THE REAL URBAN EMISSIONS INITIATIVE

FACT SHEET

JUNE 2024

Assessment of Real-World Passenger Vehicle and Taxi Emissions in Mexico City

BACKGROUND

Light-duty vehicles (LDVs), such as passenger vehicles (PVs) and taxis, are a key source of transport emissions in Mexico City, contributing to high levels of ozone (O_3) and fine particulate matter, which lead to adverse health impacts among residents. Meanwhile, the policies regulating LDV emissions in Mexico continue to lag those of other countries: Notably, the national LDV emission standard was last updated in 2005.

To address road transport emissions in the Greater Mexico City area, the governments of Mexico City and the neighboring State of Mexico restrict some older, high-emitting vehicles from driving on certain days. Mexico City has also set goals for future emissions reduction through strategies like implementing a low-emission zone and accelerating the transition to battery-electric vehicles.

To support city officials in developing effective responses to LDV emissions and air pollution, TRUE conducted a real-world testing campaign that aimed to:

- Provide a comprehensive picture of vehicle emissions from the PV and taxi fleets in the Greater Mexico City region
- Develop policy recommendations based on real-world data to address high-emitting vehicles and accelerate the transition to lower-emitting and zero-emission vehicles

CAMPAIGN STATS:

Testing schedule: February – April 2022

Sites: 21 total locations (10 in Mexico City, 8 in the State of Mexico, 3 in Puebla)

Samples: Approximately 45,000 valid measurements

Measured fleet: PVs, taxis, and light-duty trucks (98.6% gasoline)

Pollutants analyzed:

- Carbon monoxide (CO)
- Hydrocarbons (HC)
- Nitrogen oxides (NO_X)
- UV smoke (a proxy for particulate matter)

PARTNERS:

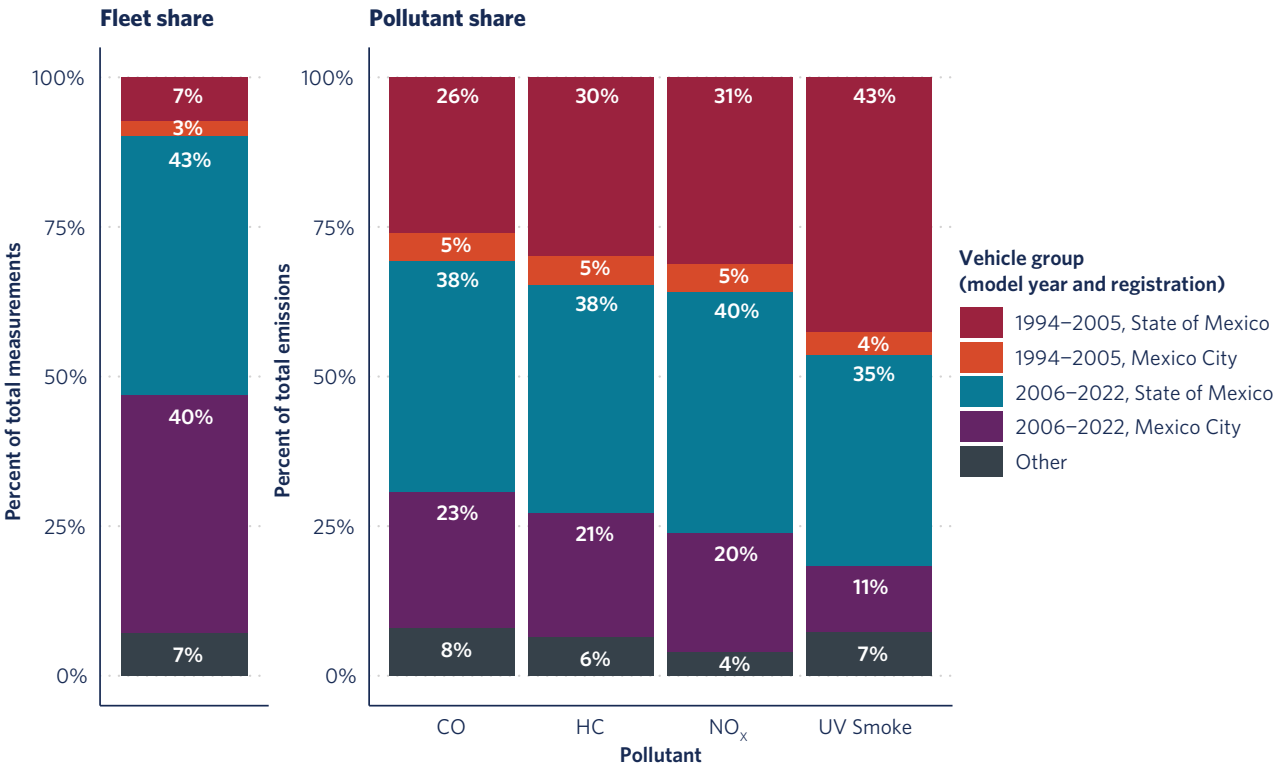
This study was conducted in coordination with the Secretariat of the Environment (Secretaría del Medio Ambiente, SEDEMA), the Environmental Commission of the Megalopolis (Comisión Ambiental de la Megalópolis, CAMe), and the National Institute for Ecology and Climate Change (Instituto Nacional de Ecología y Cambio Climático, INECC). The partners helped select the testing sites, obtained permits for testing, and provided input on policy recommendations.

Remote sensing device setup on Blvd. de los Virreyes in Mexico City.

STRATEGIES TO REDUCE EMISSIONS

The analysis of the real-world vehicle emission samples provides strong evidence to support two main strategies to reduce vehicle emissions and associated air pollution:

1. **Addressing a small percentage of high-emitting PVs and taxis through improved inspection and maintenance programs and replacement can lead to substantial emission reductions.**



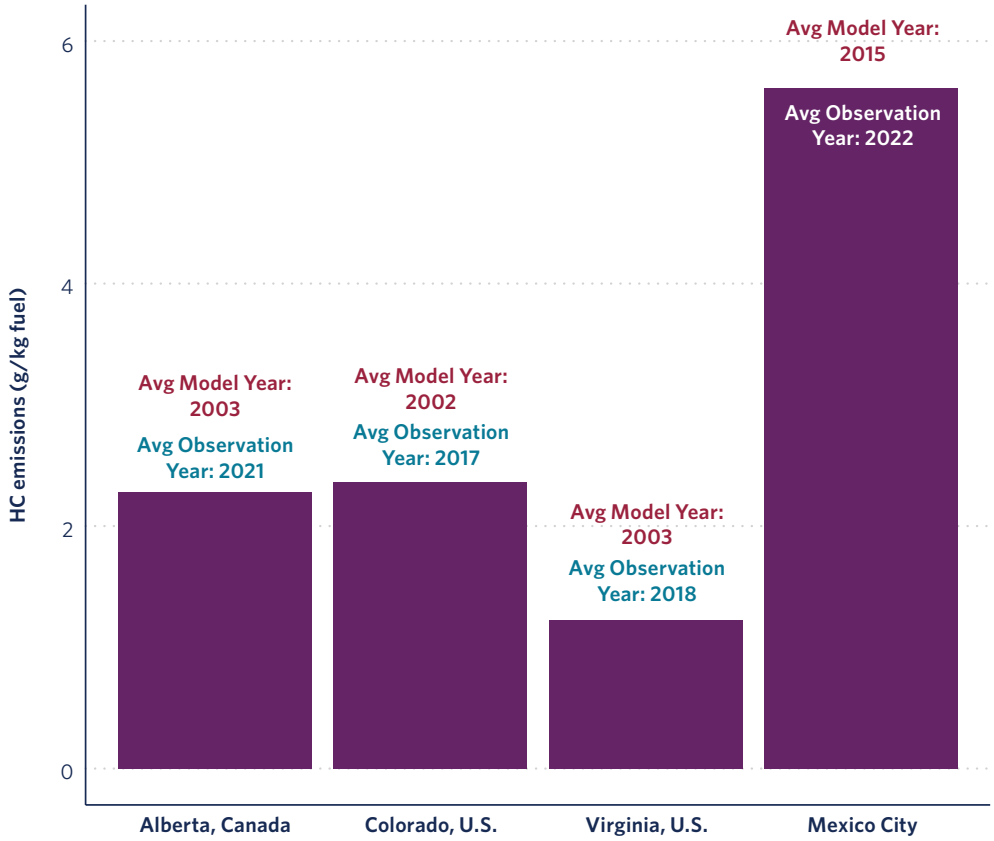
- Older cars account for a small portion of the fleet but contribute a large share of emissions. Specifically, model year (MY) 1994–2005 PVs registered in the State of Mexico accounted for only 7% of the sampled fleet but made up 25%–42% of total emissions across pollutants.
- Taxis showed much higher emissions compared to PVs, approximately 2.2–3.1 times higher across all pollutants. Nissan Tsurus, the most popular taxi model, showed particularly high emissions: For example, MY 2014 Nissan Tsuru taxis showed NO_x emissions over 10 times higher than MY 2014 passenger vehicles.

Policy implications:

- **Replacing the highest-emitting taxi models** in favor of zero-emission and lower-emitting models would greatly improve real-world taxi emissions.
- **Harmonizing and strengthening inspection and maintenance programs** across the Mexico City megalopolis could help to identify and address high-emitting vehicles.
- Adopting the proposed **low-emission zone** in the Mexico City downtown area by 2024 could accelerate emissions reduction from older vehicles.

2. Stringent regulations to support the transition to lower-emitting and zero-emission vehicles are key to addressing air pollution and climate issues.

- Mexico City vehicles showed extremely high levels of HC emissions, which contribute to O_3 formation, compared to vehicles from the United States and Canada based on TRUE remote sensing data. Mexico's current national emission standard is most similar to the Tier 1 standard in the United States and Canada, which applied for MY 1994–2006 vehicles. Comparatively newer Tier 1-equivalent Mexico City cars (average MY 2015) emit at least 2 times higher HC compared with older Tier 1 U.S. and Canadian cars (average MY 2002/2003). Gasoline in Mexico also has higher sulfur content compared to the United States and Canada, contributing to higher HC emissions.



Comparing HC emissions from Tier 1-equivalent Mexico City vehicles with other Tier 1 North American vehicles. Select datasets include measurements taken across several years; average observation year refers to the average year of data collection of each group.

- Certain popular vehicle models certified to the most recent national emission standard in Mexico showed emissions several times above the fleet average, indicating that current emission standards are not sufficient to ensure low real-world emissions.

Policy implications:

- Coordinating across several states to **adopt more stringent regulations** can greatly reduce emissions pending national-level regulatory updates.
- Implementing **financial and non-financial incentives** such as building charging infrastructure, implementing preferential parking, and increasing consumer awareness can help **leapfrog to zero-emission vehicles.**

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TO FIND OUT MORE

For details on the TRUE remote sensing database, contact **Yoann Bernard, y.bernard@theicct.org**.
For more information on TRUE, visit **www.trueinitiative.org**.

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