THE URBAN MOBILITY COUNCIL
PERCORSI DELLE NUOVE MOBILITÀ

FORUM 2023 - ENERGY, INFRASTRUCTURE AND INDUSTRIES FOR ZERO EMISSION MOBILITY

STUDY BY POLITECNICO DI MILANO: AROUND 30 PERCENT OF VEHICLES WITH INTERNAL COMBUSTION ENGINES CIRCULATING IN ITALY COULD ALREADY BE REPLACED BY ELECTRIC VEHICLES WITHOUT CHANGING THE DRIVING HABITS OF ITALIANS

THE ANSWER FOR A FAIR, SOCIALLY SUSTAINABLE AND INCLUSIVE MOBILITY POLICY IS GREEN BOXES

This is what has emerged from an analysis carried out in the provinces of Rome, Brescia and Bari after collecting data from the black boxes installed on the vehicles of Unipol customers

Milan, 26 June 2023 – Based on the electronic data detected by the black boxes installed on the vehicles of Unipol customers in the provinces of Rome, Brescia and Bari, it has been found that the **E-Private Mobility Index**[1] - the percentage of traditional vehicles (with internal combustion engines) that could actually be replaced by electric vehicles - is not uniform **throughout the country,** being equal to **17%** in the province of **Rome**, **28%** in the province of **Brescia**, **42%** in the province of **Bari**. This discrepancy is the result of a different geographical size, of the different services provided locally and of the population's driving habits; it is also inversely correlated to the number of km travelled: the E-Private Mobility Index increases as the km travelled by the individual vehicle decreases.

Approximately 360 million trips of over 226,000 vehicles were processed for the calculation of the E-Private Mobility Index, divided as follows: in the province of **Bari**, **81,460 vehicles** (60% of existing black boxes in the province) for a total of around **140 million of trips**; in the province of **Rome 91,920 vehicles** (about 40% of existing black boxes in the province) for a total of **about 150 million trips**; in the province of **Brescia 53,410 vehicles** (90% of existing black boxes in the province) for a total of over **70 million trips**. All data are statistically significant.

The study measured **economic feasibility** only after calculating the E-Private Mobility Index, that is, whether the investment for transitioning to an electric car would be cost effective, bearing in mind that the average ownership period of a private car in Italy is eight years. One of the variables that most affects economic feasibility is the recharging cost: in the province of Rome all cars that can be electrified (17% of the E-Private Mobility Index) could be depreciated over a period of 8 years if the recharging cost was €0.2 per KWh (the price before the energy crisis); if the cost increases to €0.36 per KWh (the price after the energy crisis), only 7% of the cars identified would break even in 8 years. These percentages are 7% and 3% for Brescia, 13% and 6% for Bari.

This is what emerged from a study conducted by **Politecnico di Milano** (the Polytechnic University of Milan) containing an analysis of car trips of Italians recorded through electronic boxes and presented today at the Milan Triennale during the second forum of **The Urban Mobility Council, the mobility think tank** promoted by the **Unipol Group** with the endorsement of the **European Commission,** of the **European Parliament Office in Italy,** of **Agenzia per l'Italia Digitale (AgID, Agency for Digital Italy),** of the **(Italian) Ministry of the Environment and**

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[1] Monitoring tool developed by Politecnico di Milano together with UnipolTech for the first time in 2023. The index is measured by considering the length of trips made and the presence of a low-cost domestic recharge point near home.

Energy Security, of the **(Italian) Ministry of Infrastructure and Transport,** of the **Lombardy Region,** and of the **Municipality of Milan**. The project was created to promote a permanent discussion platform to share ideas, research and case studies among institutional stakeholders, universities and companies engaged every day in building the sustainable mobility of the future: connected, autonomous, integrated and environmentally-friendly.

From Black Boxes to Green Boxes

The study by **Politecnico di Milano** also shows how vehicles that are not immediately electrifiable may, under certain conditions, continue to circulate even in restricted traffic areas if the data collected by the green boxes were taken into consideration. This is a tool for defining and classifying the environmental impact of each vehicle, which goes beyond the traditional classification of vehicles in Euro classes.

The research and analyses carried out by using data drawn from UnipolTech electronic devices[2] make it possible to transition from the concept of black box to that of green box by continuously measuring the kilometres travelled, speeds, sharp accelerations, and braking.

In summary, the analysis of car driving data shows how **an eco-friendly vehicle (with a high Euro class) driven inefficiently may actually cause a greater environmental impact than an older car driven in an "environmentally-friendly" way**.

It has been found that mileage and driving style are important factors for the overall environmental impact of a vehicle, regardless of its age or propulsion technology. The need has thus emerged to promote "environmentally-friendly" and responsible driving by providing information to motorists on driving practices that may reduce emissions and air pollution.

This is an innovative approach that will allow **public administrations to plan effective policies for the management of private vehicle traffic and contain pollution**. In essence, by using the data drawn from the green boxes, local administrations could transition from policies based on average data, such as those on the amount of emissions released by a certain type of engine, to policies based on the actual data of individual vehicles and on how they are driven. A revolution, particularly in the management of access to city centres, because **entrance into LTZs would be based not only on the car that one owns, but on the KMs travelled, the speed adopted, the surface area occupied, and the driving style**.

Matteo Laterza - UnipolSai Chief Executive Officer - stated: *"With the emergence of new mobility paradigms, the role of insurance companies cannot be limited to insuring cars. New services should also be provided. Thanks to the analysis of electronic data, it will be possible to foster change in the citizens' habits towards a more sustainable and inclusive future. We hope that this evolution will also be accompanied by consistent policies on the part of municipal, regional and national administrations. We, at Unipol Group, are following with interest the actions being undertaken by municipalities in terms of infrastructural planning with the aim of ensuring that all citizens have access to services that promote sustainable mobility, such as the installation of electric charging*

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[2] UnipolTech is a Unipol Group company that provides UnipolSai customers with innovative solutions and services to meet their needs through the use of the latest technological innovations. The company has developed electronic devices to ensure safety and immediate assistance: on the road, at home or in the workplace. UnipolTech is the leader in Italy and Europe for in-vehicle electronic devices, with more than 4.2 million black boxes installed.

stations, the opening of new parking areas and new stops for public transport so as to encourage multi-modal travel, thereby increasing road safety".

Sergio Savaresi, Director of the Electronic Information and Bioengineering Department (DEIB, Politecnico di Milano) said: *"The study based on electronic data carried out in collaboration with UnipolTech has given quantitative evidence regarding two key concepts. The first one is that the environmental impact of using a vehicle (in particular its CO_2 emissions) is largely linked to how the vehicle is actually used, rather than to its EURO class; perhaps, thanks to modern electronic technologies, the time has come to start measuring the actual impact of each vehicle without relying on traditional average data only. The second one is that, while keeping the traditional model of cars for private use, their effective electrifiability can hardly exceed 30%; the transition toward new service mobility models (more easily electrifiable) must therefore be managed efficiently."*

Carlo Ratti, architect, urban planner and engineer, Director of Senseable City Lab, Massachusetts Institute of Technology in Boston, commented: "*We are living in a very interesting period of great transformations at a technological and social level. The Internet is entering the physical space - the space of our cities - and is becoming the Internet of Things, thus changing many of the urban planning paradigms of the past. One of the sectors that has been most affected by change is that of Mobility, where vehicles are becoming 'computers on wheels' capable of producing and collecting enormous amounts of data. Precisely due to the analysis of big data, as this research in partnership with Unipol has shown, we may be able to accelerate the evolution of our cities and our roads even further, while abiding by the imperatives of safety and environmental attention".*

The forum was attended by: **Matteo Laterza** - Chief Executive Officer of UnipolSai; **Galeazzo Bignami** - Deputy Minister of Infrastructure and Transport; **Arianna Censi** - Councillor for Mobility, Milan; **Carlo Corazza** - Director, European Parliament Office in Italy; **Michele Crisci** - President, UNRAE and CEO, Volvo Italy; **Luca De Meo** - Chief Executive Officer, Renault Group and President, ACEA (European Automobile Manufacturers' Association); **Franco Ferraro** - Sky Tg24 journalist; **Santo Ficili** - Country Manager Italy, Stellantis; **Attilio Fontana** - President, Lombardy Region; **Stefano Genovese** - Head of Institutional & Public Affairs, Unipol Group and Coordinator, Think Tank "The Urban Mobility Council "; **Maria Leitner** - Rai Tg2 Motori journalist; **Raffaella Lucarno** - Head of Bio Refinery & Supply, Biomethane, Eni Sustainable Mobility, Eni; **Camillo Mazza** - General Manager, Robert Bosch GmbH Branch Italy; **Paolo Mazzoleni** - Councillor for Town Planning, Turin; **Massimo Nordio** - President, Motus-E and Vice President Group Government Relations and Public Affairs, Volkswagen Group Italia; **Eugenio Patané** - Councillor for Mobility, Rome Capital; **Carlo Ratti** - architect, urban planner and engineer, Director of Senseable City Lab, Massachusetts Institute of Technology in Boston; **Massimiliano Salini** - MEP, Member of the Transport Commission, European Parliament; **Sergio Savaresi** - Professor of vehicle automation at Politecnico di Milano; **Patrizia Toia** - MEP, Vice-President of Committee on Industry, Research and Energy, European Parliament;