Deloitte.

2020 Global Automotive Consumer Study

Is consumer interest in advanced automotive technologies on the move?

Asia Pacific

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.

Mixed feelings about increased connectivity

There is a significant difference among Asia Pacific countries regarding the percentage of people that believe increased vehicle connectivity is beneficial.

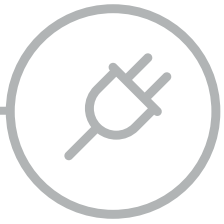
Interest in AVs mixed across Asia Pacific markets

Consumer perception regarding the safety of self-driving vehicles has stalled in most markets across the Asia Pacific region, while consumers in both India and China are becoming more pessimistic on the technology.

Consumers remain resistant to multimodal mobility

Consumer behavior regarding multimodal mobility may be difficult to shift, as the idea of combining different types of transportation into one trip remains largely an occasional behavior for most consumers in the Asia Pacific region.

Interest in EVs continues to grow



The number of people that most want an alternative engine in their next vehicle is growing rapidly across a majority of the Asia Pacific region as people look to hybrids going forward.

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 ~US$500[1] for a vehicle with advanced technologies

Advanced technology category	Australia	China	India	Japan	Republic of Korea	Southeast Asia
Safety	66%	39%	49%	59%	52%	62%
Connectivity	70%	46%	52%	72%	63%	67%
Infotainment	79%	52%	57%	79%	74%	76%
Autonomy	60%	37%	40%	61%	42%	55%
Alternative engine solutions	57%	37%	39%	60%	42%	54%
Unwilling to pay more than . . .	A$750	¥2,500	₹25,000	¥50,000	₩500,000	IDR 5 million; MYR 2,000; and 15,000 THB

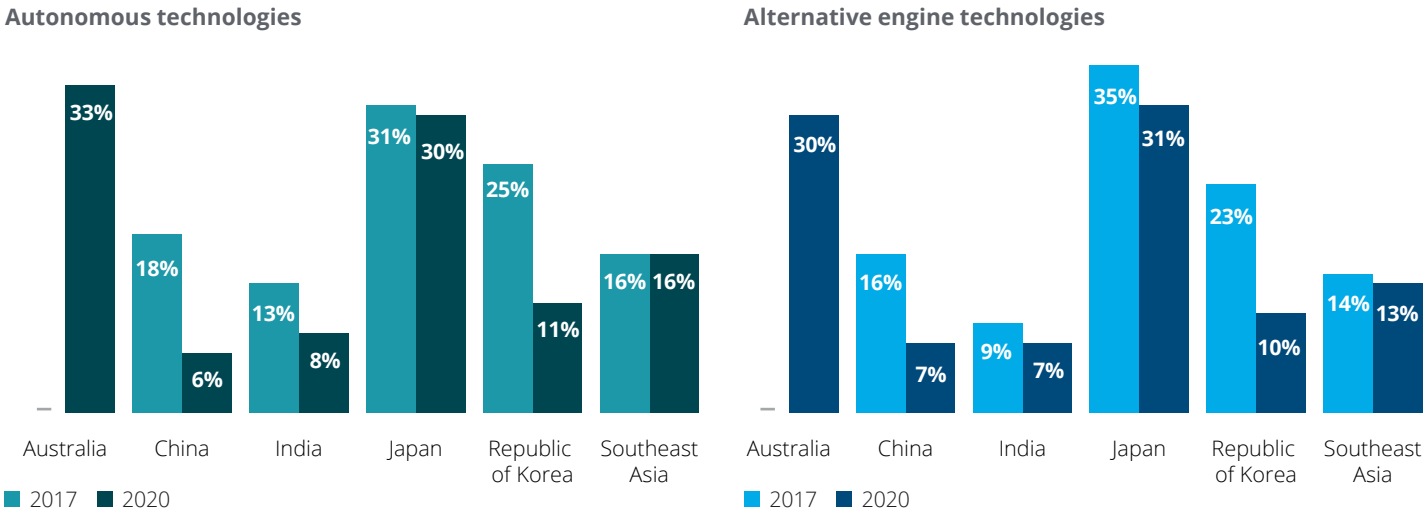
[1] Calculated for each country in local market currency (roughly equivalent to ~US$500).

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: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea 3,013; Southeast Asia=3,826

However, there is some evidence to suggest that consumers' 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 . . .



Note: Australia was not part of the 2017 study.

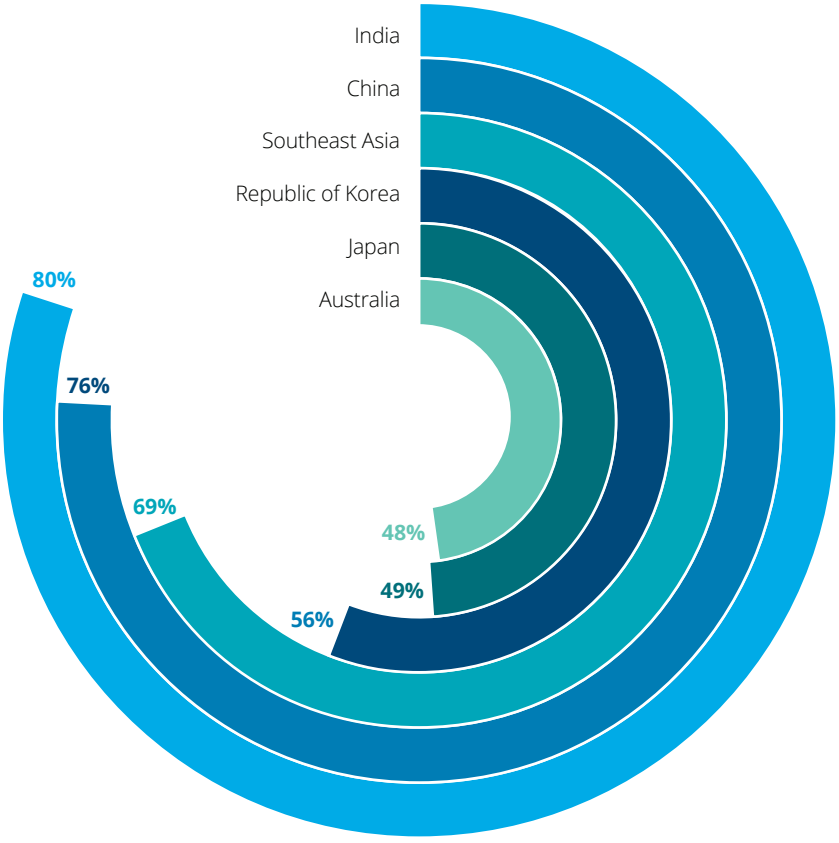
Q7. How much more would you be willing to pay for a vehicle that had each of the technologies listed below and that met your wants and needs?

Sample size (2020/2017): Australia=1,253/NA; China=3,019/1,738; India=3,022/1,739; Japan=3,056/1,745; Republic of Korea=3,013/1,708; Southeast Asia=3,826/1,503

What do consumers think about connected vehicles?

Consumers are split on the benefits of increased vehicle connectivity, where people in India and China embrace the idea much more than those in Japan or Australia.

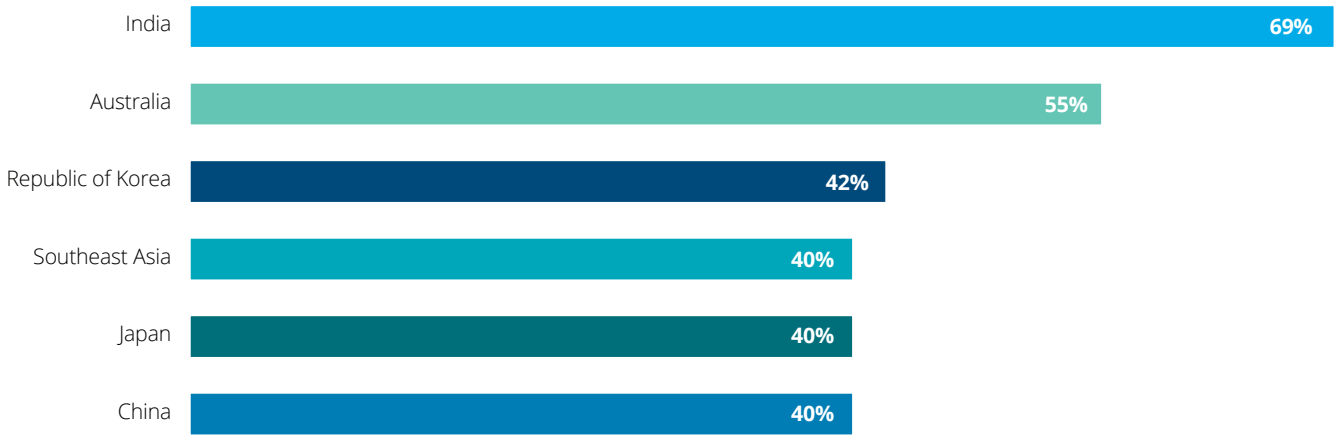
Percentage of consumers who feel that increased vehicle connectivity will be beneficial



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: Australia=1,206; China=2,980; India=2,979; Japan=2,912; Republic of Korea=2,974; Southeast Asia=3,752

Consumer opinion also differs 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



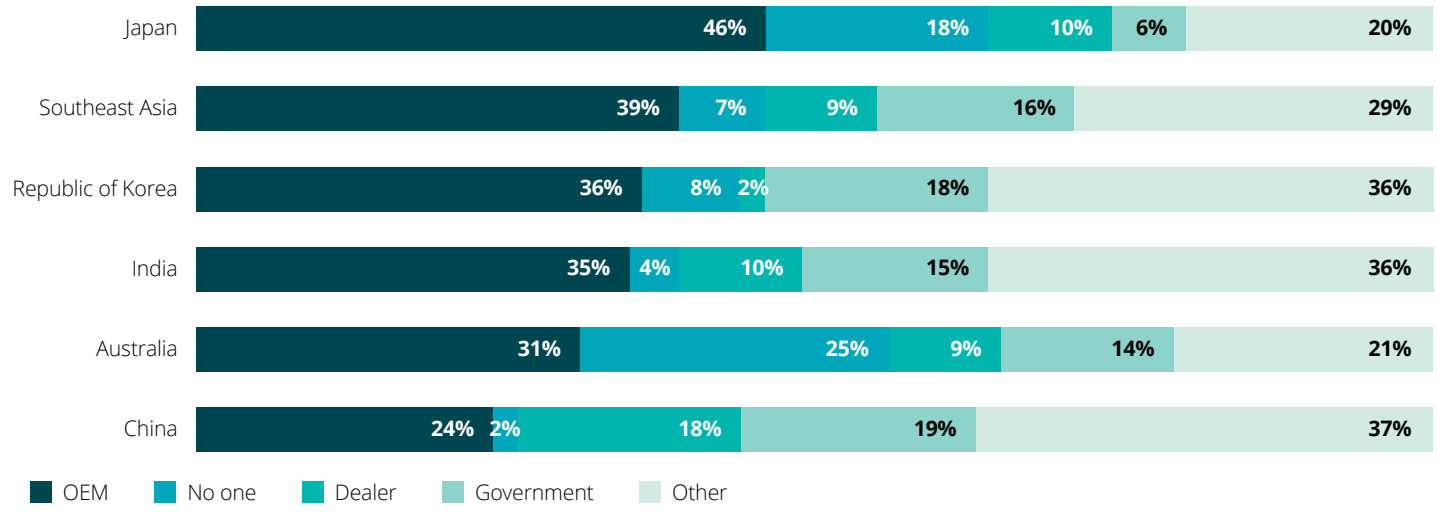
Note: Biometric data refers to information about the vehicle occupant(s) such as heart rate, blood pressure, blood alcohol level, etc.

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: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013, Southeast Asia=3,826

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



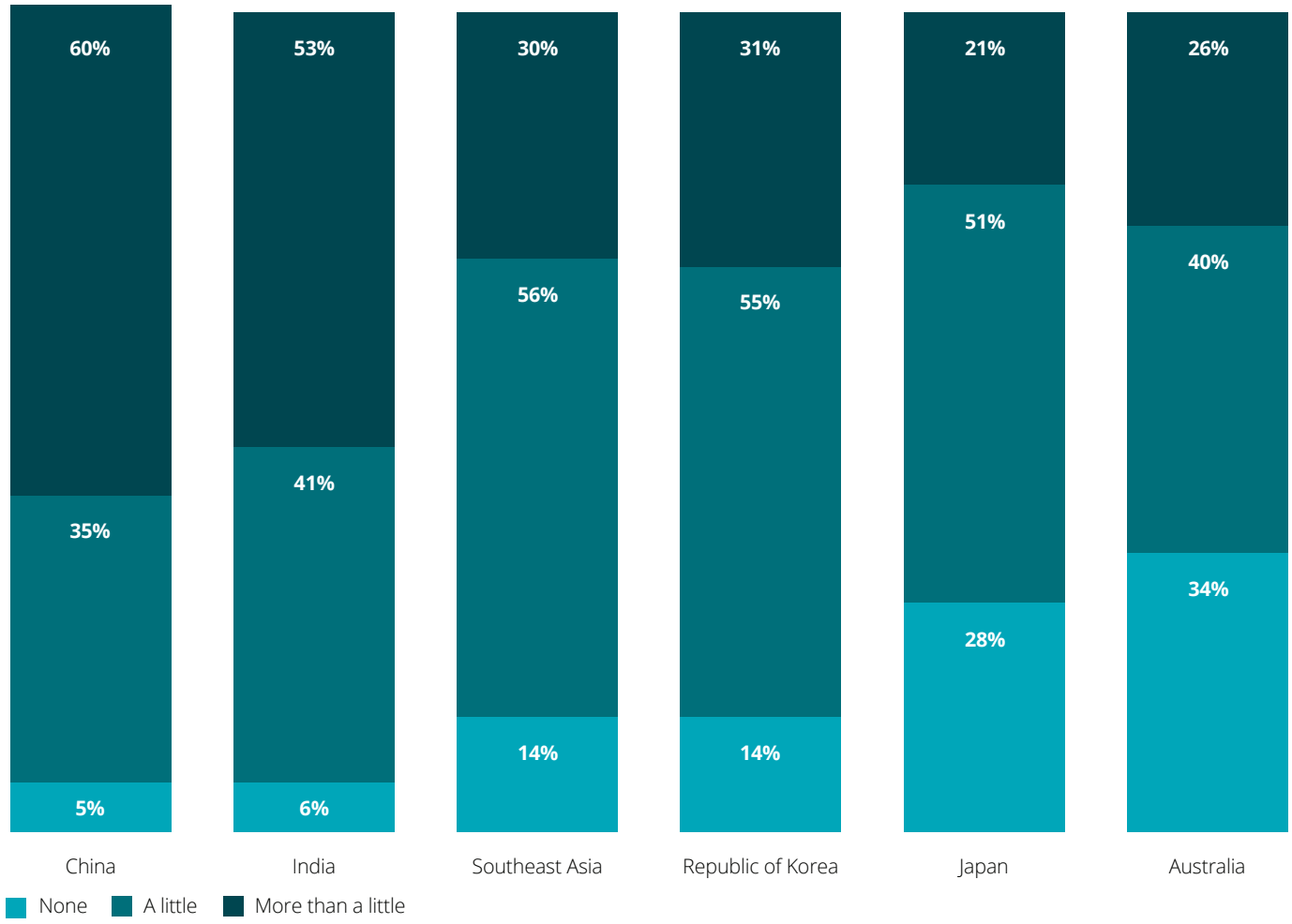
Note: The "other" category includes financial service providers, insurance companies, cellular service providers, and cloud service providers.

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: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

A majority of consumers across the Asia Pacific region are willing to pay for advanced connectivity features that increase 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: AUS (A$750); CN (2,500 yuan); IN (₹25,000); JP (¥50,000); KR (₩500,000); Southeast Asia (Indonesia (IDR 5 million), Malaysia (MYR 2,500), and Thailand (15,000 THB)).

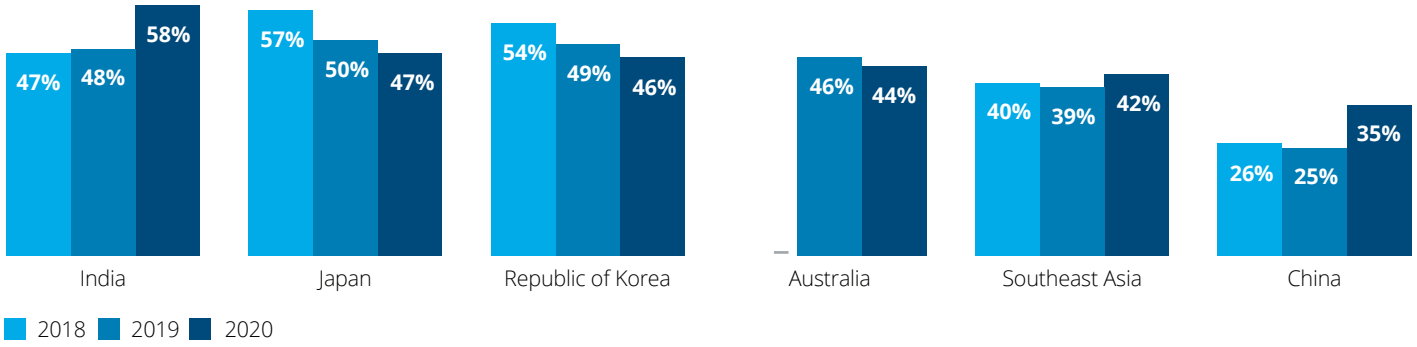
Q37. How much more would you be willing to pay for a vehicle that had the following connectivity technologies?

Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

What do consumers think about autonomous vehicle technology?

Consumer perception regarding the safety of self-driving vehicles has stalled in most markets across the Asia Pacific region, while consumers in both India and China are becoming more pessimistic on the technology.

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; Australia was not part of the 2018 study.
Q3. To what extent do you agree with the following statements regarding future vehicle technology?
Sample size: Australia=1,222 [2020], 1,230 [2019], NA [2018]; China=2,988 [2020], 1,735 [2019], 1,724 [2018]; India=2,945 [2020], 1,725 [2019], 1,273 [2018]; Japan=2,976 [2020], 1,717 [2019], 1,680 [2018]; Republic of Korea=2,999 [2020], 1,715 [2019], 1,722 [2018]; Southeast Asia=3,773 [2020], 1,498 [2019], 1,508 [2018]

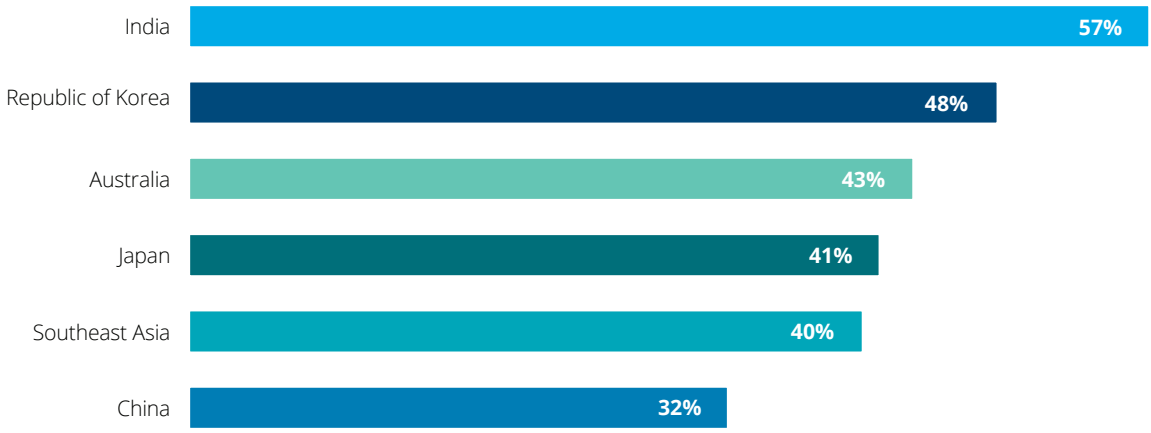
Reports of accidents involving autonomous vehicles have had a significant and lasting impact on consumers' view of the technology.

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: Australia=1,213; China=2,996; India=2,935; Japan=2,998; Republic of Korea=2,984; Southeast Asia=3,759

Roughly half of consumers in India and the Republic of Korea are concerned about the idea of autonomous vehicles being tested in areas where they live.

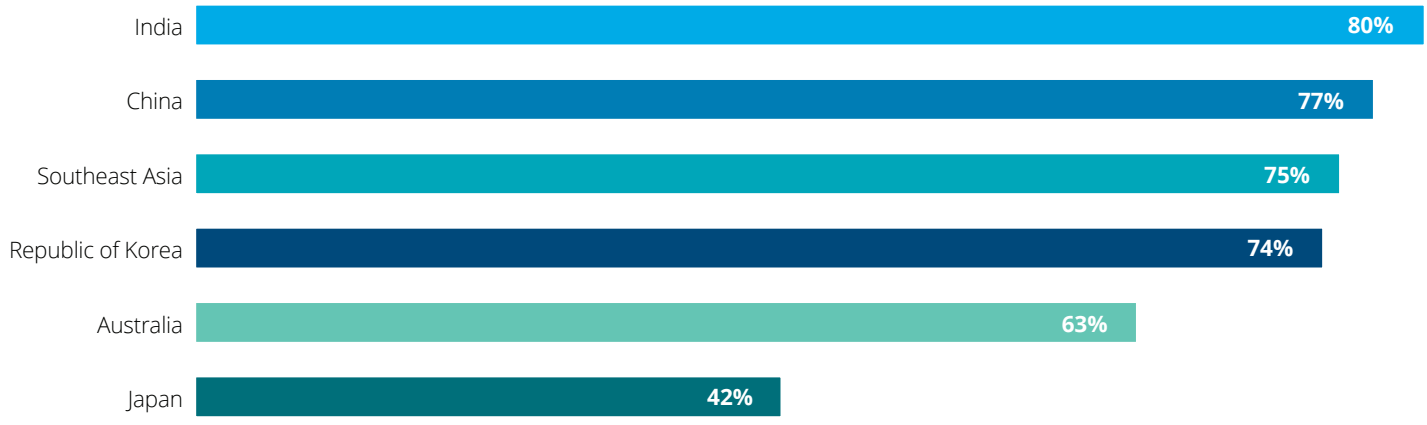
Percentage of consumers who are somewhat/very concerned with fully autonomous vehicles being tested on public roads where they live



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: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

A strong majority of consumers in several Asia Pacific markets would feel more comfortable about autonomous vehicles if they were government-certified.

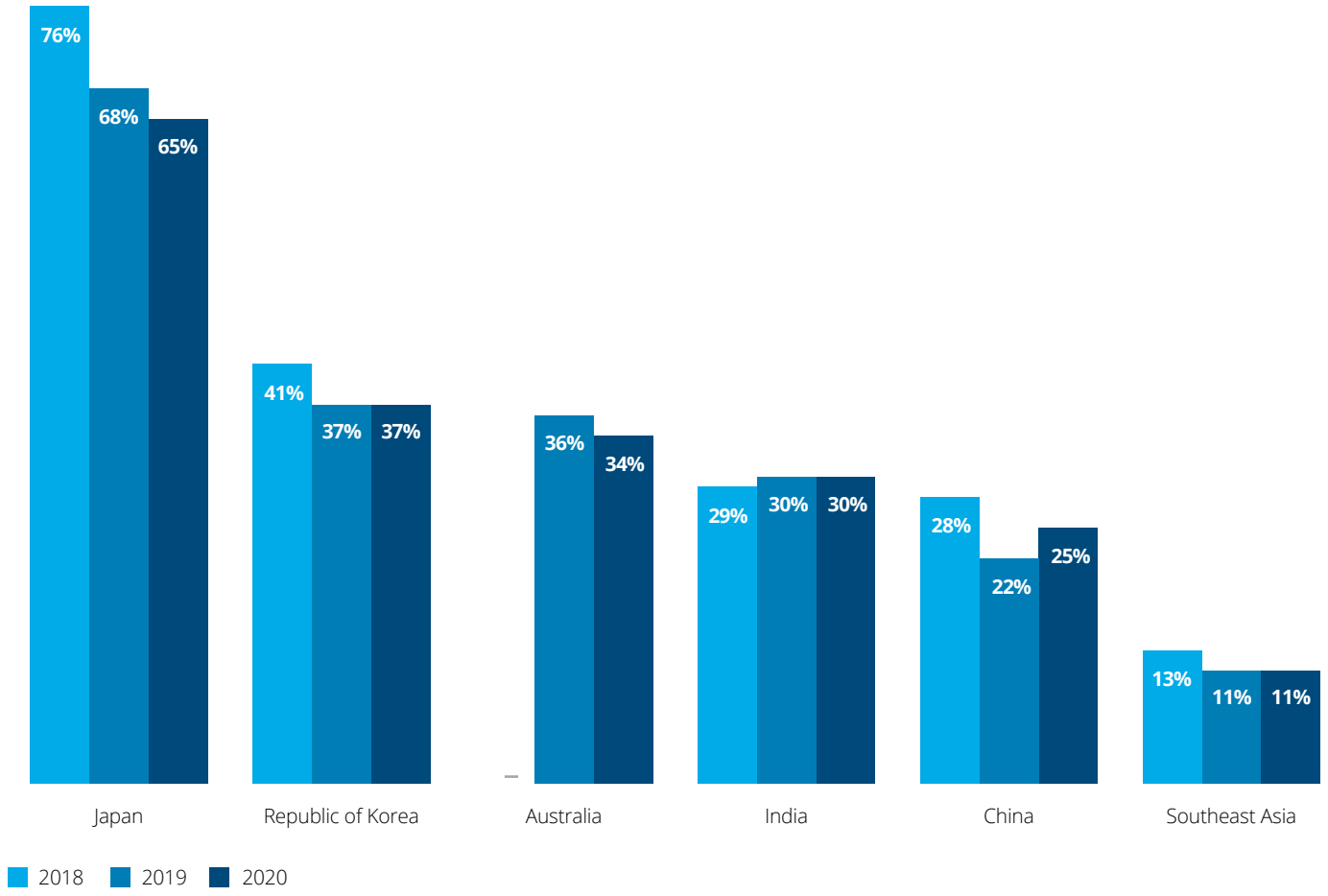
Percentage of consumers who feel that government safety certification makes them more likely to ride in a self-driving car



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: Australia=1,213; China=2,991; India=2,971; Japan=2,987; Republic of Korea=2,978; Southeast Asia=3,696

Consumer trust in traditional manufacturers to bring autonomous vehicle technology to market continues to struggle across most Asia Pacific markets . . .

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



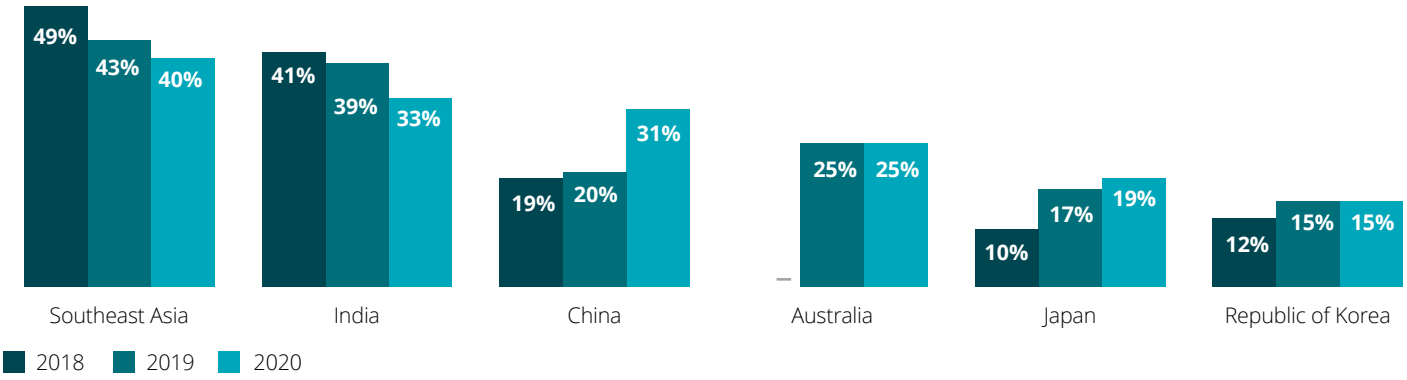
Note: Australia was not part of the 2018 study.

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: Australia=1,253 [2020], 1,252 [2019], NA [2018]; China=3,019 [2020], 1,760 [2019], 1,759 [2018]; India=3,022 [2020], 1,755 [2019], 1,761 [2018]; Japan=3,056 [2020], 1,770 [2019], 1,762 [2018]; Republic of Korea=3,013 [2020], 1,731 [2019], 1,763 [2018]; Southeast Asia=3,826 [2020], 1,517 [2019], 1,523 [2018]

. . . as trust in existing technology companies continues to grow, except in India and Southeast Asia . . .

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



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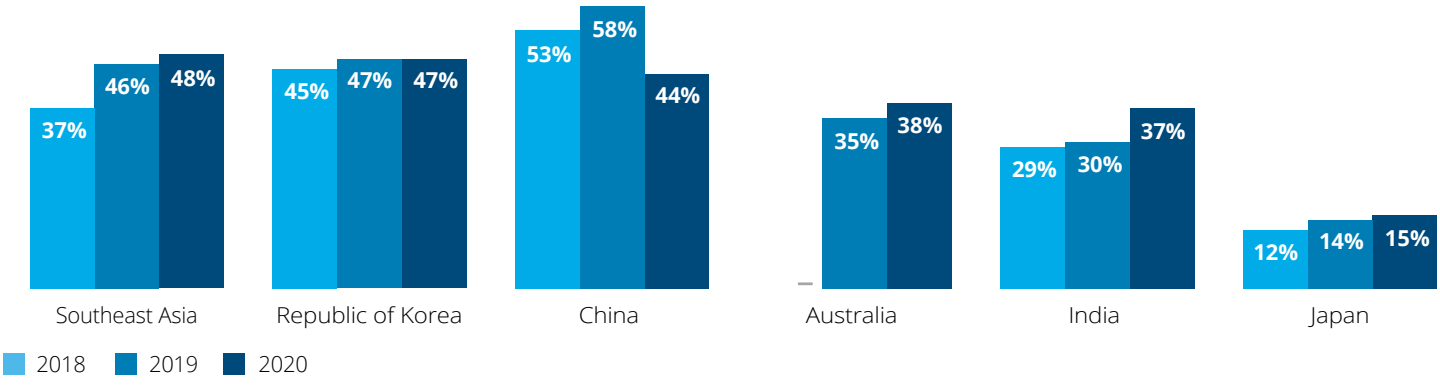
. . . and trust in a new player that specializes in autonomous vehicle technology also inches up across most markets, except China.

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



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What do consumers think about new mobility models?

Asia Pacific 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

	Australia	China	India	Japan	Republic of Korea	Southeast Asia
Road tolls/congestion charges	8%	7%	15%	16%	7%	10%
High-occupancy express lanes	20%	14%	21%	8%	9%	11%
Greater access to mass transit	41%	41%	22%	46%	52%	42%
V2V connectivity	10%	20%	21%	10%	15%	13%
Regulations that restrict car use	9%	12%	14%	15%	13%	18%
Creation of low- or zero-emission zones	5%	6%	6%	3%	3%	5%
Other	7%	0%	1%	2%	1%	1%

Top option

Q43. In your opinion, what is the best way to reduce traffic congestion?
Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

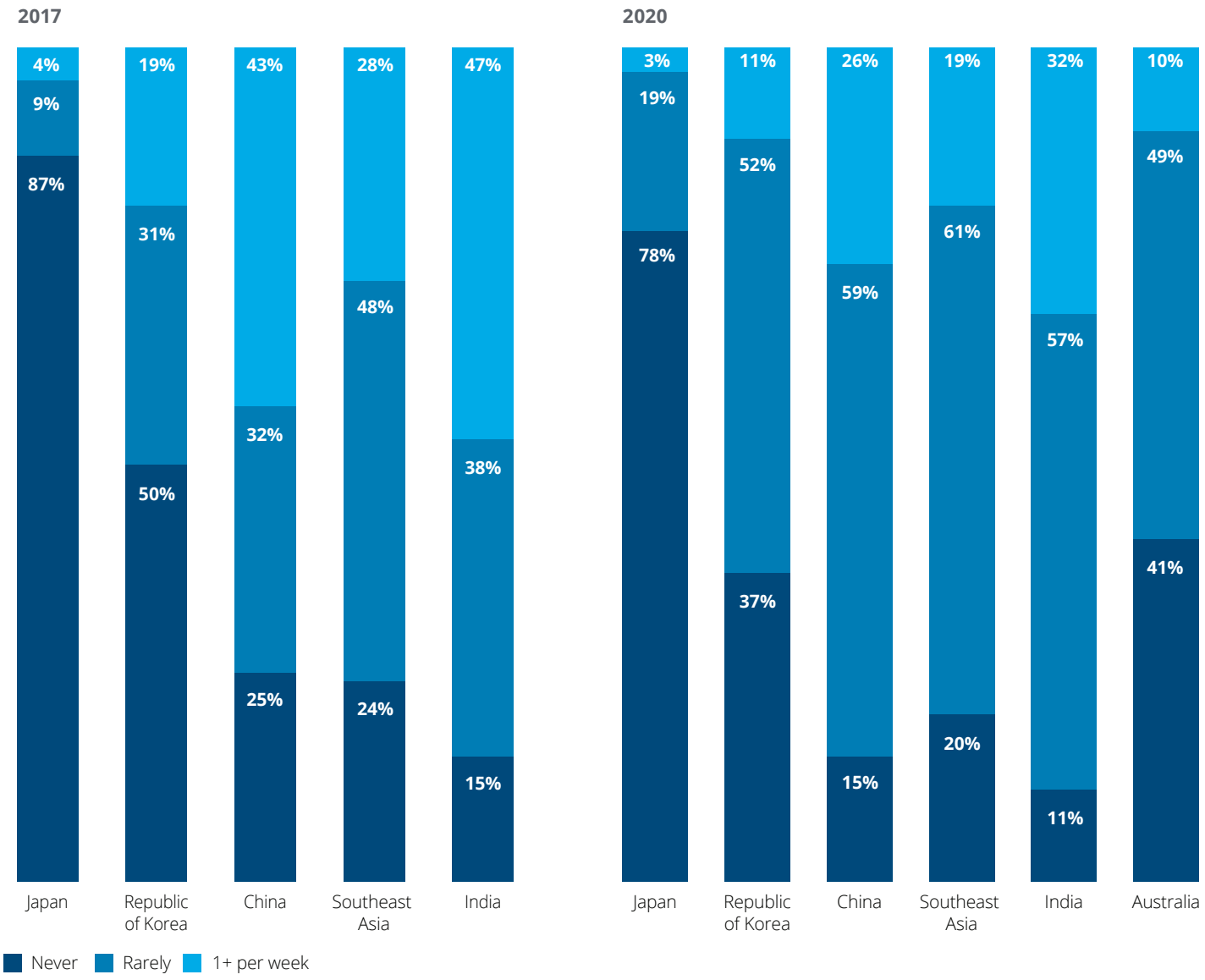
And the idea of combining different modes of mobility into one trip remains largely an occasional behavior for most consumers.

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 (such as a trip using a subway, commuter train, and your own vehicle)?
Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

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

Frequency of ride-hailing usage



Note: Australia was not part of the 2017 study.

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

Sample size: Australia=1,253 [2020], NA [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], 1,799 [2017]; Southeast Asia=3,826 [2020], 1,508 [2017]

. . . an ability to multitask, lower costs versus owning a vehicle, reduced concerns regarding drunk driving, and not having to find a place to park.

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

Australia		China	
No worries about alcohol consumption	**27%**	Ability to multitask (text/check email/watch a video)	**30%**
No need to find or pay for parking	**25%**	No worries about alcohol consumption	**17%**
Ability to multitask (text/check email/watch a video)	**14%**	No need to find or pay for parking	**17%**

India		Japan	
Ability to multitask (text/check email/watch a video)	**32%**	Ability to multitask (text/check email/watch a video)	**21%**
Less costly than owning or driving a car (payments/ maintenance)	**24%**	Less costly than owning or driving a car (payments/ maintenance)	**20%**
Better for the environment	**16%**	No worries about alcohol consumption	**20%**

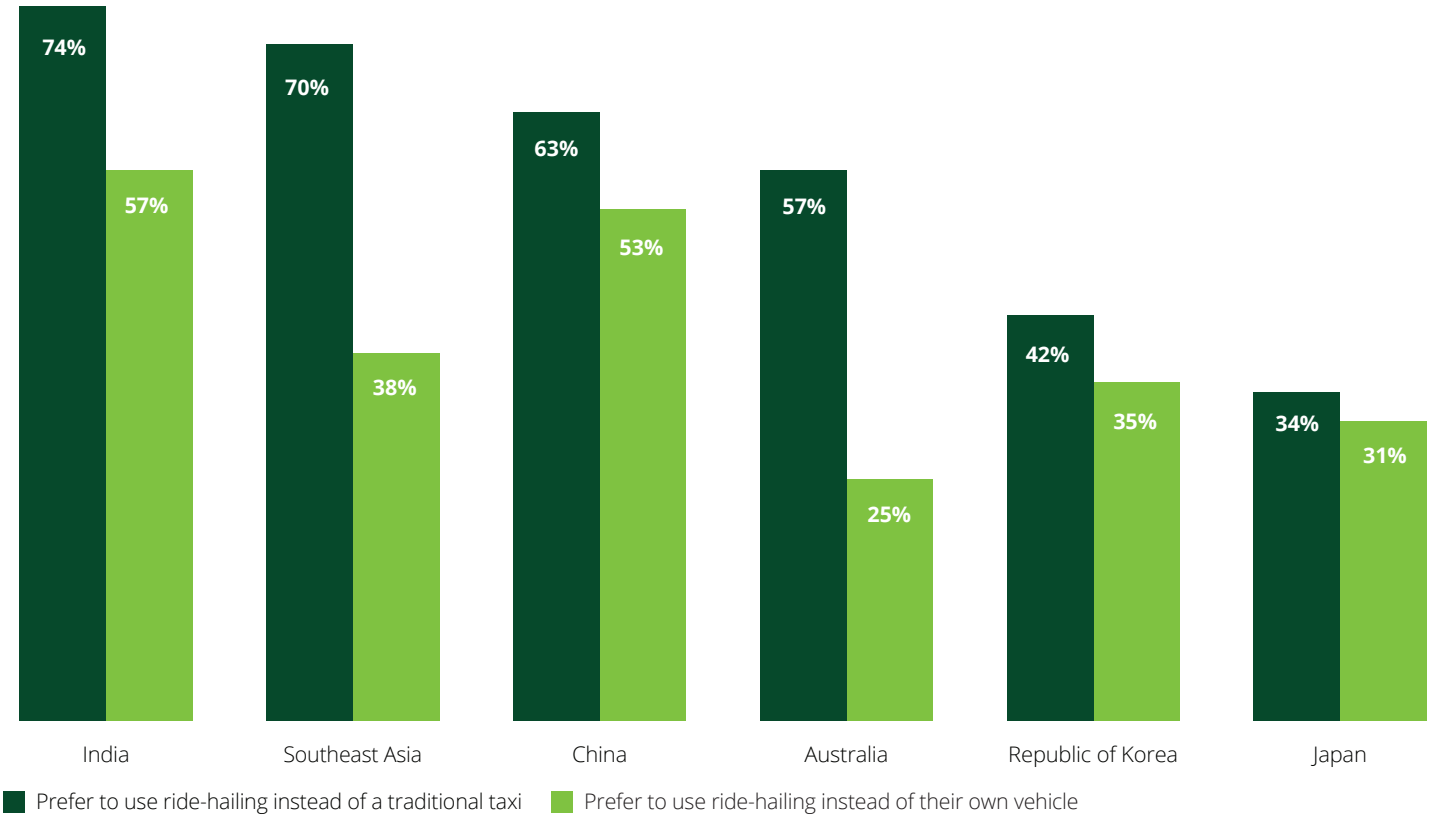
Republic of Korea		Southeast Asia	
Less costly than owning or driving a car (payments/ maintenance)	**33%**	No need to find or pay for parking	**28%**
Ability to multitask (text/check email/watch a video)	**16%**	Ability to multitask (text/check email/watch a video)	**25%**
No need to find or pay for parking	**16%**	Less costly than owning or driving a car (payments/ maintenance)	**22%**

Q36b. What is the most important benefit of using a ride-hailing service?

Sample size: Australia=625; China=1,465; India=1,576; Japan=239; Republic of Korea=668; Southeast Asia=1,263

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

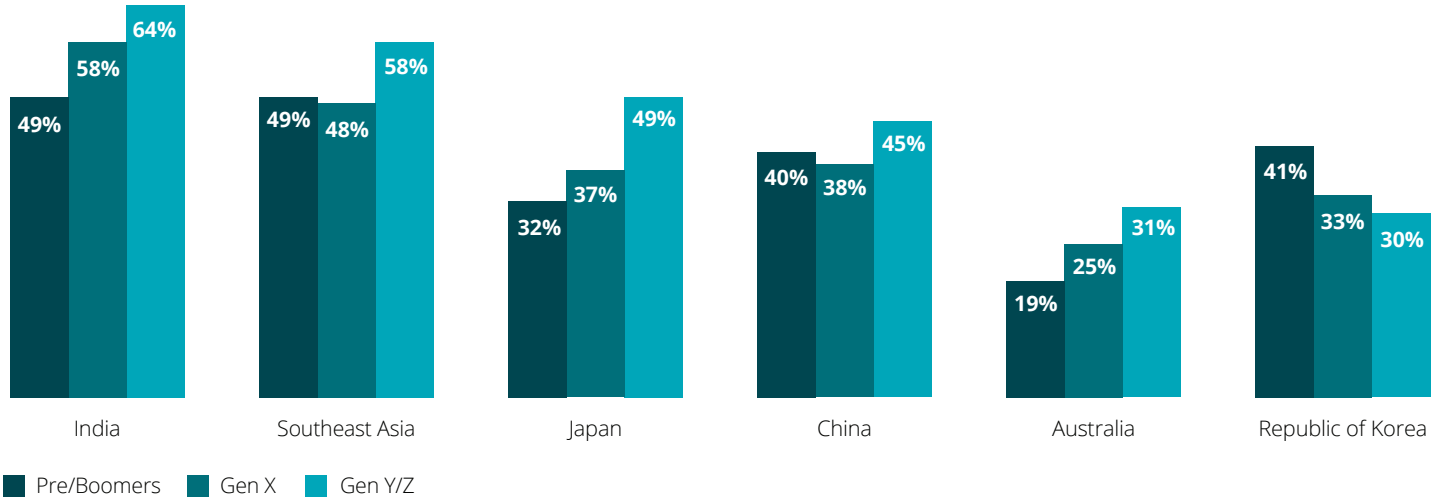
Consumer preferences regarding the usage of ride-hailing services



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: Australia=738; China=2,557; India=2,670; Japan=667; Republic of Korea=1,892; Southeast Asia=3,044

Having said that, younger people in most markets 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%	54%	42%	43%	27%	33%

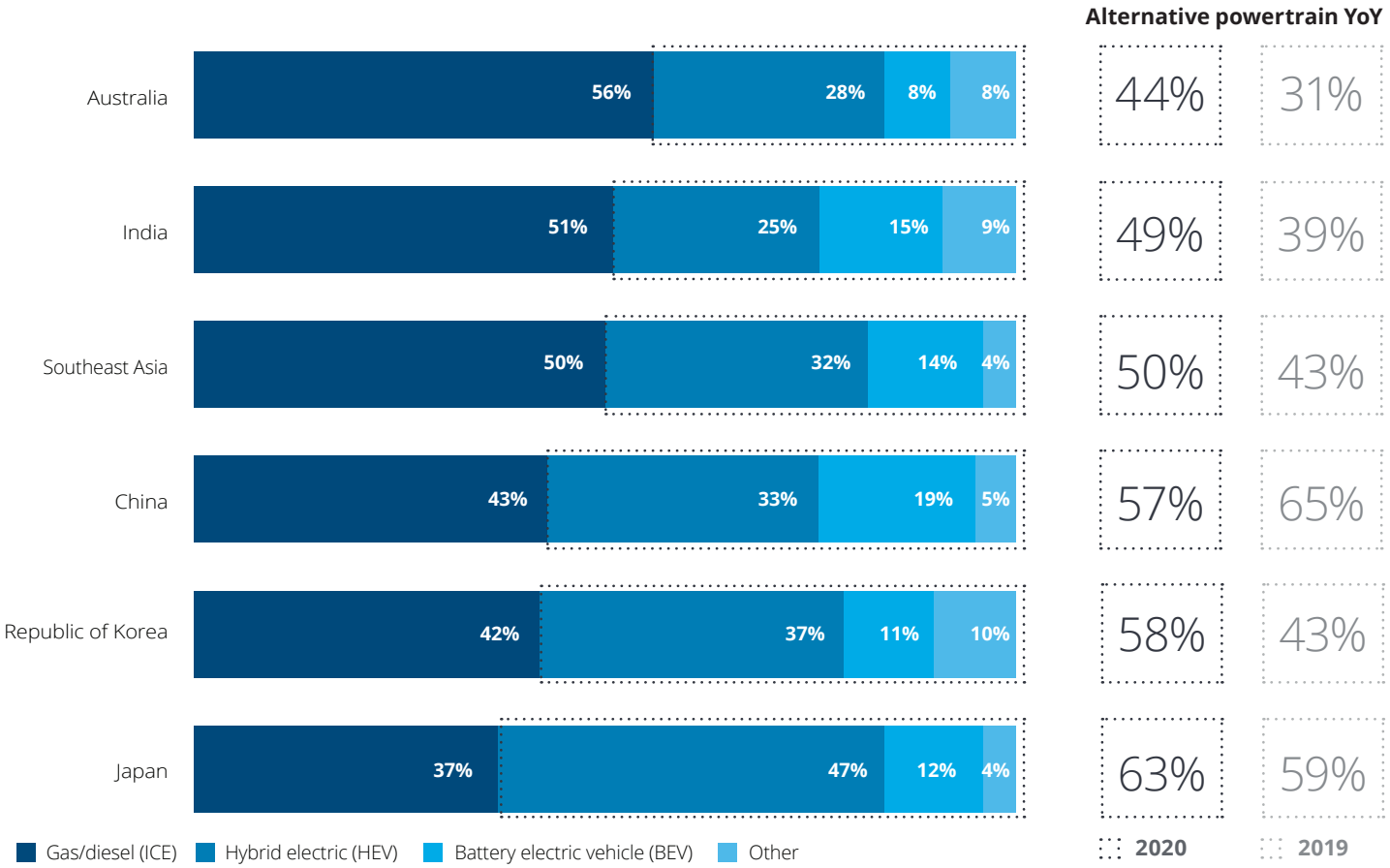
Q42. Does your use of ride-hailing services make you question whether you need to own a vehicle going forward?

Sample size: Australia=Pre/Boomers (169), Gen X (121), Gen Y/Z (448); 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 (115), Gen Y/Z (332); Republic of Korea=Pre/Boomers (354), Gen X (536), Gen Y/Z (1,002); Southeast Asia=Pre/Boomers (539), Gen X (657), Gen Y/Z (1,848)

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

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

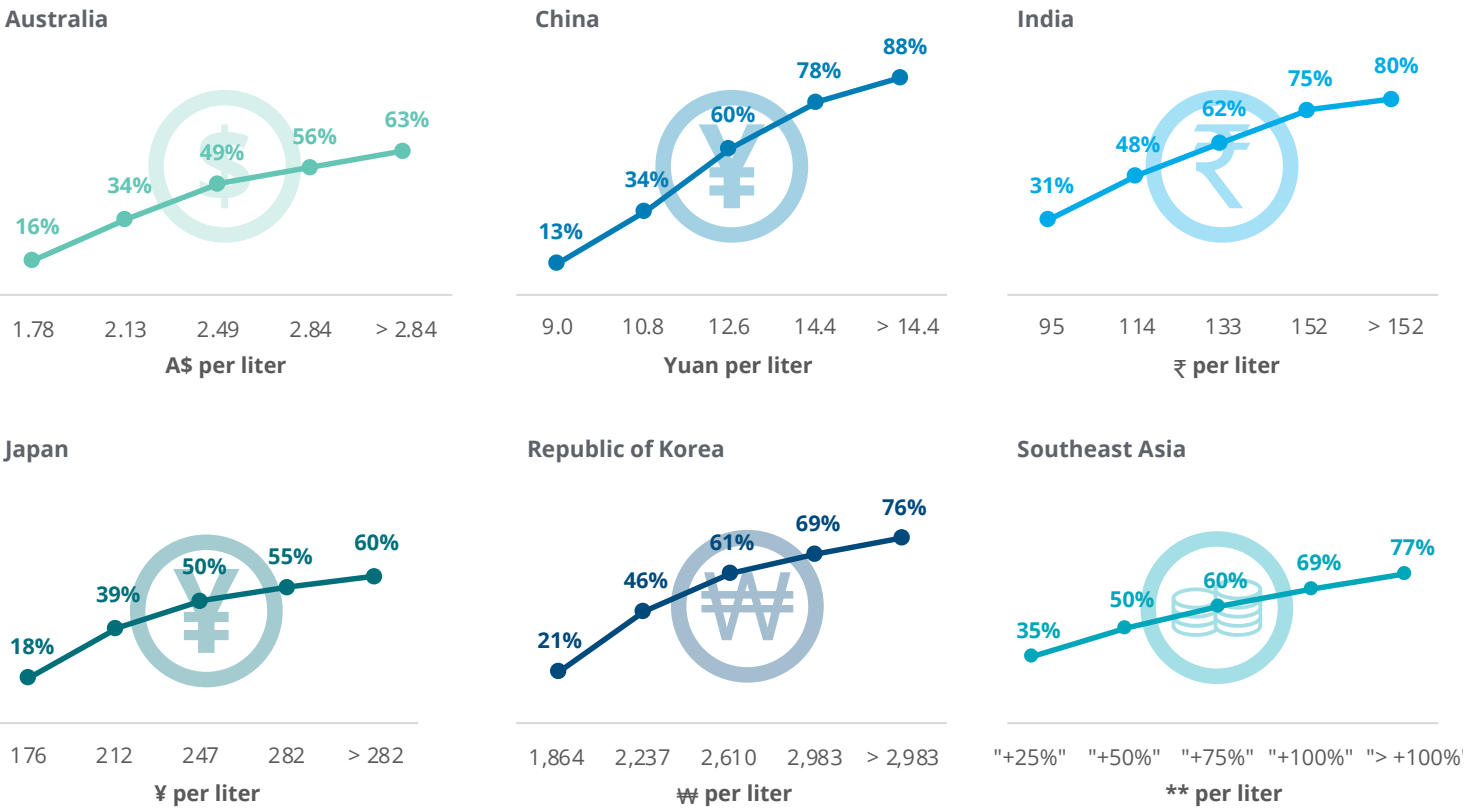
Consumer powertrain preferences for their next vehicle (2020)



Note: "Other" category includes ethanol, CNG, and hydrogen fuel cell.
Q52. What type of engine would you prefer in your next vehicle?
Sample size: Australia=1,021; China=2,557; India=2,669; Japan=1,714; Republic of Korea=2,711; Southeast Asia=3,240

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

Percentage of consumers (cumulative) who are <u>much more</u> 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."

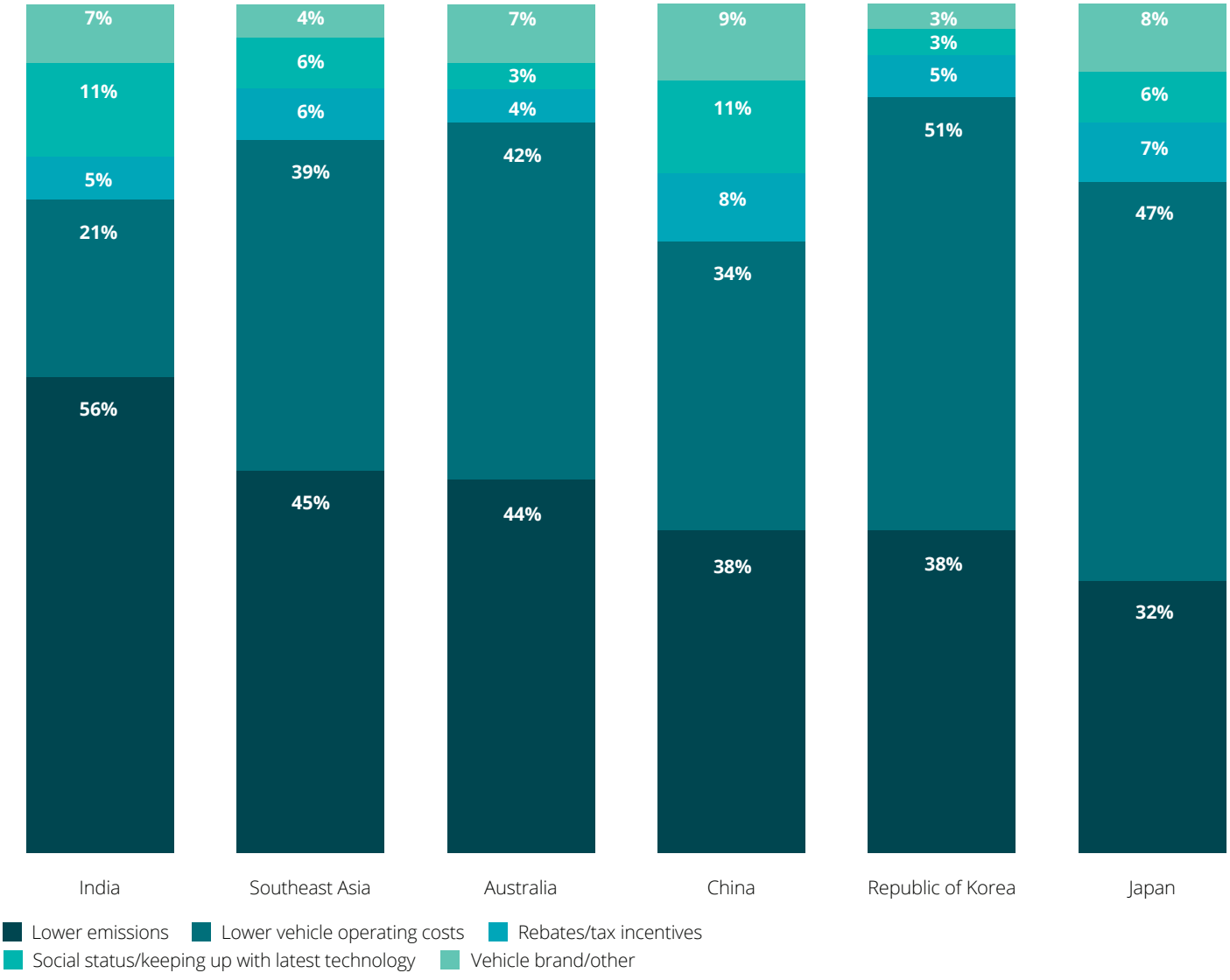
** % are calculated based on price of gasoline @ 10,187.5 IDR per liter, 2.08 MYR per liter, and 35.76 THB per liter

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

Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

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

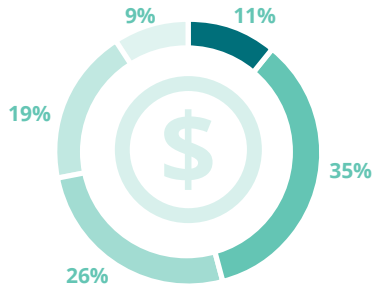
Reasons consumers consider hybrids or BEVs



Q54. What is the main reason you are considering an electrified vehicle?
Sample size: Australia=364; China=1,345; India=1,060; Japan=998; Republic of Korea=1,311; Southeast Asia=1,484

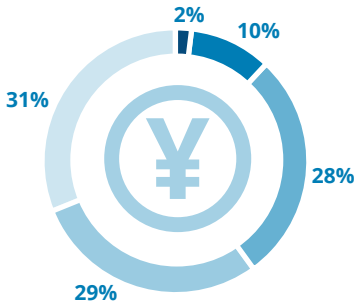
Consumers in some countries are not willing to pay very much extra for an EV.

Australia



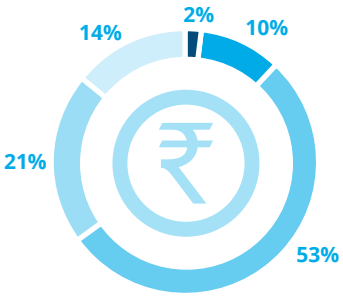
- Wouldn't pay more
- <A$1,500
- A$1,500–4,500
- >A$4,500
- Don't know

China



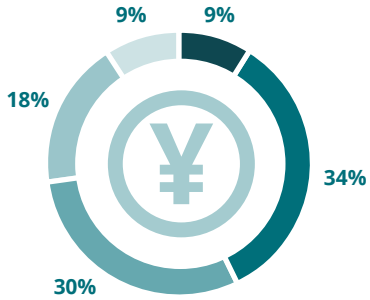
- Wouldn't pay more
- <5,000 yuan
- 5,000–15,000 yuan
- >15,000 yuan
- Don't know

India



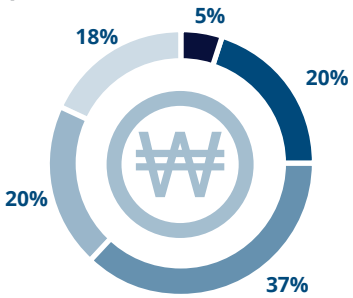
- Wouldn't pay more
- <INR 100,000
- INR 100,000–300,000
- >INR 300,000
- Don't know

Japan



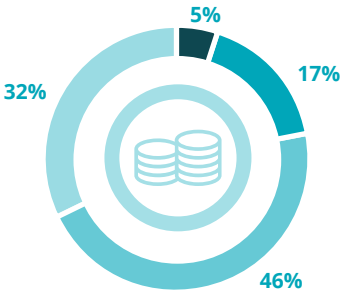
- Wouldn't pay more
- <¥100,000
- ¥100,000–300,000
- >¥300,000
- Don't know

Republic of Korea



- Wouldn't pay more
- <1 million won
- 1 million–3 million won
- >3 million won
- Don't know

Southeast Asia

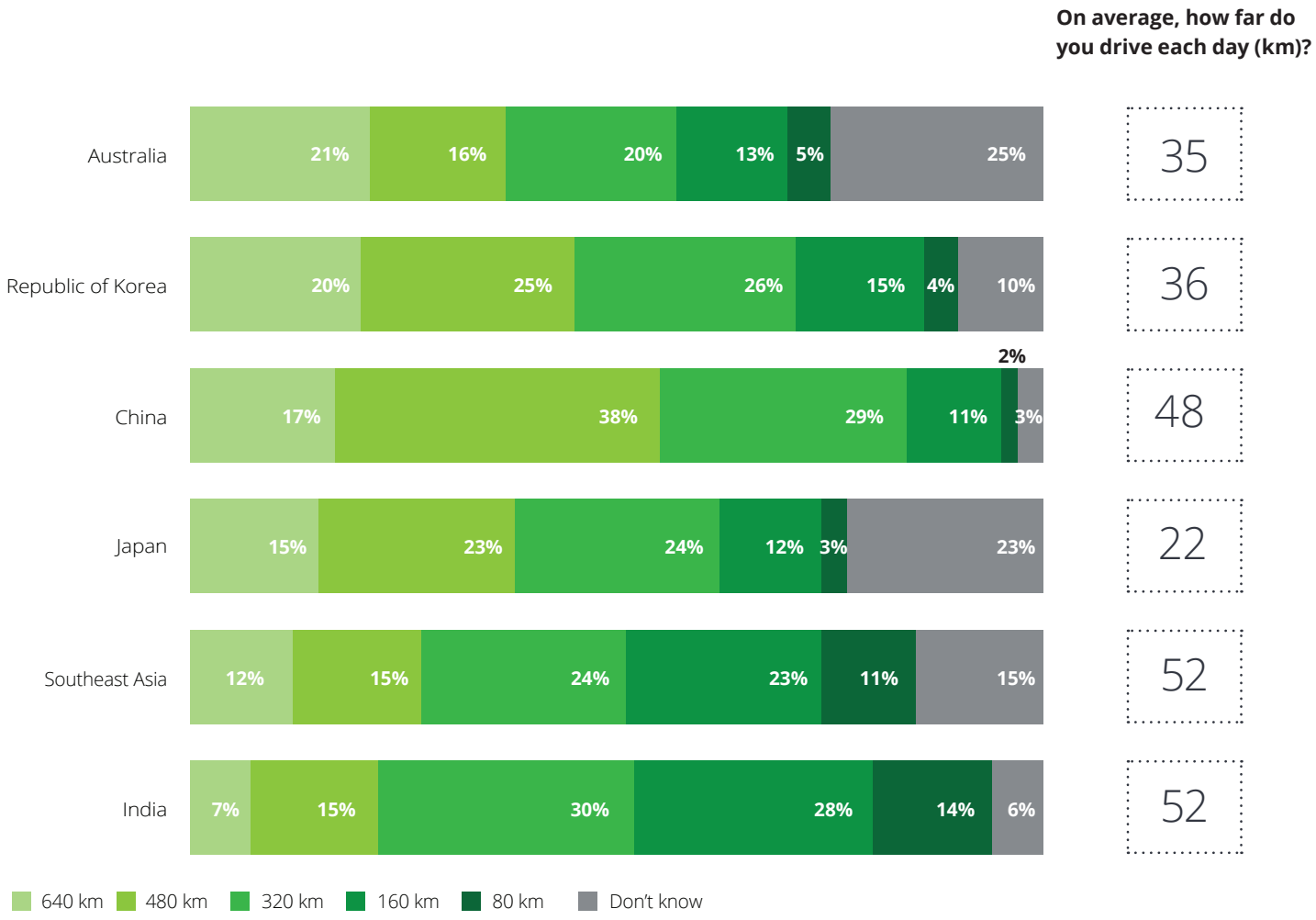


- Wouldn't pay more
- More than a little
- A little
- Don't know

Note: Definition for "a little" is less than or equal to: Southeast Asia (Indonesia (IDR 10 million), Malaysia (MYR 5,000), and Thailand (30,000 THB))
Q25. How much more would you be willing to pay for an electric vehicle, compared with a similar vehicle with a traditional internal combustion engine?
Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

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

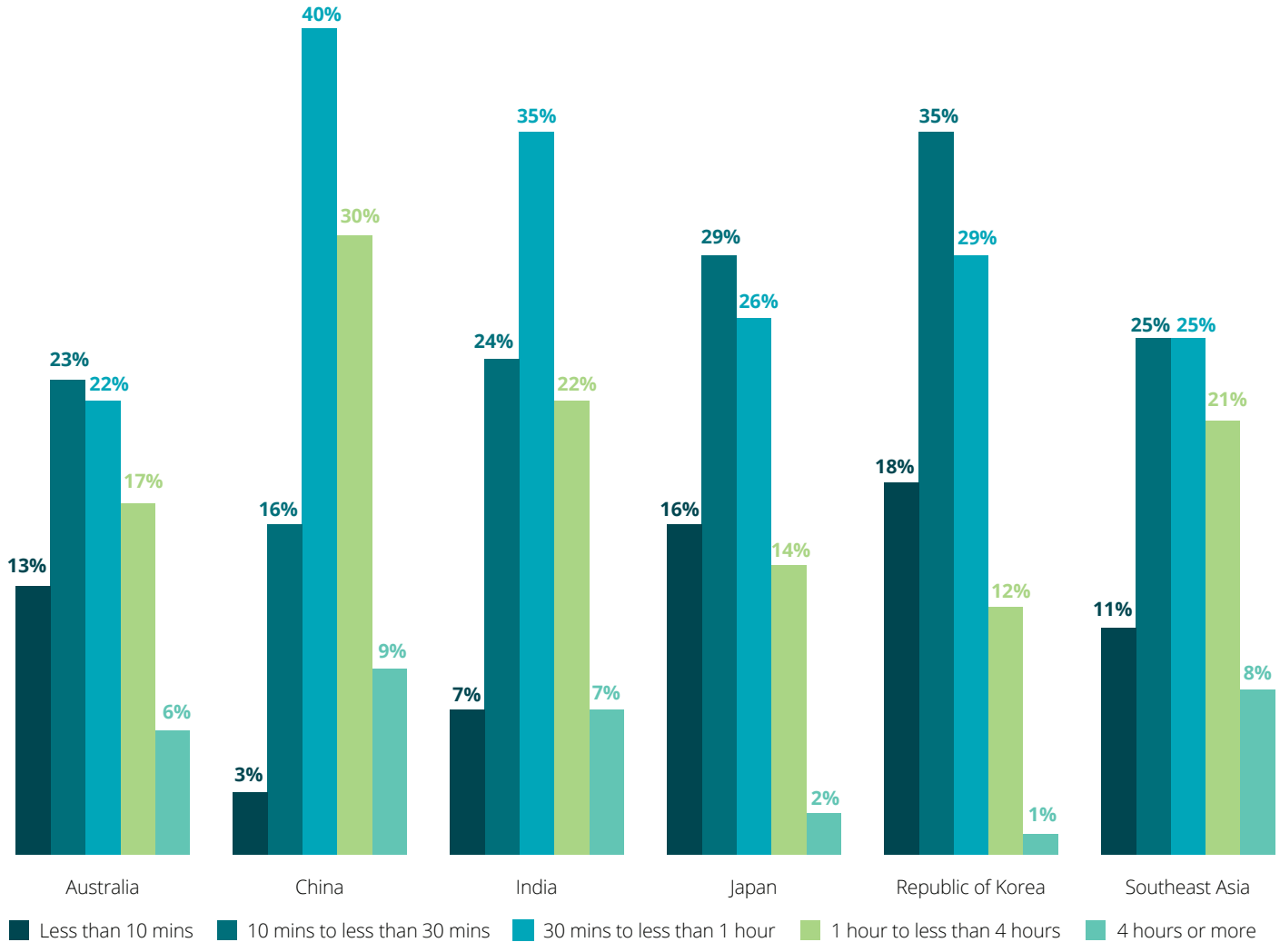
Minimum driving range consumers are expecting from a BEV (km)



Q27. What is the minimum driving range that an all-battery-powered electric vehicle (BEV) needs to have?
Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

In addition, a significant proportion of consumers are willing to wait 30 minutes or more to fully charge a BEV.

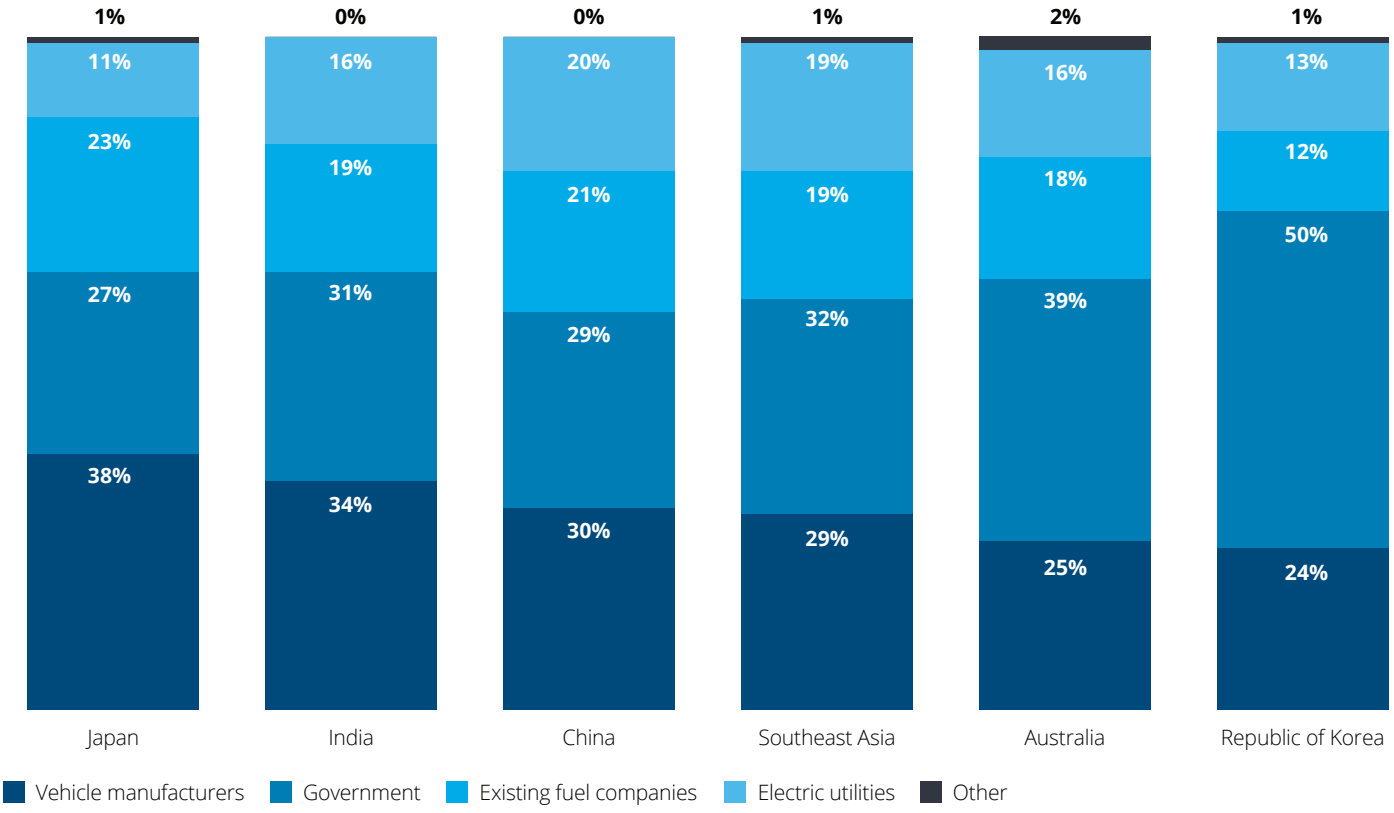
Amount of time consumers are willing to wait to fully recharge a BEV



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: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

There are a variety of opinions when it comes to who consumers think should be responsible for building EV charging networks, potentially opening the door to public-private partnerships.

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

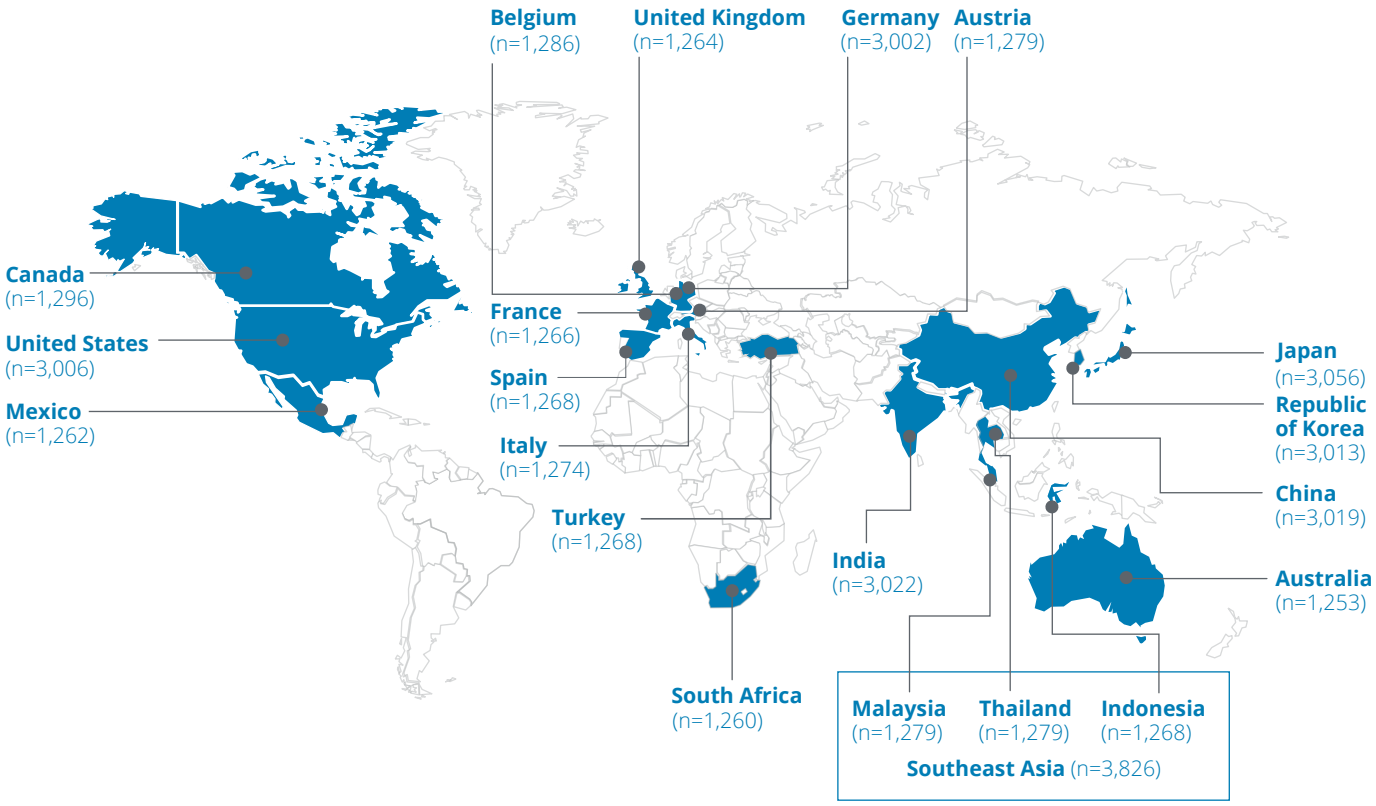


Q31. In your opinion, who should be primarily responsible for building publicly accessible electric vehicle charging stations and other EV infrastructure?
Sample size: Australia=1,253; China=3,019; India=3,022; Japan=3,056; Republic of Korea=3,013; Southeast Asia=3,826

About the study

Global study coverage

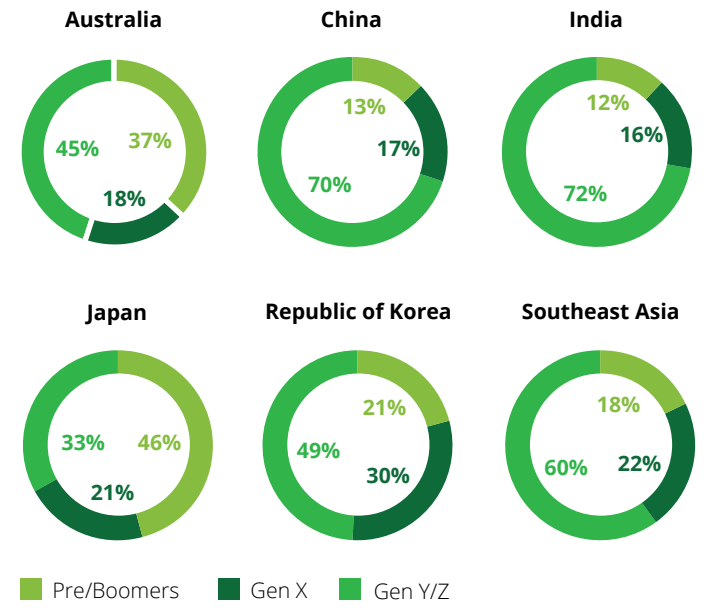
The 2020 study includes more than 35K consumer responses across 20 global markets.

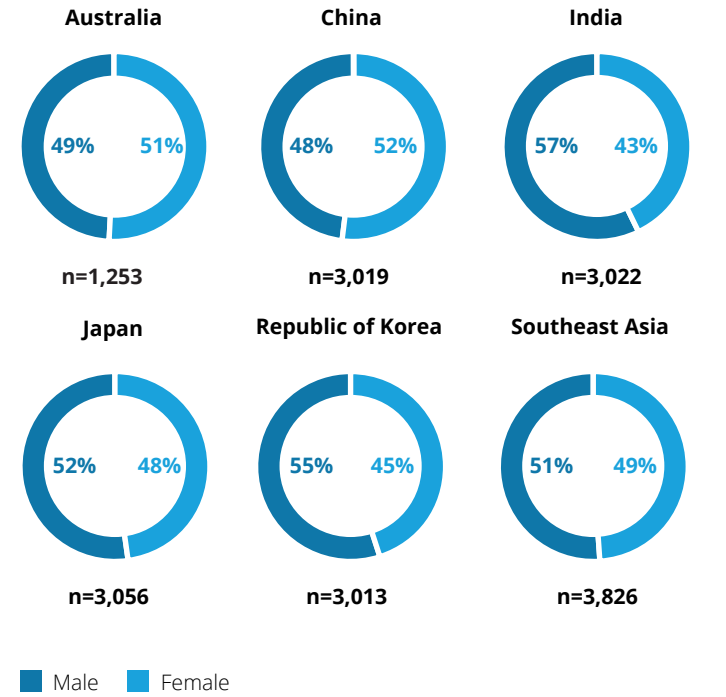


Study methodology
The study is fielded using an online panel methodology where consumers of driving age are invited to complete the questionnaire (translated into local languages) via email.

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

The study is fielded using an online panel.





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

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