

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

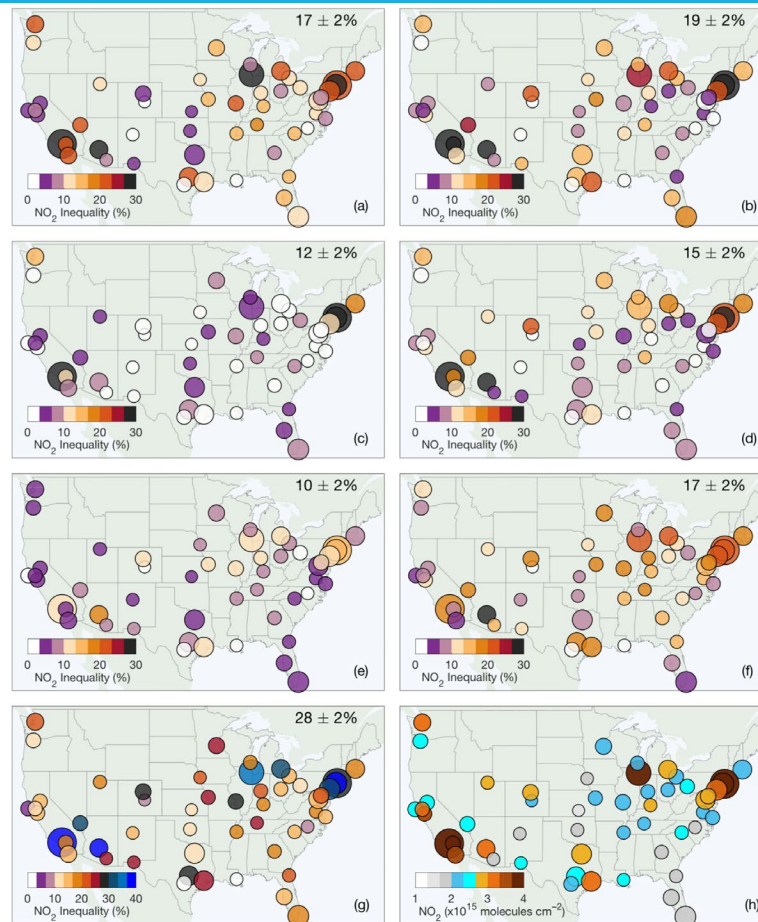
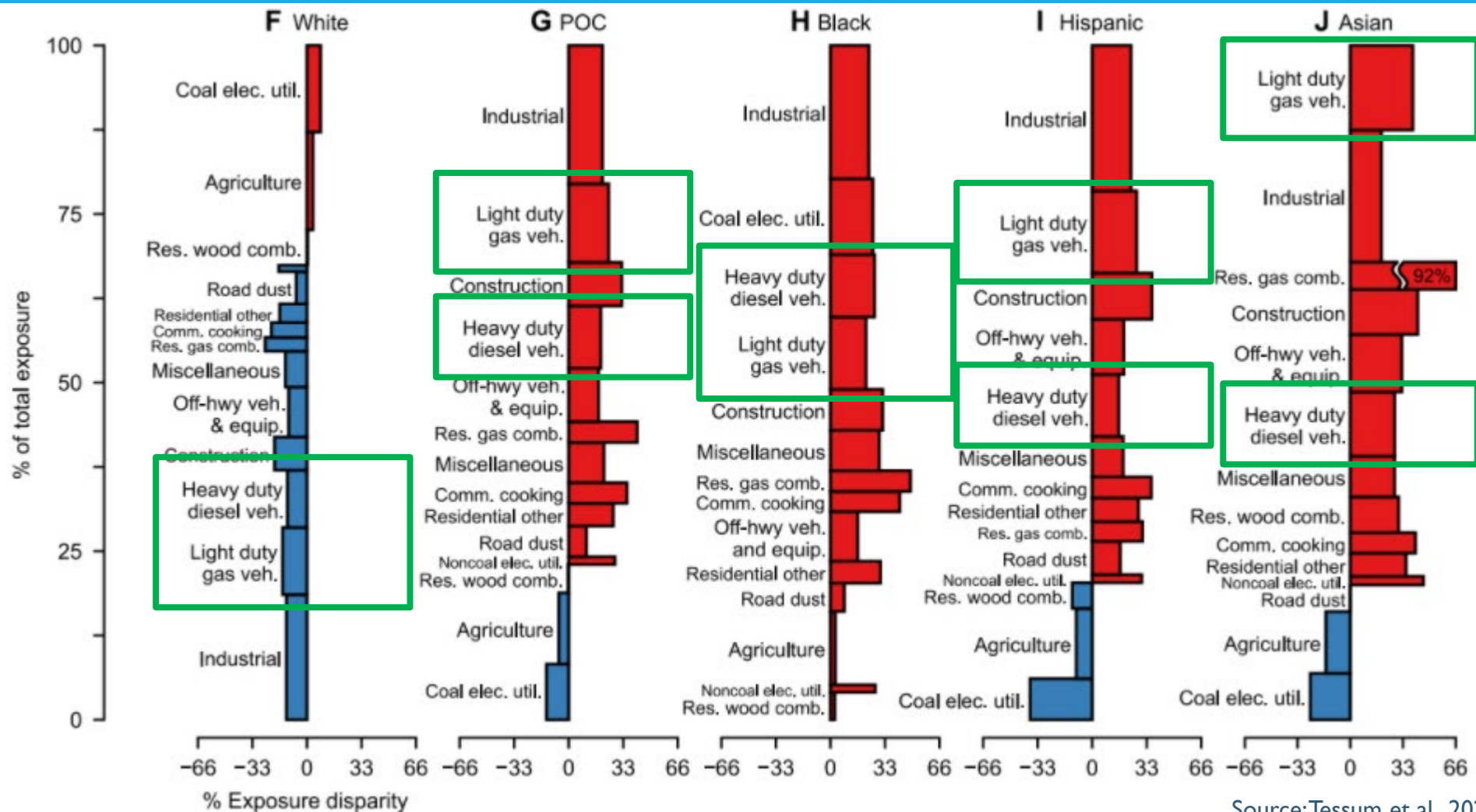


Figure 1. Relative NO₂ inequalities (percentage difference between population-weighted NO₂ means) for 52 major US cities over all days in June 2018–February 2020. Marker size reflects the total city population with the smallest markers representing cities with <1.5 million residents and the largest markers for cities with >10 million residents. Average NO₂ 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) versus above the poverty line and for LINS compared to HTWs (g). Displayed mean values for each group are weighted by urban population size. City-averaged NO₂ tropospheric vertical column densities are shown (h).

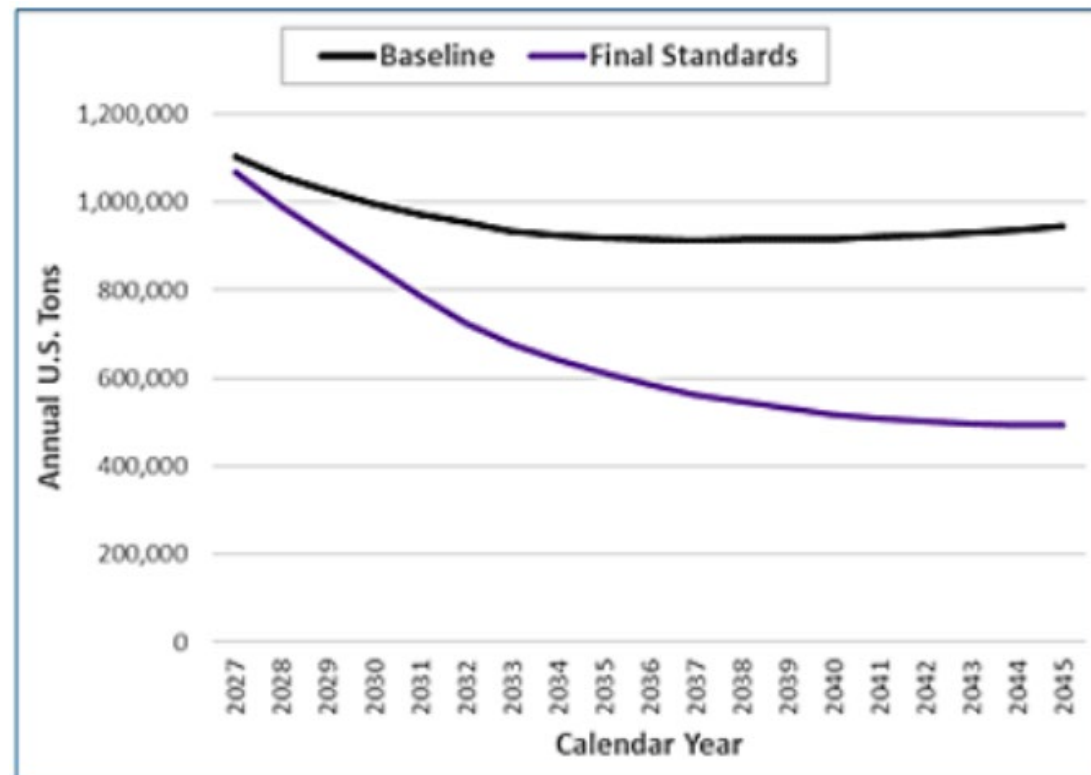
Source: Demetillo et al., 2021

RACIAL-ETHNIC DISPARITIES IN TRAFFIC-RELATED AIR POLLUTION



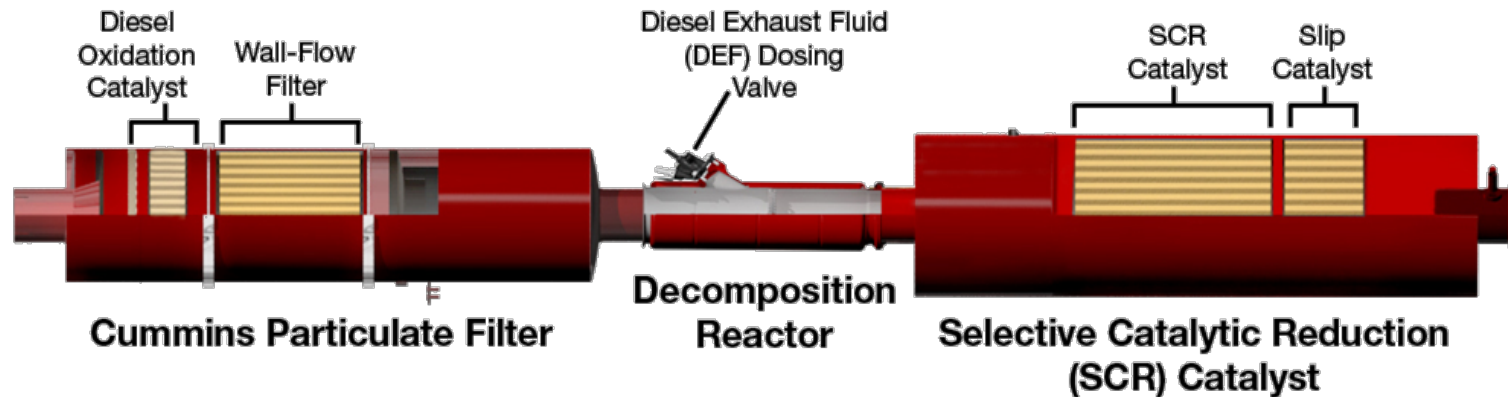
EPA'S CLEAN TRUCK PLAN

- Phase I: New NO_x emission standards for 2027+ MY



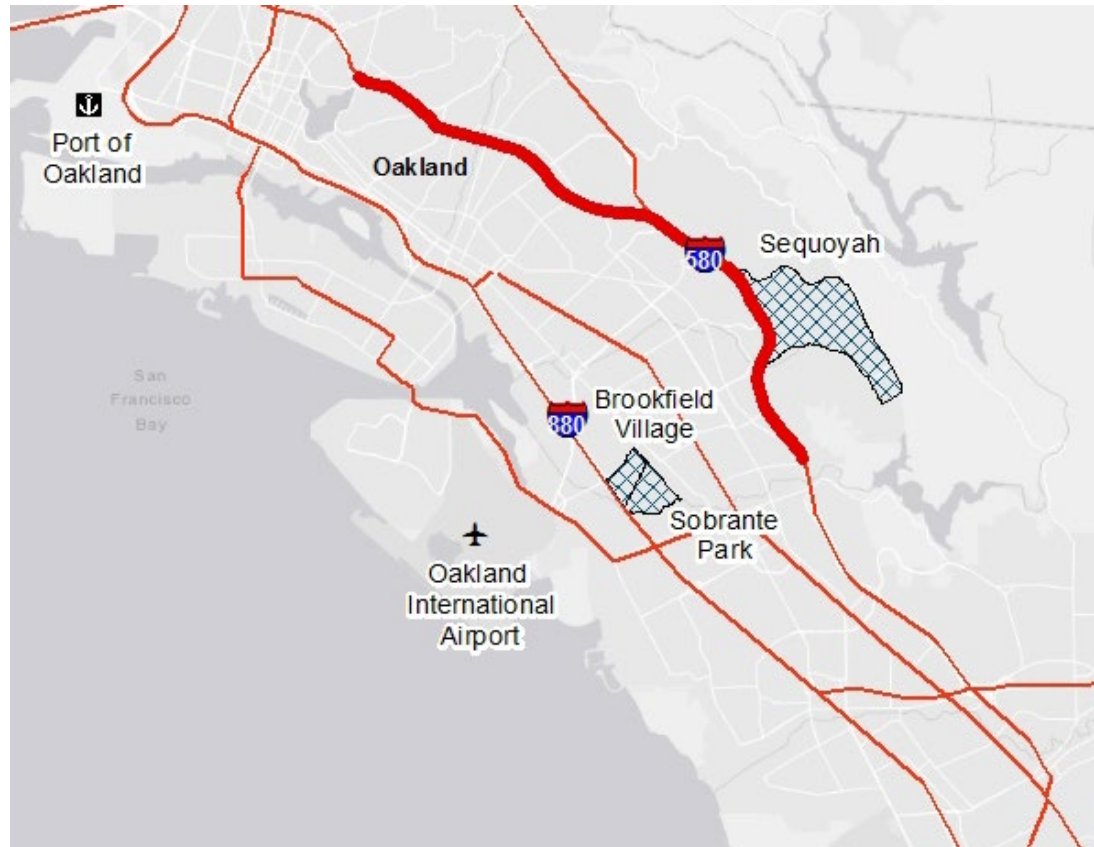
Source: nepis.epa.gov

STUDY: DIESEL EMISSION CONTROLS



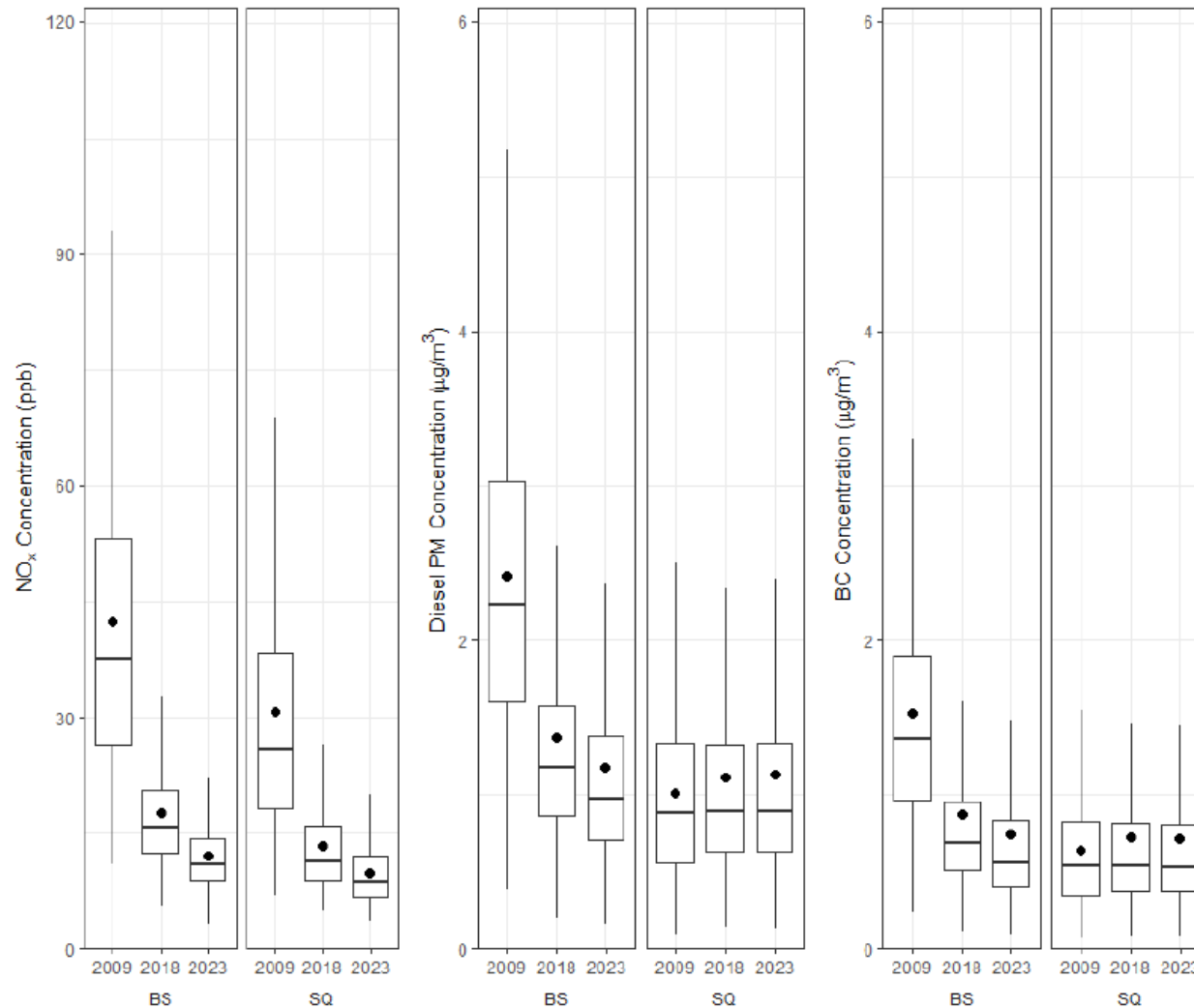
- Exhaust after-treatment control technologies:
 - Diesel particle filters (DPFs) for PM control (2007+ MY)
 - Selective catalytic reduction (SCR) systems for NO_x control (2010+ MY)
- CA rules require all heavy-duty diesel engines have DPFs by 2018 and both DPFs + SCR by 2023

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

INFRASTRUCTURE INEQUITY

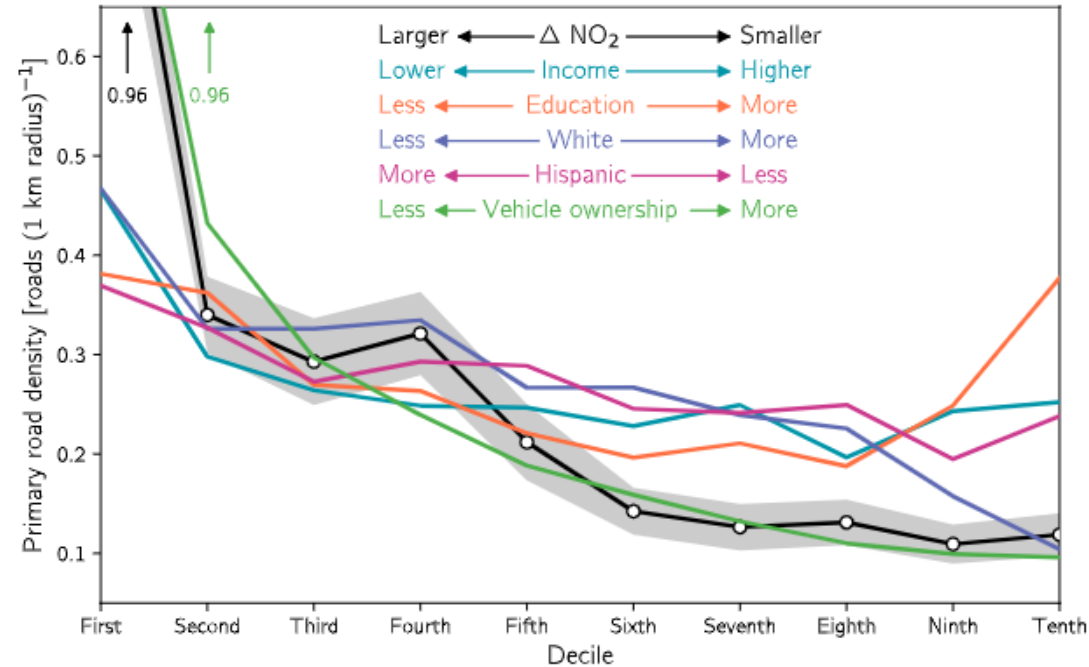


Fig. 3. The relationship of road density with urban lockdown-related drops in NO_2 columns and demographic variables. Road density is calculated as the number of primary road segments within a 1-km radius of tracts' centroids for each decile of demographic variables. The colored legend indicates the 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%)

TENNESSEE | LOOKOUT

HEALTHCARE EDUCATION ENVIRONMENT POLITICS IMMIGRATION INVESTIGATES

CIVIL RIGHTS WORKING & THE ECONOMY

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 WADHWANI - APRIL 3, 2023 6:00 AM



Farmer and logger Marvin Sanderling and sons Matthew and Joseph are fighting the Tennessee Department of Transportation in an eminent domain fight. (Photo: John Partipilo)

RECONNECTING COMMUNITIES



U.S. Department of Transportation

ABOUT DOT ▾

PRIORITIES ▾

CONNECT ▾



What is an Eligible Facility?

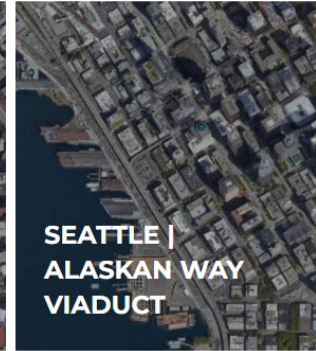
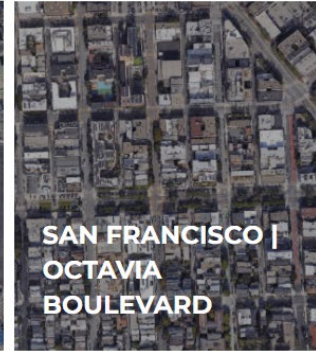
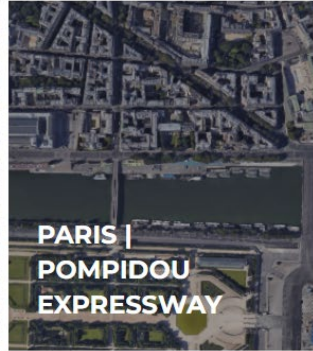
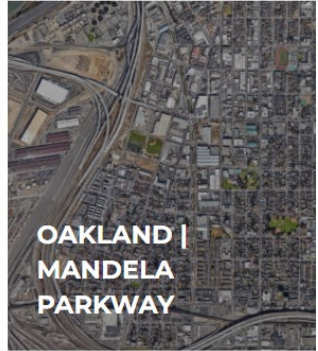
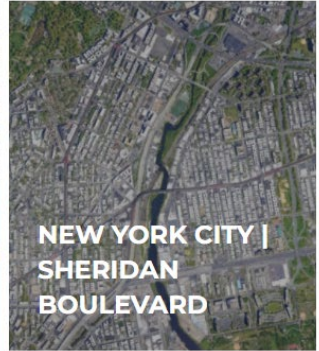
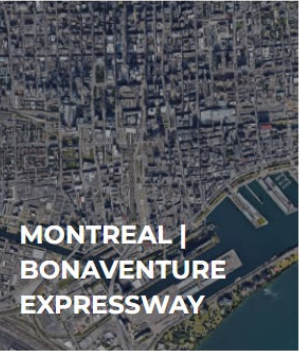
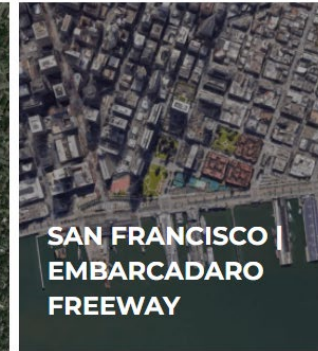
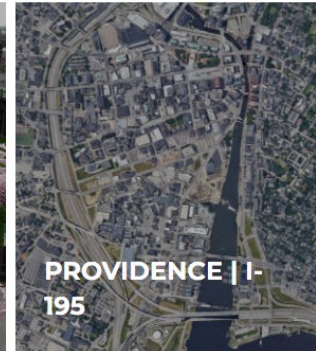
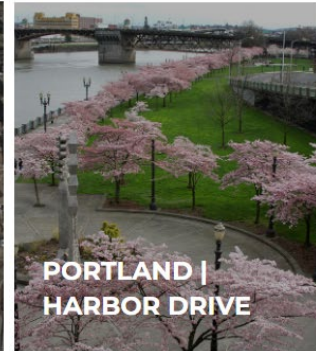
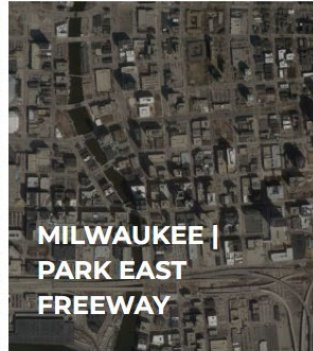
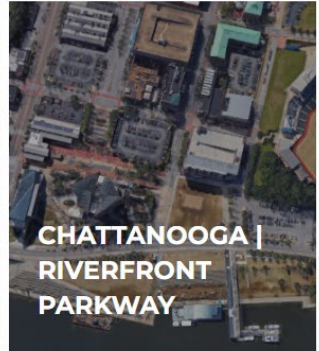
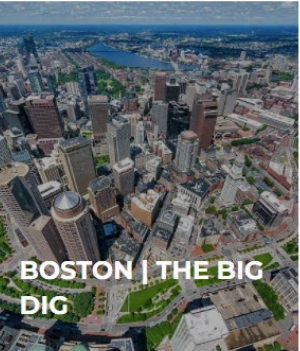
A highway, including a road, street, or parkway or other transportation facility, such as a rail line, that creates a barrier to community connectivity, including barriers to mobility, access, or economic development, due to high speeds, grade separations, or other design factors.

Funding Available

Fiscal Year	2022	2023	2024	2025	2026	5-Year Total
Planning & Technical Assistance	\$50M	\$50M	\$50M	\$50M	\$50M	\$250M
Capital Construction	\$145M	\$148M	\$150M	\$152M	\$155M	\$750M
Total Authorized Amount	\$195M	\$198M	\$200M	\$202M	\$205M	\$1,000M

Source: www.transportation.gov/grants/reconnecting-communities

COMPLETED PROJECTS





The ferry building before and after the removal of the Embarcadero Freeway in San Francisco

AWARDED PROJECTS



CONCLUSION

- The transition to zero-tailpipe emission vehicles must be coupled with transformative solutions to achieve environmental justice

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