

Exposure to air pollution from diesel trucks in New York City

Air pollution from diesel truck emissions is a major environmental justice issue in New York City. Diesel trucks are a major source of fine particulate matter (PM_{2.5}) and nitrogen oxides (NO_x) which lead to adverse health impacts, including premature mortality. Numerous studies have found racial disparities in exposure to PM_{2.5} from diesel trucks, and these inequities in air pollution exposure contribute to disparate health outcomes. A new TRUE analysis uses real-world emissions data to analyze the health impacts of diesel truck emissions in New York City and identify policy recommendations for reducing exposure disparities.

KEY FINDINGS

- Older diesel trucks are responsible for a large share of total emissions and resulting premature mortalities. Pre-2007 engine model year (MY) trucks make up 6%-10%

of the fleet but contribute 64%-83% of diesel truck tailpipe PM_{2.5} emissions.

- Vehicles certified to the most recent NO_x emissions limit also have excess emissions; a 2010 engine MY truck has approximately double the health impact per vehicle-mile compared to a post-2015 engine MY truck.
- Replacing a pre-2010 engine MY truck with a new diesel truck reduces health impacts by 81%-96%. Given the significant damages associated with these older vehicles, it is important to take an active approach in reducing their share of the fleet as opposed to waiting for natural fleet turnover.
- Even new diesel trucks have a non-negligible health impact, particularly when considering vehicles with malfunctioning emission control systems. An accelerated transition to zero-emission alternatives is

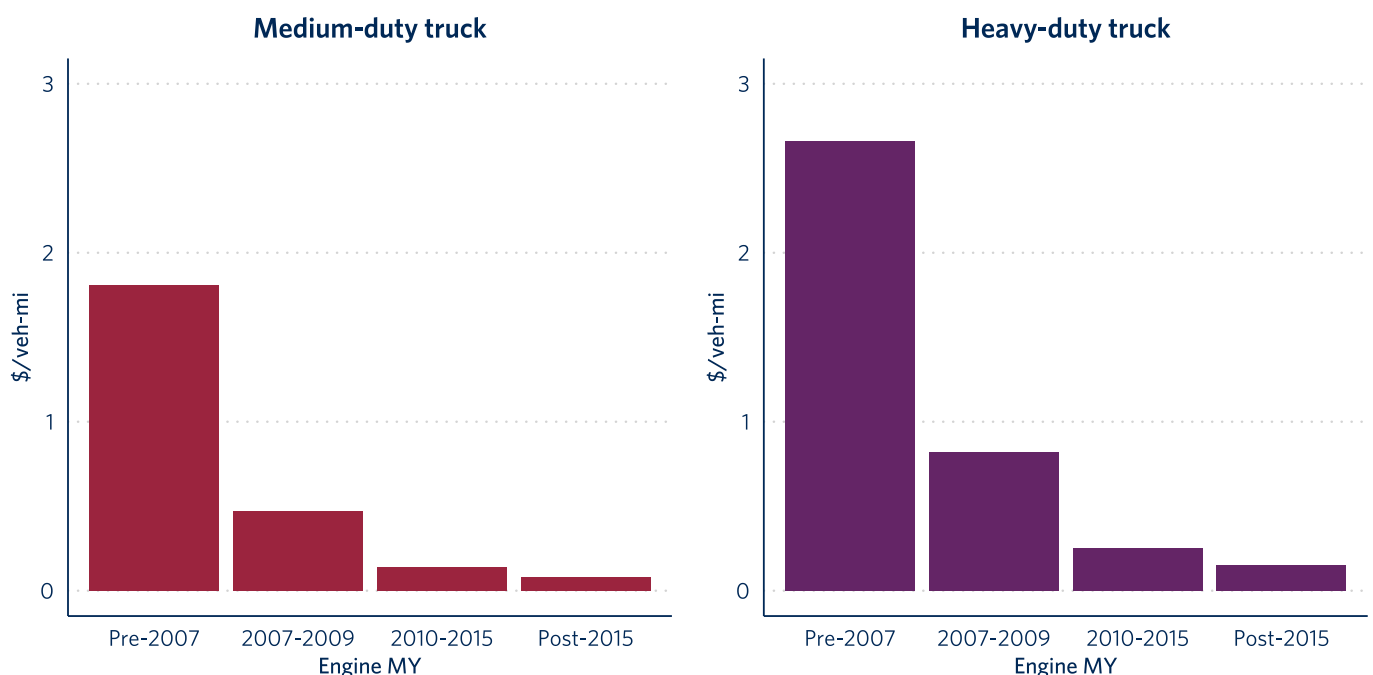


Figure 1. Per-mile health damage rates of diesel trucks operating in New York City by engine model year (MY) group. The health impacts reflect the monetized value of premature mortalities caused by exposure to PM_{2.5} from diesel trucks.

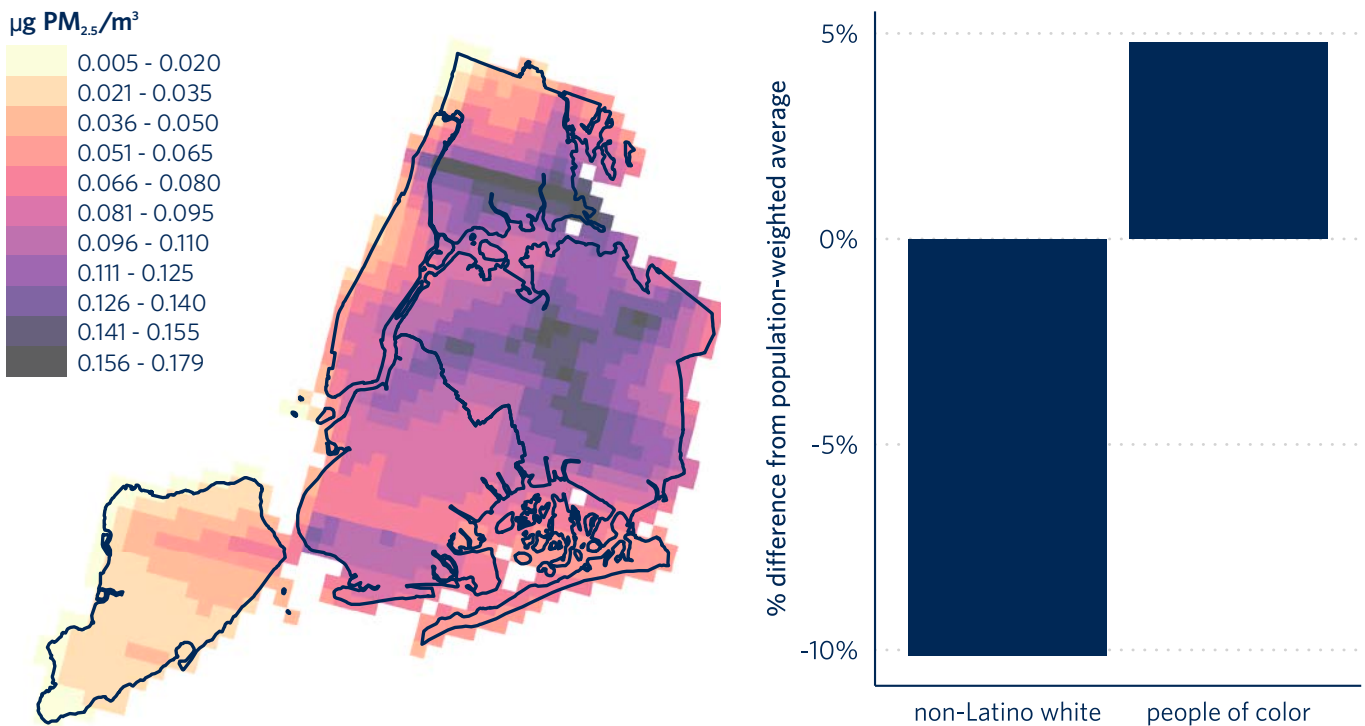


Figure 2. Ambient PM_{2.5} concentrations attributable to diesel truck tailpipe emissions within New York City and disparate PM_{2.5} exposure by race.

necessary to ensure a continued decline in diesel truck emissions and to meet climate goals.

- The highest concentrations of ambient PM_{2.5} are observed around the major freight corridors in the Bronx and Queens. People of color living in New York City are exposed to 5% more PM_{2.5} attributable to diesel trucks operating in the city than average, while non-Latino white residents are exposed to 10% less.

RECOMMENDATIONS

- *Drastically reduce the share of pre-2010 engine MY diesel trucks to maximize emission reductions in the shortest amount of time.* Shifts to cleaner vehicles could be incentivized by implementing emissions-based truck tolls through the Central Business District Tolling Program. In addition, expanding New York City’s Clean Trucks Program would provide additional funding to replace older diesel trucks.
- *Update inspection and maintenance program methods to effectively identify high emitters among newer diesel vehicles.* Implementing on-board diagnostics, particle number measurements, and other updated inspection methods would help to identify vehicles with malfunctioning emission control systems.
- *Focus emission reduction policies on the environmental justice areas currently experiencing the largest health burdens to reduce racial disparities in exposure to PM_{2.5}.* Targeted policies for ports and other industrial areas, such as emissions-based access restrictions with targets for fully zero-emission operation, would address areas shown to have high concentrations of pollutants.
- *Accelerate the shift to zero-emission vehicles to achieve the largest emission reductions and to achieve climate goals.* Implementing zero-emission zones could quickly address local emissions while encouraging fleet owners to replace combustion engine vehicles. Offering incentives, such as increased rebates for battery-electric vehicles and infrastructure improvements and dedicated curb space for zero-emission last-mile delivery, would assist fleet owners in the transition to zero-emission freight options.



TO FIND OUT MORE

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For more information on TRUE, visit www.trueinitiative.org