

otonomo



Data-Driven Driving:

Shifting into Shared Mobility and Autonomous Cars

Otonomo Data Trends
Survey data provided by  SBD Automotive

Connected Car Data is driving the evolution from private ownership to shared mobility and autonomous driving.

But data alone cannot bring us to the finish line.

Consumer trust, enabling technologies and government action are needed for transformational change to take place. The automotive industry (automakers and auto-adjacent service suppliers) working together can fulfil the public's need for accessible, affordable, and safe means to get to and from work, school, shopping, social functions and more.

Today, more than ever, we are seeing the impact that mobility has had on our cities. Mobility brings benefits and challenges ranging from mind-numbing traffic jams, horrendous pollution, to economic opportunity and freedom of movement for disabled, elderly and young people. Mobility also provides opportunities for economic growth. It gives us access to goods and services and can improve our quality of life. Mobility is the impetus for city life and connector for peripheral communities.

Consumer buy-in is critical. Automakers and service providers must share a compelling narrative to spark wide adoption of their new offerings. Car ownership will need to take on a new meaning, as will driving, riding and car sharing. Whether its shared mobility solutions or autonomous vehicles, these technologies need to be persuasive and not invasive. There is a huge opportunity for companies and governments to educate and evangelize the future of mobility.

The emerging shared economy, climate change, digital transformation, population growth and even Covid-19 are accelerating the discussion and implementation of new mobility models. It behoves governments to continue exploring tactical urbanism (solutions to counter gridlock, pollution, land usage and other transportation issues). Autonomous cars are primed to reduce traffic, enable better flowing traffic, and free up considerable swaths of land dedicated to parking. Furthermore, continued data privacy regulations will be needed to ensure a secure experience for driver and passenger.

The underlying technologies that will enable the realization of shared mobility, autonomous vehicles and ultimately seamless mobility are connectivity and car data. Connected car data is key to generating revenue, reducing costs and increasing safety. Combined with artificial intelligence (AI) vehicle occupants' needs and commands can be anticipated and responded to, in-vehicle sensors and data on consumer preferences from various digital domains (social media, connected home and connected office) can be integrated to deliver auto and auto-adjacent services. Ultimately, the transformation of the driver and passenger experience, generated by connected car data, will result in meaningful value creation.

The following pages share the results of a recent survey conducted by Otonomo and SDB Automotive. We surveyed 2,512 car owners across five European countries about their attitudes towards topics ranging from mobility, autonomous cars, data gathering and usage, technology. Details about the survey cohort can be found at the end of the report.

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Cars Are The New Supercomputers

Their diverse sensors generate data comparable in quantities to spaceships.

It is estimated that self-driving cars can generate and consume nearly 40 terabytes of data every 8 hours on the road. Compare this to the estimated average personal daily data consumption (video, chat and internet) which is estimated to be 1.5 GB.

“Each autonomous car driving on the road will generate about as much data as about 3,000 people. And just a million autonomous cars will generate 3 billion people’s worth of data.” Intel CEO Brian Krzanich.

	How much data is generated in an hour?	
	 5 TB	 1TB

The car health, location, driver behavior and environmental data gathered by the numerous sensors are helping to define ownership, shared mobility and autonomous vehicles.

Survey Says...



Ownership

49%

said that they sometimes drive just for the experience

Today, car ownership is defined by personal ownership and driver driven vehicles. Implied are the consumer benefits of privacy, flexibility, security, and convenience.

Technologically speaking, these vehicles may leverage ADAS features as many OEMs currently offer ADAS embedded capabilities.

Shared Mobility

34%

want mobility of the future

46%

believe a public transport style of mobility is the future

Shared mobility refers to access to vehicles through ridesharing and carsharing. Increased competition has been driving the expansion of shared vehicle services into new geographic territories and more specialized customer segments.

Multi-vehicle households may begin reducing the number of cars they own in response to the greater availability of local transportation services. Some may relinquish ownership altogether.

Ride / Car Sharing

41%

are not interested in sharing their own car

38%

are not interested in access to a shared car

Ride/Car Sharing is a merging of both the autonomous and vehicle sharing trends.

A wide variety of services at varying price points are available from mobility management companies and fleet operators. Many of these services were first available in cities, but they now can be found in suburban settings. This points to the emergence of seamless mobility.

Autonomous Cars

38%

are willing to ride in autonomous cars

NHTSA's scale of autonomy defines a fully autonomous drive as the vehicle's central processing unit which has full responsibility for controlling its operation, but, can be taken over by a human driver. The vehicle can operate fully autonomously under any condition, regardless of the weather, or potential constraints in the infrastructure within the surroundings, without the intervention of a driver.

While most imagine autonomous cars in a fleet environment, there are scenarios where drivers will still want to own their cars but want driverless functionality due to safety and ease. This flexibility, combined with advanced technology, will allow for the realization of bespoke vehicles meeting the special needs of individuals and families.

Ownership

Among consumers, questions remain. Like, when will autonomous cars be deemed safe and practical, how quickly will consumers choose to give up the freedom and independence of operating their own cars and will consumers keep owning cars even if it is more expensive than using autonomous vehicles?

On average, cars are the most valuable personal asset people own after homes. But unlike homes, the average car is not in use 90-95% of the time, as it is parked.³

Ride- and car-sharing are viable ways for car owners to offset the cost of car ownership. But, even with the advent of more economical mobility options, personal vehicle ownership is not fading away.

It should be mentioned that there is some understanding among consumers of the need for supporting technologies like IoT, 5G, and connected car data to support the shift to emerging mobility alternatives. And, that their integration into vehicles is part of the innovation brought about by the new mobility models.



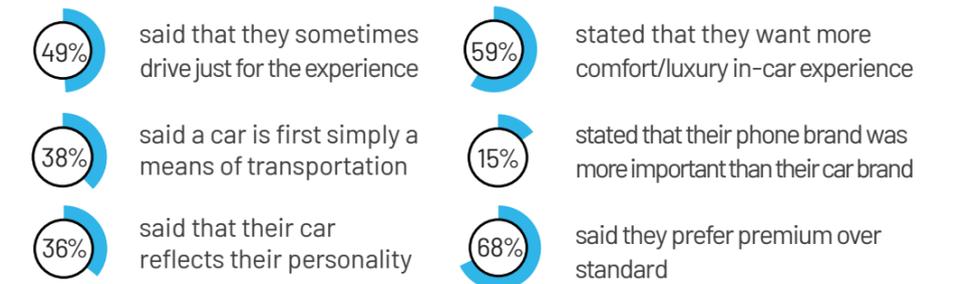
Attitudes About Car Ownership

To place the consumers' beliefs about mobility in context, we asked the car owners several questions related to their attitudes on technology and lifestyle, specifically relating to cars and car ownership.

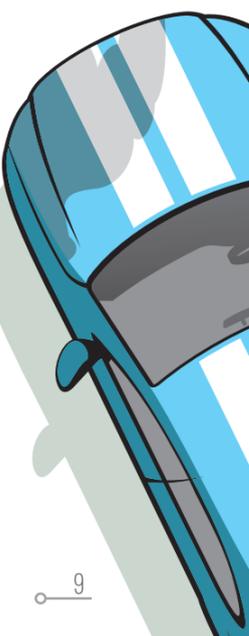
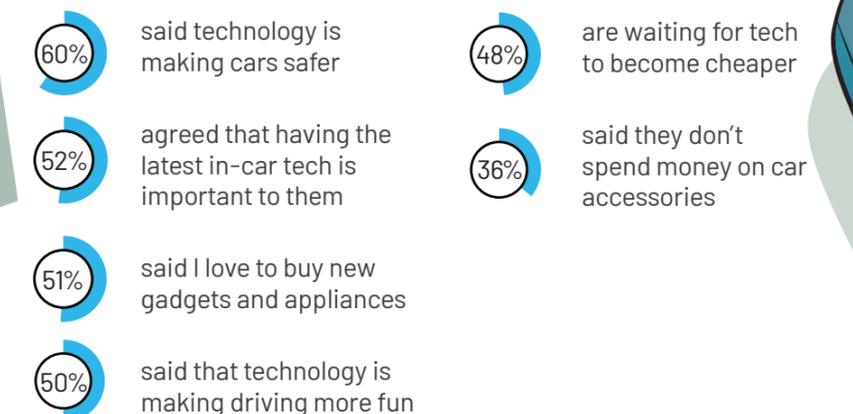
There was little difference in mobility attitudes across technophobes, gadget lovers or those indifferent to them, car geeks or practical drivers.

With over 49% of respondents saying that they drive for the experience, it is not surprising that these driving pleasure-seekers are less likely to want the public transport style mobility of the future.

Lifestyle Attitudes



Technology Attitudes



Shared Mobility

Shared mobility or shared transport refers to demand-driven vehicle sharing, either by travellers ride-sharing (sharing a vehicle as a group simultaneously) or car or bike sharing (over time) as a rental or short term for a journey. This is a hybrid model found between private ownership and mass/public transport. Examples of shared mobility systems include public bicycle systems (PBS or bike sharing), car sharing, (car clubs), ride-sharing or lift-sharing (also referred to as carpools and vanpools), real-time sharing, slugging, casual carpooling, community buses and vans, demand responsive transit (DRT), and paratransit.

Despite the positive impact and mounting importance of shared mobility as a critical tool in fighting pollution, enabling better traffic flow and furthering digital transformation, not everyone is interested in sharing their car or using a shared car. It is possible that consumers opposed to the idea of sharing a vehicle have not been sufficiently exposed to the benefits of shared mobility.

Almost half of the car owners we surveyed acknowledged that the future of mobility will look more like public transport than the one-family, one or

two car model that prevails today. But a strong cohort, 32%, are very opposed to this idea. Interestingly, while UK car owners, 53%, were more likely to believe in the public transport-style future, Italian car owners, 39%, expressed the most desire for the mobility future saying "I really want a shift towards this mobility alternative."

Consumers Are Not So Interested in Current Mobility Options

We found that European car owners are not yet ready to adopt a public transport-style mobility at the pace the industry is developing it.

Overall, 47% of respondents said that they believe in a future in which cars will be shared and used in a way similar to the way public transport is used today, but only 33% say that they want that future. A deeper dive showed that interest in car-sharing business models is quite low with only 20% of those surveyed, reporting that they are very interested or quite interested in sharing their car.

Millennials are driving technological innovation with their increasing purchasing power. They are demanding products and services that are quite different from previous generations – this is the same regarding transportation. Many people in this age group do not need or want to own a car. They rather have the comfort, flexibility and lack of long-term commitment associated with a shared car service.

43% of car owners under the age of 35 have a desire for public-transport mobility versus the 31% of their older counterparts. In fact, a solid 35% of car owners over the age of 35 said they strongly do not want public-transport style mobility.

Less than half of the under 35 group believe in the mobility vision. As these younger consumers have many years of commuting, errand-running, and traveling ahead of them, impacting their desires is critical to driving long-term attitudinal change.

I Want This Future



I Believe A Public Transport Style Of Mobility Is The Future



○ Agree ○ Neither ○ Disagree

Among those interested in both options, they prefer:

Sharing Own Car **25%**

Access to a Shared Car **75%**

Sharing a Car

- You own the car
- When not in use you rent it out
- The management service returns the car fuelled and clean

Using a Shared Car

- You do not own the car
- You pay by time, mileage or short term

Car Sharing

Car sharing is on the rise. From 10 million users to an expected 36 million in 2025. Currently, there are over 236 cars in 3,128 cities around the world. Currently, Western Europe and the US are leading the trend, but Asia is poised to experience the fastest growth in this field.⁴

City governments have helped spur the growth in car sharing services with designated parking spaces, allowing drivers to use bus lanes, entry into zones reserved for non-ICE engines, as well as the permission to gather connected car data from municipal shared vehicles to improve infrastructure and traffic flow. Regulations, like the European Commission setting mandatory reduction CO2 emissions targets for new cars by 2020 combined with heavy fines, are helping with the electrification of the car sharing market.

A recent survey suggested that a fear of sharing personal assets was cited as a primary barrier to the adoption of P2P sharing services.⁵

The automotive industry, mobility leaders and public sector stakeholders need to invest in educating consumers about the future of mobility and its benefits, even as customers may shy away from public transportations amid the current health crisis. They will also need to answer what clean and safe mobility will mean to customers. Will they demand health screening for drivers and riders, special air filters, cleaning services and driver/passenger partitions? If these new safety measures affect the cost of car sharing services, how will that affect the customers' choice?



Concierge Car Sharing:
Porsche Drive - a subscription program where Porsche owns the car, pays for maintenance and insurance... you pay for the opportunity to drive in style with concierge perks.

Ok, I Might Share My Car, But I Rather Use Someone Else's Shared Car.

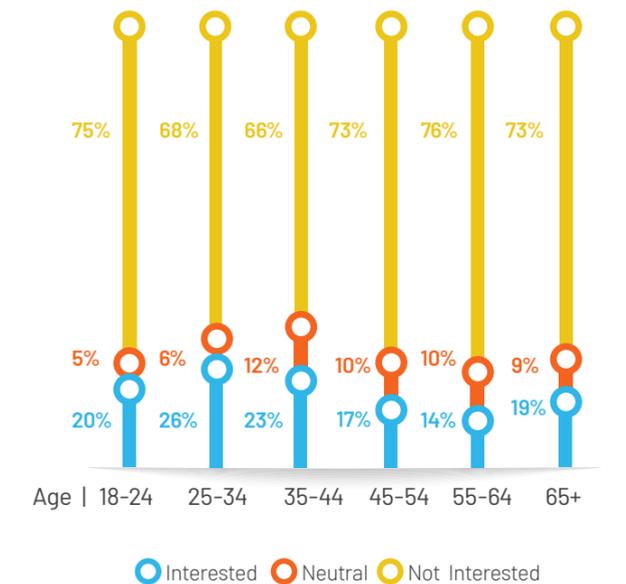
Car sharing is emerging as a leading mobility solution causing a shift towards public use. Even though apps like Car2Go, Maven and ZipCar have established growing customer base across Europe, our survey population, overwhelmingly expressed low interest in sharing their own cars.

20% of those surveyed said that they were "very interested" or "quite interested" in doing so. With 268⁶ million cars on the road in Europe, this equates to over 50 million cars that could be shared. This number is significant.

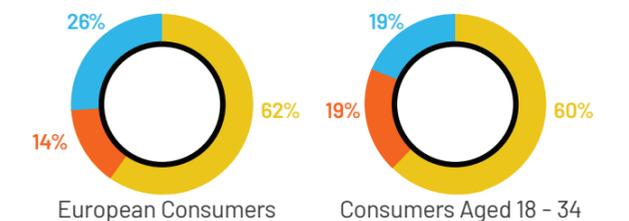
Consumers under 35 were more likely to be at least "quite interested" in sharing their own cars. The group strongly opposed to the idea becomes steadily larger as the age of the respondents increases.

When asked if they would be interested in a service through which they could access a shared car, 27% of consumers expressed interest. While this is a minority opinion, it was held by a large group of consumers.

Willingness To Share Their Own Cars



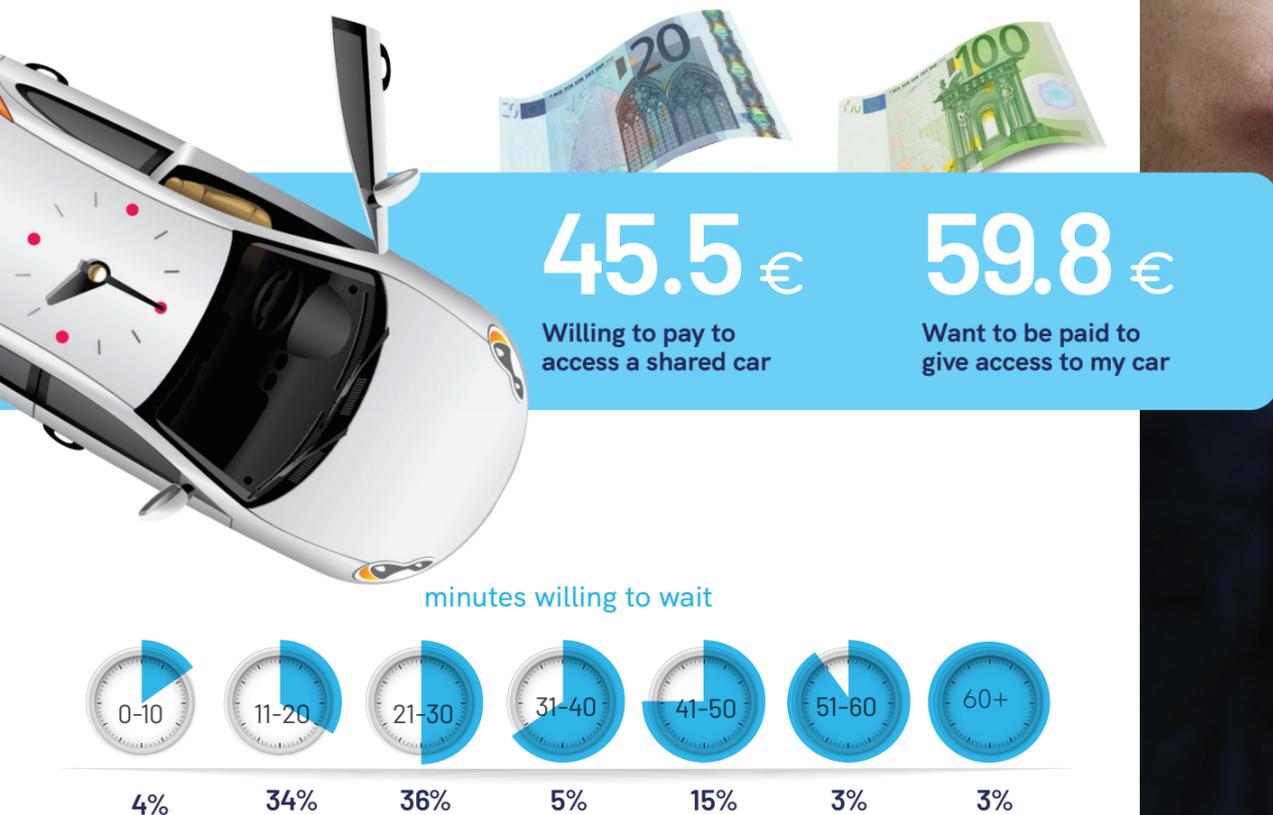
Willingness To Access A Shared Car



I Will Use Your Car If...

Another hinderance to car sharing is consumers' expectations of how much money they expect to be paid for sharing their car compared to how much they expect to pay to access a car. There is a significant disparity between what people are willing to pay to use a shared car and what they will accept to grant access to their car. This presents a challenge. ⁷

We also asked the consumers interested in accessing shared cars how long they would be willing to wait for a car. 68% were willing to wait between 10 - 30 minutes for a shared car. This may be an issue of contention should someone else be driving the car during the wait time.

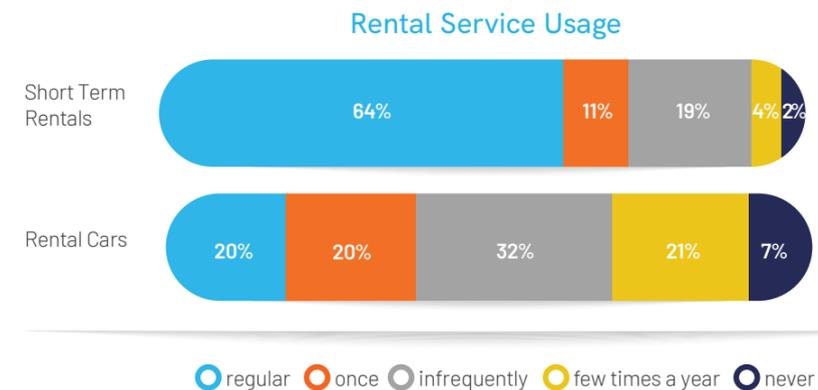


The Original Shared Car – Rental Cars

When talking about shared mobility, some forget the “OG” of shared mobility – rental cars. Rental car companies were designed for car owners to have access to a car when they do not have access to their own for specified periods of time, like vacation or when their car is in the repair shop. Whereas, car sharing services, intended for qualified drivers, provide cars by the hour or mile or both for specific errands or activities. To answer the needs of those drivers, many car rental companies have ventured into the car sharing world, among them Avis – Avis on Location, Uhaul – Uhaul Car Share, and Enterprise – WeCar.

We asked our survey participants at what frequency they use traditional rental car and short-term rental services. Overall, German and Italian respondents reported renting cars more often than others surveyed. They also reported using short term rentals more. Like many industries, rental companies have been greatly affected by the Covid-19 crisis. Expectations of rental companies have changed. Renters are expecting rental companies to take ownership of the health-related risk that may be associated with renting. Customers expect cars to be cleaned and disinfected, employees trained in social distancing, safety seals on doors, touchless rentals, and markedly lower prices. The industry response has been quick. For example, Alamo, Enterprise and National have initiated the Complete Clean Pledge.

Potentially, as cities emerge from Coronavirus, leisure travel is expected to be done locally by car and this may result in a rise of car rentals. Time will tell. ⁸



OEMs Are Taking A Rideshare, Too

Auto manufacturers are putting skin in the game, partnering, buying and investing heavily in rideshare and autonomous car technologies and start-ups.

This is a very dynamic and partial list of the exciting activity happening in this market.⁹

Audi - Huawei | **Jaguar Land Rover** - Waymo | **GM** - Lyft (with Honda), Maven, Cruise | **Honda** - Lyft (with GM), Samsung | **Continental** - EasyMile, Nvidia | **Ford** - Argo (with Volkswagen), Velodyne, Civil Maps, ZipCar | **Daimler** - Moovel, Car2Go, Bosch | **Chery** - Yongche, Pateo Corp | **Beijing Automotive Group** - Atieva | **Shanghai General Motors** - Baidu | **Porsche** - Huawei | **Toyota** - Uber, Microsoft, Nvidia, Pony.ai, Suzuki | **Volkswagen Group** - Gett, Didi Chuxing, | **Argo** (with Ford), Avea | **BMW AG** - Scoop Technologies Inc, Intel, MobileEye | **Mercedes** - Bosch | **Magna** - Lyft, Waymo, Innoviz | **Volvo** - Veoneer, Luminar, Microsoft | **Nissan Renault** - DeNa, Microsoft, Google | **PSA** (Peugot, Citroen, and DS) - nuTonomy | **ZF** - Hella, Nvidia, Astyz Communications & Sensors, Ibeo Automotive Systems, doubleSLash NetBusiness, Baidu, WABCO

Telsa is unique in its outlook.

Tesla has a master plan which includes ridesharing - within the Tesla Network. Currently, the company does not permit Tesla owners to use its autonomous driving technology for ridesharing, except for friends and family of the car owner or the electric car maker's own car-hailing service. service.

Ford partnerships outside of the automotive world:

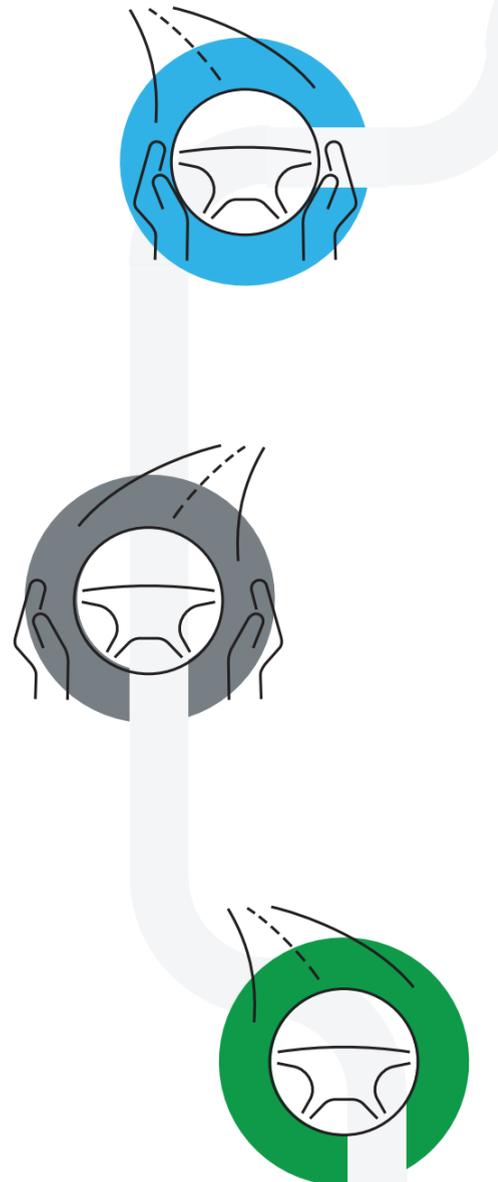
Ford partners include Domino's Pizza, with a partnership launched in August 2017 to develop a fleet of self-driving pizza delivery vehicles, and Postmates, to enable on-demand autonomous delivery. In November 2018, the company added Walmart to its list of autonomous delivery partners, with a grocery delivery pilot located in Miami-Dade County.

Defining Autonomy

Consumers have clearly stated that they need to build trust and increase their familiarity with Advanced Driving Assistance Services (ADAS) and other autonomous technologies.

Car automation is defined by a set of increased capabilities and complex technologies. The Society of Automotive Engineers (SAE) outlined 6 levels of automation - from no automation to full automation, as seen here.

- 0 No Automation**
Driver performs all driving tasks.
- 1 Driver Assistance**
Some assist features may be included in the vehicle design.
- 2 Partial Automation**
Vehicle has combined automated functions, but the driver must remain engaged with driving tasks and monitor the environment at all times.
- 3 Conditional Automation**
Driver is a necessity, but not required to monitor the environment and be ready to take control of the vehicle.
- 4 High Automation**
The vehicle can perform all driving functions under certain conditions and the driver may have the option to control the vehicle.
- 5 Full Automation**
The vehicle is capable of performing all driving functions in all conditions. The driver may have the option to control the vehicle

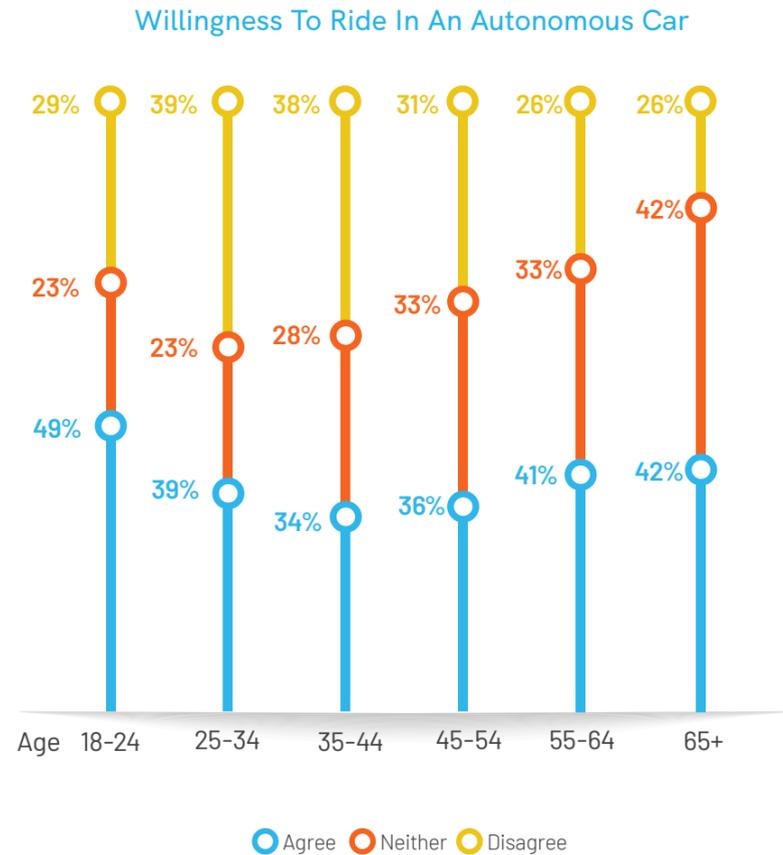


Autonomous Cars, Not So Fast.

We found among our respondents the willingness to ride in autonomous cars to be low, while neutrality and negativity to the idea quite high, with some variation among different age groups.

The younger consumers, we surveyed, seem to have a more flexible mindset about driving in autonomous vehicles than their over-65 counterparts. Car owners aged 18 – 24 said that they were likely to ride in an autonomous vehicle more than any other group. However, this number drops significantly with consumers aged 25 – 35 and in the early years of their car ownership lifetime.

Interestingly, there is an uptick in consumers aged 65 and up who say they are “very likely” to ride in an autonomous vehicle. Perhaps this age group prefers not to drive or foresees a future when they will no longer be able to drive. On the other end of the spectrum, a significantly higher percentage of these consumers say they are “very unlikely” to ride in an autonomous vehicle, compared to those under 35.



Attitudes About Autonomous Cars From Both Sides of The Pond¹⁰



United States

Only 18%

of US Consumers say that they are “extremely” or “very comfortable” riding in a self-driving vehicle.

Only 32%

of consumers say they know a “great deal” or “fair amount” about self-driving vehicles.

Of those stating they know “a great deal” about self-driving vehicles, 32% are “extremely likely” to purchase or lease one.

Of those stating they know “nothing at all”, the likelihood drops.

* US Statistics from JD Power Mobility Confidence Index Study

Europe

Only 39%

of European consumers say that they are “very likely” or “somewhat likely” to ride in an autonomous vehicle.

Spain leads this group with 45% likely to ride in an autonomous car and France is the least likely with only 34%.

43% of

respondents that stated “I love to buy new gadgets and appliances” also said that they are more likely to ride in an autonomous vehicle.

35% of

the respondents that disagreed with the statement “I love to buy new gadgets and appliances” said that they would likely ride in an autonomous vehicle.

Barriers to Consumer Confidence in Autonomous Cars

We asked those consumers who said that they were “somewhat unlikely” or “very unlikely” to ride in an autonomous vehicle to share the reason or reasons for their reluctance.

Two themes emerged: lack of trust and unwillingness to give up driving.

60% of respondents are reluctant to ride in autonomous cars because they “like to be in control”.

Yet, human error¹¹ contributes to about 90% of car accidents. In contrast, only 2.4% were due solely to mechanical fault and 4.7% were caused only by environmental factors.

Education and exposure to autonomous vehicle technologies can reshape these false beliefs.

Top Barriers

76%

I do not trust in the technology

62%

I really enjoy driving

60%

I like to be in control of the vehicle

57%

I need to see more safety testing done

38%

It is not yet ready for regular use

*JD Power reported similar attitudes in the JD Power Mobility Confidence Index Study

Creating Gateways to Autonomous Cars

There is a long list of ADAS functions currently available, ranging from cruise control, lane keeping, and self-parking to collision avoidance. But, the major thrust of innovation is geared towards the future. A future of fully autonomous cars.

As cars are becoming more autonomous, they require greater levels of autonomous activity, have increased need for higher levels of internet connectivity and the ability to support going electric.

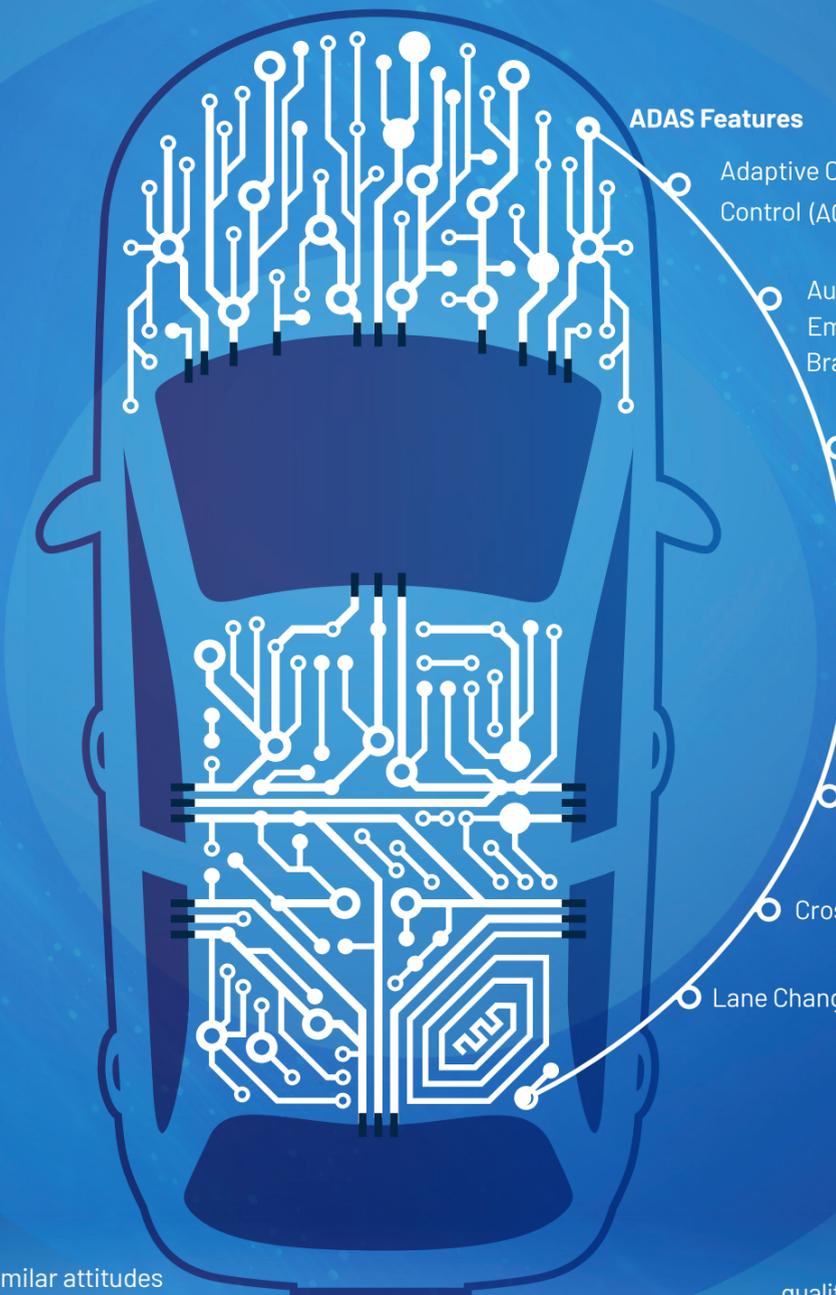
While surveys, including ours, show that younger people are more open to driving autonomous vehicles. The underlying technologies for autonomous vehicles are ubiquitous in very expensive vehicles, such as Tesla. Tesla’s owners average age is 54, 71% male, and 88% homeowners with incomes over \$140K.

Having said that Elon Musk, Tesla CEO and Founder has said that “Tesla owners will be able to add their car to the Tesla fleet by just tapping a button on the Tesla phone app and have it generate income for you while you’re at work or on vacation.” He added, “Significantly offsetting and at times potentially exceeding the monthly loan or lease cost. This dramatically lowers the true cost of ownership to the point almost anyone could own a Tesla.”¹³

ADAS functionality is now appearing in cars of all price brackets and becoming more common in the mass market.

Complimenting ADAS functionality is a flourishing suite of connected cars services like on-demand fueling, electric vehicle route planning, parking solutions, preventative maintenance tools – each delivering on critical values promised by the smart mobility ecosystem.

The promise of autonomous vehicles and shared mobility relies upon quality and rich content to provide quality services. OEMs, service providers and data service providers, like Otonomo, collaborate closely to deliver excellent customer experiences in and out of the car for drivers and passengers.



ADAS Features

Adaptive Cruise Control (ACC)

Autonomous Emergency Braking (AEB)

Blind Spot Detection (BSD)

Forward/Rear Collision Warning

System (FCW & RSW)

Intelligent Parking Assistance (LPA)

Cross Traffic Alert (CTA)

Lane Change Assist (LCA)

Benefits of Automation

Reduced Accidents And Improved Driver/Passenger Safety

There are over 1.25 million fatal motor vehicle accidents a year worldwide because of tiredness, incapacitation, intoxication, and lack of attention. AV proponents argue that the AV¹⁴ technologies can reduce accidents by 90% when eliminating the driver error. Autonomous vehicles have the potential to save lives and reduce injuries of drivers, passengers, bicyclists, and pedestrians.

Car crashes cost billions in lost economic activity, workplace productivity, loss of life and quality of life due to injury. Drastically reducing accidents would eliminate these costs. To put the economic impact¹⁵ of this into perspective; it was estimated by the 2013 National Automotive Sampling System (NASS) and the General Estimates System (GES) that the US crash costs could be reduced by \$126 billion (not including pain and suffering damages, and other non-economic costs) and functional human-years lost by nearly 2 million.

Studies posit that the reduction of workload associated with autonomous driving will contribute the overall wellbeing of the driver because of the reduced stress.

Potentially, up to 50 minutes a day could be freed for relaxing or entertainment. This represents the opportunity for €5 billion in new revenue per year per additional minute people spend on the mobile internet while in the car.¹⁷

Efficiency, Convenience And Reliability

The concept of traffic lanes and parking spaces may become obsolete with AV – as roadways and parking areas are dedicated to AVs. In addition, reduced traffic congestion, and better traffic flow can be expected on roads that enable autonomous vehicle traffic due to increased utilization and capacity of highways. As a result, congestion may be relieved without the need to expand lanes or build new roads.

Think of the positive impact a decrease in traffic delays would mean to fuel costs, CO2 emissions, and time spent in transit. Moreover, the footprint of highways and parking may shrink releasing land for commercial and residential development or new communal spaces. It is projected that 5.7 billion square meters could be

repurposed from parking as AV alters mobility behavior and infrastructure needs change. For example, AVs do not require space for open doors when parking providing a 15% reduction in size.

In addition to making driving safer, autonomous vehicles will not need all the protective design features currently in use. This will lead to lighter vehicles, that require less fuel or electricity. Eco-driving tools like cruise control will promote fuel optimization.

Mobility For Non-Drivers And Shared Mobility

New mobility models may provide economic growth and employment opportunities for diverse communities including the disabled, elderly, and young people.

Self-driving vehicles may enable growth in shared autonomous vehicles (SAV) services. For example, SAVs may serve more than one person in the household or even more than one household. Imagine, the head of the household takes the SAV to commute to work, then sends the car to take the children to school and then run errands and back to pick the children up from school. Only to send the car to pick the commuter up from work and then take him/her home.

Autonomous Vehicles Generate Vast Amounts of Metadata

Today, connected car data supports a wide variety of services; smart cities, traffic management, electric vehicle services, parking solutions, safety and emergency solutions, fleet management, mapping and planning solutions, innovative insurance, location intelligence, remote diagnostics, predictive maintenance, media measurement and concierge services. Specific examples include, GPS information can help locate available parking spots, driving habits can help insurance companies provide dynamic use-based insurance (UBI) premiums, in-vehicle ultra-sensors can be used to report hazard conditions to road maintenance crews.

The aggregation of personal data can make smart mobility systems even smarter. Smart cities rely upon such data to improve urban life with tactical urbanism solutions to redefine public transportation routes, traffic management to recognize driving trends, parking solutions to free up public space or automate payments, to optimize time and energy and more.



Fleets & AV Technology

Today is an unprecedented time of disruption for the transportation and automotive industries. The combination of the need to drastically reduce fossil fuel, which is propelling the use of electric vehicles and the lack of interest in long term commitment by young people has led to a decline in private car ownership. This has allowed AV technologies to take a foothold in the transportation-as-a-serve arena.

In addition, AV has found a place in logistics and the supply chain. Morgan Stanley reservedly predicts that the freight industry could save up to \$168 billion annually by leveraging AV technology. 40% of that from staff reductions.¹⁸

AV impact on routes would be relative to navigational complexity, for example one manned truck could lead a platoon of AV trucks. Thus, fewer drivers would be needed, and fuel economy would be improved for the trailing trucks.

AV trucks could be traveling storefronts – facilitating remote deliveries anywhere, anytime. Blending connected car data

and buying preferences can lead to specialized concierge services. In addition to operational benefits, fleets using AV, reduce liability and can leverage their connected car data to benefit from innovative insurance.



Today

Fleets & OEMs partner to create sharing models for trucking, taxis, and logistics.



Tomorrow

Fleets build analytics capabilities injecting connected car and operational data to deliver the sophisticated analytical models need to achieve real value.¹⁹



Who Do You Trust?

We asked those surveyed which car manufacturers they most trust. The data somewhat reflects the car ownership patterns of those surveyed.

Most Trusted Brands Per Country



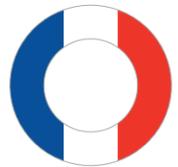
UK

- Ford
- Mercedes
- Toyota
- Audi
- BMW



Germany

- VW
- Mercedes
- BMW
- Ford
- Audi



France

- Renault
- Peugot
- Citreon
- Mercedes
- Toyota



Italy

- Fiat
- VW
- Audi
- BMW
- Ford



Spain

- Seat
- Peugot
- Mercedes
- Audi
- BMW

Who Do You Trust More

Drivers were asked which service providers they trusted with their data.

They could choose multiple options from those listed.

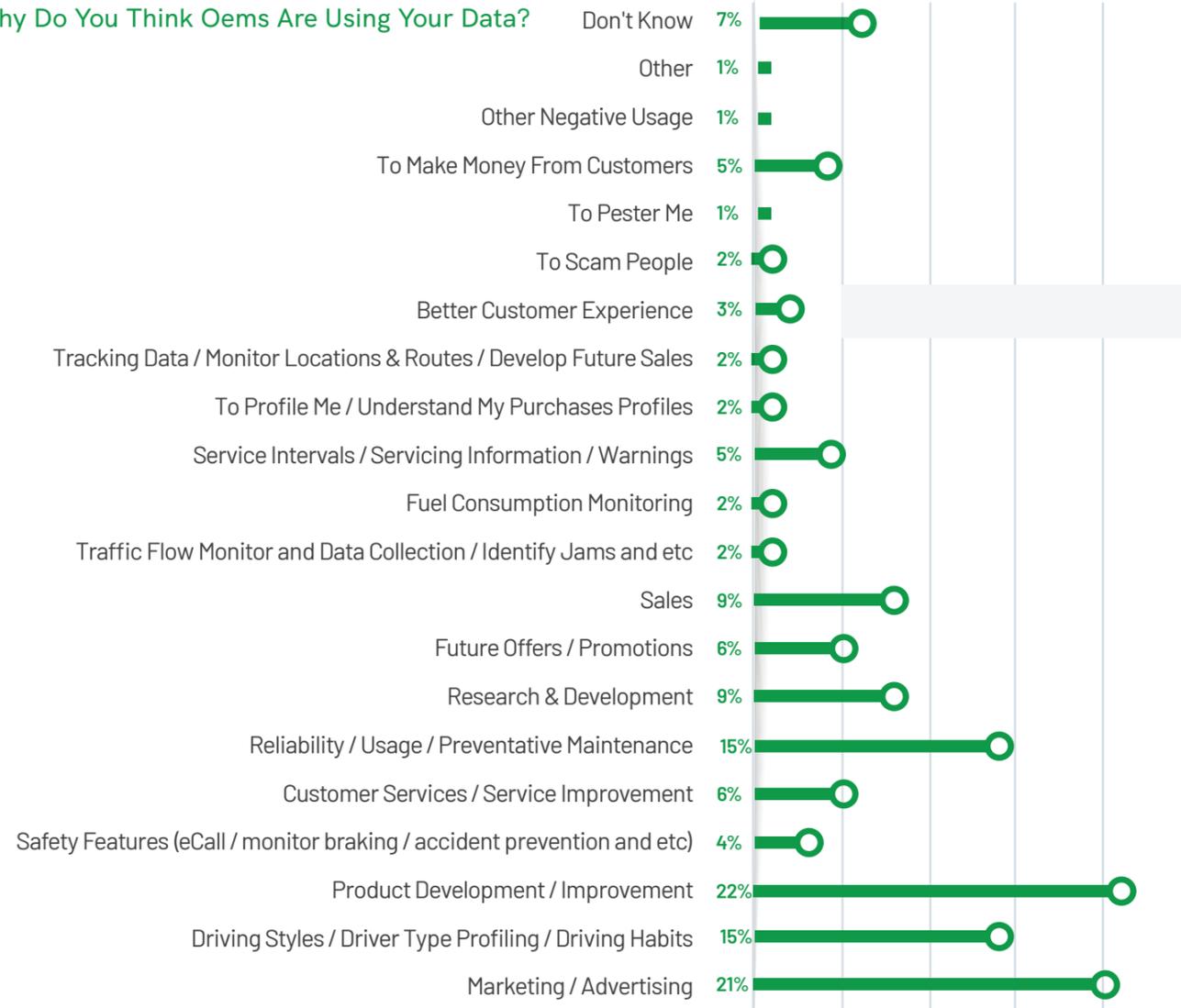
- 72% Credit Card Company
- 65% Car Manufacturers
- 57% Smartphone Providers
- 50% Software Companies
- 47% The Government
- 44% Brick and Mortar Retailers
- 33% 3rd Party Partners of Car
- 19% Social Media Sites



What Car Owners Think That OEMs Are Doing With Their Data.

Most car owners think that car manufacturers are collecting data for the benefit of future car improvements, however the skeptics think it may be for marketing purposes.

Why Do You Think Oems Are Using Your Data?



My Car Did What? I Want To See.

As consumers are gaining knowledge and understanding about connected car data, a majority of them want access to the data generated by their car.

Of the car owners we surveyed, there was a strict alignment between the digital car services they would consume and the data they want to access.

Consumer interest in applications and services aligns with the data they want to view.

75%

of those surveyed are interested in accessing data held by the OEMs (more than twice a month)

47%

of all car owners are interested in frequently accessing data (from once a day to three times a month)

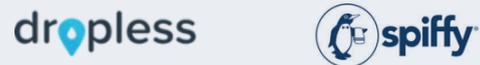
Applications And Services Consumers Want



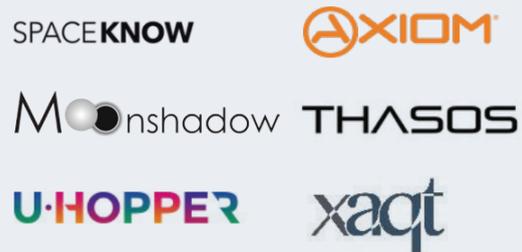
Connected Car Data in Action

This is a very partial list of applications leveraging connected car data.

CONCIERGE SERVICES



DATA



DIAGNOSTICS



[Click Here To Test Drive Otonomo's Connected Car Data](#)

EV



FLEETS



INSURANCE



PARKING



PAYMENTS



SMART CITIES



Trust, Technology And Regulation – Keys to Achieving Shared Mobility And Autonomous Vehicles

To summarize, we are not far from the seamless mobility future we asked our car owners about. The question that remains is how leaders in the automotive industry, governments, and technology industries will move us forward.

Trust

To drive the needed behavioral changes among consumers, OEMs and service providers need to deliver compelling messages which will resonate among consumers. These messages may vary from safety, economic promise, and convenience to environmental improvements.

To build trust in the technologies will require exposure to ADAS technologies. Corporate and government partnerships can go a long way in changing attitudes. For example, the Japanese government's initiative with Toyota, Nissan and server car parts manufacturers to bring autonomous vehicles to the Tokyo Summer Olympics, which were postponed.

Technology

Connectivity and data are the building blocks for tomorrow's seamless mobility. Advancements in IoT and 5G systems are enabling more vehicles to leverage connectivity.

Connectivity and its related car data are transforming not only the driver experience, but that of the rider and pedestrians. As seen with the application of tactical urbanism and a slew of auto-adjacent services.

Today, cars, trucks, and other vehicles, are connected to smart cities, their traffic management systems, parking facilities, toll schemes and the like.

There are opportunities abound for OEMs, fleets, and service providers to leverage the technologies for deepening their customer relationships and to provide superior customer experiences. OEMs are leveraging connected car data to improve car ownership experience by extending beyond the car with a variety of concierge services. This is just the beginning of the utilization of OEM data. Fleets, albeit ride-sharing services,

enterprise fleets, leasing operations or shipping fleets, can be using connected data to improve operations and generate new revenues. Improved driver safety, EV, route planning, AV and predictive maintenance are only some of the use cases which are disrupting this sector.

Regulation

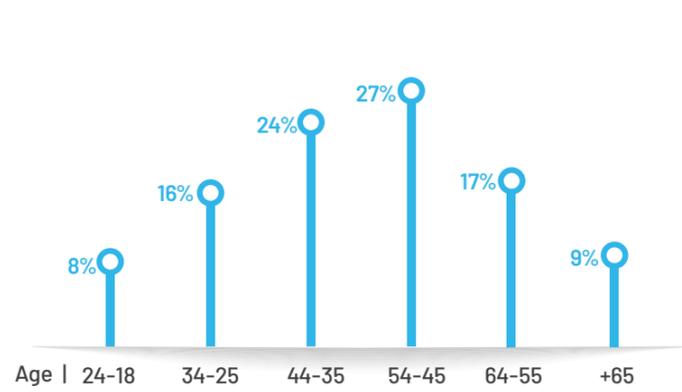
Public and private partnerships are needed to prepare for the reality of seamless mobility, including autonomous vehicles and various sharing modules.

By implementing regulations consistent with consumer-friendly mobility-focused technological developments, goals like reduced pollution, decreased congestion, reassignment of parking areas, improved fuel economy, and increased driver/rider safety can be achieved.

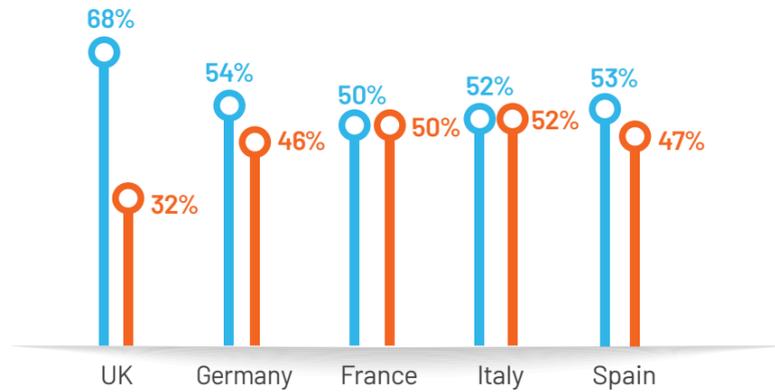
Protection of driver data is paramount, thus advancements in data privacy regulation is needed.

Governments must also put in place incentives to promote private industry to adopt autonomous vehicle technologies, shared mobility models, advanced connectivity, and connected data.

Survey Sample



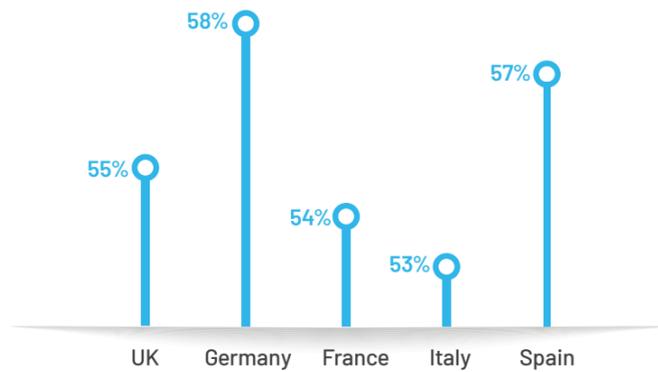
Respondent Age



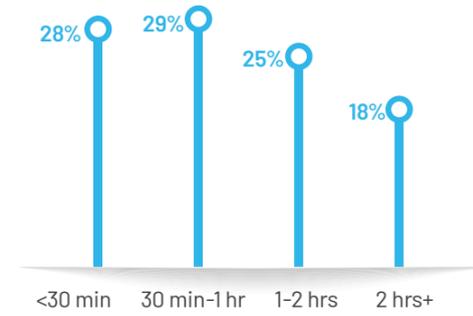
Respondent Gender
Male / Female



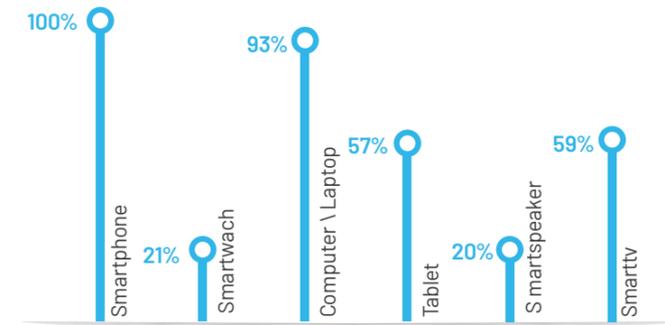
Respondent Domicile



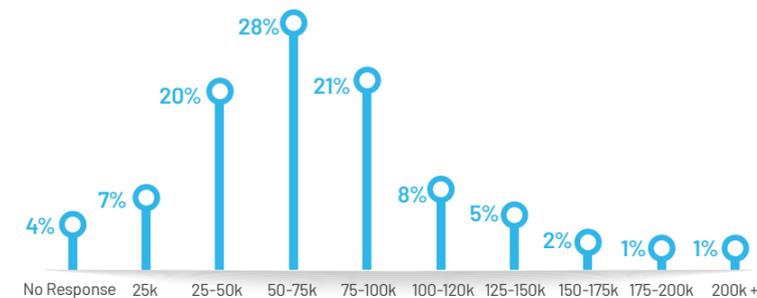
I Commute By Car



I Drive Each Day



Gadgets I Own



Respondent Income

Endnotes

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About Otonomo

Otonomo fuels an ecosystem of OEMs, fleets and more than 100 service providers. Our platform securely ingests more than 2 billion data points per day from over 20 million global connected cars, trucks, and construction and agricultural equipment, then reshapes and enriches it, to accelerate time to market for new services that delight drivers. Privacy by design and neutrality are at the core of our platform, which enables GDPR, CCPA, and other privacy-regulation-compliant solutions using both personal and aggregate data. Use cases include traffic management, emergency services, mapping, EV management, subscription-based fueling, parking, predictive maintenance, usage-based insurance, media measurement, in-vehicle services, and dozens of smart city solutions. With an R&D center in, Israel, and a presence in the United States, Europe, and Japan, Otonomo collaborated with twelve industries to transform their business with car data.

More information is available at otonomo.io



About SBD

SBD Automotive is a global technical research and engineering consultancy located in the centers of automotive innovation: Germany, the UK, Japan, the US, and China. For more than 20 years, our independent research, insight, and consultancy have helped vehicle manufacturers and their partners create smarter, more secure, better connected, and increasingly autonomous cars.

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