

TRANSPORT MOBILITY IN THE WORLD DURING QUARANTINE RESTRICTIONS

**Shapoval N.A., student,
Gubareva O.S., PhD, Associate Professor,
Semchenko N. O, PhD, Associate Professor,
Kharkiv National Automobile and Highway University.**

On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. The pandemic has severely affected a number of different sectors of the economy, including transport, tourism and mobility. The state of emergency has forced governments to ban unnecessary movements and adapt the mobility of key workers and goods to protect health and curb the spread of the virus. Authorities and operators around the world had to act quickly and find quick and effective solutions to ensure safe mobility. All these measures have had a significant impact, disrupting traditional mobility opportunities (roads, sidewalks, public transport and shared transport services) and setting new trends.

Researchers after processing data from 130 countries (1,100 cities) found that travel on individual transport, public transport and on foot in all regions of the world decreased compared to baseline (January 13, 2020) by 60 - 80% (slide 2) . The decline began on March 8, 2020, and the largest decline was achieved in early April.

The largest decrease was in the use of public transport, reaching a 76% reduction in April 2020. Walking and individual transport have been less affected, and it appears that these two mobility modes already tend to return to pre-COVID-19 levels.

Public transport is the type of transport that has suffered the most from the crisis, given the physical proximity of its users and, consequently, the risk of infection that it entails. However, epidemiological studies in Austria, France and Japan, and data from New York and Singapore suggest that preventive measures are very low in public transport and that public transport is potentially safer than other enclosed spaces. In France, for example, data show that only 1% of COVID-19 diseases are related to transport, ie land, air and sea.

Shared mobility systems also faced challenges. High risk of sharing vehicles with other people has forced many companies to stop providing services such as Uber and Lyft

As for the distribution of urban cargo - the movement of goods does not stop. The main recommendations of the companies were: contactless interaction between operators and drivers during loading and unloading operations, contactless deliveries. In Zaragoza, the authorities allowed the loading and unloading of goods 24/7 (24 hours a day, 7 days a week).

US INRIX researchers assess mobility trends based on the average baseline level for January-February in terms of Vehicle-miles traveled (VMT) and compare the results between selected European countries. According to these data, Italy was the first country to experience a reduction in vehicle mileage due to early quarantine.

Spain suffered the biggest drop, reaching only 12% of mileage compared to COVID-19.

Although delivery companies reported lower activity (about 75% in Paris), e-commerce growth, particularly in the food sector, ranged from 10% to 40% compared to pre-crisis levels. Bpost, the Belgian company responsible for postal services, recorded a sharp increase in parcel delivery (+ 60% in all types of sectors combined). The largest increase in revenues was recorded in food, personal prevention and medicine. In China, Carrefour reported an increase of up to + 600%, and the Chinese online store JD.com - up to + 215% of revenue in January-February, while in France, electronic products grew by 38% in the week after March 12.

Passenger traffic in public transport fell sharply during the first wave of the pandemic, with a reduction of 60-90% of baseline levels before the pandemic, which then stabilized by about 30-40% of reductions (see slide). According to the survey, only 7% of people perceive public transport as a safe mode of transport.

According to the Boston Consulting Group (BCG, 2020), respondents in Europe, the United States and China report less likely to buy a ticket. This is reflected in their uncertainty about the total number of trips they have made in a month and the mode of transport they have chosen.

Globally, demand for shared mobility services has fallen to 70% (movmi, 2020).

Distinguishing between different variants of joint mobility, two main trends can be seen (Corwin, Zarif, Berdichevskiy, &Pankrat, 2020):

1. Bicycle and scooter exchange systems support (or increase) the number of users in cities where governments are creating new infrastructure conducive to bicycles and e-scooters.

2. Transport companies continue to change their business model to good delivery.

In the first periods after the lockdown phase, cities had to face problems with partial recovery of mobility. The recovery posed a high risk of congestion on public transport. Overcrowding of vehicles and stops can lead to a re-increase in the level of infection. Cities like Beijing have begun testing digital booking solutions to control flows and avoid over-demand. In addition, Catalonia has accelerated the deployment of the Autocorb program, which provides users with real-time bus occupancy, allowing them to balance supply and demand without overcrowding. Other cities, such as Hamburg, have taken a flexible approach, providing more travel on the busiest routes and reducing the number of services with less demand. The city of Rotterdam, along with some micromobility partners, provided 1,500 shared bicycles and 1,500 shared electric scooters available at 25 transportation hubs to prevent crowds on public transportation.

In different countries, cities such as Berlin, Leeds, Paris, Brussels, etc., have created temporary pop-up ("emerging") bike paths. Paris has created 650 km of new bike paths, including "pop-up" options. In Milan, 22 miles of officially used roads have been converted into pedestrian and bicycle routes. In Bogota, the capital of Colombia, officials have made 75 miles of streets free of motorized vehicles. In Italy,

the city of Bologna has accelerated work on an additional 348 km of cycle paths, the construction of which is already planned as part of their Sustainable Urban Mobility Plan (SUMP), and completed 60% of them by the end of 2020.

Bicyclesales have increased everywhere: in the UK, for example, annual sales have increased by + 677%.

The use of cargo bicycles, i.e. bicycles used for cargo delivery, also increased in 2020 by 53% compared to 2019. Many countries, such as Denmark and Germany, have made public recommendations to avoid the use of private cars and public transport in favor of cycling or walking. Italy is offering a 60% cash refund of up to € 500 on the purchase of a bicycle or electronic bicycle to stimulate the event; in France, the government has allocated 50 euros for bicycle repairs. In Amsterdam, the municipality provided 1,600 bicycles to students to ensure a safe ride and limit the use of public transport.

The pandemic has also facilitated contactless deliveries, thus reducing the risk of transmitting the virus. In Wuhan (China), drones were used to deliver goods to neighboring villages. The emergency strengthens the drone delivery market: kiwi bot, a robot delivery, has increased its fleet from 20 to 50 and serves two cities in California and two in Colombia and Taiwan, and another 500 units in production. Japan is conducting tests to launch drones, and France has conducted tests in Montpellier, testing drones to deliver mail. Wing, Google's drone delivery service, saw an impressive peak of interest during the coronavirus pandemic, when worldwide demand increased by + 350% from February to April, while diversifying more types of goods suitable for delivery. In Ohio, a robotic food delivery initiative helped students carry supplies to campus and helped enforce the "rule of home."

References

1. ВПЛИВ ПАНДЕМІЇ НА МОБІЛЬНІСТЬ: ЛЕКЦІЇ ІV МІЖНАРОДНОЇ ОСВІТНЬОЇ ШКОЛИ ЗІ СТАЛОЇ МОБІЛЬНОСТІ (21-24 квітня 2021 року) / Т. Бекер [таін.] – К :Екодія, 2021 – 33с.

2. Біла книга – Транспорт. 2011 [Електронний ресурс]. – Режим доступу: http://www.tur.org.ua/sites/default/files/white_book_transport_2050_ukr_0.pdf.

3. Дикань В. Л. Трансформація діяльності транспортно-логістичних центрів в умовах міжнародних транспортних коридорів та їх роль в інформаційному забезпеченні інтелектуалізації промислового комплексу / В. Л. Дикань // Вісн. економіки трансп. і пром-сті :зб. наук. пр. – Харків : УкрДАЗТ, 2010. – № 30. – С. 172–173.

4. Transport. Investing in energy and resource efficiency [Electronic resource]. – Mode of access : http://www.unep.org/transport/lowcarbon/newsletter/pdf/GER_10_Transport.pdf.