ENVIRONMENTAL JUSTICE AND OTHER IMPLICATIONS OF NEW TRANSPORTATION ON TRAP AND HEALTH

HEI ANNUAL CONFERENCE 2023
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RACIAL-ETHNIC DISPARITIES IN TRAFFIC-RELATED AIR POLLUTION

Source: Demetillo et al., 2021

Figure 1. Relative NOx inequalities (percentage difference between population-weighted NOx exposure for 52 major US cities over all days in June 2018–February 2020. Marker size reflects the total city population with the smallest markers representing cities with <1.5 million residents and the largest markers for cities with >10 million residents. Average NOx inequalities are shown for Black and African American (a), Hispanic/Latino (b), Asian (c), and Native American (d) compared to white residents. Inequalities are also mapped for people living near (e) and below (f) the poverty line and for LIs compared to HIs (g). Displayed means values for each group are weighted by urban population size. City-averaged NOx, tropospheric vertical columns densities. Source: Demetillo et al., 2021.
RACIAL-ETHNIC DISPARITIES IN TRAFFIC-RELATED AIR POLLUTION

Source: Tessum et al., 2021
EPA’S CLEAN TRUCK PLAN

- Phase I: New NO\textsubscript{x} emission standards for 2027+ MY

Source: nepis.epa.gov
Exhaust after-treatment control technologies:
- Diesel particle filters (DPFs) for PM control (2007+ MY)
- Selective catalytic reduction (SCR) systems for NO\textsubscript{x} control (2010+ MY)
- CA rules require all heavy-duty diesel engines have DPFs by 2018 and both DPFs + SCR by 2023
STUDY AREA: EAST OAKLAND FREIGHT CORRIDOR

- I-880
  - Carries highest volume of trucks in the region
- I-580
  - No trucks over 4.5 tons along segment indicated by thick red line
  - The only Interstate Freeway not open to trucks
- All truck traffic, including Port- and airport-related cargo movement, must travel on I-880
REDUCTIONS IN POLLUTANT CONCENTRATIONS

Source: Patterson and Harley, 2021
Fig. 3. The relationship of road density with urban lockdown-related drops in NO$_2$ columns and demographic variables. Road density is calculated as the number of primary road segments within a 1-km radius of tracts’ centroids for each decile of demographic variables. The colored legend indicates the directionality of each demographic variable. As an example, the density corresponding to the lowest decile of the “White” curve represents the road density in urban tracts that are the least White (i.e., in the first decile of the percentage of their population that is White). Shading for the ΔNO$_2$ curve illustrate the 90% CI.  
Source: Kerr et al., 2021
NON-TAILPIPE ISSUES OF CONCERN

Non-Exhaust Emissions
Tire, brake, and road wear and road dust resuspension are important sources for traffic-related PM emissions

Battery Production
Environmental and Indigenous land rights impacts in the US and globally

Auto Manufacturing
Pollution from new hybrid and EV production sites exacerbate environmental injustices

Electricity Generation
Fossil fuels are the largest sources of electricity generation in the US (61%)

Source: Patterson, 2022
Black farming community fights to get fair deal as state takes land for Ford plant roadways

Farmers near the new BlueOval City campus are excited by the project but say the state is offering them a fraction of what their land is worth

BY ANITA WASHNHANI - APRIL 5, 2023 - 6:00 AM
What is an Eligible Facility?

A highway, including a road, street, or parkway or other transportation facility, such as a rail line, that creates a barrier to community connectivity, including barriers to mobility, access, or economic development, due to high speeds, grade separations, or other design factors.

Funding Available

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<th>Fiscal Year</th>
<th>2022</th>
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<th>2024</th>
<th>2025</th>
<th>2026</th>
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<td>Planning &amp; Technical Assistance</td>
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Source: www.transportation.gov/grants/reconnecting-communities
COMPLETED PROJECTS

- BOSTON | THE BIG DIG
- CHATTANOOGA | RIVERFRONT PARKWAY
- MADRID | MANZANARES RIVER BANKS
- MILWAUKEE | PARK EAST FREEWAY
- PORTLAND | HARBOR DRIVE
- PROVIDENCE | I-195
- ROCHESTER | EMBARCADERO FREEWAY
- MONTREAL | BONAVENTURE EXPRESSWAY
- NEW YORK CITY | SHERIDAN BOULEVARD
- OAKLAND | MANDELA PARKWAY
- PARIS | POMPIDOU EXPRESSWAY
- SAN FRANCISCO | OCTAVIA BOULEVARD
- SEATTLE | ALASKAN WAY VIADUCT
- SEOUL | CHEONGGYE FREEWAY

Source: cnu.org
AWARDED PROJECTS
The transition to zero-tailpipe emission vehicles must be coupled with transformative solutions to achieve environmental justice.