APPENDIX AVAILABLE ON REQUEST

Special Report

Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality

Part I: Replication and Validation

Appendix F. Computer Programs and Output Used in the Replication of the Original Analyses of the American Cancer Society Study

Daniel Krewski, Richard T. Burnett, Mark S. Goldberg, Kristin Hoover, Jack Siemiatycki, Michal Abrahamowicz, Warren H. White, and Others

Correspondence may be addressed to Dr. Daniel Krewski, Professor of Epidemiology and Statistics, Department of Epidemiology and Community Medicine, Room 3229C, 451 Smyth Road, University of Ottawa, Ottawa Ontario K1H 8M5, Canada

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Re-analysis of the Harvard Six-Cities Study
and the American Cancer Society Study
of Air Pollution and Mortality,
Phase I: Validation and Replication

Appendix F: Computer Programs and Output Used in the Replication
of the Original Analysis of the American Cancer Society Study

R. Samuel McLaughlin Center for
Population Health Risk Assessment
Institute of Population Health
University of Ottawa

July, 2000
# Table of Contents

**Program 1** was used to confirm the results summarized in Table 1 of the ACS study (Pope et al. 1995). Table 1 features a broad range of characteristics used to profile the study cohort. These included age, sex, race, smoking status, occupational exposure, education, body mass index and alcohol consumption. Two separate indices of exposure to combustion source particulate air pollution were used: one with sulfate particles and another with fine particles. The analysis with sulfate particles involved subjects from 151 different metropolitan areas, while the analysis with fine particles involved subjects from 50 metropolitan areas.

**Output 1a** (Original Data)

**Output 1b** Modified Data

**Program 2** was used to confirm the results summarized in Table 2 of the ACS study (Pope et al. 1995). It reported the adjusted mortality risk ratios and 95% CI by cause of death for current smokers and for two separate indices of exposure to combustion source particulate air pollution.

**Output 2a** (Original Data)

**Output 2b** Modified Data

**Program 3** was used in the reanalysis to validate the adjusted mortality risk ratios (and 95% CI) which Pope et al. (1995) used to accommodate an inconsistency which they found in the data concerning lung cancer mortality. To identify the source of the inconsistency, they restricted their analysis to 47 metropolitan areas that had both sulfate and fine particle emission data.

**Output 3a** (Original Data)

**Output 3b** Modified Data

**Program 4** was used to reanalyze the data in Table 2 for the current smoker category. In this analysis, two new variables were entered into the equation. These were “25 years of smoking” and “20 cigarettes per day”.

**Output 4a** (Original Data)

**Output 4b** Modified Data

**Program 5** was used to confirm the results summarized in Table 3 of the ACS study for fine particles (Pope et al. 1995). It calculates the adjusted mortality rates and 95% CI for the most polluted areas compared to the least polluted areas in terms of all-cause and cardiopulmonary deaths. Mortality risk ratios were separated by gender and smoking status and were adjusted for age, sex, race, cigarette smoking, exposure to passive cigarette smoke, body-mass index, alcohol consumption, education and occupational exposure.

**Output 5a** (Original Data)

**Output 5b** Modified Data

**Program 6** was used to incorporate weather indicator variables (dcold and dhot) into the models in order to validate the findings of the Original Investigators.

**Output 6a** (Original Data)

**Output 6b** Modified Data
Program #1
/***************
* Repeat the results in
* ACS Study paper (1995)
* -- Table One
*
***************

libname acs '/home/yuanli/acss/';
libname fmo '/home/fmo/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
                0 = 'Dead'
;
  value sex   1 = 'Male'
                2 = 'Female'
;
  value race  1 = 'White'
                2 = 'Black'
                3 = 'Other'
;
  value ind   0 = 'No.'
                1 = 'Yes'
;
filename derdata '/home/fmo/derdata.cport';

proc cimport data=dertest infile=derdata;

* proc contents data=dertest;

data sulf; set dertest;

   if flagdel = 0 and sulfdel = 0 ;

   if (xsmkcpd gt 0 or xsmkcyr gt 0) then xsmk = 1; else xsmk = 0;

proc freq;
   table cemall sex racecat curcig xsmk indusexp evpconly edulow;
   format cemall dead. sex sex. racecat race.
      curcig xsmk indusexp evpconly edulow ind. ;
   label curcig = 'Current Smoker'
                xsmk = 'Former Smoker'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education';
title1 'Table1: Summary Characteristics of Subjects in Baseline Analytic Cohort';
title2 'Derived From the ACS, CPS-II Study Cohort, 1982-1989';
title3 'Analysis with Sulfate Particles';

proc means n mean;
  var age_int passive bmi alc;
  label age_int = 'Age at Interview'
             passive = 'Passive Smoking'
             bmi = 'Body Mass Index'
             alc = 'Alcohol Drinking';
proc means;
  var meansulf;
  label meansulf = 'Sulfate Particles';
proc univariate;
  var meansulf;

data sulf2;
  set sulf;
  if curcig > 0;
proc means n mean;
  var smkcpd smkcyr;
  label smkcpd = 'Current cigarettes per day'
              smkcyr = 'Current years smoke';

data sulf3;
  set sulf;
  if xsmk = 1;
proc means n mean;
  var xsmkcpd xsmkcyr;
  label xsmkcpd = 'Former cigarettes per day'
               xsmkcyr = 'Former years smoked';
run;

data fpf; set dertest;
  if flagdel = 0 and fpfdel = 0;
if (xsmkcpd gt 0 or xsmkcyr gt 0) then xsmk = 1; else xsmk = 0;
proc freq;
  table cenall sex racecat curcig xsmk indusexp evponly edulow;
format cenall dead. sex sex. racecat race.
curcig xsmk indusexpr evpconly edulow ind.;
label curcig = 'Current Smoker'
xsmk = 'Former Smoker'
evpconly = 'Pipe/cigar smoker'
indusexpr = 'Occupational exposure'
edulow = 'Less than high school education';

title1 'Table1: Summary Characteristics of Subjects in Baseline Analytic Cohort';
title2 ' Derived From the ACS, CPS-II Study Cohort, 1982-1989 ';
title3 ' Analysis with Fine Particles ';

proc means n mean;
   var age_int passive bmi alc ;
   label age_int = 'Age at Interview'
   passive = 'Passive Smoking'
   bmi = 'Body Mass Index'
   alc = 'Alcohol Drinking';

proc means;
   var fpf;
   label fpf = 'Fine Particles';

proc univariate;
   var fpf;

data fpf2;
   set fpf;
   if curcig > 0 ;

proc means n mean;
   var smkcpd smkcyr;
   label smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoked';

data fpf3;
   set fpf;
   if xsmk = 1 ;

proc means n mean;
   var xsmkcpd xsmkcyr;
   label xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked';
run;

* ACS_tab1.out;
/**
 * ACS Sensitivity Phase:
 * New derdata with --
 * 1. Female Deaths to 89;
 * 2. Female Former Smokers
 * ACS Study paper (1995)
 * -- Table One
 */

libname acs 'home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
               0 = 'Dead'
  ;
  value sex 1 = 'Male'
               2 = 'Female'
  ;
  value race 1 = 'White'
               2 = 'Black'
               3 = 'Other'
  ;
  value ind 0 = 'No.'
             1 = 'Yes'
  ;

/*
proc contents data=acs.dern;
title 'Contents in New Derived Dataset for ACS Study';
run; */

data sulf; set acs.dern;
   if flagd = 0 and sulfd = 0 ;

   if (xsmkcpd gt 0 or xsmkycr gt 0) then xsmk = 1; else xsmk = 0;

proc freq;
  table cenall sex racecat curcig xsmk indusexp evpconly edulow;
  format cenall dead. sex sex. racecat race.
  curcig xsmk indusexp evpconly edulow ind .;
  label curcig = 'Current Smoker'
    xsmk = 'Former Smoker'
evponly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education';

title1 'Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort';
title2 ' New Derived From the ACS, CPS-II Study Cohort, 1982-1989 ';
title3 ' Analysis with Sulfate Particles ';

proc means n mean;
  var age_int passive bmi alc;
  label age_int = 'Age at Interview'
                passive = 'Passive Smoking'
                bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking';

proc means;
  var meansulf;
  label meansulf = 'Sulfate Particles';

proc univariate;
  var meansulf;

data sulf2;
  set sulf;

  if curcig > 0 ;

proc means n mean;
  var smkcpd smkcyr;
  label smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke';

data sulf3;
  set sulf;

  if xsmk = 1 ;

proc means n mean;
  var xsmkcpd xsmkcyr;
  label xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked';
run;

data fpf; set acs.dern;

  if flagd = 0 and fpfd = 0 ;
  if (xsmkcpd gt 0 or xsmkcyr gt 0) then xsmk = 1;else xsmk = 0;
proc freq;
  table cenall sex racecat curcig xsmk indusexp evpconly edulow;
  format cenall dead. sex sex. racecat race.
    curcig xsmk indusexp evpconly edulow ind. ;
  label curcig = 'Current Smoker'
  xsmk = 'Former Smoker'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education';

  title1 'Table 1: Summary Characteristics of Subjects in
Baseline Analytic Cohort';
  title2 ' New Derived From the ACS, CPS-II Study
Cohort, 1982-1989 ';
  title3 ' Analysis with Fine Particles ';

proc means n mean;
  var age_int passive bmi alc ;
  label age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking';

proc means;
  var fpf;
  label fpf = 'Fine Particles';

proc univariate;
  var fpf;

data fpf2;
  set fpf;
  if curcig > 0 ;

proc means n mean;
  var smkcpd smkcyr;
  label smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke';

data fpf3;
  set fpf;
  if xsmk = 1 ;

proc means n mean;
  var xsmkcpd xsmkcyr;
  label xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked';
run;
Output 1a:

Original Data
Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>CENALL</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>38963</td>
<td>7.1</td>
<td>38963</td>
<td>7.1</td>
</tr>
<tr>
<td>Alive</td>
<td>513175</td>
<td>92.9</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEX</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>242698</td>
<td>44.0</td>
<td>242698</td>
<td>44.0</td>
</tr>
<tr>
<td>Female</td>
<td>309440</td>
<td>56.0</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RACECAT</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>520244</td>
<td>94.2</td>
<td>520244</td>
<td>94.2</td>
</tr>
<tr>
<td>Black</td>
<td>22666</td>
<td>4.1</td>
<td>542910</td>
<td>98.3</td>
</tr>
<tr>
<td>Other</td>
<td>9228</td>
<td>1.7</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Current Smoker

<table>
<thead>
<tr>
<th>CURCIG</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>430642</td>
<td>78.0</td>
<td>430642</td>
<td>78.0</td>
</tr>
<tr>
<td>Yes</td>
<td>121496</td>
<td>22.0</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Former Smoker

<table>
<thead>
<tr>
<th>XSMK</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>391437</td>
<td>70.9</td>
<td>391437</td>
<td>70.9</td>
</tr>
<tr>
<td>Yes</td>
<td>160761</td>
<td>29.1</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Occupational exposure

<table>
<thead>
<tr>
<th>INDUSEXP</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>441829</td>
<td>80.0</td>
<td>441829</td>
<td>80.0</td>
</tr>
<tr>
<td>Yes</td>
<td>110309</td>
<td>20.0</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

Pipe/cigar smoker

<table>
<thead>
<tr>
<th>EVPONLY</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>529620</td>
<td>95.9</td>
<td>529620</td>
<td>95.9</td>
</tr>
<tr>
<td>Yes</td>
<td>22518</td>
<td>4.1</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Less than high school education

<table>
<thead>
<tr>
<th>ECULOW</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>484128</td>
<td>87.7</td>
<td>484128</td>
<td>87.7</td>
</tr>
<tr>
<td>Yes</td>
<td>68010</td>
<td>12.3</td>
<td>552138</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>Variable Label</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE_INT</td>
<td>552138</td>
<td>56.5407742</td>
<td>3.2238616</td>
<td>25.1113858</td>
<td>0.9634964</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>552138</td>
<td>3.2238616</td>
<td>0.9634964</td>
<td>11.0078508</td>
<td>3.6000000</td>
</tr>
<tr>
<td>BMI</td>
<td>552138</td>
<td>25.1113858</td>
<td>0.9634964</td>
<td>3.6000000</td>
<td>23.5000000</td>
</tr>
<tr>
<td>ALC</td>
<td>552138</td>
<td>0.9634964</td>
<td>3.6000000</td>
<td>23.5000000</td>
<td>0.9634964</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

Analysis Variable : MEANSULF Sulfate Particles

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>552138</td>
<td>11.0078508</td>
<td>3.3309424</td>
<td>3.6000000</td>
<td>23.5000000</td>
</tr>
</tbody>
</table>
Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived from the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

Univariate Procedure

Variable = MEANSLULF

Moments

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>552138</td>
</tr>
<tr>
<td>Mean</td>
<td>11.00785</td>
</tr>
<tr>
<td>Std Dev</td>
<td>3.330942</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.05337</td>
</tr>
<tr>
<td>USS</td>
<td>73030154</td>
</tr>
<tr>
<td>CV</td>
<td>30.2597</td>
</tr>
<tr>
<td>T: Mean = 0</td>
<td>2455.609</td>
</tr>
<tr>
<td>Num ^= 0</td>
<td>552138</td>
</tr>
<tr>
<td>M(Sign)</td>
<td>276069</td>
</tr>
<tr>
<td>Sgn Rank</td>
<td>7.621E10</td>
</tr>
</tbody>
</table>

Quantiles (Def = 5)

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Max</td>
<td>23.5</td>
</tr>
<tr>
<td>75% Q3</td>
<td>13.7</td>
</tr>
<tr>
<td>50% Med</td>
<td>11.4</td>
</tr>
<tr>
<td>25% Q1</td>
<td>8.4</td>
</tr>
<tr>
<td>0% Min</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Range       | 19.9 |
Q3-Q1       | 5.3 |
Mode        | 8.4 |

Extremes

<table>
<thead>
<tr>
<th>Value</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>549251</td>
</tr>
<tr>
<td>3.6</td>
<td>549250</td>
</tr>
<tr>
<td>3.6</td>
<td>549249</td>
</tr>
<tr>
<td>3.6</td>
<td>549248</td>
</tr>
<tr>
<td>3.6</td>
<td>549247</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived from the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMKCPD</td>
<td>Current cigarettes per day</td>
<td>121496</td>
<td>22.0318364</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>Current years smoke</td>
<td>121496</td>
<td>33.5317706</td>
</tr>
</tbody>
</table>

Variable | Label | N | Mean |
----------|-------|---|------|

### Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

**Derived From the ACS, CPS-II Study Cohort, 1982-1989**

**Analysis with Fine Particles**

<table>
<thead>
<tr>
<th>CENNALL</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>20765</td>
<td>7.0</td>
<td>20765</td>
<td>7.0</td>
</tr>
<tr>
<td>Alive</td>
<td>274458</td>
<td>93.0</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEX</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>130310</td>
<td>44.1</td>
<td>130310</td>
<td>44.1</td>
</tr>
<tr>
<td>Female</td>
<td>164913</td>
<td>55.9</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RACECAT</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>277405</td>
<td>94.0</td>
<td>277405</td>
<td>94.0</td>
</tr>
<tr>
<td>Black</td>
<td>12117</td>
<td>4.1</td>
<td>289522</td>
<td>98.1</td>
</tr>
<tr>
<td>Other</td>
<td>5701</td>
<td>1.9</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Current Smoker**

<table>
<thead>
<tr>
<th>CURCIG</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>231352</td>
<td>78.4</td>
<td>231352</td>
<td>78.4</td>
</tr>
<tr>
<td>Yes</td>
<td>63871</td>
<td>21.6</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Former Smoker**

<table>
<thead>
<tr>
<th>XSMK</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>208538</td>
<td>70.6</td>
<td>208538</td>
<td>70.6</td>
</tr>
<tr>
<td>Yes</td>
<td>86685</td>
<td>29.4</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Occupational exposure**
<table>
<thead>
<tr>
<th>INDUSEXP</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>237694</td>
<td>80.5</td>
<td>237694</td>
<td>80.5</td>
</tr>
<tr>
<td>Yes</td>
<td>57529</td>
<td>19.5</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived from the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

Pipe/cigar smoker

<table>
<thead>
<tr>
<th>EVPCONLY</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>283663</td>
<td>96.1</td>
<td>283663</td>
<td>96.1</td>
</tr>
<tr>
<td>Yes</td>
<td>11560</td>
<td>3.9</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Less than high school education

<table>
<thead>
<tr>
<th>EDULOW</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>261783</td>
<td>88.7</td>
<td>261783</td>
<td>88.7</td>
</tr>
<tr>
<td>Yes</td>
<td>33440</td>
<td>11.3</td>
<td>295223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived from the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE_INT</td>
<td>Age at Interview</td>
<td>295223</td>
<td>56.6116122</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>Passive Smoking</td>
<td>295223</td>
<td>3.1796811</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
<td>295223</td>
<td>25.0377213</td>
</tr>
<tr>
<td>ALC</td>
<td>Alcohol Drinking</td>
<td>295223</td>
<td>0.9816258</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived from the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

Analysis Variable: PPF Fine Particles

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>295223</td>
<td>18.1962016</td>
<td>4.4238552</td>
<td>8.9500000</td>
<td>33.3500000</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

Derived from the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

Univariate Procedure

Variable=FFP

Moments

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>295223</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>18.1962</td>
<td></td>
</tr>
<tr>
<td>Std Dev</td>
<td>4.423855</td>
<td></td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.03277</td>
<td></td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.6679</td>
<td></td>
</tr>
<tr>
<td>USS</td>
<td>1.0353E8</td>
<td></td>
</tr>
<tr>
<td>CV</td>
<td>24.31197</td>
<td></td>
</tr>
<tr>
<td>T:Mean=0</td>
<td>2234.484</td>
<td>Pr&gt;</td>
</tr>
<tr>
<td>Num ^= 0</td>
<td>295223</td>
<td>Num &gt; 0</td>
</tr>
<tr>
<td>M(Sign)</td>
<td>147611.5</td>
<td>Pr&gt;=</td>
</tr>
<tr>
<td>Sgn Rank</td>
<td>2.179810</td>
<td>Pr&gt;=</td>
</tr>
</tbody>
</table>

Quantiles (Def=5)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Max</td>
<td>33.35</td>
<td>99%</td>
</tr>
<tr>
<td>75% Q3</td>
<td>21.81</td>
<td>95%</td>
</tr>
<tr>
<td>50% Med</td>
<td>18.8</td>
<td>90%</td>
</tr>
<tr>
<td>25% Q1</td>
<td>13.68</td>
<td>10%</td>
</tr>
<tr>
<td>0% Min</td>
<td>8.95</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Range</td>
<td>24.4</td>
<td></td>
</tr>
<tr>
<td>Q3-Q1</td>
<td>8.13</td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>21.04</td>
<td></td>
</tr>
</tbody>
</table>

Extremes

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>8.95(295223)</td>
<td>Highest</td>
</tr>
<tr>
<td>8.95(295201)</td>
<td>33.35(295158)</td>
<td></td>
</tr>
<tr>
<td>8.95(295176)</td>
<td>33.35(295159)</td>
<td></td>
</tr>
<tr>
<td>8.95(293812)</td>
<td>33.35(295160)</td>
<td></td>
</tr>
<tr>
<td>8.95(277062)</td>
<td>33.35(295162)</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort
Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMKCPD</td>
<td>Current cigarettes per day</td>
<td>63871</td>
<td>22.1195065</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>Current years smoke</td>
<td>63871</td>
<td>33.5461164</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>Former cigarettes per day</td>
<td>86685</td>
<td>21.9716445</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>Former years smoked</td>
<td>86685</td>
<td>22.1799619</td>
</tr>
</tbody>
</table>
Output 1b:

Modified Data
Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort
5
New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>CENALL</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>43361</td>
<td>7.8</td>
<td>43361</td>
<td>7.8</td>
</tr>
<tr>
<td>Alive</td>
<td>515688</td>
<td>92.2</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEX</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>242698</td>
<td>43.4</td>
<td>242698</td>
<td>43.4</td>
</tr>
<tr>
<td>Female</td>
<td>316351</td>
<td>56.6</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RACECAT</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>526741</td>
<td>94.2</td>
<td>526741</td>
<td>94.2</td>
</tr>
<tr>
<td>Black</td>
<td>22990</td>
<td>4.1</td>
<td>549731</td>
<td>98.3</td>
</tr>
<tr>
<td>Other</td>
<td>9318</td>
<td>1.7</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Current Smoker

<table>
<thead>
<tr>
<th>CURCIG</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>437553</td>
<td>78.3</td>
<td>437553</td>
<td>78.3</td>
</tr>
<tr>
<td>Yes</td>
<td>121496</td>
<td>21.7</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Former Smoker

<table>
<thead>
<tr>
<th>XSMK</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>391437</td>
<td>70.0</td>
<td>391437</td>
<td>70.0</td>
</tr>
<tr>
<td>Yes</td>
<td>167612</td>
<td>30.0</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Occupational exposure

<table>
<thead>
<tr>
<th>INDUSEXP</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>448170</td>
<td>80.2</td>
<td>448170</td>
<td>80.2</td>
</tr>
<tr>
<td>Yes</td>
<td>110879</td>
<td>19.8</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

Pipe/cigar smoker

<table>
<thead>
<tr>
<th>EVPCONLY</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>536531</td>
<td>96.0</td>
<td>536531</td>
<td>96.0</td>
</tr>
<tr>
<td>Yes</td>
<td>22518</td>
<td>4.0</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Less than high school education

<table>
<thead>
<tr>
<th>EDULOW</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>490175</td>
<td>87.7</td>
<td>490175</td>
<td>87.7</td>
</tr>
<tr>
<td>Yes</td>
<td>68874</td>
<td>12.3</td>
<td>559049</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE INT</td>
<td>Age at Interview</td>
<td>559049</td>
<td>56.5697962</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>Passive Smoking</td>
<td>559049</td>
<td>3.2045304</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
<td>559049</td>
<td>25.1037408</td>
</tr>
<tr>
<td>ALC</td>
<td>Alcohol Drinking</td>
<td>559049</td>
<td>0.9619076</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

Analysis Variable: MEANSULF Sulfate Particles

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>559049</td>
<td>11.0084649</td>
<td>3.3295041</td>
<td>3.600000</td>
<td>23.500000</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

Univariate Procedure

Variable=MEANSULF
Moments

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>559049</td>
<td>559049</td>
</tr>
<tr>
<td>Mean</td>
<td>11.00846</td>
<td>6154271</td>
</tr>
<tr>
<td>Std Dev</td>
<td>3.329504</td>
<td>11.0856</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.05611</td>
<td>-0.12539</td>
</tr>
<tr>
<td>USS</td>
<td>73946461</td>
<td>6197381</td>
</tr>
<tr>
<td>CV</td>
<td>30.24494</td>
<td>0.004453</td>
</tr>
<tr>
<td>T:Mean=0</td>
<td>2472.135</td>
<td>0.0001</td>
</tr>
<tr>
<td>Num ~ 0</td>
<td>559049</td>
<td>559049</td>
</tr>
<tr>
<td>M(Sign)</td>
<td>279524.5</td>
<td>0.0001</td>
</tr>
<tr>
<td>Sgn Rank</td>
<td>7.813E10</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Quantiles (Def=5)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Max</td>
<td>23.5</td>
<td>99%</td>
</tr>
<tr>
<td>75% Q3</td>
<td>13.7</td>
<td>95%</td>
</tr>
<tr>
<td>50% Med</td>
<td>11.4</td>
<td>90%</td>
</tr>
<tr>
<td>25% Q1</td>
<td>8.4</td>
<td>10%</td>
</tr>
<tr>
<td>0% Min</td>
<td>3.6</td>
<td>5%</td>
</tr>
<tr>
<td>Range</td>
<td>19.9</td>
<td></td>
</tr>
<tr>
<td>Q3 - Q1</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>8.4</td>
<td></td>
</tr>
</tbody>
</table>

Extremes

<table>
<thead>
<tr>
<th>Lowest</th>
<th>Obs</th>
<th>Highest</th>
<th>Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>555472</td>
<td>23.5</td>
<td>552404</td>
</tr>
<tr>
<td>3.6</td>
<td>555471</td>
<td>23.5</td>
<td>552405</td>
</tr>
<tr>
<td>3.6</td>
<td>555470</td>
<td>23.5</td>
<td>552406</td>
</tr>
<tr>
<td>3.6</td>
<td>555469</td>
<td>23.5</td>
<td>552407</td>
</tr>
<tr>
<td>3.6</td>
<td>555468</td>
<td>23.5</td>
<td>553059</td>
</tr>
</tbody>
</table>

Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMKCPD</td>
<td>Current cigarettes per day</td>
<td>121496</td>
<td>22.0318364</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>Current years smoke</td>
<td>121496</td>
<td>33.5317706</td>
</tr>
</tbody>
</table>

Table 2: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Sulfate Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>XSMKCPD</td>
<td>Former cigarettes per day</td>
<td>167612</td>
<td>21.5404804</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>Former years smoked</td>
<td>167612</td>
<td>22.1532706</td>
</tr>
</tbody>
</table>

Table 3: Summary Characteristics of Subjects in Baseline Analytic Cohort

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles
<table>
<thead>
<tr>
<th>CENALL</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>23093</td>
<td>7.7</td>
<td>23093</td>
<td>7.7</td>
</tr>
<tr>
<td>Alive</td>
<td>275724</td>
<td>92.3</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEX</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>130310</td>
<td>43.6</td>
<td>130310</td>
<td>43.6</td>
</tr>
<tr>
<td>Female</td>
<td>168507</td>
<td>56.4</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RACECAT</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>280759</td>
<td>94.0</td>
<td>280759</td>
<td>94.0</td>
</tr>
<tr>
<td>Black</td>
<td>12300</td>
<td>4.1</td>
<td>293059</td>
<td>98.1</td>
</tr>
<tr>
<td>Other</td>
<td>5758</td>
<td>1.9</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Current Smoker**

<table>
<thead>
<tr>
<th>CURCIG</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>234946</td>
<td>78.6</td>
<td>234946</td>
<td>78.6</td>
</tr>
<tr>
<td>Yes</td>
<td>63871</td>
<td>21.4</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Former Smoker**

<table>
<thead>
<tr>
<th>XSMK</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>208538</td>
<td>69.8</td>
<td>208538</td>
<td>69.8</td>
</tr>
<tr>
<td>Yes</td>
<td>90279</td>
<td>30.2</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Occupational exposure**

<table>
<thead>
<tr>
<th>INDUSEXP</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>240992</td>
<td>80.6</td>
<td>240992</td>
<td>80.6</td>
</tr>
<tr>
<td>Yes</td>
<td>57825</td>
<td>19.4</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table_1: Summary Characteristics of Subjects in Baseline Analytic Cohort
New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

Pipe/cigar smoker

<table>
<thead>
<tr>
<th>EVPCONLY</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>287257</td>
<td>.96.1</td>
<td>287257</td>
<td>96.1</td>
</tr>
<tr>
<td>Yes</td>
<td>11560</td>
<td>3.9</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Less than high school education

<table>
<thead>
<tr>
<th>EDULOW</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>264961</td>
<td>88.7</td>
<td>264961</td>
<td>88.7</td>
</tr>
<tr>
<td>Yes</td>
<td>33856</td>
<td>11.3</td>
<td>298817</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table_1: Summary Characteristics of Subjects in Baseline Analytic Cohort
New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE_INT</td>
<td>Age at Interview</td>
<td>298817</td>
<td>56.6392173</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>Passive Smoking</td>
<td>298817</td>
<td>3.1608409</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
<td>298817</td>
<td>25.0294690</td>
</tr>
<tr>
<td>ALC</td>
<td>Alcohol Drinking</td>
<td>298817</td>
<td>0.9803525</td>
</tr>
</tbody>
</table>

Table_1: Summary Characteristics of Subjects in Baseline Analytic Cohort
New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

Analysis Variable : FPF Fine Particles

<table>
<thead>
<tr>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>298817</td>
<td>18.1977080</td>
<td>4.4239552</td>
<td>8.9500000</td>
<td>33.3500000</td>
</tr>
</tbody>
</table>

Table_1: Summary Characteristics of Subjects in Baseline Analytic Cohort
New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

Univariate Procedure

Variable=FFP

Moments
### Table 1: Summary Characteristics of Subjects in Baseline Analytic Cohort 17

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

<table>
<thead>
<tr>
<th>Variable Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMKCPD</td>
<td>63871</td>
<td>22.1195065</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>63871</td>
<td>33.5461164</td>
</tr>
</tbody>
</table>

### Table 2: Summary Characteristics of Subjects in Baseline Analytic Cohort 18

New Derived From the ACS, CPS-II Study Cohort, 1982-1989
Analysis with Fine Particles

<table>
<thead>
<tr>
<th>Variable Label</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>XSMKCPD</td>
<td>90279</td>
<td>21.5583912</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>90279</td>
<td>22.0252993</td>
</tr>
</tbody>
</table>
Program #2
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
                0 = 'Dead'
  ;
  value sex  1 = 'Male'
                2 = 'Female'
  ;
  value race 1 = 'White'
                2 = 'Black'
                3 = 'Other'
  ;
  value ind  0 = 'No.'
                1 = 'Yes'
  ;

filename derdata '/home/fmo/derdata.cport';

proc cimport data=dertest infile=derdata;

/*
   data sulf; set dertest;
   
   if flagdel = 0 and sulfdel = 0 ;
   
   sulfates = meansulf/19.9;
*/

proc phreg data=sulf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';

where west in (0,1);

title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
run;

proc phreg data=sulf nosummary;
   model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                      xsmkcyr passive
                      edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
               smkcpd = 'Current cigarettes per day'
               smkcyr = 'Current years smoke'
               xsmkcpd = 'Former cigarettes per day'
               xsmkcyr = 'Former years smoked'
               evpconly = 'Pipe/cigar smoker'
               indusexp = 'Occupational exposure'
               edulow = 'Less than high school education'
               age_int = 'Age at Interview'
               passive = 'Passive Smoking'
               bmi = 'Body Mass Index'
               alc = 'Alcohol Drinking'
               sulfates = 'Sulfate Particles';
   where west in (0,1);

   title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';

proc phreg data=sulf nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                         xsmkcyr passive
                       edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'

24
data fpf; set dertest;

   if flagdel = 0 and fpfdel = 0 ;

   fine = fpf/24.5;
proc phreg data=fpf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                         xsmkcyr passive
                         edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
where west in (0,1);

title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
  title2 'Intervals) by All Cause of Death for the Fine Particles';
run;

proc phreg data=fpf nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                        xsmkcyr passive
                        edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
where west in (0,1);

title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals') by Lung Cancer Related Death for the Fine Particles;

proc phreg data=fpf nosummary;
model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
    edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals') by Cardiopulmonary Death for the Fine Particles';

proc phreg data=fpf nosummary;
model fail*cenrest(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
    edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);
title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)'
title2 'Intervals) by All Other Death for the Fine Particles'
run;

data sulf; set dertest;
if flagdel = 0 and sulfdel = 0 ;
sulfates = meansulf/19.9;
smkcpd20 = smkcpd/20;
smkcyr25 = smkcyr/25;

proc phreg data=sulf nosummary;
model fail*cenall(1) = curcig smkcpd20 smkcyr25 evpconly
xsmkcpd xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
    smkcpd20 = 'Current cigarettes 20 per day'
    smkcyr25 = 'Current 25 years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

run;

proc phreg data=sulf nosummary;
model fail*cen62(1) = curcig smkcpd20 smkcyr25 evpconly
xsmkcpd xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
    smkcpd20 = 'Current cigarettes 20 per day'
smkcyr25 = 'Current 25 years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

/*Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)*/
/*Intervals) by Lung Cancer Related Death for the Current Smoker*/
proc phreg data=sulf nosummary;
model fail*cencomb(1) = curcig smkcpd20 smkcyr25 evpconly
xsmkcpd xsmkcyr passive
   edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd20 = 'Current cigarettes 20 per day'
smkcyr25 = 'Current 25 years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

/*Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)*/
/*Intervals) by Cardiopulmonary Death for the Current Smoker*/
proc phreg data=sulf nosummary;
model fail*cenrest(1) = curcig smkcpd20 smkcyr25 evpconly
xsmkcpd xsmkcyr passive
   edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd20 = 'Current cigarettes 20 per day'
smkcyr25 = 'Current 25 years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Other Death for the Current Smoker';
run;

* ACS_tab2.out;
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
                0 = 'Dead'
;            
  value sex  1 = 'Male'
                2 = 'Female'
;            
  value race 1 = 'White'
                2 = 'Black'
                3 = 'Other'
;          
  value ind  0 = 'No.'
                1 = 'Yes'
;

data sulf; set acs.dern;

  if flagd = 0 and sulfd = 0;

  sulfates = meansulf/19.9;

proc phreg data=sulf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                        xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;

  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';

where west in (0,1);

title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 '--- with the Female new subcohort';
run;

proc phreg data=sulf nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive 
   edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
title3 '--- with the Female new subcohort';

proc phreg data=sulf nosummary;
model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive 
   edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 '-- with the Female new subcohort';

proc phreg data=sulf nosummary;
model fail*cenrest(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                      xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Other Death for the Sulfate Particles';
title3 '-- with the Female new subcohort';
run;
data fpf; set acs.dern;

if flagd = 0 and fpfd = 0;

fine = fpf/24.5;

proc phreg data=fpf nosummary;
  model fail*cenall1 = curcig evpconly smkcpd xsmkcpd smkcyr
                   xsmkcyr passive
                   edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 fine = 'Fine Particles';
  where west in (0,1);

title1 'Table_2: Adjusted Mortality Risk Ratios (and 95%
       Confidence);
  title2 'Intervals) by All Cause of Death for the Fine
       Particles';
  title3 ' -- with the Female new subcohort';

proc phreg data=fpf nosummary;
  model fail*cen621 = curcig evpconly smkcpd xsmkcpd smkcyr
                     xsmkcyr passive
                     edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles';
title3 ' -- with the Female new subcohort,'

proc phreg data=fpf nosummary;
    model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc fine / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                    smkcpd = 'Current cigarettes per day'
                    smkcyr = 'Current years smoke'
                    xsmkcpd = 'Former cigarettes per day'
                    xsmkcyr = 'Former years smoked'
                    evpconly = 'Pipe/cigar smoker'
                    indusexp = 'Occupational exposure'
                    edulow = 'Less than high school education'
                    age_int = 'Age at Interview'
                    passive = 'Passive Smoking'
                    bmi = 'Body Mass Index'
                    alc = 'Alcohol Drinking'
                    fine = 'Fine Particles';
    where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles';
title3 ' -- with the Female new subcohort,'

proc phreg data=fpf nosummary;
    model fail*cenrest(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                           xsmkcyr passive
                        edulow indusexp bmi alc fine / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                    smkcpd = 'Current cigarettes per day'
                    smkcyr = 'Current years smoke'
                    xsmkcpd = 'Former cigarettes per day'
                    xsmkcyr = 'Former years smoked'
                    evpconly = 'Pipe/cigar smoker'
                    indusexp = 'Occupational exposure';

35
edulow  = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi    = 'Body Mass Index'
alc    = 'Alcohol Drinking'
fine   = 'Fine Particles';
where west in (0,1);

title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Other Death for the Fine Particles';
title3 '-- with the Female new subcohort';
run;

data sulf; set acs.dern;
    if flagd = 0 and sulfd = 0 ;
    sulfates = meansulf/19.9;
    smkcpd20 = smkcpd/20;
    smkcyr25 = smkcyr/25;
proc phreg data=sulf.nosummary;
    model fail*cenall(1) = curcig smkcpd20 smkcyr25 evpconly
        xsmkcpd xsmkcyr passive
            edulow indusexp bmi alc sulfates / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig  = 'Current Smoker'
        smkcpd20 = 'Current cigarettes 20 per day'
        smkcyr25 = 'Current 25 years smoke'
        xsmkcpd = 'Former cigarettes per day'
        xsmkcyr = 'Former years smoked'
        evpconly = 'Pipe/cigar smoker'
        indusexp = 'Occupational exposure'
        edulow  = 'Less than high school education'
        age_int = 'Age at Interview'
        passive = 'Passive Smoking'
        bmi     = 'Body Mass Index'
        alc     = 'Alcohol Drinking'
        sulfates = 'Sulfate Particles';
    where west in (0,1);

    title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
    title2 'Intervals) by All Cause of Death for the Current Smoker';
    title3 '-- with the Female new subcohort';
proc phreg data=sulf nosummary;
  model fail*cens2(1) = curcig smkcdp20 smkcyr25 evpconly
                    xsmkcdp xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcdp20 = 'Current cigarettes 20 per day'
  smkcyr25 = 'Current 25 years smoke'
  xsmkcdp = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Current Smoker';
title3 '--- with the Female new subcohort';

proc phreg data=sulf nosummary;
  model fail*cencomb(1) = curcig smkcdp20 smkcyr25 evpconly
                       xsmkcdp xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcdp20 = 'Current cigarettes 20 per day'
  smkcyr25 = 'Current 25 years smoke'
  xsmkcdp = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Current Smoker';
title3 '-- with the Female new subcohort';

proc phreg data=sulf nosummary;
  model fail*cenrest(1) = curcig smkcpd20 smkcyr25 evpconly xsmkcpd xsmkcyr passive  
    edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd20 = 'Current cigarettes 20 per day'
    smkcyr25 = 'Current 25 years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    sulfates = 'Sulfate Particles';
  where west in (0,1);
   
title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Other Death for the Current Smoker';
title3 '-- with the Female new subcohort';
run;
Output 2a:

Original Data
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>744467.416</td>
<td>739017.328</td>
<td>5450.088 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td></td>
<td>5969.967 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td></td>
<td>5734.594 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.297361</td>
<td>0.04478</td>
<td>44.08867</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.226345</td>
<td>0.02413</td>
<td>87.95760</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.011719</td>
<td>0.0007716</td>
<td>230.67138</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.005072</td>
<td>0.0005337</td>
<td>90.32437</td>
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<tr>
<td>SMKCYR</td>
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<td>0.007760</td>
<td>0.0009304</td>
<td>69.56341</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.012802</td>
<td>0.0004866</td>
<td>692.22879</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.001148</td>
<td>0.00146</td>
<td>0.62168</td>
<td>0.4304</td>
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<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.249379</td>
<td>0.01238</td>
<td>405.59584</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.035682</td>
<td>0.01282</td>
<td>7.75116</td>
<td>0.0054</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.005508</td>
<td>0.00141</td>
<td>15.18944</td>
<td>0.0001</td>
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<td>ALC</td>
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<td>-0.016057</td>
<td>0.00264</td>
<td>37.08966</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.141239</td>
<td>0.03010</td>
<td>22.01207</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.346</td>
<td>1.233</td>
<td>1.470</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.254</td>
<td>1.196</td>
<td>1.315</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.012</td>
<td>1.010</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.998</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.283</td>
<td>1.252</td>
<td>1.315</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.036</td>
<td>1.011</td>
<td>1.063</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.995</td>
<td>0.992</td>
<td>0.997</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.984</td>
<td>0.979</td>
<td>0.989</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.152</td>
<td>1.086</td>
<td>1.222</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Limits)
Intervals) by Lung Cancer Related Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CB62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>69780.314</td>
<td>65223.146</td>
<td>4557.168 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>5105.261 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3453.342 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.951495</td>
<td>0.14197</td>
<td>44.91789</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.235356</td>
<td>0.11783</td>
<td>109.29202</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.021890</td>
<td>0.00176</td>
<td>155.21504</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.015410</td>
<td>0.00162</td>
<td>91.03174</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.035436</td>
<td>0.00292</td>
<td>147.05165</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.056494</td>
<td>0.00182</td>
<td>965.91483</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.004316</td>
<td>0.00392</td>
<td>1.21457</td>
<td>0.2704</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.408665</td>
<td>0.04064</td>
<td>101.13842</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.036601</td>
<td>0.03987</td>
<td>0.84279</td>
<td>0.3586</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.066315</td>
<td>0.00509</td>
<td>169.42136</td>
<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>0.004117</td>
<td>0.00665</td>
<td>0.38294</td>
<td>0.5360</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.307335</td>
<td>0.10160</td>
<td>9.14955</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.590</td>
<td>1.961</td>
<td>3.420</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>3.440</td>
<td>2.730</td>
<td>4.333</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.022</td>
<td>1.019</td>
<td>1.026</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.016</td>
<td>1.012</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.036</td>
<td>1.030</td>
<td>1.042</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.058</td>
<td>1.054</td>
<td>1.062</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.997</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.505</td>
<td>1.390</td>
<td>1.630</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.037</td>
<td>0.959</td>
<td>1.122</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.936</td>
<td>0.927</td>
<td>0.945</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.004</td>
<td>0.991</td>
<td>1.017</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.360</td>
<td>1.114</td>
<td>1.659</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>357444.550</td>
<td>354830.631</td>
<td>2613.918 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>2785.861 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>2708.368 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.622048</td>
<td>0.0697</td>
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</tr>
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<td>0.244623</td>
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<tr>
<td>SMKCPD</td>
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<td>0.231590</td>
<td>0.04284</td>
<td>29.22531</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.863</td>
<td>1.634</td>
<td>2.124</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.277</td>
<td>1.197</td>
<td>1.362</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.007</td>
<td>1.005</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>1.000</td>
<td>1.005</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.997</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.339</td>
<td>1.296</td>
<td>1.385</td>
<td>Less than high school ed</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.033</td>
<td>0.996</td>
<td>1.070</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.001</td>
<td>0.997</td>
<td>1.005</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.960</td>
<td>0.952</td>
<td>0.968</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULPATES</td>
<td>1.261</td>
<td>1.159</td>
<td>1.371</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENREST
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>316399.128</td>
<td>315508.225</td>
<td>890.903 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>966.584 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>947.068 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.049556</td>
<td>0.06890</td>
<td>0.51726</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.126286</td>
<td>0.03758</td>
<td>11.29315</td>
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<tr>
<td>SMKCPD</td>
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<td>0.010809</td>
<td>0.00126</td>
<td>73.53014</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.0008620</td>
<td>26.47287</td>
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<td>SMKCYR</td>
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<td>0.006604</td>
<td>0.00149</td>
<td>19.74643</td>
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<tr>
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<td>0.006182</td>
<td>0.0008086</td>
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<td>42.84421</td>
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<td>INDUSEXP</td>
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<td>0.02014</td>
<td>3.20077</td>
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<tr>
<td>BMI</td>
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<td>0.60234</td>
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<td>ALC</td>
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<td>0.002493</td>
<td>0.00377</td>
<td>0.43646</td>
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<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.012998</td>
<td>0.04658</td>
<td>0.07787</td>
</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.051</td>
<td>0.918</td>
<td>1.203</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.135</td>
<td>1.054</td>
<td>1.221</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.008</td>
<td>1.033</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.004</td>
<td>1.003</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.004</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.006</td>
<td>1.005</td>
<td>1.008</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.143</td>
<td>1.098</td>
<td>1.189</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.037</td>
<td>0.997</td>
<td>1.078</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.998</td>
<td>0.994</td>
<td>1.003</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.002</td>
<td>0.995</td>
<td>1.010</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.013</td>
<td>0.925</td>
<td>1.110</td>
<td>Sulfate Particles</td>
</tr>
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</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>370354.471</td>
<td>367469.089</td>
<td>2885.382 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3141.727 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3022.887 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.300891</td>
<td>0.06215</td>
<td>23.44252</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.224551</td>
<td>0.03365</td>
<td>44.51830</td>
<td>0.0001</td>
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<tr>
<td>SMKCPD</td>
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<td>0.010015</td>
<td>0.00107</td>
<td>86.84582</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.0007221</td>
<td>63.65033</td>
<td>0.0001</td>
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<tr>
<td>SMKCYR</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.012570</td>
<td>0.0006663</td>
<td>355.93647</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
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<td>0.001439</td>
<td>0.00200</td>
<td>0.51526</td>
<td>0.4729</td>
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<tr>
<td>EDULOW</td>
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<td>0.248080</td>
<td>0.01730</td>
<td>205.58328</td>
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<td>BMI</td>
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<td>0.0001</td>
</tr>
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<td>FINE</td>
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<td>0.158451</td>
<td>0.03869</td>
<td>16.77475</td>
<td>0.0001</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.351</td>
<td>1.196</td>
<td>1.526</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.252</td>
<td>1.172</td>
<td>1.337</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.010</td>
<td>1.008</td>
<td>1.012</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.009</td>
<td>1.006</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.011</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.998</td>
<td>1.005</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.282</td>
<td>1.239</td>
<td>1.326</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.059</td>
<td>1.024</td>
<td>1.097</td>
<td>Occupational exposure</td>
</tr>
</tbody>
</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>34529.177</td>
<td>32404.448</td>
<td>2488.729 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>:</td>
<td>:</td>
<td>2773.295 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>:</td>
<td>:</td>
<td>1887.140 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.937638</td>
<td>0.19546</td>
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<td>0.0001</td>
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<tr>
<td>EVPONLY</td>
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<td>1.249317</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.022754</td>
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<tr>
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<td>0.0001</td>
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<td>0.0001</td>
</tr>
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<td>0.00543</td>
<td>0.35513</td>
<td>0.5512</td>
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<tr>
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<td>0.0001</td>
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<td>0.4906</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.030368</td>
<td>0.12801</td>
<td>0.05628</td>
<td>0.8125</td>
</tr>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.554</td>
<td>1.741</td>
<td>3.746</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>3.488</td>
<td>2.522</td>
<td>4.824</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.023</td>
<td>1.018</td>
<td>1.028</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.014</td>
<td>1.009</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.036</td>
<td>1.028</td>
<td>1.044</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.062</td>
<td>1.056</td>
<td>1.067</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.003</td>
<td>0.993</td>
<td>1.014</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.567</td>
<td>1.402</td>
<td>1.751</td>
<td>Less than high school education</td>
</tr>
</tbody>
</table>
**INDUSEXP** 1.107 0.994 1.232 Occupational exposure
**BMI** 0.926 0.913 0.939 Body Mass Index
**ALC** 0.993 0.975 1.012 Alcohol Drinking
**FINE** 1.031 0.802 1.325 Fine Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>175982.317</td>
<td>174616.065</td>
<td>1366.253 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1463.905 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1422.010 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.575299</td>
<td>0.09392</td>
<td>37.52355</td>
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</tr>
<tr>
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<td>0.00165</td>
<td>11.31746</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.005627</td>
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<td>30.09536</td>
</tr>
<tr>
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<td>0.0009214</td>
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</tr>
<tr>
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<td>1.09897</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>156.10182</td>
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<td>INDUSEXP</td>
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<td>0.02521</td>
<td>5.05773</td>
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<tr>
<td>BMI</td>
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<td>0.52528</td>
</tr>
<tr>
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<td>0.00565</td>
<td>44.11714</td>
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<tr>
<td>FINE</td>
<td>1</td>
<td>0.266757</td>
<td>0.05554</td>
<td>23.07097</td>
</tr>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.778</td>
<td>1.479</td>
<td>2.137</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVFCONLY</td>
<td>1.242</td>
<td>1.134</td>
<td>1.359</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.002</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.004</td>
<td>1.000</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.010</td>
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<td>Former years smoked</td>
</tr>
<tr>
<td>Variable</td>
<td>DF</td>
<td>Parameter Estimate</td>
<td>Standard Error</td>
<td>Wald Chi-Square</td>
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<tr>
<td>----------</td>
<td>----</td>
<td>-------------------</td>
<td>----------------</td>
<td>-----------------</td>
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<tr>
<td>CURCIG</td>
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<tr>
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<td>XSMKCPD</td>
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<td>SMKCYR</td>
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<td>0.006856</td>
<td>0.00205</td>
<td>11.16673</td>
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<td>0.006383</td>
<td>0.00110</td>
<td>33.90128</td>
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<td>PASSIVE</td>
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<td>0.00309</td>
<td>0.20389</td>
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<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.117209</td>
<td>0.02847</td>
<td>16.94438</td>
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<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.044762</td>
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<td>2.65067</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.003301</td>
<td>0.00289</td>
<td>1.30313</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.001577</td>
<td>0.00509</td>
<td>0.09607</td>
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<tr>
<td>FINE</td>
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<td>0.069941</td>
<td>0.05956</td>
<td>1.37885</td>
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</table>

### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.121</td>
<td>0.931</td>
<td>1.350</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.159</td>
<td>1.047</td>
<td>1.283</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.004</td>
<td>1.011</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
</tbody>
</table>
SMKCYR  1.007  1.003  1.011  Current years smoke
XSMKCYR  1.005  1.004  1.009  Former years smoked
PASSIVE  0.999  0.993  1.005  Passive Smoking
EDULOW   1.124  1.063  1.189  Less than high school education
INDUSEXP  1.046  0.991  1.104  Occupational exposure
BMI      1.003  0.998  1.009  Body Mass Index
ALC      1.002  0.992  1.012  Alcohol Drinking
FINE     1.072  0.954  1.205  Fine Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Current Smoker

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>744467.416</td>
<td>739017.328</td>
<td>5450.088 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>5969.967 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>5734.594 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.297361</td>
<td>0.04478</td>
<td>44.08867</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1</td>
<td>0.234388</td>
<td>0.01543</td>
<td>230.67138</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1</td>
<td>0.193989</td>
<td>0.02326</td>
<td>69.56341</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.226345</td>
<td>0.02413</td>
<td>87.95760</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.005072</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.012802</td>
<td>0.004866</td>
<td>692.22879</td>
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<tr>
<td>PASSIVE</td>
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<td>0.001148</td>
<td>0.00146</td>
<td>0.62168</td>
<td>0.4304</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.249379</td>
<td>0.01238</td>
<td>405.59584</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.035682</td>
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<td>7.75116</td>
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<td>BMI</td>
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<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
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<td>-0.016057</td>
<td>0.00264</td>
<td>37.08966</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.141239</td>
<td>0.03010</td>
<td>22.01207</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.346</td>
<td>1.233</td>
<td>1.470</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.264</td>
<td>1.226</td>
<td>1.303</td>
<td>Current cigarettes 20 per day</td>
</tr>
</tbody>
</table>
SMKCYR25  1.214  1.160  1.271  Current 25 years smoke
EVPCONLY  1.254  1.196  1.315  Pipe/cigar smoker
XSMKCPD  1.005  1.004  1.006  Former cigarettes per day
XSMKCYR  1.013  1.012  1.014  Former years smoked
PASSIVE  1.001  0.998  1.004  Passive Smoking
EDULOW  1.283  1.252  1.315  Less than high school education
INDUSEXP  1.036  1.011  1.063  Occupational exposure
BMI  0.995  0.992  0.997  Body Mass Index
ALC  0.984  0.979  0.989  Alcohol Drinking
SULFATES 1.152  1.086  1.222  Sulfate Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Current Smoker

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>69780.314</td>
<td>65223.146</td>
<td>4557.168 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>5105.261 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3453.342 with 12 DF (p=0.0001)</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.951485</td>
<td>0.14197</td>
<td>44.91789</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD20</td>
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<td>0.437806</td>
<td>0.03514</td>
<td>155.21504</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR25</td>
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<td>0.885891</td>
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<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>1.235356</td>
<td>0.11783</td>
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<td>0.0001</td>
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<tr>
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<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<tr>
<td>PASSIVE</td>
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<td>1.21457</td>
<td>0.2704</td>
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<tr>
<td>EDULOW</td>
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<td>0.408665</td>
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<td>ALC</td>
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<td>SULFATES</td>
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<td>0.307335</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.590</td>
<td>1.961</td>
<td>3.420</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.549</td>
<td>1.446</td>
<td>1.660</td>
<td>Current cigarettes 20 per day</td>
</tr>
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</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Current Smoker

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>357444.550</td>
<td>354830.631</td>
<td>2613.918 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>2785.861 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2708.368 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.622048</td>
<td>0.06697</td>
<td>86.28461</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1</td>
<td>0.143501</td>
<td>0.02368</td>
<td>36.73418</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1</td>
<td>0.059183</td>
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<td>0.0819</td>
</tr>
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<td>EVPCONLY</td>
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<td>0.244623</td>
<td>0.03286</td>
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<td>0.0001</td>
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<td>0.0001</td>
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<td>0.001661</td>
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<td>0.57671</td>
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<td>EDULOW</td>
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<td>0.292244</td>
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</tr>
<tr>
<td>BMI</td>
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<td>0.0001377</td>
<td>0.000203</td>
<td>0.46148</td>
<td>0.4969</td>
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<td>ALC</td>
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<td>92.69753</td>
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<td>SULFATES</td>
<td>1</td>
<td>0.231590</td>
<td>0.04284</td>
<td>29.22531</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.863</td>
<td>1.634</td>
<td>2.124</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.154</td>
<td>1.102</td>
<td>1.209</td>
<td>Current cigarettes 20 per day</td>
</tr>
</tbody>
</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Current Smoker

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: CENREST
Censoring Variable: CENREST
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>316399.128</td>
<td>315508.225</td>
<td>890.903 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>966.584 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>947.068 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.049556</td>
<td>0.06890</td>
<td>0.51726</td>
<td>0.4720</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1</td>
<td>0.216173</td>
<td>0.02521</td>
<td>73.53014</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1</td>
<td>0.165090</td>
<td>0.03715</td>
<td>19.74643</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
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<td>0.03758</td>
<td>11.29315</td>
<td>0.0008</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>-0.004435</td>
<td>0.0008620</td>
<td>26.47287</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>-0.006182</td>
<td>0.0008086</td>
<td>58.44638</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
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<td>-0.001240</td>
<td>0.00226</td>
<td>0.30115</td>
<td>0.5832</td>
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<tr>
<td>EDULOW</td>
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<td>0.133238</td>
<td>0.02036</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.02014</td>
<td>3.20077</td>
<td>0.0736</td>
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<tr>
<td>BMI</td>
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<td>0.00213</td>
<td>0.60234</td>
<td>0.4377</td>
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<tr>
<td>ALC</td>
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<td>0.002493</td>
<td>0.00377</td>
<td>0.43646</td>
<td>0.5088</td>
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<td>SULFATES</td>
<td>1</td>
<td>0.012998</td>
<td>0.04658</td>
<td>0.07787</td>
<td>0.7802</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.051</td>
<td>0.918</td>
<td>1.203</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.241</td>
<td>1.181</td>
<td>1.304</td>
<td>Current cigarettes 20 per day</td>
</tr>
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<td>Variable</td>
<td>Value1</td>
<td>Value2</td>
<td>Value3</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
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<td>--------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>SMKCYR25</td>
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<td>1.269</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
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<td>1.054</td>
<td>1.221</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.004</td>
<td>1.003</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.006</td>
<td>1.005</td>
<td>1.008</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.143</td>
<td>1.098</td>
<td>1.189</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.037</td>
<td>0.997</td>
<td>1.078</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.998</td>
<td>0.994</td>
<td>1.003</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.002</td>
<td>0.995</td>
<td>1.010</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.013</td>
<td>0.925</td>
<td>1.110</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Output 2b:

Modified Data
Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>–2 LOG L</td>
<td>829147.183</td>
<td>823192.894</td>
<td>5954.289 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>6558.806 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>6301.681 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.277415</td>
<td>0.04210</td>
<td>43.41944</td>
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<tr>
<td>EVPCOMLY</td>
<td>1</td>
<td>0.221992</td>
<td>0.02396</td>
<td>85.86112</td>
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</tr>
<tr>
<td>SMKCPD</td>
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<td>0.012405</td>
<td>0.0007407</td>
<td>280.48101</td>
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</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.005252</td>
<td>0.0005171</td>
<td>103.14534</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.007825</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.0004629</td>
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<td>PASSIVE</td>
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<td>0.001136</td>
<td>0.00139</td>
<td>0.66485</td>
<td>0.4149</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.247560</td>
<td>0.01175</td>
<td>444.02462</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.039604</td>
<td>0.01248</td>
<td>10.07614</td>
<td>0.0015</td>
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<tr>
<td>BMI</td>
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<td>-0.002720</td>
<td>0.00131</td>
<td>4.29467</td>
<td>0.0382</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.017794</td>
<td>0.00259</td>
<td>47.31403</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULPATES</td>
<td>1</td>
<td>0.150844</td>
<td>0.02855</td>
<td>27.91566</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.320</td>
<td>1.215</td>
<td>1.433</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCOMLY</td>
<td>1.249</td>
<td>1.191</td>
<td>1.309</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.012</td>
<td>1.011</td>
<td>1.014</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.998</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.281</td>
<td>1.252</td>
<td>1.311</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.040</td>
<td>1.015</td>
<td>1.066</td>
<td>Occupational exposure</td>
</tr>
</tbody>
</table>
BMI    0.997    0.995    1.000    Body Mass Index
ALC    0.982    0.977    0.987    Alcohol Drinking
SULFATES    1.163    1.100    1.230    Sulfate Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles -- with the female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CBNG2
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>75831.517</td>
<td>70820.661</td>
<td>5010.856 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>5705.606 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3816.474 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.997632</td>
<td>0.13328</td>
<td>56.02591</td>
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<tr>
<td>EVPCONLY</td>
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<td>1.239756</td>
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<td>SMKCPD</td>
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<td>0.023366</td>
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<tr>
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<td>PASSIVE</td>
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<tr>
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<td>101.41258</td>
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<tr>
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<td>0.03901</td>
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<tr>
<td>BMI</td>
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<td>ALC</td>
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<tr>
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<td>1</td>
<td>0.308890</td>
<td>0.09764</td>
<td>10.00740</td>
<td>0.0016</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.712</td>
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</tr>
<tr>
<td>EVPCONLY</td>
<td>3.455</td>
<td>2.750</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.024</td>
<td>1.020</td>
<td>1.027</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.016</td>
<td>1.013</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.035</td>
<td>1.029</td>
<td>1.040</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.057</td>
<td>1.054</td>
<td>1.061</td>
<td>Former years smoked</td>
</tr>
</tbody>
</table>
PASSIVE  1.004  0.997  1.012  Passive Smoking
EDULOW  1.486  1.376  1.606  Less than high school education
INDUSEXP  1.046  0.969  1.129  Occupational exposure
BMI  0.941  0.932  0.950  Body Mass Index
ALC  1.001  0.988  1.014  Alcohol Drinking
SULFATES  1.362  1.125  1.649  Sulfate Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>394021.990</td>
<td>391066.500</td>
<td>2955.491 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>3165.167 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3076.289 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.627590</td>
<td>0.06302</td>
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<td>0.0001</td>
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<tr>
<td>EVPCONLY</td>
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<td>0.249394</td>
<td>0.03264</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.0001</td>
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<td>SMKCYR</td>
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<tr>
<td>KSMKCYR</td>
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<td>0.012905</td>
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<td>0.89395</td>
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<td>0.249393</td>
<td>0.04080</td>
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<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.873</td>
<td>1.655</td>
<td>2.119</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.283</td>
<td>1.204</td>
<td>1.368</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
</tbody>
</table>
XSMKCPD  1.005  1.004  1.007  Former cigarettes per day
SMKCYR  1.002  1.000  1.005  Current years smoke
XSMKCYR  1.013  1.012  1.014  Former years smoked
PASSIVE  1.002  0.998  1.006  Passive Smoking
EDULOW  1.349  1.307  1.392  Less than high school education
INDUSEXP  1.035  0.999  1.072  Occupational exposure
BMI  1.003  1.000  1.007  Body Mass Index
ALC  0.958  0.950  0.966  Alcohol Drinking
SULFATES  1.283  1.185  1.390  Sulfate Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Sulfate Particles
-- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENREST
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>358042.829</td>
<td>357115.281</td>
<td>927.548 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
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<td>1007.755 with 12 DF (p=0.0001)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>988.599 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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</tr>
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<td>0.0007653</td>
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<td>0.00215</td>
<td>0.52825</td>
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<tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Ratio Limits

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<th>Lower</th>
<th>Upper</th>
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57
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<tr>
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<th>Standard Error</th>
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<th>Pr &gt; Chi-Square</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>0.262766</td>
<td>0.05852</td>
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<td>0.0001</td>
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<td>0.3237</td>
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<td>0.167046</td>
<td>0.03670</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits
<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.301</td>
<td>1.160</td>
<td>1.459</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.248</td>
<td>1.168</td>
<td>1.332</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.009</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.011</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
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<tr>
<td>EDULOW</td>
<td>1.288</td>
<td>1.248</td>
<td>1.330</td>
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<td>INDUSEXP</td>
<td>1.063</td>
<td>1.028</td>
<td>1.099</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.997</td>
<td>0.993</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.983</td>
<td>0.976</td>
<td>0.990</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.182</td>
<td>1.110</td>
<td>1.270</td>
<td>Fine Particles</td>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>37302.126</td>
<td>34588.620</td>
<td>2713.507 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3071.615 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2063.364 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.959785</td>
<td>0.18451</td>
<td>27.05306</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>1.250382</td>
<td>0.16379</td>
<td>58.27932</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.023391</td>
<td>0.00234</td>
<td>100.24327</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.013918</td>
<td>0.00217</td>
<td>41.12524</td>
<td>0.0001</td>
</tr>
<tr>
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</tr>
<tr>
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<td>0.00522</td>
<td>0.71314</td>
<td>0.3964</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.448474</td>
<td>0.05488</td>
<td>66.78425</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.05383</td>
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<td>0.0684</td>
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<td>BMI</td>
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<td>0.00673</td>
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<td>0.3261</td>
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<tr>
<td>FINE</td>
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<td>0.017144</td>
<td>0.12329</td>
<td>0.01934</td>
<td>0.8894</td>
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</table>

Analysis of Maximum Likelihood Estimates
## Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.611</td>
<td>1.819</td>
<td>3.749</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>3.492</td>
<td>2.533</td>
<td>4.813</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.024</td>
<td>1.019</td>
<td>1.028</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.014</td>
<td>1.010</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.027</td>
<td>1.043</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.056</td>
<td>1.066</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.994</td>
<td>1.015</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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</tr>
<tr>
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<td>0.993</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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</tr>
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<td>1.295</td>
<td>Fine Particles</td>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.FPP
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>194480.995</td>
<td>192929.578</td>
<td>1551.417 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>1672.019 with 12 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald</td>
<td>1623.234 with 12 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.544053</td>
<td>0.08867</td>
<td>37.64750</td>
<td>0.0001</td>
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<td>0.0001</td>
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<td>0.0001</td>
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<td>0.274734</td>
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<td>0.0001</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.723</td>
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<td>2.050</td>
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</tr>
<tr>
<td>EVPCONLY</td>
<td>1.249</td>
<td>1.142</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.003</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.001</td>
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<td>Current years smoked</td>
</tr>
<tr>
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<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.998</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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</tr>
<tr>
<td>BMI</td>
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<td>0.995</td>
<td>1.005</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.952</td>
<td>0.973</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.316</td>
<td>1.187</td>
<td>1.460</td>
<td>Fine Particles</td>
</tr>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Fine Particles -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.PPF
Dependent Variable: FAIL
Censoring Variable: CENTREST
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>179701.910</td>
<td>179198.132</td>
<td>503.778 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>535.772 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>527.241 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.075786</td>
<td>0.08917</td>
<td>0.72242</td>
<td>0.3954</td>
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<tr>
<td>EVPCONLY</td>
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<td>-0.140914</td>
<td>0.05145</td>
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<td>0.0062</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.008160</td>
<td>0.00169</td>
<td>23.32347</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.005503</td>
<td>0.00111</td>
<td>24.70650</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.00195</td>
<td>13.53481</td>
<td>0.0002</td>
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<td>XSMKCYR</td>
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<td>0.006216</td>
<td>0.00104</td>
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<td>0.0001</td>
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<td>0.23660</td>
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<td>EDULOW</td>
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<td>0.0001</td>
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<td>INDUSEXP</td>
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<td>0.045232</td>
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<td>0.0892</td>
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<td>BMI</td>
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<td>0.005428</td>
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<td>4.13816</td>
<td>0.0419</td>
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<tr>
<td>ALC</td>
<td>1</td>
<td>0.001447</td>
<td>0.00492</td>
<td>0.08637</td>
<td>0.7688</td>
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</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.079</td>
<td>0.905</td>
<td>1.285</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.151</td>
<td>1.041</td>
<td>1.273</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.005</td>
<td>1.012</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.003</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.003</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.127</td>
<td>1.069</td>
<td>1.188</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.046</td>
<td>0.993</td>
<td>1.102</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.005</td>
<td>1.000</td>
<td>1.011</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.001</td>
<td>0.992</td>
<td>1.111</td>
<td>Alcohol Drinking</td>
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<tr>
<td>FINE</td>
<td>1.089</td>
<td>0.975</td>
<td>1.215</td>
<td>Fine Particles</td>
</tr>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Current Smoker
-- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>829147.183</td>
<td>823192.894</td>
<td>5954.289 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>6558.806 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>6301.681 with 12 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.277415</td>
<td>0.04210</td>
<td>43.41944</td>
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<tr>
<td>SMKCPD20</td>
<td>1</td>
<td>0.248098</td>
<td>0.01481</td>
<td>280.48101</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1</td>
<td>0.195622</td>
<td>0.02205</td>
<td>78.67998</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.221992</td>
<td>0.02396</td>
<td>85.86112</td>
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<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.005252</td>
<td>0.0005171</td>
<td>103.14534</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.012478</td>
<td>0.0004629</td>
<td>726.66995</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.001136</td>
<td>0.00139</td>
<td>0.66485</td>
<td>0.4149</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.247560</td>
<td>0.01175</td>
<td>444.02462</td>
<td>0.0001</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.320</td>
<td>1.215</td>
<td>1.433</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.282</td>
<td>1.245</td>
<td>1.319</td>
<td>Current cigarettes 20 per day</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1.216</td>
<td>1.165</td>
<td>1.270</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.249</td>
<td>1.191</td>
<td>1.309</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.998</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.281</td>
<td>1.252</td>
<td>1.311</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.040</td>
<td>1.015</td>
<td>1.066</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.997</td>
<td>0.995</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.982</td>
<td>0.977</td>
<td>0.987</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.163</td>
<td>1.100</td>
<td>1.230</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Current Smoker -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN52
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>75831.517</td>
<td>70820.661</td>
<td>5010.856 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>5705.606 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>3816.474 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.997632</td>
<td>0.13328</td>
<td>56.02591</td>
<td>0.0001</td>
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<tr>
<td>SMKCPD20</td>
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<td>0.467317</td>
<td>0.03353</td>
<td>194.27245</td>
<td>0.0001</td>
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<tr>
<td>SMKCYR25</td>
<td>1</td>
<td>0.850947</td>
<td>0.06926</td>
<td>150.93196</td>
<td>0.0001</td>
</tr>
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<td>EVPONLY</td>
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<td>1.239756</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.015995</td>
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<td>103.96630</td>
<td>0.0001</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.712</td>
<td>2.088</td>
<td>3.521</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.596</td>
<td>1.494</td>
<td>1.704</td>
<td>Current cigarettes 20 per day</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>2.342</td>
<td>2.045</td>
<td>2.682</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>3.455</td>
<td>2.750</td>
<td>4.340</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
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<td>1.013</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.057</td>
<td>1.054</td>
<td>1.061</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.997</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.486</td>
<td>1.376</td>
<td>1.606</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.046</td>
<td>0.969</td>
<td>1.129</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.941</td>
<td>0.932</td>
<td>0.950</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.001</td>
<td>0.988</td>
<td>1.014</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.362</td>
<td>1.125</td>
<td>1.649</td>
<td>Sulfate Particles</td>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Current Smoker -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>394021.990</td>
<td>391066.500</td>
<td>2955.491 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3165.167 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3076.289 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.627590</td>
<td>0.06302</td>
<td>99.18688</td>
<td>0.0001</td>
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<tr>
<td>SMKCPD20</td>
<td>1</td>
<td>0.156209</td>
<td>0.02278</td>
<td>47.00785</td>
<td>0.0001</td>
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</table>
### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

<table>
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<th>Upper 95% CI</th>
<th>Label</th>
</tr>
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<tr>
<td>CURCIG</td>
<td>1.873</td>
<td>1.655</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.169</td>
<td>1.118</td>
<td>1.222</td>
<td>Current cigarettes 20 per day</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1.057</td>
<td>0.992</td>
<td>1.126</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPONELY</td>
<td>1.283</td>
<td>1.204</td>
<td>1.368</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.349</td>
<td>1.307</td>
<td>1.392</td>
<td>Less than high school education</td>
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<tr>
<td>INDUSEXP</td>
<td>1.035</td>
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<td>Occupational exposure</td>
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<td>BMI</td>
<td>1.003</td>
<td>1.000</td>
<td>1.007</td>
<td>Body Mass Index</td>
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<td>ALC</td>
<td>0.958</td>
<td>0.950</td>
<td>0.966</td>
<td>Alcohol Drinking</td>
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<tr>
<td>SULFATES</td>
<td>1.283</td>
<td>1.185</td>
<td>1.390</td>
<td>Sulfate Particles</td>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Current Smoker -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENREST
Censoring Value(s): 1
Ties Handling: BRESLOW

#### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>358042.829</td>
<td>357115.281</td>
<td>927.548 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1007.755 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>988.599 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
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65
<table>
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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.012</td>
<td>0.891</td>
<td>1.149</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD20</td>
<td>1.248</td>
<td>1.190</td>
<td>1.309</td>
<td>Current cigarettes 20 per day</td>
</tr>
<tr>
<td>SMKCYR25</td>
<td>1.191</td>
<td>1.111</td>
<td>1.276</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.124</td>
<td>1.045</td>
<td>1.209</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.004</td>
<td>1.003</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.998</td>
<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.134</td>
<td>1.092</td>
<td>1.177</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.042</td>
<td>1.003</td>
<td>1.082</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.001</td>
<td>0.997</td>
<td>1.005</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.002</td>
<td>0.994</td>
<td>1.009</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.018</td>
<td>0.934</td>
<td>1.109</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model CHI-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>395272.837</td>
<td>392324.662</td>
<td>2948.176 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>3155.784 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>3067.965 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.615399</td>
<td>0.06299</td>
<td>95.44964</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.248016</td>
<td>0.03262</td>
<td>57.81483</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.007740</td>
<td>0.00114</td>
<td>46.18555</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.005026</td>
<td>0.0007295</td>
<td>47.46993</td>
<td>0.0001</td>
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<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.002438</td>
<td>0.00129</td>
<td>3.57379</td>
<td>0.0587</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.012938</td>
<td>0.006336</td>
<td>416.97564</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.002111</td>
<td>0.00210</td>
<td>1.01044</td>
<td>0.3148</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.298705</td>
<td>0.01610</td>
<td>344.28708</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.034626</td>
<td>0.01789</td>
<td>3.74734</td>
<td>0.0529</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>0.003305</td>
<td>0.00189</td>
<td>3.05878</td>
<td>0.0803</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.043238</td>
<td>0.00417</td>
<td>107.27348</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.240555</td>
<td>0.04074</td>
<td>34.86216</td>
<td>0.0001</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.850</td>
<td>1.635</td>
<td>2.094</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.281</td>
<td>1.202</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.005</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>1.000</td>
<td>1.005</td>
<td>Current years smoked</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.348</td>
<td>1.306</td>
<td>1.391</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.035</td>
<td>1.000</td>
<td>1.072</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.003</td>
<td>1.000</td>
<td>1.007</td>
<td>Body Mass Index</td>
</tr>
</tbody>
</table>
### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles in Women

--- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>149232.637</td>
<td>147970.703</td>
<td>1261.934 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.466090</td>
<td>0.09308</td>
<td>25.07584</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.018243</td>
<td>0.00208</td>
<td>77.10431</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.008683</td>
<td>0.00195</td>
<td>19.75523</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.002152</td>
<td>0.00209</td>
<td>2.10396</td>
<td>0.1228</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.010306</td>
<td>0.00135</td>
<td>58.64122</td>
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<tr>
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<td>0.005767</td>
<td>0.00374</td>
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<td>0.1228</td>
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<tr>
<td>EDUCLOW</td>
<td>1</td>
<td>0.325632</td>
<td>0.02540</td>
<td>164.39893</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.044343</td>
<td>0.04320</td>
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<td>BMI</td>
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<td>0.004162</td>
<td>0.00264</td>
<td>2.48782</td>
<td>0.1147</td>
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<tr>
<td>ALC</td>
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<td>-0.075125</td>
<td>0.01066</td>
<td>49.67760</td>
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</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.343328</td>
<td>0.06572</td>
<td>27.28877</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

### Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.594</td>
<td>1.328</td>
<td>1.913</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.014</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.005</td>
<td>1.013</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>0.999</td>
<td>1.006</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.010</td>
<td>1.008</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>246040.200</td>
<td>244287.282</td>
<td>1752.918 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1020.001 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1767.140 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.656415</td>
<td>0.08853</td>
<td>54.97581</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.243627</td>
<td>0.03397</td>
<td>51.42714</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKPD</td>
<td>1</td>
<td>0.004046</td>
<td>0.00139</td>
<td>8.52997</td>
<td>0.0035</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.004046</td>
<td>0.0007987</td>
<td>25.66718</td>
<td>0.0001</td>
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<tr>
<td>SMKCYR</td>
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<td>2.76823</td>
<td>0.0962</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.013811</td>
<td>0.0007456</td>
<td>343.07457</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.000851</td>
<td>0.00254</td>
<td>0.1194</td>
<td>0.7379</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.274680</td>
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</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.036378</td>
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<td>0.0646</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.001893</td>
<td>0.00271</td>
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<td>0.4856</td>
</tr>
<tr>
<td>ALC</td>
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<td>-0.036085</td>
<td>0.00452</td>
<td>63.72681</td>
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</tr>
<tr>
<td>SULFATES</td>
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<td>0.171631</td>
<td>0.05193</td>
<td>10.92394</td>
<td>0.0009</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.928</td>
<td>1.621</td>
<td>2.293</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.276</td>
<td>1.194</td>
<td>1.364</td>
<td>Pipe/cigar smoker</td>
</tr>
</tbody>
</table>
SMKCPD    1.004  1.001  1.007  Current cigarettes per day
XSMKCPD   1.004  1.002  1.006  Former cigarettes per day
SMKCYR    1.003  0.999  1.006  Current years smoke
XSMKCYR   1.014  1.012  1.015  Former years smoked
PASSIVE   1.001  0.996  1.006  Passive Smoking
EDULOW    1.316  1.263  1.371  Less than high school education
INDUSEXP  1.037  0.998  1.078  Occupational exposure
BMI       1.002  0.997  1.007  Body Mass Index
ALC       0.965  0.956  0.973  Alcohol Drinking
SULFATES  1.187  1.072  1.314  Sulfate Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles Never-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULP_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>124993.647</td>
<td>124775.284</td>
<td>218.363 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>-2 LOG L</td>
<td>Score</td>
<td></td>
<td>216.907 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td>Wald</td>
<td></td>
<td>217.830 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
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<td></td>
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</tr>
<tr>
<td>XSMKCPD</td>
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<td></td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.012522</td>
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<td>5.91261</td>
<td>0.0150</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.284389</td>
<td>0.02593</td>
<td>120.25597</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>-0.032111</td>
<td>0.03723</td>
<td>0.74388</td>
<td>0.3884</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>0.012429</td>
<td>0.00289</td>
<td>18.46931</td>
<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.059550</td>
<td>0.01161</td>
<td>26.32058</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.304465</td>
<td>0.06635</td>
<td>21.05869</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% confidence limits

Risk
Variable | Ratio | Lower | Upper | Label
---|---|---|---|---
CURCIG | 1.013 | 1.002 | 1.023 | Current Smoker
EVPCONLY | 1.329 | 1.263 | 1.398 | Pipe/cigar smoker
SMKCPD | 0.968 | 0.900 | 1.042 | Current cigarettes per day
XSMKCPD | 1.013 | 1.007 | 1.018 | Former cigarettes per day
SMKCYR | 0.942 | 0.921 | 0.964 | Current years smoke
XSMKCYR | 1.356 | 1.191 | 1.544 | Former years smoked
PASSIVE | Passive Smoking
EDULOW | 0.970 | 0.900 | 1.042 | Less than high school education
INDUSEXP | 0.006144 | 0.006153 | 0.00997 | Occupational exposure
BMI | 0.007460 | 0.00334 | 4.98524 | Body Mass Index
ALC | -0.124803 | 0.02147 | 33.79779 | Alcohol Drinking
SULFATES | 0.339958 | 0.08361 | 16.53079 | Sulfate Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles Never-smokers in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>82417.255</td>
<td>82259.147</td>
<td>158.108 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>82259.147</td>
<td>148.597 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>150.893 with 6 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.017083</td>
<td>0.00638</td>
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<td>0.03123</td>
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<td>0.0001</td>
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<td>0.9205</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.0256</td>
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<td>SMKCYR</td>
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</table>

Analysis of Maximum Likelihood Estimates
### Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td></td>
<td></td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.017</td>
<td>1.005</td>
<td>1.030</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.296</td>
<td>1.219</td>
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<td>INDUSEXP</td>
<td>1.006</td>
<td>0.892</td>
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<tr>
<td>BMI</td>
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<td>1.001</td>
<td>1.014</td>
<td>Body Mass Index</td>
</tr>
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<td>ALC</td>
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<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.405</td>
<td>1.193</td>
<td>1.655</td>
<td>Sulfate Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles

Never-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

#### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>42576.392</td>
<td>42487.751</td>
<td>88.642 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>92.029 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>91.745 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

#### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPONLY</td>
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<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCYR</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
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<td>PASSIVE</td>
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<td>0.04672</td>
<td>1.55089</td>
<td>0.2130</td>
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<tr>
<td>BMI</td>
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<td>21.63316</td>
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<tr>
<td>ALC</td>
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<td>0.238437</td>
<td>0.10925</td>
<td>4.76292</td>
<td>0.0291</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPE</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPE</td>
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<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.987</td>
<td>1.021</td>
<td>Passive Smoking</td>
</tr>
<tr>
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<td>1.276</td>
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<tr>
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<td>0.943</td>
<td>0.861</td>
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</tr>
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<td>1.016</td>
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<td>Body Mass Index</td>
</tr>
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<td>ALC</td>
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<td>0.949</td>
<td>0.998</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.269</td>
<td>1.025</td>
<td>1.572</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles Ever-smokers

-- with the Female New Subchort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>246622.457</td>
<td>244659.076</td>
<td>1963.381 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1934.924 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1889.071 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.829727</td>
<td>0.07243</td>
<td>131.22107</td>
<td>0.0001</td>
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<tr>
<td>EVPCONLY</td>
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<td>0.701792</td>
<td>0.04611</td>
<td>231.64238</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.006718</td>
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<td>33.66027</td>
<td>0.0001</td>
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<td>110.10184</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.0001</td>
</tr>
<tr>
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<td>0.52742</td>
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<tr>
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<td>0.278460</td>
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<td>0.0034</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>2.642</td>
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</tr>
<tr>
<td>EVPCONLY</td>
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<td>1.843</td>
<td>2.208</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.007</td>
<td>1.004</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.007</td>
<td>1.010</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.005</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.021</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>1.269</td>
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</tr>
<tr>
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<td>1.020</td>
<td>1.105</td>
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</tr>
<tr>
<td>BMI</td>
<td>0.996</td>
<td>0.991</td>
<td>1.001</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.953</td>
<td>0.970</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.221</td>
<td>1.104</td>
<td>1.352</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles Ever-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>56662.084</td>
<td>56040.785</td>
<td>621.299 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>618.879 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>591.902 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.698071</td>
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</tr>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.00213</td>
<td>55.65403</td>
<td>0.0001</td>
</tr>
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<td>0.0001</td>
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<td>0.0013</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.010</td>
<td>1.601</td>
<td>2.524</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.016</td>
<td>1.012</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.010</td>
<td>1.006</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.003</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.017</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.990</td>
<td>1.008</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.515</td>
<td>1.392</td>
<td>1.649</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.974</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.991</td>
<td>1.007</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>Alcohol Drinking</td>
</tr>
<tr>
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<td>1.426</td>
<td>1.157</td>
<td>1.758</td>
<td>Sulfate Particles</td>
</tr>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>189960.373</td>
<td>188567.298</td>
<td>1393.075 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>1382.815 with 12 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
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<td>.</td>
<td>1355.204 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.872353</td>
<td>0.09664</td>
<td>81.48206</td>
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</table>
### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.393</td>
<td>1.980</td>
<td>2.891</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>2.007</td>
<td>1.820</td>
<td>2.214</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.003</td>
<td>1.001</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.004</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.023</td>
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<td>1.026</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.267</td>
<td>1.209</td>
<td>1.327</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>1.018</td>
<td>1.109</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.994</td>
<td>0.988</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.965</td>
<td>0.956</td>
<td>0.974</td>
<td>Alcohol Drinking</td>
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<tr>
<td>SULFATES</td>
<td>1.161</td>
<td>1.034</td>
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<td>Sulfate Particles</td>
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</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary + Asthma Death for the Fine Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>195142.008</td>
<td>193589.714</td>
<td>1552.294 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1671.853 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1623.452 with 12 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Wald</th>
<th>Pr &gt;</th>
</tr>
</thead>
</table>

76
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Estimate</th>
<th>Error</th>
<th>Chi-Square</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.542040</td>
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<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.220999</td>
<td>0.04585</td>
<td>23.23238</td>
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<tr>
<td>SMKCPD</td>
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<td>0.006042</td>
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<td>0.0096</td>
</tr>
<tr>
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<td>0.011896</td>
<td>0.000872</td>
<td>185.82326</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
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<td>0.003921</td>
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<td>1.83800</td>
<td>0.1752</td>
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<tr>
<td>EDULOW</td>
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<td>0.307184</td>
<td>0.02242</td>
<td>187.72994</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.064418</td>
<td>0.02459</td>
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<td>0.0088</td>
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<td>BMI</td>
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<td>0.000121</td>
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<td>0.00214</td>
<td>0.9631</td>
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<td>ALC</td>
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<td>-0.038293</td>
<td>0.0551</td>
<td>48.27478</td>
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<td>FINE</td>
<td>1</td>
<td>0.266587</td>
<td>0.05273</td>
<td>25.56044</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.720</td>
<td>1.446</td>
<td>2.045</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.247</td>
<td>1.140</td>
<td>1.365</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.003</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.005</td>
<td>1.001</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.998</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.360</td>
<td>1.301</td>
<td>1.421</td>
<td>Less than high school education</td>
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<tr>
<td>INDUSEXP</td>
<td>1.067</td>
<td>1.016</td>
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<tr>
<td>BMI</td>
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<td>0.995</td>
<td>1.005</td>
<td>Body Mass Index</td>
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<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.952</td>
<td>0.973</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.362</td>
<td>1.177</td>
<td>1.448</td>
<td>Fine Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FFP
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>72923.155</td>
<td>72260.840</td>
<td>662.315 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>-</td>
<td>-</td>
<td>769.188 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>-</td>
<td>-</td>
<td>736.900 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.311665</td>
<td>0.13348</td>
<td>5.45201</td>
<td>0.0195</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.016591</td>
<td>0.00299</td>
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<td>0.0001</td>
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<tr>
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<td>0.0088</td>
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<td>0.010874</td>
<td>0.00181</td>
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<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
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<td>0.011572</td>
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<td>0.09279</td>
<td>0.7607</td>
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<td>ALC</td>
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<td>-0.071736</td>
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<td>25.95878</td>
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<td>FINE</td>
<td>1</td>
<td>0.359862</td>
<td>0.08549</td>
<td>17.71993</td>
<td>0.0001</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.366</td>
<td>1.051</td>
<td>1.774</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.011</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.007</td>
<td>1.002</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.006</td>
<td>1.001</td>
<td>1.012</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.011</td>
<td>1.007</td>
<td>1.015</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.012</td>
<td>1.001</td>
<td>1.022</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.393</td>
<td>1.300</td>
<td>1.493</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.091</td>
<td>0.971</td>
<td>1.226</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.001</td>
<td>0.994</td>
<td>1.008</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.905</td>
<td>0.957</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.433</td>
<td>1.212</td>
<td>1.695</td>
<td>Fine Particles</td>
</tr>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles in Men -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>122218.853</td>
<td>121292.495</td>
<td>926.358 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>
### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.643273</td>
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</tr>
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<td>0.213956</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.002615</td>
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<td>1.86510</td>
<td>0.1720</td>
</tr>
<tr>
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<td>0.005154</td>
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<td>0.205248</td>
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</table>

### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.903</td>
<td>1.495</td>
<td>2.421</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.239</td>
<td>1.128</td>
<td>1.359</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.003</td>
<td>0.999</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.004</td>
<td>0.999</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.994</td>
<td>1.008</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.333</td>
<td>1.259</td>
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<td>INDUSEXP</td>
<td>1.065</td>
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<td>1.123</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.999</td>
<td>0.991</td>
<td>1.006</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.970</td>
<td>0.958</td>
<td>0.981</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.228</td>
<td>1.077</td>
<td>1.400</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles
Never-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0
Without Covariates With Covariates Model Chi-Square

-2 LOG L 62160.712 62037.082 123.630 with 6 DF (p=0.0001)
Score . . 123.693 with 6 DF (p=0.0001)
Wald . . 123.766 with 6 DF (p=0.0001)

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
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<tr>
<td>EVPONLY</td>
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<td>Former cigarettes per day</td>
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<td>XSMKCYR</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles
Never-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FFP_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW
Testing Global Null Hypothesis: $\beta_1=0$

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
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<tbody>
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<td>40258.360</td>
<td>40154.651</td>
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<tr>
<td>Score</td>
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<tr>
<td>Wald</td>
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<td>86.896 with 6 DF (p=0.0001)</td>
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<td></td>
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<td>88.735 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tr>
<td>EVPONLY</td>
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<td>0</td>
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<td>SMKCPD</td>
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<td>XSMKCPD</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>Current Smoker</td>
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<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td></td>
<td></td>
<td>Former years smoked</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles Never-smokers in Men -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPP_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
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<td>21902.352</td>
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</tr>
<tr>
<td>Score</td>
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<td>56.086 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>55.841 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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<td>EVPCONLY</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<td>Pipe/cigar smoker</td>
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<td>Former cigarettes per day</td>
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<tr>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles Ever-smokers -- with the Female New Subcohort
Testing Global Null Hypothesis: BETA=0

<table>
<thead>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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<td>-2 LOG L Score</td>
<td>120322.978</td>
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<td>1032.920 with 12 DF (p=0.0001)</td>
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<td></td>
<td>1023.711 with 12 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

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<th>Variable</th>
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<th>Parameter Estimate</th>
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<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<td>Pipe/cigar smoker</td>
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<tr>
<td>PASSIVE</td>
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<td>0.994</td>
<td>1.007</td>
<td>Passive Smoking</td>
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</tr>
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<td>BMI</td>
<td>0.992</td>
<td>0.985</td>
<td>0.999</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.966</td>
<td>0.955</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.243</td>
<td>1.093</td>
<td>1.414</td>
<td>Fine Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Fine Particles Ever-smokers in Women
The PHREG Procedure

Data Set: WORK.FPP_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>27353.226</td>
<td>27041.873</td>
<td>311.353 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>310.861 with 11 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>298.140 with 11 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
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<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.484170</td>
<td>0.16414</td>
<td>8.70072</td>
<td>0.0032</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
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<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.013191</td>
<td>0.00307</td>
<td>18.42070</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.007798</td>
<td>0.00287</td>
<td>7.39094</td>
<td>0.0066</td>
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<td>SMKCYR</td>
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<td>0.011578</td>
<td>0.00313</td>
<td>13.69922</td>
<td>0.0002</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.020645</td>
<td>0.00275</td>
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<tr>
<td>PASSIVE</td>
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<td>0.00634</td>
<td>0.92733</td>
<td>0.3356</td>
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<tr>
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<td>0.06106</td>
<td>49.36957</td>
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<td>0.08387</td>
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<td>0.00607</td>
<td>0.16928</td>
<td>0.6808</td>
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<td>ALC</td>
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<td>-0.048093</td>
<td>0.01577</td>
<td>9.30171</td>
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<td>FINE</td>
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<td>0.271401</td>
<td>0.13414</td>
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<td>0.0431</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.623</td>
<td>1.176</td>
<td>2.239</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.013</td>
<td>1.007</td>
<td>1.019</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.002</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.005</td>
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<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.015</td>
<td>1.026</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.006</td>
<td>0.994</td>
<td>1.019</td>
<td>Passive Smoking</td>
</tr>
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<td>EDULOW</td>
<td>1.536</td>
<td>1.363</td>
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<td>INDUSEXP</td>
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<td>0.962</td>
<td>1.337</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.998</td>
<td>0.986</td>
<td>1.009</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.924</td>
<td>0.983</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.312</td>
<td>1.009</td>
<td>1.706</td>
<td>Fine Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles Ever-smokers in Men

--- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>92969.752</td>
<td>92223.035</td>
<td>746.717 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>.</td>
<td>745.286 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>729.098 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.873643</td>
<td>0.13420</td>
<td>42.38304</td>
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<tr>
<td>EVPONLY</td>
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<td>0.681646</td>
<td>0.06593</td>
<td>97.79289</td>
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</tr>
<tr>
<td>SMKCPD</td>
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<td>0.00193</td>
<td>1.03210</td>
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<td>XSMKCPD</td>
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<td>ALC</td>
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<td>-0.031093</td>
<td>0.00638</td>
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<td>FINE</td>
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<td>0.199497</td>
<td>0.07519</td>
<td>7.03979</td>
<td>0.0080</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.396</td>
<td>1.842</td>
<td>3.116</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.977</td>
<td>1.727</td>
<td>2.263</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.006</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.003</td>
<td>1.013</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.019</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.991</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.285</td>
<td>1.204</td>
<td>1.371</td>
<td>Less than high school education</td>
</tr>
</tbody>
</table>

85
INDUSEXP  1.078  1.016  1.143  Occupational exposure  
BMI  0.989  0.980  0.997  Body Mass Index  
ALC  0.969  0.957  0.982  Alcohol Drinking  
PINE  1.221  1.054  1.415  Fine Particles  

Table 2c: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Current Smoker -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG  L</td>
<td>395272.837</td>
<td>392324.662</td>
<td>2948.176 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>3155.784 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3067.965 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.615399</td>
<td>0.06299</td>
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<td>0.154808</td>
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</tr>
<tr>
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<td>3.57379</td>
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<tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>SMKCPD20</td>
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<td>Current cigarettes 20 per day</td>
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<td>SMKCYR25</td>
<td>1.063</td>
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<td>1.132</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPONLY</td>
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</tr>
<tr>
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<td>1.006</td>
<td>Former cigarettes per day</td>
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<table>
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<th>OBS</th>
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<th>TYPE_</th>
<th>NAME_</th>
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<th>SMKCPD20</th>
<th>SMKCYR25</th>
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<td>PARM S</td>
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<td>CURCIG</td>
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<td>3</td>
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<td>5</td>
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<tr>
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</table>

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<th>XSMKCYR</th>
<th>PASSIVE</th>
<th>EDULOW</th>
<th>INDUSEXP</th>
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Program #3
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
                    0 = 'Dead'
    ;
  value sex  1 = 'Male'
                    2 = 'Female'
    ;
  value race 1 = 'White'
                    2 = 'Black'
                    3 = 'Other'
    ;
  value ind  0 = 'No.'
                    1 = 'Yes'
    ;

filename derdata '/home/fmo/derdata.cport';

proc cimport data=dertest infile=derdata;

data sulf; set dertest;
  if flagdel = 0 and sulfdel = 0 ;
  sulfates = meansulf/19.9;

proc phreg data=sulf nosummary;
  model fail*cenall(1) = curcig evpconly smkcqd xsmkcqd smkcyr xsmkcyr passive
                         edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcqd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcqd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker';
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by All Cause of Death for the Sulfate Particles';

proc phreg data=sulf nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
   where west in (0,1) and sex eq 2 ;

   title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence);
   title2 'Intervals) by All Cause of Death for the Sulfate Particles';
   title3 ' in Women ';

proc phreg data=sulf nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1 

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 ' in Men ';
run;

proc phreg data=sulf nosummary;
 model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
 xsmkcyr passive
 edulow indusexp bmi alc sulfates / rl;
 strata age_int (25 to 105 by 5) sex racecat;
 format sex sex. racecat race. ;
 label curcig = 'Current Smoker'
 smkcpd = 'Current cigarettes per day'
 smkcyr = 'Current years smoke'
 xsmkcpd = 'Former cigarettes per day'
 xsmkcyr = 'Former years smoked'
 evpconly = 'Pipe/cigar smoker'
 indusexp = 'Occupational exposure'
 edulow = 'Less than high school education'
 age_int = 'Age at Interview'
 passive = 'Passive Smoking'
 bmi = 'Body Mass Index'
 alc = 'Alcohol Drinking'
 sulfates = 'Sulfate Particles';
 where west in (0,1); 

 title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';

 proc phreg data=sulf nosummary;
 model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
 xsmkcyr passive
 edulow indusexp bmi alc sulfates / rl;
title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
title3 ' in Women ';

proc phreg data=sulf nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 2 ;
run;
proc phreg data=sulf nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                              edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education'
                age_int = 'Age at Interview'
                passive = 'Passive Smoking'
                bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking'
                sulfates = 'Sulfate Particles';
  where west in (0,1);

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';

proc phreg data=sulf nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                              edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education'
                age_int = 'Age at Interview'
                passive = 'Passive Smoking'
                bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking'
                sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2 ;

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 ' in Women ';

proc phreg data=sulf nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
  xsmkcyr passive
     edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
     smkcpd = 'Current cigarettes per day'
     smkcyr = 'Current years smoke'
     xsmkcpd = 'Former cigarettes per day'
     xsmkcyr = 'Former years smoked'
     evpconly = 'Pipe/cigar smoker'
     indusexp = 'Occupational exposure'
     edulow = 'Less than high school education'
     age_int = 'Age at Interview'
     passive = 'Passive Smoking'
     bmi = 'Body Mass Index'
     alc = 'Alcohol Drinking'
     sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 1;

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 ' in Men ';
run;

data sulf_n;set sulf;

  if curcig = 0 and xsmkcpd = 0 and xsmkcyr = 0 and evpconly = 0;

proc phreg data=sulf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
  xsmkcyr passive
     edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
     smkcpd = 'Current cigarettes per day'
     smkcyr = 'Current years smoke'
     xsmkcpd = 'Former cigarettes per day'
     xsmkcyr = 'Former years smoked'
     evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 'Never-smokers';

proc phreg data=sulf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
       xsmkcyr passive
       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
      smkcpd = 'Current cigarettes per day'
      smkcyr = 'Current years smoke'
      xsmkcpd = 'Former cigarettes per day'
      xsmkcyr = 'Former years smoked'
      evpconly = 'Pipe/cigar smoker'
      indusexp = 'Occupational exposure'
      edulow = 'Less than high school education'
      age_int = 'Age at Interview'
      passive = 'Passive Smoking'
      bmi = 'Body Mass Index'
      alc = 'Alcohol Drinking'
      sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2;

proc phreg data=sulf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
      xsmkcyr passive
      edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
      smkcpd = 'Current cigarettes per day'

smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

  title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 'Never-smokers in Men';
run;

proc phreg data=sulf_n nosummary;
  model fail^cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                     xsmkcyr passive
                     edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race .;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

  title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
title3 'Never-smokers';
proc phreg data=sulf_n nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive  
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
title3  ' Never-smokers in Women ';

proc phreg data=sulf_n nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive  
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Lung Cancer Related Death for the
Sulfate Particles';
   title3 'Never-smokers in Men';
run;

proc phreg data=sulf_n nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                      xsmkcyr passive             edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                  smkcpd = 'Current cigarettes per day'
                      smkcyr = 'Current years smoke'
                       xsmkcpd = 'Former cigarettes per day'
                         xsmkcyr = 'Former years smoked'
                          evpconly = 'Pipe/cigar smoker'
                          indusexp = 'Occupational exposure'
                            edulow = 'Less than high school education'
                              age_int = 'Age at Interview'
                                 passive = 'Passive Smoking'
                                    bmi = 'Body Mass Index'
                                       alc = 'Alcohol Drinking'
                                        sulfates = 'Sulfate Particles';
   where west in (0,1) ;

   title1 'Table3: Adjusted Mortality Risk Ratios (and 95%
Confidence';
   title2 'Intervals) by Cardiopulmonary Death for the Sulfate
Particles';
   title3 'Never-smokers';

proc phreg data=sulf_n nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                      xsmkcyr passive             edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                  smkcpd = 'Current cigarettes per day'
                      smkcyr = 'Current years smoke'
                       xsmkcpd = 'Former cigarettes per day'
                         xsmkcyr = 'Former years smoked'
                          evpconly = 'Pipe/cigar smoker'
                          indusexp = 'Occupational exposure'
                            edulow = 'Less than high school education'
                              age_int = 'Age at Interview'
                                 passive = 'Passive Smoking'
                                    bmi = 'Body Mass Index'
                                       alc = 'Alcohol Drinking'
                                        sulfates = 'Sulfate Particles';
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table3: Adjusted Mortality Risk Ratios (and 95%
Confidence');
title2 'Intervals) by Cardiopulmonary Death for the Sulfate
Particles';
title3 ' Never-smokers in Women ';

proc phreg data=sulf_n nosummary;
model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
    edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) . sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

proc phreg data=sulf_e nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
    edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) . sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 ' Ever-smokers';

proc phreg data=sulf_e nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                       xsmkcyr passive
                           edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                  smkcpd = 'Current cigarettes per day'
                  smkcyr = 'Current years smoke'
                  xsmkcpd = 'Former cigarettes per day'
                  xsmkcyr = 'Former years smoked'
                  evpconly = 'Pipe/cigar smoker'
                  indusexp = 'Occupational exposure'
                  edulow = 'Less than high school education'
                  age_int = 'Age at Interview'
                  passive = 'Passive Smoking'
                  bmi = 'Body Mass Index'
                  alc = 'Alcohol Drinking'
                  sulfates = 'Sulfate Particles';
   where west in (0,1) and sex eq 2;

   title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
   title2 'Intervals) by All Cause of Death for the Sulfate Particles';
   title3 ' Ever-smokers in Women ';
run;

proc phreg data=sulf_e nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive 
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 ' Ever-smokers in Men ';

proc phreg data=sulf_e nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive 
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the
Sulfate Particles';
  title3 ' Ever-smokers';

proc phreg data=sulf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                     xsmkcyr passive
                     edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2 ;

  title1 'Table3: Adjusted Mortality Risk Ratios (and 95%
          Confidence)';
  title2 'Intervals) by Lung Cancer Related Death for the
          Sulfate Particles';
  title3 ' Ever-smokers in Women ';

proc phreg data=sulf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                     xsmkcyr passive
                     edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 1;
title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence) by Lung Cancer Related Death for the SulfateParticles';
title2 'Ever-smokers in Men';

proc phreg data=sulf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyrsxsmkcyrs
                         edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1) ;

title1 'Table3: Adjusted Mortality Risk Ratios (and 95% Confidence) by Cardiopulmonary Death for the Sulfate Particles';
title2 'Ever-smokers';

title3 'Ever-smokers in Men';

proc phreg data=sulf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyrsxsmkcyrs
                         edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1) ;

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alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 'Ever-smokers in Women';

proc phreg data=sulf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                   edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 1;

  title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
  title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
  title3 'Ever-smokers in Men';

run;

* ACS_tab3.out;
libname acs '/home/yuanli/acss/';
libname her './';

options nocenter ps=64 ls=80 obs=max;

proc format;
   value dead 1 = 'Alive'
                  0 = 'Dead'
   ;
   value sex 1 = 'Male'
                 2 = 'Female'
   ;
   value race 1 = 'White'
                 2 = 'Black'
                 3 = 'Other'
   ;
   value ind 0 = 'No.'
              1 = 'Yes'
   ;

data sulf; set acs.dern;

   if flagd = 0 and sulfd = 0 ;

   sulfates = meansulf/19.9;
   smkcpd20 = smkcpd/20;
   smkcyr25 = smkcyr/25;

   if cencomb = 0 or cenasma = 0 then cencoma = 0; else cencoma = 1;

/*
 proc phreg data=sulf nosummary covout outest=her.covall;
   model fail*cenall(1) = curcig smkcpd20 smkcyr25 evpconly
                           xsmkcpd xsmkcyr passive
                           edulow indusexp bmi alc sulfates / rl;
 */
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd20 = 'Current cigarettes 20 per day'
smkcyr25 = 'Current 25 years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);
title1 'Table2c: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 ' -- with the Female new subcohort';

proc phreg data=sulf nosummary covout outest=her.covlung;
  model fail*cen62(1) = curcig smkcpd20 smkcyr25 evpconly
     xsmkcpd xsmkcyr passive
     edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd20 = 'Current cigarettes 20 per day'
smkcyr25 = 'Current 25 years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);
title1 'Table2c: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Current Smoker';
title3 ' -- with the Female new subcohort';

proc phreg data=sulf nosummary covout outest=her.covcar;
  model fail*cencomb(1) = curcig smkcpd20 smkcyr25 evpconly
xsmkcpd xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd20 = 'Current cigarettes 20 per day'
  smkcyr25 = 'Current 25 years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);
title1 'Table2c: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Current Smoker';
title3 '-- with the Female new subcohort';
proc phreg data=sulf nosummary covout outest=her.covoth;
model fail*cenrest(1) = curcig smkcpd20 smkcyr25 evpconly
  xsmkcpd xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd20 = 'Current cigarettes 20 per day'
  smkcyr25 = 'Current 25 years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);
title1 'Table2c: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Other Death for the Current Smoker';
title3 '-- with the Female new subcohort';
run;
proc print data=her.covall;
title1 'Covariance Matrix for All Causes of Death in ACS Study';
title2 '-- with the Female new subcohort';
proc print data=her.covcar;
title1 'Covariance Matrix for Cardiopulmonary Death in ACS Study';
title2 '-- with the Female new subcohort';
proc print data=her.covlung;
title1 'Covariance Matrix for Lung Cancer Death in ACS Study';
title2 '-- with the Female new subcohort';
proc print data=her.covoth;
title1 'Covariance Matrix for All Other Death in ACS Study';
title2 '-- with the Female new subcohort';
run; */
proc phreg data=sulf nosummary covout outest=her.covcara;
model fail*cencoma(1) = curcig smkcpd20 smkcyr25 evpconly
xsmkcpd xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd20 = 'Current cigarettes 20 per day'
  smkcyr25 = 'Current 25 years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  sulfates = 'Sulfate Particles';
where west in (0,1);
title1 'Table2c: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Current Smoker';
title3 '-- with the Female new subcohort';
proc print data=her.covcara;
title1 'Covariance Matrix for Cardiopulmonary+Asthma Death in ACS Study';
title2 '-- with the Female new subcohort';
run;
Output 3a:

Original Data
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>744467.416</td>
<td>739017.328</td>
<td>5450.088 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>5969.967 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>5734.594 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.297361</td>
<td>0.04478</td>
<td>44.08867</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.226345</td>
<td>0.02413</td>
<td>87.95760</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPCD</td>
<td>1</td>
<td>0.011719</td>
<td>0.0007716</td>
<td>230.67139</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPCD</td>
<td>1</td>
<td>0.005072</td>
<td>0.0005337</td>
<td>90.32437</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.007760</td>
<td>0.0009304</td>
<td>69.56341</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.012802</td>
<td>0.0004866</td>
<td>692.22879</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.001148</td>
<td>0.00146</td>
<td>6.2168</td>
<td>0.4304</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.249379</td>
<td>0.01238</td>
<td>405.59584</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.035682</td>
<td>0.01282</td>
<td>7.75116</td>
<td>0.0054</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.005508</td>
<td>0.00141</td>
<td>15.18944</td>
<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.016057</td>
<td>0.00264</td>
<td>37.08966</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULPATES</td>
<td>1</td>
<td>0.141239</td>
<td>0.03010</td>
<td>22.01207</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.346</td>
<td>1.233</td>
<td>1.470</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.254</td>
<td>1.196</td>
<td>1.315</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPCD</td>
<td>1.012</td>
<td>1.010</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPCD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.998</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.283</td>
<td>1.252</td>
<td>1.315</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.036</td>
<td>1.011</td>
<td>1.063</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.995</td>
<td>0.992</td>
<td>0.997</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.984</td>
<td>0.979</td>
<td>0.989</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULPATES</td>
<td>1.152</td>
<td>1.086</td>
<td>1.222</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles in Women

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENFAIL
Censoring Value(s): 1
Ties Handling: ERSLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>266322.047</td>
<td>264670.625</td>
<td>1651.422 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1918.961 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1836.258 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.152727</td>
<td>0.06876</td>
<td>4.93330</td>
<td>0.0263</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.017936</td>
<td>0.00147</td>
<td>148.55157</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.010189</td>
<td>0.00144</td>
<td>49.81994</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.007158</td>
<td>0.00152</td>
<td>22.07785</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.008680</td>
<td>0.00112</td>
<td>60.59875</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>-0.001396</td>
<td>0.00264</td>
<td>0.28012</td>
<td>0.5966</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.232260</td>
<td>0.02089</td>
<td>123.60320</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.064082</td>
<td>0.03072</td>
<td>4.35036</td>
<td>0.0370</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.002685</td>
<td>0.00203</td>
<td>1.74967</td>
<td>0.1859</td>
</tr>
<tr>
<td>ALC</td>
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<td>-0.036106</td>
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<td>27.75581</td>
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<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.162620</td>
<td>0.05035</td>
<td>10.43145</td>
<td>0.0012</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.165</td>
<td>1.018</td>
<td>1.333</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.015</td>
<td>1.021</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.010</td>
<td>1.007</td>
<td>1.013</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.004</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.261</td>
<td>1.211</td>
<td>1.314</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.066</td>
<td>1.004</td>
<td>1.132</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.997</td>
<td>0.993</td>
<td>1.001</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.965</td>
<td>0.952</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.177</td>
<td>1.066</td>
<td>1.299</td>
<td>Sulfate Particles</td>
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</table>

111
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles in Men

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>478145.369</td>
<td>474264.098</td>
<td>3881.270 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>4136.931 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>3951.348 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.456720</td>
<td>0.06156</td>
<td>54.86935</td>
<td>0.0001</td>
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<tr>
<td>EVPCONLY</td>
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<td>0.255633</td>
<td>0.02518</td>
<td>103.06638</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.0009191</td>
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<td>XSMKCPD</td>
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<td>0.0005806</td>
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<tr>
<td>SMKCYR</td>
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<td>XSMKCYR</td>
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<td>0.014044</td>
<td>0.0005579</td>
<td>633.65072</td>
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<tr>
<td>PASSIVE</td>
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<td>0.001652</td>
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<td>0.88905</td>
<td>0.3457</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.249743</td>
<td>0.01548</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.01411</td>
<td>4.46085</td>
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<td>BMI</td>
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<td>0.00285</td>
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<td>SULFATES</td>
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<td>0.126380</td>
<td>0.03757</td>
<td>11.31587</td>
<td>0.0008</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.579</td>
<td>1.399</td>
<td>1.782</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.291</td>
<td>1.229</td>
<td>1.357</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.004</td>
<td>1.009</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.014</td>
<td>1.013</td>
<td>1.015</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.998</td>
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<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.284</td>
<td>1.245</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.030</td>
<td>1.002</td>
<td>1.059</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.991</td>
<td>0.987</td>
<td>1.005</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.983</td>
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<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.135</td>
<td>1.054</td>
<td>1.221</td>
<td>Sulfate Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>69780.314</td>
<td>65223.146</td>
<td>4557.168 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>5105.261 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3453.342 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.951485</td>
<td>0.14197</td>
<td>44.91789</td>
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<tr>
<td>EVPCONLY</td>
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<td>1.235356</td>
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<td>109.92502</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>1.21457</td>
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<td>0.5360</td>
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<tr>
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<td>0.307335</td>
<td>0.10160</td>
<td>9.14955</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.590</td>
<td>1.961</td>
<td>3.420</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>3.440</td>
<td>2.730</td>
<td>4.333</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.022</td>
<td>1.019</td>
<td>1.026</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.016</td>
<td>1.012</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.036</td>
<td>1.030</td>
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<td>Current years smoke</td>
</tr>
<tr>
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<td>1.062</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.997</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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</tr>
<tr>
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<td>0.959</td>
<td>1.122</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.927</td>
<td>0.945</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.004</td>
<td>0.991</td>
<td>1.017</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.360</td>
<td>1.114</td>
<td>1.659</td>
<td>Sulfate Particles</td>
</tr>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles in Women

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENS2
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>19672.991</td>
<td>18231.600</td>
<td>1441.391 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1955.517 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1221.740 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.807161</td>
<td>0.22298</td>
<td>13.10337</td>
<td>0.0003</td>
</tr>
<tr>
<td>BVPCONLY</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>SMKCPD</td>
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<td>0.9568</td>
</tr>
<tr>
<td>SULFATES</td>
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<td>0.159168</td>
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<td>0.66953</td>
<td>0.4132</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.242</td>
<td>1.448</td>
<td>3.470</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>BVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.034</td>
<td>1.027</td>
<td>1.041</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMMCPD</td>
<td>1.030</td>
<td>1.022</td>
<td>1.038</td>
<td>Former cigarettes per day</td>
</tr>
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<td>SMKCYR</td>
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<td>1.019</td>
<td>1.039</td>
<td>Current years smoke</td>
</tr>
<tr>
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<td>1.052</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.984</td>
<td>1.014</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.396</td>
<td>1.177</td>
<td>1.655</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.096</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.001</td>
<td>0.969</td>
<td>1.034</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.173</td>
<td>0.801</td>
<td>1.717</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles in Men

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Wald</td>
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<td></td>
<td>3353.250 with 12 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
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<td>CURCIG</td>
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<td>2.206</td>
<td>4.627</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>5.227</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.013</td>
<td>1.022</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
</tr>
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</tr>
<tr>
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<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.996</td>
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<td>Passive Smoking</td>
</tr>
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<tr>
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<td>0.919</td>
<td>0.941</td>
<td>Body Mass Index</td>
</tr>
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<td>0.991</td>
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<td>SULPATES</td>
<td>1.433</td>
<td>1.134</td>
<td>1.810</td>
<td>Sulfate Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>357444.550</td>
<td>354830.631</td>
<td>2613.918 with 12 DF (p=0.0001)</td>
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<tr>
<td>Score</td>
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<td></td>
<td>2785.861 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2708.368 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>29.22531</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.863</td>
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</tr>
<tr>
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<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.000</td>
<td>1.005</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.997</td>
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<td>Passive Smoking</td>
</tr>
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<td>Body Mass Index</td>
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<td>1.261</td>
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<td>Sulfate Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles in Women

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>-2 LOG I. Score</td>
<td>111859.648</td>
<td>110950.350</td>
<td>909.298 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1053.086 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1014.042 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tbody>
<tr>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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</tr>
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<td>EVPONLY</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>1.003</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
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<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.013</td>
<td>Current years smoke</td>
</tr>
<tr>
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<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.373</td>
<td>1.297</td>
<td>1.454</td>
<td>Passive Smoking</td>
</tr>
<tr>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.393</td>
<td>1.201</td>
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<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td></td>
<td></td>
<td></td>
<td>Sulfate Particles</td>
</tr>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles in Men

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>245584.902</td>
<td>243832.934</td>
<td>1751.968 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>1819.157 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1766.290 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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<td>0.0005</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
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<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
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<td>1.937</td>
<td>1.628</td>
<td>2.304</td>
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</tr>
<tr>
<td>EVFCONLY</td>
<td>1.277</td>
<td>1.194</td>
<td>1.365</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>1.001</td>
<td>1.007</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.002</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.003</td>
<td>0.999</td>
<td>1.006</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.012</td>
<td>1.015</td>
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</tr>
<tr>
<td>PASSIVE</td>
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<td>1.012</td>
<td>1.061</td>
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<tr>
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<td>1.263</td>
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</tr>
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<tr>
<td>SULFATES</td>
<td>1.198</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles
Never-smokers

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENVALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
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<th>Model Chi-Square</th>
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<td>-2 LOG L</td>
<td>219244.365</td>
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<td>166.920 with 6 DF (p=0.0001)</td>
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<td>Score</td>
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<td>167.776 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>167.884 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Variable</th>
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<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
<tr>
<td>SMKCYR</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
<td>0</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
<td></td>
<td></td>
<td></td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.994</td>
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<td>Passive Smoking</td>
</tr>
<tr>
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<td>1.201</td>
<td>1.304</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.008</td>
<td>0.956</td>
<td>1.063</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>1.002</td>
<td>1.011</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.178</td>
<td>1.065</td>
<td>1.301</td>
<td>Sulfate Particles</td>
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</table>

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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Never-smokers in Women

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>141276.522</td>
<td>141183.527</td>
<td>92.995 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>90.834 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>91.254 with 6 DF (p=0.0001)</td>
</tr>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>SMKCYR</td>
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<td>0</td>
<td>.</td>
</tr>
<tr>
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<td>ALC</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>.791</td>
<td>.328</td>
<td>2.27</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.924</td>
<td>.705</td>
<td>1.21</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.998</td>
<td>.975</td>
<td>1.02</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.995</td>
<td>.972</td>
<td>1.02</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.997</td>
<td>.984</td>
<td>1.01</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.983</td>
<td>1.01</td>
<td>Former years smoked</td>
</tr>
<tr>
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<td>0.995</td>
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<tr>
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</tr>
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<td>BMI</td>
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<td>0.998</td>
<td>1.008</td>
<td>Body Mass Index</td>
</tr>
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<td>0.970</td>
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</tr>
<tr>
<td>SULFATES</td>
<td>1.203</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Never-smokers in Men

The PHREG Procedure

Data Set: WORK.SULP_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>77967.843</td>
<td>77873.348</td>
<td>94.495 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>97.913 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>97.544 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tr>
<td>CURCIG</td>
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<td></td>
<td></td>
</tr>
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<td>EVPCONLY</td>
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<td>SMKCPD</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.996</td>
<td>0.984</td>
<td>1.009</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDUCLOW</td>
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<td>1.254</td>
<td>1.441</td>
<td>Less than high school education</td>
</tr>
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</tr>
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<td>1.142</td>
<td>0.974</td>
<td>1.340</td>
<td>Sulfate Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence
Intervals) by Lung Cancer Related Death for the Sulfate Particles
Never-smokers

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
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<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square (p)</th>
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</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>4462.097</td>
<td>4439.410</td>
<td>22.688 with 6 DF (p=0.0009)</td>
</tr>
<tr>
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<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>22.636 with 6 DF (p=0.0009)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
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<tr>
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<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Never-smokers in Women

The PHREG Procedure

Data Set: WORK.SULP.N
Dependent Variable: FAIL
Censoring Variable: CEN52
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>Model Chi-Square</th>
</tr>
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<td>-2 LOG L</td>
<td>3128.366</td>
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<td>13.652 with 6 DF (p=0.0338)</td>
</tr>
<tr>
<td>Score</td>
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<td>12.901 with 6 DF (p=0.0446)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>13.097 with 6 DF (p=0.0415)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tr>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
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<td>PASSIVE</td>
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<tr>
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<tr>
<td>INDUSEXP</td>
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<td>Body Mass Index</td>
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<td>ALC</td>
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<td>1.608</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Never-smokers in Men

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
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<tbody>
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<td>-2 LOG L</td>
<td>1333.731</td>
<td>1322.377</td>
<td>11.354 with 6 DF (p=0.0780)</td>
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<tr>
<td>Score</td>
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<td>12.068 with 6 DF (p=0.0605)</td>
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<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>11.901 with 6 DF (p=0.0642)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td>0.26458</td>
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<td>0.0252</td>
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<td>0.23413</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Variable</th>
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<th>Lower</th>
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<tbody>
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<td>Current Smoker</td>
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<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td></td>
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<td>Current cigarettes per day</td>
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<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
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<td>SMKCYR</td>
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<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Never-smokers

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
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<th>Model Chi-Square</th>
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<td>106712.082</td>
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<td>177.133 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Variable</th>
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<th>Parameter Estimate</th>
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<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
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<tr>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
</tr>
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<td>XSMKCPD</td>
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<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
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<td>1.021</td>
<td>Passive Smoking</td>
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<td>BMI</td>
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<td>1.004</td>
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<td>Body Mass Index</td>
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<td>1.196</td>
<td>1.582</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

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### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Never-smokers in Women

The PHREG Procedure.

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

#### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
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<tbody>
<tr>
<td>-2 LOG L</td>
<td>64190.517</td>
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<td>113.544 with 6 DF (p=0.0001)</td>
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<tr>
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<tr>
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#### Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
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<th>Pr &gt; Chi-Square</th>
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<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
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</tr>
<tr>
<td>XSSMKCPD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0</td>
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</tr>
<tr>
<td>XSSMKCYR</td>
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<td>0</td>
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<tr>
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<td>0.261147</td>
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<td>0.373289</td>
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#### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
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<td>Former cigarettes per day</td>
</tr>
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<td>Current years smoke</td>
</tr>
<tr>
<td>XSSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
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<td>1.000</td>
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</tr>
<tr>
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<td>1.391</td>
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<td>BMI</td>
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<td>0.995</td>
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<td>Body Mass Index</td>
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<td>0.853</td>
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<tr>
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<td>1.207</td>
<td>1.749</td>
<td>Sulfate Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Never-smokers in Men

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>42521.565</td>
<td>42431.999</td>
<td>89.566 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>92.950 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td>0.003690</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0.003690</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td>0.003690</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>0</td>
<td>0</td>
<td>0.003690</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>0</td>
<td>0</td>
<td>0.003690</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>0</td>
<td>0</td>
<td>0.003690</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.003690</td>
<td>0.00873</td>
<td>0.17848</td>
<td>0.6727</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>ALC</td>
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<td>0.242659</td>
<td>0.10931</td>
<td>4.92785</td>
<td>0.0264</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.004</td>
<td>0.987</td>
<td>1.021</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.398</td>
<td>1.277</td>
<td>1.531</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0.943</td>
<td>0.861</td>
<td>1.034</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.028</td>
<td>1.016</td>
<td>1.040</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>0.973</td>
<td>0.948</td>
<td>0.998</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.987</td>
<td>1.021</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.398</td>
<td>1.277</td>
<td>1.531</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>0.943</td>
<td>0.861</td>
<td>1.034</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.028</td>
<td>1.016</td>
<td>1.040</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.973</td>
<td>0.948</td>
<td>0.998</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.275</td>
<td>1.029</td>
<td>1.579</td>
<td>Sulfate Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Ever-smokers

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>481785.502</td>
<td>478106.464</td>
<td>3679.038 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>3709.064 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>3591.752 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.530036</td>
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<tr>
<td>EVPCONLY</td>
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<td>0.03730</td>
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<td>0.0004</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>1.881</td>
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</tr>
<tr>
<td>EVPCONLY</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.009</td>
<td>1.012</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.007</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.021</td>
<td>1.023</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>1.003</td>
<td>Passive Smoking</td>
</tr>
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<td>EDULOW</td>
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</tr>
<tr>
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<td>Body Mass Index</td>
</tr>
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<td>0.982</td>
<td>0.993</td>
<td>Alcohol Drinking</td>
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<tr>
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<td>1.140</td>
<td>1.060</td>
<td>1.226</td>
<td>Sulfate Particles</td>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Ever-smokers in Women

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>106957.841</td>
<td>106194.982</td>
<td>762.859 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>765.600 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>741.395 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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<tr>
<td>CURCIG</td>
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<td>0.358525</td>
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<td></td>
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<td>0.0856</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.431</td>
<td>1.211</td>
<td>1.691</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.014</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.012</td>
<td>1.009</td>
<td>1.016</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKYR</td>
<td>1.010</td>
<td>1.007</td>
<td>1.014</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKYR</td>
<td>1.017</td>
<td>1.014</td>
<td>1.020</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.996</td>
<td>0.989</td>
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<td>Passive Smoking</td>
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<td>1.335</td>
<td>1.246</td>
<td>1.431</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.080</td>
<td>0.993</td>
<td>1.175</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.989</td>
<td>0.982</td>
<td>0.995</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.973</td>
<td>0.958</td>
<td>0.988</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.145</td>
<td>0.981</td>
<td>1.337</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Ever-smokers in Men

The PHREG Procedure

Data Set: WORK.SUL_F_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>374827.661</td>
<td>371853.941</td>
<td>2973.719 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>3015.315 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>2916.706 with 12 DF (p=0.0001)</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.650786</td>
<td>0.06768</td>
<td>92.46948</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.672465</td>
<td>0.03635</td>
<td>339.15067</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.008146</td>
<td>0.0009267</td>
<td>77.27178</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.007837</td>
<td>0.0006303</td>
<td>154.59892</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.011309</td>
<td>0.00130</td>
<td>76.03532</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.022874</td>
<td>0.0007707</td>
<td>880.80351</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.000477</td>
<td>0.00183</td>
<td>0.06825</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.218430</td>
<td>0.01722</td>
<td>160.93737</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.044216</td>
<td>0.01552</td>
<td>8.11689</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.015951</td>
<td>0.00220</td>
<td>52.74477</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.010138</td>
<td>0.00299</td>
<td>11.51405</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.127613</td>
<td>0.04234</td>
<td>9.08443</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.917</td>
<td>1.679</td>
<td>2.189</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.959</td>
<td>1.824</td>
<td>2.104</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.005</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.007</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.011</td>
<td>1.009</td>
<td>1.014</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.023</td>
<td>1.022</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.997</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.244</td>
<td>1.203</td>
<td>1.287</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.045</td>
<td>1.014</td>
<td>1.077</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.984</td>
<td>0.980</td>
<td>0.988</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.990</td>
<td>0.984</td>
<td>0.996</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.136</td>
<td>1.046</td>
<td>1.234</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Ever-smokers

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>61839.449</td>
<td>59159.869</td>
<td>2679.580 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>2636.669 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2162.835 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>PR &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.268383</td>
<td>0.16282</td>
<td>60.68319</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.767248</td>
<td>0.14478</td>
<td>149.00393</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.020804</td>
<td>0.00177</td>
<td>138.19485</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.018125</td>
<td>0.00169</td>
<td>114.91906</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.041264</td>
<td>0.00314</td>
<td>173.08857</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.068441</td>
<td>0.00252</td>
<td>737.65633</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.002649</td>
<td>0.00397</td>
<td>0.44525</td>
<td>0.5046</td>
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<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.382007</td>
<td>0.04228</td>
<td>81.65311</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.018158</td>
<td>0.04092</td>
<td>0.19692</td>
<td>0.6572</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.00533</td>
<td>160.98248</td>
<td>0.0001</td>
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<td>0.005035</td>
<td>0.00668</td>
<td>0.56798</td>
<td>0.4511</td>
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<tr>
<td>SULFATES</td>
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<td>0.298512</td>
<td>0.10572</td>
<td>7.97229</td>
<td>0.0047</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.555</td>
<td>2.584</td>
<td>4.892</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>5.855</td>
<td>4.408</td>
<td>7.776</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.021</td>
<td>1.017</td>
<td>1.025</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.018</td>
<td>1.015</td>
<td>1.022</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.042</td>
<td>1.036</td>
<td>1.049</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.071</td>
<td>1.066</td>
<td>1.076</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.003</td>
<td>0.995</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.465</td>
<td>1.349</td>
<td>1.592</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.018</td>
<td>0.940</td>
<td>1.103</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.935</td>
<td>0.925</td>
<td>0.944</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.005</td>
<td>0.992</td>
<td>1.018</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.348</td>
<td>1.096</td>
<td>1.658</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Ever-smokers in Women

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>14851.100</td>
<td>14243.179</td>
<td>607.921 with 11 DF (p=0.00001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>554.047 with 11 DF (p=0.00001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>459.346 with 11 DF (p=0.00001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.624025</td>
<td>0.30555</td>
<td>28.25026</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>SMKCPD</td>
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<td>0.031515</td>
<td>0.00342</td>
<td>84.93334</td>
<td>0.0001</td>
</tr>
<tr>
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<tr>
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<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.0001</td>
</tr>
<tr>
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<td>0.15907</td>
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<tr>
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<td>0.318585</td>
<td>0.09760</td>
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</tr>
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<td>0.0001</td>
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<td>ALC</td>
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<td>0.002875</td>
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<td>0.8653</td>
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<tr>
<td>SULFATES</td>
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<td>0.094843</td>
<td>0.21522</td>
<td>0.19420</td>
<td>0.6594</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>5.073</td>
<td>2.788</td>
<td>9.234</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.032</td>
<td>1.025</td>
<td>1.039</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
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<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.028</td>
<td>1.051</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.074</td>
<td>1.061</td>
<td>1.088</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.997</td>
<td>0.981</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDUelow</td>
<td>1.375</td>
<td>1.136</td>
<td>1.665</td>
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</tr>
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<td>1.083</td>
<td>0.864</td>
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</tr>
<tr>
<td>BMI</td>
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<td>0.931</td>
<td>0.967</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.003</td>
<td>0.970</td>
<td>1.037</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.099</td>
<td>0.721</td>
<td>1.676</td>
<td>Sulfate Particles</td>
</tr>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Ever-smokers in Men

The PHREG Procedure

Data Set: WORK.SULFE
Dependent Variable: FAIL
Censoring Variable: CEN52
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>46988.349</td>
<td>44876.655</td>
<td>2111.694 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2133.508 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1734.484 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.268797</td>
<td>0.20143</td>
<td>39.67641</td>
<td>0.0001</td>
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<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.655210</td>
<td>0.15275</td>
<td>117.41974</td>
<td>0.0001</td>
</tr>
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<td>SMKCPD</td>
<td>1</td>
<td>0.016982</td>
<td>0.00208</td>
<td>66.52069</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.015364</td>
<td>0.00189</td>
<td>66.96111</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.040893</td>
<td>0.00386</td>
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<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.0001</td>
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<td>PASSIVE</td>
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<td>0.004489</td>
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<td>0.95646</td>
<td>0.3281</td>
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<td>EDULOW</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.04371</td>
<td>0.03666</td>
<td>0.8482</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.077373</td>
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<td>ALC</td>
<td>1</td>
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<td>0.3939</td>
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<td>0.363943</td>
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<td>0.0027</td>
</tr>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.557</td>
<td>2.396</td>
<td>5.278</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>5.234</td>
<td>3.880</td>
<td>7.061</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.013</td>
<td>1.021</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.015</td>
<td>1.012</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.042</td>
<td>1.034</td>
<td>1.050</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.070</td>
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<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.996</td>
<td>1.014</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.483</td>
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<td>1.626</td>
<td>Less than high school education</td>
</tr>
<tr>
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<td>0.926</td>
<td>1.099</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.917</td>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.006</td>
<td>0.992</td>
<td>1.021</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.439</td>
<td>1.134</td>
<td>1.825</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

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### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Ever-smokers

The **PHREG** Procedure

**Data Set:** WORK.SULF_E  
**Dependent Variable:** FAIL  
**Censoring Variable:** CENCOMB  
**Censoring Value(s):** 1  
**Ties Handling:** BRESLOW

**Testing Global Null Hypothesis: BETA=0**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>229818.461</td>
<td>228029.170</td>
<td>1789.290 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
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<td>1761.849 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1722.258 with 12 DF (p=0.0001)</td>
</tr>
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</table>

**Analysis of Maximum Likelihood Estimates**

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.849362</td>
<td>0.07708</td>
<td>121.43232</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.713241</td>
<td>0.04742</td>
<td>226.18398</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.00120</td>
<td>24.69643</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.0008123</td>
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<tr>
<td>SMKCYR</td>
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<td>0.00147</td>
<td>25.98225</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.023008</td>
<td>0.0009620</td>
<td>571.97266</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>-0.001705</td>
<td>0.00238</td>
<td>0.51355</td>
<td>0.4736</td>
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<tr>
<td>EDULOW</td>
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<td>0.264265</td>
<td>0.02150</td>
<td>151.05405</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.02083</td>
<td>7.57994</td>
<td>0.0059</td>
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<td>BMI</td>
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<td>0.00453</td>
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<td>SULFATES</td>
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<td>0.180133</td>
<td>0.05355</td>
<td>11.31615</td>
<td>0.0008</td>
</tr>
</tbody>
</table>

**Analysis of Maximum Likelihood Estimates**

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.336</td>
<td>2.010</td>
<td>2.719</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.041</td>
<td>1.859</td>
<td>2.239</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.007</td>
<td>1.010</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.005</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.998</td>
<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
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<tr>
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<td>1.249</td>
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</tr>
<tr>
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<td>Body Mass Index</td>
</tr>
<tr>
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<td>Alcohol Drinking</td>
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<tr>
<td>SULFATES</td>
<td>1.197</td>
<td>1.078</td>
<td>1.330</td>
<td>Sulfate Particles</td>
</tr>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Ever-smokers in Women

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>40235.946</td>
<td>39809.145</td>
<td>426.801 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>419.040 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>399.325 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.731217</td>
<td>0.13858</td>
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</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.015263</td>
<td>0.00244</td>
<td>39.25719</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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</tr>
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<td>0.261294</td>
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<td>4.28141</td>
<td>0.0385</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.078</td>
<td>1.583</td>
<td>2.726</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.015</td>
<td>1.011</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.010</td>
<td>1.005</td>
<td>1.015</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.003</td>
<td>1.013</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.017</td>
<td>1.027</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.998</td>
<td>0.988</td>
<td>1.008</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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</tr>
<tr>
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</tr>
<tr>
<td>BMI</td>
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<td>0.985</td>
<td>1.006</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.926</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.299</td>
<td>1.014</td>
<td>1.663</td>
<td>Sulfate Particles</td>
</tr>
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</table>

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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Ever-smokers in Men

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETAS=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>189582.515</td>
<td>188186.998</td>
<td>1395.517 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>.</td>
<td>1384.862 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1357.158 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.880999</td>
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<td>196.05563</td>
<td>0.0001</td>
</tr>
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<td>5.90300</td>
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<tr>
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<td>0.0001</td>
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<tr>
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<td>0.159797</td>
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<td>7.30302</td>
<td>0.0069</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.413</td>
<td>1.997</td>
<td>2.917</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.016</td>
<td>1.828</td>
<td>2.224</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.003</td>
<td>1.001</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.004</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.024</td>
<td>1.021</td>
<td>1.026</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.266</td>
<td>1.209</td>
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<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.062</td>
<td>1.018</td>
<td>1.109</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.994</td>
<td>0.988</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.965</td>
<td>0.956</td>
<td>0.974</td>
<td>Alcohol Drinking</td>
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<td>1.317</td>
<td>Sulfate Particles</td>
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</table>
Output 3b:

Modified Data
Table 2c: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles--with the Female new subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>829147.183</td>
<td>823192.894</td>
<td>5954.289 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>6558.806 with 12 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
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<td></td>
<td>6301.681 with 12 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tbody>
<tr>
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<td>1</td>
<td>0.277415</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
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<tbody>
<tr>
<td>CURCIG</td>
<td>1.320</td>
<td>1.215</td>
<td>1.433</td>
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</tr>
<tr>
<td>SMKCPD20</td>
<td>1.282</td>
<td>1.245</td>
<td>1.319</td>
<td>Current cigarettes 20 per day</td>
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<tr>
<td>SMKCYR25</td>
<td>1.216</td>
<td>1.165</td>
<td>1.270</td>
<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.249</td>
<td>1.191</td>
<td>1.309</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.012</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
<tr>
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<td>0.998</td>
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<td>Passive Smoking</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>SMKCYR25</td>
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<td>DF</td>
<td>Parameter Estimate</td>
<td>Standard Error</td>
<td>Wald Chi-Square</td>
</tr>
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**Analysis of Maximum Likelihood Estimates**

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.873</td>
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<td>Current 25 years smoke</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>Pipe/cigar smoker</td>
</tr>
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<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>Variable</td>
<td>Parameter Estimate</td>
<td>Standard Error</td>
<td>Wald Chi-Square</td>
<td>Pr &gt; Chi-Square</td>
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### Analysis of Maximum Likelihood Estimates

**Conditional Risk Ratio and 95% Confidence Limits**

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td>SMKCPFD20</td>
<td>1.248</td>
<td>1.190</td>
<td>1.309</td>
<td>Current cigarettes 20 per day</td>
</tr>
</tbody>
</table>

---

Table 2c: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Current Smoker -- with the Female Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENTREST
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>358042.829</td>
<td>357115.281</td>
<td>927.548 with 12 DF (p=0.0001)</td>
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<tr>
<td>Score</td>
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<td>1007.755 with 12 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
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<td>988.599 with 12 DF (p=0.0001)</td>
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<tr>
<td>SMKCYR25</td>
<td>1.191</td>
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<tr>
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<td>1.124</td>
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<tr>
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Covariance Matrix for All Causes of Death in ACS Study

---

with the Female new subcohort

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<td>CURCIG</td>
<td>0.00177</td>
<td>-0.00221</td>
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<tr>
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<td>8</td>
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Covariance Matrix for Cardiopulmonary Death in ACS Study

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with the Female new subcohort

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Covariance Matrix for Lung Cancer Death in ACS Study

-- with the Female new subcohort

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Covariance Matrix for All Other Death in ACS Study

-- with the Female new subcohort

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<td>11</td>
<td>0.0000038</td>
<td>0.0000002</td>
<td>-0.000001</td>
<td>-178557.64</td>
</tr>
<tr>
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<td>0.0000135</td>
<td>0.000002</td>
<td>-178557.64</td>
</tr>
<tr>
<td>13</td>
<td>-0.000014</td>
<td>0.0000019</td>
<td>0.001923</td>
<td>-178557.64</td>
</tr>
</tbody>
</table>
Program #4
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
   value dead 1 = 'Alive'
                 0 = 'Dead'
;
   value sex  1 = 'Male'
                2 = 'Female'
;
   value race 1 = 'White'
                2 = 'Black'
                3 = 'Other'
;
   value ind  0 = 'No.'
                1 = 'Yes'
;
filename derdata '/home/fmo/derdata.cport';

proc cimport data=dertest infile=derdata;

* Cox PH Model by All Cause of Death for the sulfate population ;
data sulf; set dertest;
   
   if flagdel = 0 and sulfdel = 0 ;

   sulfates = meansulf/19.9;
   smkcpd20 = smkcpd/20;
   smkcyr25 = smkcyr/25;

proc phreg data=sulf nosummary covout outest=acs.covall;
   model fail*cenall(1) = currcig smkcpd20 smkcyr25 evpconly xsmkcpd
                       xsmkcyr passive edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. sexracecat race. ;
   label currcig = 'Current Smoker'
                  smkcpd20 = 'Current cigarettes 20 per day'
                  smkcyr25 = 'Current 25 years smoke'
                  xsmkcpd = 'Former cigarettes per day'
                  xsmkcyr = 'Former years smoked'
                  evpconly = 'Pipe/cigar smoker'

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indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

%title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
%title2 'Intervals) by All Cause of Death for the Current Smoker';

* Cox PH Model by Lung Cancer Death for the sulfate population ;

proc phreg data=sulf nosummary covout outest=acs.covlung;
  model fail*cen62(1) = curcig smkcpd20 smkcyr25 evpconly xsmkcpd
                         xsmkcyr passive edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd20 = 'Current cigarettes 20 per day'
                 smkcyr25 = 'Current 25 years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1);

%title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
%title2 'Intervals) by Lung Cancer Related Death for the Current Smoker';

* Cox PH Model by Cardiopulmonary Death for the sulfate population ;

proc phreg data=sulf nosummary covout outest=acs.covcar;
  model fail*cencomb(1) = curcig smkcpd20 smkcyr25 evpconly
                         xsmkcpd xsmkcyr passive edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd20 = 'Current cigarettes 20 per day'
smkcyr25 = 'Current 25 years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Current Smoker';

* Cox PH Model by All Other Cause Death for the sulfate population ;

proc phreg data=sulf nosummary covout outest=acs.covoth;
  model fail*cenrest(1) = curcig smkcpd20 smkcyr25 evpconly xsmkcpd xsmkcyr passive edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd20 = 'Current cigarettes 20 per day'
  smkcyr25 = 'Current 25 years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  sulfates = 'Sulfate Particles';
  where west in (0,1);

  title1 'Table2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
  title2 'Intervals) by All Other Death for the Current Smoker';

  proc print data=acs.covall;
  title 'Covariance Matrix for All Causes of Death in ACS Study';
proc print data=acs.covcar;
  title 'Covariance Matrix for Cardiopulmonary Death in ACS Study';

proc print data=acs.covlung;
  title 'Covariance Matrix for Lung Cancer Death in ACS Study';

proc print data=acs.covoth;
  title 'Covariance Matrix for All Other Death in ACS Study';

run;
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
                0 = 'Dead'
;
  value sex   1 = 'Male'
                2 = 'Female'
;
  value race  1 = 'White'
                2 = 'Black'
                3 = 'Other'
;
  value ind   0 = 'No.'
                1 = 'Yes'
;

data sulf; set acs.dern;
  if flagd = 0 and sulfd = 0 ;
  sulfates = meansulf/19.9;
  if cencomb = 0 or cenasma = 0 then cencoma = 0; else cencoma = 1;

proc phreg data=sulf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr 
                        xsmkcyr passive 
                           edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpld = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpld = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 '-- with the Female New Subcohort';

proc phreg data=sulf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpld xsmkcpld smkcyr 
  xsmkcyr passive       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpld = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpld = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2 ;

proc phreg data=sulf nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive  
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1 ;
title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%  
Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate  
Particles';
title3 ' in Men.';
title4 ' -- with the Female New Subcohort';
run;

proc phreg data=sulf nosummary;
model fail*cens2(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive  
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);
title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
title3 ' -- with the Female New Subcohort';

proc phreg data=sulf nosummary;
 model fail*cen62(1) = curcig evpconly smkcpc xsmkcpcd smkcyr xsmkcyr passive
         edulow indusexp bmi alc sulfates / rl;
 strata age_int (25 to 105 by 5) sex racecat;
 format sex sex. racecat race. ;
 label curcig = 'Current Smoker'
    smkcpcd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpcd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    sulfates = 'Sulfate Particles';
 where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
title3 ' in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf nosummary;
 model fail*cen62(1) = curcig evpconly smkcpcd xsmkcpcd smkcyr xsmkcyr passive
         edulow indusexp bmi alc sulfates / rl;
 strata age_int (25 to 105 by 5) sex racecat;
 format sex sex. racecat race. ;
 label curcig = 'Current Smoker'
    smkcpcd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpcd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

proc phreg data=sulf nosummary;
    model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                         edulow indusexp bmi alc sulfates / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                   smkcpd = 'Current cigarettes per day'
                   smkcyr = 'Current years smoke'
                   xsmkcpd = 'Former cigarettes per day'
                   xsmkcyr = 'Former years smoked'
                   evpconly = 'Pipe/cigar smoker'
                   indusexp = 'Occupational exposure'
                   edulow = 'Less than high school education'
                   age_int = 'Age at Interview'
                   passive = 'Passive Smoking'
                   bmi = 'Body Mass Index'
                   alc = 'Alcohol Drinking'
                   sulfates = 'Sulfate Particles';
    where west in (0,1);

proc phreg data=sulf nosummary;
    model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                         edulow indusexp bmi alc sulfates / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                   smkcpd = 'Current cigarettes per day'
                   smkcyr = 'Current years smoke'

xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evponly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';

where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 '' in Women '';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf nosummary;
model fail*cencomb(1) = curcig evponly smkcpd xsmkcpd smkcyr xsmkcyr passive

   edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evponly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 '' in Men '';
title4 ' -- with the Female New Subcohort';
run;

data sulf_n;set sulf;

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if curcig = 0 and xsmkcpd = 0 and xsmkcyr = 0 and evpconly = 0;

proc phreg data=sulf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1);

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
          Confidence);';
  title2 'Intervals) by All Cause of Death for the Sulfate
          Particles';
  title3 'Never-smokers';
  title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2;
title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence) by All Cause of Death for the Sulfate Particles';

proc phreg data=sulf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                  smkcpd = 'Current cigarettes per day'
                  smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                  evpconly = 'Pipe/cigar smoker'
                  indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
               age_int = 'Age at Interview'
              passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking'
              sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 1;
run;

proc phreg data=sulf_n nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                  smkcpd = 'Current cigarettes per day'
                  smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                  evpconly = 'Pipe/cigar smoker'

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indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the
Sulfate Particles';
title3 ' Never-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                       xsmkcyr passive
                       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the
Sulfate Particles';
title3 ' Never-smokers in Women '
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                       xsmkcyr passive
                       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
  title3 ' Never-smokers in Men ';
  title4 ' -- with the Female New Subcohort';
run;

proc phreg data=sulf_n nosummary;
model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
  xsmkcyr passive
    edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  sulfates = 'Sulfate Particles';
where west in (0,1) ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
  title3 ' Never-smokers';

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title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                     edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
   where west in (0,1) and sex eq 2 ;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95%
Confidence');
   title2 'Intervals) by Cardiopulmonary Death for the Sulfate
Particles';
   title3 'Never-smokers in Women ';
   title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                     edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';

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where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
title3 ' Never-smokers in Men ';
title4 ' -- with the Female New Subcohort';
run;

data sulf_e;set sulf;

if curcig = 1 or xsmkcpd gt 0 or xsmkcyr gt 0 or evpconly = 1;

proc phreg data=sulf_e nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.
; label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  sulfates = 'Sulfate Particles';
where west in (0,1);

proc phreg data=sulf_e nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.
; label curcig = 'Current Smoker'

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smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';

where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 ' Ever-smokers in Women ';
title4 ' -- with the Female New Subcohort';
run;

proc phreg data=sulf_e nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
            xsmkcyr passive
                      edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 1;

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Sulfate Particles';
title3 ' Ever-smokers in Men ';
title4 ' -- with the Female New Subcohort';
proc phreg data=sulf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                             edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig  = 'Current Smoker'
               smkcpd  = 'Current cigarettes per day'
               smkcyr  = 'Current years smoke'
               xsmkcpd = 'Former cigarettes per day'
               xsmkcyr = 'Former years smoked' 
               evpconly = 'Pipe/cigar smoker'
               indusexp = 'Occupational exposure'
               edulow  = 'Less than high school education'
               age_int = 'Age at Interview'
               passive = 'Passive Smoking'
               bmi     = 'Body Mass Index'
               alc     = 'Alcohol Drinking'
               sulfates = 'Sulfate Particles';
  where west in (0,1);

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
  title2 'Intervals) by Lung Cancer Related Death for the Sulfate Particles';
  title3 ' Ever-smokers';
  title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                             edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig  = 'Current Smoker'
               smkcpd  = 'Current cigarettes per day'
               smkcyr  = 'Current years smoke'
               xsmkcpd = 'Former cigarettes per day'
               xsmkcyr = 'Former years smoked' 
               evpconly = 'Pipe/cigar smoker'
               indusexp = 'Occupational exposure'
               edulow  = 'Less than high school education'
               age_int = 'Age at Interview'
               passive = 'Passive Smoking'
               bmi     = 'Body Mass Index'
               alc     = 'Alcohol Drinking'
               sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2 ;

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence';
title2 'Intervals) by Lung Cancer Related Death for the
Sulfate Particles';
title3 ' Ever-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_e nosummary;
   model fail*cen52(1) = curcig evpconly smkcpd xsmkcpd smkcyr
   xsmkcyr passive
       edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
   indusexp = 'Occupational exposure'
   edulow = 'Less than high school education'
   age_int = 'Age at Interview'
   passive = 'Passive Smoking'
   bmi = 'Body Mass Index'
   alc = 'Alcohol Drinking'
   sulfates = 'Sulfate Particles';
   where west in (0,1) and sex eq 1;

   title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
   Confidence');
title2 'Intervals) by Lung Cancer Related Death for the
Sulfate Particles';
title3 ' Ever-smokers in Men ';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_e nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
   xsmkcyr passive
       edulow indusexp bmi alc sulfates / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
   indusexp = 'Occupational exposure'
   edulow = 'Less than high school education'
   age_int = 'Age at Interview'
   passive = 'Passive Smoking'

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bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence);
  title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
  title3 ' Ever-smokers';
  title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkyr
  xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2;

proc phreg data=sulf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkyr
  xsmkcyr passive
  edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'

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xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

* Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence) by Cardiopulmonary Death for the Sulfate Particles; -- with the Female New Subcohort;

proc phreg data=sulf nosummary;
  model fail*cencode(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                     edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 sulfates = 'Sulfate Particles';
  where west in (0,1);

* Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence) by Cardiopulmonary+Asthma Death for the Sulfate Particles;

proc phreg data=sulf nosummary;
  model fail*cencode(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 2 ;
title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence);'
title2 'Intervals) by Cardiopulmonary+Asthma Death for the
Sulfate Particles';
title3 ' in Women ';
title4 ' -- with the Female New Subcohort';
proc phreg data=sulf nosummary;
model fail*cen coma(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;
title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence);'
title2 'Intervals) by Cardiopulmonary+Asthma Death for the
Sulfate Particles;
    title3 ' in Men ';
    title4 ' -- with the Female New Subcohort';
run;

data sulf_n;set sulf;
    if curcig = 0 and xsmkcpd = 0 and xsmkcyr = 0 and evpconly = 0;

proc phreg data=sulf_n nosummary;
    model fail*cencom(a(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
      edulow indusexp bmi alc sulfates / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
      smkcpd = 'Current cigarettes per day'
      smkcyr = 'Current years smoke'
      xsmkcpd = 'Former cigarettes per day'
      xsmkcyr = 'Former years smoked'
      evpconly = 'Pipe/cigar smoker'
      indusexp = 'Occupational exposure'
      edulow = 'Less than high school education'
      age_int = 'Age at Interview'
      passive = 'Passive Smoking'
      bmi = 'Body Mass Index'
      alc = 'Alcohol Drinking'
      sulfates = 'Sulfate Particles';
    where west in (0,1);

    title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
      Confidence);'
    title2 'Intervals) by Cardiopulmonary+Asthma Death for the
      Sulfate Particles';
    title3 ' Never-smokers';
    title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
    model fail*cencom(a(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
      edulow indusexp bmi alc sulfates / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
      smkcpd = 'Current cigarettes per day'
      smkcyr = 'Current years smoke'
      xsmkcpd = 'Former cigarettes per day'
      xsmkcyr = 'Former years smoked'
      evpconly = 'Pipe/cigar smoker'

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indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles';
title3 ' Never-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_n nosummary;
model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
   edulow indusexp bmi alc sulfates / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evponly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles';
title3 ' Never-smokers in Men ';
title4 ' -- with the Female New Subcohort';
run;

data sulf_e;set sulf;
   if curcig = 1 or xsmkcpd gt 0 or xsmkcyr gt 0 or evponly = 1;
proc phreg data=sulf_e nosummary;
  model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                        xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig   = 'Current Smoker'
                  smkcpd  = 'Current cigarettes per day'
                  smkcyr = 'Current years smoke'
                  xsmkcpd = 'Former cigarettes per day'
                  xsmkcyr = 'Former years smoked'
                  evpconly = 'Pipe/cigar smoker'
                  indusexp = 'Occupational exposure'
                  edulow  = 'Less than high school education'
                  age_int = 'Age at Interview'
                  passive = 'Passive Smoking'
                  bmi     = 'Body Mass Index'
                  alc     = 'Alcohol Drinking'
                  sulfates = 'Sulfate Particles';
  where west in (0,1) ;

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
          Confidence)';
  title2 'Intervals) by Cardiopulmonary+Asthma Death for the
          Sulfate Particles';
  title3    Ever-smokers';
  title4    -- with the Female New Subcohort';

proc phreg data=sulf_e nosummary;
  model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                        xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig   = 'Current Smoker'
                  smkcpd  = 'Current cigarettes per day'
                  smkcyr = 'Current years smoke'
                  xsmkcpd = 'Former cigarettes per day'
                  xsmkcyr = 'Former years smoked'
                  evpconly = 'Pipe/cigar smoker'
                  indusexp = 'Occupational exposure'
                  edulow  = 'Less than high school education'
                  age_int = 'Age at Interview'
                  passive = 'Passive Smoking'
                  bmi     = 'Body Mass Index'
                  alc     = 'Alcohol Drinking'
                  sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 2 ;
title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles';
title3 '  Ever-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=sulf_e nosummary;
  model fail*cencom(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                       edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
              smkcpd = 'Current cigarettes per day'
              smkcyr = 'Current years smoke'
              xsmkcpd = 'Former cigarettes per day'
              xsmkcyr = 'Former years smoked'
              evpconly = 'Pipe/cigar smoker'
              indusexp = 'Occupational exposure'
              edulow = 'Less than high school education'
              age_int = 'Age at Interview'
              passive = 'Passive Smoking'
              bmi = 'Body Mass Index'
              alc = 'Alcohol Drinking'
              sulfates = 'Sulfate Particles';
  where west in (0,1) and sex eq 1;

run;
Output 4a:

Original Data
### Covariance Matrix for All Causes of Death in ACS Study

**15:03 Tuesday, November 17, 1998**

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<thead>
<tr>
<th>OBS</th>
<th><em>TIES</em></th>
<th><em>TYPE</em></th>
<th><em>NAME</em></th>
<th>CURCIG</th>
<th>SMKCPD20</th>
<th>SMKCYR25</th>
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<td>CURCIG</td>
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### Covariance Matrix for Cardiopulmonary Death in ACS Study

**15:03 Tuesday, November 17, 1998**

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Covariance Matrix for All Other Death in ACS Study

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Output 4b:

Modified Data
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles -- with the Female New Subcohort
The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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Analysis of Maximum Likelihood Estimates

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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<td>CURCIG</td>
<td>1.320</td>
<td>1.215</td>
<td>1.433</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.249</td>
<td>1.191</td>
<td>1.309</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.012</td>
<td>1.011</td>
<td>1.014</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.998</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.281</td>
<td>1.252</td>
<td>1.311</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.040</td>
<td>1.015</td>
<td>1.066</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.997</td>
<td>0.995</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>351001.814</td>
<td>348811.195</td>
<td>2190.619 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>2553.290 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2442.521 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.139839</td>
<td>0.06071</td>
<td>5.30541</td>
<td>0.0213</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.018708</td>
<td>0.00129</td>
<td>209.52600</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.009653</td>
<td>0.00120</td>
<td>64.27878</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.007344</td>
<td>0.00135</td>
<td>29.66399</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.008874</td>
<td>0.0009106</td>
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</tr>
<tr>
<td>PASSIVE</td>
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<td>-0.000985</td>
<td>0.00231</td>
<td>0.18197</td>
<td>0.6697</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.228844</td>
<td>0.01824</td>
<td>157.37029</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.076841</td>
<td>0.02672</td>
<td>8.27167</td>
<td>0.0040</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>0.001515</td>
<td>0.00176</td>
<td>0.74492</td>
<td>0.3881</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.039281</td>
<td>0.00604</td>
<td>42.28815</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.179169</td>
<td>0.04395</td>
<td>16.62230</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.150</td>
<td>1.021</td>
<td>1.295</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.019</td>
<td>1.016</td>
<td>1.021</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.010</td>
<td>1.007</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.005</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Former years smoked</td>
</tr>
</tbody>
</table>

179
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>478145.369</td>
<td>474264.098</td>
<td>3881.270 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>4136.931 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3951.348 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.456720</td>
<td>0.06166</td>
<td>54.86935</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVFCONLY</td>
<td>1</td>
<td>0.255633</td>
<td>0.02518</td>
<td>103.06638</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.008839</td>
<td>0.0009191</td>
<td>92.49186</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.004602</td>
<td>0.0005806</td>
<td>62.81946</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.005760</td>
<td>0.00122</td>
<td>30.80999</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.014044</td>
<td>0.0005579</td>
<td>633.65072</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.001652</td>
<td>0.00175</td>
<td>0.88905</td>
<td>0.3457</td>
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<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.249743</td>
<td>0.01548</td>
<td>260.32740</td>
<td>0.0001</td>
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<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.029809</td>
<td>0.01411</td>
<td>4.46085</td>
<td>0.0347</td>
</tr>
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<td>BMI</td>
<td>1</td>
<td>-0.008905</td>
<td>0.00197</td>
<td>20.48636</td>
<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.012006</td>
<td>0.00285</td>
<td>17.74509</td>
<td>0.0001</td>
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<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.126380</td>
<td>0.03757</td>
<td>11.31587</td>
<td>0.0008</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.579</td>
<td>1.399</td>
<td>1.782</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVFCONLY</td>
<td>1.291</td>
<td>1.229</td>
<td>1.357</td>
<td>Pipe/cigar smoker</td>
</tr>
</tbody>
</table>

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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>75831.517</td>
<td>70820.661</td>
<td>5010.856 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>5705.606 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3816.474 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.997632</td>
<td>0.13328</td>
<td>56.02591</td>
<td>0.0001</td>
</tr>
<tr>
<td>EUPCONLY</td>
<td>1</td>
<td>1.239756</td>
<td>0.11639</td>
<td>113.45428</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.023366</td>
<td>0.00168</td>
<td>194.27245</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.015995</td>
<td>0.00157</td>
<td>103.96630</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.034038</td>
<td>0.00277</td>
<td>150.93196</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.055832</td>
<td>0.00174</td>
<td>1026</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.004199</td>
<td>0.00376</td>
<td>1.24769</td>
<td>0.2640</td>
</tr>
<tr>
<td>EUDULOW</td>
<td>1</td>
<td>0.396354</td>
<td>0.03936</td>
<td>101.41258</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.044867</td>
<td>0.03901</td>
<td>1.32296</td>
<td>0.2501</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.061222</td>
<td>0.00484</td>
<td>160.13927</td>
<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>0.000579</td>
<td>0.00664</td>
<td>0.00760</td>
<td>0.9305</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.308890</td>
<td>0.09764</td>
<td>10.00740</td>
<td>0.0016</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Risk Variable</th>
<th>Risk Ratio</th>
<th>Lower Limit</th>
<th>Upper Limit</th>
<th>Label</th>
</tr>
</thead>
</table>

181
CURCIG  2.712  2.088  3.521  Current Smoker
EVPONLY  3.455  2.750  4.340  Pipe/cigar smoker
SMKCND  1.024  1.020  1.027  Current cigarettes per day
XSMKCPD  1.016  1.013  1.019  Former cigarettes per day
SMKCNR  1.035  1.029  1.040  Current years smoke
XSMKCNR  1.057  1.054  1.061  Former years smoked
PASSVE  1.004  0.997  1.012  Passive Smoking
EDULOW  1.486  1.376  1.606  Less than high school education
INDUSEXP  1.046  0.969  1.129  Occupational exposure
BMI  0.941  0.932  0.950  Body Mass Index
ALC  1.001  0.988  1.014  Alcohol Drinking
SULFATES  1.362  1.125  1.669  Sulfate Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>25724.193</td>
<td>23811.896</td>
<td>1912.298 with 11 DF (p=0.00001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>2667.763 with 11 DF (p=0.00001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1621.489 with 11 DF (p=0.00001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.890514</td>
<td>0.19493</td>
<td>20.86938</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>SMKCND</td>
<td>1</td>
<td>0.035863</td>
<td>0.00290</td>
<td>153.19734</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.028013</td>
<td>0.00342</td>
<td>67.01558</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCNR</td>
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<td>0.027125</td>
<td>0.00427</td>
<td>40.30737</td>
<td>0.0001</td>
</tr>
<tr>
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<tr>
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<td>0.000226</td>
<td>0.00664</td>
<td>0.00816</td>
<td>0.9729</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.291401</td>
<td>0.07663</td>
<td>14.45914</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.118369</td>
<td>0.09207</td>
<td>1.66971</td>
<td>0.1963</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.044062</td>
<td>0.00750</td>
<td>34.48125</td>
<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.014955</td>
<td>0.01619</td>
<td>0.85352</td>
<td>0.3556</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.194593</td>
<td>0.17035</td>
<td>1.30484</td>
<td>0.2533</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>50107.324</td>
<td>46943.571</td>
<td>3163.753 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3353.250 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2270.189 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.161542</td>
<td>0.18892</td>
<td>37.80255</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>1.398197</td>
<td>0.13039</td>
<td>114.99217</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCIPD</td>
<td>1</td>
<td>0.017387</td>
<td>0.00208</td>
<td>70.18017</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.00181</td>
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<td>0.00373</td>
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<td>0.0001</td>
</tr>
<tr>
<td>XSMKCRP</td>
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<td>0.0651556</td>
<td>0.02225</td>
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<td>0.0001</td>
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<tr>
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<tr>
<td>EDULOW</td>
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<td>0.04635</td>
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<td>0.5845</td>
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<td>SULFATES</td>
<td>1</td>
<td>0.359802</td>
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Analysis of Maximum Likelihood Estimates
## Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.195</td>
<td>2.206</td>
<td>4.627</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>4.048</td>
<td>3.135</td>
<td>5.227</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.013</td>
<td>1.022</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.014</td>
<td>1.011</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.038</td>
<td>1.030</td>
<td>1.046</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.063</td>
<td>1.059</td>
<td>1.068</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.005</td>
<td>0.996</td>
<td>1.014</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>1.650</td>
<td>Less than high school education</td>
</tr>
<tr>
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<td>0.941</td>
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</tr>
<tr>
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<td>0.919</td>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.991</td>
<td>1.020</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.433</td>
<td>1.134</td>
<td>1.810</td>
<td>Sulfate Particles</td>
</tr>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles -- with the Female New Subcohort

### The PHREG Procedure

- **Data Set:** WORK.SULF
- **Dependent Variable:** FAIL
- **Censoring Variable:** CENCOMB
- **Censoring Value(s):** 1
- **Ties Handling:** BRESLOW

### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>394021.990</td>
<td>391066.500</td>
<td>2955.491 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3165.167 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3076.289 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.627590</td>
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</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.249394</td>
<td>0.03264</td>
<td>58.38099</td>
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</tr>
<tr>
<td>SMKCPD</td>
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<tr>
<td>SMKCYR</td>
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<td>0.00129</td>
<td>2.92234</td>
<td>0.0874</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.012905</td>
<td>0.0006346</td>
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<td>0.0001</td>
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<tr>
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<td>0.001988</td>
<td>0.00210</td>
<td>0.89395</td>
<td>0.3444</td>
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<tr>
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<tr>
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<td>3.66332</td>
<td>0.0556</td>
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<td>BMI</td>
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<td>0.003302</td>
<td>0.00189</td>
<td>3.04068</td>
<td>0.0812</td>
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<td>ALC</td>
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<td>-0.043209</td>
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<td>106.89307</td>
<td>0.0001</td>
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<td>0.249393</td>
<td>0.04080</td>
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<td>0.0001</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.873</td>
<td>1.555</td>
<td>2.119</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.283</td>
<td>1.204</td>
<td>1.368</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>1.000</td>
<td>1.005</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.349</td>
<td>1.307</td>
<td>1.392</td>
<td>Less than high school education</td>
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<tr>
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<td>1.035</td>
<td>0.999</td>
<td>1.072</td>
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</tr>
<tr>
<td>BMI</td>
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<td>1.000</td>
<td>1.007</td>
<td>Body Mass Index</td>
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<td>Alcohol Drinking</td>
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<tr>
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<td>1.283</td>
<td>1.185</td>
<td>1.390</td>
<td>Sulfate Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>148437.089</td>
<td>147165.823</td>
<td>1271.266 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1480.858 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.482226</td>
<td>0.09306</td>
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<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>78.58714</td>
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</tr>
<tr>
<td>XSMKCPD</td>
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<tr>
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<td>0.02544</td>
<td>165.19943</td>
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</tr>
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<td>0.04334</td>
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<td>BMI</td>
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<td>0.004010</td>
<td>0.00265</td>
<td>2.29546</td>
<td>0.1298</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.620</td>
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<td>1.944</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.019</td>
<td>1.014</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.005</td>
<td>1.013</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.010</td>
<td>1.008</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.005</td>
<td>0.998</td>
<td>1.013</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.387</td>
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<td>INDUSEXP</td>
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</tr>
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<td>0.999</td>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.909</td>
<td>0.947</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.423</td>
<td>1.250</td>
<td>1.619</td>
<td>Sulfate Particles</td>
</tr>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>245584.902</td>
<td>243832.934</td>
<td>1751.968 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>1819.157 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1766.290 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.661239</td>
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<tr>
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<td>0.244300</td>
<td>0.03399</td>
<td>51.65221</td>
<td>0.0001</td>
</tr>
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</tr>
<tr>
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<td>0.0001</td>
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</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.937</td>
<td>1.628</td>
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<tr>
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<td>1.001</td>
<td>1.007</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.002</td>
<td>1.006</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.999</td>
<td>1.006</td>
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<tr>
<td>XSMKCYR</td>
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<td>1.012</td>
<td>1.015</td>
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<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.996</td>
<td>1.006</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.316</td>
<td>1.263</td>
<td>1.371</td>
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<tr>
<td>INDUSEXP</td>
<td>1.037</td>
<td>0.997</td>
<td>1.077</td>
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<tr>
<td>BMI</td>
<td>1.002</td>
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<td>ALC</td>
<td>0.965</td>
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</tr>
<tr>
<td>SULFATES</td>
<td>1.198</td>
<td>1.082</td>
<td>1.326</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>258686.072</td>
<td>258480.094</td>
<td>205.978 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>206.306 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>206.633 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
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</tr>
</tbody>
</table>

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### Analysis of Maximum Likelihood Estimates

**Conditional Risk Ratio and 95% Confidence Limits**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.995</td>
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<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.239</td>
<td>1.193</td>
<td>1.287</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.015</td>
<td>0.965</td>
<td>1.068</td>
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</tr>
<tr>
<td>BMI</td>
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<td>1.005</td>
<td>1.013</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.949</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.187</td>
<td>1.082</td>
<td>1.302</td>
<td>Sulfate Particles</td>
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</tbody>
</table>

**Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles**

---

**The PHREG Procedure**

- **Data Set:** WORK.SULF_N
- **Dependent Variable:** FAIL
- **Censoring Variable:** CENALL
- **Censoring Value(s):** 1
- **Ties Handling:** BRESLOW

**Testing Global Null Hypothesis: BETA=0**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>180718.229</td>
<td>180586.102</td>
<td>132.127 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>128.914 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
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<td>.</td>
<td>129.577 with 6 DF (p=0.0001)</td>
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</tbody>
</table>

**Analysis of Maximum Likelihood Estimates**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Wald</th>
<th>Pr &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
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<td>Estimate</td>
<td>Error</td>
</tr>
<tr>
<td>----------</td>
<td>----</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>CURCIG</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.003466</td>
<td>0.00412</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.180978</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.064051</td>
<td>0.03885</td>
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<tr>
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<td>0.007097</td>
<td>0.00228</td>
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<tr>
<td>ALC</td>
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<td>0.191894</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
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<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.995</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.198</td>
<td>1.146</td>
<td>1.254</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.066</td>
<td>0.988</td>
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</tr>
<tr>
<td>BMI</td>
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<td>1.003</td>
<td>1.012</td>
<td>Body Mass Index</td>
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<td>ALC</td>
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<td>Alcohol Drinking</td>
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<tr>
<td>SULFATES</td>
<td>1.212</td>
<td>1.082</td>
<td>1.357</td>
<td>Sulfate Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>77967.843</td>
<td>77873.348</td>
<td>94.495 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>97.913 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>97.544 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
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**Analysis of Maximum Likelihood Estimates**

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCYR</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
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<td>0.133129</td>
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<td>2.66374</td>
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**Analysis of Maximum Likelihood Estimates**

Conditional Risk Ratio and 95% Confidence Limits:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>Passive Smoking</td>
</tr>
<tr>
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<td>1.007</td>
<td>1.024</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.961</td>
<td>0.997</td>
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<td>1.142</td>
<td>0.974</td>
<td>1.340</td>
<td>Sulfate Particles</td>
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</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Never-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

**Testing Global Null Hypothesis: BETA=0**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>5092.097</td>
<td>5067.017</td>
<td>25.080 with 6 DF (p=0.0003)</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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<td>0.01592</td>
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<td>0.628187</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>.</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former years smoke</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.997</td>
<td>0.951</td>
<td>1.045</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.405</td>
<td>1.058</td>
<td>1.866</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.508</td>
<td>1.090</td>
<td>2.085</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.948</td>
<td>0.919</td>
<td>0.978</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.973</td>
<td>0.879</td>
<td>1.076</td>
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</tr>
<tr>
<td>SULFATES</td>
<td>1.874</td>
<td>0.952</td>
<td>3.689</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENC2
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>3758.366</td>
<td>3742.289</td>
<td>16.076 with 6 DF (p=0.0134)</td>
</tr>
<tr>
<td>Score</td>
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</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>15.847 with 6 DF (p=0.0146)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
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<tr>
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<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0</td>
<td>.</td>
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</tr>
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<td>.</td>
</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tr>
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<td>.</td>
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<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
</tr>
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</tr>
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<td>.</td>
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<td>Former years smoked</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles

Never-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENS2
Censoring Value(s): 1
Ties Handling: BRESLOW

192
Testing Global Null Hypothesis: BETA=0

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<tr>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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</thead>
<tbody>
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<td>-2 LOG L Score</td>
<td>1333.731</td>
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<td>11.354 with 6 DF (p=0.0780)</td>
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<tr>
<td>Wald</td>
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<td>12.068 with 6 DF (p=0.0605)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
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<td></td>
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<td>PASSIVE</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
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<td>PASSIVE</td>
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<tr>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.548</td>
<td>0.979</td>
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</tr>
<tr>
<td>BMI</td>
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<td>0.892</td>
<td>1.020</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.945</td>
<td>0.803</td>
<td>1.112</td>
<td>Alcohol Drinking</td>
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<tr>
<td>SULFATES</td>
<td>1.360</td>
<td>0.397</td>
<td>4.658</td>
<td>Sulfate Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence 16
Intervals) by Cardiopulmonary Death for the Sulfate Particles
Never-smokers
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>124500.565</td>
<td>124281.571</td>
<td>218.994 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>217.420 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td></td>
<td>218.370 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
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<th>Variable</th>
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<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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<tr>
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<td>.</td>
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<tr>
<td>EVPCONLY</td>
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<td>.</td>
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<tr>
<td>SMKCPD</td>
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<td>XSMKCYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Never-smokers in Women -- with the Female New Subcohort

The PHREG Procedure
Data Set: WORK.SULF.N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>81979.000</td>
<td>81821.090</td>
<td>157.910 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>150.667 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
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<th>DF</th>
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<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td></td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td></td>
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<td>XSMKCYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits:

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</tr>
<tr>
<td>EVPONLY</td>
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<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>Less than high school education</td>
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<td>INDUSEXP</td>
<td>1.007</td>
<td>0.892</td>
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<td>Occupational exposure</td>
</tr>
<tr>
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<td>1.001</td>
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<td>1.416</td>
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<td>Sulfate Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Never-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULP_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>42521.565</td>
<td>42431.999</td>
<td>89.566 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>92.950 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>92.675 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td></td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>0</td>
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</tr>
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<td>SMKCPD</td>
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<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0</td>
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</tr>
<tr>
<td>SMKCYR</td>
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<td></td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<tr>
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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
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<tr>
<td>SMKCYR</td>
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<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.987</td>
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</tr>
<tr>
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<tr>
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</tr>
<tr>
<td>BMI</td>
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<td>1.016</td>
<td>1.040</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.948</td>
<td>0.998</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.275</td>
<td>1.029</td>
<td>1.579</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Ever-smokers
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULP_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>521083.348</td>
<td>517121.478</td>
<td>3961.869 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>4003.990 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3873.285 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.495598</td>
<td>0.04863</td>
<td>103.84641</td>
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<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.617461</td>
<td>0.03291</td>
<td>352.05301</td>
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<tr>
<td>SMKCPD</td>
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<td>XSMKCPD</td>
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<td>1024</td>
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<tr>
<td>PASSIVE</td>
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<td>0.00153</td>
<td>0.12027</td>
<td>0.7287</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.238244</td>
<td>0.01490</td>
<td>255.49780</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.050352</td>
<td>0.01431</td>
<td>12.37853</td>
<td>0.0004</td>
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<tr>
<td>BMI</td>
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<td>0.00172</td>
<td>47.07720</td>
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</tr>
<tr>
<td>ALC</td>
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<td>-0.013910</td>
<td>0.00275</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SULPATES</td>
<td>1</td>
<td>0.140687</td>
<td>0.03588</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.641</td>
<td>1.492</td>
<td>1.806</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.854</td>
<td>1.738</td>
<td>1.978</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.010</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.007</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.020</td>
<td>1.023</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.996</td>
<td>1.002</td>
<td>Passive Smoking</td>
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<tr>
<td>EDULOW</td>
<td>1.269</td>
<td>1.232</td>
<td>1.307</td>
<td>Less than high school education</td>
</tr>
</tbody>
</table>
INDUSEXP  1.052  1.023  1.082  Occupational exposure  
BMI       0.988  0.985  0.992  Body Mass Index     
ALC       0.986  0.981  0.992  Alcohol Drinking  
SULFATES  1.151  1.073  1.235  Sulfate Particles  

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles  
-- with the Female New Subcohort  

The PHREG Procedure  
Data Set: WORK.SULF_E  
Dependent Variable: FAIL  
Censoring Variable: CENALL  
Censoring Value(s): 1  
Ties Handling: BRESLOW  

Testing Global Null Hypothesis: BETA=0  

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>146255.687</td>
<td>145181.322</td>
<td>1074.365 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1092.454 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1056.228 with 11 DF (p=0.0001)</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates  

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.322341</td>
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<td>0</td>
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<td>0.00000</td>
<td>0.00000</td>
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<td>SMKCPRD</td>
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<td>0.0183</td>
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<td>0.167403</td>
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<td>6.12634</td>
<td>0.0133</td>
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Analysis of Maximum Likelihood Estimates  

Conditional Risk Ratio and  
95% Confidence Limits  

<table>
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<th>Variable</th>
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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
<td>1.380</td>
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</tr>
<tr>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPRD</td>
<td>1.018</td>
<td>1.015</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.012</td>
<td>1.009</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Sulfate Particles Ever-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>374827.661</td>
<td>371853.941</td>
<td>2973.719 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3015.315 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2916.706 with 12 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td>0.04234</td>
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<td>0.0026</td>
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</table>

Analysis of Maximum Likelihood Estimates
Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
</table>

199
CURCIG  1.917  1.679  2.189  Current Smoker
EVPONLY  1.959  1.824  2.104  Pipe/cigar smoker
SMKCPD  1.008  1.005  1.010  Current cigarettes per day
XSMKCPD  1.008  1.007  1.009  Former cigarettes per day
SMKCYR  1.011  1.009  1.014  Current years smoke
XSMKCYR  1.023  1.022  1.025  Former years smoked
PASSIVE  1.000  0.997  1.004  Passive Smoking
EDULOW  1.244  1.203  1.287  Less than high school education
INDUSEXP  1.045  1.014  1.077  Occupational exposure
BMI  0.984  0.980  0.988  Body Mass Index
ALC  0.990  0.984  0.996  Alcohol Drinking
SULFATES  1.136  1.045  1.234  Sulfate Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence
Intervals) by Lung Cancer Related Death for the Sulfate Particles
Ever-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CEN52
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>66818.233</td>
<td>63920.155</td>
<td>2898.078 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>2866.920 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2326.904 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.286718</td>
<td>0.15379</td>
<td>70.00073</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>1.775017</td>
<td>0.14210</td>
<td>156.02726</td>
<td>0.0001</td>
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<td>SMKCPD</td>
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<tr>
<td>SMKCYR</td>
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<td>0.00298</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

200
<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.621</td>
<td>2.679</td>
<td>4.895</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>5.906</td>
<td>4.466</td>
<td>7.795</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.023</td>
<td>1.019</td>
<td>1.026</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.019</td>
<td>1.015</td>
<td>1.022</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.041</td>
<td>1.035</td>
<td>1.047</td>
<td>Current years smoke</td>
</tr>
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<td>1.065</td>
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<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.003</td>
<td>0.995</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
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<td>1.569</td>
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</tr>
<tr>
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<td>0.946</td>
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</tr>
<tr>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.001</td>
<td>0.988</td>
<td>1.015</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.326</td>
<td>1.086</td>
<td>1.619</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Ever-smokers in Women

-- with the female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>19829.884</td>
<td>18989.164</td>
<td>840.720 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>.</td>
<td>807.555 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>638.768 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.519117</td>
<td>0.26020</td>
<td>34.08465</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.034161</td>
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<td>135.39539</td>
<td>0.0001</td>
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<td>XSMKCPD</td>
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<td>XSMKCYR</td>
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<td>0.04033</td>
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<td>BMI</td>
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<td>ALC</td>
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<td>SULFATES</td>
<td>1</td>
<td>0.082321</td>
<td>0.18687</td>
<td>0.19407</td>
<td>0.6596</td>
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</table>

Analysis of Maximum Likelihood Estimates
Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>4.568</td>
<td>2.743</td>
<td>7.607</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td>.</td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.035</td>
<td>1.029</td>
<td>1.041</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.033</td>
<td>1.025</td>
<td>1.040</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.028</td>
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<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.071</td>
<td>1.060</td>
<td>1.082</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.985</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.307</td>
<td>1.105</td>
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<td>INDUSEXP</td>
<td>1.092</td>
<td>0.898</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.943</td>
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<td>1.086</td>
<td>0.753</td>
<td>1.566</td>
<td>Sulfate Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>46988.349</td>
<td>44876.655</td>
<td>2111.694 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>2133.508 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1734.484 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>BMI</td>
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<td>ALC</td>
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<td>0.363943</td>
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<td>8.99459</td>
<td>0.0027</td>
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</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.557</td>
<td>2.396</td>
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</tr>
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<td>5.234</td>
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<td>Pipe/Cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.013</td>
<td>1.021</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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</tr>
<tr>
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<td>1.075</td>
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</tr>
<tr>
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<td>0.996</td>
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<td>Passive Smoking</td>
</tr>
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</tr>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.917</td>
<td>0.941</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>1.439</td>
<td>1.134</td>
<td>1.825</td>
<td>Sulfate Particles</td>
</tr>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Ever-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>245942.855</td>
<td>243970.580</td>
<td>1972.275 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1943.378 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1896.782 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.844405</td>
<td>0.07251</td>
<td>135.63080</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.707327</td>
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</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>2.018</td>
<td>2.682</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.029</td>
<td>1.853</td>
<td>2.221</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.007</td>
<td>1.005</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.007</td>
<td>1.010</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.004</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.023</td>
<td>1.021</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.998</td>
<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.321</td>
<td>1.269</td>
<td>1.376</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.061</td>
<td>1.020</td>
<td>1.105</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.996</td>
<td>0.991</td>
<td>1.001</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.953</td>
<td>0.970</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.234</td>
<td>1.115</td>
<td>1.366</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles Ever-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>56360.341</td>
<td>55731.515</td>
<td>628.825 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>628.899 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>598.780 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.716171</td>
<td>0.11642</td>
<td>37.84306</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.016011</td>
<td>0.00213</td>
<td>56.63032</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.010365</td>
<td>0.00207</td>
<td>24.98719</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.006883</td>
<td>0.00220</td>
<td>9.76915</td>
<td>0.0018</td>
</tr>
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</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.047</td>
<td>1.629</td>
<td>2.571</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.016</td>
<td>1.012</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.010</td>
<td>1.006</td>
<td>1.015</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.003</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.017</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.998</td>
<td>0.989</td>
<td>1.007</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.517</td>
<td>1.394</td>
<td>1.652</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.097</td>
<td>0.973</td>
<td>1.237</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.999</td>
<td>0.991</td>
<td>1.008</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.948</td>
<td>0.926</td>
<td>0.971</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.442</td>
<td>1.170</td>
<td>1.779</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles

Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>189582.515</td>
<td>188186.998</td>
<td>1395.517 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1384.862 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1357.158 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.880999</td>
<td>0.09673</td>
<td>82.96039</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

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### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.413</td>
<td>1.997</td>
<td>2.917</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.016</td>
<td>1.828</td>
<td>2.224</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.003</td>
<td>1.001</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.005</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.004</td>
<td>1.011</td>
<td>Current years smoked</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.024</td>
<td>1.021</td>
<td>1.026</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.266</td>
<td>1.209</td>
<td>1.326</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.062</td>
<td>1.018</td>
<td>1.109</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.994</td>
<td>0.988</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.965</td>
<td>0.955</td>
<td>0.974</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.173</td>
<td>1.045</td>
<td>1.317</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>395272.837</td>
<td>392324.662</td>
<td>2948.176 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td>3155.784</td>
<td>12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td>3067.965</td>
<td>12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.615399</td>
<td>0.06299</td>
<td>95.44964</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.248016</td>
<td>0.03262</td>
<td>57.81483</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.007740</td>
<td>0.00114</td>
<td>46.18555</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.005026</td>
<td>0.0007295</td>
<td>47.46993</td>
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<tr>
<td>SMCYR</td>
<td>1</td>
<td>0.002438</td>
<td>0.00129</td>
<td>3.57379</td>
</tr>
<tr>
<td>XSMCYR</td>
<td>1</td>
<td>0.012938</td>
<td>0.0006336</td>
<td>416.97564</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.002111</td>
<td>0.00210</td>
<td>1.01044</td>
</tr>
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<td>EDULOW</td>
<td>1</td>
<td>0.298705</td>
<td>0.01610</td>
<td>344.28708</td>
</tr>
<tr>
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<td>0.034626</td>
<td>0.01789</td>
<td>3.74734</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>0.003305</td>
<td>0.00189</td>
<td>3.05878</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.043238</td>
<td>0.00417</td>
<td>107.27348</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.240555</td>
<td>0.04074</td>
<td>34.86216</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.850</td>
<td>1.635</td>
<td>2.094</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.281</td>
<td>1.202</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMCYR</td>
<td>1.002</td>
<td>1.000</td>
<td>1.005</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.348</td>
<td>1.306</td>
<td>1.391</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.035</td>
<td>1.000</td>
<td>1.072</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.003</td>
<td>1.000</td>
<td>1.007</td>
<td>Body Mass Index</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>149232.637</td>
<td>147970.703</td>
<td>1261.934 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1466.665 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1401.962 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.466090</td>
<td>0.09308</td>
<td>25.07584</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCOMLY</td>
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<td>19.75523</td>
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</tr>
<tr>
<td>SMKCYR</td>
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<td>0.2205</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.010306</td>
<td>0.00135</td>
<td>58.64122</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.005767</td>
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<td>2.38074</td>
<td>0.1228</td>
</tr>
<tr>
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<td>0.325632</td>
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<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>1.05356</td>
<td>0.3047</td>
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<tr>
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<td>0.004162</td>
<td>0.00264</td>
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<td>0.01066</td>
<td>49.67760</td>
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</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.343328</td>
<td>0.06572</td>
<td>27.28877</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.594</td>
<td>1.328</td>
<td>1.913</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCOMLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.014</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.005</td>
<td>1.013</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>0.999</td>
<td>1.006</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.010</td>
<td>1.008</td>
<td>1.013</td>
<td>Former years smoked</td>
</tr>
</tbody>
</table>

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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: ERESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>246040.200</td>
<td>244287.282</td>
<td>1752.918 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1820.001 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1767.140 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.656415</td>
<td>0.08853</td>
<td>54.97581</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.243627</td>
<td>0.03397</td>
<td>51.42714</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<td>1.621</td>
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</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

Risk
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles

Never-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULP_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
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<td>-2 LOG L</td>
<td>82417.255</td>
<td>82259.147</td>
<td>158.108 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>148.597 with 6 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
<td></td>
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<td>150.893 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Variable</th>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates
Conditional Risk Ratio and 95% Confidence Limits

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<th>Risk Ratio</th>
<th>Lower</th>
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<th>Label</th>
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<td>Current Smoker</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td></td>
<td></td>
<td>Former cigarettes per day</td>
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<td>SMKCYR</td>
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<td></td>
<td>Current years smoke</td>
</tr>
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<td>Former years smoked</td>
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<td>Sulfate Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Asthma Death for the Sulfate Particles

Never-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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<td>42576.392</td>
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<td>88.642 with 6 DF (p=0.0001)</td>
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<td>Score</td>
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<td>92.029 with 6 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
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<td>91.745 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

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<th>Standard Error</th>
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<th>Pr &gt; Chi-Square</th>
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</tr>
<tr>
<td>XSMKCPD</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
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<td>.</td>
<td>Current years smoke</td>
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<td>Former years smoked</td>
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<td>1.572</td>
<td>Sulfate Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles Ever-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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<td>1889.071 with 12 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
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<th>Pr &gt; Chi-Square</th>
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213
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<th>Upper</th>
<th>Label</th>
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<td>Passive Smoking</td>
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<td>1.001</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.953</td>
<td>0.970</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.221</td>
<td>1.104</td>
<td>1.352</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles Ever-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>56662.084</td>
<td>56040.785</td>
<td>621.299 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>618.879 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>591.902 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.698071</td>
<td>0.11619</td>
<td>36.09381</td>
<td>0.00001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.015871</td>
<td>0.00213</td>
<td>55.65403</td>
<td>0.00001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.010287</td>
<td>0.00206</td>
<td>24.84456</td>
<td>0.00001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.007085</td>
<td>0.00220</td>
<td>10.35117</td>
<td>0.0013</td>
</tr>
</tbody>
</table>

214
XSMKCYR  1  0.020887  0.00204  104.71643  0.0001
PASSIVE  1  -0.001465  0.00459  0.10196  0.7495
EDULOW  1  0.415509  0.04333  91.94115  0.0001
INDUSEXP  1  0.092793  0.06086  2.32431  0.1274
BMI  1  -0.000994  0.00430  0.05332  0.8174
ALC  1  -0.053365  0.01204  19.64784  0.0001
SULPATES  1  0.354319  0.10663  11.07817  0.0009

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.010</td>
<td>1.601</td>
<td>2.524</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.016</td>
<td>1.012</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.010</td>
<td>1.006</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.003</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.017</td>
<td>1.025</td>
<td>Former years smoke</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.990</td>
<td>1.008</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.515</td>
<td>1.392</td>
<td>1.649</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.097</td>
<td>0.974</td>
<td>1.236</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.999</td>
<td>0.991</td>
<td>1.007</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.948</td>
<td>0.926</td>
<td>0.971</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULPATES</td>
<td>1.426</td>
<td>1.157</td>
<td>1.758</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>189960.373</td>
<td>188567.298</td>
<td>1393.075 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1382.815 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1355.204 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.872353</td>
<td>0.09664</td>
<td>81.48206</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

215
<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVPCONLY</td>
<td>2.393</td>
<td>1.980</td>
<td>2.891</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>2.007</td>
<td>1.820</td>
<td>2.214</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.003</td>
<td>1.001</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.006</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.008</td>
<td>1.004</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.267</td>
<td>1.209</td>
<td>1.327</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>1.018</td>
<td>1.109</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.994</td>
<td>0.988</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.965</td>
<td>0.956</td>
<td>0.974</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.161</td>
<td>1.034</td>
<td>1.304</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits
Program #5
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
                0 = 'Dead'
          ;
  value sex 1 = 'Male'
                2 = 'Female'
          ;
  value race 1 = 'White'
                2 = 'Black'
                3 = 'Other'
          ;
  value ind 0 = 'No.'
                1 = 'Yes'
          ;

filename derdata '/home/fmo/derdata.cport';

proc cimport data=dertest infile=derdata;

* Cox PH Model by Lung Cancer Death for 47 areas ;

data sulff; set dertest;
  if flagdel = 0 and sulfdel = 0 and fpfdel = 0;
  sulfates = meansulf/19.9;

proc phreg data=sulff nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
sulfates = 'Sulfate Particles';
where west in (0,1);

* Cox PH Model by Cardiopulmonary Death for 47 areas ;

proc phreg data=sulff nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
      edulow indusexp bmi alc sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    sulfates = 'Sulfate Particles';
where west in (0,1);

* ACS_tab2Extra.out
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
  0 = 'Dead'

  value sex 1 = 'Male'
  2 = 'Female'

  value race 1 = 'White'
  2 = 'Black'
  3 = 'Other'

  value ind 0 = 'No.'
  1 = 'Yes'

data fpf; set acs.dern;

  if flagd = 0 and fpfd = 0;

  fine = ffp/24.5;

  if cencomb = 0 or cenasma = 0 then cencoma = 0;else cencoma = 1;

/*
proc phreg data=fpf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
c   edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
*/
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';

where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Fine Particles';
title3 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                      xsmkcyr passive
                      edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
   where west in (0,1) and sex eq 2 ;

   title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
   title2 'Intervals) by All Cause of Death for the Fine Particles';
   title3 ' in Women ';
   title4 ' -- with the Female New Subcohort';

   proc phreg data=fpf nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                       edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
     smkcpd = 'Current cigarettes per day'
     smkcyr = 'Current years smoke'
     xsmkcpd = 'Former cigarettes per day'
     xsmkcyr = 'Former years smoked'
     evpconly = 'Pipe/cigar smoker'
     indusexp = 'Occupational exposure'
     edulow = 'Less than high school education'
     age_int = 'Age at Interview'
     passive = 'Passive Smoking'
     bmi = 'Body Mass Index'
     alc = 'Alcohol Drinking'
     fine = 'Fine Particles';
where west in (0,1) and sex eq 1 ;

proc phreg data=fpf nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                       edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
     smkcpd = 'Current cigarettes per day'
     smkcyr = 'Current years smoke'
     xsmkcpd = 'Former cigarettes per day'
     xsmkcyr = 'Former years smoked'
     evpconly = 'Pipe/cigar smoker'
     indusexp = 'Occupational exposure'
     edulow = 'Less than high school education'
     age_int = 'Age at Interview'
     passive = 'Passive Smoking'
     bmi = 'Body Mass Index'
     alc = 'Alcohol Drinking'
     fine = 'Fine Particles';
where west in (0,1);

222
data=fpf nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2 ;

data=fpf nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence) by Lung Cancer Related Death for the Fine
Particles';
title3 ' -- with the Female New Subcohort';
run;

proc phreg data=fpf nosummary;
  model fail*cencomb(1) = curcig evpconly smkcdp xsxmkcdp smkcyr
  xsmkcyr passive
          edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcdp = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsxmkcdp = 'Former cigarettes per day'
  xsxmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence) by Cardiopulmonary Death for the Fine
Particles';
title3 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
  model fail*cencomb(1) = curcig evpconly smkcdp xsxmkcdp smkcyr
  xsmkcyr passive
          edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcdp = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'

xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';

where west in (0,1) and sex eq 2;

proc phreg data=fpf nosummary;
   model fail*cencomb(1) = curcig evconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                      edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
               smkcpd = 'Current cigarettes per day'
               smkcyr = 'Current years smoke'
               xsmkcpd = 'Former cigarettes per day'
               xsmkcyr = 'Former years smoked'
               evconly = 'Pipe/cigar smoker'
               indusexp = 'Occupational exposure'
               edulow = 'Less than high school education'
               age_int = 'Age at Interview'
               passive = 'Passive Smoking'
               bmi = 'Body Mass Index'
               alc = 'Alcohol Drinking'
               fine = 'Fine Particles';
   where west in (0,1) and sex eq 1;

   title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
          Confidence)';
   title2 'Intervals) by Cardiopulmonary Death for the Fine
          Particles';
   title3    in Women ';
   title4    -- with the Female New Subcohort';
   run;

data fpf_n;set fpf;

if curcig = 0 and xsmkcpd = 0 and xsmkcyr = 0 and evpconly = 0;

proc phreg data=fpf_n nosummary;
   model fail*cenall(1) = curcig evpconly xsmkcpd xsmkcpd smkcyr xsmkcyr passive
           edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig  = 'Current Smoker'
                 smkcpd   = 'Current cigarettes per day'
                 smkcyr   = 'Current years smoke'
                 xsmkcpd  = 'Former cigarettes per day'
                 xsmkcyr  = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow   = 'Less than high school education'
                 age_int  = 'Age at Interview'
                 passive  = 'Passive Smoking'
                 bmi      = 'Body Mass Index'
                 alc      = 'Alcohol Drinking'
                 fine     = 'Fine Particles';
   where west in (0,1);

   title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
   title2 'Intervals) by All Cause of Death for the Fine Particles';
   title3 'Never-smokers';
   title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
   model fail*cenall(1) = curcig evpconly xsmkcpd xsmkcpd smkcyr xsmkcyr passive
           edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig  = 'Current Smoker'
                 smkcpd   = 'Current cigarettes per day'
                 smkcyr   = 'Current years smoke'
                 xsmkcpd  = 'Former cigarettes per day'
                 xsmkcyr  = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow   = 'Less than high school education'
                 age_int  = 'Age at Interview'
                 passive  = 'Passive Smoking'
                 bmi      = 'Body Mass Index'
                 alc      = 'Alcohol Drinking'
                 fine     = 'Fine Particles';
   where west in (0,1) and sex eq 2;
### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence) by All Cause of Death for the Fine Particles

**Never-smokers in Women**

-- with the Female New Subcohort

```sas
proc phreg data=fpf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
  edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
  where west in (0,1) and sex eq 1;
run;
```

---

### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence) by All Cause of Death for the Fine Particles

**Never-smokers in Men**

-- with the Female New Subcohort

```sas
proc phreg data=fpf_n nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
  edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
run;
```
edulow = 'Less than high school education'
age_int = 'Age at Interview'(passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles';
title3 ' Never-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
  where west in (0,1) and sex eq 2 ;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles';
title3 ' Never-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'

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smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles';
title3 'Never-smokers in Men ';
title4 ' -- with the Female New Subcohort';
run;

proc phreg data=fpf_n nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
e dulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles';
title3 'Never-smokers';
title4 ' -- with the Female New Subcohort';
proc phreg data=fpf_n nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                         edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race . ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education'
                age_int = 'Age at Interview'
                passive = 'Passive Smoking'
                bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking'
                fine = 'Fine Particles';
  where west in (0,1) and sex eq 2 ;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles';
title3 'Never-smokers in Women';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                         edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race . ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education'
                age_int = 'Age at Interview'
                passive = 'Passive Smoking'
                bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking'
                fine = 'Fine Particles';
  where west in (0,1) and sex eq 1;

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data fpf_e;set fpf;
if curcig = 1 or xsmkcpd gt 0 or xsmkcyr gt 0 or evpconly = 1;
proc phreg data=fpf_e nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
c    edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
where west in (0,1);

proc phreg data=fpf_e nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
c    edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Fine Particles';
title3 ' Ever-smokers in Women ';
title4 ' -- with the Female New Subcohort';
run;

proc phreg data=fpf_e nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
     xsmkcyr passive 
     edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racetc;
  format sex sex. racetc race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
  where west in (0,1) and sex eq 1;

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
  title2 'Intervals) by All Cause of Death for the Fine Particles';
  title3 ' Ever-smokers in Men ';
  title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
   indusexp = 'Occupational exposure'
   edulow = 'Less than high school education'
   age_int = 'Age at Interview'
   passive = 'Passive Smoking'
   bmi = 'Body Mass Index'
   alc = 'Alcohol Drinking'
   fine = 'Fine Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles';
title3 ' Ever-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
   model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
   xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
   indusexp = 'Occupational exposure'
   edulow = 'Less than high school education'
   age_int = 'Age at Interview'
   passive = 'Passive Smoking'
   bmi = 'Body Mass Index'
   alc = 'Alcohol Drinking'
   fine = 'Fine Particles';
where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Fine
Particles';
title3 'Ever-smokers in Women';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                   xsmkcyr passive
                     edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'
                 fine = 'Fine Particles';
  where west in (0,1) and sex eq 1;

  title1 'Table 3: Adjusted Mortality Risk Ratios (and 95%
           Confidence) by Lung Cancer Related Death for the Fine
           Particles';
  title2 'Intervals) by Lung Cancer Related Death for the Fine
           Particles';
  title3 'Ever-smokers in Men';
  title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                         xsmkcyr passive
                           edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi = 'Body Mass Index'
                 alc = 'Alcohol Drinking'

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fine = 'Fine Particles';  
where west in (0,1);  

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% 
Confidence);  
title2 'Intervals) by Cardiopulmonary Death for the Fine 
Particles';  
title3 ' Ever-smokers';  
title4 ' -- with the Female New Subcohort';  

proc phreg data=fpf_e nosummary;  
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr 
                         xsmkcyr passive 
                           edulow indusexp bmi alc fine / rl;  
strata age_int (25 to 105 by 5) sex racemat;  
format sex sex. racemat race. ;  
label curcig = 'Current Smoker'  
              smkcpd = 'Current cigarettes per day'  
              smkcyr = 'Current years smoke'  
              xsmkcpd = 'Former cigarettes per day'  
              xsmkcyr = 'Former years smoked'  
              evpconly = 'Pipe/cigar smoker'  
              indusexp = 'Occupational exposure'  
              edulow = 'Less than high school education'  
              age_int = 'Age at Interview'  
              passive = 'Passive Smoking'  
              bmi = 'Body Mass Index'  
              alc = 'Alcohol Drinking'  
              fine = 'Fine Particles';  
where west in (0,1) and sex eq 2 ;  

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% 
Confidence);  
title2 'Intervals) by Cardiopulmonary Death for the Fine 
Particles';  
title3 ' Ever-smokers in Women ';  
title4 ' -- with the Female New Subcohort';  

proc phreg data=fpf_e nosummary;  
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr 
                         xsmkcyr passive 
                           edulow indusexp bmi alc fine / rl;  
strata age_int (25 to 105 by 5) sex racemat;  
format sex sex. racemat race. ;  
label curcig = 'Current Smoker'  
              smkcpd = 'Current cigarettes per day'  
              smkcyr = 'Current years smoke'  
              xsmkcpd = 'Former cigarettes per day'  
              xsmkcyr = 'Former years smoked'  
              evpconly = 'Pipe/cigar smoker'  

indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

%title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
%title2 'Intervals) by Cardiopulmonary Death for the Fine Particles';
%title3 ' -- Ever-smokers in Men';
%title4 ' -- with the Female New Subcohort';
run;
*/

proc phreg data=fpf nosummary;
model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race..;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

%title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
%title2 'Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles';
%title3 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;

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strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.;
label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles';
title3 ' in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
   model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr
         xsmkcyr passive
         edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.;
label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
where west in (0,1) and sex eq 1 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles';
title3 ' in Men ';

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title4 ' -- with the Female New Subcohort';
run;

data fpf_n;set fpf;

if curcig = 0 and xsmkcpd = 0 and xsmkcyr = 0 and evpconly = 0;

proc phreg data=fpf_n nosummary;
  model fail*cencoma(1) = curcig evpconly xsmkcpd xsmkcyr passive
    edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
  where west in (0,1);

  title1 'Table 3: Adjusted Mortality Risk Ratios (and 95%
             Confidence)
             Intervals) by Cardiopulmonary+Asthma Death for the
             Fine Particles';
  title2 'Never-smokers';
  title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cencoma(1) = curcig evpconly xsmkcpd xsmkcyr passive
    edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence') title2 'Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles';
title3 ' Never-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive 
                        edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race.;
  label curcig = 'Current Smoker'
               smkcpd = 'Current cigarettes per day'
               smkcyr = 'Current years smoke'
               xsmkcpd = 'Former cigarettes per day'
               xsmkcyr = 'Former years smoked'
               evpconly = 'Pipe/cigar smoker'
               indusexp = 'Occupational exposure'
               edulow = 'Less than high school education'
               age_int = 'Age at Interview'
               passive = 'Passive Smoking'
               bmi = 'Body Mass Index'
               alc = 'Alcohol Drinking'
               fine = 'Fine Particles';
  where west in (0,1) and sex eq 1;

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence') title2 'Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles';
  title3 ' Never-smokers in Men ';
  title4 ' -- with the Female New Subcohort';
  run;

data fpf_e;set fpf;
  if curcig = 1 or xsmkcpd gt 0 or xsmkcyr gt 0 or evpconly = 1;
  proc phreg data=fpf_e nosummary;
model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive  
      edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles';
title3 ' Ever-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
model fail*cencoma(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive  
      edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary+Asthma Death for the
Fine Particles';
title3 '      Ever-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
 model fail*cencomn(1) = curcig evpconly smkcpd xsmkcpd smkcyr
 xsmkcyr passive
     edulow indusexp bmi alc fine / rl;
 strata age_int (25 to 105 by 5) sex racecat;
 format sex sex. racecat race. ;
 label curcig = 'Current Smoker'
     smkcpd = 'Current cigarettes per day'
     smkcyr = 'Current years smoke'
     xsmkcpd = 'Former cigarettes per day'
     xsmkcyr = 'Former years smoked'
     evpconly = 'Pipe/cigar smoker'
     indusexp = 'Occupational exposure'
     edulow = 'Less than high school education'
     age_int = 'Age at Interview'
     passive = 'Passive Smoking'
     bmi = 'Body Mass Index'
     alc = 'Alcohol Drinking'
     fine = 'Fine Particles';
 where west in (0,1) and sex eq 1;

  title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
 Confidence)';
  title2 'Intervals) by Cardiopulmonary+Asthma Death for the
Fine Particles';
  title3 '      Ever-smokers in Men ';
  title4 ' -- with the Female New Subcohort';
 run;
Output 5a:

Original Data
Tab2_Extra: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles in 47 Areas with both Sulfate and Fine Particles

The PHREG Procedure

Data Set: WORK.SULFF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>31345.556</td>
<td>29020.458</td>
<td>2325.098 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>2600.843 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1746.917 with 12 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>1.035267</td>
<td>0.20342</td>
<td>25.90082</td>
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<td>EVPCONLY</td>
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<td>1.298804</td>
<td>0.17204</td>
<td>56.99543</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.00252</td>
<td>80.84229</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.013501</td>
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<td>33.49041</td>
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<td>65.65211</td>
<td>0.0001</td>
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<td>548.57251</td>
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<td>PASSIVE</td>
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<td>0.002002</td>
<td>0.00568</td>
<td>0.12422</td>
<td>0.7245</td>
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<tr>
<td>EDULOW</td>
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<td>0.449239</td>
<td>0.05927</td>
<td>57.45744</td>
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<tr>
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<td>ALC</td>
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<td>-0.006501</td>
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<td>0.5205</td>
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<td>SULFATES</td>
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<td>0.365087</td>
<td>0.13030</td>
<td>7.85014</td>
<td>0.0051</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.816</td>
<td>1.890</td>
<td>4.195</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>3.665</td>
<td>2.616</td>
<td>5.135</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.023</td>
<td>1.018</td>
<td>1.028</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.009</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.026</td>
<td>1.043</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.062</td>
<td>1.057</td>
<td>1.068</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.991</td>
<td>1.013</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.567</td>
<td>1.395</td>
<td>1.760</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.105</td>
<td>0.987</td>
<td>1.236</td>
<td>Occupational exposure</td>
</tr>
</tbody>
</table>

243
BMI  0.930   0.917   0.943  Body Mass Index
ALC  0.994   0.974   1.013  Alcohol Drinking
SULFATES  1.441   1.116   1.860  Sulfate Particles
Tab2_Extra: Adjusted Mortality Risk Ratios (and 95% Confidence
Intervals) by Cardiopulmonary Death for the Sulfate Particles
in 47 Areas with both Sulfate and Fine Particles

The PHREG Procedure

Data Set: WORK.SULFF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>155778.175</td>
<td>154557.785</td>
<td>1220.389 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1311.306 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1272.576 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.598800</td>
<td>0.09876</td>
<td>36.76329</td>
<td>0.0001</td>
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<td>EVPCONLY</td>
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<td>0.249778</td>
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<td>SMKCPD</td>
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<td>ALC</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.820</td>
<td>1.500</td>
<td>2.209</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.284</td>
<td>1.168</td>
<td>1.411</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.002</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.003</td>
<td>0.999</td>
<td>1.007</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>Variable</td>
<td>Estimate 1</td>
<td>Estimate 2</td>
<td>Estimate 3</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.998</td>
<td>1.011</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>BDULOW</td>
<td>1.343</td>
<td>1.278</td>
<td>1.411</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>1.010</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.996</td>
<td>0.991</td>
<td>1.002</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.950</td>
<td>0.973</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.201</td>
<td>1.078</td>
<td>1.338</td>
<td>Sulfate Particles</td>
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</table>
Output 5b:

Modified Data
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>412146.044</td>
<td>408975.491</td>
<td>3170.553 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>3471.612 with 12 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald</td>
<td>3341.331 with 12 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.262756</td>
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<td>0.167046</td>
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<td>0.0001</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.301</td>
<td>1.160</td>
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</tr>
<tr>
<td>EVPONLY</td>
<td>1.248</td>
<td>1.168</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.000</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.011</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>1.330</td>
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<tr>
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<td>1.063</td>
<td>1.028</td>
<td>1.099</td>
<td>Occupational exposure</td>
</tr>
</tbody>
</table>
### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>172682.448</td>
<td>171562.322</td>
<td>1120.126 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1282.316 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1233.616 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.111726</td>
<td>0.08508</td>
<td>1.72436</td>
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<tr>
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<td>0</td>
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</tr>
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<td>0.0001</td>
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<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.010017</td>
<td>0.00122</td>
<td>67.11676</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.002420</td>
<td>0.00318</td>
<td>0.57920</td>
<td>0.4466</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.224241</td>
<td>0.02546</td>
<td>77.58707</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.102231</td>
<td>0.03674</td>
<td>7.74232</td>
<td>0.0054</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>0.001620</td>
<td>0.00243</td>
<td>0.44265</td>
<td>0.5058</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.040487</td>
<td>0.00809</td>
<td>25.04207</td>
<td>0.0001</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.170204</td>
<td>0.05673</td>
<td>9.00244</td>
<td>0.0027</td>
</tr>
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</table>

### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.118</td>
<td>0.946</td>
<td>1.321</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.015</td>
<td>1.011</td>
<td>1.019</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.006</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.010</td>
<td>1.006</td>
<td>1.013</td>
<td>Current years smoke</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles in Men

--- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPP
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>239463.596</td>
<td>237360.825</td>
<td>2102.771 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>2237.819 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>2139.378 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.468904</td>
<td>0.08517</td>
<td>30.30846</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.252506</td>
<td>0.03497</td>
<td>52.13872</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.007941</td>
<td>0.00127</td>
<td>39.37520</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.005588</td>
<td>0.0007850</td>
<td>50.67435</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.006961</td>
<td>0.00168</td>
<td>17.11591</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.013441</td>
<td>0.0007642</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.000823</td>
<td>0.00241</td>
<td>0.11694</td>
<td>0.7324</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.265517</td>
<td>0.02157</td>
<td>151.51833</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.050041</td>
<td>0.01933</td>
<td>6.69881</td>
<td>0.0096</td>
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<td>BMI</td>
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<td>-0.009763</td>
<td>0.00269</td>
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<td>0.0003</td>
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<td>ALC</td>
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<td>-0.010883</td>
<td>0.00383</td>
<td>8.07736</td>
<td>0.0045</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.163628</td>
<td>0.04813</td>
<td>11.55949</td>
<td>0.0007</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.598</td>
<td>1.353</td>
<td>1.889</td>
<td>Current Smoker</td>
</tr>
</tbody>
</table>

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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FP
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>37302.126</td>
<td>34588.620</td>
<td>2713.507 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>3071.615 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>2063.364 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.959785</td>
<td>0.18451</td>
<td>27.05806</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.250382</td>
<td>0.16379</td>
<td>58.27932</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.023391</td>
<td>0.00234</td>
<td>100.24927</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.013918</td>
<td>0.00217</td>
<td>41.12524</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKYR</td>
<td>1</td>
<td>0.034609</td>
<td>0.00383</td>
<td>81.52196</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.058978</td>
<td>0.00327</td>
<td>621.02922</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.004428</td>
<td>0.00522</td>
<td>0.71914</td>
<td>0.3964</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.448474</td>
<td>0.05488</td>
<td>66.78425</td>
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</tr>
<tr>
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<td>0.098079</td>
<td>0.05383</td>
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<td>0.0684</td>
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</tr>
<tr>
<td>ALC</td>
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<td>-0.009376</td>
<td>0.00955</td>
<td>0.94637</td>
<td>0.3261</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.017144</td>
<td>0.12329</td>
<td>0.01934</td>
<td>0.8894</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

Risk

250
Variable | Ratio | Lower | Upper | Label
---|---|---|---|---
CURCIG | 2.611 | 1.819 | 3.749 | Current Smoker
EVPCONLY | 3.492 | 2.533 | 4.813 | Pipe/cigar smoker
SMKCPD | 1.024 | 1.019 | 1.028 | Current cigarettes per day
XSMKCPD | 1.014 | 1.010 | 1.018 | Former cigarettes per day
SMKCYR | 1.035 | 1.027 | 1.043 | Current years smoke
XSMKCYR | 1.061 | 1.056 | 1.066 | Former years smoked
PASSIVE | 1.004 | 0.994 | 1.015 | Passive Smoking
EDULOW | 1.566 | 1.406 | 1.744 | Less than high school education
INDUSEXP | 1.103 | 0.993 | 1.226 | Occupational exposure
BMI | 0.931 | 0.918 | 0.943 | Body Mass Index
ALC | 0.991 | 0.972 | 1.009 | Alcohol Drinking
FINE | 1.017 | 0.799 | 1.295 | Fine Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPP
Dependent Variable: FAIL
Censoring Variable: CENS2
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>12981.086</td>
<td>11965.671</td>
<td>1015.415 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>862.479 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.981010</td>
<td>0.26383</td>
<td>13.82632</td>
<td>0.0002</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.035140</td>
<td>0.00405</td>
<td>75.10857</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.024809</td>
<td>0.00473</td>
<td>27.50520</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.023240</td>
<td>0.00580</td>
<td>16.08058</td>
<td>0.0001</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.046311</td>
<td>0.00431</td>
<td>115.42672</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.005152</td>
<td>0.00905</td>
<td>0.32379</td>
<td>0.5693</td>
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<tr>
<td>EDULOW</td>
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<td>0.361578</td>
<td>0.10514</td>
<td>11.82717</td>
<td>0.0006</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.225641</td>
<td>0.12075</td>
<td>3.49203</td>
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</tr>
<tr>
<td>BMI</td>
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<td>-0.057246</td>
<td>0.01049</td>
<td>29.75303</td>
<td>0.0001</td>
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<tr>
<td>ALC</td>
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<tr>
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<td>-0.122531</td>
<td>0.21128</td>
<td>0.33632</td>
<td>0.5620</td>
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</table>

Analysis of Maximum Likelihood Estimates
Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.667</td>
<td>1.590</td>
<td>4.473</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.036</td>
<td>1.028</td>
<td>1.044</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.025</td>
<td>1.016</td>
<td>1.035</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.024</td>
<td>1.012</td>
<td>1.035</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.047</td>
<td>1.039</td>
<td>1.056</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.005</td>
<td>0.987</td>
<td>1.023</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.436</td>
<td>1.168</td>
<td>1.764</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.253</td>
<td>0.989</td>
<td>1.588</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.944</td>
<td>0.925</td>
<td>0.964</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.980</td>
<td>0.938</td>
<td>1.023</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>0.885</td>
<td>0.585</td>
<td>1.339</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PPF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>24321.041</td>
<td>22584.639</td>
<td>1736.402 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1833.463 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1233.467 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.031942</td>
<td>0.26483</td>
<td>15.18333</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.470972</td>
<td>0.18361</td>
<td>64.18507</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.017690</td>
<td>0.00289</td>
<td>37.39764</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.012433</td>
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</tr>
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<td>0.0001</td>
</tr>
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<td>XSMKCYR</td>
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<td>0.066320</td>
<td>0.00311</td>
<td>455.22974</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.003139</td>
<td>0.00639</td>
<td>0.24098</td>
<td>0.6235</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.450948</td>
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<td>48.05769</td>
<td>0.0001</td>
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<td>INDUSEXP</td>
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<td>0.061316</td>
<td>0.05981</td>
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<td>BMI</td>
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<td>-0.081762</td>
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<td>89.76524</td>
<td>0.0001</td>
</tr>
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<td>ALC</td>
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<td>-0.005083</td>
<td>0.01052</td>
<td>0.23346</td>
<td>0.6290</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.091064</td>
<td>0.15170</td>
<td>0.36033</td>
<td>0.5483</td>
</tr>
</tbody>
</table>

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### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.807</td>
<td>1.670</td>
<td>4.716</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>4.353</td>
<td>3.038</td>
<td>6.239</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.012</td>
<td>1.024</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.013</td>
<td>1.008</td>
<td>1.017</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.043</td>
<td>1.032</td>
<td>1.053</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.069</td>
<td>1.062</td>
<td>1.075</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.003</td>
<td>0.991</td>
<td>1.016</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.570</td>
<td>1.382</td>
<td>1.783</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>0.946</td>
<td>1.195</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.921</td>
<td>0.906</td>
<td>0.937</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.995</td>
<td>0.975</td>
<td>1.016</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.095</td>
<td>0.814</td>
<td>1.475</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>194480.995</td>
<td>192299.578</td>
<td>1551.417 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1672.019 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1623.234 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.544053</td>
<td>0.08867</td>
<td>37.64750</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.222319</td>
<td>0.04586</td>
<td>23.49728</td>
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</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.006097</td>
<td>0.00159</td>
<td>14.71245</td>
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<td>XSMKCPD</td>
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<td>0.005690</td>
<td>0.0009969</td>
<td>32.57854</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.004643</td>
<td>0.00180</td>
<td>6.64480</td>
<td>0.0099</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.011844</td>
<td>0.0008744</td>
<td>183.48717</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.003808</td>
<td>0.00290</td>
<td>1.72804</td>
<td>0.1887</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.307022</td>
<td>0.02245</td>
<td>187.01698</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.064200</td>
<td>0.02462</td>
<td>6.79730</td>
<td>0.0091</td>
</tr>
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<td>BMI</td>
<td>1</td>
<td>0.000175</td>
<td>0.00263</td>
<td>0.00441</td>
<td>0.9470</td>
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</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.723</td>
<td>1.448</td>
<td>2.050</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.249</td>
<td>1.142</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.003</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.005</td>
<td>1.001</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.998</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.359</td>
<td>1.301</td>
<td>1.421</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.066</td>
<td>1.016</td>
<td>1.119</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.000</td>
<td>0.995</td>
<td>1.005</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.963</td>
<td>0.952</td>
<td>0.973</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.316</td>
<td>1.187</td>
<td>1.460</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>72454.763</td>
<td>71790.200</td>
<td>664.563 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>773.874 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>740.520 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.314213</td>
<td>0.13373</td>
<td>5.52064</td>
<td>0.0188</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.016868</td>
<td>0.00299</td>
<td>31.77269</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.007067</td>
<td>0.00269</td>
<td>6.90190</td>
<td>0.0086</td>
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</tr>
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<td>XSMKCYR</td>
<td>1</td>
<td>0.010704</td>
<td>0.00182</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.369</td>
<td>1.053</td>
<td>1.779</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.011</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.007</td>
<td>1.002</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.006</td>
<td>1.001</td>
<td>1.012</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.011</td>
<td>1.007</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.011</td>
<td>1.001</td>
<td>1.021</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.395</td>
<td>1.302</td>
<td>1.495</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.089</td>
<td>0.969</td>
<td>1.225</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.001</td>
<td>0.994</td>
<td>1.008</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.931</td>
<td>0.906</td>
<td>0.957</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.448</td>
<td>1.224</td>
<td>1.713</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPP
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>122026.232</td>
<td>121102.513</td>
<td>923.719 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>967.172 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>937.900 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.640239</td>
<td>0.12303</td>
<td>27.07900</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.214765</td>
<td>0.04754</td>
<td>20.40995</td>
<td>0.0001</td>
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<tr>
<td>Variable</td>
<td>Risk Ratio</td>
<td>Lower</td>
<td>Upper</td>
<td>Label</td>
<td></td>
</tr>
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<td>------------</td>
<td>------------</td>
<td>-------</td>
<td>-------</td>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td>CURCIG</td>
<td>1.897</td>
<td>1.490</td>
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<td>Current Smoker</td>
<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.240</td>
<td>1.129</td>
<td>1.361</td>
<td>Pipe/cigar smoker</td>
<td></td>
</tr>
<tr>
<td>SMKCPRD</td>
<td>1.003</td>
<td>0.999</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
<td></td>
</tr>
<tr>
<td>XSMKCPRD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
<td></td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.004</td>
<td>0.999</td>
<td>1.009</td>
<td>Current years smoke</td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
<td></td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.999</td>
<td>1.008</td>
<td>Passive Smoking</td>
<td></td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.322</td>
<td>1.257</td>
<td>1.411</td>
<td>Less than high school education</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.065</td>
<td>1.010</td>
<td>1.123</td>
<td>Occupational exposure</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>0.999</td>
<td>0.991</td>
<td>1.006</td>
<td>Body Mass Index</td>
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</tr>
<tr>
<td>ALC</td>
<td>0.970</td>
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<td>Alcohol Drinking</td>
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</tr>
<tr>
<td>FINE</td>
<td>1.236</td>
<td>1.084</td>
<td>1.410</td>
<td>Fine Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles Never-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>128702.967</td>
<td>128570.749</td>
<td>132.218 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>131.185 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>131.545 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Parameter Standard Wald Pr >
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Estimate</th>
<th>Error</th>
<th>Chi-Square</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0</td>
<td>0</td>
<td>0.24964</td>
<td>0.6173</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>65.82422</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
<td>0</td>
<td>4.16500</td>
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<tr>
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<td>0</td>
<td>0</td>
<td>20.19234</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
<td>0</td>
<td>11.64593</td>
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<tr>
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<td>0.002357</td>
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<td>0.24964</td>
<td>0.6173</td>
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<td>0.217252</td>
<td>0.02678</td>
<td>65.82422</td>
<td>0.0001</td>
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<td>0.070484</td>
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</tr>
<tr>
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</tr>
<tr>
<td>ALC</td>
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<td>0.01025</td>
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<td>0.0001</td>
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<td>FINE</td>
<td>1</td>
<td>0.215120</td>
<td>0.06304</td>
<td>11.64593</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95\% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
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<td>Fine Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95\% Confidence Intervals) by All Cause of Death for the Fine Particles

Never-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FFF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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</thead>
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<tr>
<td>-2 LOG L</td>
<td>88709.677</td>
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<td>77.527 with 6 DF (p=0.0001)</td>
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<tr>
<td>Score</td>
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<td>72.689 with 6 DF (p=0.0001)</td>
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<td>Wald</td>
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<td>73.746 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Upper</th>
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<td>Current Smoker</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
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<td>Former cigarettes per day</td>
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<td>Current years smoke</td>
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<td>1.000</td>
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<td>1.247</td>
<td>1.073</td>
<td>1.449</td>
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Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles

Never-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable:FAIL
Censoring Variable:CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>35993.290</td>
<td>39912.554</td>
<td>80.736 with 6 DF (p=0.0001)</td>
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</table>
Analysis of Maximum Likelihood Estimates

<table>
<thead>
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<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
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<td>Current Smoker</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
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<tr>
<td>SMKYR</td>
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<td></td>
<td>Current years smoke</td>
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<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
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<td>1.239</td>
<td>0.997</td>
<td>1.541</td>
<td>Fine Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles Never-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

259
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<td>-2 LOG L</td>
<td>2593.402</td>
<td>2574.167</td>
<td>19.236 with 6 DF (p=0.0038)</td>
</tr>
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<td>Score</td>
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<td>18.102 with 6 DF (p=0.0060)</td>
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<tr>
<td>Wald</td>
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<td></td>
<td>18.526 with 6 DF (p=0.0050)</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
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<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tr>
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<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPCD</td>
<td></td>
<td></td>
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<td>Former cigarettes per day</td>
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<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
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<td>0.731</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles Never-smokers in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CEN52
Censoring Value(s): 1
Ties Handling: BRESLOW
Testing Global Null Hypothesis: BETA=0

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<th>Model Chi-Square</th>
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<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>13.552 with 6 DF (p=0.0351)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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</tr>
<tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Lower</th>
<th>Upper</th>
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</tr>
<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
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<tr>
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<td>Current years smoke</td>
</tr>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles Never-smokers in Men -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PDF_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Testing Global Null Hypothesis: BETA=0

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<th>Criterion</th>
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<tr>
<td>-2 LOG L</td>
<td>690.527</td>
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<td>7.705 with 6 DF (p=0.2605)</td>
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<td></td>
<td>7.210 with 6 DF (p=0.3019)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Lower</th>
<th>Upper</th>
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<td>Current Smoker</td>
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<tr>
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<td></td>
<td>Pipe/cigar smoker</td>
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<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
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<tr>
<td>XSMKCPD</td>
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<td></td>
<td></td>
<td>Former cigarettes per day</td>
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<td>SMKCYR</td>
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<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td></td>
<td>Former years smoked</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles Never-smokers -- with the Female New Subcohort

The PHREG Procedure
Data Set: WORK.FPF.N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>61917.801</td>
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<td>123.107 with 6 DF (p=0.0001)</td>
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<td>123.270 with 6 DF (p=0.0001)</td>
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<tr>
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<td></td>
<td></td>
<td>123.318 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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</tr>
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<td>SMKCYR</td>
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<td>XSMKCYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
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<td>Current Smoker</td>
</tr>
<tr>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
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<td>Current cigarettes per day</td>
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<tr>
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<td>Former cigarettes per day</td>
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<tr>
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<td>Current years smoke</td>
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<td>Former years smoked</td>
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Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles Never-smokers in Women

263
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
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<th>Model Chi-Square</th>
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</thead>
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<tr>
<td>-2 LOG L</td>
<td>40047.762</td>
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<td>93.072 with 6 DF (p=0.0001)</td>
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<td>Score</td>
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<tr>
<td>Wald</td>
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<td>88.289 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
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<tr>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPCD</td>
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<td>Former cigarettes per day</td>
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<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>Former years smoked</td>
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<td>1.543</td>
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<td>1.919</td>
<td>Fine Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles Never-smokers in Men with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
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<tr>
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<td>53.034 with 6 DF (p=0.0001)</td>
</tr>
<tr>
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<td>55.731 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>55.498 with 6 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tr>
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<td>FINE</td>
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<td>0.214480</td>
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<td>2.05971</td>
<td>0.1512</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.977</td>
<td>1.023</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.428</td>
<td>1.261</td>
<td>1.617</td>
<td>Less than high school education</td>
</tr>
</tbody>
</table>
INDUSEXP 1.035 0.918 1.167  Occasional exposure
BMI 1.031 1.015 1.047  Body Mass Index
ALC 0.978 0.946 1.010  Alcohol Drinking
FINE 1.239 0.925 1.661  Ever-smokers

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Ever-smokers
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PPF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>256918.906</td>
<td>254822.716</td>
<td>2096.190 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>2101.562 with 12 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald</td>
<td>2036.754 with 12 DF (p=0.0001)</td>
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<td></td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.494837</td>
<td>0.06735</td>
<td>53.98032</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.631429</td>
<td>0.04527</td>
<td>194.58501</td>
<td>0.0001</td>
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<tr>
<td>SMKCYP</td>
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<td>0.009461</td>
<td>0.00105</td>
<td>81.01935</td>
<td>0.0001</td>
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<tr>
<td>XSMKCYP</td>
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<td>0.0007552</td>
<td>133.33964</td>
<td>0.0001</td>
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<tr>
<td>SMKCYR</td>
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<td>90.16036</td>
<td>0.0001</td>
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<td>XSMKCYR</td>
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<td>0.021476</td>
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<td>559.91150</td>
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<td>PASSIVE</td>
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<td>0.000316</td>
<td>0.00210</td>
<td>0.02252</td>
<td>0.8807</td>
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<td>EDUW</td>
<td>1</td>
<td>0.250752</td>
<td>0.02086</td>
<td>144.49284</td>
<td>0.0001</td>
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<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.623666</td>
<td>0.01974</td>
<td>9.98141</td>
<td>0.0016</td>
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<tr>
<td>BMI</td>
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<td>0.00238</td>
<td>31.46715</td>
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<tr>
<td>ALC</td>
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<td>-0.011934</td>
<td>0.00367</td>
<td>10.59285</td>
<td>0.0011</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.139623</td>
<td>0.04520</td>
<td>9.54246</td>
<td>0.0020</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.640</td>
<td>1.437</td>
<td>1.872</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.880</td>
<td>1.721</td>
<td>2.055</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCYP</td>
<td>1.010</td>
<td>1.007</td>
<td>1.012</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCYP</td>
<td>1.009</td>
<td>1.007</td>
<td>1.010</td>
<td>Former cigarettes per day</td>
</tr>
</tbody>
</table>
SMKCYR  1.013  1.010  1.015  Current years smoke
XSMKCYR  1.022  1.020  1.024  Former years smoked
PASSIVE  1.000  0.996  1.004  Passive Smoking
EDULOW  1.285  1.234  1.339  Less than high school education
INDUSEXP  1.064  1.024  1.106  Occupational exposure
BMI  0.987  0.982  0.991  Body Mass Index
ALC  0.988  0.981  0.995  Alcohol Drinking
FINE  1.150  1.052  1.256  Fine Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles Ever-smokers in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>71296.129</td>
<td>70772.665</td>
<td>523.465 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>520.441 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>504.842 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.309334</td>
<td>0.10170</td>
<td>9.25095</td>
<td>0.0024</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.013493</td>
<td>0.00190</td>
<td>50.27445</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.010621</td>
<td>0.00174</td>
<td>37.06473</td>
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</tr>
<tr>
<td>SMKCYR</td>
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<td>0.00208</td>
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<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.00180</td>
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<td>0.0001</td>
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<tr>
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<td>0.8367</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.309665</td>
<td>0.04188</td>
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<td>0.0001</td>
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<tr>
<td>INDUSEXP</td>
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<td>ALC</td>
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<td>0.00914</td>
<td>7.95066</td>
<td>0.0048</td>
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<tr>
<td>FINE</td>
<td>1</td>
<td>0.110259</td>
<td>0.08447</td>
<td>1.70392</td>
<td>0.1918</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
</table>

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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence
Intervals) by All Cause of Death for the Fine Particles
Ever-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>185622.776</td>
<td>184009.409</td>
<td>1613.367 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1629.988 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1578.344 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.668174</td>
<td>0.0939</td>
<td>51.08457</td>
</tr>
<tr>
<td>EVPONLY</td>
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<tr>
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</tr>
<tr>
<td>XSMKCPD</td>
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<tr>
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<tr>
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</tr>
<tr>
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<tr>
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<td>0.05349</td>
<td>7.87045</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits
<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.951</td>
<td>1.624</td>
<td>2.343</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.005</td>
<td>1.817</td>
<td>2.211</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.007</td>
<td>1.005</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.007</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.008</td>
<td>1.015</td>
<td>Current years smoke</td>
</tr>
<tr>
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<td>1.021</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.995</td>
<td>1.005</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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</tr>
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<td>1.061</td>
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</tr>
<tr>
<td>BMI</td>
<td>0.981</td>
<td>0.975</td>
<td>0.987</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.984</td>
<td>0.999</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.162</td>
<td>1.046</td>
<td>1.290</td>
<td>Fine Particles</td>
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</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles Ever-smokers
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PPF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>32587.192</td>
<td>31012.422</td>
<td>1574.770 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>1540.064 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1263.231 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>1.258948</td>
<td>0.21214</td>
<td>35.21746</td>
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</tr>
<tr>
<td>EVPCONLY</td>
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<td>1.816968</td>
<td>0.19823</td>
<td>84.01438</td>
<td>0.0001</td>
</tr>
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<td>0.016606</td>
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<td>0.0001</td>
</tr>
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</tr>
<tr>
<td>PASSIVE</td>
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<td>0.003820</td>
<td>0.00529</td>
<td>0.52064</td>
<td>0.4706</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.429401</td>
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<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.081158</td>
<td>0.05536</td>
<td>2.14932</td>
<td>0.1426</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.071839</td>
<td>0.00705</td>
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<td>0.0001</td>
</tr>
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<td>-0.007523</td>
<td>0.00954</td>
<td>0.62229</td>
<td>0.4302</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.038429</td>
<td>0.12814</td>
<td>0.08995</td>
<td>0.7642</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

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Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.522</td>
<td>2.324</td>
<td>5.337</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>6.153</td>
<td>4.172</td>
<td>9.075</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.022</td>
<td>1.018</td>
<td>1.027</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.017</td>
<td>1.012</td>
<td>1.021</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.042</td>
<td>1.034</td>
<td>1.051</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.075</td>
<td>1.068</td>
<td>1.082</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.993</td>
<td>1.014</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.536</td>
<td>1.373</td>
<td>1.719</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.085</td>
<td>0.973</td>
<td>1.209</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.931</td>
<td>0.918</td>
<td>0.944</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.993</td>
<td>0.974</td>
<td>1.011</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.039</td>
<td>0.808</td>
<td>1.336</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles Ever-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>9918.593</td>
<td>9498.501</td>
<td>420.092 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>407.159 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>331.411 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.428233</td>
<td>0.34146</td>
<td>17.49552</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.033678</td>
<td>0.00411</td>
<td>67.13357</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.028059</td>
<td>0.00493</td>
<td>32.44686</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.030121</td>
<td>0.00645</td>
<td>21.79144</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.063670</td>
<td>0.00690</td>
<td>85.03993</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.006551</td>
<td>0.00932</td>
<td>0.49455</td>
<td>0.4819</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.381121</td>
<td>0.11603</td>
<td>10.78925</td>
<td>0.0010</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.206106</td>
<td>0.13032</td>
<td>2.50139</td>
<td>0.1137</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.052503</td>
<td>0.01148</td>
<td>20.91423</td>
<td>0.0001</td>
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<tr>
<td>ALC</td>
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<td>-0.017844</td>
<td>0.02264</td>
<td>0.62123</td>
<td>0.4306</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>-0.124126</td>
<td>0.22961</td>
<td>0.29224</td>
<td>0.5888</td>
</tr>
</tbody>
</table>

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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>4.171</td>
<td>2.136</td>
<td>8.146</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.034</td>
<td>1.026</td>
<td>1.043</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.028</td>
<td>1.019</td>
<td>1.038</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.031</td>
<td>1.018</td>
<td>1.044</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.066</td>
<td>1.051</td>
<td>1.080</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.007</td>
<td>0.988</td>
<td>1.025</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.464</td>
<td>1.166</td>
<td>1.838</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.229</td>
<td>0.952</td>
<td>1.586</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.949</td>
<td>0.928</td>
<td>0.970</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.982</td>
<td>0.940</td>
<td>1.027</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>0.883</td>
<td>0.563</td>
<td>1.385</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles Ever-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>22668.599</td>
<td>21485.578</td>
<td>1183.021 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1181.270 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>962.011 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.169206</td>
<td>0.28197</td>
<td>17.19410</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.829596</td>
<td>0.21471</td>
<td>72.61299</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.017155</td>
<td>0.00290</td>
<td>34.92798</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
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<td>0.00260</td>
<td>29.51879</td>
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<tr>
<td>SMKCYR</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.00384</td>
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</tr>
<tr>
<td>PASSIVE</td>
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<td>0.002447</td>
<td>0.00643</td>
<td>0.14481</td>
<td>0.7035</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.431846</td>
<td>0.06609</td>
<td>42.69526</td>
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<td>INDUSEXP</td>
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<td>0.051409</td>
<td>0.06084</td>
<td>0.71399</td>
<td>0.3981</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.219</td>
<td>1.853</td>
<td>5.595</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVFCONLY</td>
<td>6.231</td>
<td>4.091</td>
<td>9.492</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.012</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.014</td>
<td>1.009</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.048</td>
<td>1.037</td>
<td>1.059</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.077</td>
<td>1.069</td>
<td>1.085</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.990</td>
<td>1.015</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.540</td>
<td>1.353</td>
<td>1.753</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXPF</td>
<td>1.053</td>
<td>0.934</td>
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</tr>
<tr>
<td>BMI</td>
<td>0.921</td>
<td>0.905</td>
<td>0.937</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.997</td>
<td>0.976</td>
<td>1.017</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.121</td>
<td>0.829</td>
<td>1.517</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles Ever-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>119951.825</td>
<td>118915.695</td>
<td>1036.130 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>1027.128 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1001.154 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.752139</td>
<td>0.10147</td>
<td>54.93938</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVFCONLY</td>
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<td>0.678678</td>
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<td>113.33870</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.004961</td>
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<td>9.38810</td>
<td>0.0022</td>
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<tr>
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<td>0.009578</td>
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<td>24.30342</td>
<td>0.0001</td>
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</tbody>
</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.122</td>
<td>1.739</td>
<td>2.588</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.971</td>
<td>1.740</td>
<td>2.234</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.005</td>
<td>1.002</td>
<td>1.008</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.006</td>
<td>1.013</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.019</td>
<td>1.024</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.994</td>
<td>1.007</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.337</td>
<td>1.262</td>
<td>1.415</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.081</td>
<td>1.022</td>
<td>1.143</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.992</td>
<td>0.985</td>
<td>0.999</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.967</td>
<td>0.956</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.251</td>
<td>1.100</td>
<td>1.423</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Risk for the Fine Particles
Ever-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPP_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>27130.714</td>
<td>26813.788</td>
<td>316.926 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>316.660 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>303.207 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.499498</td>
<td>0.16481</td>
<td>9.18597</td>
<td>0.0024</td>
</tr>
</tbody>
</table>
EVPONLY  0         0          .        19.07343   .        .
SMKCPD   1         0.013437  0.00308  7.66026    0.0056
XSMKCPD  1         0.007977  0.00288  5.66924    0.0002
SMKCYR   1         0.011584  0.00313  13.66924  0.0001
XSMKCYR  1         0.020741  0.00277  56.15643  0.0001
PASSIVE  1         0.005409  0.00637  0.72050   0.3960
EDULOW   1         0.432189  0.06118  49.89855  0.0001
INDUSEXP 1         0.129123  0.08414  2.35498   0.1249
BMI      1        -0.002361  0.00609  0.15006   0.6985
ALC      1        -0.047859  0.01581  9.16881   0.0025
FINE     1        0.276121  0.13466  4.20472   0.0403

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.648</td>
<td>1.193</td>
<td>2.276</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.014</td>
<td>1.007</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.002</td>
<td>1.002</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.005</td>
<td>1.018</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.015</td>
<td>1.027</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.005</td>
<td>0.993</td>
<td>1.018</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.541</td>
<td>1.367</td>
<td>1.737</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.138</td>
<td>0.965</td>
<td>1.342</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.998</td>
<td>0.986</td>
<td>1.010</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.953</td>
<td>0.924</td>
<td>0.983</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.318</td>
<td>1.012</td>
<td>1.716</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles Ever-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>92821.112</td>
<td>92076.126</td>
<td>744.986 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>743.633 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>727.445 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.871160</td>
<td>0.13433</td>
<td>42.05751</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.682745</td>
<td>0.06898</td>
<td>97.97366</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.001981</td>
<td>0.00193</td>
<td>1.05096</td>
<td>0.3053</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.008709</td>
<td>0.00119</td>
<td>54.29910</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.008437</td>
<td>0.00254</td>
<td>11.00555</td>
<td>0.0009</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.022095</td>
<td>0.00144</td>
<td>236.22721</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>-0.001199</td>
<td>0.00368</td>
<td>0.10626</td>
<td>0.7444</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.250221</td>
<td>0.03314</td>
<td>56.99507</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.075668</td>
<td>0.03016</td>
<td>6.29559</td>
<td>0.0121</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.011388</td>
<td>0.00424</td>
<td>7.20597</td>
<td>0.0073</td>
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<tr>
<td>ALC</td>
<td>1</td>
<td>-0.030903</td>
<td>0.00638</td>
<td>23.44960</td>
<td>0.0001</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.206412</td>
<td>0.07525</td>
<td>7.52360</td>
<td>0.0061</td>
</tr>
</tbody>
</table>

**Analysis of Maximum Likelihood Estimates**

**Conditional Risk Ratio and 95% Confidence Limits**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.390</td>
<td>1.837</td>
<td>3.109</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.979</td>
<td>1.729</td>
<td>2.266</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.006</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.003</td>
<td>1.014</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.019</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.992</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.284</td>
<td>1.204</td>
<td>1.371</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.079</td>
<td>1.017</td>
<td>1.144</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.989</td>
<td>0.980</td>
<td>0.997</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.958</td>
<td>0.982</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.229</td>
<td>1.061</td>
<td>1.425</td>
<td>Fine Particles</td>
</tr>
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</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>395272.837</td>
<td>392324.662</td>
<td>2948.176 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3155.784 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3067.965 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.615399</td>
<td>0.06299</td>
<td>95.44964</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.248016</td>
<td>0.03262</td>
<td>57.81483</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.007740</td>
<td>0.00114</td>
<td>46.18555</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.005026</td>
<td>0.0007295</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.00129</td>
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</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.012938</td>
<td>0.0006336</td>
<td>416.97564</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.002111</td>
<td>0.00210</td>
<td>1.01044</td>
<td>0.3148</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.298705</td>
<td>0.01610</td>
<td>344.28708</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.034626</td>
<td>0.01789</td>
<td>3.74734</td>
<td>0.0529</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.003305</td>
<td>0.00189</td>
<td>3.05878</td>
<td>0.0803</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.043238</td>
<td>0.00417</td>
<td>107.27348</td>
<td>0.0001</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.240555</td>
<td>0.04074</td>
<td>34.86216</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower Limit</th>
<th>Upper Limit</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.850</td>
<td>1.635</td>
<td>2.094</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.281</td>
<td>1.202</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.004</td>
<td>1.006</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.002</td>
<td>1.000</td>
<td>1.005</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.013</td>
<td>1.012</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.348</td>
<td>1.306</td>
<td>1.391</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.035</td>
<td>1.000</td>
<td>1.072</td>
<td>Occupational exposure</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>149232.637</td>
<td>147970.703</td>
<td>1261.934 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1466.665 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.466090</td>
<td>0.09308</td>
<td>25.07584</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.018243</td>
<td>0.00208</td>
<td>77.10431</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.008683</td>
<td>0.00195</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKYR</td>
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<td>0.002452</td>
<td>0.00200</td>
<td>1.50096</td>
<td>0.2205</td>
</tr>
<tr>
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<td>0.010306</td>
<td>0.00135</td>
<td>58.64122</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.005767</td>
<td>0.00374</td>
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<tr>
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</tr>
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<td>0.04320</td>
<td>1.05356</td>
<td>0.3047</td>
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<tr>
<td>BMI</td>
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<td>0.004162</td>
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<td>0.1147</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.343328</td>
<td>0.06572</td>
<td>27.28877</td>
<td>0.0001</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.594</td>
<td>1.328</td>
<td>1.913</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.014</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.005</td>
<td>1.013</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKYR</td>
<td>1.002</td>
<td>0.999</td>
<td>1.006</td>
<td>Current years smoke</td>
</tr>
</tbody>
</table>
### Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles in Men

-- with the Female New Subcohort

**The PHREG Procedure**

**Data Set:** WORK.SULF  
**Dependent Variable:** FAIL  
**Censoring Variable:** CENCOMA  
**Censoring Value(s):** 1  
**Ties Handling:** BRESLOW

#### Testing Global Null Hypothesis: \( \beta = 0 \)

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>246040.200</td>
<td>244287.282</td>
<td>1752.918 with 12 DF (( p=0.0001 ))</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1820.001 with 12 DF (( p=0.0001 ))</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1767.140 with 12 DF (( p=0.0001 ))</td>
</tr>
</tbody>
</table>

#### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.656415</td>
<td>0.08853</td>
<td>54.97581</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVFCONLY</td>
<td>1</td>
<td>0.243627</td>
<td>0.03397</td>
<td>51.42714</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.004046</td>
<td>0.00139</td>
<td>8.52997</td>
<td>0.0035</td>
</tr>
<tr>
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<td>0.004046</td>
<td>0.0007987</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>2.76823</td>
<td>0.0962</td>
</tr>
<tr>
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<td>0.013811</td>
<td>0.0007456</td>
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<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.000851</td>
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<td>0.11194</td>
<td>0.7379</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.274680</td>
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<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.036378</td>
<td>0.01968</td>
<td>3.41596</td>
<td>0.0646</td>
</tr>
<tr>
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#### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Upper</th>
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278
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
</tr>
<tr>
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<td>Current years smoke</td>
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<td>XSMKCYR</td>
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<td>.</td>
<td>Former years smoked</td>
</tr>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles
Never-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>82417.255</td>
<td>82259.147</td>
<td>158.108 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>148.597 with 6 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>150.893 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
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<th>Variable</th>
<th>DF</th>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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Analysis of Maximum Likelihood Estimates

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Conditional Risk Ratio and 95% Confidence Limits

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<td>Current Smoker</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td></td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td></td>
<td>Former cigarettes per day</td>
</tr>
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<td>SMKCYR</td>
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<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td></td>
<td></td>
<td>Former years smoked</td>
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<td>Sulfate Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles Never-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
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</thead>
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<td>42576.392</td>
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<td>88.642 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>91.745 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

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<th>Variable</th>
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<th>Parameter Estimate</th>
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<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0</td>
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<tr>
<td>SMKCPD</td>
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<td>0</td>
<td></td>
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</tr>
<tr>
<td>XSMKCPD</td>
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<td>0</td>
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<tr>
<td>SMKCYR</td>
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<td></td>
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<td>XSMKCYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<td>Pipe/cigar smoker</td>
</tr>
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<td>Current cigarettes per day</td>
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<td>Former cigarettes per day</td>
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<td>Former years smoked</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary + Asthma Death for the Sulfate Particles Ever-smokers
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>246622.457</td>
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</tr>
<tr>
<td>Score</td>
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</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1889.071 with 12 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

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<th>Variable</th>
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<th>Lower</th>
<th>Upper</th>
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<td>1.843</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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</tr>
<tr>
<td>SMKCYR</td>
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<td>1.005</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.023</td>
<td>1.021</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.998</td>
<td>0.994</td>
<td>1.003</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.321</td>
<td>1.269</td>
<td>1.376</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.062</td>
<td>1.020</td>
<td>1.105</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.995</td>
<td>0.991</td>
<td>1.001</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.953</td>
<td>0.970</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.221</td>
<td>1.104</td>
<td>1.352</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Sulfate Particles Ever-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.SULF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>56662.084</td>
<td>56040.785</td>
<td>621.299 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>618.879 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>591.902 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.698071</td>
<td>0.11619</td>
<td>36.09381</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.015871</td>
<td>0.00213</td>
<td>55.65403</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.010287</td>
<td>0.00206</td>
<td>24.84456</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.007085</td>
<td>0.00220</td>
<td>10.35117</td>
<td>0.0013</td>
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</table>

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### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.010</td>
<td>1.601</td>
<td>2.524</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVDCONLY</td>
<td>1.016</td>
<td>1.012</td>
<td>1.020</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMRCPD</td>
<td>1.010</td>
<td>1.006</td>
<td>1.014</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>SMRCERP</td>
<td>1.007</td>
<td>1.003</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKYR</td>
<td>1.021</td>
<td>1.017</td>
<td>1.025</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>SMKLER</td>
<td>0.999</td>
<td>0.999</td>
<td>1.008</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>EDUCN</td>
<td>1.515</td>
<td>1.392</td>
<td>1.649</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.097</td>
<td>0.974</td>
<td>1.236</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.999</td>
<td>0.999</td>
<td>1.007</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.948</td>
<td>0.926</td>
<td>0.971</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.426</td>
<td>1.157</td>
<td>1.758</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Sulfate Particles

-- with the Female New Subcohort

### The PHREG Procedure

**Data Set: WORK.SULF_E**

Dependent Variable: FAIL

Censoring Variable: CENCOMA

Censoring Value(s): 1

Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>189960.373</td>
<td>188567.298</td>
<td>1393.075 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1382.815 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1355.204 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.872353</td>
<td>0.09664</td>
<td>81.48206</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.393</td>
<td>1.980</td>
<td>2.891</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.007</td>
<td>1.820</td>
<td>2.144</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.003</td>
<td>1.001</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.006</td>
<td>1.009</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.004</td>
<td>1.011</td>
<td>Former years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.023</td>
<td>1.021</td>
<td>1.026</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.993</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.267</td>
<td>1.209</td>
<td>1.327</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>1.018</td>
<td>1.109</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.994</td>
<td>0.988</td>
<td>1.000</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.965</td>
<td>0.956</td>
<td>0.974</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.161</td>
<td>1.034</td>
<td>1.304</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+ Asthma Death for the Fine Particles -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>195142.008</td>
<td>193589.714</td>
<td>1552.294 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1671.853 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1623.452 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Parameter | Standard | Wald | Pr >
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Estimate</th>
<th>Error</th>
<th>Chi-Square</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.542040</td>
<td>0.08853</td>
<td>37.48526</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.220999</td>
<td>0.04585</td>
<td>23.23238</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.006042</td>
<td>0.00159</td>
<td>14.46397</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
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<tr>
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<td>0.004660</td>
<td>0.00180</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.011896</td>
<td>0.0008727</td>
<td>185.82326</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.003921</td>
<td>0.00289</td>
<td>1.83800</td>
<td>0.1752</td>
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<tr>
<td>EDULOW</td>
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<td>0.307184</td>
<td>0.02242</td>
<td>187.72994</td>
<td>0.0001</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.064418</td>
<td>0.02459</td>
<td>6.86229</td>
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</tr>
<tr>
<td>BMI</td>
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<td>0.000121</td>
<td>0.00262</td>
<td>0.00214</td>
<td>0.9631</td>
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<tr>
<td>ALC</td>
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<td>0.00551</td>
<td>48.27478</td>
<td>0.0001</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.266587</td>
<td>0.05273</td>
<td>25.56044</td>
<td>0.0001</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.720</td>
<td>1.446</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.247</td>
<td>1.140</td>
<td>1.365</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.003</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.005</td>
<td>1.001</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.999</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.360</td>
<td>1.301</td>
<td>1.421</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.067</td>
<td>1.016</td>
<td>1.119</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.000</td>
<td>0.995</td>
<td>1.005</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.962</td>
<td>0.952</td>
<td>0.973</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.306</td>
<td>1.177</td>
<td>1.448</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>72923.155</td>
<td>72260.840</td>
<td>662.315 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>769.188 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>736.900 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

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### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.311665</td>
<td>0.13348</td>
<td>5.45201</td>
<td>0.0195</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.016591</td>
<td>0.00299</td>
<td>30.79241</td>
<td>0.0001</td>
</tr>
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</tr>
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<td>0.010874</td>
<td>0.00181</td>
<td>36.21192</td>
<td>0.0001</td>
</tr>
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<td>PASSIVE</td>
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<td>0.011572</td>
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<td>5.05366</td>
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<td>0.09279</td>
<td>0.7607</td>
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<td>-0.071736</td>
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<td>0.0001</td>
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<tr>
<td>FINE</td>
<td>1</td>
<td>0.359862</td>
<td>0.08549</td>
<td>17.71993</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.366</td>
<td>1.051</td>
<td>1.774</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.011</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSSMKCPD</td>
<td>1.007</td>
<td>1.002</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.006</td>
<td>1.001</td>
<td>1.012</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSSMKYR</td>
<td>1.011</td>
<td>1.007</td>
<td>1.015</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.012</td>
<td>1.001</td>
<td>1.022</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.393</td>
<td>1.300</td>
<td>1.493</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.091</td>
<td>0.971</td>
<td>1.226</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.001</td>
<td>0.994</td>
<td>1.008</td>
<td>Body Mass Index</td>
</tr>
<tr>
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<td>1.433</td>
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<td>Fine Particles</td>
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Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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</thead>
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<td>-2 LOG L</td>
<td>122218.853</td>
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<td>926.358 with 12 DF (p=0.0001)</td>
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287
### Analysis of Maximum Likelihood Estimates

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<th>Variable</th>
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<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
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<td>Pipe/cigar smoker</td>
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<tr>
<td>SMKCPD</td>
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<td>0.999</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
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<td>1.003</td>
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</tr>
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<td>0.999</td>
<td>1.008</td>
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</tr>
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<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.994</td>
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<td>Passive Smoking</td>
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<td>1.412</td>
<td>Less than high school education</td>
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<td>1.010</td>
<td>1.123</td>
<td>Occupational exposure</td>
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<td>0.991</td>
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<td>Body Mass Index</td>
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<td>1.228</td>
<td>1.077</td>
<td>1.400</td>
<td>Fine Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary + Asthma Death for the Fine Particles Never-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>62160.712</td>
<td>62037.082</td>
<td>123.630 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>123.693 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>123.766 with 6 DF (p=0.0001)</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td>0.00704</td>
<td>3.21045</td>
<td>0.0732</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0.00704</td>
<td>3.21045</td>
<td>0.0732</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>0</td>
<td>0</td>
<td>0.00704</td>
<td>3.21045</td>
<td>0.0732</td>
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<tr>
<td>XSMKCPD</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td></td>
<td></td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
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<td>XSMKCYR</td>
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<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>1.412</td>
<td>1.186</td>
<td>1.681</td>
<td>Fine Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles
Never-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW
Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>40258.360</td>
<td>40164.651</td>
<td>93.710 with 6 DF (p=0.0001)</td>
</tr>
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<td>Score</td>
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<td>86.896 with 6 DF (p=0.0001)</td>
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<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>88.735 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td></td>
<td></td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>Current years smoke</td>
</tr>
<tr>
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<td>Former years smoked</td>
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<td>1.522</td>
<td>1.224</td>
<td>1.892</td>
<td>Fine Particles</td>
</tr>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles

Never-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMA

290
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>With Covariates (21848.999)</th>
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<tbody>
<tr>
<td>-2 LOG L</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Wald</td>
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<td></td>
<td></td>
</tr>
</tbody>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>SMKCYR</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
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<td></td>
</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td></td>
<td></td>
<td></td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.977</td>
<td>1.023</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.432</td>
<td>1.265</td>
<td>1.621</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.037</td>
<td>0.919</td>
<td>1.169</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.031</td>
<td>1.015</td>
<td>1.047</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.977</td>
<td>0.946</td>
<td>1.010</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.230</td>
<td>0.918</td>
<td>1.648</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Asthma Death for the Fine Particles Ever-smokers
--- with the Female New Subcohort

The PHREG Procedure
Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>120322.978</td>
<td>119290.058</td>
<td>1032.920 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td>1023.711</td>
<td>12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td>998.140</td>
<td>12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.745877</td>
<td>0.10128</td>
<td>54.23190</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.673802</td>
<td>0.06366</td>
<td>112.03228</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.004923</td>
<td>0.00162</td>
<td>9.25223</td>
<td>0.0024</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.008743</td>
<td>0.00107</td>
<td>66.19824</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.009607</td>
<td>0.00194</td>
<td>24.51039</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.021650</td>
<td>0.00127</td>
<td>291.65191</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.000511</td>
<td>0.00318</td>
<td>0.02563</td>
<td>0.8723</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.290102</td>
<td>0.02909</td>
<td>99.48374</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.076725</td>
<td>0.02838</td>
<td>7.30907</td>
<td>0.0069</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.008149</td>
<td>0.00348</td>
<td>5.48515</td>
<td>0.0192</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.034075</td>
<td>0.00591</td>
<td>33.20618</td>
<td>0.0001</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.217831</td>
<td>0.06558</td>
<td>11.03408</td>
<td>0.0009</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.108</td>
<td>1.729</td>
<td>2.571</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.962</td>
<td>1.732</td>
<td>2.222</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.005</td>
<td>1.002</td>
<td>1.008</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.010</td>
<td>1.006</td>
<td>1.014</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.019</td>
<td>1.024</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.994</td>
<td>1.007</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.337</td>
<td>1.263</td>
<td>1.415</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.080</td>
<td>1.021</td>
<td>1.142</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.992</td>
<td>0.985</td>
<td>0.999</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.966</td>
<td>0.955</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.243</td>
<td>1.093</td>
<td>1.414</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary-Asthma Death for the Fine Particles Ever-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FFP_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>27353.226</td>
<td>27041.873</td>
<td>311.353 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>310.861 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>298.140 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.484170</td>
<td>0.16414</td>
<td>8.70072</td>
<td>0.0032</td>
</tr>
<tr>
<td>EVPCONY</td>
<td>0</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.013191</td>
<td>0.00307</td>
<td>18.42070</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.007798</td>
<td>0.00287</td>
<td>7.39094</td>
<td>0.0066</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.011578</td>
<td>0.00313</td>
<td>13.69922</td>
<td>0.0002</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.020645</td>
<td>0.00275</td>
<td>56.32508</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.006110</td>
<td>0.00634</td>
<td>9.2733</td>
<td>0.0002</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.429017</td>
<td>0.06106</td>
<td>49.36957</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.125739</td>
<td>0.08387</td>
<td>2.24765</td>
<td>0.1338</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.002498</td>
<td>0.00607</td>
<td>0.16928</td>
<td>0.6808</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.048093</td>
<td>0.01577</td>
<td>9.30171</td>
<td>0.0023</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.271401</td>
<td>0.13414</td>
<td>4.09342</td>
<td>0.0431</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.623</td>
<td>1.176</td>
<td>2.239</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.013</td>
<td>1.007</td>
<td>1.019</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.002</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.005</td>
<td>1.018</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.015</td>
<td>1.026</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.006</td>
<td>0.994</td>
<td>1.019</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.536</td>
<td>1.363</td>
<td>1.731</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.134</td>
<td>0.962</td>
<td>1.337</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.998</td>
<td>0.986</td>
<td>1.009</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.953</td>
<td>0.924</td>
<td>0.983</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.312</td>
<td>1.009</td>
<td>1.706</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary+Pneumo A Death for the Fine Particles

Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMA
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>92969.752</td>
<td>92223.035</td>
<td>746.717 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>745.286 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>729.098 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.873643</td>
<td>0.13420</td>
<td>42.38304</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.681646</td>
<td>0.06893</td>
<td>97.79289</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.001962</td>
<td>0.00193</td>
<td>1.03210</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.008736</td>
<td>0.00118</td>
<td>54.78146</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.008407</td>
<td>0.00254</td>
<td>10.94650</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1</td>
<td>0.022108</td>
<td>0.00144</td>
<td>237.01052</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>-0.001399</td>
<td>0.00368</td>
<td>0.14481</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.250945</td>
<td>0.03311</td>
<td>57.44047</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.074954</td>
<td>0.03014</td>
<td>6.18621</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.011427</td>
<td>0.00424</td>
<td>7.26689</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.031093</td>
<td>0.00638</td>
<td>23.74016</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.199497</td>
<td>0.07519</td>
<td>7.03979</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.396</td>
<td>1.842</td>
<td>3.116</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.977</td>
<td>1.727</td>
<td>2.263</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.006</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.003</td>
<td>1.013</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.019</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.991</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.285</td>
<td>1.204</td>
<td>1.371</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.078</td>
<td>1.016</td>
<td>1.143</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.989</td>
<td>0.980</td>
<td>0.997</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.969</td>
<td>0.957</td>
<td>0.982</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.221</td>
<td>1.054</td>
<td>1.415</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>
Program #6
libname acs '/home/yuanli/acss/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
               0 = 'Dead'
  ;
  value sex 1 = 'Male'
              2 = 'Female'
  ;
  value race 1 = 'White'
               2 = 'Black'
               3 = 'Other'
  ;

filename rawdata '/home/fmo/rawdata.cport';

proc cimport data=rawtest infile=rawdata;

data raw;
  set rawtest;
  keep id st name meansulf;
  proc sort;by st name;

data clmt_raw;
  merge raw acs.climate;
  by st name;
  proc sort;by id;

filename derdata '/home/fmo/derdata.cport';

proc cimport data=dertest infile=derdata;

data der;
  set dertest;
  proc sort;by id;

data c_sulf;
  merge clmt_raw der;
  by id;
if flagdel = 0 and sulfdel = 0;

sulfates = meansulf/19.9;

proc phreg data=c_sulf nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                        edulow indusexp bmi alc dcold dhot
sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education'
                age_int = 'Age at Interview'
                passive = 'Passive Smoking'
                bmi = 'Body Mass Index'
                alc = 'Alcohol Drinking'
                dcold = 'Mean Temperature less than 50 F'
                dhot = 'Mean Temperature greater than 60 F'
                sulfates = 'Sulfate Particles';

where west in (0,1);

title1 'Climate_Extra: Adjusted Mortality Risk Ratios (and
         95% Confidence)';
  title2 'Intervals) by Lung Cancer Related Death for the
         Sulfate Particles';

proc phreg data=c_sulf nosummary;
  model fail*cencombi(1) = curcig evpconly smkcpd xsmkcpd
                          smkcyr xsmkcyr passive
                        edulow indusexp bmi alc dcold dhot
sulfates / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
                smkcpd = 'Current cigarettes per day'
                smkcyr = 'Current years smoke'
                xsmkcpd = 'Former cigarettes per day'
                xsmkcyr = 'Former years smoked'
                evpconly = 'Pipe/cigar smoker'
                indusexp = 'Occupational exposure'
                edulow = 'Less than high school education'
                age_int = 'Age at Interview'
                passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
dcold = 'Mean Temperature less than 50 F'
dhot = 'Mean Temperature greater than 60 F'
sulfates = 'Sulfate Particles';
where west in (0,1);

title1 'Climate_Extra: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Sulfate Particles';
run;

data c_fpf;
  merge clmt_raw der;
  by id;

  if flagdel = 0 and fpfdel = 0;

  fine = fpf/24.5;

proc phreg data=c_fpf nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
    edulow indusexp bmi alc dcold dhot
fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
dcold = 'Mean Temperature less than 50 F'
dhot = 'Mean Temperature greater than 60 F'
fine = 'Fine Particles';
where west in (0,1);

title1 'Climate_Extra: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles';

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proc phreg data=c_fpfr nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd
                    smkcyr xsmkcyr passive edulow indusexp bmi alc dcold dhot
       fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
                 smkcpd = 'Current cigarettes per day'
                 smkcyr = 'Current years smoke'
                 xsmkcpd = 'Former cigarettes per day'
                 xsmkcyr = 'Former years smoked'
                 evpconly = 'Pipe/cigar smoker'
                 indusexp = 'Occupational exposure'
                 edulow = 'Less than high school education'
                 age_int = 'Age at Interview'
                 passive = 'Passive Smoking'
                 bmi    = 'Body Mass Index'
                 alc    = 'Alcohol Drinking'
                 dcold  = 'Mean Temperature less than 50 F'
                 dhot   = 'Mean Temperature greater than 60 F'
                 fine   = 'Fine Particles';
   where west in (0, 1);

   title1 'ClimateExtra: Adjusted Mortality Risk Ratios (and
                    95% Confidence');
   title2 'Intervals) by Cardiopulmonary Death for the Fine
                    Particles';

run;
/*
 * ACS Sensitivity Phase:
 * New derdata with --
 * 1. Female Deaths to 89;
 * 2. Female Former Smokers
 * ACS Study paper (1995)
 * Table 2 or 3 for Fine
 * Particles at 24.4
 */

libname acs '/home/yuanli/acs/';

options nocenter ps=64 ls=80 obs=max;

proc format;
  value dead 1 = 'Alive'
               0 = 'Dead'
      ;
  value sex 1 = 'Male'
              2 = 'Female'
      ;
  value race 1 = 'White'
             2 = 'Black'
             3 = 'Other'
      ;
  value ind 0 = 'No.'
            1 = 'Yes'
      ;

data fpf; set acs.dern;

  if flagd = 0 and fpfd = 0 ;

  fine = fpf/24.4;

proc phreg data=fpf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                        xsmkcyr passive
                      edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
             smkcpd = 'Current cigarettes per day'
             smkcyr = 'Current years smoke'
             xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
title3 ' -- with the Female new subcohort';

proc phreg data=fpf nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcyr = 'Former years smoked'
smkcyr = 'Former years smoked'
evpmconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4';
title3 ' -- with the Female new subcohort';

proc phreg data=fpf nosummary;
model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
title3 '-- with the Female new subcohort';

proc phreg data=fpf nosummary;
model fail*cenrest(1) = curcig evconly smkcpd xsmkcpd smkcyr xsmkcyr passive
edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table_2: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Other Death for the Fine Particles at 24.4';
title3 '-- with the Female new subcohort';
run;
data fpf; set acs.dern;
    if flagd = 0 and fpfd = 0;
    fine = fpf/24.4;

proc phreg data=fpf nosummary;
    model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                       xsmkcyr passive
                       edulow indusexp bmi alc fine / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                   smkcpd = 'Current cigarettes per day'
                   smkcyr = 'Current years smoke'
                   xsmkcpd = 'Former cigarettes per day'
                   xsmkcyr = 'Former years smoked'
                   evpconly = 'Pipe/cigar smoker'
                   indusexp = 'Occupational exposure'
                   edulow = 'Less than high school education'
                   age_int = 'Age at Interview'
                   passive = 'Passive Smoking'
                   bmi = 'Body Mass Index'
                   alc = 'Alcohol Drinking'
                   fine = 'Fine Particles';
    where west in (0,1);

    title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
    title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
    title3 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
    model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                       xsmkcyr passive
                       edulow indusexp bmi alc fine / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                   smkcpd = 'Current cigarettes per day'
                   smkcyr = 'Current years smoke'
                   xsmkcpd = 'Former cigarettes per day'
                   xsmkcyr = 'Former years smoked'
                   evpconly = 'Pipe/cigar smoker'
                   indusexp = 'Occupational exposure'
                   edulow = 'Less than high school education'
                   age_int = 'Age at Interview'
                   passive = 'Passive Smoking'
                   bmi = 'Body Mass Index'

    data fpf; set acs.dern;
    if flagd = 0 and fpfd = 0;
    fine = fpf/24.4;

    proc phreg data=fpf nosummary;
    model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
                       xsmkcyr passive
                       edulow indusexp bmi alc fine / rl;
    strata age_int (25 to 105 by 5) sex racecat;
    format sex sex. racecat race. ;
    label curcig = 'Current Smoker'
                   smkcpd = 'Current cigarettes per day'
                   smkcyr = 'Current years smoke'
                   xsmkcpd = 'Former cigarettes per day'
                   xsmkcyr = 'Former years smoked'
                   evpconly = 'Pipe/cigar smoker'
                   indusexp = 'Occupational exposure'
                   edulow = 'Less than high school education'
                   age_int = 'Age at Interview'
                   passive = 'Passive Smoking'
                   bmi = 'Body Mass Index'

    title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
    title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
    title3 ' -- with the Female New Subcohort';

data fpf; set acs.dern;
if flagd = 0 and fpfd = 0;
fine = fpf/24.4;

proc phreg data=fpf nosummary;
model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
       edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'

where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
title3 ' -- with the Female New Subcohort';
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2;

proc phreg data=fpf nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyyr passive
    edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

proc phreg data=fpf nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyyr passive
    edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
xsmkcdp = 'Former cigarettes per day'  
xsmkcyr = 'Former years smoked'  
evpconly = 'Pipe/cigar smoker'  
indusex = 'Occupational exposure'  
edulow = 'Less than high school education'  
age_int = 'Age at Interview'  
passive = 'Passive Smoking'  
bmi = 'Body Mass Index'  
alc = 'Alcohol Drinking'  
fine = 'Fine Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%  
Confidence)';

model fail*cen62(1) = curcig evpconly smkcdp xsmkcdp smkcyr xsmkcyr passive  
edulow indusex bmi alc fine / rl;

strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'  
smkcdp = 'Current cigarettes per day'  
smkcyr = 'Current years smoke'  
xsmkcdp = 'Former cigarettes per day'  
xsmkcyr = 'Former years smoked'  
evpconly = 'Pipe/cigar smoker'  
indusex = 'Occupational exposure'  
edulow = 'Less than high school education'  
age_int = 'Age at Interview'  
passive = 'Passive Smoking'  
bmi = 'Body Mass Index'  
alc = 'Alcohol Drinking'  
fine = 'Fine Particles';
where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%  
Confidence)';
title2 'Intervals) by Lung Cancer Related Death for the Fine  
Particles at 24.4';
title3 '  -- with the Female New Subcohort';
title4 '  in Women ';
title5 '  -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
model fail*cen62(1) = curcig evpconly smkcdp xsmkcdp smkcyr xsmkcyr passive  
edulow indusex bmi alc fine / rl;

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strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';

where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)
Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4';
title2 'in Men';
title3 ' -- with the Female New Subcohort';
run;

proc phreg data=fpf nosummary;
    model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
edulow indusexp bmi alc fine / rl;

strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';

where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)
Intervals) by Cardiopulmonary Death for the Fine
Particles at 24.4';
title3 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
       edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
       smkcpd = 'Current cigarettes per day'
       smkcyr = 'Current years smoke'
       xsmkcpd = 'Former cigarettes per day'
       xsmkcyr = 'Former years smoked'
       evpconly = 'Pipe/cigar smoker'
       indusexp = 'Occupational exposure'
       edulow = 'Less than high school education'
       age_int = 'Age at Interview'
       passive = 'Passive Smoking'
       bmi = 'Body Mass Index'
       alc = 'Alcohol Drinking'
       fine = 'Fine Particles';
   where west in (0,1) and sex eq 2 ;

   title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence');
   title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
   title3 ' in Women ';
   title4 ' -- with the Female New Subcohort';

proc phreg data=fpf nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
       edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig = 'Current Smoker'
       smkcpd = 'Current cigarettes per day'
       smkcyr = 'Current years smoke'
       xsmkcpd = 'Former cigarettes per day'
       xsmkcyr = 'Former years smoked'
       evpconly = 'Pipe/cigar smoker'
       indusexp = 'Occupational exposure'
       edulow = 'Less than high school education'
       age_int = 'Age at Interview'
       passive = 'Passive Smoking'
       bmi = 'Body Mass Index'
       alc = 'Alcohol Drinking'
       fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
title3 ' in Men ';
title4 ' -- with the Female New Subcohort';
run;

data fpf_n;set fpf;
  if curcig = 0 and xsmkcpd = 0 and xsmkcyr = 0 and evpconly = 0;
proc phreg data=fpf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
    xsmkcyr passive
       edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig  = 'Current Smoker'
    smkcpd  = 'Current cigarettes per day'
    smkcyr  = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
  where west in (0,1);

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
title3 ' Never-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr
    xsmkcyr passive
       edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig  = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsrmkcpd = 'Former cigarettes per day'
xsrmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';

where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
title3 ' -- Never-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
model fail*cenall(1) = cur cig evpconly smkcpd xsrmkcpd smkcyr
xsrmkcyr passive
edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label cur cig = 'Current Smoker'
smk cpd = 'Current cigarettes per day'
smk cyr = 'Current years smoke'
xsrmkcpd = 'Former cigarettes per day'
xsrmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

run;
proc phreg data=fpf_n nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr 
  xsmkcyr passive
    edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence);'
title2 'Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4';
title3 'Never-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr 
  xsmkcyr passive
    edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race.;
label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsmkcpd = 'Former cigarettes per day'
  xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table 3: Adjusted Mortality Risk Ratios (and 95%
Confidence';
title2 'Intervals) by Lung Cancer Related Death for the Fine
Particles at 24.4';
title3 ' Never-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
   model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
   xsmkcyr passive ;
   edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat ;
   format sex sex. racecat race . ;
   label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
   indusexp = 'Occupational exposure'
   edulow = 'Less than high school education'
   age_int = 'Age at Interview'
   passive = 'Passive Smoking'
   bmi = 'Body Mass Index'
   alc = 'Alcohol Drinking'
   fine = 'Fine Particles';
   where west in (0,1) and sex eq 1;

   title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
   Confidence';
   title2 'Intervals) by Lung Cancer Related Death for the Fine
   Particles at 24.4';
   title3 ' Never-smokers in Men ';
   title4 ' -- with the Female New Subcohort';
run;

proc phreg data=fpf_n nosummary;
   model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
   xsmkcyr passive ;
   edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat ;
   format sex sex. racecat race . ;
   label curcig = 'Current Smoker'
   smkcpd = 'Current cigarettes per day'
   smkcyr = 'Current years smoke'
   xsmkcpd = 'Former cigarettes per day'
   xsmkcyr = 'Former years smoked'
   evpconly = 'Pipe/cigar smoker'
   indusexp = 'Occupational exposure'
   edulow = 'Less than high school education'

311
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
title3 ' Never-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyry passive
    edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
    smkcpd = 'Current cigarettes per day'
    smkcyr = 'Current years smoke'
    xsmkcpd = 'Former cigarettes per day'
    xsmkcyr = 'Former years smoked'
    evpconly = 'Pipe/cigar smoker'
    indusexp = 'Occupational exposure'
    edulow = 'Less than high school education'
    age_int = 'Age at Interview'
    passive = 'Passive Smoking'
    bmi = 'Body Mass Index'
    alc = 'Alcohol Drinking'
    fine = 'Fine Particles';
  where west in (0,1) and sex eq 2;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence');
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
title3 ' Never-smokers in Women ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_n nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyry passive
    edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'

312
smkcpd  = 'Current cigarettes per day'
smkcyr  = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow  = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi     = 'Body Mass Index'
alc     = 'Alcohol Drinking'
fine    = 'Fine Particles';

where west in (0,1) and sex eq 1;

/* Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence) */
/* Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 */
/* -- with the Female New Subcohort */
run;

data fpf_e;set fpf;
if curcig = 1 or xsmkcpd gt 0 or xsmkcyr gt 0 or evpconly = 1;

proc phreg data=fpf_e nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
      edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig  = 'Current Smoker'
      smkcpd = 'Current cigarettes per day'
      smkcyr = 'Current years smoke'
      xsmkcpd = 'Former cigarettes per day'
      xsmkcyr = 'Former years smoked'
      evpconly = 'Pipe/cigar smoker'
      indusexp = 'Occupational exposure'
      edulow  = 'Less than high school education'
      age_int = 'Age at Interview'
      passive = 'Passive Smoking'
      bmi     = 'Body Mass Index'
      alc     = 'Alcohol Drinking'
      fine    = 'Fine Particles';
   where west in (0,1);

/* Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence) */
title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
title3 '   Ever-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                  edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig  = 'Current Smoker'
       smkcpd   = 'Current cigarettes per day'
       smkcyr   = 'Current years smoke'
       xsmkcpd  = 'Former cigarettes per day'
       xsmkcyr  = 'Former years smoked'
       evpconly = 'Pipe/cigar smoker'
       indusexp = 'Occupational exposure'
       edulow   = 'Less than high school education'
       age_int  = 'Age at Interview'
       passive  = 'Passive Smoking'
       bmi      = 'Body Mass Index'
       alc      = 'Alcohol Drinking'
       fine     = 'Fine Particles';
   where west in (0,1) and sex eq 2;

   title1 'Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence');
   title2 'Intervals) by All Cause of Death for the Fine Particles at 24.4';
   title3 '   Ever-smokers in Women ';
   title4 ' -- with the Female New Subcohort';
   run;

proc phreg data=fpf_e nosummary;
   model fail*cenall(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
                  edulow indusexp bmi alc fine / rl;
   strata age_int (25 to 105 by 5) sex racecat;
   format sex sex. racecat race. ;
   label curcig  = 'Current Smoker'
       smkcpd   = 'Current cigarettes per day'
       smkcyr   = 'Current years smoke'
       xsmkcpd  = 'Former cigarettes per day'
       xsmkcyr  = 'Former years smoked'
       evpconly = 'Pipe/cigar smoker'
       indusexp = 'Occupational exposure'
       edulow   = 'Less than high school education'
       age_int  = 'Age at Interview'
       passive  = 'Passive Smoking'
   run;
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence');
title2 'Intervals) by All Cause of Death for the Fine
Particles at 24.4';
title3 ' Ever-smokers in Men ';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1);

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95%
Confidence');
title2 'Intervals) by Lung Cancer Related Death for the Fine
Particles at 24.4';
title3 ' Ever-smokers';
title4 ' -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2;

proc phreg data=fpf_e nosummary;
  model fail*cen62(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
        edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsblkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 1;

proc phreg data=fpf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr xsmkcyr passive
        edulow indusexp bmi alc fine / rl;

316
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
title3 ' -- with the Female New Subcohort';
title4 ' Ever-smokers';

proc phreg data=fpf_e nosummary;
model fail*cencomb(1) = curcig evpconly smkcpd xsmkcpd smkcyr
xsmkcyr passive
   edulow indusexp bmi alc fine / rl;
strata age_int (25 to 105 by 5) sex racecat;
format sex sex. racecat race. ;
label curcig = 'Current Smoker'
smkcpd = 'Current cigarettes per day'
smkcyr = 'Current years smoke'
xsmkcpd = 'Former cigarettes per day'
xsmkcyr = 'Former years smoked'
evpconly = 'Pipe/cigar smoker'
indusexp = 'Occupational exposure'
edulow = 'Less than high school education'
age_int = 'Age at Interview'
passive = 'Passive Smoking'
bmi = 'Body Mass Index'
alc = 'Alcohol Drinking'
fine = 'Fine Particles';
where west in (0,1) and sex eq 2 ;

title1 'Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence)';
title2 'Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4';
title3 ' Ever-smokers in Women ';
title4  -- with the Female New Subcohort';

proc phreg data=fpf_e nosummary;
  model fail*cencomb(1) = curcig evpconly smkcpd xsnkcpd smkcyr
  xsnkcyr passive
            edulow indusexp bmi alc fine / rl;
  strata age_int (25 to 105 by 5) sex racecat;
  format sex sex. racecat race. ;
  label curcig = 'Current Smoker'
  smkcpd = 'Current cigarettes per day'
  smkcyr = 'Current years smoke'
  xsnkcpd = 'Former cigarettes per day'
  xsnkcyr = 'Former years smoked'
  evpconly = 'Pipe/cigar smoker'
  indusexp = 'Occupational exposure'
  edulow = 'Less than high school education'
  age_int = 'Age at Interview'
  passive = 'Passive Smoking'
  bmi = 'Body Mass Index'
  alc = 'Alcohol Drinking'
  fine = 'Fine Particles';
  where west in (0,1) and sex eq 1;

  title1  'Table_3: Adjusted Mortality Risk Ratios (and 95%
  Confidence');
  title2  'Intervals) by Cardiopulmonary Death for the Fine
  Particles at 24.4';
  title3  ' Ever-smokers in Men ';
  title4  -- with the Female New Subcohort';
  run;
Output 6a:

Original Data
Climate Extra: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.C_SULF
Dependent Variable: FAIL
Censoring Variable: CRN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
<th>DF (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>69780.314</td>
<td>65221.121</td>
<td>4559.193</td>
<td>14     (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>5108.841</td>
<td>14     (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>3456.267</td>
<td>14     (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.954687</td>
<td>0.14195</td>
<td>45.23241</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>1.234752</td>
<td>0.11782</td>
<td>109.82306</td>
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</tr>
<tr>
<td>SMKCPD</td>
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<td>0.021851</td>
<td>0.00176</td>
<td>154.49591</td>
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<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.015302</td>
<td>0.00162</td>
<td>90.60049</td>
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<tr>
<td>SMKCYR</td>
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<td>0.035378</td>
<td>0.00292</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.056501</td>
<td>0.00182</td>
<td>966.13185</td>
<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.04338</td>
<td>0.00392</td>
<td>122.2685</td>
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<tr>
<td>EDULOW</td>
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<td>0.409573</td>
<td>0.04070</td>
<td>101.28774</td>
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<tr>
<td>INDUSEXP</td>
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<td>0.037610</td>
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<td>0.88911</td>
<td>0.3457</td>
</tr>
<tr>
<td>BMI</td>
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<td>-0.066061</td>
<td>0.00510</td>
<td>167.68318</td>
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<tr>
<td>ALC</td>
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<td>0.004245</td>
<td>0.00665</td>
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<td>0.5232</td>
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<tr>
<td>DCOLD</td>
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<td>-0.061727</td>
<td>0.04355</td>
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<td>0.1563</td>
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<tr>
<td>DHOT</td>
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<td>-0.019101</td>
<td>0.04012</td>
<td>0.22671</td>
<td>0.6340</td>
</tr>
<tr>
<td>SULFATES</td>
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<td>0.304615</td>
<td>0.10290</td>
<td>8.76310</td>
<td>0.0031</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.598</td>
<td>1.967</td>
<td>3.431</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>3.438</td>
<td>2.729</td>
<td>4.330</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.022</td>
<td>1.019</td>
<td>1.026</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.015</td>
<td>1.012</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.036</td>
<td>1.030</td>
<td>1.042</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.058</td>
<td>1.054</td>
<td>1.062</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.997</td>
<td>1.012</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.506</td>
<td>1.391</td>
<td>1.631</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.038</td>
<td>0.960</td>
<td>1.123</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.935</td>
<td>0.927</td>
<td>0.945</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>1.004</td>
<td>0.991</td>
<td>1.017</td>
<td>Alcohol Drinking</td>
</tr>
</tbody>
</table>

Climate Extra: Adjusted Mortality Risk Ratios (and 95% Confidence
Intervals) by Lung Cancer Related Death for the Sulfate Particles

The PHREG Procedure

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCOLD</td>
<td>0.940</td>
<td>0.863</td>
<td>1.024</td>
<td>Mean Temperature less than 50 F</td>
</tr>
<tr>
<td>DHOT</td>
<td>0.981</td>
<td>0.907</td>
<td>1.061</td>
<td>Mean Temperature greater than 60 F</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.356</td>
<td>1.108</td>
<td>1.659</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Climate_Extra: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles

The PHREG Procedure

Data Set: WORK.C_SULF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>357444.550</td>
<td>354817.489</td>
<td>2627.060 with 14 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>2799.031 with 14 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>2721.607 with 14 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.621359</td>
<td>0.056698</td>
<td>86.06834</td>
<td>0.0001</td>
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<td>EVPCONLY</td>
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</tr>
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<td>SMKCPD</td>
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<td>XSMKCPD</td>
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<tr>
<td>SMKCYR</td>
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<td>XSMKCYR</td>
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<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
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<td>0.00203</td>
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<td>DCOLD</td>
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<td>0.97885</td>
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<td>DHOT</td>
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<td>-0.050709</td>
<td>0.01732</td>
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<td>0.0034</td>
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<tr>
<td>SULFATES</td>
<td>1</td>
<td>0.211340</td>
<td>0.04323</td>
<td>23.89611</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

321
Climate_EXTRA: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Sulfate Particles

The PHREG Procedure

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCOLD</td>
<td>1.018</td>
<td>0.982</td>
<td>1.055</td>
<td>Mean Temperature less than 50 F</td>
</tr>
<tr>
<td>DHOT</td>
<td>0.951</td>
<td>0.919</td>
<td>0.983</td>
<td>Mean Temperature greater than 60 F</td>
</tr>
<tr>
<td>SULFATES</td>
<td>1.235</td>
<td>1.135</td>
<td>1.345</td>
<td>Sulfate Particles</td>
</tr>
</tbody>
</table>

Climate_EXTRA: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles

The PHREG Procedure

Data Set: WORK.C_FPFP
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>34529.177</td>
<td>32037.664</td>
<td>2491.513 with 14 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>2777.680 with 14 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1891.394 with 14 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
</table>

322
<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.941833</td>
<td>0.19540</td>
<td>23.23189</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>1.249023</td>
<td>0.16548</td>
<td>56.97219</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.022727</td>
<td>0.00243</td>
<td>87.14185</td>
</tr>
<tr>
<td>XSSMKPD</td>
<td>1</td>
<td>0.013564</td>
<td>0.00222</td>
<td>37.24074</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.035013</td>
<td>0.00403</td>
<td>75.61439</td>
</tr>
<tr>
<td>XSSMKCYR</td>
<td>1</td>
<td>0.059712</td>
<td>0.00246</td>
<td>589.84515</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.003417</td>
<td>0.00543</td>
<td>0.39551</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.449009</td>
<td>0.05675</td>
<td>62.59402</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.102079</td>
<td>0.05488</td>
<td>3.45999</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>-0.076863</td>
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<td>118.43027</td>
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<tr>
<td>ALC</td>
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<td>-0.006425</td>
<td>0.00962</td>
<td>0.44574</td>
</tr>
<tr>
<td>DGCOLD</td>
<td>1</td>
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<td>0.06008</td>
<td>2.70561</td>
</tr>
<tr>
<td>DHOT</td>
<td>1</td>
<td>-0.042649</td>
<td>0.05468</td>
<td>0.60833</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.052977</td>
<td>0.12944</td>
<td>0.16750</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Risk Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.565</td>
<td>1.749</td>
<td>3.761</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>3.487</td>
<td>2.521</td>
<td>4.823</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.023</td>
<td>1.018</td>
<td>1.028</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSSMKPD</td>
<td>1.014</td>
<td>1.009</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.036</td>
<td>1.027</td>
<td>1.044</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSSMKCYR</td>
<td>1.062</td>
<td>1.056</td>
<td>1.067</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.003</td>
<td>0.993</td>
<td>1.014</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.567</td>
<td>1.402</td>
<td>1.751</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.107</td>
<td>0.995</td>
<td>1.233</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.926</td>
<td>0.913</td>
<td>0.939</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.994</td>
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<td>1.013</td>
<td>Alcohol Drinking</td>
</tr>
</tbody>
</table>

Climate_EXTRA: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles

The PHREG Procedure

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Risk Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGCOLD</td>
<td>0.906</td>
<td>0.805</td>
<td>1.019</td>
<td>Mean Temperature less than 50 F</td>
</tr>
<tr>
<td>DHOT</td>
<td>0.958</td>
<td>0.861</td>
<td>1.067</td>
<td>Mean Temperature greater than 60 F</td>
</tr>
<tr>
<td>FINE</td>
<td>1.054</td>
<td>0.818</td>
<td>1.359</td>
<td>Fine Particles</td>
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</table>

Climate_EXTRA: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles

The PHREG Procedure

Data Set: WORK.C_PFP
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRRESLOW

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Global Null Hypothesis: BETA=0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without Covariates</td>
</tr>
<tr>
<td>-2 LOG L</td>
<td>175982.317</td>
</tr>
<tr>
<td>Score</td>
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<tr>
<td>Wald</td>
<td>.</td>
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</tbody>
</table>

**Analysis of Maximum Likelihood Estimates**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0.574575</td>
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<td>37.42397</td>
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</tr>
<tr>
<td>SMKCPD</td>
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<tr>
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<tr>
<td>SMKCYR</td>
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<td>0.00190</td>
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<tr>
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<td>0.0001</td>
</tr>
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<td>0.000302</td>
<td>0.96812</td>
<td>0.3251</td>
</tr>
<tr>
<td>EDULOW</td>
<td>0.290531</td>
<td>0.02375</td>
<td>149.60213</td>
<td>0.0001</td>
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<tr>
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<td>0.228990</td>
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<td>16.68286</td>
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</tbody>
</table>

**Analysis of Maximum Likelihood Estimates**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.776</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.244</td>
<td>1.137</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.002</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.004</td>
<td>1.000</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.997</td>
<td>1.009</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.337</td>
<td>1.276</td>
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<td>Less than high school education</td>
</tr>
<tr>
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<td>1.054</td>
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<td>1.108</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.997</td>
<td>0.992</td>
<td>1.003</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.963</td>
<td>0.952</td>
<td>0.974</td>
<td>Alcohol Drinking</td>
</tr>
</tbody>
</table>

Climate Extra: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles

The PHREG Procedure
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCOLD</td>
<td>1.068</td>
<td>1.017</td>
<td>1.122</td>
<td>Mean Temperature less than 50 F</td>
</tr>
<tr>
<td>DHOT</td>
<td>0.924</td>
<td>0.882</td>
<td>0.969</td>
<td>Mean Temperature greater than 60 F</td>
</tr>
<tr>
<td>FINE</td>
<td>1.257</td>
<td>1.126</td>
<td>1.403</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>
Output 6b:

Modified Data
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENNULL.
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>412146.044</td>
<td>408975.491</td>
<td>3170.553 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>3471.612 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
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<td>.</td>
<td>3341.331 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.262766</td>
<td>0.05852</td>
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<td>0.010512</td>
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<td>0.0001</td>
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<td>0.001890</td>
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<td>0.97386</td>
<td>0.3237</td>
</tr>
<tr>
<td>EULLOW</td>
<td>1</td>
<td>0.253270</td>
<td>0.01639</td>
<td>238.76793</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
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<td>0.061154</td>
<td>0.01712</td>
<td>12.76536</td>
<td>0.0004</td>
</tr>
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<td>2.95727</td>
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</tr>
<tr>
<td>FINE</td>
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<td>0.166364</td>
<td>0.03655</td>
<td>20.72320</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.301</td>
<td>1.160</td>
<td>1.459</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.248</td>
<td>1.168</td>
<td>1.332</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPE</td>
<td>1.011</td>
<td>1.009</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.011</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EULLOW</td>
<td>1.288</td>
<td>1.248</td>
<td>1.330</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>1.028</td>
<td>1.099</td>
<td>Occupational exposure</td>
</tr>
</tbody>
</table>
Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 with the Female new subcohort

The PHREG Procedure

Data Set: WORK.FFP
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>373.02 1.26</td>
<td>3458.620</td>
<td>2713.507 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3071.615 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2063.364 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.959785</td>
<td>0.18451</td>
<td>27.05806</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>1.250382</td>
<td>0.16379</td>
<td>58.27932</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.023391</td>
<td>0.00234</td>
<td>100.24927</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.013918</td>
<td>0.00217</td>
<td>41.12524</td>
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<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.034609</td>
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<td>81.52196</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.058978</td>
<td>0.00237</td>
<td>621.02922</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.004428</td>
<td>0.00522</td>
<td>0.71914</td>
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<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.448474</td>
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<td>66.78425</td>
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<td>INDUSEXP</td>
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<td>0.098079</td>
<td>0.05383</td>
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<td>0.00673</td>
<td>114.32971</td>
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<tr>
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<td>-0.009376</td>
<td>0.00955</td>
<td>0.96437</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.017074</td>
<td>0.12278</td>
<td>0.01934</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.611</td>
<td>1.819</td>
<td>3.749</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>3.492</td>
<td>2.533</td>
<td>4.813</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.024</td>
<td>1.019</td>
<td>1.028</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.014</td>
<td>1.010</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.035</td>
<td>1.027</td>
<td>1.043</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.061</td>
<td>1.056</td>
<td>1.066</td>
<td>Former years smoked</td>
</tr>
</tbody>
</table>
PASSIVE  1.004  0.994  1.015  Passive Smoking
EDULOW  1.566  1.406  1.744  Less than high school education
INDUSEXPR  1.103  0.993  1.226  Occupational exposure
BMI  0.931  0.918  0.943  Body Mass Index
ALC  0.991  0.972  1.009  Alcohol Drinking
FINE  1.017  0.800  1.294  Fine Particles

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 -- with the Female new subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>194480.995</td>
<td>192929.578</td>
<td>1551.417 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1672.019 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1623.234 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.544053</td>
<td>0.08867</td>
<td>37.64750</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1</td>
<td>0.222319</td>
<td>0.04586</td>
<td>23.49728</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.006097</td>
<td>0.00159</td>
<td>14.71249</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.005890</td>
<td>0.000996</td>
<td>32.57854</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.004843</td>
<td>0.00180</td>
<td>6.54480</td>
<td>0.0099</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.011844</td>
<td>0.0008744</td>
<td>183.48717</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.003808</td>
<td>0.00290</td>
<td>1.72804</td>
<td>0.1887</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.307022</td>
<td>0.02245</td>
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<td>0.0001</td>
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<tr>
<td>INDUSEXPR</td>
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<td>0.02462</td>
<td>6.79730</td>
<td>0.0091</td>
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<tr>
<td>BMI</td>
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<td>0.000175</td>
<td>0.000263</td>
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<td>ALC</td>
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<td>-0.037996</td>
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<td>47.52896</td>
<td>0.0001</td>
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<tr>
<td>FINE</td>
<td>1</td>
<td>0.273613</td>
<td>0.05260</td>
<td>27.05804</td>
<td>0.0001</td>
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</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.723</td>
<td>1.448</td>
<td>2.050</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.249</td>
<td>1.142</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.006</td>
<td>1.003</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
</tbody>
</table>

329
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.075786</td>
<td>0.08917</td>
<td>0.72242</td>
<td>0.3954</td>
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<tr>
<td>EVPONLY</td>
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<td>0.140954</td>
<td>0.05145</td>
<td>7.50171</td>
<td>0.0062</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.008160</td>
<td>0.00169</td>
<td>23.32347</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.005503</td>
<td>0.00111</td>
<td>24.70650</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.007175</td>
<td>0.00104</td>
<td>13.57481</td>
<td>0.0002</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0.23660</td>
<td>0.6267</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.119383</td>
<td>0.02690</td>
<td>19.70040</td>
<td>0.0001</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.045232</td>
<td>0.02662</td>
<td>2.88821</td>
<td>0.0892</td>
</tr>
<tr>
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<td>1</td>
<td>0.005428</td>
<td>0.00267</td>
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<td>0.0419</td>
</tr>
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<td>BMI</td>
<td>1</td>
<td>0.001447</td>
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<td>0.08637</td>
<td>0.7688</td>
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<tr>
<td>ALC</td>
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<td>0.084532</td>
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<td>2.28411</td>
<td>0.1307</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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</table>

Table 2: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Other Death for the Fine Particles at 24.4 μg/m³ with the Female new subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENREST
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>179701.910</td>
<td>179198.132</td>
<td>503.778 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>535.772 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>527.241 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>
The PHREG Procedure

Data Set: WORK.PFF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>412146.044</td>
<td>408975.491</td>
<td>3170.553 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>3471.612 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>3341.331 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.0001</td>
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<tr>
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</tr>
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<td>0.0001</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.012844</td>
<td>0.0006321</td>
<td>381.30492</td>
<td>0.0001</td>
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<tr>
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<td>0.00192</td>
<td>0.97386</td>
<td>0.3237</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.253270</td>
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</tr>
<tr>
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<td>0.00346</td>
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<td>0.0001</td>
</tr>
<tr>
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<td>0.166364</td>
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<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits
<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.301</td>
<td>1.160</td>
<td>1.459</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.248</td>
<td>1.168</td>
<td>1.332</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.009</td>
<td>1.013</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.011</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.288</td>
<td>1.248</td>
<td>1.330</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>1.028</td>
<td>1.099</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.997</td>
<td>0.993</td>
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<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.181</td>
<td>1.099</td>
<td>1.269</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>172682.448</td>
<td>171562.322</td>
<td>1120.126 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1282.316 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1233.616 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
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</tr>
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<td>XSMKCPD</td>
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<td>SMKCYR</td>
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<td>0.010017</td>
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<td>0.002420</td>
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<td>0.57920</td>
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</tr>
<tr>
<td>EDULOW</td>
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<td>0.224241</td>
<td>0.02546</td>
<td>77.58707</td>
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<td>INDUSEXP</td>
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<td>0.169510</td>
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Analysis of Maximum Likelihood Estimates
Conditional Risk Ratio and 
95% Confidence Limits

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<th>Upper</th>
<th>Label</th>
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</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.946</td>
<td>1.321</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.015</td>
<td>1.011</td>
<td>1.019</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.006</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.010</td>
<td>1.008</td>
<td>1.012</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.010</td>
<td>0.996</td>
<td>1.009</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.997</td>
<td>1.006</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.251</td>
<td>1.190</td>
<td>1.315</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.108</td>
<td>1.031</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.002</td>
<td>0.997</td>
<td>1.006</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.960</td>
<td>0.945</td>
<td>0.976</td>
<td>Alcohol Drinking</td>
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<tr>
<td>FINE</td>
<td>1.185</td>
<td>1.061</td>
<td>1.323</td>
<td>Fine Particles</td>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>239463.596</td>
<td>237360.825</td>
<td>2102.771 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>2237.819 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2139.378 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.468904</td>
<td>0.08517</td>
<td>30.30846</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.252506</td>
<td>0.03497</td>
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</tr>
<tr>
<td>SMKCPD</td>
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<td>0.007941</td>
<td>0.00127</td>
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<td>0.0001</td>
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<td>XSMKCPD</td>
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<tr>
<td>SMKCYR</td>
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<tr>
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<td>0.013441</td>
<td>0.0007642</td>
<td>309.37879</td>
<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.000823</td>
<td>0.00241</td>
<td>0.11694</td>
<td>0.7324</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>0.265517</td>
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<td>ALC</td>
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<td>0.00333</td>
<td>8.07736</td>
<td>0.0045</td>
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<td>FINE</td>
<td>1</td>
<td>0.162960</td>
<td>0.04793</td>
<td>11.55949</td>
<td>0.0007</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.598</td>
<td>1.353</td>
<td>1.889</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.287</td>
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<td>1.379</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>1.005</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
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<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.007</td>
<td>1.004</td>
<td>1.010</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>1.012</td>
<td>1.015</td>
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</tr>
<tr>
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<td>Passive Smoking</td>
</tr>
<tr>
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<td>1.051</td>
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<tr>
<td>ALC</td>
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<td>0.982</td>
<td>0.997</td>
<td>Alcohol Drinking</td>
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<tr>
<td>FINE</td>
<td>1.177</td>
<td>1.071</td>
<td>1.293</td>
<td>Fine Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>37302.126</td>
<td>34588.620</td>
<td>2713.507 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>3071.615 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2063.364 with 12 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.959785</td>
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<td>SMKCPD</td>
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<td>0.0001</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
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<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
<td>2.611</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVFCONLY</td>
<td>3.492</td>
<td>2.533</td>
<td>4.813</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.024</td>
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<td>1.028</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.010</td>
<td>1.018</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
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</tr>
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<td>FINE</td>
<td>1.017</td>
<td>0.800</td>
<td>1.294</td>
<td>Fine Particles</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENS
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>12981.086</td>
<td>11965.671</td>
<td>1015.415 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>1382.170 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>862.479 with 11 DF (p=0.0001)</td>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.981010</td>
<td>0.26383</td>
<td>13.82632</td>
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<td>0</td>
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<td></td>
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</tr>
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</table>
### Analysis of Maximum Likelihood Estimates

**Conditional Risk Ratio and 95% Confidence Limits**

<table>
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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.036</td>
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</tr>
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<td>1.012</td>
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<tr>
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<td>0.987</td>
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<td>Passive Smoking</td>
</tr>
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<td>1.764</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.253</td>
<td>0.989</td>
<td>1.588</td>
<td>Occupational exposure</td>
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<tr>
<td>BMI</td>
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<td>0.964</td>
<td>Body Mass Index</td>
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<td>ALC</td>
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<td>1.337</td>
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</tbody>
</table>

*Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 in Men -- with the Female New Subcohort*

---

The **PHREG** Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

---

### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>24321.041</td>
<td>22584.639</td>
<td>1736.402 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>1833.463 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1233.467 with 12 DF (p=0.0001)</td>
</tr>
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### Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.031942</td>
<td>0.26483</td>
<td>15.18333</td>
<td>0.0001</td>
</tr>
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<td>1.470972</td>
<td>0.18361</td>
<td>64.18507</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.807</td>
<td>1.670</td>
<td>4.716</td>
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</tr>
<tr>
<td>EVPCONLY</td>
<td>4.353</td>
<td>3.038</td>
<td>6.239</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.018</td>
<td>1.012</td>
<td>1.024</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.013</td>
<td>1.008</td>
<td>1.017</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.043</td>
<td>1.032</td>
<td>1.053</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.069</td>
<td>1.062</td>
<td>1.075</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.003</td>
<td>0.991</td>
<td>1.016</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.570</td>
<td>1.382</td>
<td>1.783</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.063</td>
<td>0.946</td>
<td>1.195</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.921</td>
<td>0.906</td>
<td>0.937</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.995</td>
<td>0.975</td>
<td>1.016</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.095</td>
<td>0.814</td>
<td>1.472</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>194480.995</td>
<td>192929.578</td>
<td>1551.417 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>:</td>
<td>:</td>
<td>1672.019 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>:</td>
<td>:</td>
<td>1623.234 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
</table>

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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.723</td>
<td>1.448</td>
<td>2.050</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.249</td>
<td>1.142</td>
<td>1.366</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMCP1D</td>
<td>1.006</td>
<td>1.003</td>
<td>1.009</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.006</td>
<td>1.004</td>
<td>1.008</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.005</td>
<td>1.001</td>
<td>1.008</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.998</td>
<td>1.010</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.359</td>
<td>1.301</td>
<td>1.421</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.066</td>
<td>1.016</td>
<td>1.119</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>1.000</td>
<td>0.995</td>
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<td>Body Mass Index</td>
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<tr>
<td>ALC</td>
<td>0.963</td>
<td>0.952</td>
<td>0.973</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.315</td>
<td>1.186</td>
<td>1.457</td>
<td>Fine Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>72454.763</td>
<td>71790.200</td>
<td>664.563 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>773.874 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>740.520 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.314213</td>
<td>0.13373</td>
<td>5.52064</td>
<td>0.0188</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.016868</td>
<td>0.00299</td>
<td>31.77269</td>
<td>0.0001</td>
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<tr>
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<td>0.006465</td>
<td>0.00283</td>
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<tr>
<td>XSSMCKYR</td>
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<td>0.010704</td>
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</tr>
<tr>
<td>PASSIVE</td>
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<td>0.010862</td>
<td>0.00517</td>
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</tr>
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<td>BMI</td>
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<td>FINE</td>
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<td>0.368639</td>
<td>0.08539</td>
<td>18.63590</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.369</td>
<td>1.053</td>
<td>1.779</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.017</td>
<td>1.011</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSSMCKPD</td>
<td>1.007</td>
<td>1.002</td>
<td>1.012</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.006</td>
<td>1.001</td>
<td>1.012</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSSMCKYR</td>
<td>1.011</td>
<td>1.007</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.011</td>
<td>1.001</td>
<td>1.021</td>
<td>Passive Smoking</td>
</tr>
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<td>EDULOW</td>
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</tr>
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</tr>
<tr>
<td>BMI</td>
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<td>0.994</td>
<td>1.008</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.906</td>
<td>0.957</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.446</td>
<td>1.223</td>
<td>1.709</td>
<td>Fine Particles</td>
</tr>
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</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>122026.232</td>
<td>121102.513</td>
<td>923.719 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>967.172 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>937.900 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>0.640239</td>
<td>0.12303</td>
<td>27.07900</td>
<td>0.0001</td>
</tr>
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<td>0.214765</td>
<td>0.04754</td>
<td>20.40995</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.1689</td>
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<td>22.09603</td>
<td>0.0001</td>
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<td>0.211369</td>
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<td>10.00392</td>
<td>0.0016</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.897</td>
<td>1.490</td>
<td>2.414</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.240</td>
<td>1.129</td>
<td>1.361</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCD</td>
<td>1.003</td>
<td>0.999</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.005</td>
<td>1.003</td>
<td>1.007</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.004</td>
<td>0.999</td>
<td>1.009</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKYR</td>
<td>1.012</td>
<td>1.010</td>
<td>1.014</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.994</td>
<td>1.008</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULON</td>
<td>1.332</td>
<td>1.257</td>
<td>1.411</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.065</td>
<td>1.010</td>
<td>1.123</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.999</td>
<td>0.991</td>
<td>1.006</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.970</td>
<td>0.959</td>
<td>0.981</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.235</td>
<td>1.084</td>
<td>1.408</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 Never-smokers

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

Criterion Without Covariates With Covariates Model Chi-Square

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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
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<td>0</td>
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<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

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<th>Upper</th>
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<td>1.095</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 Never-smokers in Women.
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0
With Covariates | With Covariates | Model Chi-Square
---|---|---
-2 LOG L: | 88709.677 | 88632.150 | 77.527 with 6 DF (p=0.0001)
Score: | 72.689 with 6 DF (p=0.0001) | 73.746 with 6 DF (p=0.0001)
Wald: | | |

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Lower</th>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>.</td>
<td>Former cigarettes per day</td>
</tr>
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<td>SMKCYR</td>
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<td>Current years smoke</td>
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<tr>
<td>XSMKCYR</td>
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<td>Former years smoked</td>
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Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 Never-smokers in Men
---

with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PFP_N
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW
Testing Global Null Hypothesis: BETA=0

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<tr>
<th>Criterion</th>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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</thead>
<tbody>
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<td>80.736 with 6 DF (p=0.0001)</td>
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<td>84.396 with 6 DF (p=0.0001)</td>
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<td></td>
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<td>84.012 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<th>Variable</th>
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<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td>0</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

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<th>Variable</th>
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<th>Upper</th>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>Current cigarettes per day</td>
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<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
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<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
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<td>1.238</td>
<td>0.997</td>
<td>1.538</td>
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Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 Never-smokers
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>Model Chi-Square</th>
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<td>16.526 with 6 DF (p=0.0050)</td>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
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<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
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<th>Lower</th>
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<td>Pipe/cigar smoker</td>
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<td>Current years smoke</td>
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<td>Former years smoked</td>
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<td>0.732</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 Never-smokers in Women -- with the Female New Subcohort

The PHREG Procedure
Testing Global Null Hypothesis: BETA=0

<table>
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<th>With Covariates</th>
<th>Model Chi-Square</th>
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<tbody>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
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<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
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<td></td>
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<td></td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td></td>
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<td>Former years smoked</td>
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<tr>
<td>EDUC</td>
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<td>0.742</td>
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<td>INDF</td>
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<tr>
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<tr>
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<td>FINE</td>
<td>0.873</td>
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<td>2.513</td>
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Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 Never-smokers in Men -- with the Female New Subcohort

345
The PHREG Procedure

Data Set: WORK.FPP_N
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

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<th>Model Chi-Square</th>
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</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>690.527</td>
<td>682.822</td>
<td>7.705 with 6 DF (p=0.2605)</td>
</tr>
<tr>
<td>Score</td>
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<td>7.095 with 6 DF (p=0.3121)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>7.210 with 6 DF (p=0.3019)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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<td>0</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and
95% Confidence Limits

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<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tr>
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<td>.</td>
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<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>.</td>
<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>.</td>
<td>.</td>
<td>Current years smoke</td>
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<tr>
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<td>.</td>
<td>.</td>
<td>Former years smoked</td>
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<td>0.863</td>
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<tr>
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<td>0.493</td>
<td>0.092</td>
<td>2.650</td>
<td>Fine Particles</td>
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</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Limits)

346
Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 Never-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>61917.801</td>
<td>61794.694</td>
<td>123.107 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>123.270 with 6 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>123.318 with 6 DF (p=0.0001)</td>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
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<td>SMKCPD</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>XSMKCPD</td>
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<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>SMKCYR</td>
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<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCYR</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tr>
<td>CURCIG</td>
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<td>Current Smoker</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td></td>
<td></td>
<td></td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td></td>
<td></td>
<td></td>
<td>Former years smoked</td>
</tr>
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<td>1.011</td>
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<td>Body Mass Index</td>
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</table>

347
Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4
Never-smokers in Women

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>40047.762</td>
<td>39954.690</td>
<td>93.072 with 6 DF (p=0.00001)</td>
</tr>
<tr>
<td>Score</td>
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</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>88.289 with 6 DF (p=0.0001)</td>
</tr>
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Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCIND</td>
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<td></td>
</tr>
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<td>SMKCYR</td>
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<td>0</td>
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<td></td>
<td></td>
</tr>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
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<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
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<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>.</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCIND</td>
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<td>.</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Former years smoked</td>
</tr>
</tbody>
</table>
PASSIVE  1.020  1.002  1.037  Passive Smoking
EDULOW  1.306  1.200  1.421  Less than high school education
INDUSEXP  1.049  0.888  1.240  Occupational exposure
BMI  1.004  0.994  1.013  Body Mass Index
ALC  0.882  0.833  0.934  Alcohol Drinking
FINE  1.540  1.239  1.914  Fine Particles

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4
Never-smokers in Men
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_N
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L Score</td>
<td>21870.039</td>
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</tr>
<tr>
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<tr>
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<td></td>
<td></td>
<td>55.498 with 6 DF (p=0.0001)</td>
</tr>
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Analysis of Maximum Likelihood Estimates

<table>
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<tr>
<th>Variable</th>
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<th>Parameter Estimate</th>
<th>Standard Error</th>
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<th>Pr &gt; Chi-Square</th>
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</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>XSMKCPD</td>
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</tr>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>PASSIVE</td>
<td>1</td>
<td>-0.000342</td>
<td>0.01174</td>
<td>0.0008502</td>
<td>0.9767</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.356510</td>
<td>0.06345</td>
<td>31.57363</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
<td>0.034342</td>
<td>0.06139</td>
<td>0.31293</td>
<td>0.5759</td>
</tr>
<tr>
<td>BMI</td>
<td>1</td>
<td>0.030370</td>
<td>0.00781</td>
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<td>0.0001</td>
</tr>
<tr>
<td>ALC</td>
<td>1</td>
<td>-0.022493</td>
<td>0.01677</td>
<td>1.79965</td>
<td>0.1798</td>
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<td>FINE</td>
<td>1</td>
<td>0.213605</td>
<td>0.14884</td>
<td>2.05971</td>
<td>0.1512</td>
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Analysis of Maximum Likelihood Estimates

Conditional risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
</tbody>
</table>

349
SMKCPD . . . Current cigarettes per day
XSMKCPD . . . Former cigarettes per day
SMKCYR . . . Current years smoked
XSMKCYR . . . Former years smoked
PASSIVE 1.000 0.977 1.023 Passive Smoking
EDULOW 1.428 1.261 1.617 Less than high school education
INDUSEXP 1.035 0.918 1.167 Occupational exposure
BMI 1.031 1.015 1.047 Body Mass Index
ALC 0.978 0.946 1.010 Alcohol Drinking
FINE 1.238 0.925 1.658 Fine Particles

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 Ever-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPP_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>256918.906</td>
<td>254822.716</td>
<td>2096.190 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td></td>
<td>2101.562 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>2036.754 with 12 DF (p=0.0001)</td>
</tr>
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</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.494837</td>
<td>0.06735</td>
<td>53.98032</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
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<td>0.631429</td>
<td>0.04527</td>
<td>194.58501</td>
<td>0.0001</td>
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<tr>
<td>SMKCPD</td>
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<td>0.009461</td>
<td>0.00105</td>
<td>81.01935</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.008721</td>
<td>0.007552</td>
<td>133.33964</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>0.012689</td>
<td>0.00134</td>
<td>90.16036</td>
<td>0.0001</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.021476</td>
<td>0.009076</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.000316</td>
<td>0.00210</td>
<td>0.02252</td>
<td>0.8807</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.250752</td>
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<td>144.49284</td>
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<td>INDUSEXP</td>
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<td>0.062366</td>
<td>0.01974</td>
<td>9.98141</td>
<td>0.0016</td>
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<td>BMI</td>
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<td>-0.013351</td>
<td>0.00238</td>
<td>31.46715</td>
<td>0.0001</td>
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<tr>
<td>ALC</td>
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<td>-0.011934</td>
<td>0.00367</td>
<td>10.59285</td>
<td>0.0011</td>
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<td>FINE</td>
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<td>0.139053</td>
<td>0.04501</td>
<td>9.54246</td>
<td>0.0020</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

Risk
<table>
<thead>
<tr>
<th>Variable</th>
<th>Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.640</td>
<td>1.437</td>
<td>1.872</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.880</td>
<td>1.721</td>
<td>2.055</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.010</td>
<td>1.007</td>
<td>1.012</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.007</td>
<td>1.010</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKHY</td>
<td>1.013</td>
<td>1.010</td>
<td>1.015</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKHY</td>
<td>1.022</td>
<td>1.020</td>
<td>1.024</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.996</td>
<td>1.004</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.285</td>
<td>1.234</td>
<td>1.339</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.064</td>
<td>1.024</td>
<td>1.106</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.987</td>
<td>0.982</td>
<td>0.991</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.988</td>
<td>0.981</td>
<td>0.995</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.149</td>
<td>1.052</td>
<td>1.255</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 Ever-smokers in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>71296.129</td>
<td>70772.665</td>
<td>523.465 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>520.441 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>504.842 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.309334</td>
<td>0.10170</td>
<td>9.25095</td>
<td>0.0024</td>
</tr>
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<td>EVPONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1</td>
<td>0.013493</td>
<td>0.00190</td>
<td>50.27445</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.010621</td>
<td>0.00174</td>
<td>37.06473</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKHY</td>
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<td>0.011794</td>
<td>0.00208</td>
<td>32.04626</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKHY</td>
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<td>0.00180</td>
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<td>0.0001</td>
</tr>
<tr>
<td>PASSIVE</td>
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<td>0.000796</td>
<td>0.00386</td>
<td>0.04251</td>
<td>0.8367</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1</td>
<td>0.309665</td>
<td>0.04188</td>
<td>54.67811</td>
<td>0.0001</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1</td>
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<td>0.05120</td>
<td>3.19602</td>
<td>0.0738</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.00382</td>
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<td>0.1858</td>
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<tr>
<td>ALC</td>
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<td>-0.025776</td>
<td>0.00914</td>
<td>7.95066</td>
<td>0.0048</td>
</tr>
<tr>
<td>FINE</td>
<td>1</td>
<td>0.109809</td>
<td>0.08412</td>
<td>1.70392</td>
<td>0.1918</td>
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</table>

Analysis of Maximum Likelihood Estimates

351
Conditional Risk Ratio and
95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.363</td>
<td>1.116</td>
<td>1.663</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1.014</td>
<td>1.010</td>
<td>1.017</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.011</td>
<td>1.007</td>
<td>1.014</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMPKCPD</td>
<td>1.012</td>
<td>1.008</td>
<td>1.016</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKYR</td>
<td>1.018</td>
<td>1.014</td>
<td>1.021</td>
<td>Former years smoke</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.001</td>
<td>0.993</td>
<td>1.008</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDUCLOW</td>
<td>1.363</td>
<td>1.256</td>
<td>1.480</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.096</td>
<td>0.991</td>
<td>1.212</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.995</td>
<td>0.988</td>
<td>1.002</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.975</td>
<td>0.957</td>
<td>0.992</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.116</td>
<td>0.946</td>
<td>1.316</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by All Cause of Death for the Fine Particles at 24.4 Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENALL
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>185622.776</td>
<td>184009.409</td>
<td>1613.367 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
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<td>.</td>
<td>1629.988 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>1578.344 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.668174</td>
<td>0.09349</td>
<td>51.08457</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPONLY</td>
<td>1</td>
<td>0.695476</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>0.0072446</td>
<td>0.00128</td>
<td>32.17936</td>
<td>0.0001</td>
</tr>
<tr>
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<td>0.0001</td>
</tr>
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<td>SMKYR</td>
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<td>0.022980</td>
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<td>0.0001</td>
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<td>BMI</td>
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<td>0.0001</td>
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<tr>
<td>ALC</td>
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<td>FINE</td>
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<td>0.149458</td>
<td>0.05327</td>
<td>7.87045</td>
<td>0.0050</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.951</td>
<td>1.624</td>
<td>2.343</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>2.005</td>
<td>1.817</td>
<td>2.211</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.007</td>
<td>1.005</td>
<td>1.010</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.009</td>
<td>1.007</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.008</td>
<td>1.015</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.023</td>
<td>1.021</td>
<td>1.025</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.995</td>
<td>1.005</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.256</td>
<td>1.198</td>
<td>1.316</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.061</td>
<td>1.018</td>
<td>1.107</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.981</td>
<td>0.975</td>
<td>0.987</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.991</td>
<td>0.984</td>
<td>0.999</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.161</td>
<td>1.046</td>
<td>1.289</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 Ever-smokers -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>32587.192</td>
<td>31012.422</td>
<td>1574.770 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1540.064 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1263.231 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
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<td>1.258948</td>
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</tr>
<tr>
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<tr>
<td>SMKCPD</td>
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<td>0.00235</td>
<td>88.88318</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>0.016606</td>
<td>0.00227</td>
<td>53.65923</td>
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<tr>
<td>SMKCYR</td>
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<td>0.041506</td>
<td>0.00414</td>
<td>100.71550</td>
<td>0.0001</td>
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<tr>
<td>XSMKCYR</td>
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<td>0.071956</td>
<td>0.00334</td>
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<td>0.0001</td>
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<tr>
<td>PASSIVE</td>
<td>1</td>
<td>0.003820</td>
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<td>0.52064</td>
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<td>0.429401</td>
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<td>0.081158</td>
<td>0.05536</td>
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<td>0.1426</td>
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Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Risk Variable</th>
<th>Ratio Lower</th>
<th>Upper</th>
<th>Label</th>
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<tbody>
<tr>
<td>CURCIG</td>
<td>3.522</td>
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<td>5.337</td>
</tr>
<tr>
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<td>6.153</td>
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<td>9.075</td>
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<tr>
<td>SMKCPD</td>
<td>1.022</td>
<td>1.018</td>
<td>1.027</td>
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<td>1.017</td>
<td>1.012</td>
<td>1.021</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.042</td>
<td>1.034</td>
<td>1.051</td>
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<tr>
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<td>1.075</td>
<td>1.069</td>
<td>1.082</td>
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<tr>
<td>PASSIVE</td>
<td>1.004</td>
<td>0.993</td>
<td>1.014</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.536</td>
<td>1.373</td>
<td>1.719</td>
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<tr>
<td>INDUSEXP</td>
<td>1.085</td>
<td>0.973</td>
<td>1.209</td>
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<tr>
<td>BMI</td>
<td>0.931</td>
<td>0.918</td>
<td>0.944</td>
</tr>
<tr>
<td>ALC</td>
<td>0.993</td>
<td>0.974</td>
<td>1.011</td>
</tr>
<tr>
<td>FINE</td>
<td>1.039</td>
<td>0.809</td>
<td>1.334</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 Ever-smokers in Women
-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CEN62
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>9918.593</td>
<td>9498.501</td>
<td>420.092 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>407.159 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>331.411 with 11 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.428233</td>
<td>0.34146</td>
<td>17.49552</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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<td>SMKCPD</td>
<td>1</td>
<td>0.033678</td>
<td>0.00411</td>
<td>67.13357</td>
<td>0.0001</td>
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<tr>
<td>XSMKCPD</td>
<td>1</td>
<td>0.028059</td>
<td>0.00493</td>
<td>32.44686</td>
<td>0.0001</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1</td>
<td>0.030121</td>
<td>0.00645</td>
<td>21.79144</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>4.171</td>
<td>2.136</td>
<td>8.146</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.034</td>
<td>1.026</td>
<td>1.043</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.028</td>
<td>1.019</td>
<td>1.038</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.031</td>
<td>1.018</td>
<td>1.044</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.065</td>
<td>1.051</td>
<td>1.080</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.007</td>
<td>0.988</td>
<td>1.025</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.464</td>
<td>1.166</td>
<td>1.838</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.229</td>
<td>0.952</td>
<td>1.586</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.949</td>
<td>0.928</td>
<td>0.970</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.982</td>
<td>0.940</td>
<td>1.027</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>0.884</td>
<td>0.564</td>
<td>1.383</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Lung Cancer Related Death for the Fine Particles at 24.4 Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.PPF_E
Dependent Variable: FAIL
Censoring Variable: CENS
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>22668.599</td>
<td>21485.578</td>
<td>1183.021 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>.</td>
<td>.</td>
<td>1181.270 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td>.</td>
<td>.</td>
<td>962.011 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>1.169206</td>
<td>0.28197</td>
<td>17.19410</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

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### Analysis of Maximum Likelihood Estimates

#### Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>3.219</td>
<td>1.853</td>
<td>5.595</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>6.231</td>
<td>4.091</td>
<td>9.492</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCFD</td>
<td>1.017</td>
<td>1.012</td>
<td>1.023</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCFD</td>
<td>1.014</td>
<td>1.009</td>
<td>1.019</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.059</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.077</td>
<td>1.069</td>
<td>1.085</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.002</td>
<td>0.990</td>
<td>1.015</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.540</td>
<td>1.353</td>
<td>1.753</td>
<td>Less than high school education</td>
</tr>
<tr>
<td>INDUSEXP</td>
<td>1.053</td>
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</tr>
<tr>
<td>BMI</td>
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<td>0.905</td>
<td>0.937</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.997</td>
<td>0.976</td>
<td>1.017</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.121</td>
<td>0.829</td>
<td>1.515</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 Ever-smokers

---

with the Female New Subcohort

### The PHREG Procedure

- **Data Set:** WORK.FPF_E
- **Dependent Variable:** FAIL
- **Censoring Variable:** CENCOMB
- **Censoring Value(s):** 1
- **Ties Handling:** BRESLOW

### Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>119951.825</td>
<td>118915.695</td>
<td>1036.130 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td></td>
<td>1027.128 with 12 DF (p=0.0001)</td>
</tr>
<tr>
<td>Wald</td>
<td></td>
<td></td>
<td>1001.154 with 12 DF (p=0.0001)</td>
</tr>
</tbody>
</table>

---

Analysis of Maximum Likelihood Estimates

356
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.752139</td>
<td>0.10147</td>
<td>54.93938</td>
<td>0.0001</td>
</tr>
<tr>
<td>EVPCONLY</td>
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<td>0.678678</td>
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<td>0.0001</td>
</tr>
<tr>
<td>SMKCPD</td>
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<td>9.38810</td>
<td>0.0022</td>
</tr>
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<td>SMKCYR</td>
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</tr>
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<td>0.021665</td>
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<td>0.02037</td>
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</tr>
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</tr>
<tr>
<td>FINE</td>
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<td>0.223304</td>
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<td>0.0006</td>
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</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.122</td>
<td>1.739</td>
<td>2.588</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td>1.971</td>
<td>1.740</td>
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<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.005</td>
<td>1.002</td>
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<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
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<td>1.007</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
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<td>1.013</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.022</td>
<td>1.019</td>
<td>1.024</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.000</td>
<td>0.994</td>
<td>1.007</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
<td>1.337</td>
<td>1.262</td>
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</tr>
<tr>
<td>INDUSEXP</td>
<td>1.081</td>
<td>1.022</td>
<td>1.143</td>
<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.992</td>
<td>0.985</td>
<td>0.999</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
<td>0.967</td>
<td>0.956</td>
<td>0.978</td>
<td>Alcohol Drinking</td>
</tr>
<tr>
<td>FINE</td>
<td>1.250</td>
<td>1.100</td>
<td>1.421</td>
<td>Fine Particles</td>
</tr>
</tbody>
</table>

Table_3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 Ever-smokers in Women -- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 LOG L</td>
<td>27130.714</td>
<td>26813.788</td>
<td>316.926 with 11 DF (p=0.0001)</td>
</tr>
<tr>
<td>Score</td>
<td>316.660 with 11 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald</td>
<td>303.207 with 11 DF (p=0.0001)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Analysis of Maximum Likelihood Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1</td>
<td>0.499498</td>
<td>0.16481</td>
<td>9.18597</td>
<td>0.0024</td>
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<td>EVPCONLY</td>
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<td>SMKCPD</td>
<td>1</td>
<td>0.013437</td>
<td>0.00308</td>
<td>19.07343</td>
<td>0.0001</td>
</tr>
<tr>
<td>XSMKCPD</td>
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</tr>
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<td>XSMKCYR</td>
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<td>0.00277</td>
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</tr>
<tr>
<td>PASSIVE</td>
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</table>

### Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>1.648</td>
<td>1.193</td>
<td>2.276</td>
<td>Current Smoker</td>
</tr>
<tr>
<td>EVPCONLY</td>
<td></td>
<td></td>
<td></td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.014</td>
<td>1.007</td>
<td>1.020</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSMKCPD</td>
<td>1.008</td>
<td>1.002</td>
<td>1.014</td>
<td>Former cigarettes per day</td>
</tr>
<tr>
<td>SMKCYR</td>
<td>1.012</td>
<td>1.005</td>
<td>1.018</td>
<td>Current years smoke</td>
</tr>
<tr>
<td>XSMKCYR</td>
<td>1.021</td>
<td>1.015</td>
<td>1.027</td>
<td>Former years smoked</td>
</tr>
<tr>
<td>PASSIVE</td>
<td>1.005</td>
<td>0.993</td>
<td>1.018</td>
<td>Passive Smoking</td>
</tr>
<tr>
<td>EDULOW</td>
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<td>1.367</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
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<td>0.986</td>
<td>1.010</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>ALC</td>
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<td>0.924</td>
<td>0.983</td>
<td>Alcohol Drinking</td>
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<tr>
<td>FINE</td>
<td>1.317</td>
<td>1.012</td>
<td>1.712</td>
<td>Fine Particles</td>
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</tbody>
</table>

Table 3: Adjusted Mortality Risk Ratios (and 95% Confidence Intervals) by Cardiopulmonary Death for the Fine Particles at 24.4 Ever-smokers in Men

-- with the Female New Subcohort

The PHREG Procedure

Data Set: WORK.FPF_E
Dependent Variable: FAIL
Censoring Variable: CENCOMB
Censoring Value(s): 1
Ties Handling: BRESLOW

Testing Global Null Hypothesis: BETA=0

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Without Covariates</th>
<th>With Covariates</th>
<th>Model Chi-Square</th>
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</table>

358
<table>
<thead>
<tr>
<th>Variable</th>
<th>DF</th>
<th>Parameter Estimate</th>
<th>Standard Error</th>
<th>Wald Chi-Square</th>
<th>Pr &gt; Chi-Square</th>
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</thead>
<tbody>
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<td>0.871160</td>
<td>0.13433</td>
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<td>0.00118</td>
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<td>7.52360</td>
<td>0.0061</td>
</tr>
</tbody>
</table>

Analysis of Maximum Likelihood Estimates

Conditional Risk Ratio and 95% Confidence Limits

<table>
<thead>
<tr>
<th>Variable</th>
<th>Risk Ratio</th>
<th>Lower</th>
<th>Upper</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURCIG</td>
<td>2.390</td>
<td>1.837</td>
<td>3.109</td>
<td>Current Smoker</td>
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<tr>
<td>EVPCONLY</td>
<td>1.979</td>
<td>1.729</td>
<td>2.266</td>
<td>Pipe/cigar smoker</td>
</tr>
<tr>
<td>SMKCPD</td>
<td>1.002</td>
<td>0.998</td>
<td>1.006</td>
<td>Current cigarettes per day</td>
</tr>
<tr>
<td>XSNKCPD</td>
<td>1.009</td>
<td>1.006</td>
<td>1.011</td>
<td>Former cigarettes per day</td>
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<tr>
<td>SMKCYR</td>
<td>1.008</td>
<td>1.003</td>
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<td>Current years smoke</td>
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<td>XSNKCYR</td>
<td>1.022</td>
<td>1.019</td>
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<td>Former years smoked</td>
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<tr>
<td>PASSIVE</td>
<td>0.999</td>
<td>0.992</td>
<td>1.006</td>
<td>Passive Smoking</td>
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<tr>
<td>EDULOW</td>
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<td>INDUSEXP</td>
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<td>1.017</td>
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<td>Occupational exposure</td>
</tr>
<tr>
<td>BMI</td>
<td>0.989</td>
<td>0.980</td>
<td>0.997</td>
<td>Body Mass Index</td>
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<tr>
<td>ALC</td>
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<td>1.423</td>
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