

McKinsey Center for Future Mobility

# The impact of COVID-19 on future mobility solutions

As the global pandemic spreads, mobility players need to prepare for the new world ahead.

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**As the COVID-19 crisis rages**, public life in many countries is grinding to a halt. The human toll is enormous, with the patient caseload and deaths increasing exponentially worldwide. On the economic side, the coronavirus has forced many businesses to cease or slow down operations.

Automotive OEMs and players within the mobility industry are among the hardest hit. Over the long term, COVID-19 could have a lasting impact on mobility as it drives change in the macroeconomic environment, regulatory trends, technology, and consumer behaviors. The trends may vary by region, however, so responses and outcomes for mobility players will differ by location.

### **Macrolevel weakness could spur consolidation among mobility players**

The current crisis stands to be the most abrupt shock to the global economy in modern times. As with other financial contractions, people will postpone discretionary purchases and increase their savings as they anticipate harder times ahead. According to recent McKinsey research, discretionary consumer spending may decline by 40 to 50 percent, translating into a roughly 10 percent reduction in GDP and numerous second- and third-order effects.

The most immediate and visible effect of COVID-19 in the traditional automotive sector is the standstill of many OEM and supplier factories, which will likely produce 7.5 million fewer vehicles in 2020. At the height of the crisis, over 90 percent of the factories in China, Europe, and North America closed. With the stock market and vehicle sales plummeting, automakers and suppliers have laid off workers or relied on public intervention. Many have secured capital by either applying for government assistance or seeking investor money, while others have extended their credit lines and suspended dividend payments.

Mobility players are also suffering. Public-transit ridership has fallen 70 to 90 percent in major

cities across the world, and the operators are burdened with uncertainty and the potential need to implement and control strict hygiene protocols—such as compulsory face masks and health checks for passengers, or restricting the number of riders in trains and stations to comply with space requirements. Ride hailers have also experienced declines of up to 60 to 70 percent, and many micromobility and carpooling players have suspended their services.

Some governments have launched initiatives to support mobility start-ups that were hit hard by the crisis, but low cash reserves and a lack of capital in the market will most likely take their toll on many players. Just recently, a scooter-sharing start-up laid off over 400 employees (30 to 40 percent of its workforce).<sup>1</sup> The potential weakness of some players, combined with the availability of still-cheap money, could trigger a surge in M&A activity in the mid term, leading to a long-predicted industry consolidation.

### **Regulatory uncertainty could increase**

We believe that regulators will react differently across regions. Some might view the crisis as an inflection point to accelerate the transition toward sustainable mobility, while others could loosen regulatory mandates to prop up their ailing automotive industries. In some markets, potential support programs, including cash incentives for trading in old cars, could amplify the industry's focus on sustainability and increase electric-vehicle (EV) sales above projections.<sup>2</sup> In other markets, however, regulators may relax emissions targets to support OEMs.

If physical distancing continues, city leaders might relax regulations for private mobility, at least over the short term, because people feel less vulnerable to infection in individually owned vehicles. Leaders might also revise their regulations to give more space to pedestrians and cyclists. For example, Bogotá, Colombia has added 76 kilometers, or 47 miles, of cycle lanes to encourage physical distancing. Other cities, including New York City,

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<sup>1</sup> Julia Arciga, "Over 400 Bird employees were laid off in two-minute Zoom webinar: Report," Daily Beast, April 2, 2020, thedailybeast.com.

<sup>2</sup> Several governments have previously instituted financial incentives for purchasing new cars. For instance, the United States enacted the Car Allowance Rebate System, informally called "cash for clunkers" in 2009 to provide incentives for purchasing new, more fuel-efficient vehicles.

# We assume that some of those measures might remain in place after the crisis. If they promote improvements, such as fewer accidents and less pollution, cities may decide to make them permanent.

have closed several streets to traffic. In Oakland, California, an astounding 74 miles of streets—10 percent of the total—have been blocked off so pedestrians and cyclists can remain six feet apart.

We assume that some of those measures might remain in place after the crisis. If they promote improvements, such as fewer accidents and less pollution, cities may decide to make them permanent.

## **Potential technology setbacks**

Over the short to mid-term, the COVID-19 crisis could delay the development of advanced technologies, such as autonomous driving, as OEMs and investors scale back innovation funding to concentrate on day-to-day cash-management issues. For instance, autonomous-vehicle (AV) testing may be suspended. Similarly, investment in micromobility and shared-mobility providers might drop—a trend that would drive market consolidation. Success (and survival) will likely favor larger players with higher cash reserves.

Over the long term, however, AVs, micromobility solutions, and other technologies that support physical distancing could benefit. We believe that customer demand for these solutions could soar once the initial crisis subsides, increasing their attractiveness to investors.

The impact of COVID-19 on EVs will differ across regions. For instance, we expect post-crisis EV sales to rebound strongly in China, keeping investment stable and the projected increase in EV market share on track. We also expect investment to remain on the same trajectory in Europe—even though ramp-up of EVs might be slightly delayed, there could be strong regulatory tailwinds. EV demand might stagnate in the United States, especially if federal regulations about emissions loosen and oil prices remain low. These trends could slightly decrease investment in EVs and market share could fall below the projected levels for the next few years.

## **Changes in consumer behavior and preferences could shift the modal mix**

As the pandemic continues, physical distancing will have a significant impact on mobility behavior and preferences. Many people will switch to a transport mode that reduces the risk of infection, but the exact shifts will largely depend on their pre-COVID-19 habits. People who own a private vehicle will use it increasingly, while those who previously relied on public transport might switch to another mode, such as biking or walking instead. Evidence from Chinese cities confirms that private cars, walking, and biking have gained the most share since the pandemic began, while bus and subway ridership declined.

At this point, we believe many changes in the modal mix are temporary and that shared-mobility solutions, including public transit, will rebound and continue to capture increased market share. Micromobility solutions could also pick up more quickly if strict disinfection protocols are installed. That said, the pandemic could produce some permanent shifts over both the short and long term. For instance, AVs, if approved for on-road use, could see higher-than-expected demand, since they enable physical distancing. And remote work—now common during the pandemic—could become the norm if companies recognize its power. If more people permanently work from home, the reduction in commutes would likely produce a long-term decrease in vehicle miles traveled.

technology, and customer behavior—will evolve in different ways depending on location. We have created scenarios to describe the landscape—both how it might evolve through 2021 and the potential next normal in 2025. Of course, much uncertainty persists and other scenarios could emerge. Here’s a summary.

**North America**

In the United States, future EV-market development depends largely on the regulatory environment and oil prices. The latter, in turn, affect gasoline prices and the total cost of ownership of EVs (Exhibit 1). While EV sales could return to pre-COVID-19 projections in one to two years, the specific timing depends on two factors: if and when oil prices also return to pre-COVID-19 levels and the number of states that adopt California’s emission regulations. Although some technological innovation may now face delays, we expect investment to recover.





**Regional variations in mobility trends**

The four trends discussed—macroeconomic developments, regulatory developments,

Exhibit 1

**Trends in North America may lead to the continued dominance of road travel and lower electric-vehicle uptake.**

**Trends in North America by category**

	 <b>Macroeconomic developments</b>	 <b>Consumer behavior</b>	 <b>Regulatory developments</b>	 <b>Technology readiness</b>
<b>2020–21:</b> crisis years	<ul style="list-style-type: none"> <li>• Auto factories closed, with some automotive workers losing jobs</li> <li>• Stocks and oil prices plummet</li> </ul>	<ul style="list-style-type: none"> <li>• Shift away from shared mobility and public transit to reduce risk of infection</li> <li>• Uptake in single-occupancy modes</li> <li>• Decrease in vehicle miles traveled due to remote working</li> </ul>	<ul style="list-style-type: none"> <li>• \$2 trillion economic-stimulus package may help some OEMs and mobility players</li> <li>• Corporate Average Fuel Economy regulations may be weakened</li> </ul>	<ul style="list-style-type: none"> <li>• Autonomous-vehicle testing temporarily suspended</li> <li>• Demand drop, and shortage of capital puts pressure on start-ups</li> </ul>
<b>2025:</b> potential scenario for “next normal”	<ul style="list-style-type: none"> <li>• Auto industry recovered and plants reopened</li> <li>• Car sales back to precrisis levels</li> </ul>	<ul style="list-style-type: none"> <li>• Road-based mobility dominates; adoption of electric vehicles might level off</li> </ul>	<ul style="list-style-type: none"> <li>• Policies to reduce private-car ownership are dropped</li> <li>• Weakened emission regulation slows down e-mobility transition</li> </ul>	<ul style="list-style-type: none"> <li>• Players double down on investment in autonomous vehicles</li> <li>• Market consolidated; healthy market winners emerge</li> </ul>

## Europe

While COVID-19 will likely decrease overall car sales in Europe, it might have a limited impact on EV market share and total EV sales (Exhibit 2). It is not likely that governments will weaken strict emission regulations; at most, they might defer or reduce penalty payments. Shared-mobility solutions and EVs might see greater uptake during the crisis and even more afterward. The EV market might see additional tailwinds if the government approves the green-mobility incentives that are currently under discussion.

## China

Among countries, China is furthest along in its recovery from COVID-19. In the future, the government might increasingly place limits on private-car ownership in cities, with limited exceptions for EVs (Exhibit 3). The adoption of EVs

and shared-mobility solutions could accelerate in urban environments.





Mobility will always be a basic human need. To prepare for the future, mobility-industry players should immediately adjust their strategies to navigate the current crisis and prepare for the next normal:

- As long as the crisis is acute, mobility players must focus on keeping employees and customers safe and establishing dedicated safety protocols. They must also stay connected with their customers, even if operations are temporarily suspended or restricted. For instance, they can keep potential customers informed about safety updates and demonstrate

Exhibit 2


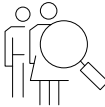


## In Europe, shared mobility and electric vehicles may see greater uptake postcrisis.

### Trends in Europe by category

	 <b>Macroeconomic developments</b>	 <b>Consumer behavior</b>	 <b>Regulatory developments</b>	 <b>Technology readiness</b>
<b>2020–21:</b> crisis years	<ul style="list-style-type: none"> <li>• Auto factories closed</li> <li>• Stocks plummet</li> </ul>	<ul style="list-style-type: none"> <li>• Shift away from shared mobility and public transit to reduce risk of infection</li> <li>• Remote working and closed borders lead to a standstill</li> </ul>	<ul style="list-style-type: none"> <li>• Strict CO<sub>2</sub> emission regulation</li> <li>• Diesel ban in selected major cities</li> <li>• Potential government incentives to stimulate the purchase of new electric vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Demand drop, and shortage of capital puts pressure on start-ups</li> <li>• Investments in autonomous-driving technology cut back in favor of short-term cash management</li> </ul>
<b>2025:</b> potential scenario for “next normal”	<ul style="list-style-type: none"> <li>• Automotive industry recovered</li> <li>• Car sales slightly below pre-crisis levels</li> </ul>	<ul style="list-style-type: none"> <li>• Consumers use multiple modes of transport</li> </ul>	<ul style="list-style-type: none"> <li>• Major city centers are car free</li> <li>• Shared and electric mobility increase in urban environments</li> </ul>	<ul style="list-style-type: none"> <li>• Autonomous-driving development slows down and focus is on level-4 highway pilots</li> <li>• Shared micromobility market consolidated, and healthy market winners emerge</li> </ul>

## The Chinese automotive market has begun to recover.

### Trends in China by category

	 <b>Macroeconomic developments</b>	 <b>Consumer behavior</b>	 <b>Regulatory developments</b>	 <b>Technology readiness</b>
<b>2020–21:</b> crisis years	<ul style="list-style-type: none"> <li>• Temporary shutdown of auto factories, slight supply restrictions</li> <li>• Slowing global demand leads to a decline in exports</li> </ul>	<ul style="list-style-type: none"> <li>• Shift away from shared mobility and public transit in fear of infection</li> </ul>	<ul style="list-style-type: none"> <li>• Strict emission regulations</li> <li>• Extended state subsidies and tax breaks for electric vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Demand drop, and shortage of capital puts pressure on start-ups</li> <li>• Crisis catalyzes introduction of autonomous-delivery robots as enabler of physical distancing</li> </ul>
<b>2025:</b> potential scenario for “next normal”	<ul style="list-style-type: none"> <li>• Car sales recovered quickly, but growing at a slower pace because of strict regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple forms of transport used</li> </ul>	<ul style="list-style-type: none"> <li>• Licensed private-vehicle ownership restricted via plate lotteries</li> <li>• Shared and electric mobility dominates urban environments</li> </ul>	<ul style="list-style-type: none"> <li>• Players double-down on autonomous-vehicle technology</li> <li>• Market consolidated; healthy market winners emerge</li> </ul>

their commitment to preventing infection. As one example, the electronic displays mounted on ride-share scooters could show when a vehicle was last disinfected.

- Looking ahead, companies can develop a detailed plan for ramping up operations. They may want to begin ramp-up in areas where COVID-19 has had a limited impact, such as cities with lower unemployment rates. Business segments that have been severely affected, such as airport rides, can be ramped up more slowly, since the impact of COVID-19 is likely to linger.

- Companies can also benefit from a thorough portfolio review that helps them focus on profitable operations. They can then decide which technologies deserve increased investment and which should be abandoned, allowing them to emerge from the crisis healthier and stronger. In some cases, companies may want to find partners to reduce the funding burden.
- Finding new opportunities for M&A may also help mobility players thrive.

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