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THE SELF-DRIVING FUTURE

Consumer views on letting go of the wheel and what's next for autonomous cars

An Ericsson Consumer Insight Summary Report
February 2017

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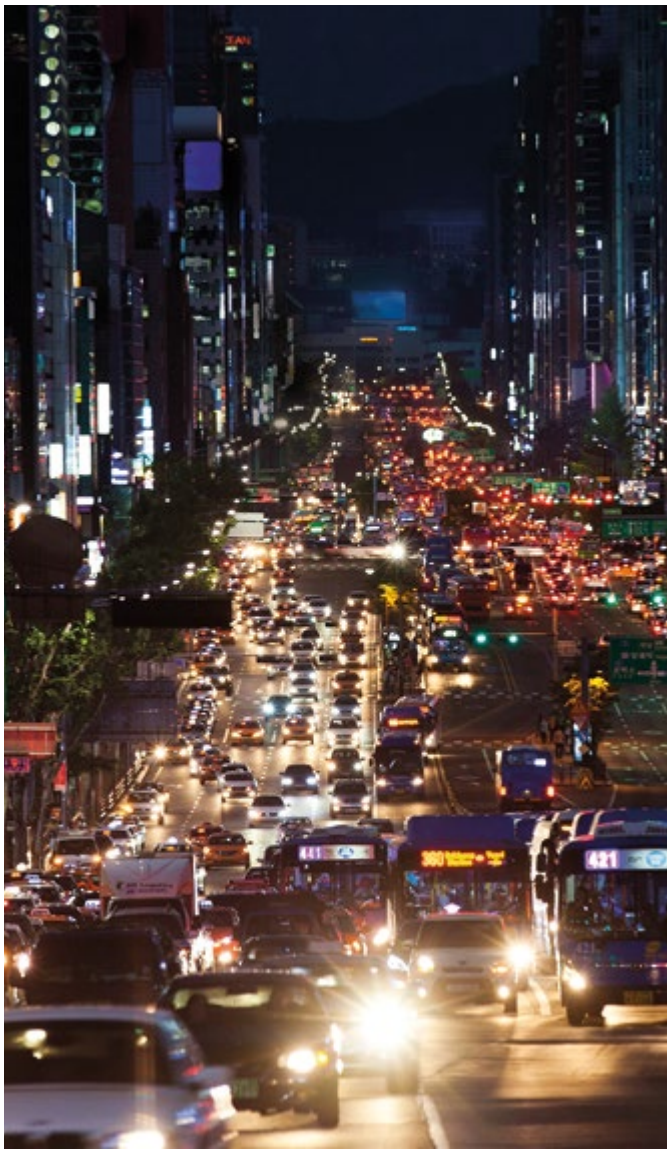


METHODOLOGY

This report presents insights from Ericsson ConsumerLab Analytical Platform for the years 2013–16. In addition, Ericsson ConsumerLab has conducted social media analysis during 2016 on consumers´ attitudes towards car driving.

The main target group is smartphone users aged 15–69 across a range of cities and countries, with a sample size of approximately 1,000 interviews for each city or country. However, sample sizes do differ throughout the report. All data is based on probability sampling and conducted mainly through online data collection. Sources and bases for respective insights are presented in each chart throughout the report.

THE VOICE OF THE CONSUMER

Ericsson ConsumerLab has more than 20 years' experience of studying people's behaviors and values, including the way they act and think about ICT products and services. Ericsson ConsumerLab provides unique insights on market and consumer trends.

Ericsson ConsumerLab gains its knowledge through a global consumer research program based on interviews with 100,000 individuals each year, in more than 40 countries – statistically representing the views of 1.1 billion people.

Both quantitative and qualitative methods are used, and hundreds of hours are spent with consumers from different cultures. To be close to the market and consumers, Ericsson ConsumerLab has representatives throughout Ericsson's global presence, developing an international understanding of the ICT market and business models.

All reports can be found at:
www.ericsson.com/consumerlab

DRIVERLESS BECOMES A REALITY

Autonomous (also known as self-driving or driverless) cars are no longer confined to science fiction movies; they're becoming a reality. In 2017, live projects involving autonomous cars will be carried out in cities around the world[1], including Pittsburgh, Gothenburg and Singapore. Although these projects are trials, their existence indicates that a future in which self-driving cars are a reality might be closer than we think.

Further to this, Tesla is already offering some autonomous drive functionality with future improvements through software updates. They are even promising coast-to-coast fully autonomous driving in the US before the end of 2017.[2]

Technological breakthroughs such as 5G connectivity and artificial intelligence (AI) are behind the phenomenon, and are making it possible for cars to drive themselves. This challenges the previously mandatory relationship between the driver and car. In this report, Ericsson ConsumerLab considers the reaction of drivers to this development, as well as what the future of self-driving cars might look like from a consumer perspective.

KEY FINDINGS

Car lovers prefer self-driving cars

Fifty-three percent of working families with children who express interest in self-driving cars also say that they are passionate about vehicles. This is compared to just 35 percent of a group of working consumers without children who do not express an interest. Moreover, those who express an interest in self-driving cars also see themselves as opinion leaders on vehicles.

Consumers interested in autonomous cars but fear letting go of the wheel

Already, one in four smartphone users states that they would prefer an autonomous car to one they drive themselves, despite the fact that autonomous vehicles are not yet part of everyday traffic. Additionally, 7 in 10 state an interest in self-driving features, such as cruise control and parking assistance. Although there is high interest in self-driving functionality and features, consumers still seem to fear letting go of the wheel.

A boost for city satisfaction and pedestrian safety

Traffic has a high impact on satisfaction levels in a city. By freeing the driver, autonomous cars may ease the pain of commuting and improve the experience of traffic. In addition, one in four pedestrians already says that they would feel safer if all cars were fully autonomous.

Self-driving cars from ICT players in demand

In the future, information and communication technology (ICT) is expected to enable different modes of transportation, and this change is in demand from consumers. In 14 cities around the world, 40 percent of advanced internet users are already very interested in cars designed by the 5 biggest IT companies.

[1] For example in Pittsburg, www.bloomberg.com/news/features/2016-08-18/uber-s-first-self-driving-fleet-arrives-in-pittsburgh-this-month-is06r7on or in Singapore, www.technologyreview.com/s/533601/singapore-wants-a-driverless-version-of-uber/

[2] www.wired.com/2017/01/teslas-new-autopilot-may-seem-lame-critical-reboot/

THE LOVE OF DRIVING

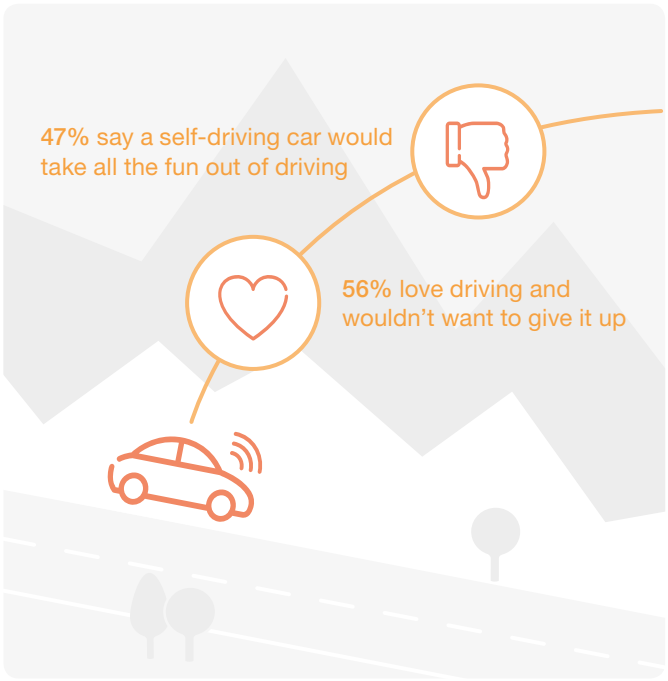
The first mass-produced car was manufactured in the early 20th century, empowering consumers to go anywhere, at any time and for a reasonable cost. This is also how driving a car is often portrayed in commercials: as a symbol of freedom, speed and performance.

As such, a sense of freedom and a love of driving are often closely connected to car ownership. They are also two of the most common factors cited as reasons for not embracing self-driving cars. For example, in a US-based study from Auto Pacific, 56 percent of respondents stated that they simply love driving and therefore would never give it up, while nearly half said that driverless cars would take all the fun out of driving.[3]

> "I know my car is not the best car. But I sure do love to drive around freely and go wherever I want and whenever I want. It gives the driver more freedom"
>
> Comment on Twitter from a man aged 27, USA, 2016

These findings raise an important question: if people love driving so much, is the autonomous car destined to fail before it even hits the road?

Figure 1: The love of driving as a barrier to self-driving cars



Source: AutoPacific, 2016
Base: Internet users who are also car drivers in the US

[3] Source: AutoPacific, 2016. Base: Internet users who are also car drivers in the US

WHO'S UP FOR DRIVERLESS?

If a love of driving is preventing some consumers from embracing self-driving cars, who is supporting the technology? When it comes to those who are interested in autonomous cars, a number of common characteristics stand out; they are often white-collar professionals with children in the household, who already use a car to commute. This provides an insight into the type of consumer who may choose to use autonomous cars in the future.

Car-lovers prefer self-driving cars

To find out more about consumers' attitudes towards autonomous cars, Ericsson ConsumerLab analyzed two groups of car drivers with opposing viewpoints. The first group was typical of those who expressed an interest in self-driving cars, while the second group expressed a lower interest in self-driving cars.

Fifty-three percent of working families with children who express interest in self-driving cars say that they are passionate about vehicles. This is compared to just 35 percent of a group of working consumers without children who do not express an interest. The group with a high interest in self-driving cars also see themselves as opinion leaders and authorities on vehicles to a much greater extent. They state that their friends and family ask them for advice on vehicles, and that they are often the first to try new vehicles and features.

Advocates of self-driving cars are often white-collar professionals with children who use a car to commute

Figure 2: Attitudes of working families with children, who are interested in self-driving cars

Source: Ericsson ConsumerLab Analytical Platform, 2016
Base: 23,040 smartphone owners who used internet on a smartphone on a monthly basis, aged 15–69 across 27 countries

LETTING GO OF THE WHEEL

Traffic accidents are one of the biggest threats faced by citizens. Each year they cause the deaths of 1.2 million people around the world.[4] Significantly, these accidents are often attributed to human error. For example, in the US, 94 percent of all traffic accidents are deemed to be caused by human factors.[5]

The question is: could self-driving cars help to reduce this threat? Perhaps not at first glance. In a US study, 46 percent of respondents stated that they would not trust a computer to make driving decisions for them.[6] This mistrust is also reflected in the decreasing consumer interest in self-driving cars as they become more and more autonomous.

Consumers interested in autonomous cars but fear letting go of the wheel

Forty-seven percent of consumers state that they are interested in self-driving cars. Further, one in four smartphone users states that they would prefer an autonomous car to one they drive themselves, despite the fact that autonomous vehicles are not yet part of everyday traffic. Additionally, 7 in 10 state an interest in self-driving car features, such as cruise control and parking assistance. Although there is high interest in self-driving functionality and features, consumers still seem to fear letting go of the wheel.[7] Consumers' trust in the technology will have to gradually increase before they are ready for a fully autonomous future.

Trust in autonomous technology is the key to a driverless future

The pedestrians' point of view

The findings discussed so far are from the drivers' perspective. However, if cars become driverless, there may not be any drivers left. In the Ericsson ConsumerLab report, 10 Hot Consumer Trends 2017, pedestrians' perspectives were also taken into account. This demonstrated that one in four pedestrians already says that they would feel safer if all cars were fully autonomous, despite the fact that autonomous cars are not yet mainstream.

Out of these pedestrians, 65 percent are interested in autonomous cars, pointing to a potentially stronger interest in a self-driving future among pedestrians than among car drivers themselves.

[4] www.who.int/mediacentre/factsheets/fs358/en/
[5] US Department of Transportation, MVCCS, 2005-07
[6] Source: AutoPacific US, 2016. Base: Internet users who also are car drivers in US
[7] Source: ConsumerLab Analytical Platform, 2016. Base: 29, 922 smartphone owners aged 15–69 across 17 countries

THE AUTONOMOUS ECOSYSTEM

Previous Ericsson ConsumerLab studies have found that traffic is the factor with the biggest negative impact on general satisfaction with life in cities.[8]

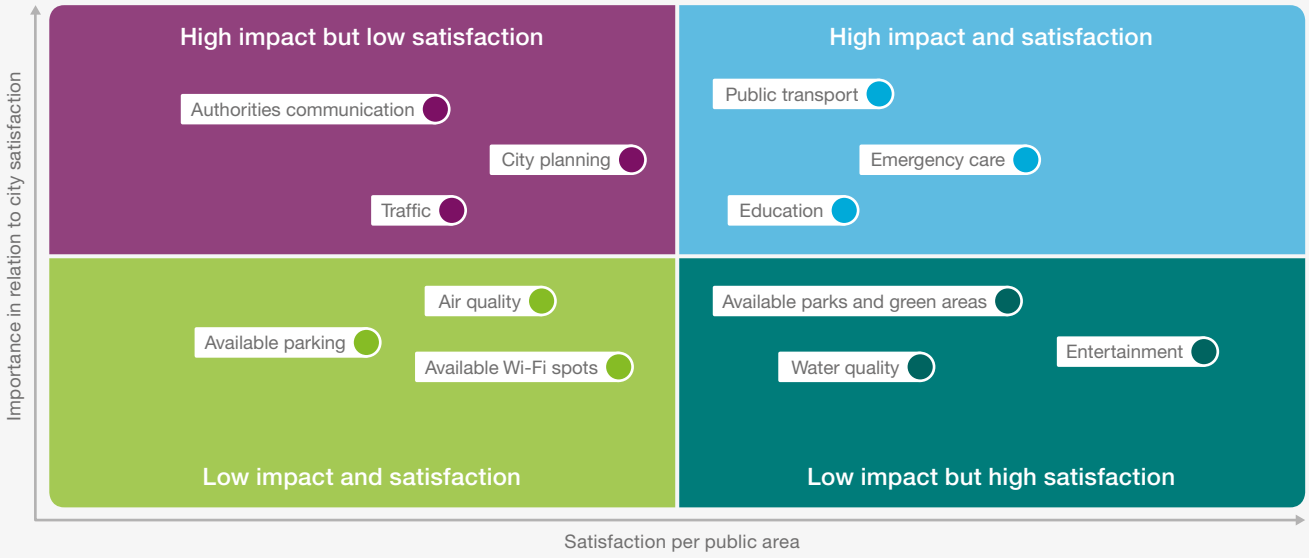
Figure 3 shows that traffic falls within a cluster of factors that that can significantly increase consumers' city satisfaction if they improve, but which have low satisfaction among surveyed smartphone users.

Although it is unclear how self-driving cars will impact levels of congestion, they will free up drivers to spend their time more productively or enjoyably. On average, urban commuters spend 83 minutes a day traveling[9], and so making this time less frustrating would likely positively impact their experience of traffic and thus, their level of satisfaction with their city.

However, 72 percent of urban commuters do not only use cars when commuting. Thirty-nine percent utilize a car and other modes of transport, whilst 33 percent commute by other means than with a car, including public transport.[10]

Autonomous cars will free drivers and improve their experience of commuting

Figure 3: Traffic as a key problem area



High impact but low satisfaction

Factors that are important to address since they have low consumer satisfaction but a strong correlation to overall city satisfaction.

High impact and satisfaction

Factors that are as important as those in the "high impact but low satisfaction" area but that already have high satisfaction. They explain the current level of city satisfaction.

Low impact and satisfaction

Factors with low satisfaction but with a low impact on city satisfaction. They are considered sector related problems – all cities have them and there is low anticipation that they can or will be improved.

Low impact but high satisfaction

Factors that don't have a strong impact on city satisfaction, as citizens take them for granted. They should not be prioritized when trying to improve city satisfaction.

Source: Ericsson ConsumerLab Analytical Platform, 2013
Base: 27,068 smartphone owners aged 15–69 years across 18 cities

[8] Ericsson ConsumerLab, Smartphones Change Cities, 2013
[9] Source: Ericsson ConsumerLab Analytical Platform, 2013. Base: 5,519 smartphone owners aged 15–69 across Beijing, London, New York, São Paulo and Tokyo
[10] Source: Ericsson ConsumerLab Analytical Platform, 2013. Base: 5,519 smartphone owners aged 15–69 across Beijing, London, New York, São Paulo and Tokyo

SHARED OR OWNED?

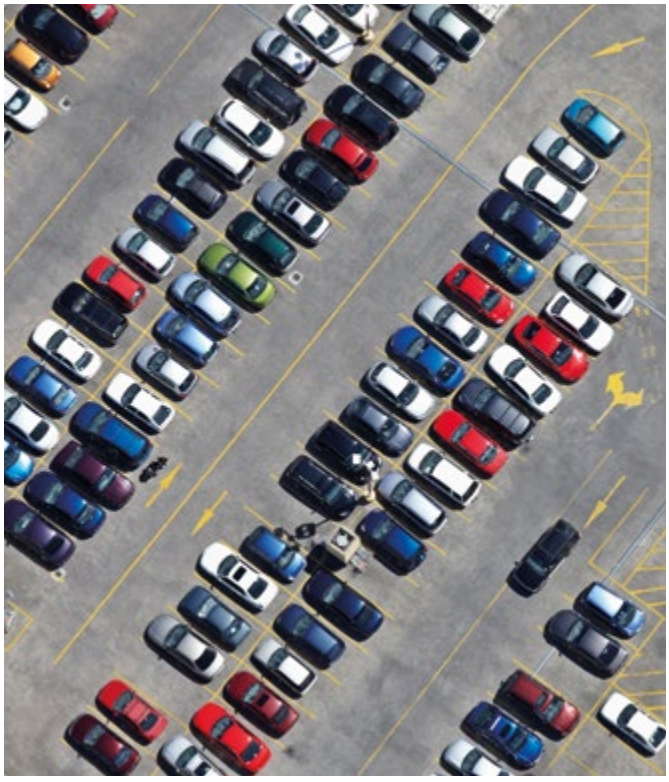
One of the basic ideas behind self-driving cars is that they can communicate with their surroundings and with consumers. With the introduction of digital keys managed via a smartphone app, different people could have safe access to a car at different times. If the car is fully autonomous, it could even be possible for the car to drive independently to pick up different passengers.

8%

Globally, 8% of consumers had already participated in various forms of car and bike sharing in 2015

Given that autonomous cars could be shared much more easily, the question of why you would own one is raised. In the future, it is possible that fewer people will choose to do so, with the car becoming more of a service and part of the public transport system.

Alternatively, cars may still be bought by individuals and shared in various car-sharing solutions, potentially for a fee, or bought by cooperation networks or car sharing companies offering fleet services for purchase. What is clear is that this type of technology enables car sharing on a whole new level. But are consumers ready for this future?



In 2015, 8 percent of smartphone users globally stated that they share cars, cabs or bikes. Moreover in the Ericsson ConsumerLab report, Smart Citizens, it was found that 74 percent of consumers would be interested in an app which would allow them to share vehicles.[11] This demonstrates that there is clearly a demand for this type of scheme, particularly if it was made even more convenient.

The true impact of autonomous technology on the way cars are used remains to be seen. However, the outcome could be transformative, both for consumers and for the automotive industry.

Cars may operate as a service or even become part of the public transport system

[11] Ericsson ConsumerLab, Smart Citizens, 2014

AN ARRAY OF MOBILITY PLAYERS

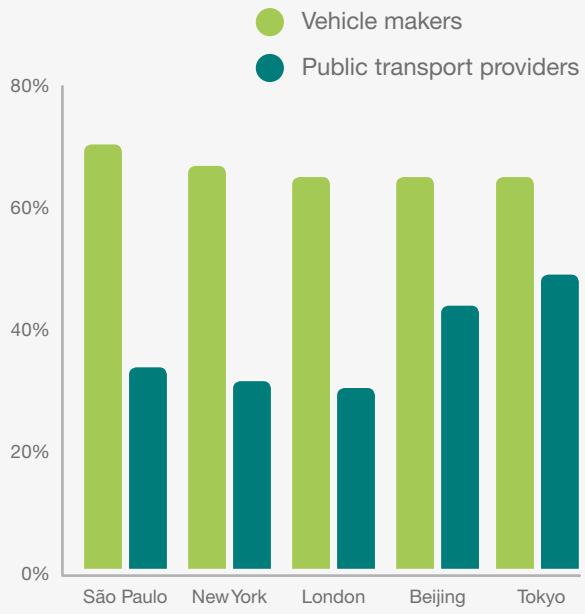
As mobility becomes increasingly intertwined with ICT, the range of mobility providers and what they offer is changing; a development anticipated by consumers. In the Ericsson ConsumerLab report, 10 Hot Consumer Trends for 2017, it was revealed that 40 percent of advanced internet users in 14 cities around the world would be very interested in cars designed by the 5 biggest ICT companies.

Who will provide new transportation modes?

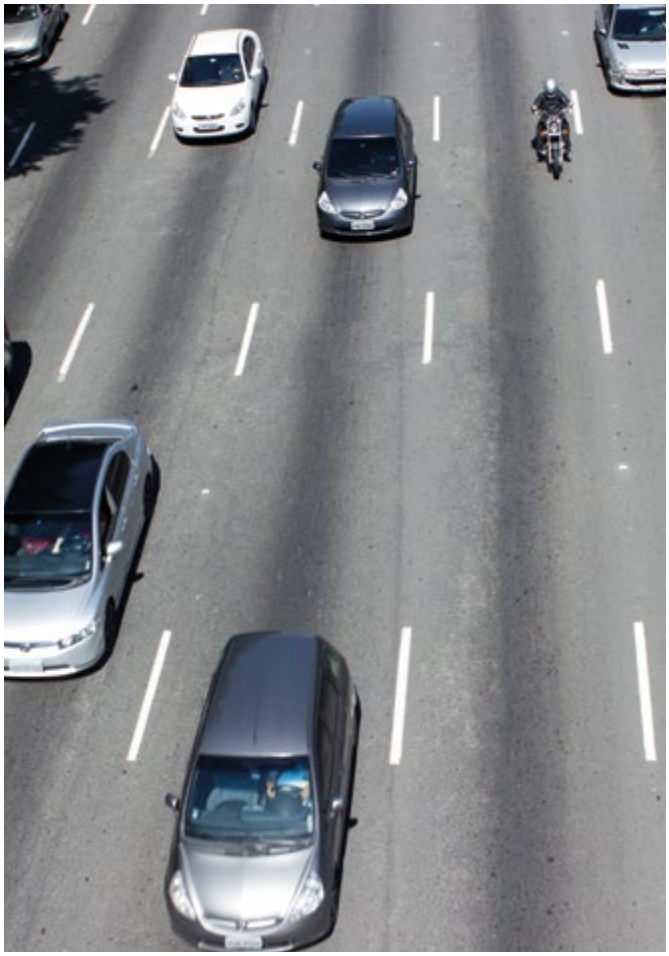
However, while consumers anticipate that ICT companies will play an important role in the future of mobility, they also see other players as credible providers of autonomous transport. Across five cities, including New York and Beijing, consumers believe that the traditional automotive industry is more likely than public transport companies to provide self-driving or self-parking cars.

Consumers believe vehicle makers are most likely to provide self-driving cars, but many also see a potential for public transport providers to offer this

Figure 4: Who will provide self-driving/parking cars?



Source: Ericsson Business Review, Issue 3, Our Future is Already Here, 2013
Base: 5,519 smartphone owners aged 15–69 across Beijing, London, New York, São Paulo and Tokyo



This does not imply, however, that vehicle makers are the only possible providers of self-driving and self-parking cars. As can be seen in Figure 4, consumers in Tokyo and Beijing ranked vehicle makers lower and public transport providers higher in comparison to respondents in other cities.

40% of advanced internet users in 14 cities would be very interested in cars designed by the 5 biggest ICT companies

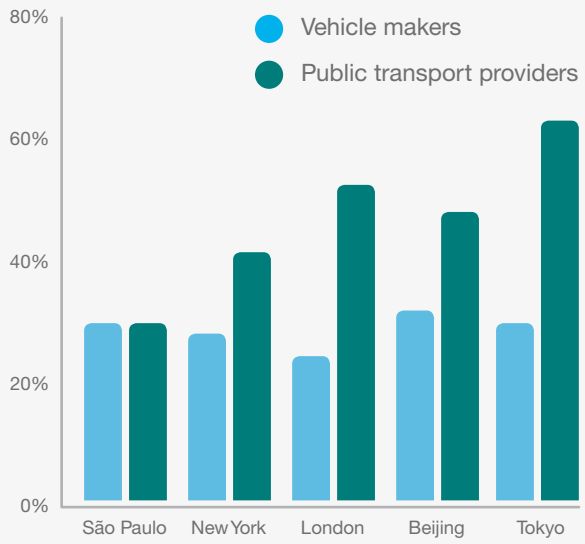
While public transport providers may not be the most obvious choice for providing self-driving vehicles, as highlighted previously, self-driving cars would have to fit in to an overall traffic flow and communicate with many other types of vehicle.

Who will provide a personal navigator app?

The people of Tokyo stand out, as 60 percent state that public transport companies would be the most likely provider of a potential personal navigator app. In the app, people would receive travel and traffic information for a wide variety of modes of indoor and outdoor transport, from walking to driving. This navigator app could also be used to allow any vehicle – whether personally used or publicly operated – to slot into the shared traffic information flow.

In London, over 50 percent also said that they believe that public transport providers will deliver such a service, followed by just under 50 percent in Beijing.

Figure 5: Who will provide personal navigator apps?



Source: Ericsson Business Review, Issue 3, 2013
Base: 5,519 smartphone owners aged 15–69 across Beijing, London, New York, São Paulo and Tokyo

In four out of five cities, the majority state that public transport providers are more likely to provide a personal navigator app

Different infrastructure calls for different solutions

In Tokyo, people are generally more satisfied with the public transportation system than in other countries. This could explain why they see public transportation companies as more likely providers of self-driving cars than in the other four cities.

In countries where satisfaction with the public transport system is low, other players such as vehicle manufacturers might be more likely to provide self-driving cars. People in these countries might also be more inclined to continue to own cars, rather than choosing to use a multi-modular transportation system orchestrated by a public service provider.

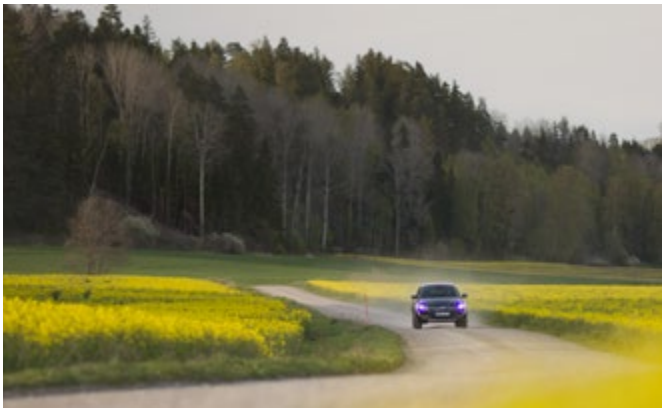
The infrastructure in which cars function is different in all cities and, depending on cultural factors, cars are also valued in different ways. As a result, it is probable that there will be a range of developments within the mobility sector, with a variety of players providing different components of the local mobility ecosystem.

In the future, it is likely that a variety of players will provide different components of the local mobility ecosystem

NEW MOBILITY PATTERNS

In 2013, Ericsson ConsumerLab found that the majority of smartphone users believed that autonomous cars would be a reality on their streets within five years.[12] While self-driving cars are far from mainstream, this report clearly demonstrates that the technology is in demand amongst consumers.

The transportation industry is moving towards autonomous solutions, and despite some concerns, many consumers are likely to appreciate all of the benefits that this brings. However, there are still a lot of questions about exactly how this change will play out. So far, this report has discussed how self-driving cars might disrupt car ownership and which players participate in the mobility arena, but how will self-driving cars impact overall mobility patterns?



Possible changes in mobility patterns

Along with self-driving vehicles, technologies such as virtual or augmented reality have the potential to change the way we travel on an everyday basis. For example, commuting time could be made more enjoyable or productive if the time was used for entertainment, socializing, study or work.

While autonomous vehicles may mean that those who love driving will get to do it less, there will be many other benefits

Commuting time might even be dramatically reduced if different activities could be done virtually from home. Further to this, what will actually be transported in self-driving vehicles is another interesting question. With a steep expansion in ecommerce, the flow of goods in cities is suited to smaller vehicles. The traditional logistic systems will be challenged by this development, and self-driving vehicles might be used to transport goods when not transporting people. Therefore self-driving cars, to some extent, may replace trucks in order to improve parcel delivery for transport companies with a need for micro logistics around a city.

In the 2014 Ericsson ConsumerLab report, Connectivity Beyond the Screen, 67 percent of smartphone owners said they were interested in a same-day delivery service that works on any device, online and in stores. As an example of this, Amazon is gradually expanding its same-day and one-day delivery services (that initially started in the US) to many cities across the world, with Toronto in Canada being the most recent addition.[13] Furthermore, Amazon has also started a rideshare-like delivery service called Amazon Flex, where drivers deliver parcels in a similar setup to companies such as Uber.[14]

While autonomous vehicles may mean that those who love driving will get to do it less, there will be many other benefits to people both inside and outside the car. As indicated in this report, changes will be more fundamental and far reaching than just giving the driver some time off.

[12] Source: Ericsson ConsumerLab Analytical Platform. Base: 5,519 smartphone users aged 15–69 in Beijing, London, New York, São Paulo and Tokyo, 2013
[13] www.globalnews.ca/news/2966454/amazon-ca-offers-same-day-free-delivery-in-toronto-vancouver-to-premium-service/
[14] flex.amazon.com

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Ericsson
SE-Stockholm, Sweden
Telephone +46 10 719 0000
www.ericsson.com

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