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2020 Global Automotive Consumer Study

Is consumer interest in advanced automotive technologies on the move?

Global focus countries

To learn more about the Global Automotive Consumer Study, visit **www.deloitte.com/autoconsumers**

For more than a decade, Deloitte has been exploring consumers' changing automotive expectations and the evolving mobility ecosystem.

Key insights from our Global Automotive Consumer Study over the years:

2010 Overall value ranked as the primary factor when evaluating brands

2011 "Cockpit technology" and the shopping experience led differentiators

2012 Interest in hybrids driven by cost and convenience, while interest in connectivity centers on safety

2014 Shared mobility emerges as an alternative to owning a vehicle

2017 Interest in full autonomy grows, but consumers want a track record of safety

2018 Consumers in many global markets continue to move away from internal combustion engines (ICE)

2019 Consumers "pump the brakes" on interest in autonomous vehicles

The Global Automotive Consumer Study helps inform Deloitte's work and insights into the evolution of mobility, smart cities, connectivity, transportation, and other changes transforming the movement of people and goods.

2020 Deloitte Global Automotive Consumer Study

From September through October 2019, Deloitte surveyed more than 35,000 consumers in 20 countries to explore opinions regarding a variety of critical issues affecting the automotive sector, including the development of advanced technologies. The overall goal of this annual study is to answer important questions that can help companies prioritize and better position their business strategies and investments.

Interest in EVs continues to grow around the world

Even in the United States, where significant barriers to EV adoption remain, the number of people who most want an alternative engine in their next vehicle is growing rapidly.

Interest in AVs stalled in most markets

Consumers in most global markets remain equally split regarding the perceived safety of autonomous vehicles, but China and India are moving in the wrong direction.

Consumers remain resistant to multimodal mobility

Consumers in Japan, Germany, and the United States are among the hardest to shift, as fewer than one in five people use multiple modes of transportation in a single trip.

Concerns about privacy and data security remain

Whom consumers trust the most to manage the data being collected and shared by their vehicle remains firmly up in the air, as original equipment manufacturers (OEMs) are not necessarily the logical choice.

Even as OEMs continue to spend billions on R&D in advanced vehicle features, questions remain regarding consumers' willingness to pay for them.

Percentage of consumers that are unwilling to pay more than ~$US500[1] for a vehicle with advanced technologies

Advanced technology category	Germany	US	Japan	Republic of Korea	China	India
Safety	71%	60%	59%	52%	39%	49%
Connectivity	79%	66%	72%	63%	46%	52%
Infotainment	84%	75%	79%	74%	52%	57%
Autonomy	67%	58%	61%	42%	37%	40%
Alternative engine solutions	58%	54%	60%	42%	37%	39%
Unwilling to pay more than...	€400	$500	¥50,000	₩500,000	¥2,500	₹25.000

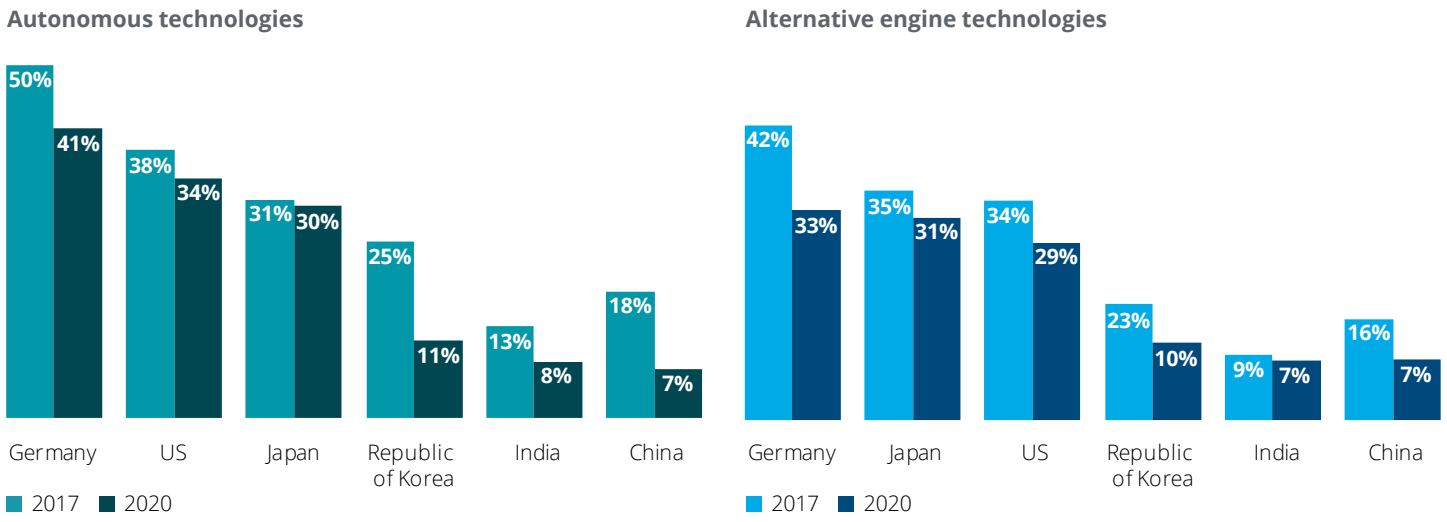
[1] Calculated for each country in local market currency (roughly equivalent to $US500)

Q7: How much more would you be willing to pay for a vehicle that had each of the technologies listed below and that met your wants and needs?

Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

However, there is some evidence to suggest that consumer willingness to pay at least something for advanced technologies has improved over the last few years.

Percentage of consumers who are unwilling to pay any more for...



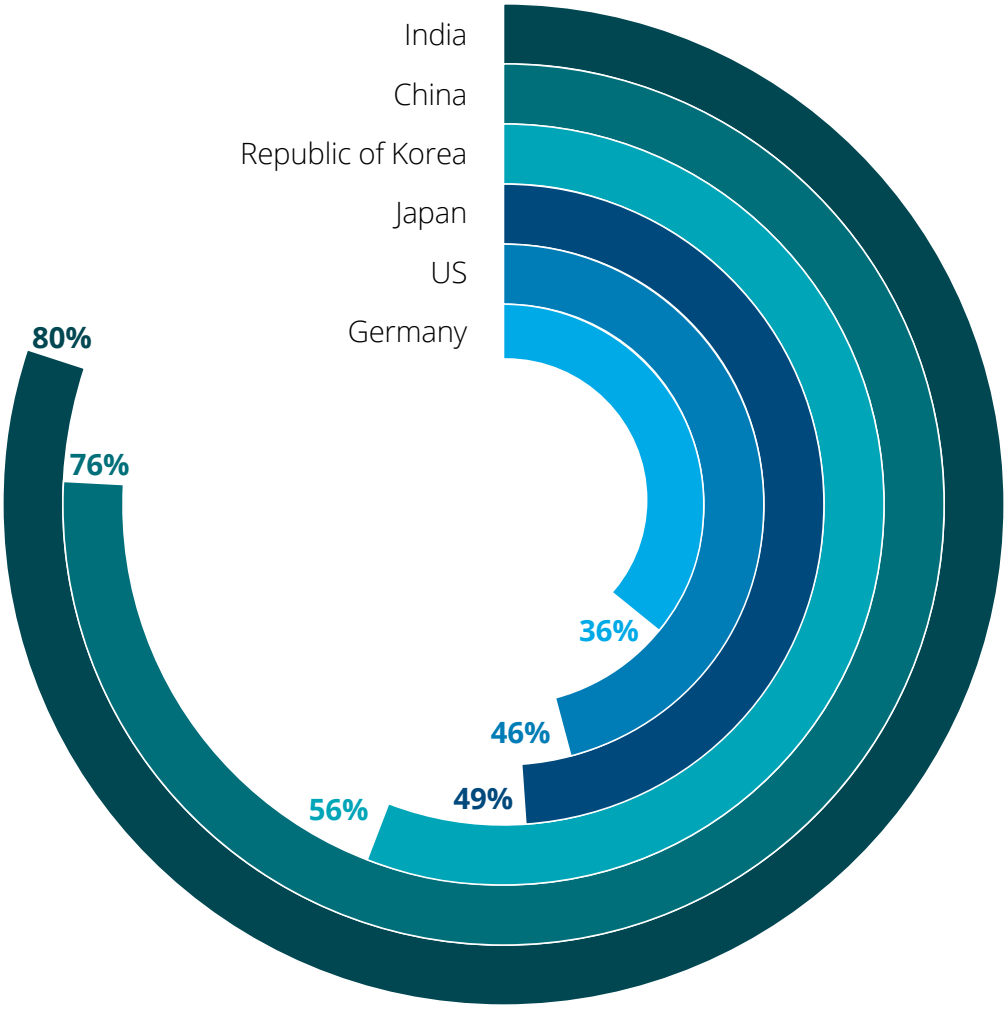
Q7. How much more would you be willing to pay for a vehicle that had each of the technologies listed below and that met your wants and needs?

Sample size (2020/2017): Germany=3,002/1,740; US=3,006/1,754; China=3,019/1,738; India=3,022/1,739; Japan=3,056/1,745; Republic of Korea=3,013/1,708

What do consumers think about connected vehicles?

Consumers are split on the benefits of increased vehicle connectivity. Consumers in India and China are embracing the idea at more than twice the rate than consumers in Germany.

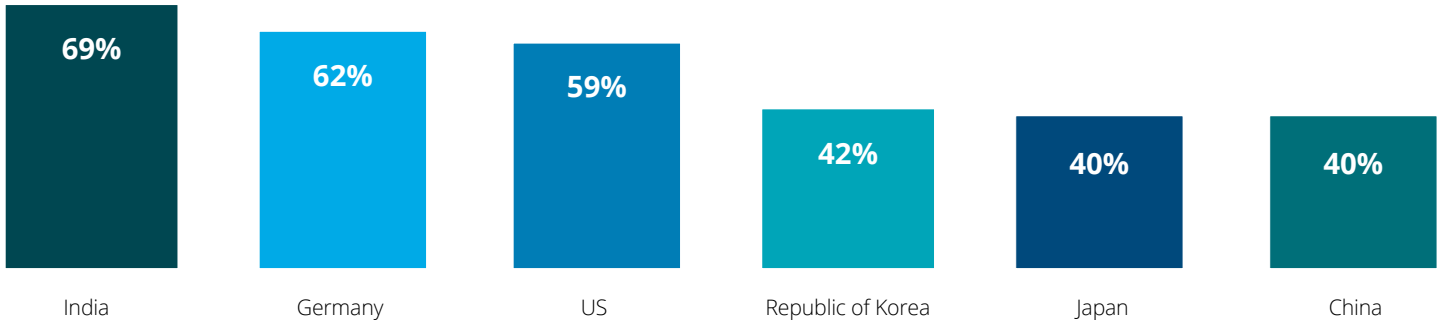
Percentage of consumers who feel that increased vehicle connectivity will be beneficial



Note: Percentage of respondents who strongly agreed or agreed have been added together; did not consider "NA/Don't know" responses
Q3. To what extent do you agree with the following statements regarding future vehicle technology?
Sample size: Germany=2,862; US=2,922; India=2,979; China=2,980; Japan=2,912; Republic of Korea=2,974

Consumer opinions also differ on specific concerns around connectivity, including the security of biometric data generated and shared by connected vehicles.

Percentage of consumers who are somewhat/very concerned about the concept of biometric data being captured and shared with external parties

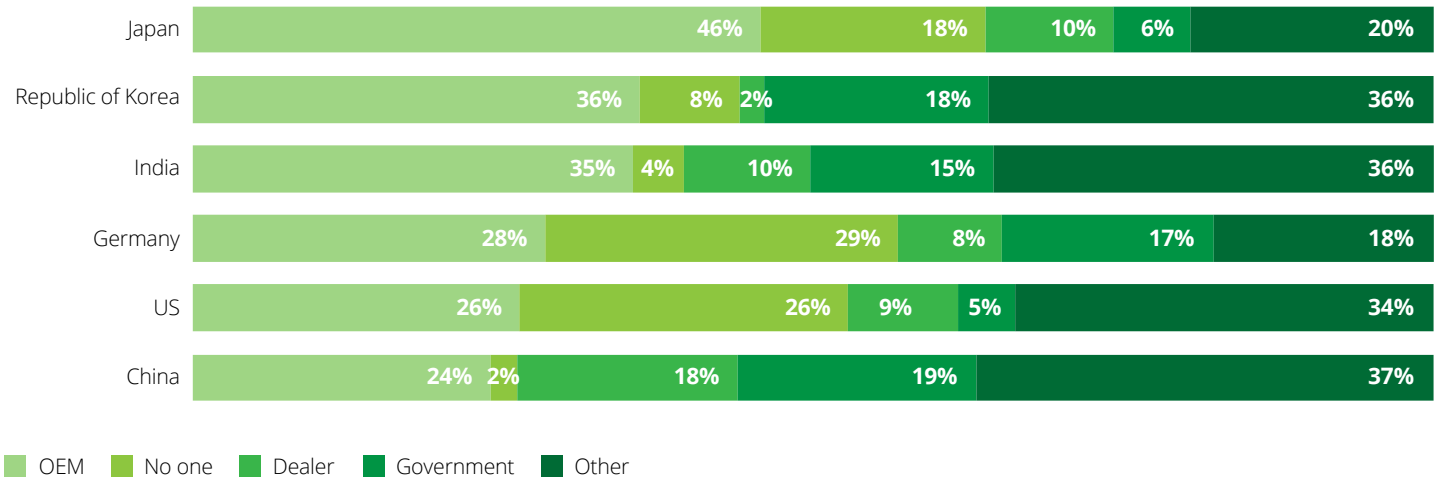


Note: Biometric data refers to information about the vehicle occupant(s), such as heart rate, blood pressure, and blood alcohol level
Q34. As vehicles become more and more connected to the Internet, how concerned would you be if the following types of data were shared with your vehicle manufacturer, dealer, insurance company, and/or other third parties?

Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

People are also concerned about who would best manage the data being generated and shared by the vehicle.

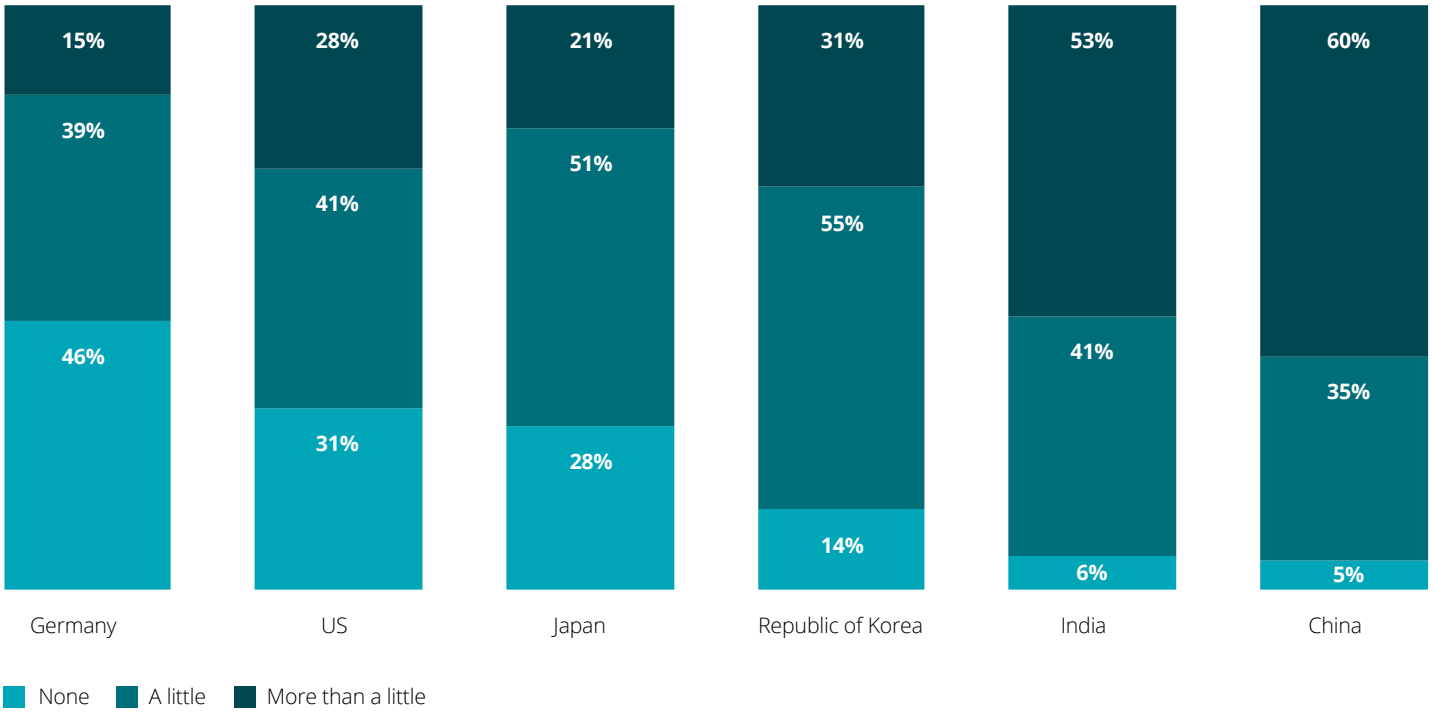
Consumer preference regarding the type of entity they would most trust to manage the data being generated and shared by a connected car



Note: The "other" category includes financial service providers, insurance companies, cellular service providers, and cloud service providers
Q36. In a scenario where you owned a connected vehicle, which of the following entities would you trust the most to manage the data being generated and shared?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

OEMs may also struggle to get consumers to pay for advanced connectivity features in some markets, even when it means increasing road safety.

Extra amount that consumers would pay for a vehicle that could communicate with other vehicles and road infrastructure to improve safety

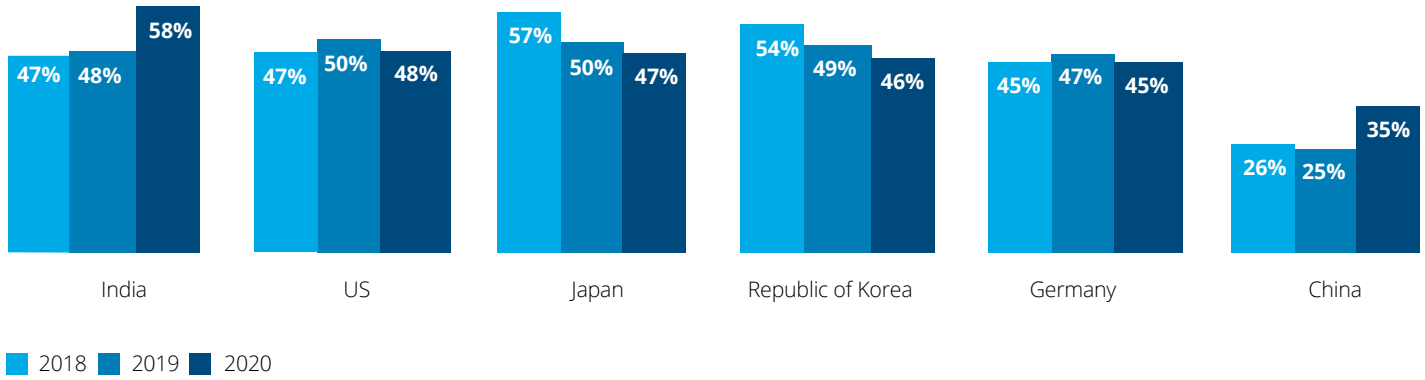


Note: Definition for "a little" is less than or equal to: DE (€600); US ($500); JP (¥50,000); IN (₹25,000); CN (¥2,500); KR (₩500,000)
Q37. How much more would you be willing to pay for a vehicle that had the following connectivity technologies?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

What do consumers think about autonomous vehicle technology?

Consumer perception regarding the safety of self-driving vehicles remains stalled since last year, and countries like India and China are reversing course.

Percentage of consumers who agree that autonomous vehicles <u>will not</u> be safe



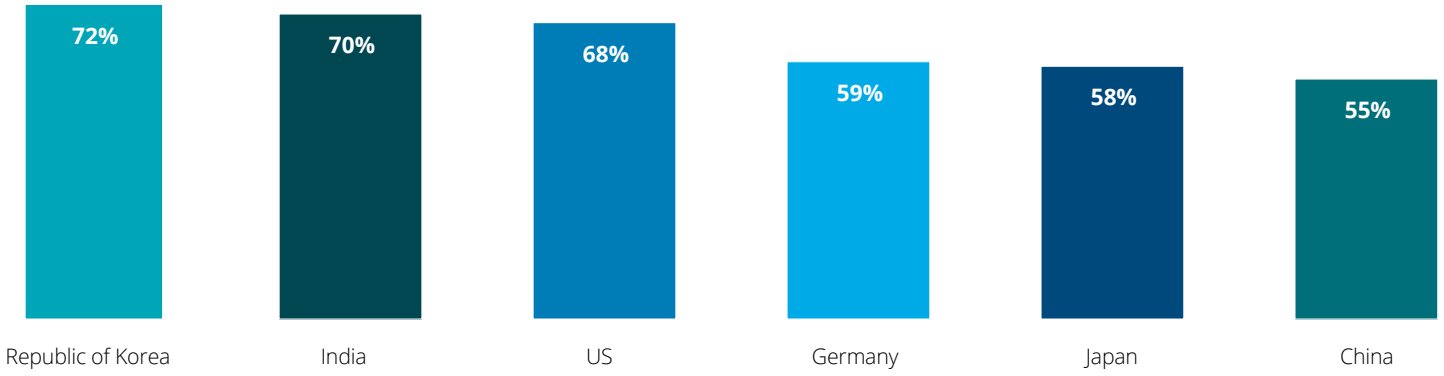
Note: Percentage of respondents who strongly agreed or agreed have been added together; did not consider "NA/Don't know" responses

Q3. To what extent do you agree with the following statements regarding future vehicle technology?

Sample size: Germany=2,950 [2020], 1,733 [2019], 1,705 [2018]; US=2,950 [2020], 1,720 [2019], 1,730 [2018]; China=2,988 [2020], 1,735 [2019], 1,724 [2018]; India=2,945 [2020], 1,725 [2019], 1,728 [2018]; Japan=2,976 [2020], 1,717 [2019], 1,680 [2018]; Republic of Korea=2,999 [2020], 1,715 [2019], 1,722 [2018]

Reports of accidents involving autonomous vehicles have had a significant and lasting impact on consumers' view of the technology.

Percentage of consumers who feel that media reports of accidents involving autonomous vehicles has made them more cautious of the technology



Note: Percentage of respondents who strongly agreed or agreed have been added together; did not consider "NA/Don't know" responses

Q3. To what extent do you agree with the following statements regarding future vehicle technology?

Sample size: Germany=2,945; US=2,940; India=2,935; China=2,996; Japan=2,998; Republic of Korea=2,984

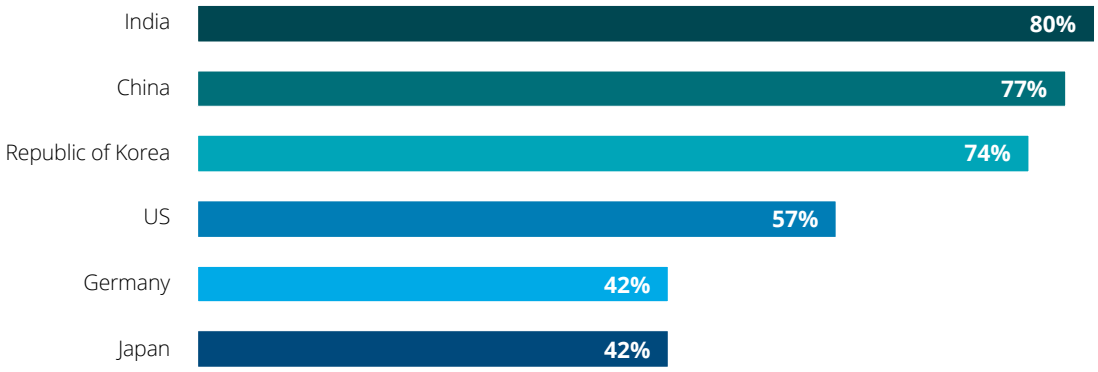
More than half of consumers in India and the United States are concerned about the idea of autonomous vehicles being tested in areas where they live.

Percentage of consumers who are somewhat/very concerned with fully autonomous vehicles being tested on public roads where they live

Note: Percentage of respondents who said "somewhat concerned" or "very concerned" have been added together
Q4. How concerned are you with each of the following scenarios?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

A strong majority of consumers in India, China, and the Republic of Korea would feel more comfortable to ride in an AV if they were government-certified.

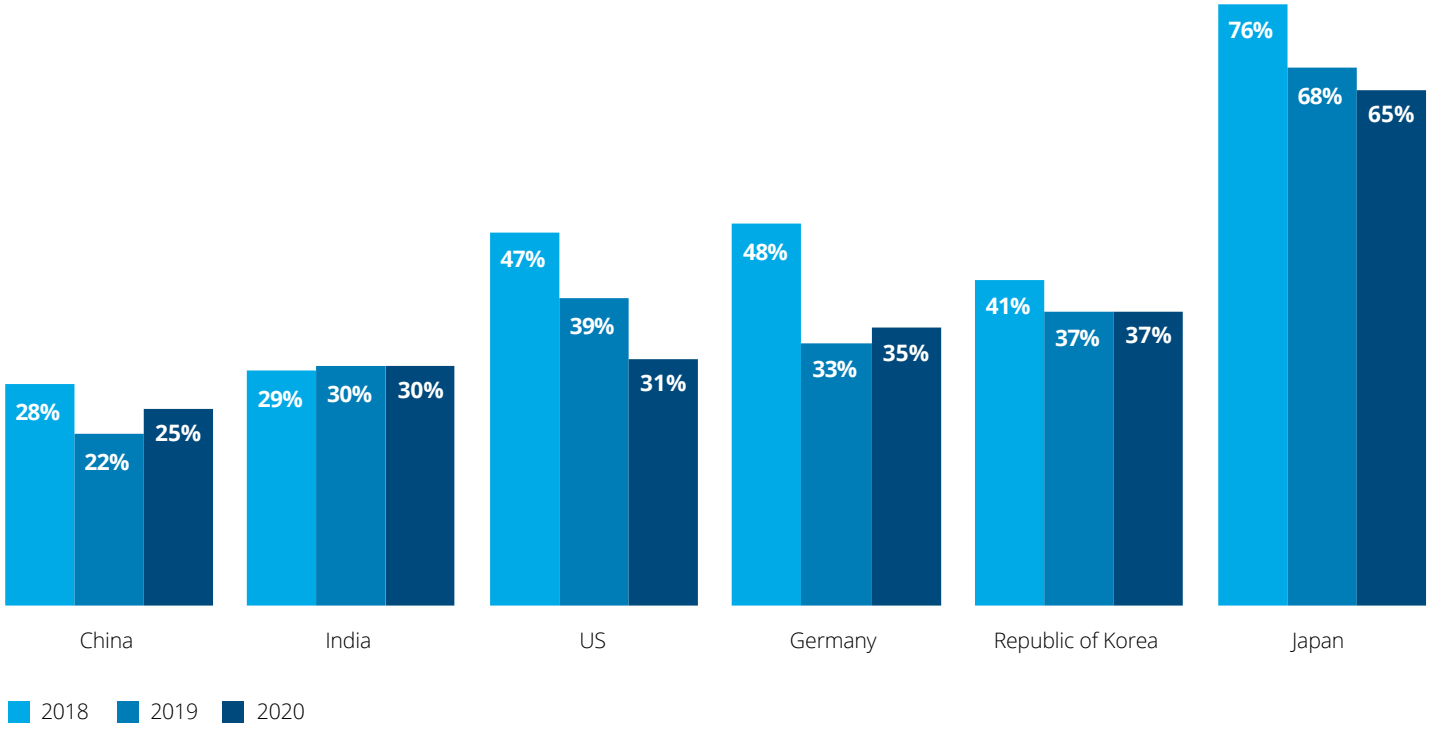
Percentage of consumers who feel that government safety certification makes them more likely to ride in a self-driving car



Note: Percentage of respondents who said somewhat more likely or significantly more likely have been added together; did not consider "Don't know" responses
Q5. To what extent do you agree with the following statements regarding future vehicle technology?
Sample size: Germany=2,903; US=2,903; India=2,971; China=2,991; Japan=2,987; Republic of Korea=2,978

Consumer trust in manufacturers to bring AV technology to market continues to decline in the United States and Japan while remaining largely unchanged in other markets.

Percentage of consumers that would most trust traditional automakers to bring fully autonomous technology to market

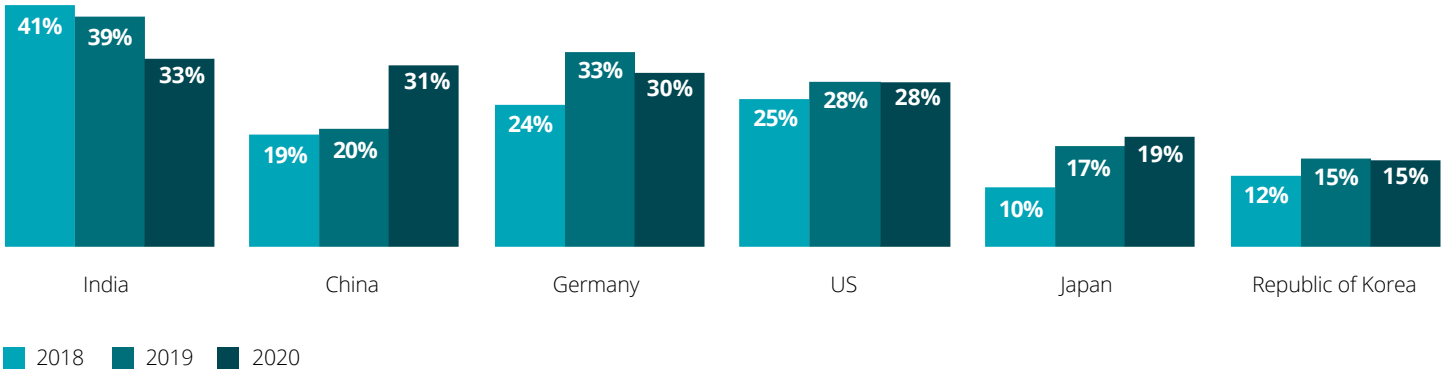


Q6. Which of the following type of company would you trust the most to bring fully autonomous (self-driving) vehicle technology to the market?

Sample size: Germany=3,002 [2020], 1,733 [2019], 1,705 [2018]; US=3,006 [2020], 1,720 [2019], 1,730 [2018]; China=3,019 [2020], 1,735 [2019], 1,724 [2018]; India=3,022 [2020], 1,725 [2019], 1,728 [2018]; Japan=3,056 [2020], 1,770 [2019], 1,762 [2018]; Republic of Korea=3,013 [2020], 1,715 [2019], 1,722 [2018]

Trust in existing technology companies continues to grow across some markets, with India being the notable exception.

Percentage of consumers that would most trust an existing technology company to bring fully autonomous technology to market

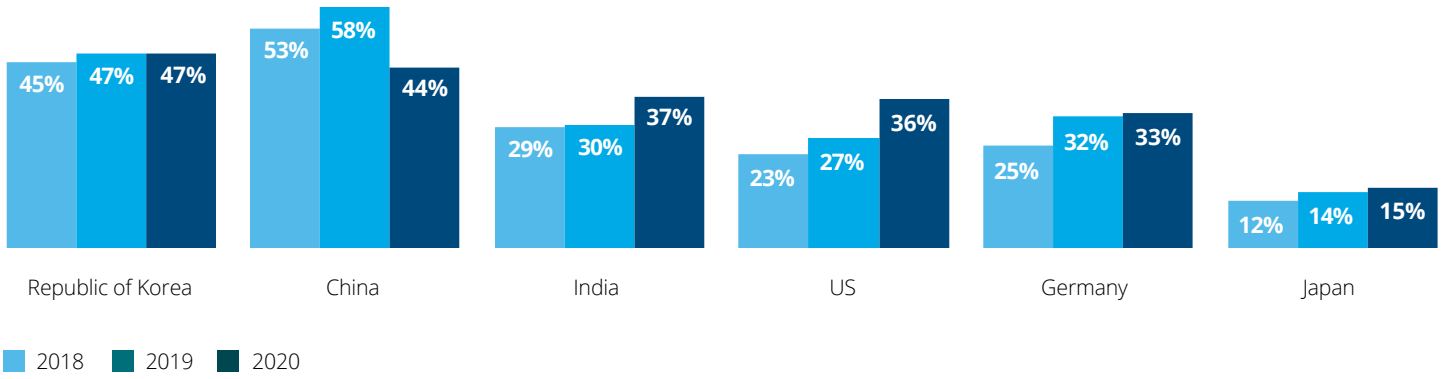


Q6. Which of the following type of company would you trust the most to bring fully autonomous (self-driving) vehicle technology to the market?

Sample size: Germany=3,002 [2020], 1,733 [2019], 1,705 [2018]; US=3,006 [2020], 1,720 [2019], 1,730 [2018]; China=3,019 [2020], 1,735 [2019], 1,724 [2018] India=3,022 [2020], 1,725 [2019], 1,728 [2018]; Japan=3,056 [2020], 1,770 [2019], 1,762 [2018]; Republic of Korea=3,013 [2020], 1,715 [2019], 1,722 [2018]

Trust in a new player that specializes in autonomous vehicle technology also inches up in some markets.

Percentage of consumers that would most trust a new company that specializes in autonomous vehicles to bring fully autonomous technology to market



Q6. Which of the following type of company would you trust the most to bring fully autonomous (self-driving) vehicle technology to the market?

Sample size: Germany=3,002 [2020], 1,733 [2019], 1,705 [2018]; US=3,006 [2020], 1,720 [2019], 1,730 [2018]; China=3,019 [2020], 1,735 [2019], 1,724 [2018]; India=3,022 [2020], 1,725 [2019], 1,728 [2018]; Japan=3,056 [2020], 1,770 [2019], 1,762 [2018]; Republic of Korea=3,013 [2020], 1,715 [2019], 1,722 [2018]

What do consumers think about new mobility models?

Global consumers are unanimous in their support for greater access to mass transit as the top method to reduce traffic congestion.

Ways to reduce traffic congestion

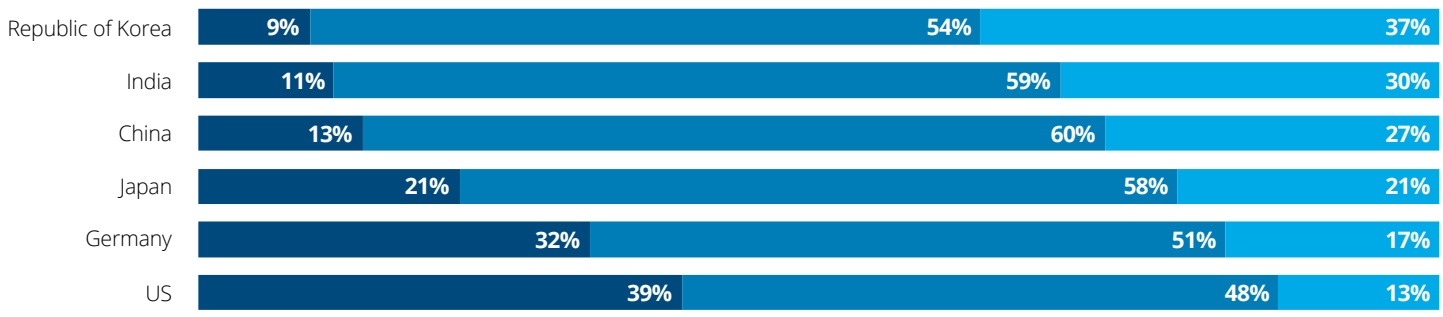
	China	Germany	India	Japan	Republic of Korea	US
Road tolls/congestion charges	7%	7%	15%	16%	7%	8%
High-occupancy express lanes	14%	8%	21%	8%	9%	21%
Greater access to mass transit	41%	62%	22%	46%	52%	44%
V2V connectivity	20%	9%	21%	10%	15%	13%
Regulations that restrict car use	12%	5%	14%	15%	13%	6%
Creation of low- or zero-emission zones	6%	5%	6%	3%	3%	4%
Other	0%	4%	1%	2%	1%	4%

Top option

Q43: In your opinion, what is the best way to reduce traffic congestion?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; South Korea=3,013

But the idea of combining different modes of transportation into a single trip remains largely an occasional behavior for most consumers.

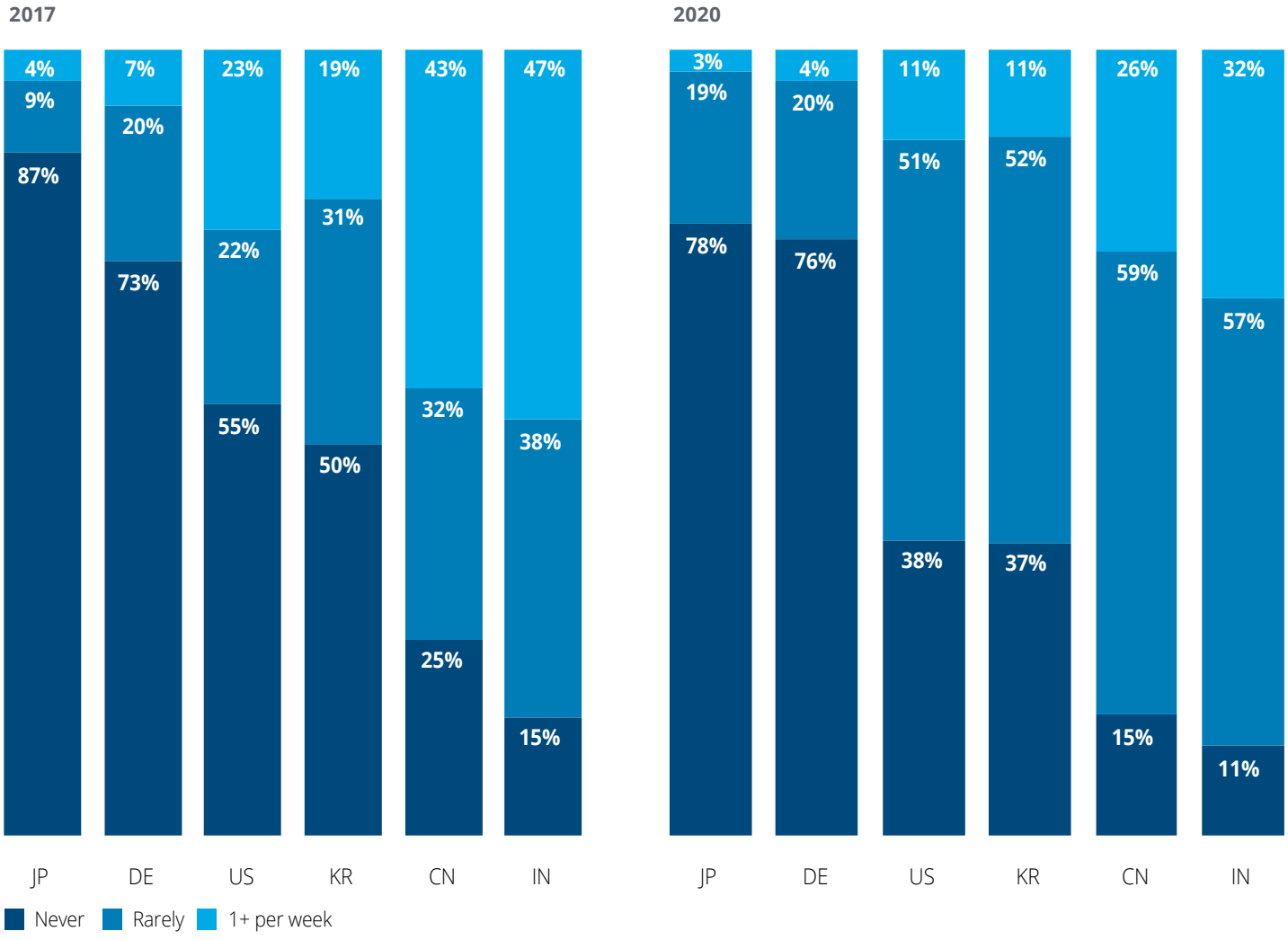
Frequency that consumers use multiple modes of transportation in the same trip



Q39. How often do you use multiple modes of transportation in the same trip (e.g., a trip using a subway, commuter train, and your own vehicle)?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

The number of people reporting regular usage of ride-hailing services has increased in the last few years as consumers see multiple benefits, such as...

Frequency of ride-hailing usage



Q40. How often do you currently use ride-hailing services?

Sample size: Sample size: Germany=3,002 [2020], 1,752 [2017]; US=3,006 [2020], 1,768 [2017]; China=3,019 [2020], 1,751 [2017]; India=3,022 [2020], 1,754 [2017]; Japan=3,056 [2020], 1,752 [2017]; Republic of Korea=3,013 [2020], 1,759 [2017]

...an ability to multitask, lower costs versus owning a vehicle, reduced concerns regarding drunk driving, and finding a place to park.

Top three benefits of using ride-hailing services (2019)

US		India	
No need to find or pay for parking	**21%**	Ability to multitask (e.g. text/check email/watch a video)	**32%**
Ability to multitask (e.g. text/check email/watch a video)	**21%**	Less costly than owning/driving a car	**24%**
No worries about alcohol consumption	**19%**	Better for the environment	**16%**

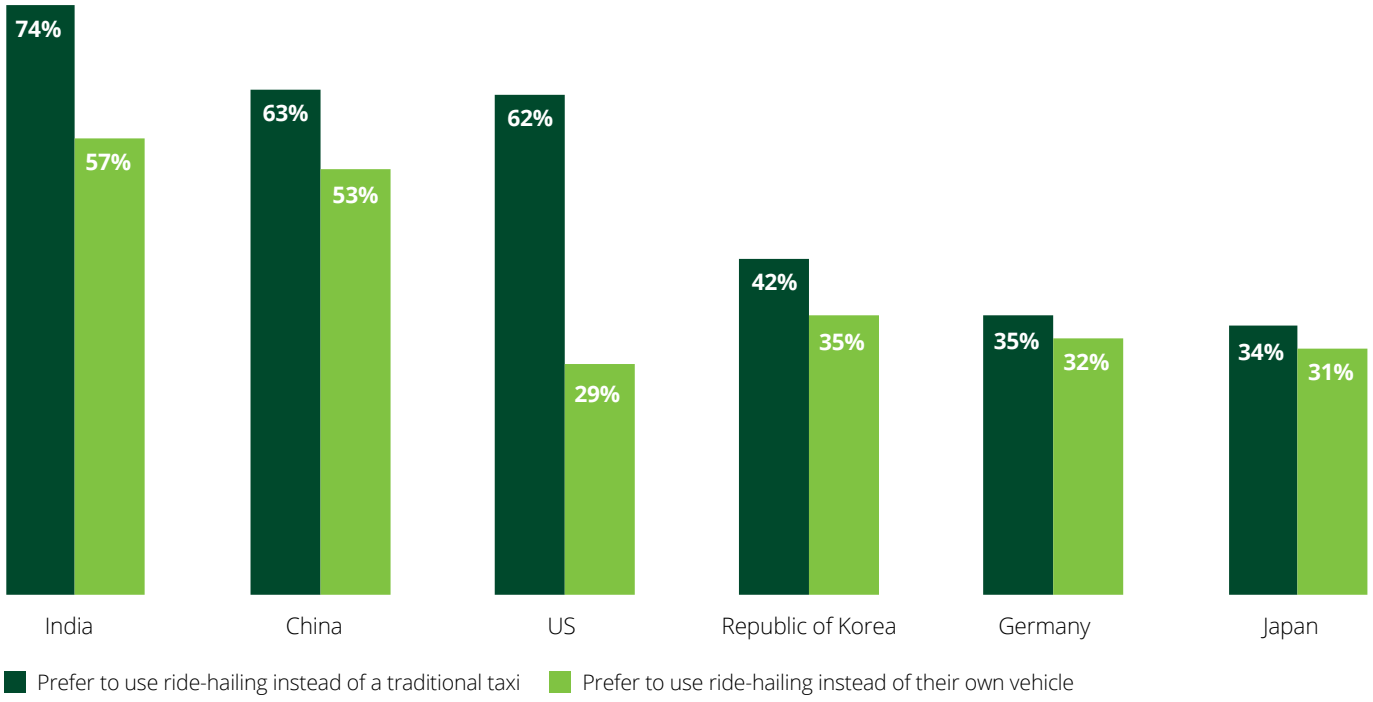
Germany		China	
Less costly than owning/driving a car	**27%**	Ability to multitask (e.g. text/check email/watch a video)	**30%**
Better for the environment	**19%**	No worries about alcohol consumption	**17%**
Ability to multitask (e.g. text/check email/watch a video)	**18%**	No need to find or pay for parking	**17%**

Japan		Republic of Korea	
Ability to multitask (e.g. text/check email/watch a video)	**21%**	Less costly than owning/driving a car	**33%**
Less costly than owning/driving a car	**21%**	No need to find or pay for parking	**16%**
No worries about alcohol consumption	**20%**	Ability to multitask (e.g. text/check email/watch a video)	**16%**

Q36b: What is the most important benefit of using a ride-hailing service?
Sample size: Germany=360; US=1,015; China=1,465; India=1,576; Japan=239; Republic of Korea=668

For the most part, consumers prefer to use ride-hailing services as a replacement for a traditional taxi.

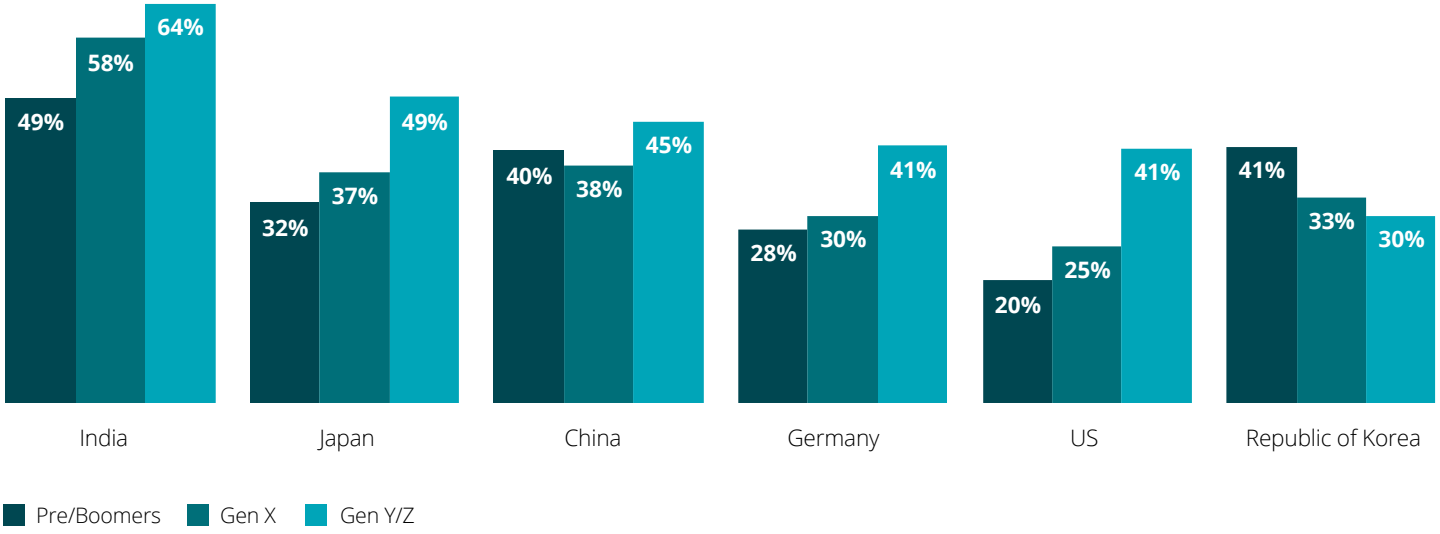
Consumer preferences regarding the usage of ride-hailing services



Note: Percentage of respondents who strongly agreed or agreed have been added together
Q41. To what extent do you agree with the following statements?
Sample size: Germany=723; US=1,874; China=2,557; India=2,670; Japan=667; Republic of Korea=1,892

Having said that, younger people appear to be more in tune with alternative mobility, even to the point of wondering if they still need to own a vehicle.

Percentage of ride-hail users that question whether they need to own a vehicle going forward (by generation)



Average across all generations

Overall					
61%	42%	43%	37%	32%	33%

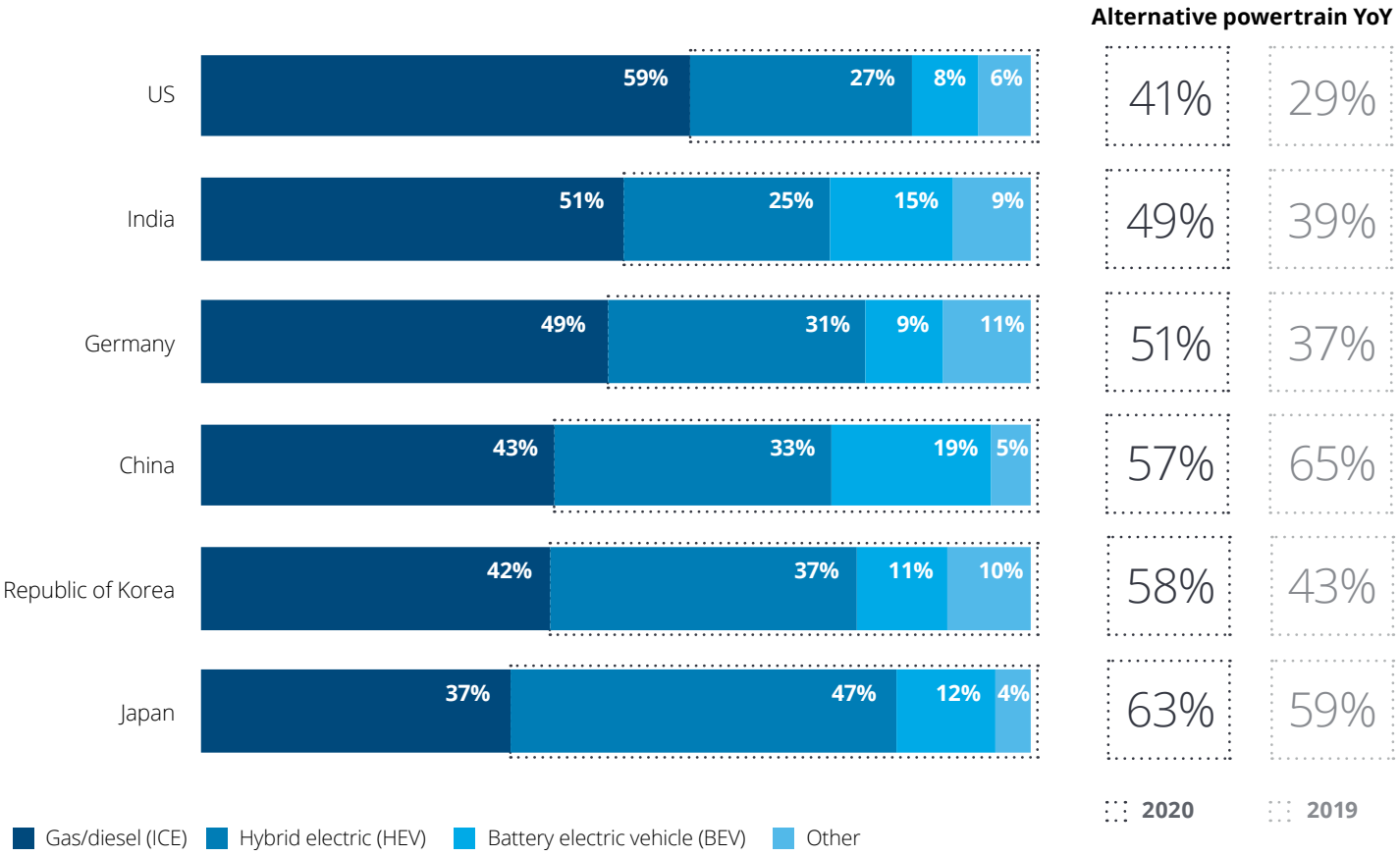
Q42. Does your use of ride-hailing services make you question whether you need to own a vehicle going forward?

Sample size: Germany=Pre/Boomers (115), Gen X (154), Gen Y/Z (454); US=Pre/Boomers (529), Gen X (337), Gen Y/Z (1,008); China=Pre/Boomers (329), Gen X (394), Gen Y/Z (1,834); India=Pre/Boomers (342), Gen X (423), Gen Y/Z (1,905); Japan=Pre/Boomers (180), Gen X (155), Gen Y/Z (332); Republic of Korea = Pre/Boomers (354), Gen X (536), Gen Y/Z (1,002)

What do consumers think about electric vehicle (EV) technology?

Interest in alternative powertrain technology continues to expand, as fewer people want traditional internal combustion engines (ICE) in their next vehicle.

Consumer powertrain preferences for their next vehicle



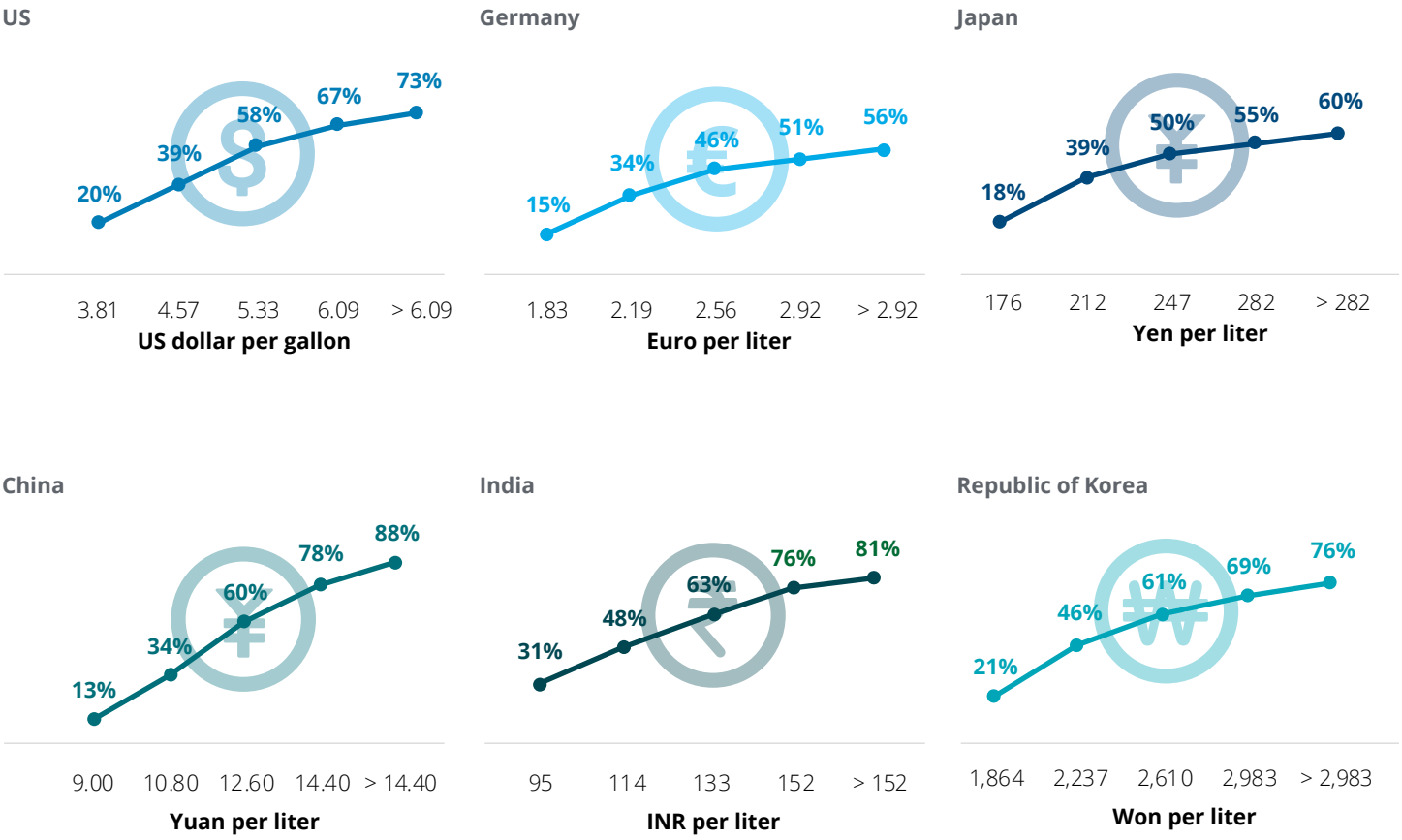
Note: "Other" category includes ethanol, CNG, and hydrogen fuel cell

Q52. What type of engine would you prefer in your next vehicle?

Sample size: Germany=2,139; US=2,522; China=2,557; India=2,669; Japan=1,714; Republic of Korea=2,711

Interest in battery electric vehicles (BEVs) would rise if fossil fuel prices increased significantly.

Percentage of consumers (cumulative) who are *much more* likely to consider BEVs if gasoline prices reach



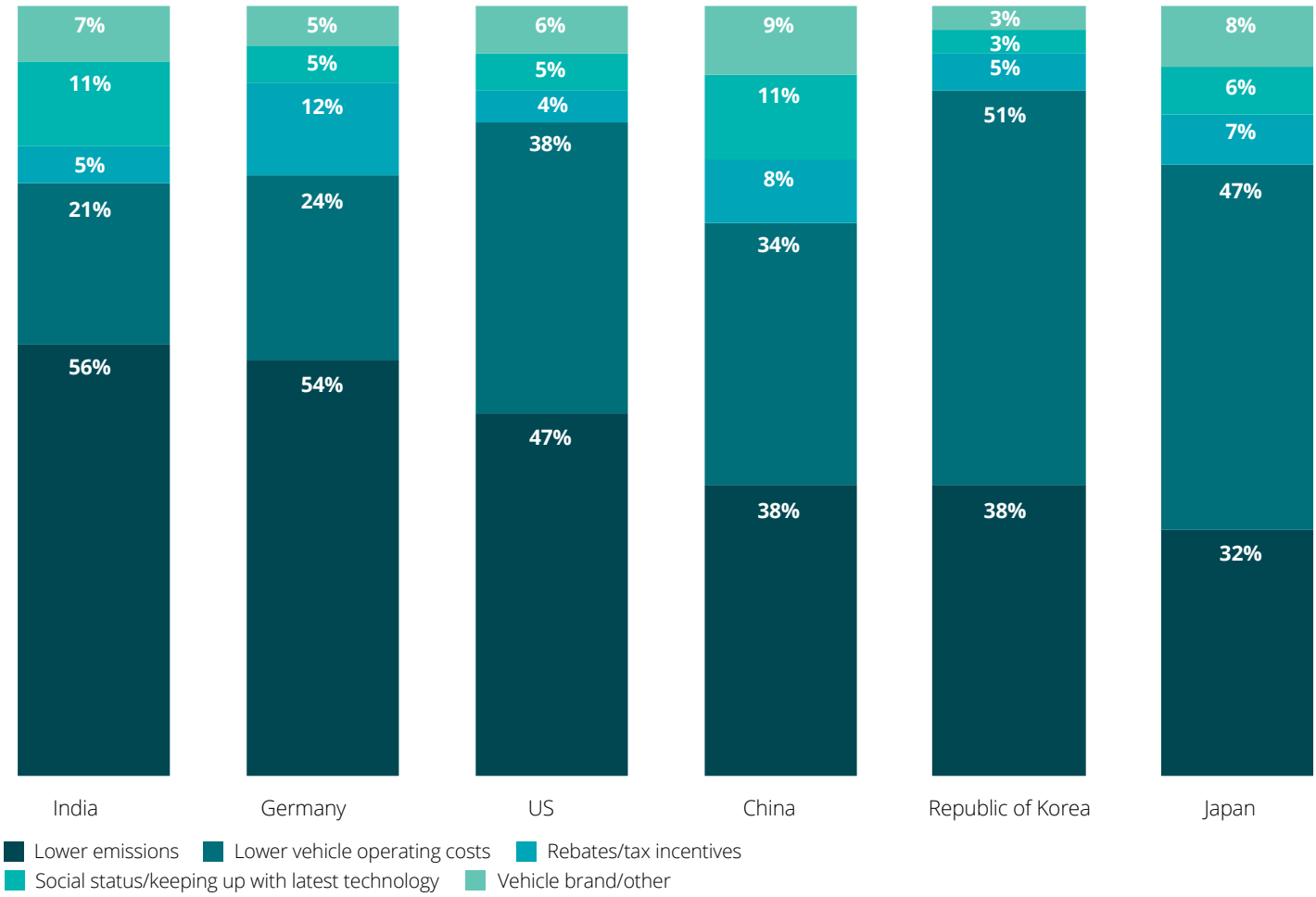
Note: Remaining percentage of consumers for each nation are those for whom price of gasoline is not a deciding factor in whether to choose a BEV or not and those who said "Don't know"

Q29. At what price for gasoline would you be much MORE likely to consider buying or leasing an all-battery-powered electric vehicle (BEV)?

Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

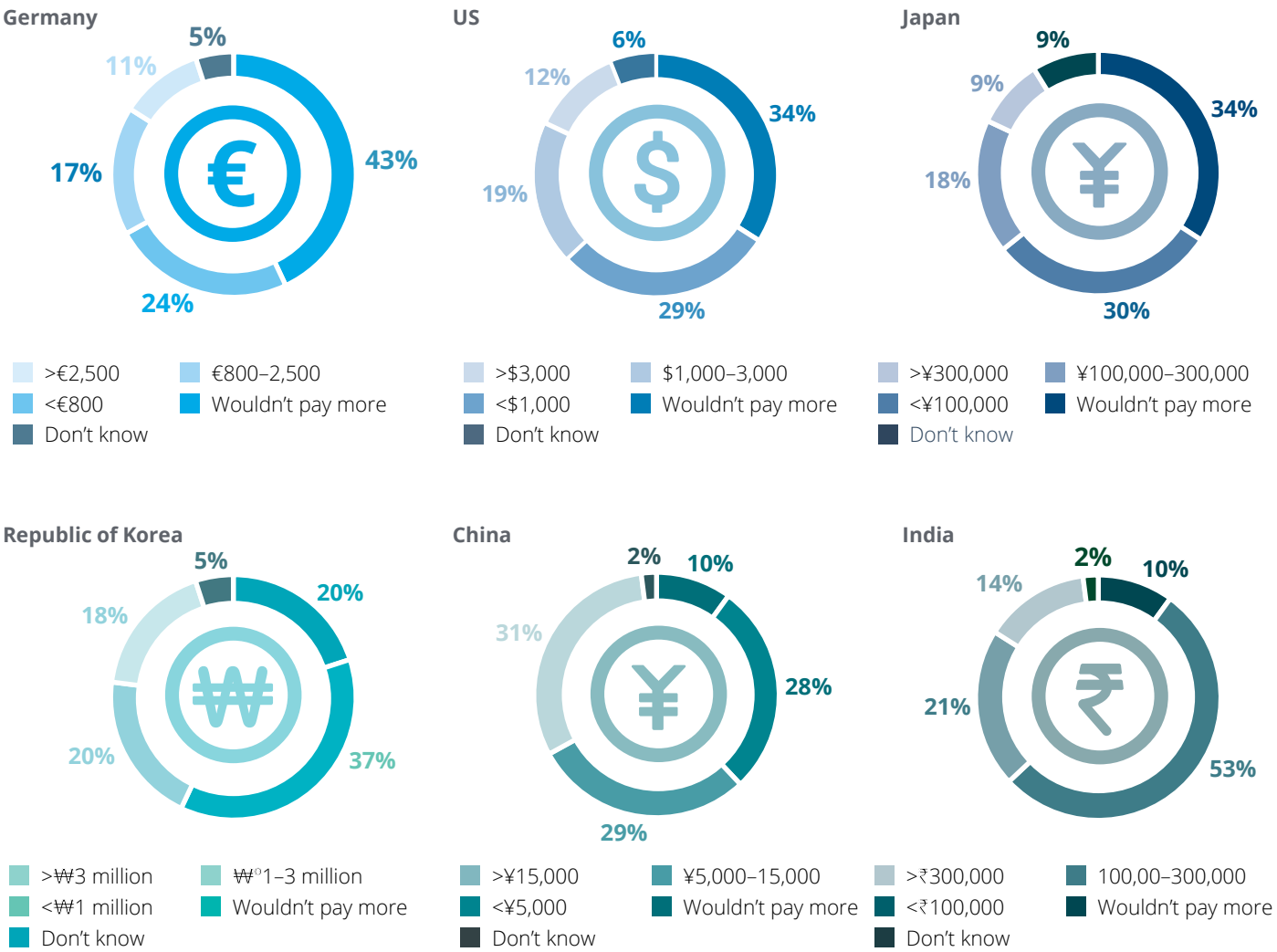
Lower emissions, as well as lower operating costs, are the primary reasons consumers consider hybrids or BEVs.

Reasons consumers consider hybrids or BEVs



Q54. What is the main reason you are considering an electrified vehicle?
Sample size: Germany=865; US=869; China=1,345; India=1,060; Japan=998; Republic of Korea=1,311

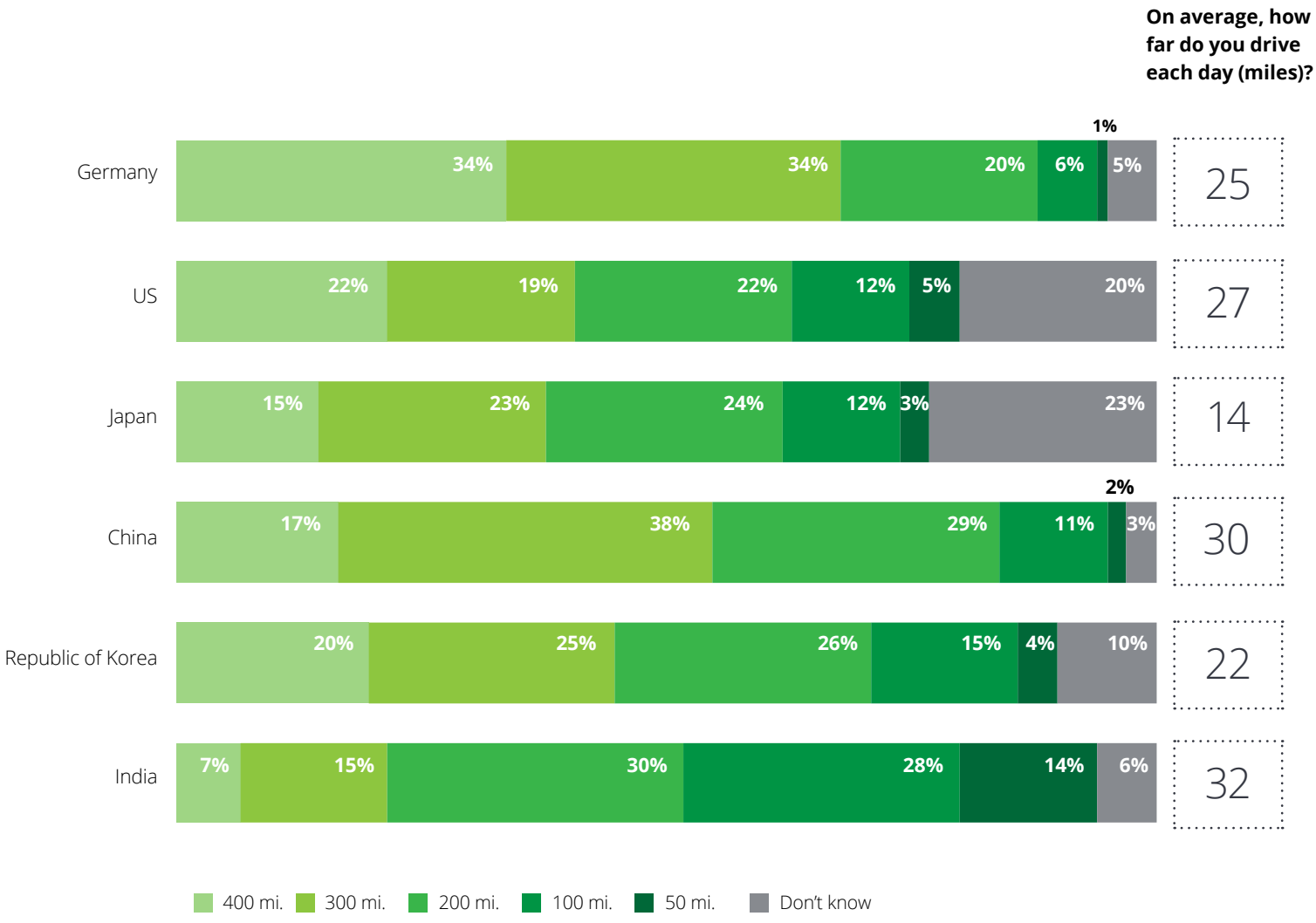
Consumers in some countries are not willing to pay very much extra for an EV.



Q25. How much more would you be willing to pay for an electric vehicle compared to a similar vehicle with a traditional internal combustion engine?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

Expectations regarding the acceptable range of a BEV are quite significant, even though daily transportation requirements are modest by comparison.

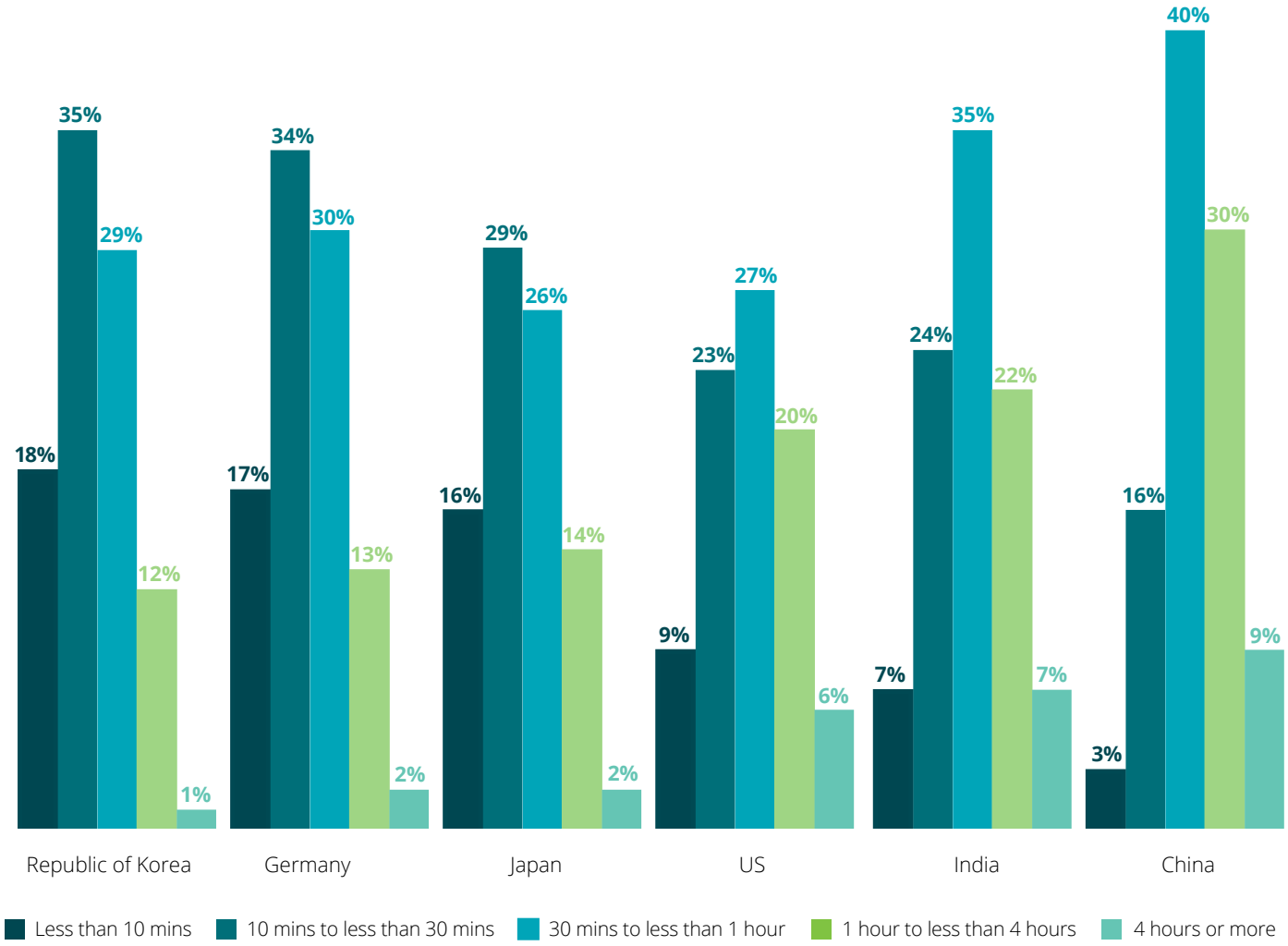
Minimum driving range consumers are expecting from a BEV (miles)



Q27. What is the minimum driving range that an all-battery-powered electric vehicle (BEV) needs to have?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

In addition, a large proportion of consumers are willing to wait at least 30 minutes to fully charge a BEV.

Amount of time consumers are willing to wait to fully recharge a BEV



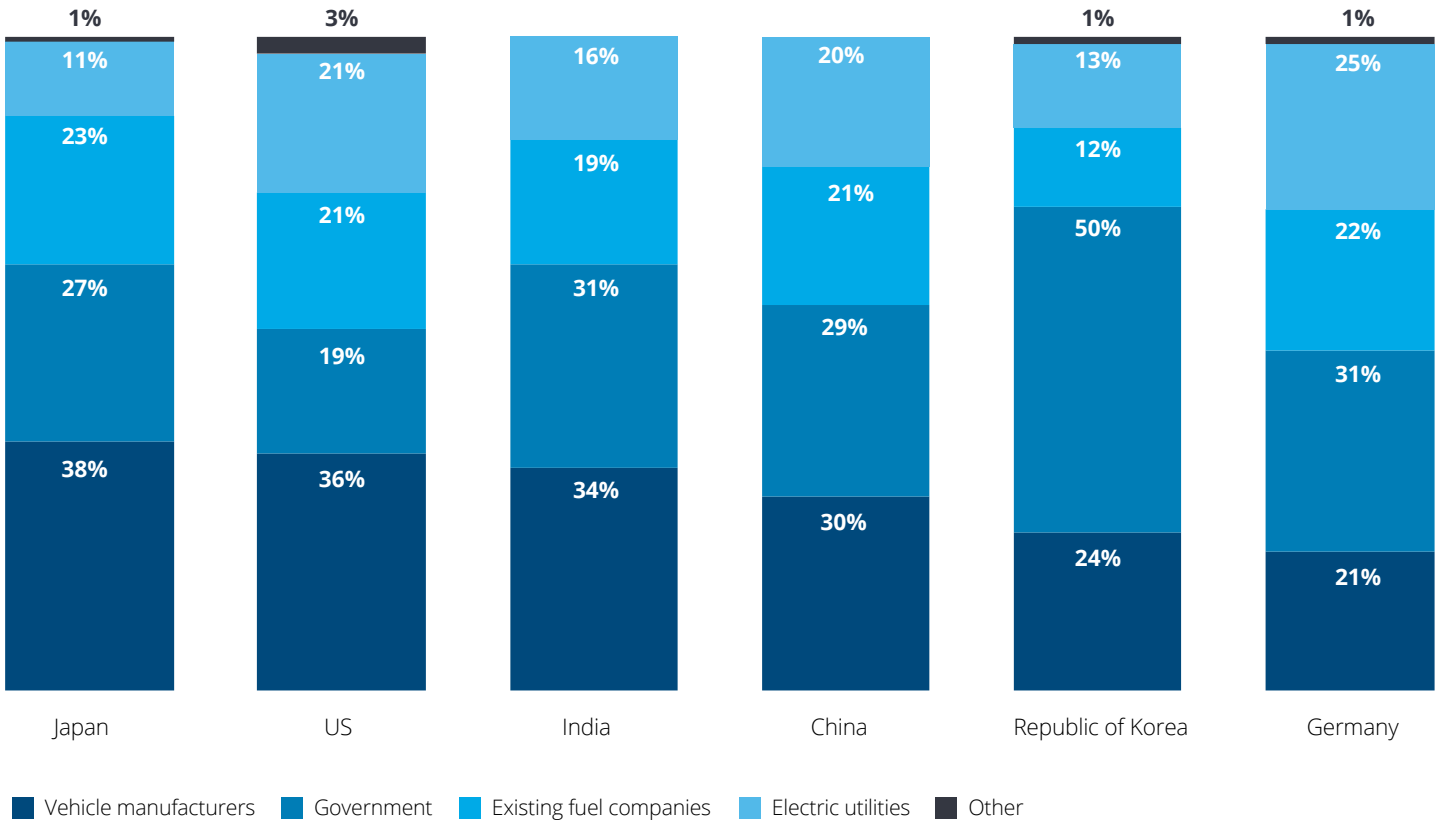
Note: Sum of percentages for a country may not add up to 100%, as "Don't know" percentage is not shown above

Q28: How long should it take to fully recharge an all-battery-powered electric vehicle (BEV)?

Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

A majority of consumers across markets agree that it is the responsibility of either OEMs or governments to set up a network of charging stations.

Consumer opinions on whom they think is responsible for building publicly accessible EV charging stations and other infrastructure

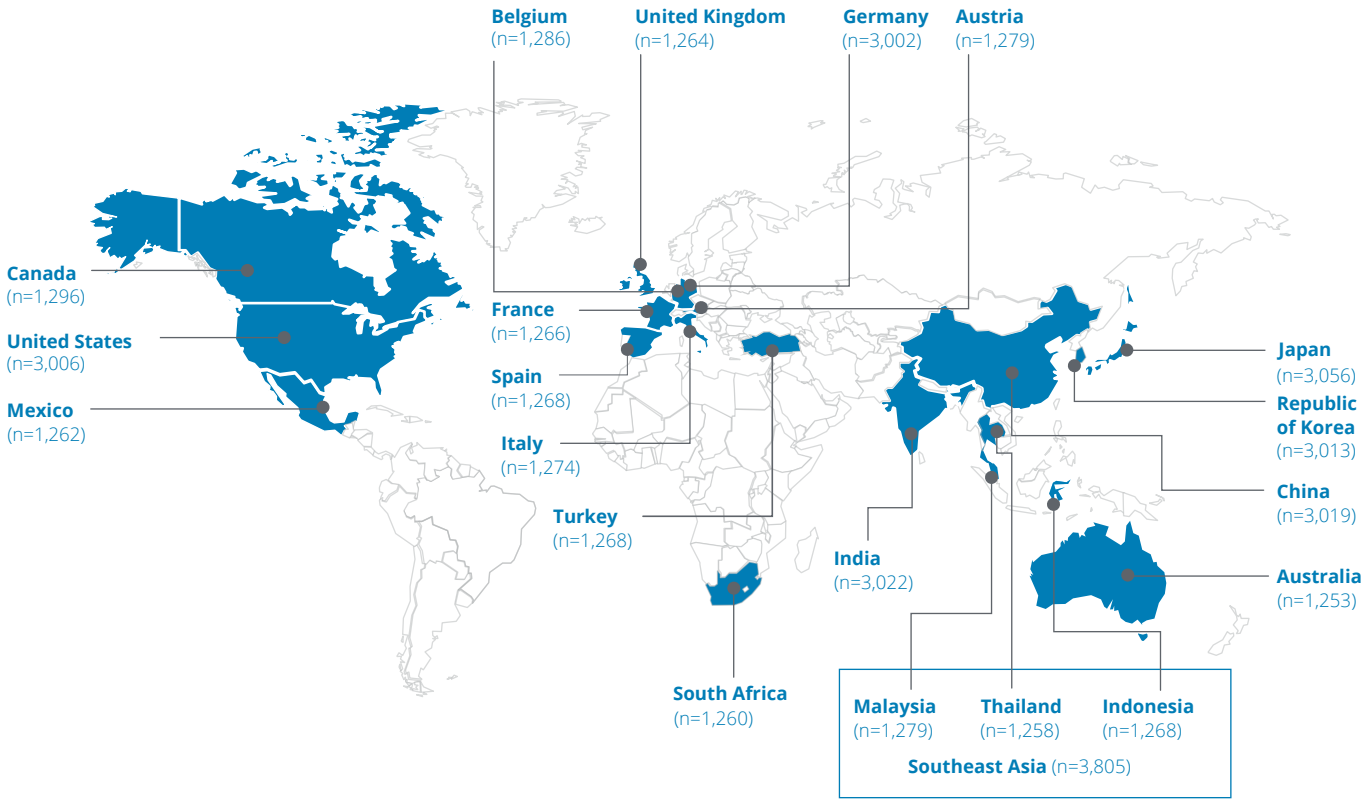


Q31. In your opinion, who should be primarily responsible for building publicly accessible electric vehicle charging stations and other EV infrastructure?
Sample size: Germany=3,002; US=3,006; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013

About the study

Global study coverage

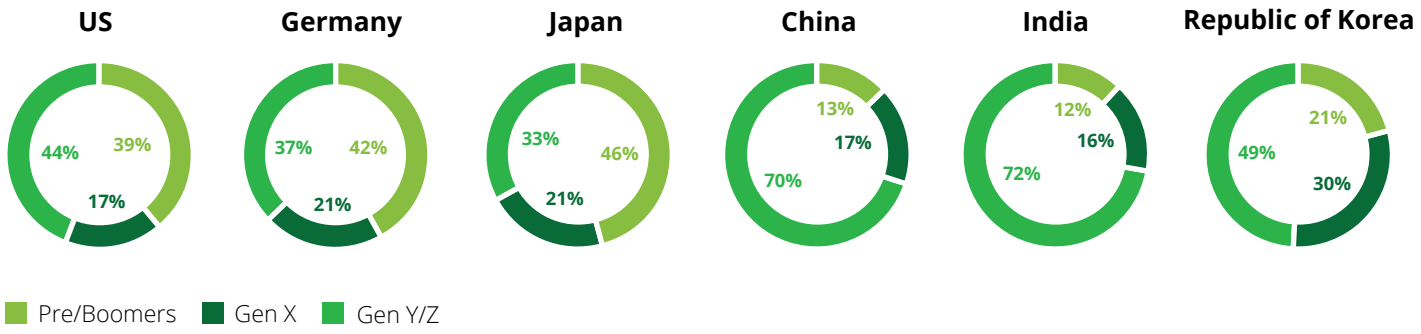
The 2020 study includes more than 35K consumer responses across 20 global markets.

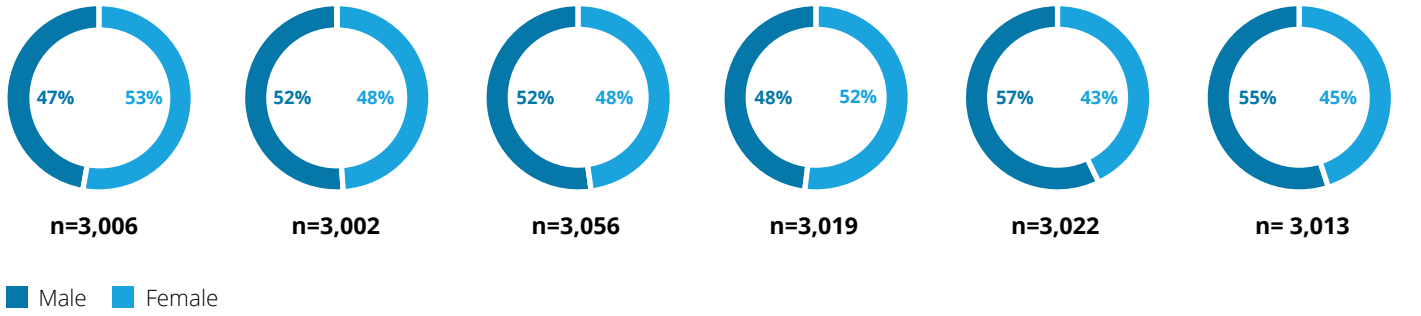


Study methodology
The study is fielded using an online panel methodology, where consumers of driving age are invited to complete the questionnaire (translated into local languages) via email. It was fielded in 20 countries and designed to be nationally representative of the overall population in each market.

Note: "n" represents the number of survey respondents in each country

The study is fielded using an online panel and designed to be nationally representative of the overall population in each market.





Note: "n" represents the number of survey respondents in each country
Note: Pre/Boomers: Born before 1965; Gen X: Born between 1965 and 1976; Gen Y/Z: Born after 1976 (sample excludes consumers under 18 years of age)

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