



## Making the Commute of the Future Happen



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**Mobility as a service (MaaS) is an attractive form of public transportation that offers a variety of benefits. Enticing consumers to abandon their private cars, however, will be tricky.**

Imagine it's 8.00 am on a workday in the year 2025. You're about to head to the office – a less frequent occurrence lately, since you, like many of your colleagues, work more from home. Instead of taking out your car keys as in years past, you reach for your smartphone and open your favourite Mobility as a Service (MaaS) app. Almost instantly you see a range of transportation options to select from, with one click. You choose the option recommended by the app for your journey: a ride-hailing carpool to the train station, with a rented bike waiting to take you the last mile after disembarking from the commuter rail. No need to pay at each step; the app automatically handles all charges and fees through an unlimited monthly subscription or an e-wallet.

This integrated alternative to private car transportation is the core idea behind MaaS platforms, which are designed to promote alternatives to private transport with a digitally delivered array of customised options for getting from A to B. A pioneering example is the city of Helsinki's [Whim app](#), launched in 2016, whose holding company MaaS Global has received investment from Mitsubishi, BP and other leading firms. MaaS Global plans to use this capital to fund expansion into other European cities, as well as urban areas in Japan, Singapore and North America. Moreover, many other MaaS schemes have popped up around the world in the last few years, and others will follow.

## **Why the time is right for MaaS**

The current system of widespread car ownership seems ripe for a rethink. Every year, [more than one million people lose their lives in car accidents](#), and between 20 and 50 million more suffer traffic injuries. Automobiles are also a major source of the pollution responsible for [millions of premature deaths](#) worldwide. Car-related costs to society and individual owners range from the financial (maintenance, fuel, insurance, etc.) to the emotional (stress, road rage). Additionally, driving diverts time from our lives that we could spend on more important matters. Outside of the commute, the world's billion-plus cars largely sit idle, taking up valuable space in parking lots and garages.

What makes the current model of private transportation even less defensible is the variety of alternatives, many of which are (or will be) incorporated into MaaS. The past decade has seen the emergence of successful ride-hailing services like Uber, Lyft and Gett. Likewise, active mobility has seen a similar revolution with prominent bike- and scooter-sharing companies launching in urban environments. Another exciting development is the advent of autonomous vehicles, currently in the testing stages and have received substantial investment. While it is unclear how near this option is to mass availability, the autonomous car model dominates private vehicle ownership on almost every dimension. Integrating these emerging options with pre-existing public transit offerings, can make MaaS remarkably appealing.

What's more, MaaS presents an opportunity for the private sector to solve longstanding societal issues associated with private vehicle ownership and usage. Governments have tried using the levers at their disposal to discourage car ownership. An extreme example is Singapore where the

government imposes heavy taxation on private cars, bringing the cost of purchasing a car to roughly five times that of countries without such taxes. Nevertheless, the demand for cars has been quite robust.

Covid-19 complicates the case for MaaS as long as social distancing remains a salient concern. Likewise, the urban congestion which MaaS reduces may diminish as work-from-home increases. In other ways, however, the pandemic smooths the way for wider MaaS adoption. With fewer daily commutes, there is less reason to own a car, especially for urban dwellers (comprising **80 percent of the OECD population**), who already have a variety of alternative transportation options that MaaS platforms could aggregate into suggested routes. Moreover, pandemic lockdowns significantly changed people's mobility and exercise habits – as evidenced by an **unprecedented bicycle boom**. While individuals will partly revert to habitual car usage after the pandemic, research suggests that disruptive circumstances are good opportunities to **change long-term habits** such as driving, which are otherwise very 'sticky'. In short, while Covid-19 may pose some short-term challenges for MaaS adoption it is also a unique opportunity.

It remains to be seen whether MaaS can succeed where many government initiatives have failed to limit private car usage. The automotive industry, used to pushing products, is ambivalent about participating in a transition to a service-based business. Customers, too, will initially feel more comfortable with the current model out of sheer **bias toward the status quo**. Our recent **paper\*** (forthcoming, in *Marketing Letters*) argues that designers of MaaS should not underestimate potential psychological roadblocks to its wide adoption. Based on psychological research, we identify four key factors that well planned MaaS solutions should account for, in order to reduce resistance of car owners to adopting MaaS.

### **Perceived control**

Even when sitting idle in traffic, commuters driving their own vehicle feel self-directed. They are literally at the wheel of their own lives. With MaaS, they surrender some of that control to the app – a threat to consumers' psychological comfort. Control comprises three aspects:

*Psychological power*: No one enjoys feeling like a puppet of technology. And that sense of powerlessness is enhanced when it seems as though the strings are tangled. For example, if commuters are stuck underground in a

crowded metro car, they may “blame” MaaS algorithms for recommending the route, failing to consider the time saved by skipping rush-hour road traffic. Sharing data about how conventional commuters are suffering can help users feel they have made a smart choice.

*Responsibility:* The more onerous responsibilities you accept in exchange for a sense of power, the less in control you feel. Having to choose your own route from the app every day and being accountable for the outcome may put off users. To counteract the psychological burden of choice, designers should stress those aspects of MaaS that reduce responsibility but are not naturally salient, such as the centralised payment platform that removes the need to monitor travel card balances.

*Trust:* Taking a leap into the unknown can threaten your sense of control. Consumers must therefore be able to trust their MaaS solution to consistently deliver. MaaS designers must take responsibility for the customer service and performance of all their partners, be they bike-sharing services, Uber drivers or local train providers.

## **Consumer identity**

In today’s consumer society, people are partly defined – and define themselves – by the kind of car they drive. By contrast, MaaS users might feel uncomfortably anonymous. Converting MaaS into an identity may prove difficult, because its low cost prevents the exclusivity that personal identity signalling depends upon. An exception could be people who have a strong commitment to sustainability – these would be the natural early adopters of MaaS and should be cultivated as brand ambassadors.

## **Social factors**

Drivers are free of many social consequences, because a car on the road is a private space. In a carpool, subway or out on the street, we are more constrained by norms and rules of politeness. On the other hand, MaaS can give users the option to loosen behavioural restrictions where appropriate, such as allowing commuters to self-select into carpools with others who want to have conversations with strangers. By the same token, people who value privacy, for example, could choose “quiet cars”.

## **Perceived costs**

The costs of using MaaS will extend well beyond the price tag at the end of a journey, and it's important to understand how consumers perceive them. Financial costs have different psychological consequences depending on how they are incurred. For instance, a pre-determined fixed cost, can be less painful and thus more attractive than variable pricing even if the former is somewhat higher, and **flat pricing** – a pre-determined price, independent of how much is consumed – can be even better. As another example, time costs to consumers will need to be managed at all stages of a journey, such as managing expectations during waiting times for vehicles to show up and shifting attention away from in-transit delays. MaaS users will also experience a cost of switching from their private transit options, weighing lost benefits of these options more heavily than gains of MaaS as is our psychological tendency.

## **Opportunity**

MaaS represents an extraordinary opportunity that can spare the myriad costs of private transportation. The time is ripe to pursue this, amid mounting determination to **build back better** as world economies struggle toward recovery. However, the success of MaaS offerings will hinge on attention to psychological roadblocks we discuss above.

\* Our co-authors were Jasper Teow of NUS Business School, Leonard Lee of NUS Business School and Lloyds Register Foundation Institute for the Public Understanding of Risk, Moshe Ben-Akiva of MIT Intelligent Transportation Systems Lab, Charlene Chen of Nanyang Technological University, Wai Yan Leong of Singapore's Land Transport Authority, Shanjun Li of Cornell University Environmental and Energy Economics Lab, Nan Yang of NUS Business School, and Jinhua Zhao of MIT's Urban Mobility Lab. This research was supported by the National Research Foundation, Singapore, under its Behavioural Studies in the Energy, Water, Waste & Transportation Sectors (BSEWWT) programme (BSEWWT2017\_01).

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## About the research

**"Mobility as a Service (MaaS): The Importance of Transportation Psychology"** will be published in *Marketing Letters*.

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