The Future of Transport & Road Safety in Smart Cities

9 trends that will revolutionise mobility by 2050

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Introduction

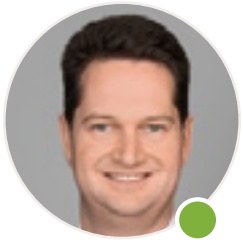
The world's population is growing, and at the same time, more and more people are living in cities. The United Nations estimates that by 2050, around 6.7 billion people worldwide will live in urban areas, representing 68% of the global population.

This means, over the next few decades, the world will have more and bigger cities, which will have a knock-on effect on mobility and transportation demands. Too many people using personal cars to get from A to B will create more congestion, increase carbon emissions, and adversely affect road safety and sustainability. Alongside these prevalent issues is Vision Zero, the EU's target to eliminate all serious road crashes by 2050.

All this translates into urban mobility and transportation undergoing a once-in-a-generation shift. Planners are looking at emerging trends together with the value that data and technology bring to help people go about their daily lives more safely, efficiently, and sustainably.

5 Road safety & mobility experts

This report explores the trends in more detail, and the roles that safety and data must play in the urban mobility challenges of the future, with insights from 5 road safety and mobility experts:



Lukas Neckermann

Co-initiator of PAVE Europe (Partners for Autonomous Vehicle Education), COO of Splyt, a leading global mobility network

Violeta Bulc

Former European Union transport commissioner; former Deputy Prime Minister of Slovenia, curator of eco-civilization

Jose Antonio Ondiviela

Industry Advisor for Cities & Regions, Microsoft Western Europe; Director of the Worldwide Observatory for Attractive Cities, UFV University

Jolan Hulscher

Product Manager for Cyclomedia, specialising in road safety

Monica Olyslagers

Global Innovations Manager for the International Road Assessment Program (IRAP)

The 9 trends that will revolutionise urban transport and safety by 2050

The world of transportation and urban mobility is changing faster than the associated infrastructure within cities. This change is accelerated by a range of different factors taking place simultaneously, all influencing how we travel today: remote working, climate change, urban migration, and more. All these contribute to nine emerging trends that will shape the way transport is used, planned, and managed in urban environments:

1 The rise of autonomous vehicles

As technology develops, cars will house more autonomous components and other technologies that further prevent human error, thereby making streets safer. In some places, such as hangars and plants, self-driving cars will be the only ones driving, however, it might take longer for this technology to be adopted in cities. Autonomous technology is essential for road safety and will become the norm as soon as its safety record exceeds that of human drivers.

Jose Antonio Ondiviela explains:
"To make safer roads happen, we need to better control movements, vehicles, intersections - where most problems happen.

And move towards more autonomous vehicles: in 15-20 years, humans will be banned from driving. In the common space, autonomous vehicles will be the main driver towards achieving Vision Zero.

We as humans will only be allowed to drive in closed circuits or off-roads with a special license. Autonomous vehicles will be better for cities when the technology matures."

2 An accelerated shift to new modes of transport & shared ownership

As the need for more flexible, sustainable transport increases, society will towards zero ownership, especially with the help of Mobility as a Service (MaaS). MaaS allows users to book, use and pay for diverse types of mobility using technology, on a per-use or subscription basis (e.g., bike hire schemes and e-scooters). In the future, this could be done from one single platform that brings providers together.

According to a research done recently by McKinsey, In the United States, ridesharing is a $30 billion market and growing. The country now has approximately ten metropolitan areas that generate $500 million or more in yearly ridesharing revenues, and compound annual growth rates are north of 150 percent.

Violeta Bulc explains:
"It will help to save space and will help people to utilise different types of mobility, where they need it, when they need it, in the format that they need it, so that is attractive to human behaviour because it meets our needs."

3 Sustainable transport & greener cities

Building greener cities is one of the most important challenges we face today. We can achieve this by using more sustainable forms of transport that help reduce our overall carbon footprint and support the fight against climate change.

Jose Antonio Ondiviela explains:
"The recovery of the cities will be green, including public transportation. We are observing a new urban mobility and a new way in which it is provided."

Violeta Bulc observes:
that there is a close connection between autonomous mobility and any kind of automation in transport and the green agenda:

"Right now transport is going through this twisted spiral where green and digital are walking hand in hand. Transport will, of course, be one of the biggest consumers of green energy.

To be successful cities must plan to use a system-level, integrated approach because you cannot push for green transport if you do not have access to green energy and green infrastructure."

4 Flexible inner-city lanes and digital urban mobility

Buses, trains, and cars are increasingly connected to the Internet of Things (IoT), and vehicle connectivity with infrastructure and other vehicles can have a significant impact on mobility and road safety. As data collection becomes more widespread, information about lane-changing habits, speed, crashes, or other issues on the road will be used to reduce congestion and improve safety in real-time.

Lukas Neckermann explains:
"Making flexible lane allocation possible in our cities, like today's smart motorways, can help at an even more sophisticated level. For example, when it rains – cycle lanes could get smaller to give more space for public transport."

Monica Olyslagers explains:
"The idea here is a shift to multi-modal streets. Understanding that streets have different purposes and use cases, often at different times of the day. Seeing that come into street and road design is so incredibly important."

5 Reduced speed limits will become more widespread

Stricter and reduced speed limits within cities will become more widespread. Slowing down traffic creates safer environments for other road users such as cyclists and pedestrians.

Lukas Neckermann highlights:
"We let humans drive too fast in the cities. It is about the peaks, not the averages."

In 2021, the mayor of Paris, Anne Hidalgo, signed a document to completely decrease the city's speed limit from 50 km/h to 30 km/h. Other major cities, such as Berlin, London, New York, Dublin, and Brussels already have speed limits of under 50km/h. We expect that more cities will follow suit.

6 Building one-minute cities and connected villages

Reducing travel times will become increasingly important over the next 10 years, shorter travel times also leave fewer opportunities for crashes. As commuters and residents strive for a better quality of life and work-life balance, building what is called a 15-minute city can help achieve this.

Jose Antonio Ondiviela explains:
the concept of a 15-minute city as:
"A city where you can find 95% of what you need for life, including your job at less than 15' commuting time using public transportation or microelectronic individual vehicles". And inside the districts, we can talk about the one-minute city as "Superblocks. Inside the block, only domestic traffic of less than 5 km/h.

This is a good opportunity to refurbish the block, a good place to build something more social, like planting trees, creating a boulevard, something that encourages people to interact and improve their quality of life. This is the idea of the one-minute city, the district. 15'-city is the villa, 1' is the new district."

••• *Violeta Bulc is typing*

Violeta Bulc explains:

These cities are the future and will reduce time lost in traffic jams. At the same time smart micro-mobility will be an essential part of the overall solutions of such cities.

In the future, districts will provide most services and green spaces to their residents, delivering everything a community requires within proximity. Allowing smaller and more rural communities to benefit from the same principles and technologies powering smart cities will help to build better-connected countries.

"We are completely forgetting our villages, which represent an incredible richness of culture and help us to continue feeding the diversity we need to push for innovation."

"Now we can see the needs of smart cities and smart villages coming together, embracing system thinking together, and visualising the needs that the society has as a whole."

7 Growing importance of contextual data

Contextual data is key to delivering traffic trend insights and can lend a hand in identifying potential road safety, alongside other transport, and planning issues. With data analytics, it is possible to make better-informed decisions about lane allocation, traffic lights, and other transport assets.

Jolan Hulscher explains:
That way, roads and assets can be improved to help save lives and ease traffic flow. "Integrated dashboards with AI will mean we can make predictions through live data on what the most dangerous places and bottlenecks are," says Jolan Hulscher. "If you see cars speeding up in an area, you can see that there might be more casualties."

8 Fewer cars and more space for people

Cities are devoting less space for cars and traffic, and more space for communities to use and enjoy safely.

Jolan Hulsher explains:
With fewer cars and the use of data to understand spaces, Jolan Hulscher mentions:

We can make city life more enjoyable. Now living in a city is not the best experience, there is noise pollution, air pollution and extensive traffic. It would be nice to be in a city that fits your needs and not the car's needs.

Delivery vehicles can be particularly problematic, adding to congestion problems. With ongoing trials to deliver packages with the help of drones, the added pressure that delivery vehicles place on the transport infrastructure will be reduced dramatically, allowing cities to reclaim space.

In the future, streets will be reallocated to include cycle lanes, pedestrian zones, and even green spaces instead of cars. It is not out of the question that cars may even be pushed out completely.

9 A new mode of transport: urban air mobility

The need to reduce carbon emissions and decongest roads have made the dream of the 'flying car' possible. There are more than 200 companies involved in developing electric vertical-take-off-and-landing vehicles (eVOTL), which can be used by small numbers of people for short urban journeys by air.

Jose Antonio Ondiviela explains:
"In very dense areas, flying will be the main way to move people: low-capacity transporters that hold 8 to 10 passengers, fully electric," says Jose Antonio Ondiviela. "When considering small groups, this way of transportation is the future.

They do not need airports, only vertiports: downtown buildings with a small airport on the roof. They can connect a range of 350km and all the people in that area."

Urban mobility solutions will, also, bring positive change to emergency and logistic services.

Summary

All these trends should be considered in the context of three wider global movements, all of which will play an important part in how we move from place to place in the decade to come.

The first is Vision Zero. Founded in Sweden in the 1990s, Vision Zero's goal is that eventually no one will be killed or seriously injured within the road transport system (Ministry of Transport and Communications, 1997). A core principle of the vision is that "Life and health can never be exchanged for other benefits within the society." The movement has now spread to many other countries around the world, including the United States and across the European Union.

The second is climate change. All urban mobility changes made in any country in the years to come will have to put sustainability front and centre of its considerations. Balancing the need for transportation with the need to protect the environment will be vital.

The third is data. The depth of information that can be gathered and analysed to make better decisions about safe urban mobility is so vast that it cannot be ignored. Even hospital data can be used to understand where and how road-related injuries occur and better inform decisions about changes that need to be made.

The key to mobility and its changes is to understand which changes need to be made to our cities based on facts and detailed analysis. Visual data represents the easiest, quickest, most cost-effective, and most detailed way of gaining that understanding.

In the second guide of this series, we will explore the current major challenges around road safety, and how data - and visual data in particular - can make a significant difference.

Ready to further discover how visual data can help you understand the many changes in mobility and how to adapt to them? We are here to provide advice.

Talk to us

To discover how you can help your city with data and Cyclomedia, contact a representative at smartcity@cyclomedia.com

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