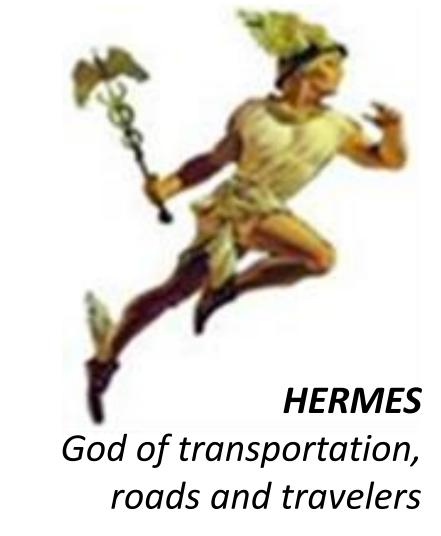
# Health effects of air pollution components, noise and socio-economic status ("HERMES")

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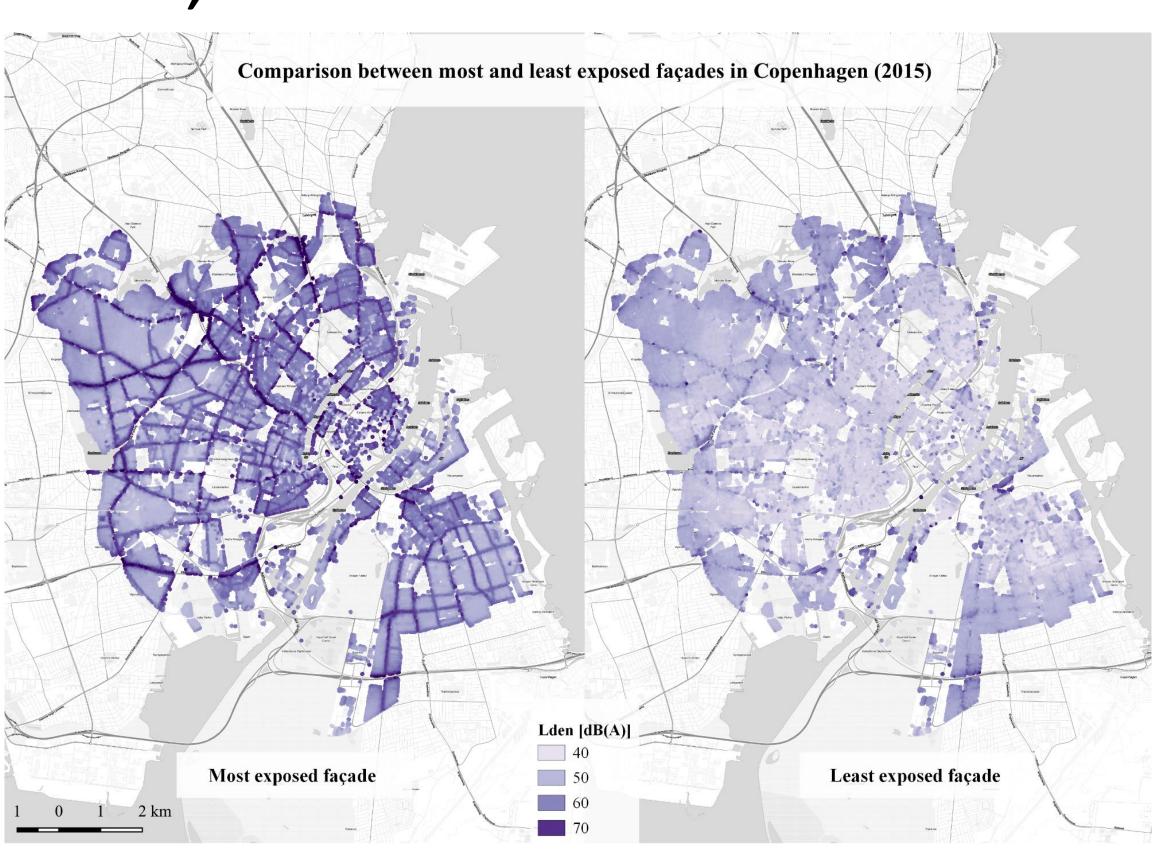
## INTRODUCTION

This poster presents three areas which have been in focus during the first 10 months of HERMES:

- Data collection
- Development of a model to calculate ultrafine particles
- Development of a statistical method to separate independent effects of correlated air pollutants

#### DATA COLLECTION 1: OIS/BBR: Addresses Geocodes 2: DCSRC Building type **Building type** specification 3: Rambøll: 5: AU: Sub-setting to (potential) dwellings Traffic loads 4: Master address data All potential dwellings in Denmark 6: Rambøll: 7: AU: 8: AU: Air pollution noise Green space estimates Traffic indicators 9: DCSRC: **Environment exposures** 14: DCSRC: Parish SES DS - server 15: KU: New statistical methods 10: Master population: 13: Hearing Loss Data - from All persons with valid personal Odense University Hospital ID, ever residing in Denmark from 1979 12: Diet Cancer Health Cohort 12: Diet Cancer Health 1: From DST registers: Next generations Hospital Discharge Cohort Cause of death Prescriptions 12: The Danish National **Health Profile Hearing Aids** Cohort Emigration/Disappearance/Death DCSRC: Danish Cancer Society Research Center

# NOISE, GREEN SPACE AND INCOME



Noise (Lden, dB) by green space and income at parish level

<u> </u>		Median, Lden, dB	
Parish proportion	Npersons	Most exposed facade	Least exposed facade
Low income			<u>=</u>
Q1	692,653	53.4	44.3
Q2	683,027	54.8	44.0
Q3	695,132	55.8	44.7
Q4	690,661	58.5	46.3
<b>Green space</b>			
Q1	690,090	60.2	46.1
Q2	691,389	55.2	46.6
Q3	688,474	52.8	44.9
Q4	691,520	54.1	41.1

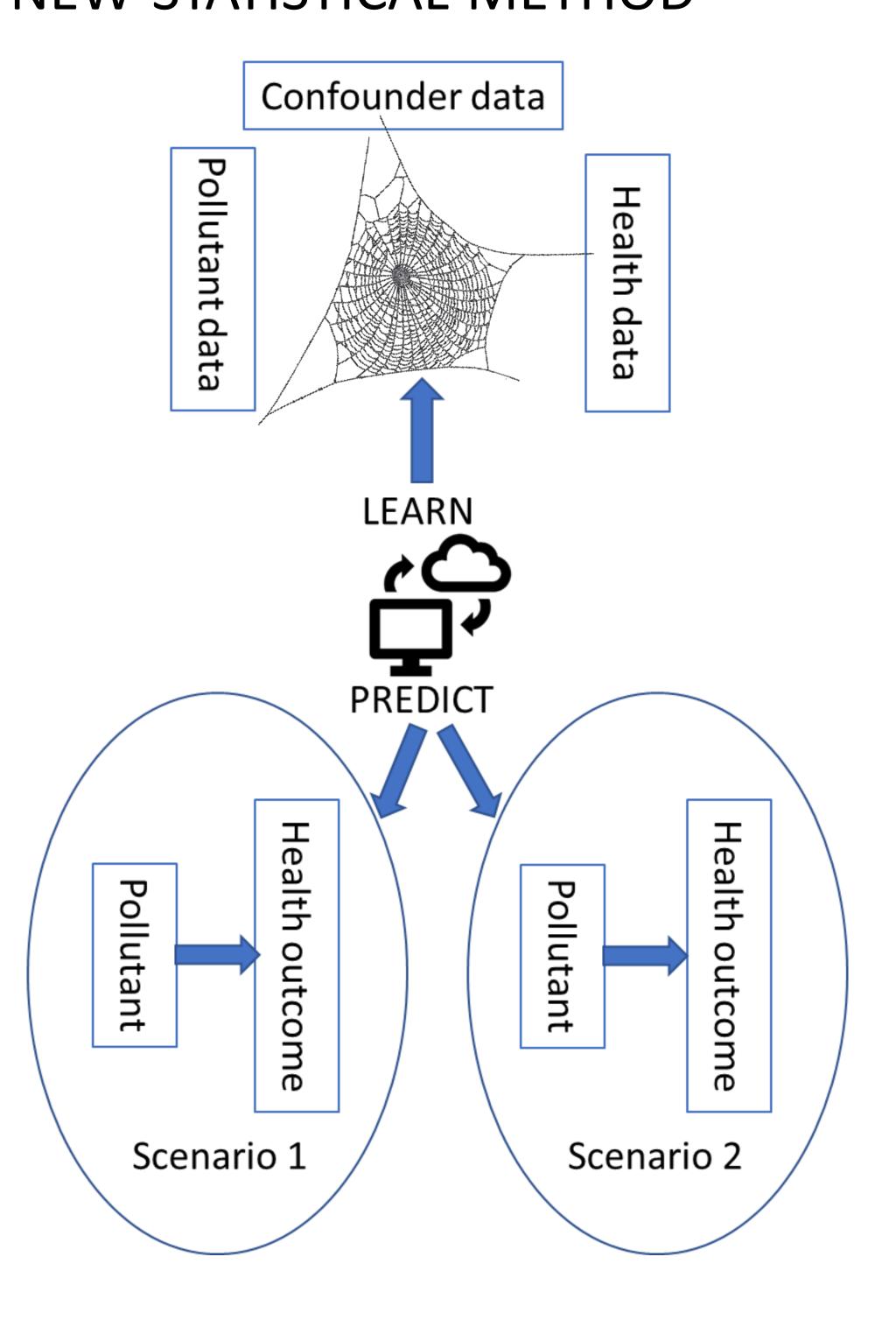
# NEW STATISTICAL METHOD

AU: Aarhus University, dep. of Environmental Science

KU: Copenhagen University, dep. of Public Health

Rambøll: Rambøll consultant engineering

DS: Statistics Denmark

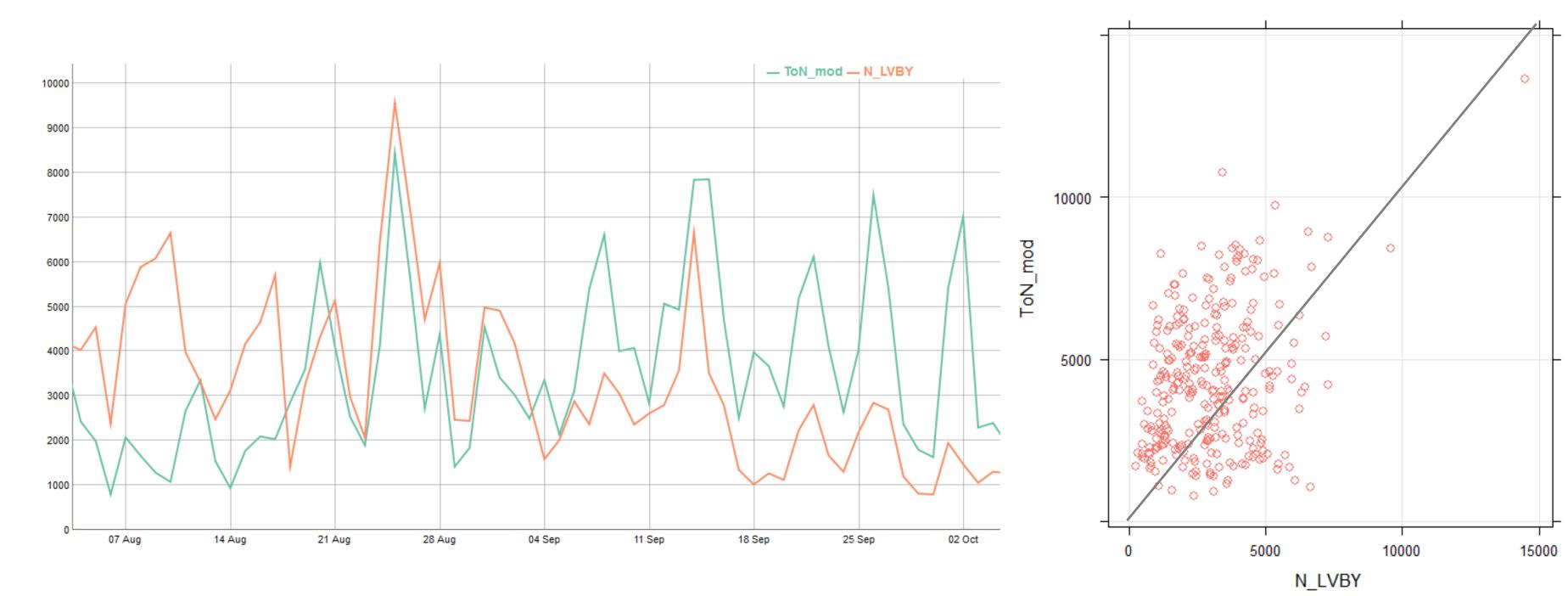


## Modelling ultrafine particles

- We implement the aerosol dynamics module "M7" in our models.
- Emission database based on methods from EU-TRANSPHORM
- First model test runs for aitken mode, one monitoring station and 2016
- Further tests are ongoing

Size range in nm	Soluble, i.e either seasalt, pure H <sub>2</sub> SO <sub>4</sub> or other PM, coated with H <sub>2</sub> SO <sub>4</sub>	Insoluble, i.e non coated PM
< 10	nucleation (H <sub>2</sub> SO <sub>4</sub> )	
10 - 100	aitken (H <sub>2</sub> SO <sub>4</sub> , BC, OC, dust)	aitken (BC, OC, dust)
100 - 1000	accumulation (H <sub>2</sub> SO <sub>4</sub> , BC, OC, ss, dust)	accumulation (BC, OC, dust)
> 1000	coarse (H <sub>2</sub> SO <sub>4</sub> , BC, OC, ss, dust)	coarse (dust)

Calculated (ToN\_mod) and measured (N\_LVBY) daily averages of total particle number (10-100nm) concentration at a rural station in Denmark for a period in 2016. Units #/cm<sup>3</sup>.



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