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Media Statement

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Central and Southern Johannesburg disproportionately exposed to vehicle emissions, new Study finds

The City of Johannesburg's Environment, Infrastructure and Services Department (EISD), through its Air Quality and Climate Change Unit, today unveiled the City's first Real World Urban Emissions (TRUE) Report at the University of Johannesburg.

The study, conducted in partnership with the TRUE Initiative, Breathe Cities, the International Council on Clean Transportation (ICCT), FIA Foundation, Clean Air Fund, and the University of Johannesburg, is the first real-world vehicle emissions assessment undertaken in Johannesburg and across Africa.

The report reveals significant inequalities in exposure to vehicle emissions across the City of Johannesburg, with residents in central and southern areas facing a disproportionate burden of transport-related air pollution.

Key findings

- **Petrol passenger cars registered before 2006** account for just **4% of the fleet**, yet contribute up to **24% of measured vehicle emissions**, including nitrogen oxides (NOx), hydrocarbons (HC), carbon monoxide (CO), and particulate matter (PM).
- **Older petrol-powered minibuses**, representing **8% of the fleet**, emit on average more than **four times** as much CO as minibuses registered after 2006.
- **Diesel-powered minibuses** emit up to **18 times more particulate matter (PM)** than petrol minibuses.
- The newest **diesel passenger cars and light commercial vehicles** recorded average **NOx emissions four to seven times higher** than comparable vehicles operating in Europe.

Supported by **Breathe Cities**, the TRUE Initiative conducted Africa's first large-scale real-world roadside remote sensing campaign, collecting nearly **250,000 vehicle exhaust measurements**

across Johannesburg. The study provides the most comprehensive assessment to date of emissions from light and heavy-duty vehicles in the city.

Between **July and September 2025**, remote sensing equipment was deployed at **11 locations** across Johannesburg to measure emissions of nitrogen oxides (NO_x), hydrocarbons (HC), carbon monoxide (CO), ammonia (NH₃), and ultraviolet smoke, a recognised proxy for particulate matter.

Minibus Taxis and Older vehicles drive a disproportionate share of emissions

Although **minibus taxis accounted for only 10% of the measured vehicle fleet**, they were responsible for between **21% and 40% of total measured emissions**, particularly CO and HC emissions.

The study found that the oldest vehicles in Johannesburg's fleet, while relatively few in number, are responsible for a disproportionately large share of emissions:

- **Petrol passenger cars registered before 2006** (4% of the fleet) contributed approximately:
 - **12% of total NO_x emissions**
 - **21% of HC emissions**
 - **22% of CO emissions**
 - **24% of PM emissions**

Petrol-powered minibus taxis registered before 2006 (8% of the fleet) contributed between **22% and 25%** of total HC and CO emissions

Emerging concern over Diesel vehicle emissions

The report also highlights the growing impact of diesel-powered vehicles. Diesel minibuses recorded **PM and NO_x emissions up to 18 and 44 times higher**, respectively, than equivalent petrol-powered vehicles.

Worryingly, the analysis found little evidence of improved emissions performance in newer diesel vehicles. Vehicles registered as recently as **2025** exhibited average NO_x and PM emissions **three to fourteen times higher than Euro 6/VI regulatory limits**. As diesel-powered vehicles become increasingly common, the report warns that, without stronger regulatory intervention, associated health impacts could increase significantly.

Supporting Cleaner Transport Solutions

The findings reinforce recommendations made by the **City of Johannesburg in June 2025** to establish **Clean Air Zones (CAZs)** as part of a gradual and equitable transition to cleaner urban

transport, particularly in the city's central and southern areas where exposure to traffic-related pollution is highest.

Policy recommendations

The TRUE Initiative recommends several measures to reduce vehicle emissions and improve air quality:

- **Adopt Euro 6d/VI-D vehicle emissions standards** for all new vehicles, aligning South Africa with major international export markets while delivering substantial air-quality benefits.
- **Expand and strengthen Johannesburg's vehicle Inspection and Maintenance (I&M) programme**, initially focusing on large commercial fleets before progressively extending requirements to private passenger vehicles.
- **Accelerate the transition to electric minibus taxis**, supported by innovative financing mechanisms that reduce upfront purchase costs while lowering lifetime operating expenses for vehicle owners.

"These findings demonstrate that a relatively small proportion of Johannesburg's vehicle fleet is responsible for a disproportionately large share of harmful emissions. Targeted interventions focused on the highest-emitting vehicle categories can deliver significant air-quality improvements and public health benefits for residents across the city."

Lebo Molefe, Director Air Quality and Climate Change at the City of Johannesburg, said:

"The City of Johannesburg continues to face significant air quality challenges, with vehicle emissions remaining a major contributor to urban air pollution. As regulators, we have long recognised the importance of robust, locally generated evidence to better understand the real-world impact of the transport sector on air quality and public health."

The completion of the ICCT and TRUE Initiative real-world vehicle emissions study marks a significant milestone for Johannesburg. By providing detailed insights into actual on-road vehicle emissions under local operating conditions, the study helps address a critical evidence gap that has historically constrained the development of targeted and effective interventions."

These findings will strengthen the City's ability to work collaboratively with provincial and national government partners to develop evidence-based policies, strategies and programmes that reduce vehicle emissions, improve air quality and deliver healthier outcomes for our residents. Importantly, the study also provides a strong foundation for advancing initiatives such as Clean Air Zones and other measures aimed at supporting a cleaner, more sustainable and equitable transport system for Johannesburg."

Mallery Crowe, lead author and researcher at the ICCT, said: *"This latest testing campaign has expanded our picture of vehicle emissions in Johannesburg and added new data points to help broaden our understanding of vehicle emissions across the larger region in Africa. We see*

that a small number of older vehicles emit a disproportionate amount, so targeted policies to quicken fleet turnover will be crucial to improve air quality.”

Sheila Watson, deputy director of the FIA Foundation, said: *“The TRUE Initiative has shown the shockingly high emissions of vehicles on Johannesburg’s streets. Thousands of the city’s residents are sicker or dying each year because of dirty air, to which road vehicles are a major contributing factor, showing just how important it is to have real-world data to understand, and then address a public health crisis. These findings point to the need for urgent action, not only to clean up the city’s air but to protect the health and lives of its residents.”*

Ends

Issued by the City of Johannesburg

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Download: <https://trueinitiative.org/research/real-world-emissions-johannesburg>

About The Real Urban Emissions Initiative

The Real Urban Emissions (TRUE) Initiative supports cities worldwide to develop effective air quality and climate policies with independent real-world vehicle emissions data, technical analysis, and expert advice. The FIA Foundation and International Council on Clean Transportation established the TRUE Initiative.

www.trueinitiative.org