# Counting on clean air
# – A call to action

**true**

THE REAL URBAN
EMISSIONS INITIATIVE

CITIES CONTINUE TO BEAR THE BURDENS OF EMISSIONS FROM DIESEL AND GASOLINE VEHICLES OPERATING ON THEIR STREETS.

THERE IS AN URGENT NEED FOR CONTINUED ACTIONS TO MITIGATE THE IMPACTS OF TRANSPORT ON AIR QUALITY.

WITH TRUE, CITIES CAN USE REAL-WORLD INFORMATION TO CRAFT POLICES THAT IMPROVE AIR QUALITY AND THE HEALTH OF THEIR RESIDENTS.

When the TRUE Initiative was established in 2017, pollution caused by excess vehicle emissions was emerging as a topic of global concern. The Dieselgate scandal, which ICCT helped to uncover, highlighted the potential for large discrepancies between emissions during laboratory testing and those during real-world operation. These excess emissions have been found to contribute to poor air quality and degrade public health. Cities bear the largest burdens from these excess emissions but are not positioned to address inadequacies in compliance and enforcement programs. However, there are actions that cities can take. The TRUE Initiative was launched to provide cities with an independent source of data on the real-world emissions of their fleets to support strong, evidence-based policies to address the highest emitting vehicles, improve air quality, and protect public health.

We have come a long way since 2017. Thanks in no small part to the work of TRUE, there is now a more widespread understanding of how motor vehicles impact urban air quality and how real-world data can support actions to limit these emissions. More cities are now equipped with the information they need to protect the health of their citizens and consumers have the tools to understand the actual emissions of their own vehicles. At the same time, momentum is building in support of a widespread transition to electric or other zero-emission vehicles. It is clear that such a transition is needed to fully address pollution from on-road transport, and this transition must occur as rapidly as possible.

Given this changing landscape, the work of the TRUE Initiative is as crucial as ever. Gasoline and diesel vehicles, and the harmful emissions they produce, will be on the roads of cities for many years to come. It is vital that these emissions are monitored and polices are enacted to accelerate the transition to zero-emission. The data and analysis performed by TRUE can be used by cities to both craft policies to address vehicle emissions and to assess if policies are working as intended. The work of TRUE remains an essential under-pinning to the sort of policy framework which we so desperately need to clean up the air in our cities and protect the health of urban residents.

**Drew Kodjak**
Executive Director
International Council on Clean Transportation (ICCT)

# THE REAL URBAN EMISSIONS (TRUE) INITIATIVE

## What is TRUE?

Ambient air pollution is the leading environmental health risk factor globally, resulting in nearly 4.5 million premature deaths in 2019. The global transportation sector is a major source of this health burden due to the significant contributions of vehicle emissions to ambient fine particulate matter, ozone, and nitrogen oxides pollution. Worldwide, approximately 385,000 premature deaths from fine particulate matter and ozone exposure were linked to vehicle tailpipe emissions in 2015, 10% of which resulted from emissions in excess of certification limits in 11 major vehicle markets. The concentration of these emissions in urban areas can have a substantial impact on the health of individuals. Although transport will ultimately need to transition to zero-emission fleets to fully address the health and climate impacts, it is important to address the emissions from vehicles already on the road. Reducing transport tailpipe emissions can significantly reduce the rates of premature deaths, years of life lost, asthma, and heart disease.

**The Real Urban Emissions (TRUE) Initiative** collects, analyzes, and publishes real-world emissions data to study the scale of vehicle emissions. TRUE works to support cities in adopting policies that will directly address urban vehicle pollution and support the transition to zero-emission solutions through data analysis and technical expertise.

In addition, through its TRUE rating system, the initiative supplies transparent emissions data to inform consumers of the average emissions values of their vehicles or to assist in helping consumers make sound purchase decisions.

The initiative launched in 2017, working with the cities of Paris and London to provide real-word data on the composition and emissions of the cities' fleets. The project aimed to help the two cities improve local air quality and assess the effectiveness of policies by identifying real-world pollution levels and high-emitting vehicles. Since the initial pilot project, TRUE has performed additional studies in Europe and the United States and has expanded its work to Latin America and Asia. TRUE is organized regionally and seeks to build comprehensive databases of emissions in seven global regions—Europe, Asia, North America, Latin America, Middle East, Africa, and Australia/New Zealand—in order to help policy makers assess the impacts of

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gasoline and diesel vehicles on city air quality. In addition, the data will help governments craft more effective policies to accelerate the transition to zero-emission transport.

The TRUE Initiative is a partnership of the FIA Foundation and the International Council on Clean Transportation. It is supported by an advisory board with members drawn from city authorities, policy advisers, consumer groups, and technical experts including C40 Cities, Centre for Science and Environment, Clean Air Fund, Environnement Bruxelles, FIA, Greater London Authority, Polish Smog Alert, Transport & Environment, UN Environment Programme (UNEP), University of Leeds, and University of York.

# What is real-world emissions data and what can it do?

Real-world emissions data is a powerful tool. Measurement of exhaust emissions from vehicles during normal, on-road operation is key to any effective system for controlling air pollution in the transportation sector. This is because the official emission values and emissions during real-world use can differ significantly, sometimes by an order of magnitude. Real-world emissions data can be collected using contactless measurement methods, such as remote-sensing technology, that can measure a very large number of vehicles to provide new insights into the emissions of vehicle fleets. The data compiled includes measurements of emission

components such as fine particulate matter and nitrogen oxides that can significantly worsen local air quality.

Remote sensing also can measure the emissions during driving conditions that are not typically accounted for during official vehicle testing, such as at slow-speeds or low loads typical of urban driving. It can also assess emissions at a variety of ambient temperatures as it is performed outside of a laboratory setting. This all gives a more accurate picture of how vehicles perform in the real-world.

Real-world emissions data can also be used by cities to inform better policymaking. For example, it can be used to:

- Support the development of low- or zero-emission zones by identifying high-emitting vehicle classes that would have the highest impact on air quality if they were restricted from the zone

- Monitor the effectiveness of policies intended to reduce air pollution

- Identify vehicle groups that could be targeted for additional testing or policy intervention to ensure emissions reductions

- Develop improved estimates of emission factors for use in air quality modeling and health impacts assessment

- Provide support for policies aimed at accelerating the transition to electric vehicles
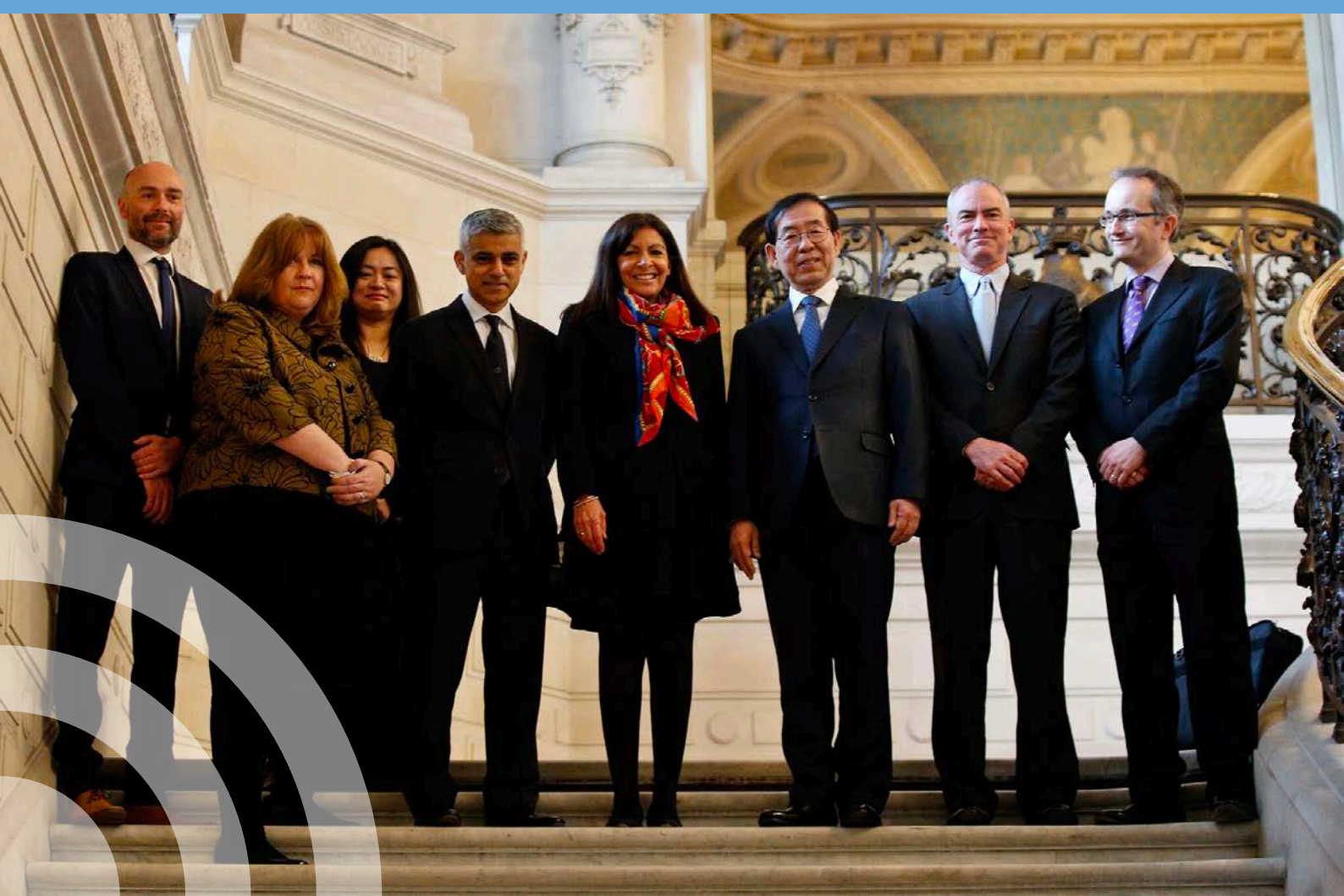
# OUR WORK

Since launching in 2017, the TRUE Initiative has worked with cities around the globe to help them gain insights into their vehicle fleets and emissions. TRUE has conducted individual measurement campaigns in London, Paris, Jakarta, Brussels, and Warsaw and has performed in-depth analysis of data from many other cities and regions.

Our regional databases provide real-world emissions information to governments and researchers who seek to assess current policies targeted at air pollution. In addition, the data can be used to inform future policymaking by identifying vehicle groups that are responsible for a disproportionate share of total emissions.

The data collected from remote sensing has been used by TRUE researchers to:
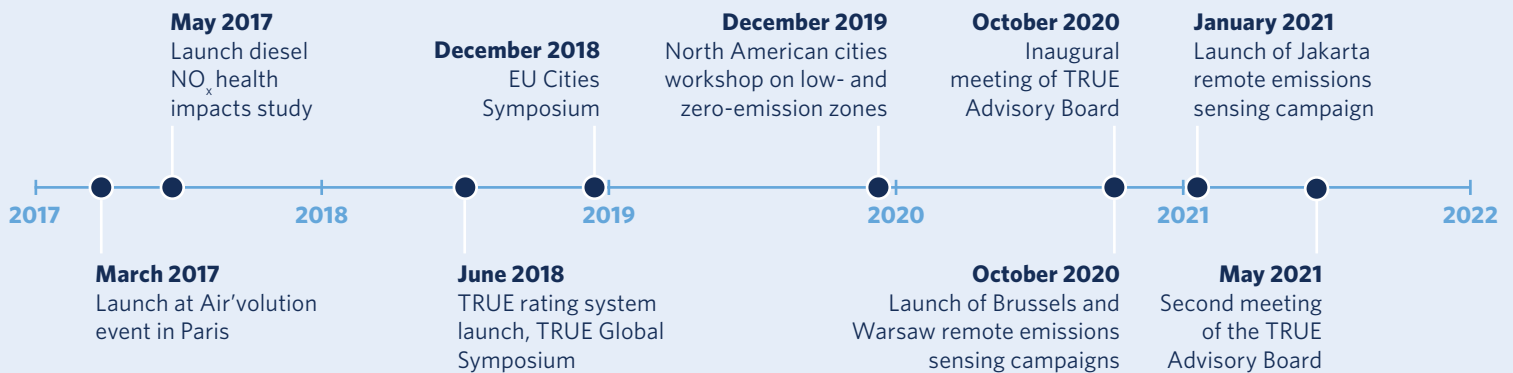
- Identify high-emitting vehicle groups or individual vehicles

- Assess the impact of vehicle age on fleet-wide emissions

- Measure emissions under urban driving conditions that are not accounted for during vehicle type approval

- Compare the impact of ambient conditions, such as cold or heat, on emissions

- Compare real-world emissions to type-approval limits

- Track long-term trends in real-world emissions

- Evaluate the emissions of high-usage fleets, like taxis and buses

In addition to conducting its own research into real-world emissions, policy support and technical assistance is a core objective of TRUE's work. The TRUE Initiative works to bring cities together to facilitate discussions on controlling pollution from vehicles. The TRUE Initiative's Global Workshop, held in June 2018, welcomed more than 50 delegates from across the world to join environmental and technical leaders to discuss how to tackle toxic emissions in cities. The Initiative also hosted similar workshops focused on work in European cities and low-emission zones in Europe and in North America.

TRUE representatives have shared their research through participation in international forums convened by governments and research institutions. TRUE's work with cities has also garnered press coverage in prominent publications. Additional outreach activities conducted by TRUE include a significant social media presence and the production of informational videos on topics such as how remote sensing technology works and how TRUE's data analysis supports policy.

# TRUE EVENTS

**May 2017**
Launch diesel NO$_x$ health impacts study

**December 2018**
EU Cities Symposium

**December 2019**
North American cities workshop on low- and zero-emission zones

**October 2020**
Inaugural meeting of TRUE Advisory Board

**January 2021**
Launch of Jakarta remote emissions sensing campaign

2017 — 2018 — 2019 — 2020 — 2021 — 2022

**March 2017**
Launch at Air'volution event in Paris

**June 2018**
TRUE rating system launch, TRUE Global Symposium

**October 2020**
Launch of Brussels and Warsaw remote emissions sensing campaigns

**May 2021**
Second meeting of the TRUE Advisory Board

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# CONSUMER OUTREACH

A key component of the TRUE Initiative's outreach to consumers is the TRUE rating system. Launched in June 2018, the three-color TRUE rating system was developed as an easy-to-use tool for identifying the lowest and highest emitting vehicles in the fleet. The TRUE rating can help car owners know whether their car is clean and can help potential buyers identify the cleanest available cars for purchase. The ratings represent, as best as is possible, measurements of real-world emissions in vehicles sold in markets across Europe. The data which underpins the TRUE rating is regularly updated as new tests are carried out.
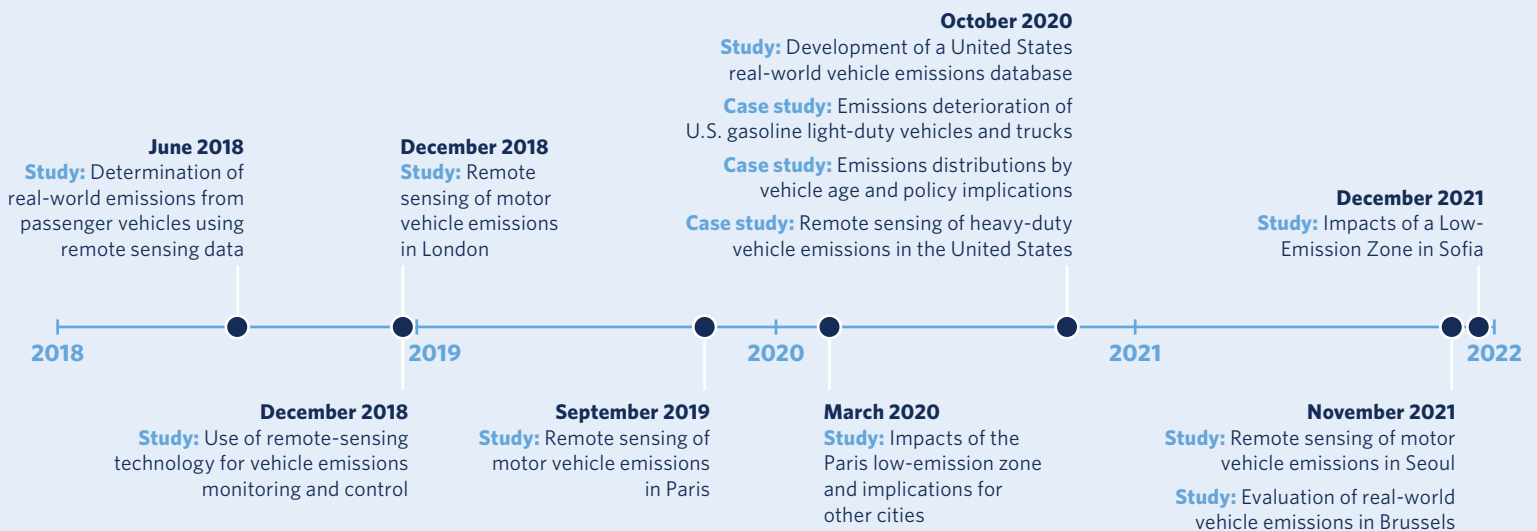


GOOD    MODERATE    POOR
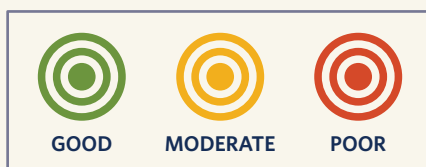
(1)  **Green rating:** vehicles with average $NO_x$ emissions that stay below 90 mg/km over a wide range of driving conditions.
(2)  **Yellow rating:** vehicles with average $NO_x$ emissions between 90 and 180 mg/km over a wide range of driving conditions, as well as vehicles that do not clearly fall into (1) or (3).
(3)  **Red rating:** vehicles with average $NO_x$ emissions that stay above 180 mg/km over a wide range of driving conditions.
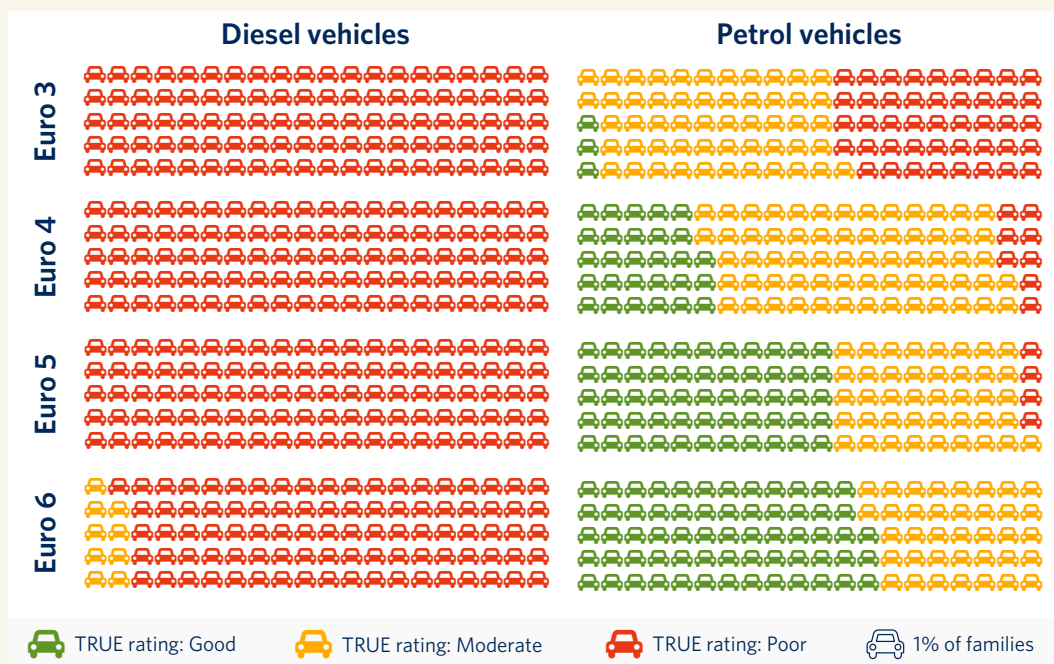


TRUE data has also been used to underpin consumer awareness projects. The **School Run Scandal toolkit** is a teaching resource for students aged 10-14 years old to understand the role of vehicles emissions, particularly in the wake of the Dieselgate Scandal, on their air, health, and environment. It supports students as they access the TRUE database to build understanding of the real impact of vehicles on their streets, encouraging them to undertake their own investigation, develop their personal views about what needs to change about their world, and what role they can play as an agent of change for a fairer, cleaner, greener and healthier future.

Legend:
- TRUE City (orange)
- TRUE engagement (e.g. workshop) (blue)

Map labels: Seattle, Portland, San Francisco, Los Angeles, New York City, Mexico City, Bogotá, Santiago, Frankfurt, Brussels, Scotland, Leeds, London, Paris, Madrid, Zurich, Oslo, Copenhagen, Milan, Rome, Warsaw, Krakow, Prague, Sofia, Amman, Dar Es Salaam, Durban, Seoul, Tokyo, Hong Kong, Ho Chi Minh City, Jakarta, Aukland

# TRUE RESEARCH



**October 2020**
**Study:** Development of a United States real-world vehicle emissions database

**Case study:** Emissions deterioration of U.S. gasoline light-duty vehicles and trucks

**Case study:** Emissions distributions by vehicle age and policy implications

**Case study:** Remote sensing of heavy-duty vehicle emissions in the United States

**June 2018**
**Study:** Determination of real-world emissions from passenger vehicles using remote sensing data

**December 2018**
**Study:** Remote sensing of motor vehicle emissions in London

**December 2021**
**Study:** Impacts of a Low-Emission Zone in Sofia

**2018**

**December 2018**
**Study:** Use of remote-sensing technology for vehicle emissions monitoring and control

**2019**

**September 2019**
**Study:** Remote sensing of motor vehicle emissions in Paris

**2020**

**March 2020**
**Study:** Impacts of the Paris low-emission zone and implications for other cities

**2021**

**November 2021**
**Study:** Remote sensing of motor vehicle emissions in Seoul

**Study:** Evaluation of real-world vehicle emissions in Brussels

**2022**

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# CASE STUDIES

From investigating the effects of low-emission zones on air quality to assessing the real-world impact of vehicle emission standards, TRUE is helping to ensure cities can craft effective policies to mitigate pollution from vehicles around the world.
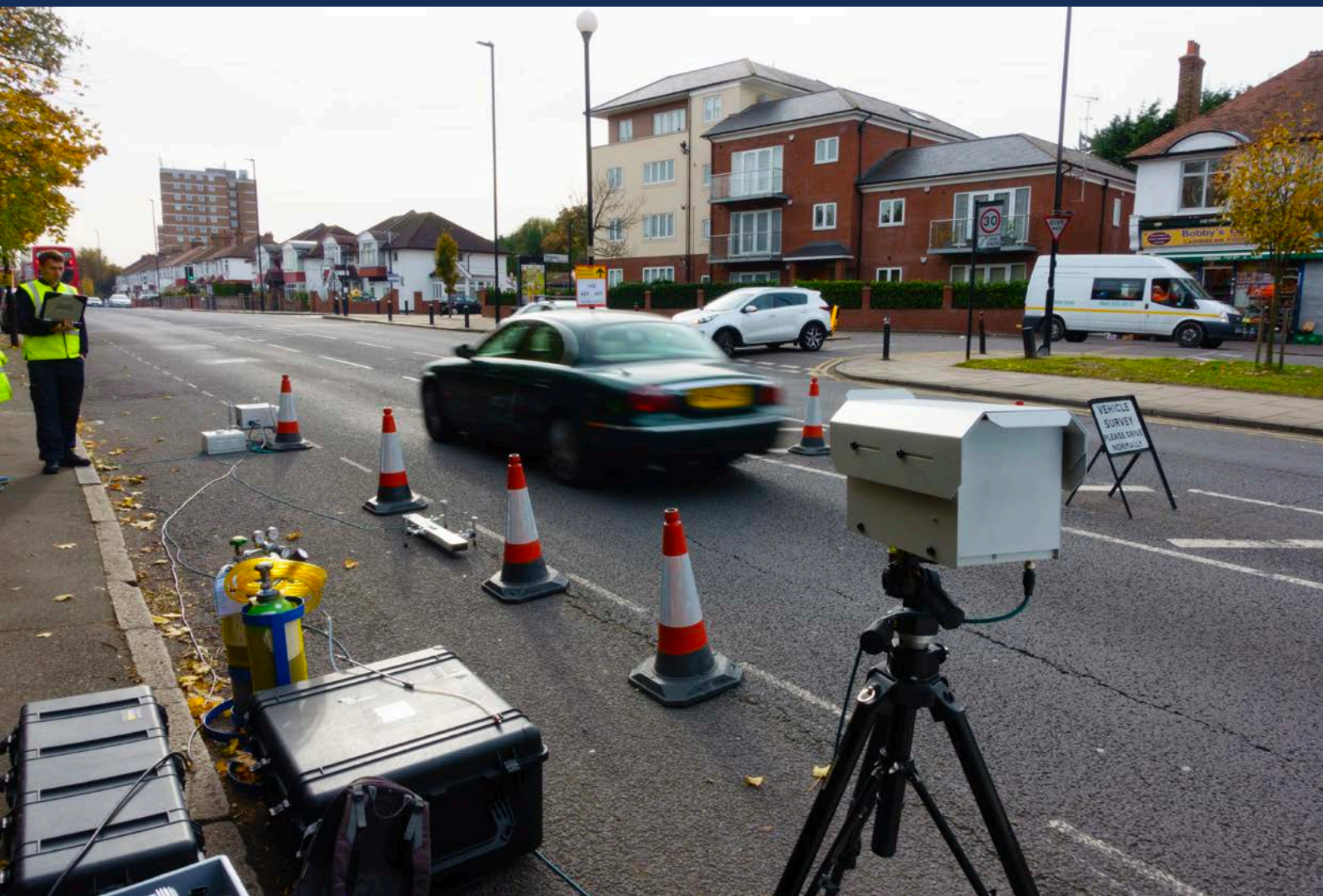
# London

The TRUE Initiative undertook its first remote sensing testing campaign in London in late 2017 and early 2018, collecting more than 100,000 measurements from passenger cars, light commercial vehicles, taxis, buses, trucks, and motorcycles.

TRUE researchers found:

- $NO_x$ emissions from diesel cars in London are about six times those of petrol cars. In addition, the average real-world $NO_x$ emissions from Euro 5 and Euro 6 diesel cars are approximately six times higher than the standards.

- London's black taxi diesel models produce, on average, higher $NO_x$ emissions than diesel passenger cars covered by the same emissions standard. $NO_x$ emissions from Euro 5 taxis are higher than those from taxis certified to previous Euro standards and are approximately three times those of other Euro 5 diesel cars.

These findings from the TRUE data had real-world policy implications.

Transport for London now uses the TRUE rating system, which was refined with data collected in the city, to help consumers choose vehicles that comply with London ultra-low-emission zone requirements. In addition, the data collected on emissions from taxis help to shed light on the vehicle's contribution to poor air quality in the city. As a result, London has enacted a series of measures that target black cab emissions, including only issuing new licenses to zero-emission capable vehicles and offering incentives for the delicensing of older diesel vehicles.

## London sampling sites

Site ID and name

- 1 - A10/M25 Junction
- 2 - Dawley Rd., Hillingdon
- 3 - Greenford Rd., Ealing
- 4 - Heston Rd., Hounslow
- 5 - Putney Hill, Wandsworth
- 6 - Stockley Rd., W. Drayton
- 7 - Christchurch Rd.
- 8 - West End Rd., Hillingdon
- 9 - A205 South Circular
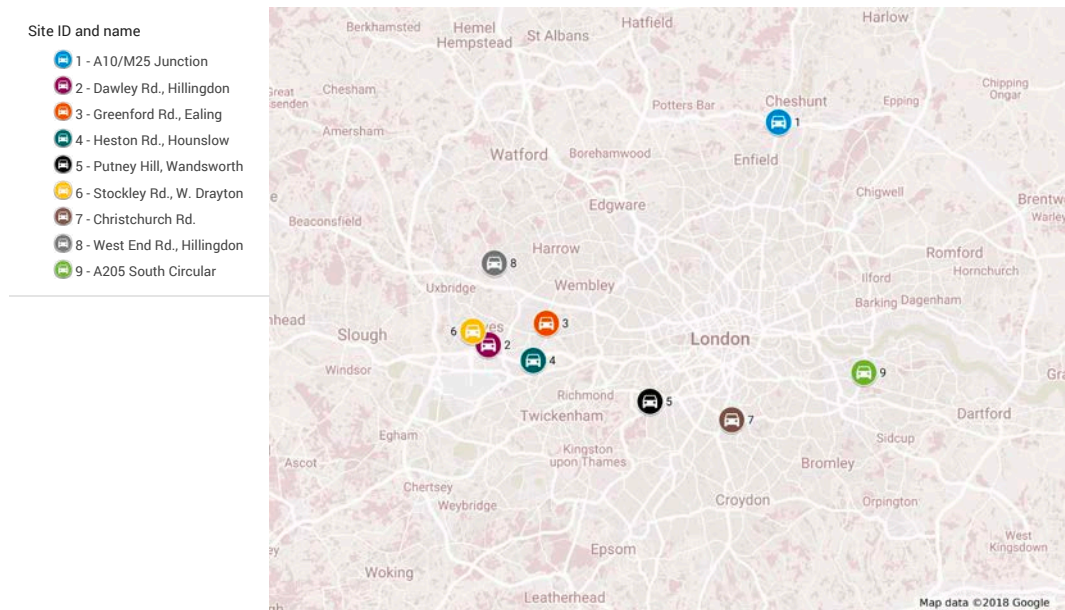
# Paris

Paris was the first metropolitan area in France to establish a low-emission zone to reduce air pollution from transport. Beginning in 2016, access restrictions were introduced for the oldest vehicles in the fleet. Since then, further implementation phases have extended these restrictions to a broader portion of the fleet, with the ultimate goal of having only zero-emission vehicles permitted in the zone by 2030.

Using real-world emissions data collected during a TRUE initiative measurement campaign in Paris in the summer of 2018, researchers explored the reductions in $NO_x$ emissions that would be achieved under the current plan and estimated the additional reduction benefits that could be realized if the move to permit only zero-emission vehicles was accelerated.

The TRUE analysis revealed:

- In-use $NO_x$ emissions increase dramatically at high outside temperatures. $NO_x$ emissions of Euro 5 and Euro 6 diesel cars measured at ambient temperatures above 30 °C were 20% to 30% greater than at temperatures between 20 °C and 30 °C.

- The current low-emission zone stringency schedule will result in 75% to 85% lower $NO_x$ emissions compared to 2016 levels. In contrast, 2024 average passenger car $NO_x$ emission factors would be only be 50% to 60% below 2016 levels without the low-emission area.

- Moving up the implementation schedule and allowing only petrol cars certified to recent standards, plug-in hybrids, or zero-emission vehicles into the low-emission zone would reduce $NO_x$ emissions by 75% in 2020 compared to emission levels in 2016.

The TRUE analysis not only identified the effectiveness of the current policy, but also showed that accelerating the implementation schedule would accelerate the air-quality benefits of the low-emission zone.
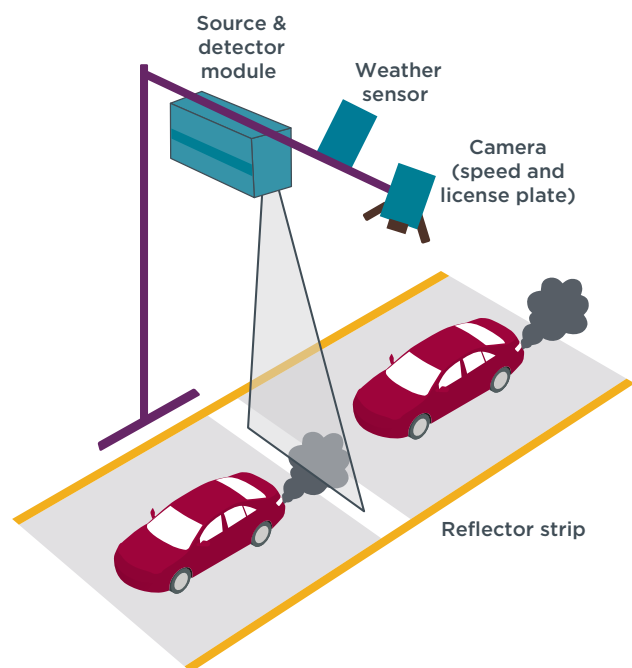


**Schematic of remote emissions sensing technology**

# Brussels

In the autumn of 2020, TRUE collected measurements in Brussels to add to the understanding of the emissions of the cities' vehicle fleets and their impact on air quality and public health. The Brussels study provided new information on the emissions of the latest Euro 6d-TEMP and 6d vehicles, the real-world emissions of which have not yet been studied at scale. The analysis also provided evidence to evaluate the impacts of the next implementation stages of the Brussels low emission zone and support its future development. In addition, the TRUE Brussels study revealed new information about the particle-number emissions from vehicles equipped with filters to help assess the prevalence of tampering and malfunctioning emissions control systems in the Brussels fleet and to provide evidence to support recently adopted particle number testing requirements.

# Warsaw and Krakow

In Krakow, TRUE researchers analyzed real-world emissions data and compared the findings with data taken from the London and Paris measurement campaigns. The data demonstrated how the age of the Krakow fleet, which is among the oldest in Europe, contributes to high emission levels and identified specific vehicle groups to target with policy actions, such as a low emission zone, to provide the greatest emissions benefits.

TRUE undertook a remote sensing campaign in Warsaw in the autumn of 2020. TRUE data will provide new evidence of the emissions impacts of the flow of used vehicles from the Western to the Eastern European vehicle markets, among other insights into the real-world emissions of the Warsaw fleet. The data collected in Warsaw will also be compared the data and findings from the TRUE Brussels campaign to provide unique insights into how policies adopted in the two cities have influenced vehicle fleets and their emissions.
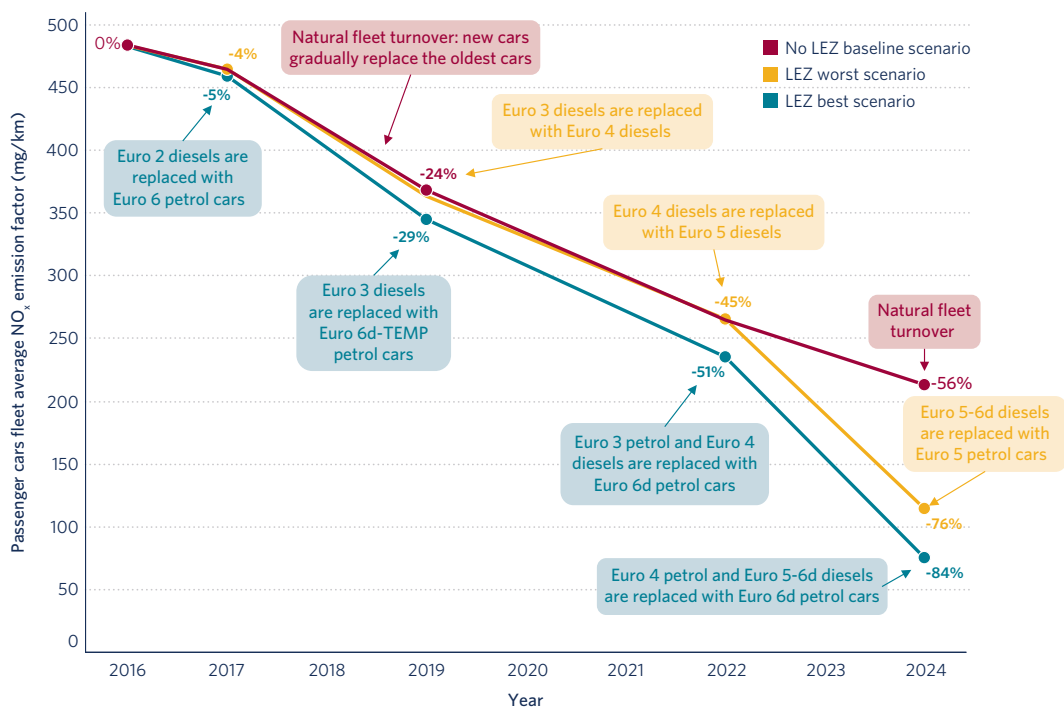


**Effects of the Paris low-emission zone on fleet-average NO$_x$ emissions.**

# Sofia

In 2021, TRUE carried out a study to help Sofia, Bulgaria better understand the emissions benefits of implementing a low emission zone in the city. The study leverages the TRUE European database of real-world emissions data to evaluate several different low emissions zone implementation schemes. Results of the study show that, relative to natural fleet turnover, an ambitious LEZ policy could achieve a 75% reduction in the fleet-average passenger car emission rate 10 to 11 years earlier for $NO_x$ and 6 years earlier for PM.
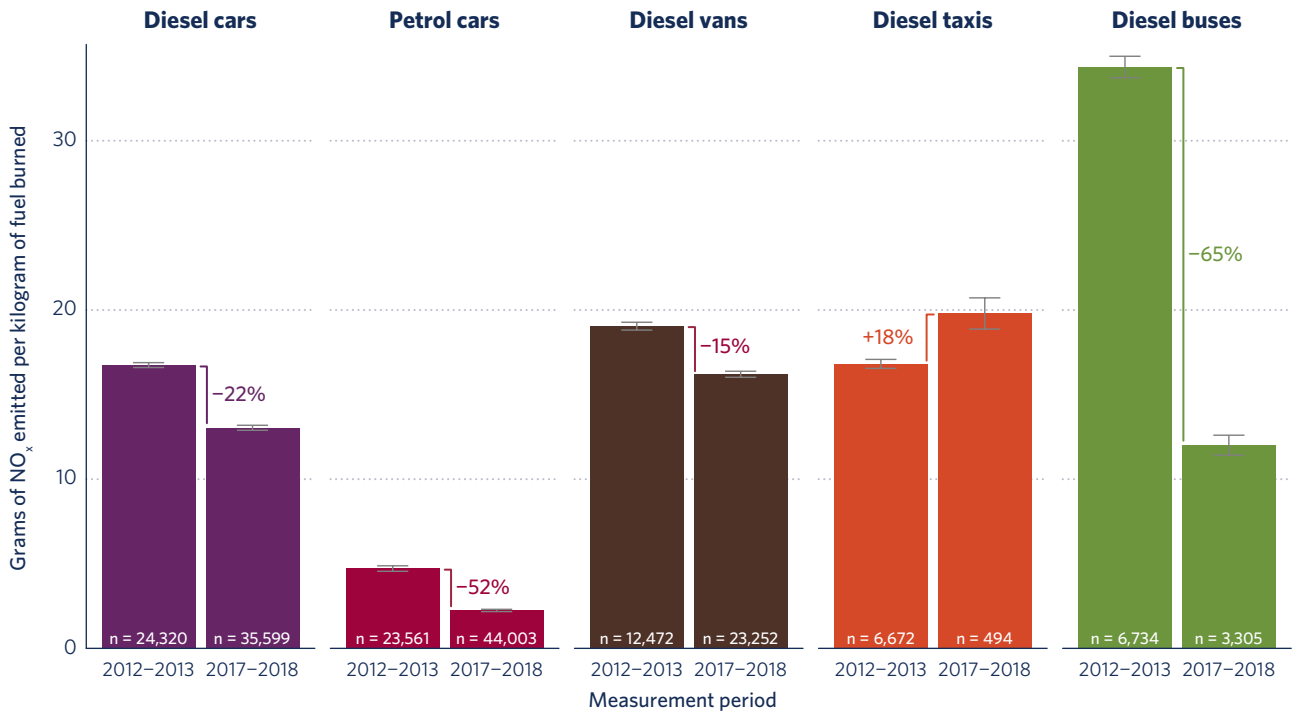


**Average real-world $NO_x$ emissions of London vehicles**

# U.S. remote sensing database

In 2020, TRUE compiled remote sensing data from the states of Colorado and Virginia and the University of Denver to investigate the emissions of U.S. cars and trucks. The TRUE U.S. remote sensing database includes nearly 60 million emissions measurements recorded over many years across a range of locations. Analysis of the data revealed:

- The $NO_x$ emissions from light-duty vehicles increase with vehicle age as emission control technologies deteriorate. In older vehicles, these emissions can increase 200% over their useful life and the deterioration rates are much higher than what is reported to regulators.

- The contribution of the oldest vehicles in the fleet to total $NO_x$ emissions has increased over time. In 2018, light-duty vehicles 18 years old and older made up approximatively 11% of the fleet but were responsible of 50% of total $NO_x$ emissions. In the same year, 16% of the heavy-duty vehicles in the fleet that were 13 years old or older made up 50% of total fleet emissions. In both cases, these vehicles are no longer subject to emissions regulation because they exceed official useful life requirements. This finding suggests additional policy actions—extended useful life requirements, higher fees for vehicles beyond useful life requirements, scrappage programs, or urban access restrictions—are needed to lower fleet emissions levels.

- Although there was a 94% reduction in heavy-duty vehicle $NO_x$ emissions from model year 2004 engines to model year 2016 engines, real-world emissions of most model years exceed U.S. Environmental Protection Agency engine emission standards. Data show a considerable lag of six years or more between the adoption of EPA 2010 standards and the time when real-world emissions approached certification limits. These findings, as well evidence of elevated $NO_x$ emissions at low-speed, urban operating conditions, provide support for new regulatory efforts underway by the California Air Resources Board and the U.S. EPA to better control emissions from heavy-duty diesel trucks.
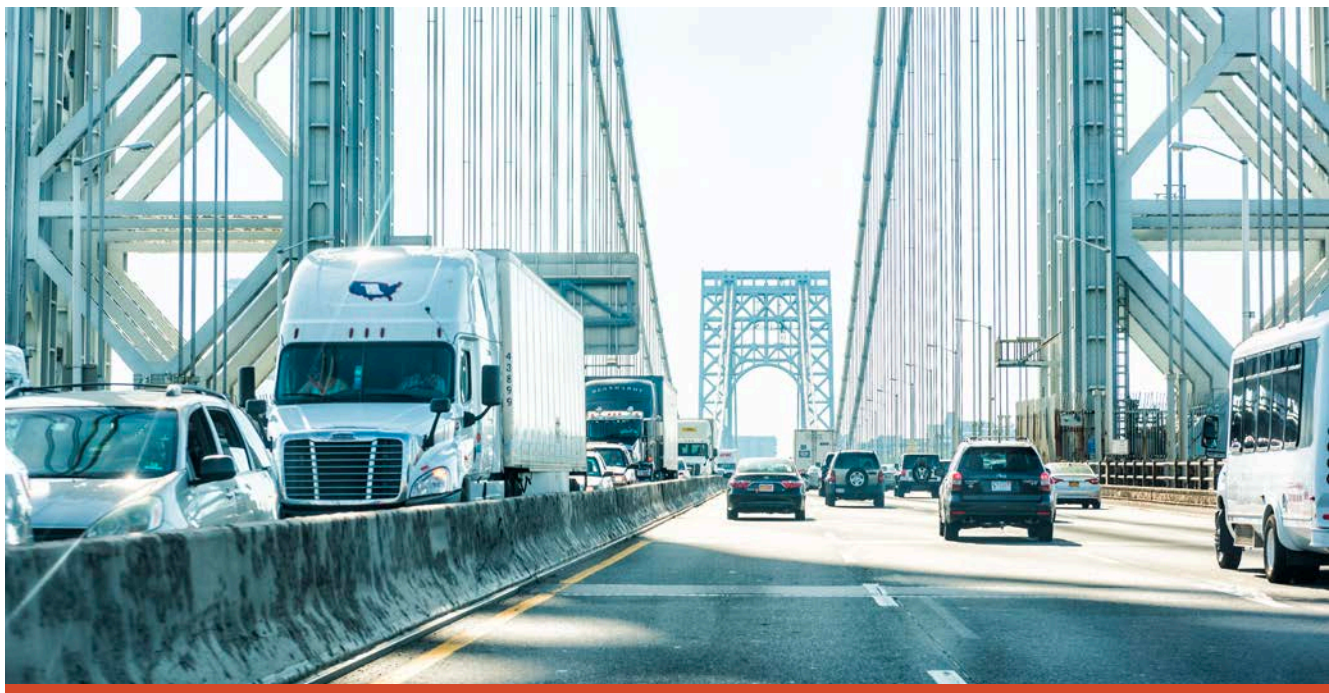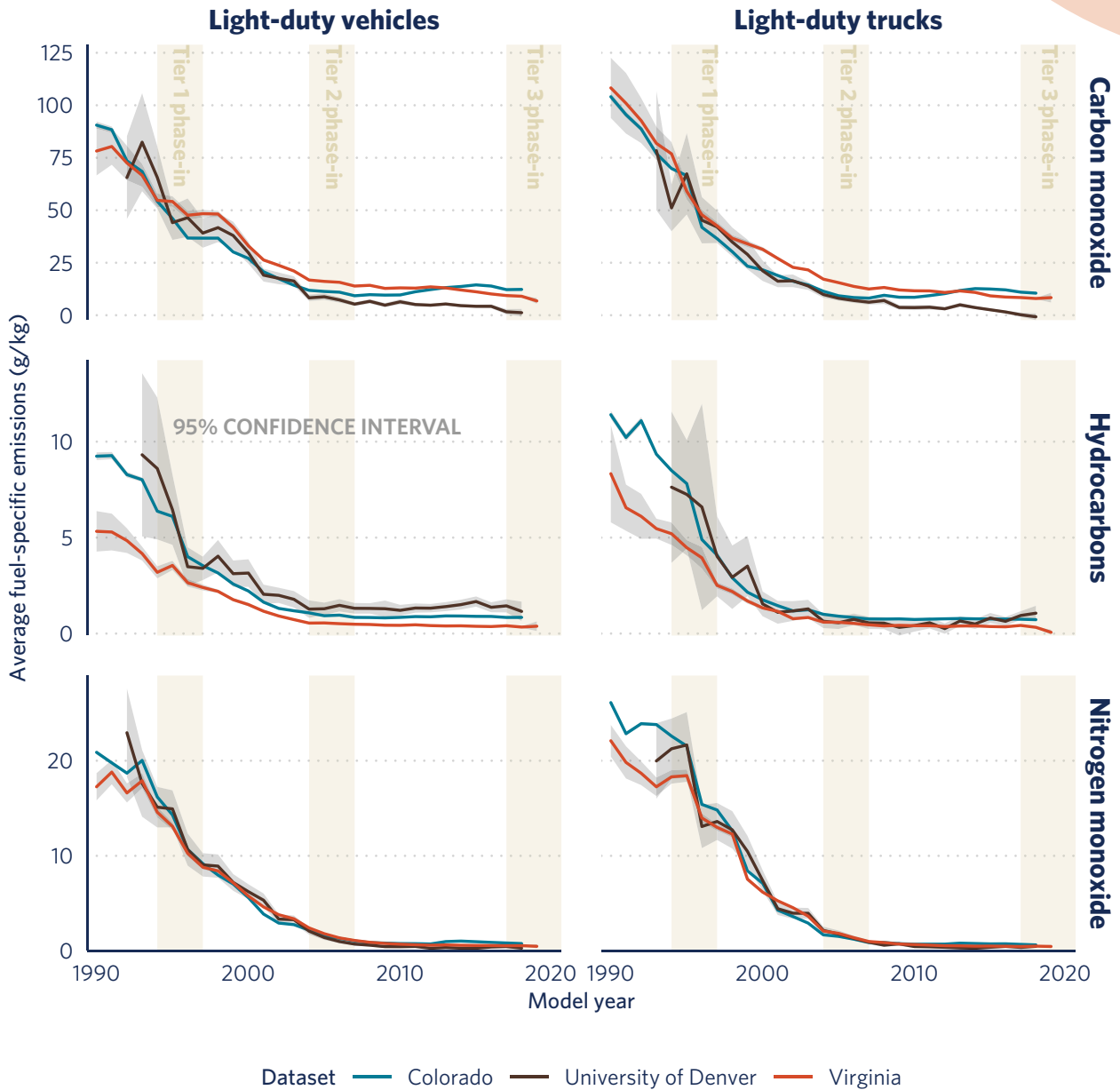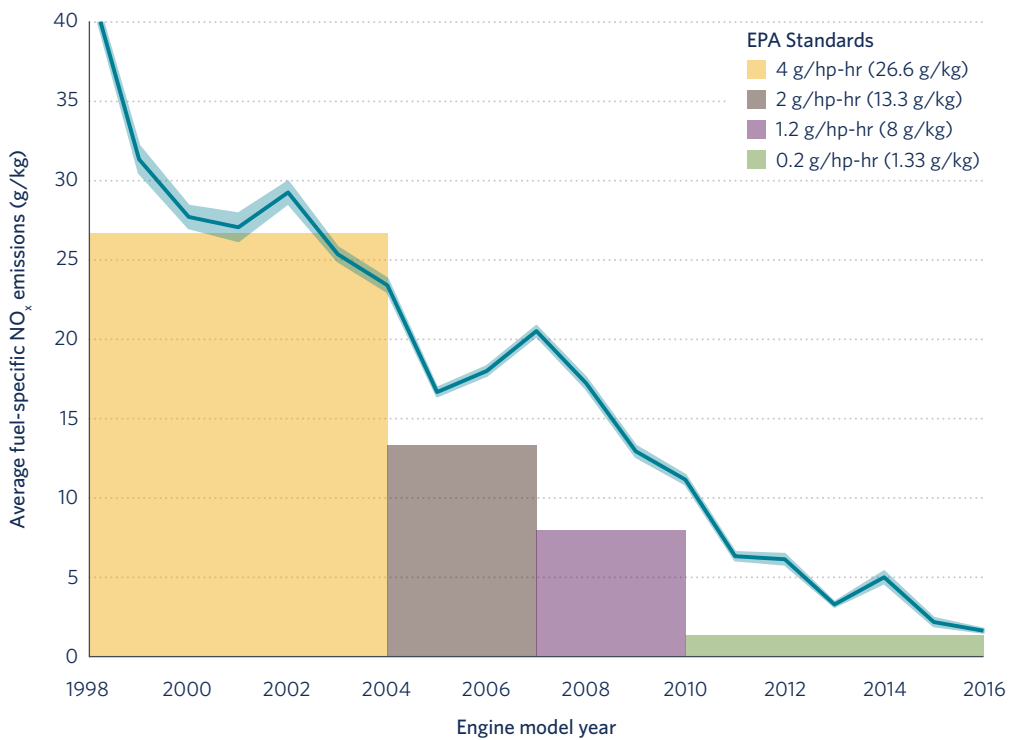
**Average real-world emissions of light-duty vehicles and trucks in the United States**

Remote sensing campaigns continue to find that real-world emissions can be much higher than emission standards. As new data become available, the TRUE U.S. database will be expanded, allowing for continued assessment of the real-world emissions of U.S. cars and trucks to support further decision making and policy development.

# New York City

New York City has long taken actions to address pollution from heavy-duty vehicles, most recently with its Clean Trucks Program, which incentivizes the replacement of older, high-emitting trucks with cleaner or zero-emission options. To support continued efforts to mitigate the impacts of diesel pollution on communities in New York City, a new project by researchers at the TRUE Initiative intends to reveal the magnitude of emissions from diesel trucks in the city, and where the pollution may be most prevalent. The analysis pairs real-world emissions data with granular information about truck activity to develop a detailed inventory of diesel truck emissions in the city. This inventory is used along with air quality modeling tools to estimate the exposure of New Yorkers to diesel truck pollution and how levels of exposure vary across the city. Findings show that people of color living in New York City are exposed to higher-than-average levels of diesel truck pollution, and that the economic costs of health impacts resulting from exposure to this pollution can be substantial. The results demonstrate the importance of policies aimed at removing the oldest, highest-emitting trucks from the streets of New York, as well as those laying the groundwork to support shifts to zero-emission freight options.



**Average real-world NO$_x$ emissions of heavy-duty vehicles in the United States in comparison to U.S. EPA standards**

# Jakarta

According to the Environment Agency of DKI Jakarta, transportation is one of the top three sources of air pollution in the region due to the growth of the number of cars and motorcycles and the increased consumption of high-sulfur fuel. To address growing emissions from the transportation sector, the Provincial Government of DKI Jakarta has implemented a number of regulations, including requiring regular emissions testing.

Between January and April 2021, TRUE undertook a remote-sensing campaign—the first of its kind in Indonesia—to supplement efforts to improve air quality. Working with researchers from the Bandung Institute of Technology, TRUE collected emissions data for more than 100,000 vehicles, covering passenger cars, trucks, buses, and motorcycles.  The measurements and analysis will provide detailed insight into the pollution emissions from the Jakarta fleet and will help regulators to assess the impact of the region's air quality improvement plan. Findings from the study will support authorities in designing better policies to control vehicle emissions and preparing for the implementation of more stringent emission standards. Results and analysis from the real-world emission measurement campaign will be released in early 2022.

# Seoul

As part of its plans to reduce greenhouse gases by 40% and traffic by 30% by 2030, Seoul established its first Green Transport Zone in the city center in 2019. A year after its implementation, the city found a decrease in overall traffic volume as well as a significant decrease in older vehicles traveling in the area.

Using data collected during 2019, TRUE researchers evaluated the real-world emissions of vehicles traveling in the Green Transport Zone. The analysis found that real-world NO emissions from diesel light-duty vehicles classified as Grade 4 are comparable or even higher than the Grade 5 diesel vehicles currently restricted from the zone. In addition, older vehicles retrofitted with a particulate filter were found have to emissions only 37% lower than those without. TRUE researchers recommended that policymakers should consider restricting Grade 4 diesel vehicles from the transport zone and enact policies to encourage the retirement of older vehicles. The findings of this analysis will also be used to inform the design of future green transport areas.

# Mexico City

Mexico City has one of the oldest vehicle restriction policies in the world. First implemented in 1989, the Hoy No Circula program is intended to control air pollution, reduce traffic, and encourage the use of alternate methods of transportation. Although the program includes an emissions testing program, emissions from vehicles during real-world operation are often significantly greater and the city continues to experience poor air quality.

TRUE supported the analysis of remote sensing data collected in Mexico City to assess the real-world impacts of the city's vehicle fleet. The findings from this work demonstrated the very high emissions of taxis operating in the city compared to similar passenger cars. The analysis also identified higher than expected emissions of hydrocarbons from light-duty vehicles and rapid deterioration of emissions performance. These findings will be used to inform the scope of a TRUE emissions testing program being planned for 2022 to provide further information needed to address these issues. The work will also be used to inform the planned update of the city's vehicle inspection and maintenance program and support efforts to model the impacts of a low emission zone in the city. The data collected during the 2022 study will also provide evidence to inform discussions of new national tailpipe emission standards for light-duty vehicles, which have not been updated in more than 15 years.
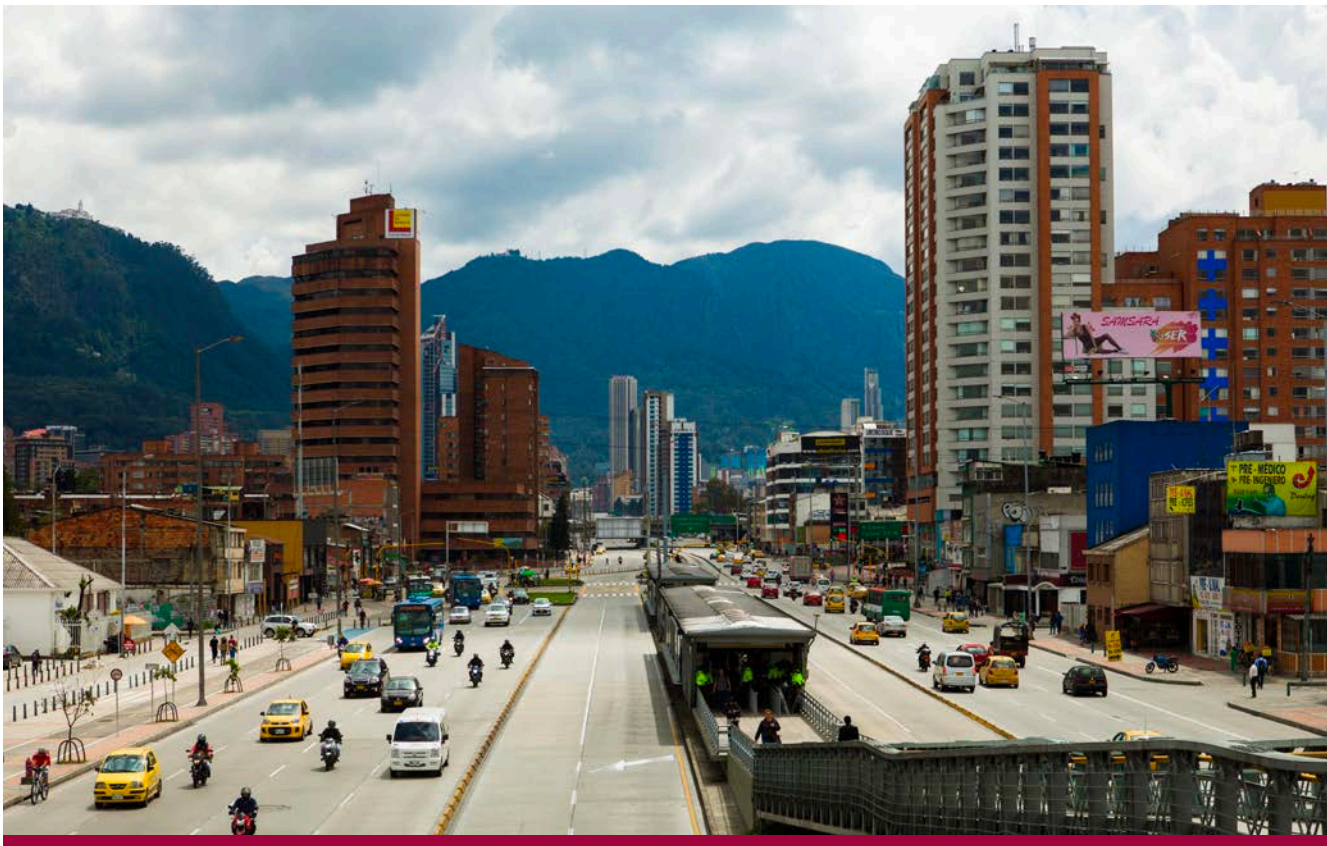
# Bogotá

Policymakers in Bogotá recently announced the intention to reduce traffic and cut air pollution by 10% within the next four years. As part of its strategy, regulators plan to impose strict emissions standards on heavy-duty diesel trucks entering the city. These efforts will be supported through the application of new monitoring and control tools. Remote sensing has been identified by the city as one such tool in their recently released air quality improvement strategic plan. TRUE researchers are working with city officials to demonstrate how this technology can be used to determine the real-world emissions from diesel trucks and how the data collected can help to assess how policies are working. TRUE plans to build on a previous pilot remote sensing study conducted in the city and develop a new test program in 2022 to help to address these issues and provide further evidence to support the cities ambitious air quality improvement goals.

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# THE FUTURE OF **TRUE** AND REAL-WORLD EMISSIONS

From its inception in 2017, TRUE has expanded its work to four continents and helped governments around the globe gain insight into their fleets by providing and analyzing real-world data. TRUE has also developed a global network of government officials, regulators, and technical experts who not only understand the role of real-world emissions in the development of policy, but also how its use could be expanded.

The objectives, focus, and rationale of TRUE going forward are described below.

## Policy development from real-word emissions data

Remote sensing data can be used to craft new policies and improve existing policies to better address the emissions from motor vehicles and the related health impacts. While emissions standards are an important regulatory tool, the emissions found during regulatory testing often differ from emissions during on-road operation. TRUE will work to reveal the magnitude of the discrepancy between official and real-world emissions to inform how standards can be crafted to work as intended.

Low- and zero-emission zones are increasingly being implemented to address emissions from vehicles in high-traffic and congested areas. TRUE will continue to work with policymakers to show how remote sensing data can be used to monitor the existing fleet and identify which vehicle types would have the largest impact on reducing emissions if they are restricted from the zone.

Cities tend to have an extra level of control over specific fleets, such as buses or taxis, which can be leveraged to accelerate emissions reductions. TRUE can help cities by measuring the emissions profiles of these fleets and offering recommendations on policies that would get the

dirtiest vehicles off the road in the fastest timeframe while also incentivizing uptake of zero-emission electric vehicles into fleets.

The work of TRUE can also contribute to building public support for city-level actions to control vehicle emissions. For example, while many policies to aim to phase out internal combustion engine cars and trucks from various parts of cities and support the transition to electric vehicles, the public may not be fully informed of the benefits of these actions. TRUE data can be applied to highlight the high real-world emissions of these vehicles and make connections to the health impacts of vehicle emissions as well as the health benefits of phasing out high-emitting vehicles. This can go a long way to swaying public opinion.

# Expanding work in cities around the globe

Cities are becoming increasingly important in the fight against air pollution from transport. Not only are cities most impacted by emissions from fleets, but local governments are uniquely positioned to craft policies that can directly address air quality problems in high-traffic areas.

TRUE will grow the network of cities using real-world emissions data to support policymaking and expand to other regions around the globe. New data will provide greater coverage of the real-world emissions in key regions, particularly in areas where there is a lack of detailed real-world emissions data available. This work will be rooted in analytical tools and approaches developed through the work of the initiative. In addition, new approaches will be developed to fully capitalize on the richness of remote sensing datasets and to continue to provide cities with the timely and actionable data they need in order to address transport emissions.

TRUE plays a vital role in connecting cities who share the common goal of taking actions to address the harmful impacts of their vehicle fleets. The Initiative provides venues, such as workshops, for these cities to come together and learn from each other. Such knowledge sharing is critical for the dissemination of best practices for vehicle emission monitoring and policy development. At the same time, TRUE will continue to act as a central contact point for this city network and will continue to develop technical research, toolkits, and other resources to provide cities with the information they need to take evidence-based actions to protect public health. As TRUE continues to expand globally, the network of cities benefitting from these opportunities will grow.

By continuing its work with cities, TRUE aims to help address the ongoing challenges related to existing diesel and gasoline fleets, while also providing the evidence cities need to move forward with strong policies and actions to accelerate the transition to zero-emission alternatives.

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EMISSIONS INITIATIVE

# Electrification and zero-carbon vehicles

In order to fully address the health and climate impacts of emissions, transport will ultimately need to transition to zero-emission fleets. Government and industry announcements and targets for phasing out internal combustion engine vehicles show that there is a broad consensus that the future of on-road transport will be electric. While the end point of this transition is becoming increasingly clear, the current pace is not fast enough. This is where TRUE can help. By monitoring and publicizing the emissions of gasoline and diesel vehicles, which will remain on city streets for many years to come, TRUE can help build the case for strong actions, like city-level bans on internal combustion engine vehicles, to accelerate this transition. At the same time, it's important to monitor what is on the road and how policies to push us towards zero-emission vehicles are working. Real world emissions testing should underpin the roll-out of pledges on electrification to ensure that future solutions which rely on a belief that emissions really are better actually deliver. Trust and transparency has not hitherto under-pinned the emissions data from the vehicle industry—however it does under-pin TRUE.

# Environmental equity and justice

Lower-income neighborhoods in cities have been found to be disproportionally impacted by poor air quality. This is particularly true for neighborhoods near high-traffic areas. A lack of access to cleanest modes of transportation in these areas will continue to compound the issue, leading to further worsening air quality.

TRUE will work with cities and impacted citizens to assess the extent of harmful emissions from transport in high-impact areas and provide data to help cities target policies that will help underserved neighborhoods. The data provided by TRUE can help local governments determine where air pollution from transport is most severe and may need special policy intervention. By monitoring the real-world emissions from fleets, cities can ensure policies intended to address climate and pollution inequities are performing as intended.

## A CALL TO ACTION

# Addressing the health and climate impact of vehicle emissions

It is vital that cities take immediate action to fully address harmful emissions from vehicles.

By working with TRUE, cities can have access to real-world data and experts, in addition to the knowledge and best practices gleaned from other cities, to help them craft effective policies. Going forward, stakeholders should:

- Support the creation of regional real-world emissions databases covering the majority of the global vehicle market.

- Use real-world emissions data to identify high-emitting vehicles and enforce emission policies.

- Demand cleaner fleets in all existing vehicles, supported by policies such as LEZs using real world data.

- Aid in the funding of programs to expand the use of real-world emissions in policymaking.

**TRUE**
THE REAL URBAN
EMISSIONS INITIATIVE

www.trueinitiative.org          @TRUE_Emissions

**FIA FOUNDATION**          **icct**
THE INTERNATIONAL COUNCIL
ON CLEAN TRANSPORTATION

## TO FIND OUT MORE

For details on the TRUE rating and related questions, contact Tim Dallmann, **t.dallmann@theicct.org**.

For more information on the TRUE project, visit **www.trueinitiative.org**.

The Real Urban Emissions Initiative (TRUE) is a partnership of the FIA Foundation,
the International Council on Clean Transportation, Global NCAP, Transport and Environment, and C40 Cities.