



GLOBAL AUTOMOTIVE INSIGHTS

2020 Global Automotive Consumer Study

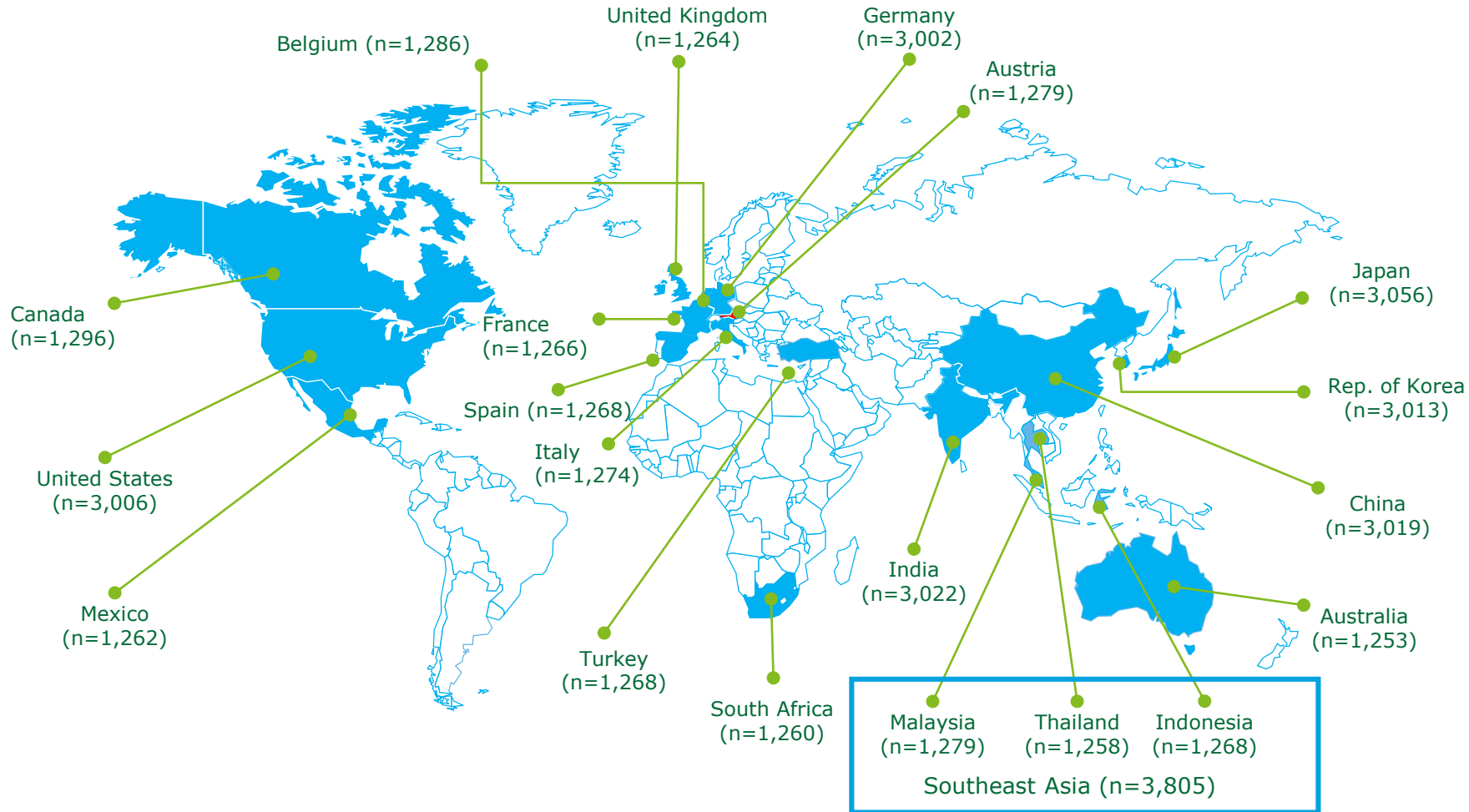
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Global study coverage

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



Study methodology

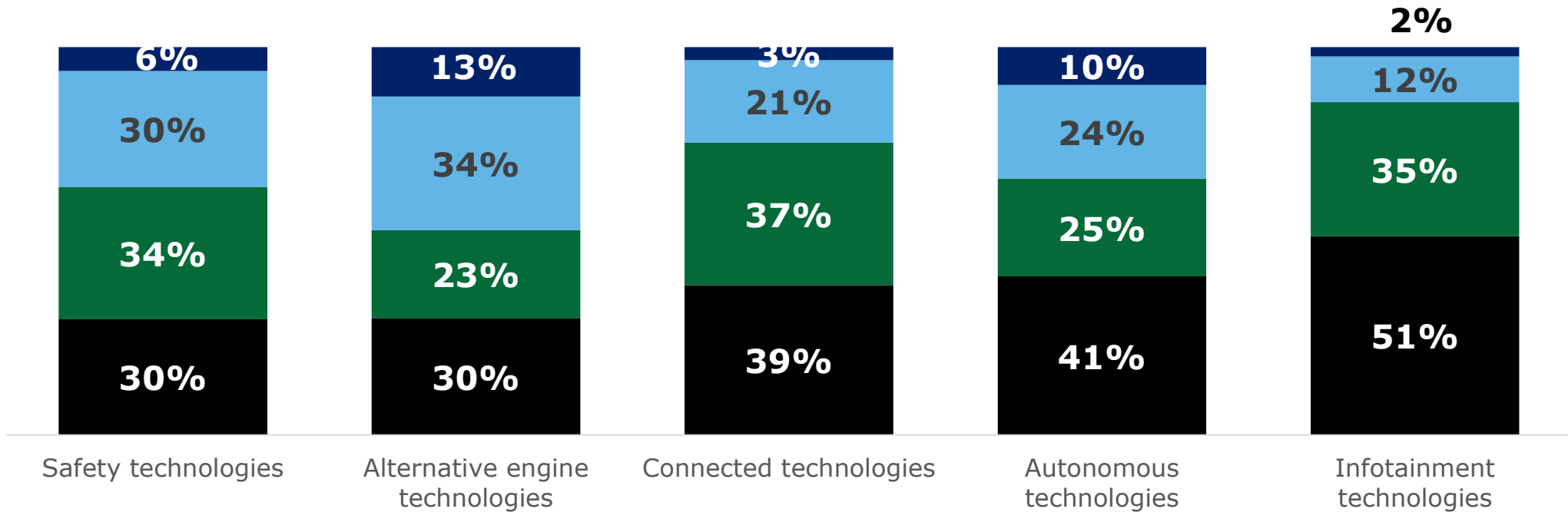
The study is fielded using an online panel methodology where consumers of driving age are invited to complete the questionnaire (translated into local languages) via email. It was fielded in 20 countries and designed to be nationally representative of the overall population in each market.

A significant number of consumers are not willing to pay more for vehicle tech

They are least willing to pay for infotainment, but this trend also extends across the 'CASE' technologies - even advanced safety features

Willingness to pay for technologies

■ I wouldn't pay more ■ Up to €400 ■ €400 to €2,000 ■ More than €2,000



Safety technologies - Lane departure warning, blind spot detection, night vision, etc.; **Connected technologies** - Communication with other vehicles and infrastructure to optimize traffic flow, diagnose problems with the vehicle and schedule service appointments, etc.; **Infotainment technologies** - Video streaming, voice recognition, etc.; **Autonomous technologies** - Full self-driving cars, adaptive cruise control, etc.; **Alternative engine technologies** - Electric, hybrid, fuel cell, etc.

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: n= 1,279

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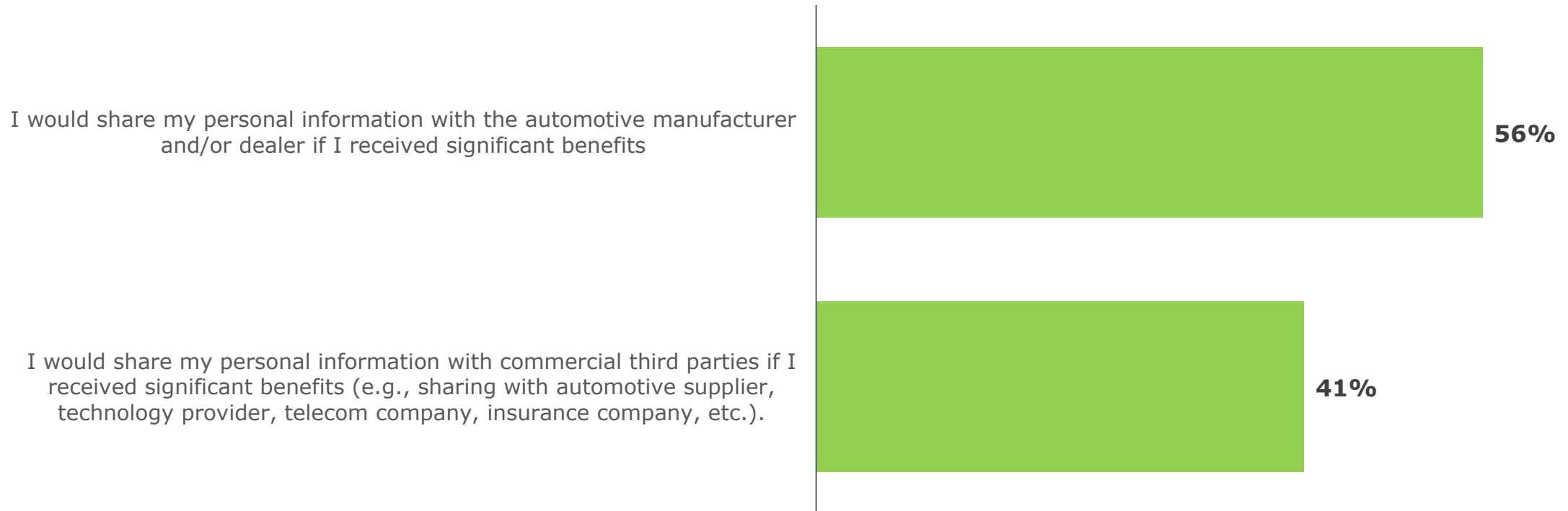


**What do consumers think
about connected vehicles?**

Half of consumers would share personal information with the OEM and/or dealer

They are more comfortable sharing their data with the OEM and/or dealer than with commercial third parties if they received “significant benefit” – opening the door to data monetization

Consumers willingness to share personal information



Note: Percentage of respondents who are somewhat agree or strongly agree have been added together; did not consider “Don’t know” responses

Q33. Please indicate your level of agreement with each of the following statements

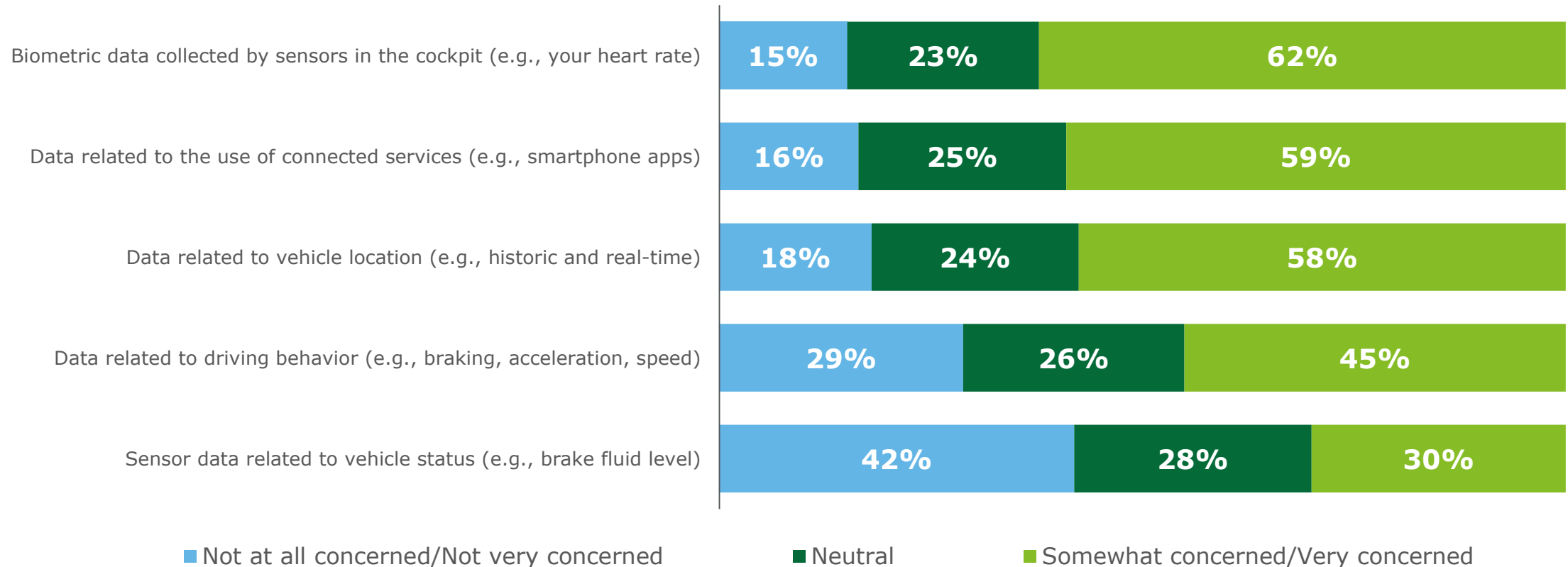
Sample size: n= 1,209

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Consumers are concerned with disseminating biometric and apps data

However, they are more inclined to share sensor data on the mechanical status of the vehicle

Consumer opinions on types of data collected



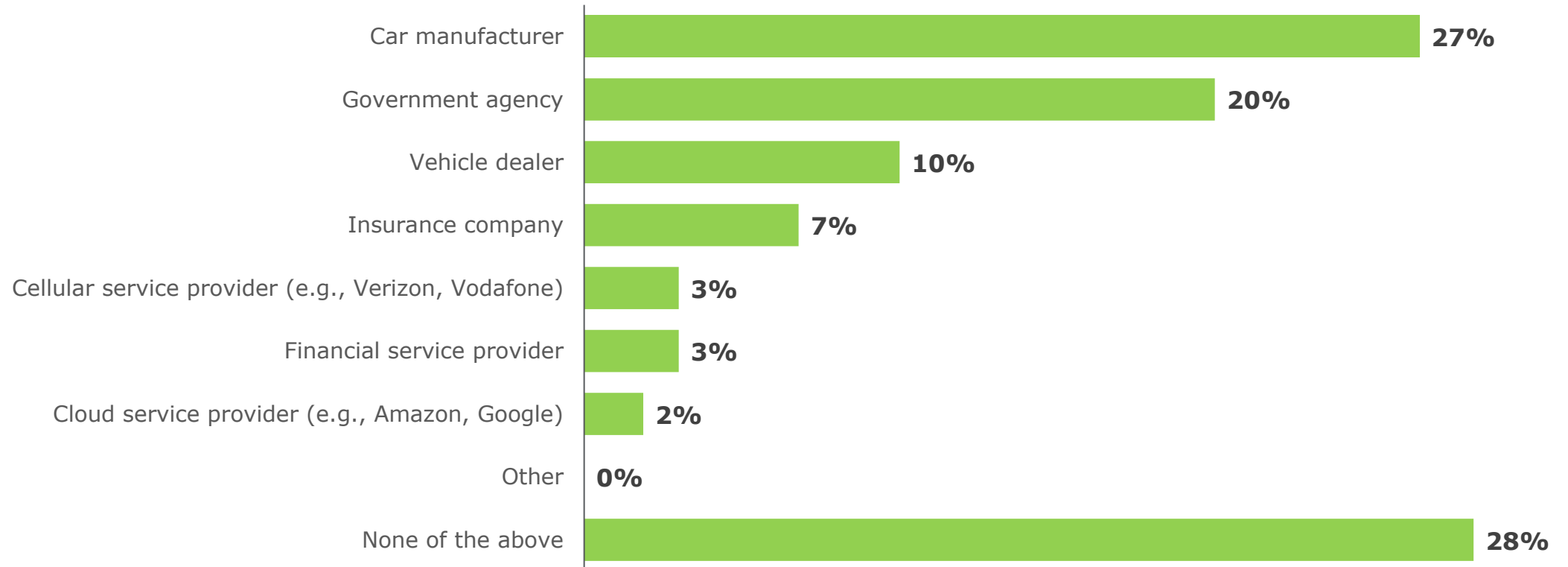
Q34. As vehicles become more and more connected to the internet, how concerned would you be if the following types of data were shared with your vehicle manufacturer, dealer, insurance company and/or other third parties?

Sample size: n=1,279

Who consumers most trust to manage their data is still very much an open question

Although OEMs appear to have a distinct advantage when it comes to engendering trust, an equal number of consumers don't want anyone managing data created by the vehicle

Consumer opinions on whom they trust the most to manage data generated by their vehicle



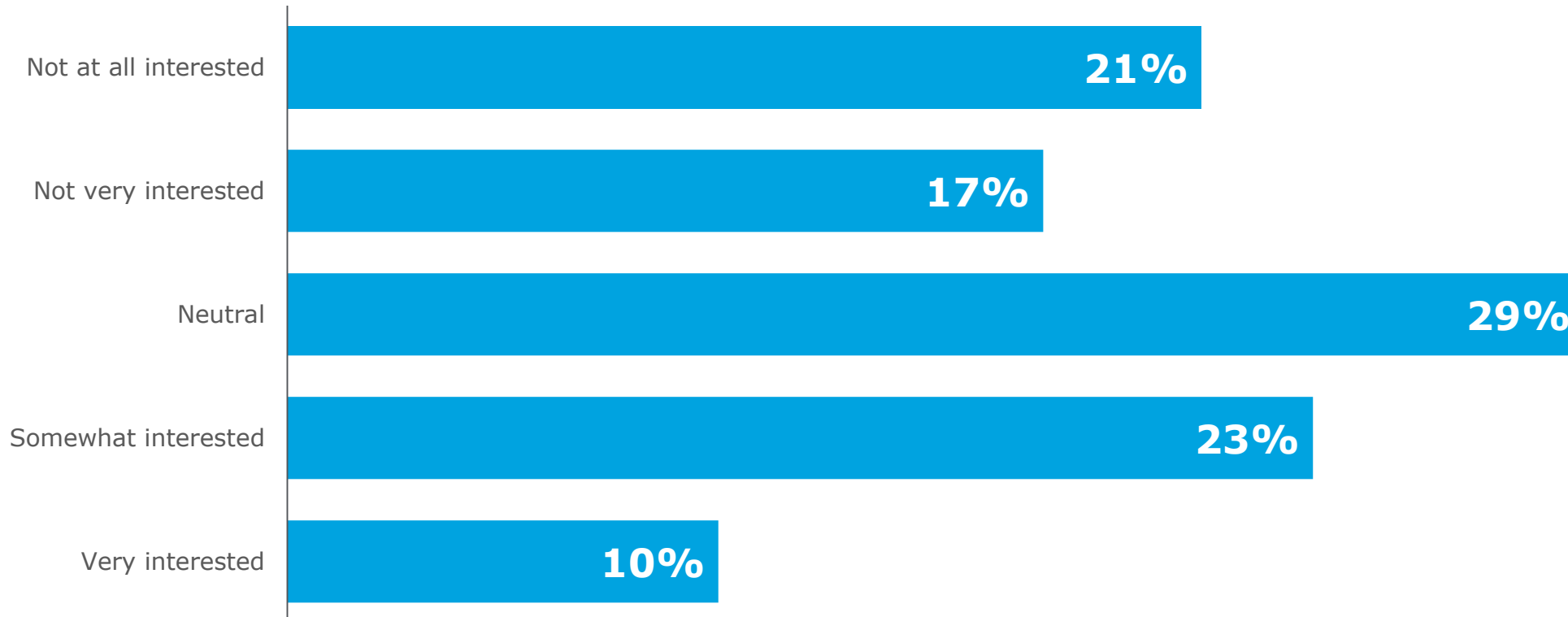
Q36. In a scenario where you owned a connected vehicle, which of the following entities would you trust the most to manage the data being generated and shared?

Sample size: n= 1,279

Only a third of consumers are interested in receiving over-the-air (OTA) updates

38 percent of consumers are NOT interested in having a connected vehicle that receives over-the-air software updates to enhance and/or correct its functionality over time

Percentage of consumers who are interested in OTA updates



Q35. How interested are you in having a connected vehicle that received over-the-air (OTA) software updates to enhance and/or correct its functionality over time?

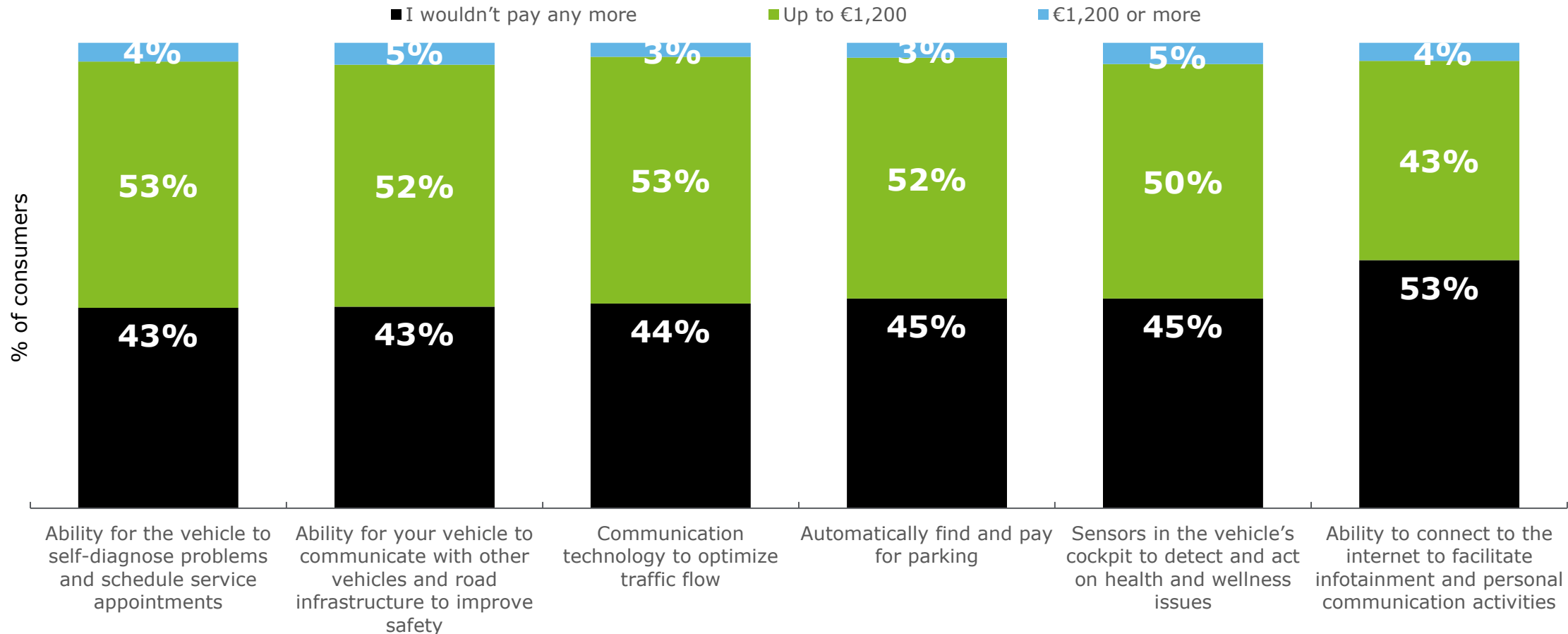
Sample size: n= 1,279

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Majority of consumers are willing to pay no more than €1,200 for connectivity

In fact, there is a concerning number of consumers that will not pay any more for a vehicle with advanced connectivity technologies (even when it will improve safety)

Consumers' willingness to pay for various connected technologies



Q37: How much more would you be willing to pay for a vehicle that had the following connectivity technologies?; Note: Numbers in brackets are for 2019.

Sample size: n= 1,279

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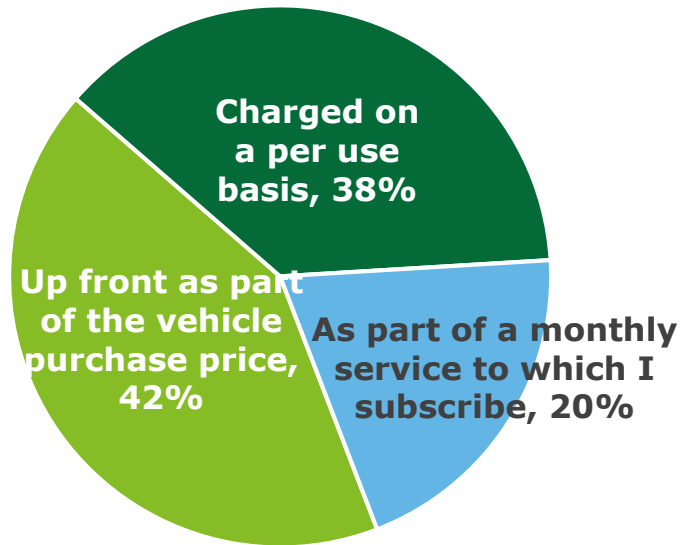
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Consumers divided between paying up front vs. per use for connectivity features

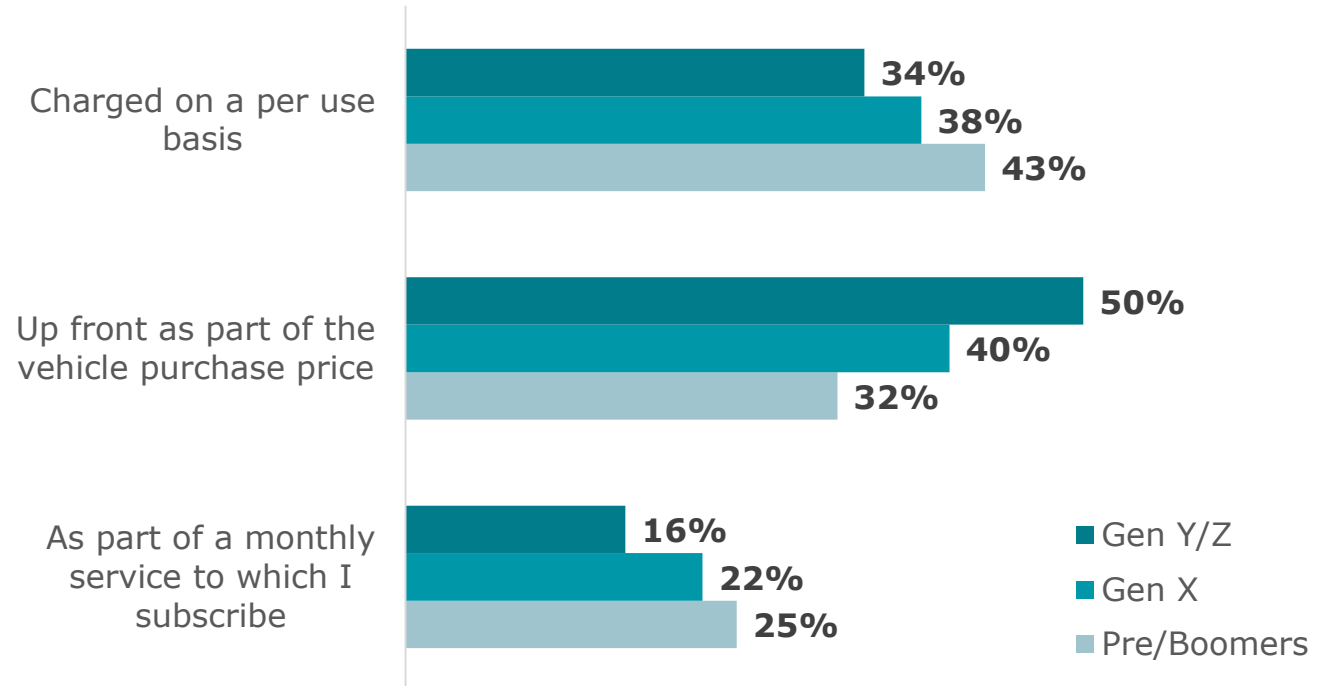
Younger consumers prefer paying up front as part of the vehicle purchase price while older generations are more inclined towards paying on a per use basis

How would consumers prefer to pay for additional connectivity technologies?

Overall



By generation



Q38. How would you prefer to pay for additional connectivity technologies in your vehicle?

Sample size: n= 959; Pre/boomers (326), Gen X (191), Gen Y/Z (442)

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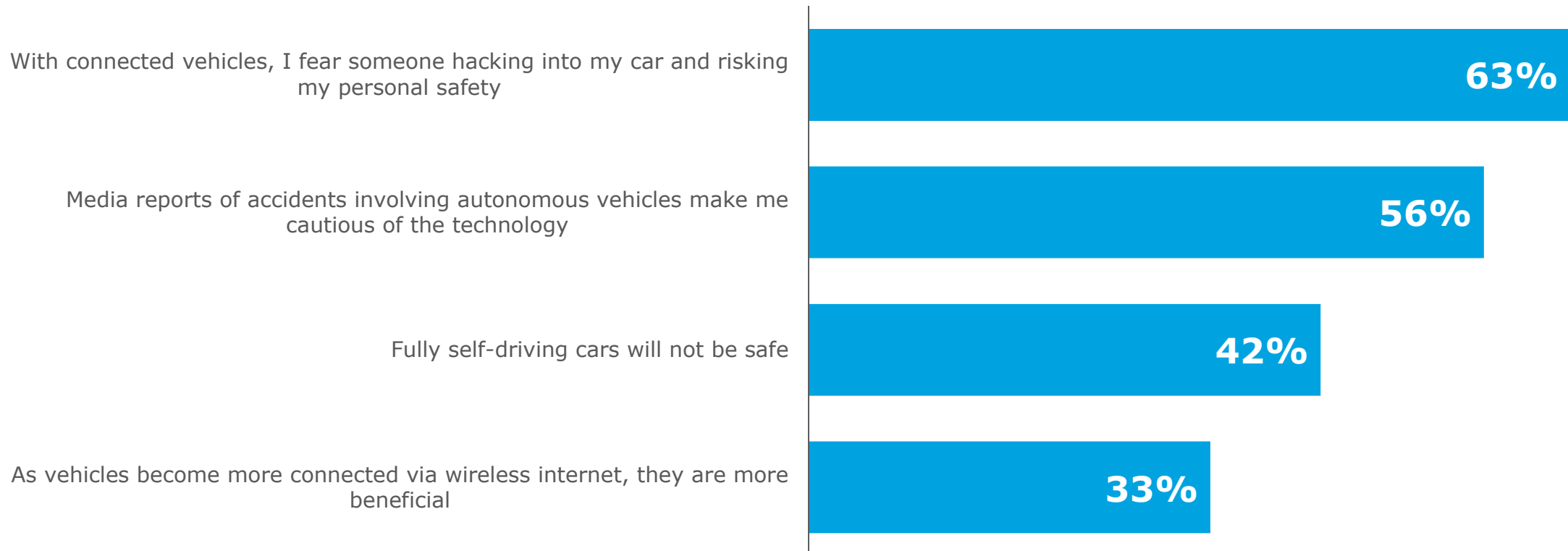


What do consumers think about autonomous vehicle (AV) technology?

Concerns over perceived safety of autonomous technology remain high

Two-thirds of consumers are concerned about hacking their connected vehicle; also, a handful of negative media reports can have a huge impact on consumer opinion regarding AV technology

Percentage of consumers who agree that...



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?

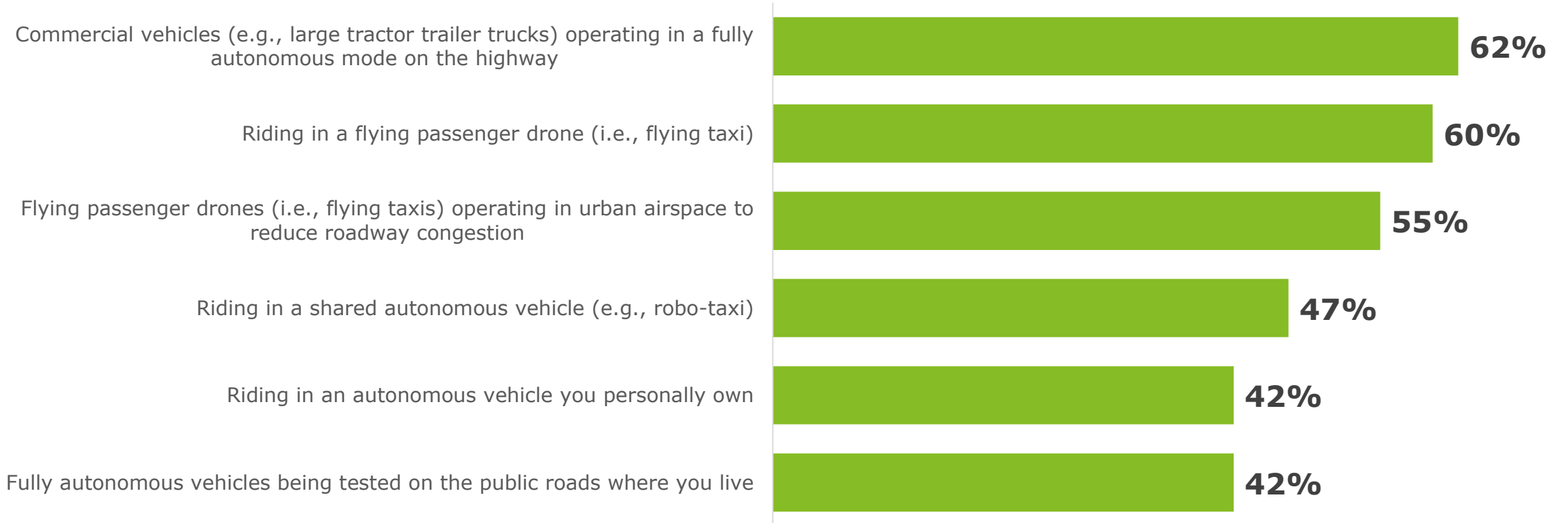
Sample size: n= 1,252

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Consumer apprehension goes well beyond riding in an autonomous vehicle

Nearly two-thirds of consumers are concerned about sharing the highway with heavy commercial vehicles operating in fully autonomous mode in the future

Percent of consumers who are concerned about



Q4. How concerned are you with each of the following scenarios?

Sample size: n=1,279

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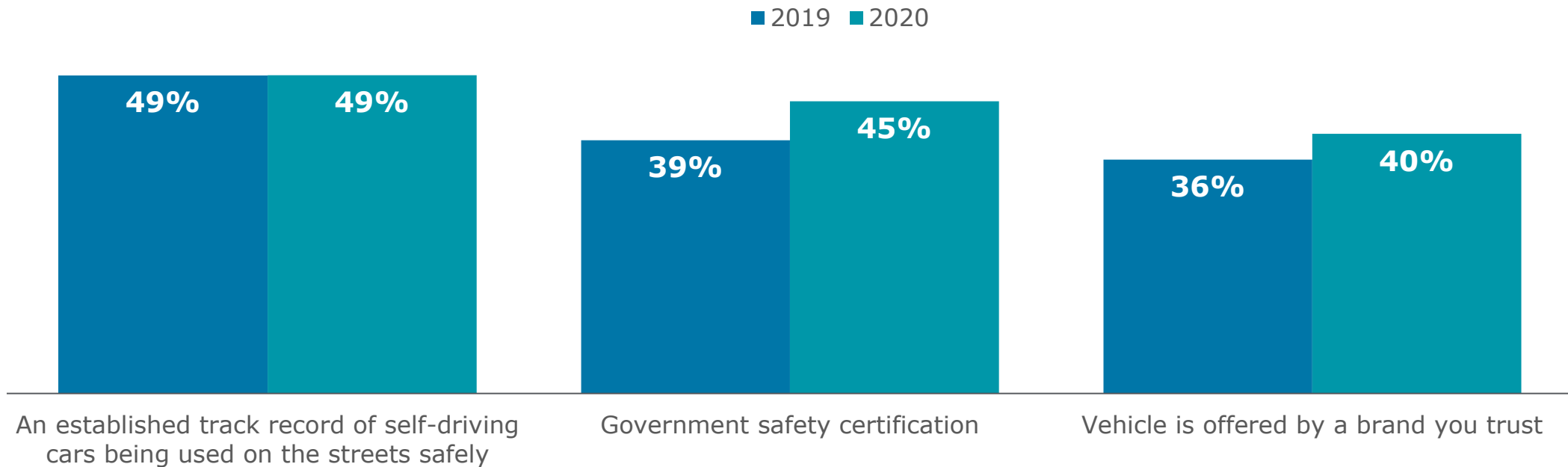
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Established track record of AVs driven safely remains very important for consumers

At the same time, consumers also look for government oversight of AV technology and whether the vehicle is offered by a brand they trust to make them more comfortable

Factors making consumers feel better about riding in a fully self-driving vehicle



Note: Percentage of respondents who are somewhat more likely or significantly more likely have been added together; did not consider "Don't know" responses

Q5: Would the following factors make you more or less likely to ride in a self-driving car?

Sample size: n= 1,251 [2020]; 1,229 [2019]

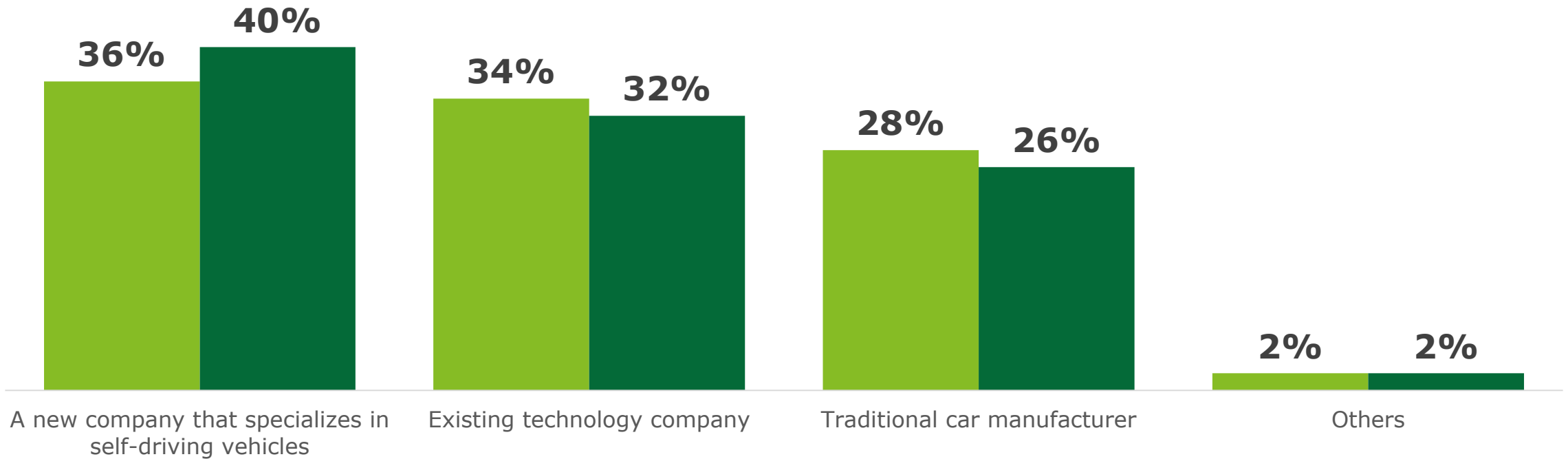
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Speaking of trust, consumers prefer AV specialists

Consumer trust in traditional OEs and existing technology companies is declining while specialists companies are gaining ground

Type of company consumers trust the most to bring fully self-driving technology to market

■ 2019 ■ 2020



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: n= 1,279 [2020]; 1,256 [2019]

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**What do consumers think
about new mobility models?**

7 out of 10 consumers drive their vehicle to work at least occasionally

However, half of those consumers are not ready to pay anything as user fee even if it reduced their commute time by 25 percent

Frequency of driving vehicle to work (% of consumers)



How much are consumers willing to pay if it reduced their commute time by 25 percent?



Q18: How often do you drive your vehicle to work?

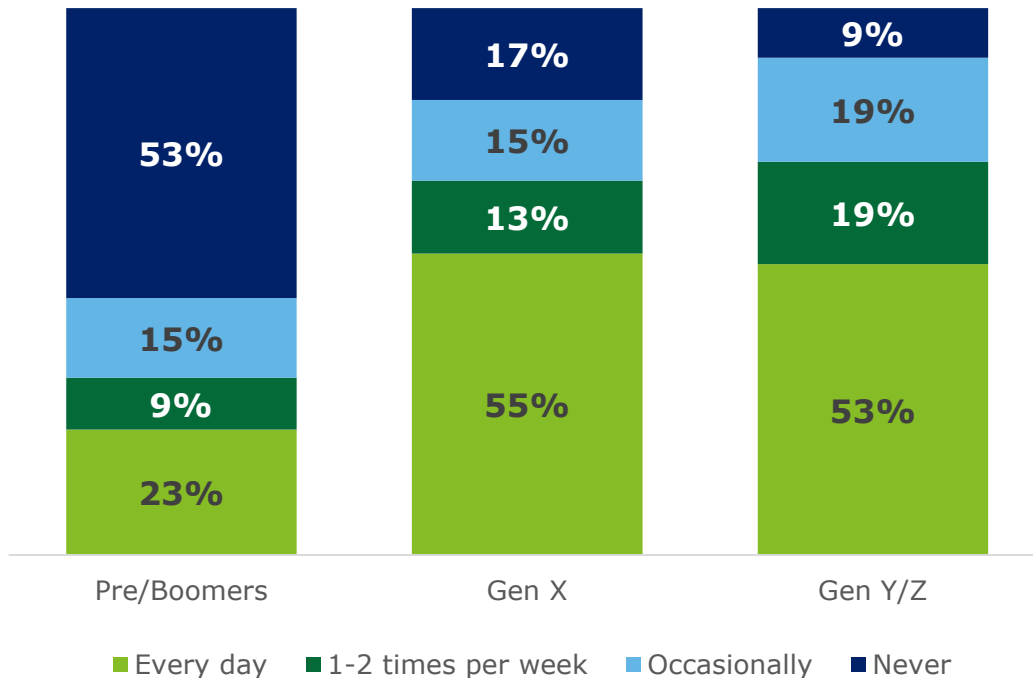
Q19: How much would you be willing to pay in the form of a user fee (e.g., congestion charge, road toll) if it reduced your commute time by 25 percent?

Sample size: n= 917 [Q18]; 654 [Q19]

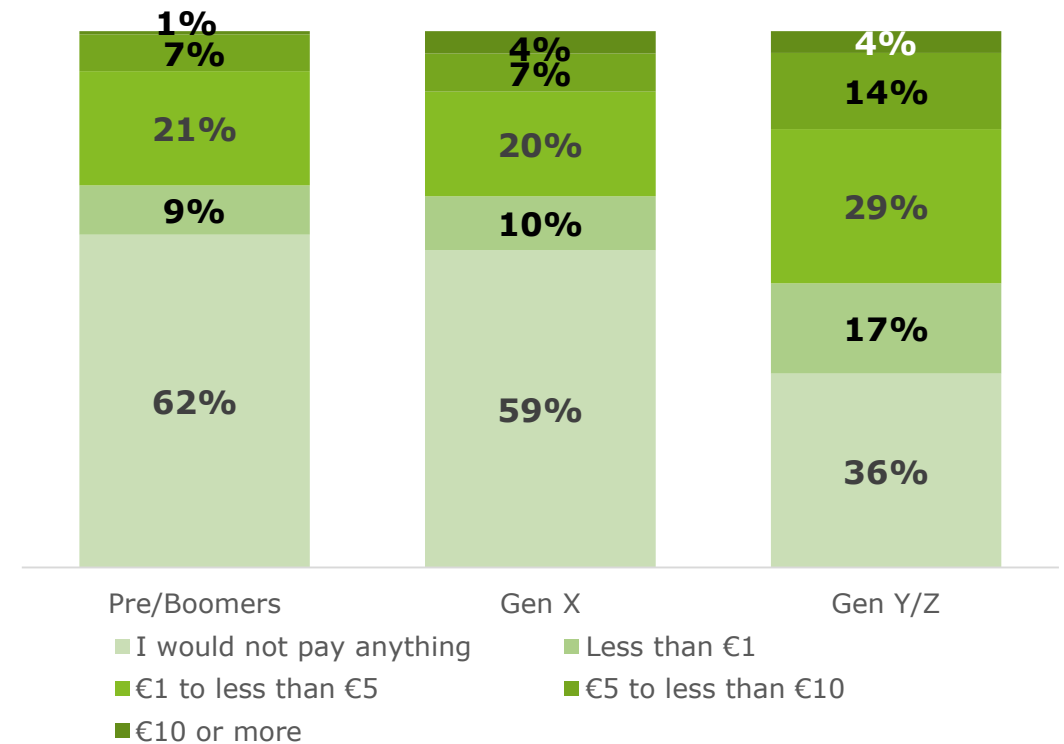
Younger consumers drive more often to the office and are willing to pay more

It appears that younger consumers are better able to see the benefit of paying a user fee to significantly reduce their daily commute time

Driving vehicle to work (% of consumers)



Willingness to pay user fee (% of consumers) if it reduces commute time by 25 percent



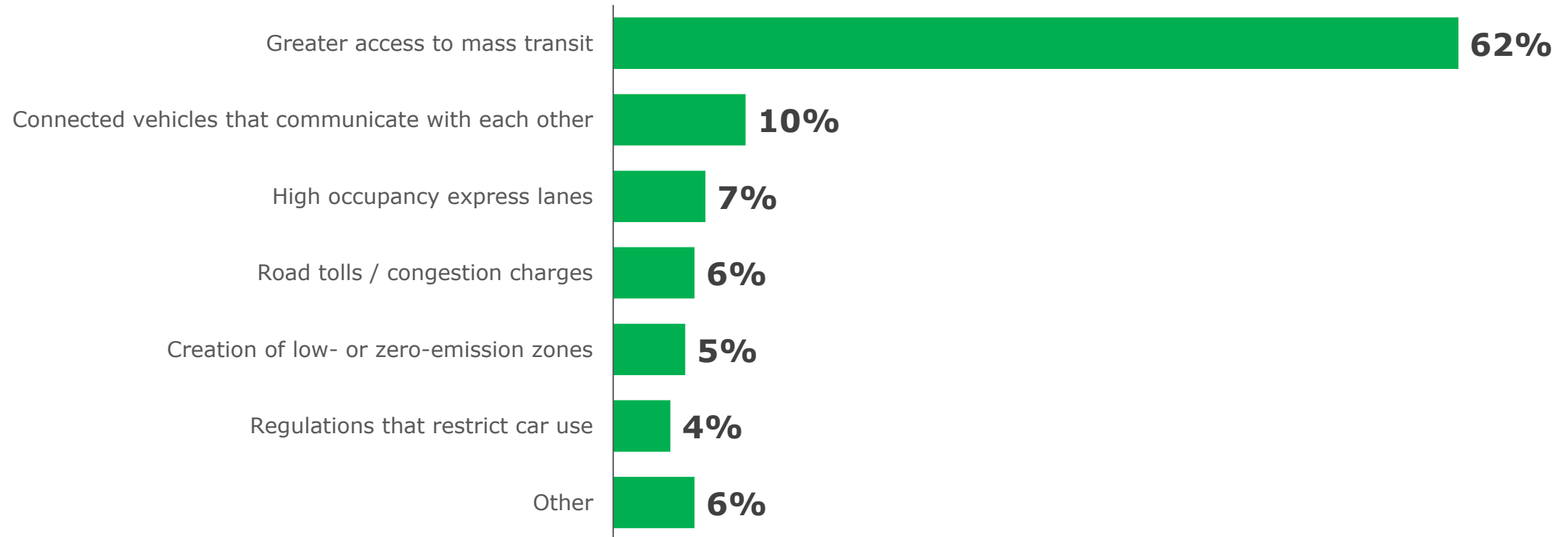
Q18: How often do you drive your vehicle to work? Q19: How much would you be willing to pay in the form of a user fee (e.g., congestion charge, road toll) if it reduced your commute time by 25 percent?

Sample size for Q18: Pre/boomers (370), Gen X (203), Gen Y/Z (344); for Q19: Pre/boomers (174), Gen X (169), Gen Y/Z (311)

Consumers think more access to mass transit is the best option to solve congestion

Comparatively, consumers do not think the creation of low/zero emission zones or car use restrictions are the right solution to the problem

Means to reduce traffic congestion...



Q43. In your opinion, what is the best way to reduce traffic congestion?

Sample size: n= 1,279

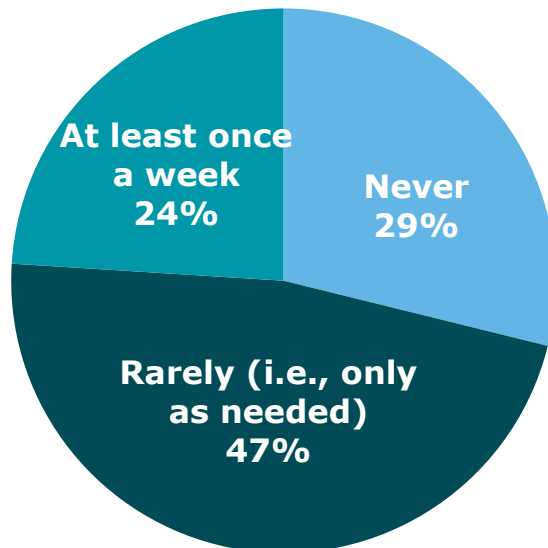
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Only 24 percent of consumers take multi-mode trips on a weekly basis

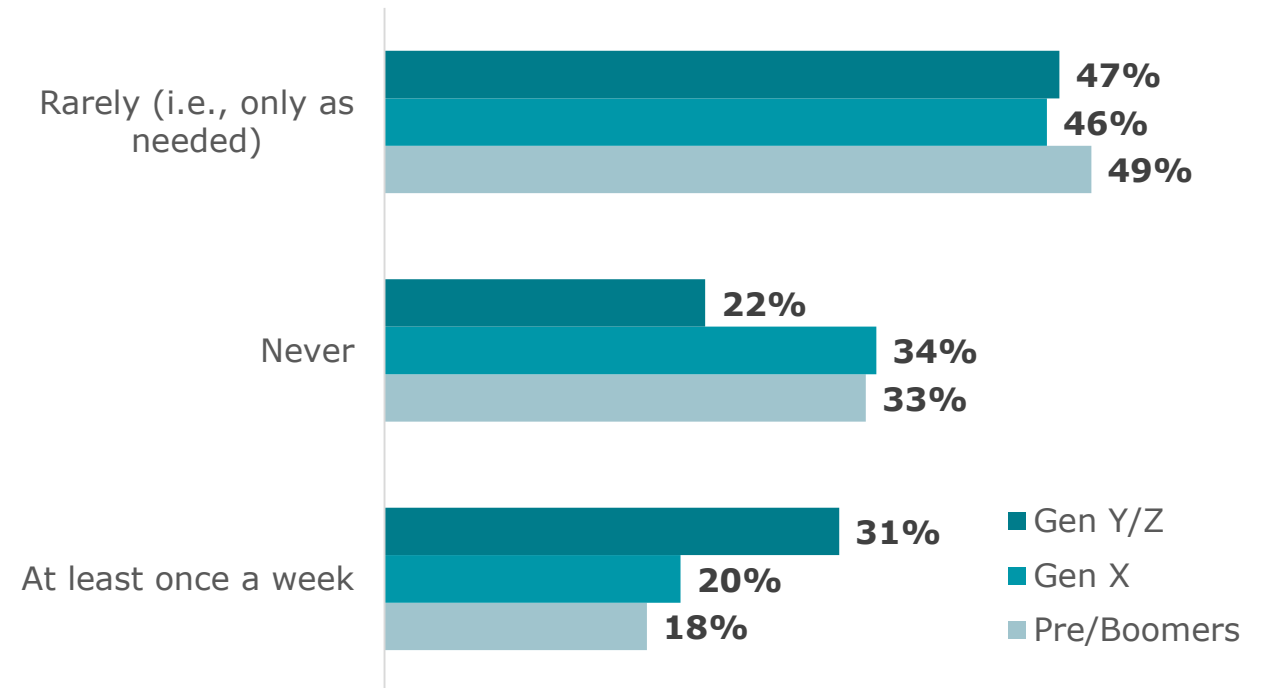
Half of consumers rarely use multiple modes of transportation in the same trip. However, younger consumers use multi-mode trips more often than older generations

% of consumers who use multiple modes of transportation in the same trip

Overall



By generation



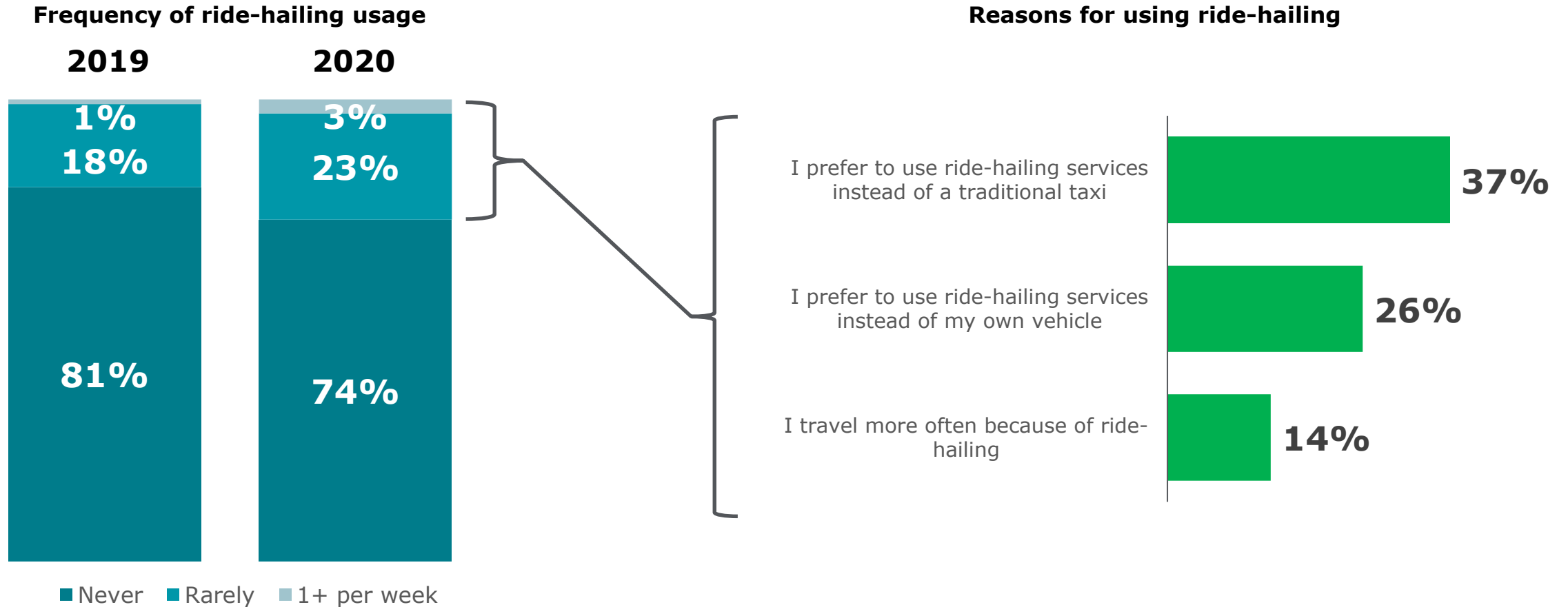
Q39. How often do you use multiple modes of transportation in the same trip (e.g., a trip using a subway, commuter train and your own vehicle)?

Sample size: n=1,279; Pre/boomers (470), Gen X (289), Gen Y/Z (520)

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Regular usage of ride-hailing services has remained essentially flat over time

At the same time, there has been a slight increase in the number of people who use the service on an occasional basis, sometimes as a replacement for the traditional taxi



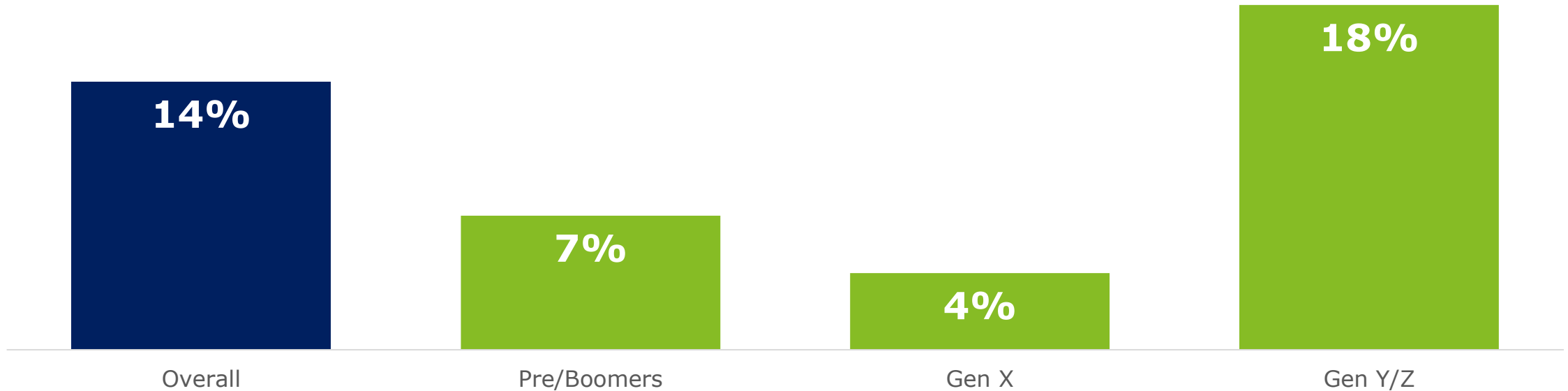
Q40. How often do you currently use ride-hailing services?
Sample size: n=1,279 [2020]; 1,256 [2019]

Note: Percentage of respondents who said somewhat agree or strongly agree have been added together
Q41. To what extent do you agree with the following statements?
Sample size: n= 331

However, younger consumers prefer to travel more thanks to ride-hailing

18 percent of Gen Y/Z consumers travel more often because of ride-hailing compared to just 7 percent of Pre/Boomers

% of consumer who travel more often because of ride-hailing



Note: Percentage of respondents who said somewhat agree or strongly agree have been added together

Q41. To what extent do you agree with the following statements?

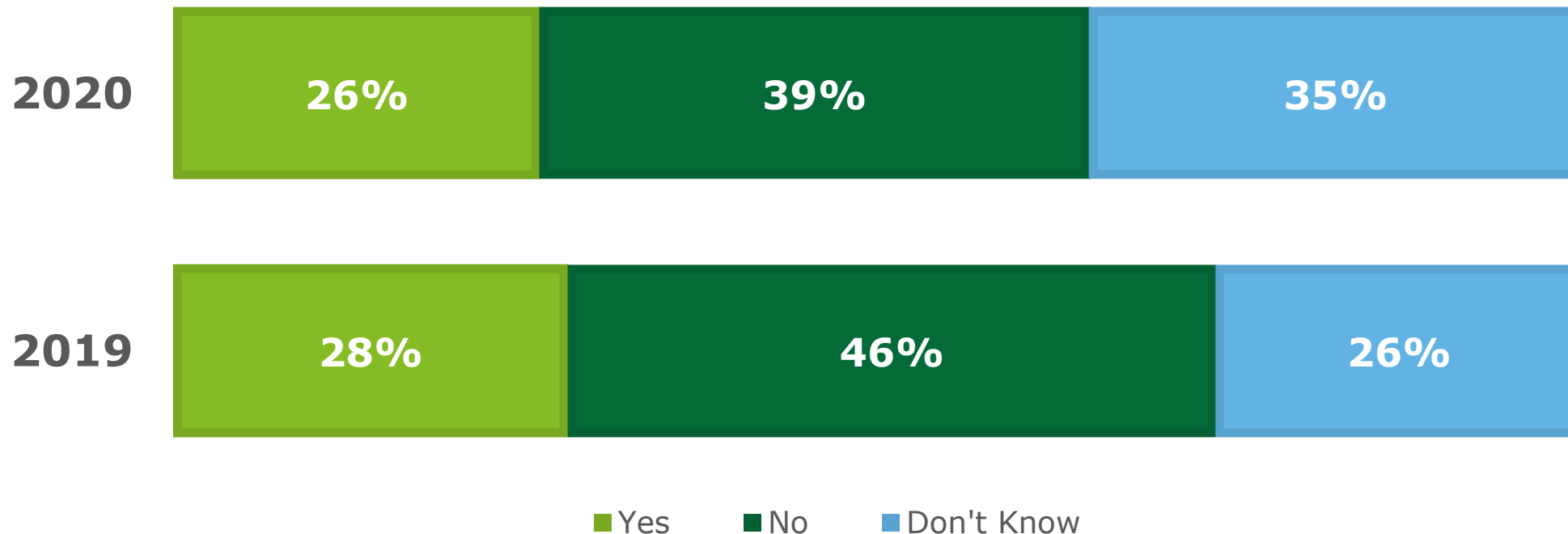
Sample size: n= 331; Pre/boomers (59), Gen X (66), Gen Y/Z (206)

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A quarter of ride-hail users may give up vehicle ownership altogether

This has remained flat from 2019 when 28 percent of ride-hail users wondered whether they need to own a vehicle going forward

Percentage of consumers who question the need to own a vehicle in the future due to use of ride-hailing services



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

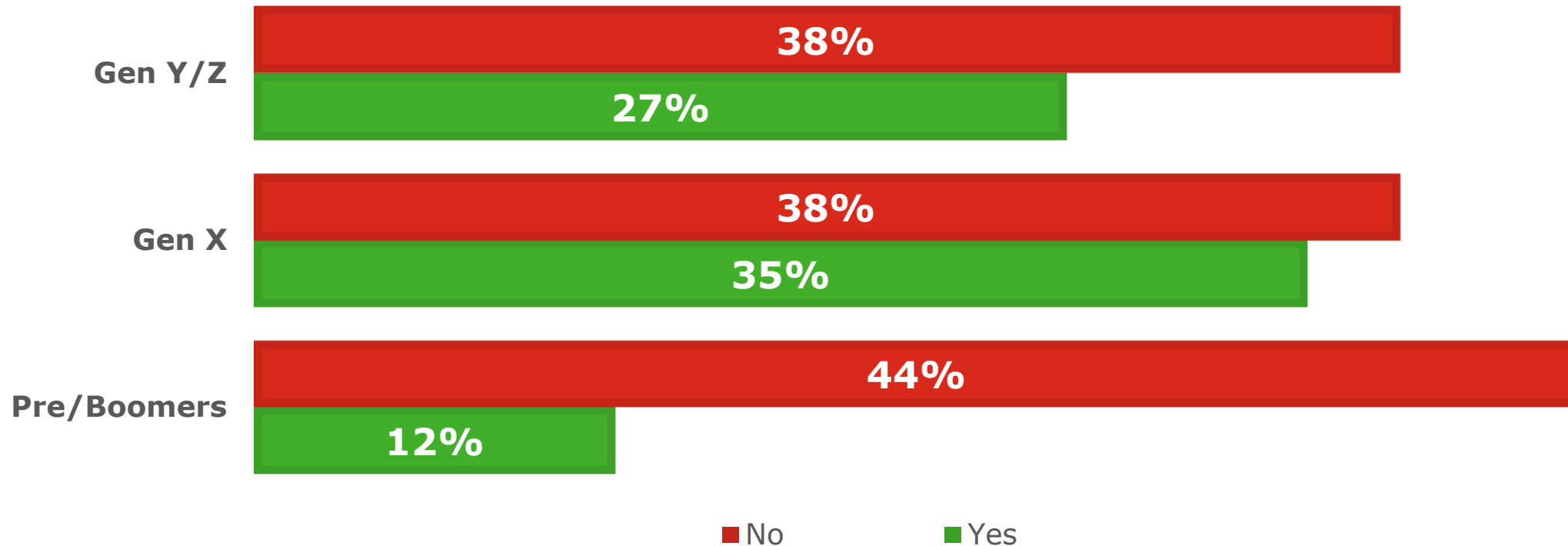
Sample size: n= 331 [2020]; 238 [2019]

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Gen X ride-hail users are more willing to give up their car

Having said that, consumers across generations, are more inclined NOT to question the need to own a vehicle due to the use of ride-hailing services

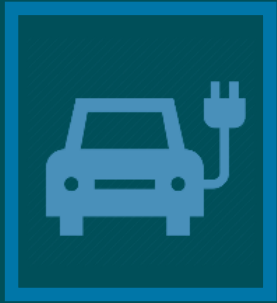
Percentage of consumers who question the need to own a vehicle in the future due to use of ride-hailing services



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

Sample size: Pre/boomers (59), Gen X (66), Gen Y/Z (206)

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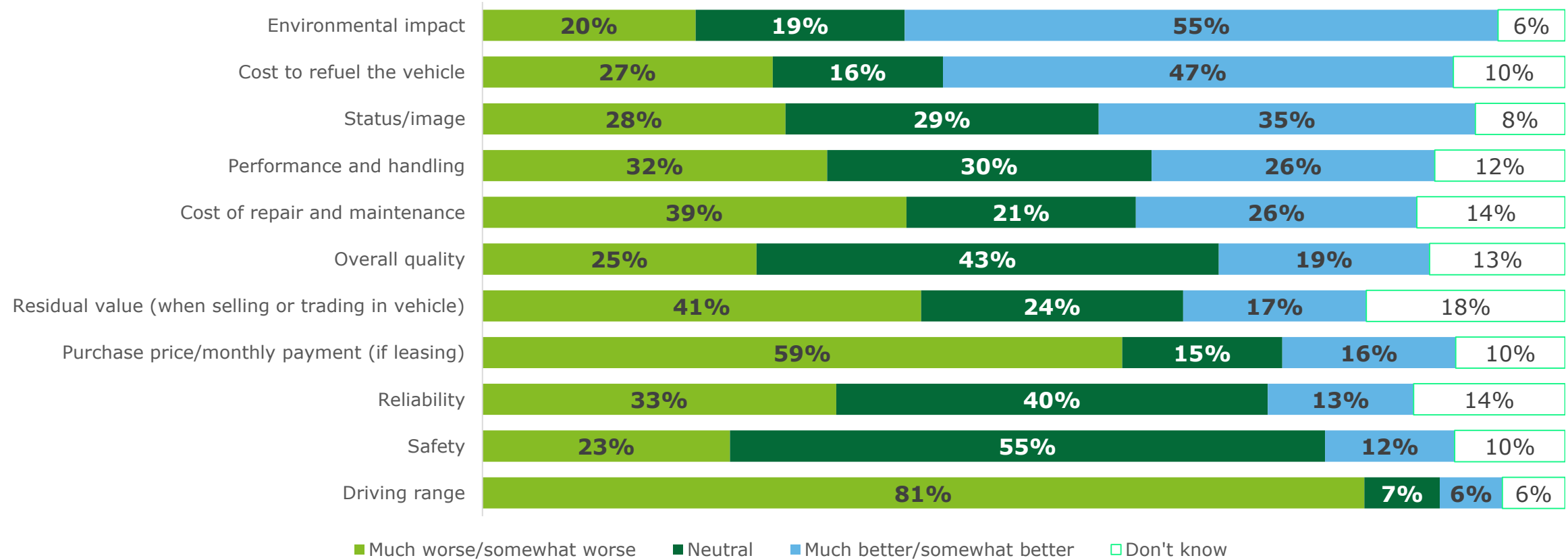


What do consumers think about electrified vehicle technology?

Compared to ICE, BEVs excel on environmental impact and fuel costs

However, consumers think BEVs still lag traditional ICE engines when it comes to driving range and purchase price

Full battery electric vehicles (BEVs) better or worse than traditional gasoline/diesel vehicles



Q23: In your opinion, to what extent are full battery electric vehicles (BEVs) better or worse than traditional gasoline/diesel vehicles in each of the following areas?

Sample size: n= 1,279

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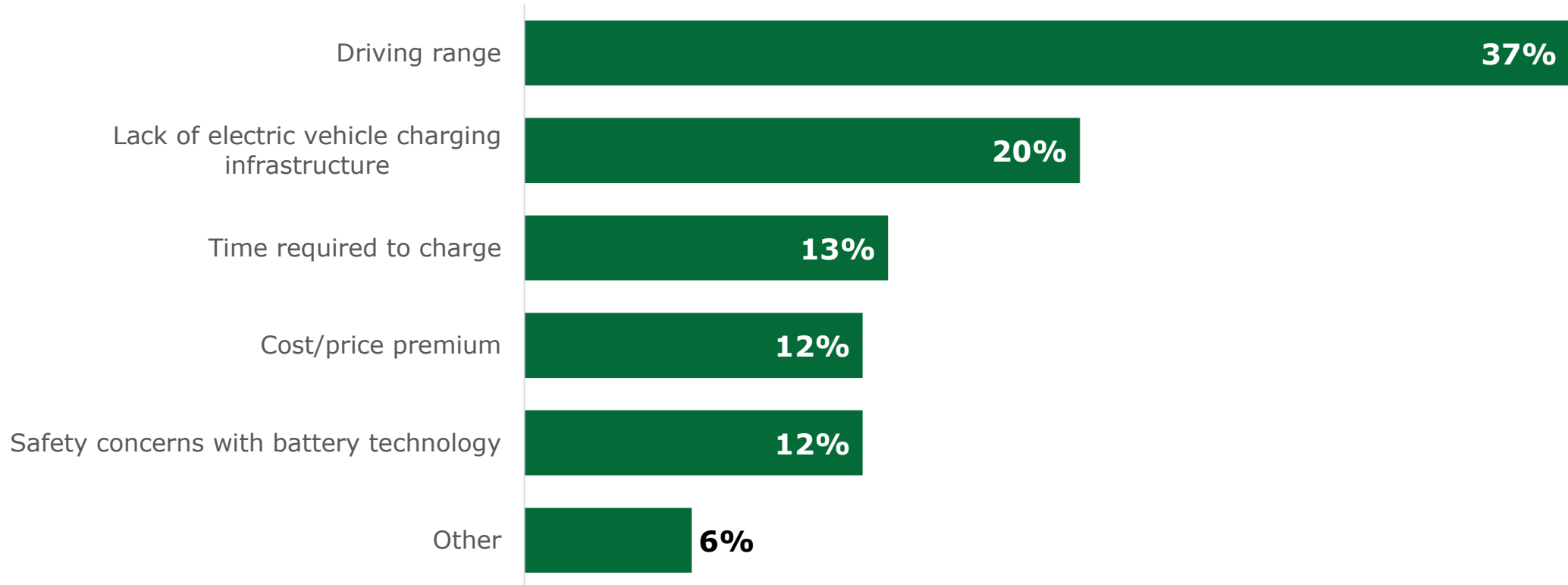
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Driving range is the top concern for consumers in adopting BEVs

Concern over cost/price premium is less of a concern, likely due to availability and economies of scale as sales of BEVs continue to grow

Greatest concern regarding all battery-powered electric vehicles



Q24: In your opinion, what is the greatest concern regarding all battery-powered electric vehicles?

Sample size: n= 1,279

Only a third of consumers have access to a 120V or 240V charging outlet

As ready domestic access to 120V or 240V electric power outlets for charging an EV battery is somewhat limited, people may be more reliant on public charging infrastructure

% of consumer who have 120V or a 240V electric power outlet in the area where they live and where they can connect an electric vehicle

120V Outlet



29%



42%

240V Outlet



36%



33%

Note: Did not show "Don't know" responses

Q61. Is there a 120V or a 240V electric power outlet where you live where you could connect an electric vehicle?

Sample size: n= 1,279

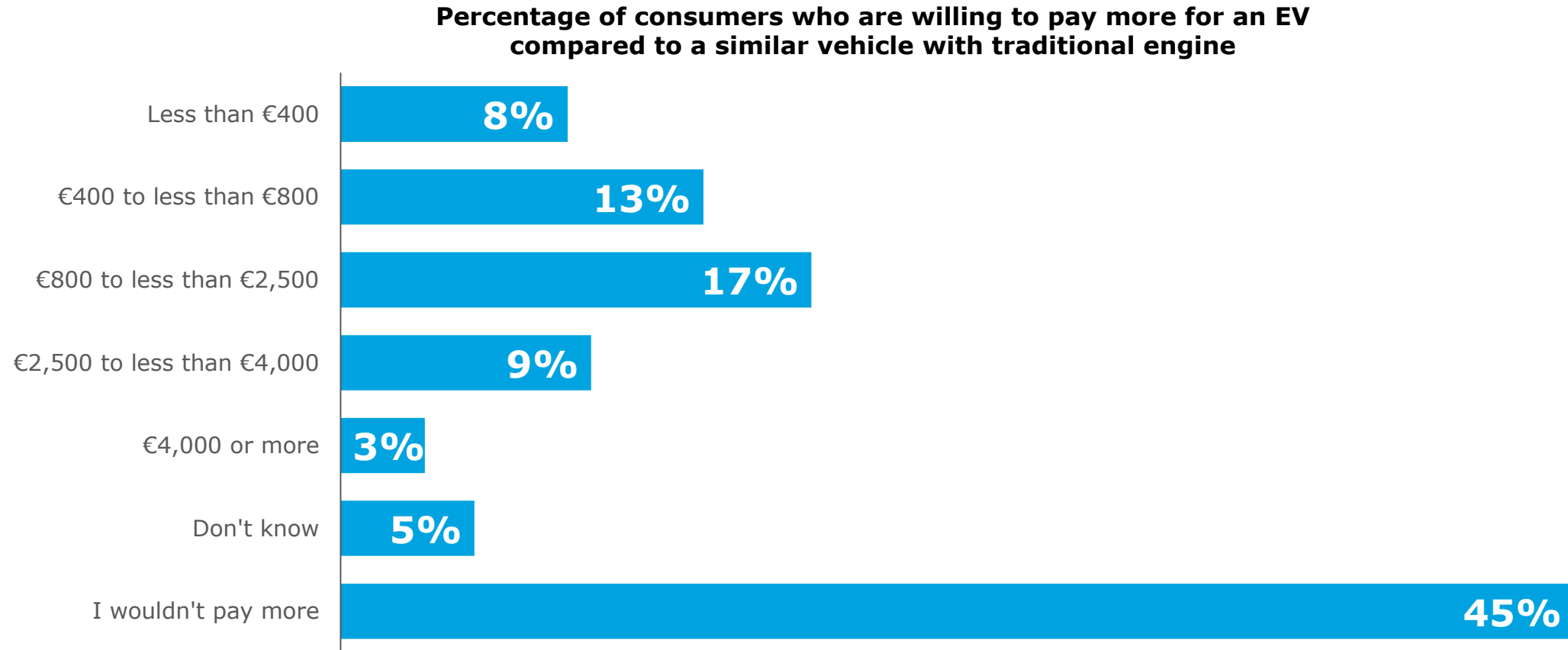
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4 out of 10 consumers are willing to pay premium up to €2,500 for an EV

However, 45 percent of consumers indicate they won't pay any more for an EV compared to a similar gasoline/diesel vehicle which should be worrisome for OEMs looking for an ROI



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: n= 1,279

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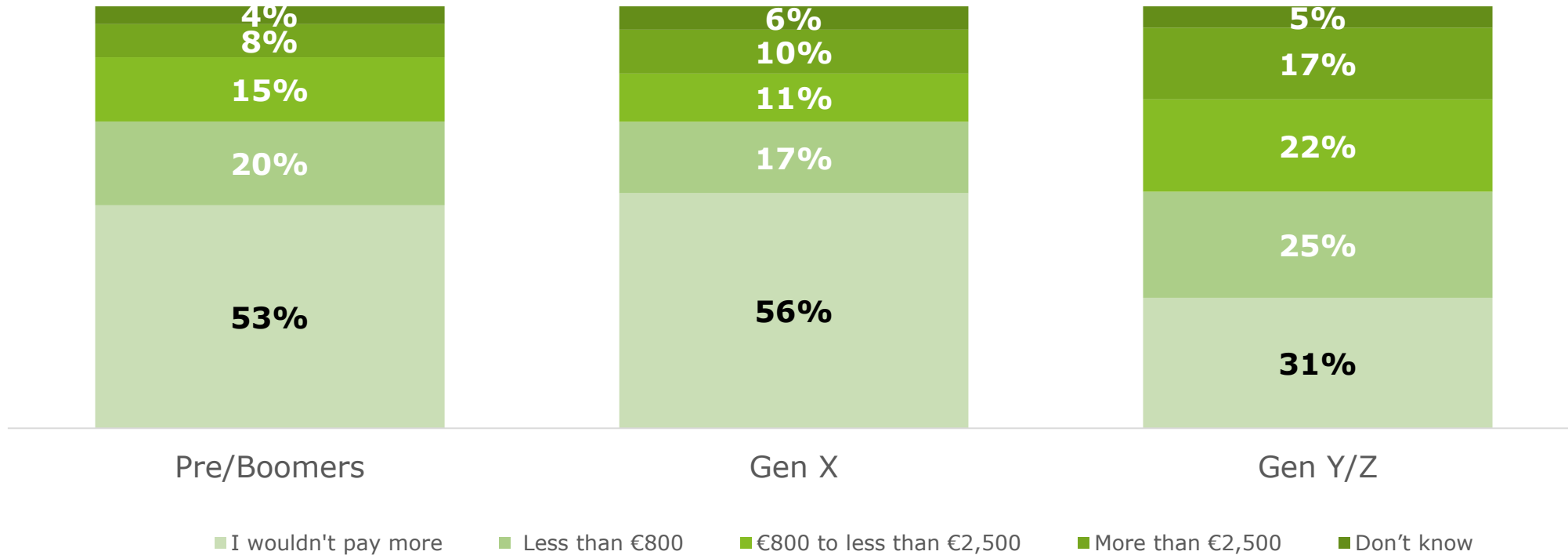
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Younger consumers are willing to pay more for an EV compared to other generations

Higher proportion of Gen Y/Z (64 percent) consumers are ready to pay a premium for an EV while only 43 percent of Pre/Boomers are ready to do so

Percentage of consumers who are willing to pay more for an EV compared to a similar vehicle with traditional engine



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: Pre/boomers (470), Gen X (289), Gen Y/Z (520)

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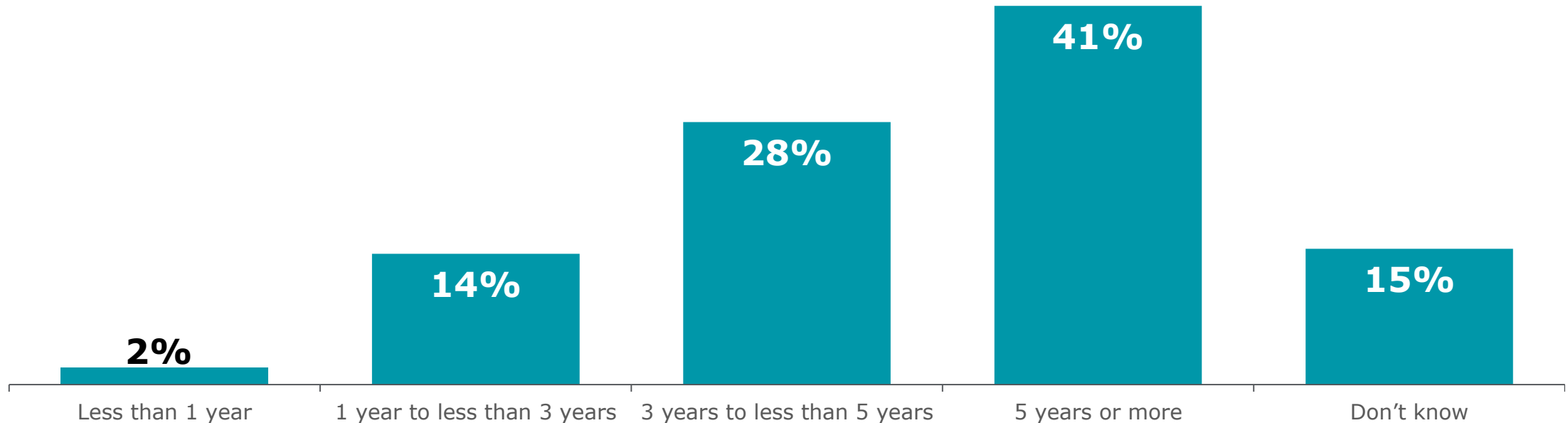
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7 out of 10 consumers think it would take 3+ years to recover BEV costs

At the same time, 15 percent of the consumers are not sure when they should expect to recover the upfront price premium through lower operating and maintenance costs of an EV

Percentage of consumers who think it would require “n” number of years to recoup the upfront price premium of an EV over a similar gasoline/diesel vehicle



Q26. How many years do you think it would take before the expected lower operating and maintenance costs of an all-battery electric vehicle (BEV) would outweigh the upfront price premium?

Sample size: n= 1,279

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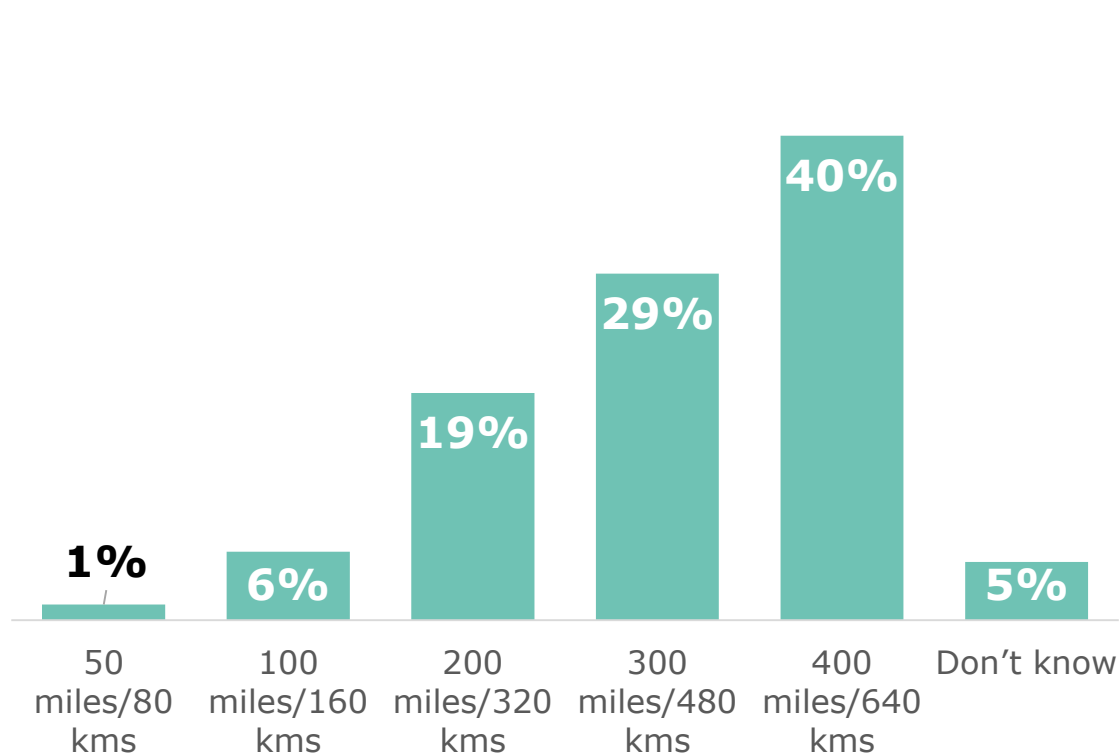
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Majority of consumers want at least 300 miles of range from a fully-charged BEV

However, younger consumers are fine with a lower driving range as compared to older generations whose mentality around the current fossil fuel paradigm is well entrenched

Minimum driving range consumers expect from a fully-charged BEV



	Upto 100 miles/160 kms	100 – 200 miles (160-320 kms)	200-300 miles (320-480 kms)	More than 300 miles/480 kms
Pre/Boomers	4%	15%	32%	44%
Gen X	7%	19%	26%	43%
Gen Y/Z	10%	22%	28%	35%

Q27: What is the minimum driving range that an all battery-powered electric vehicle (BEV) needs to have?

Sample size for Q27: n= 1,279

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Note: Not shown "Don't know"

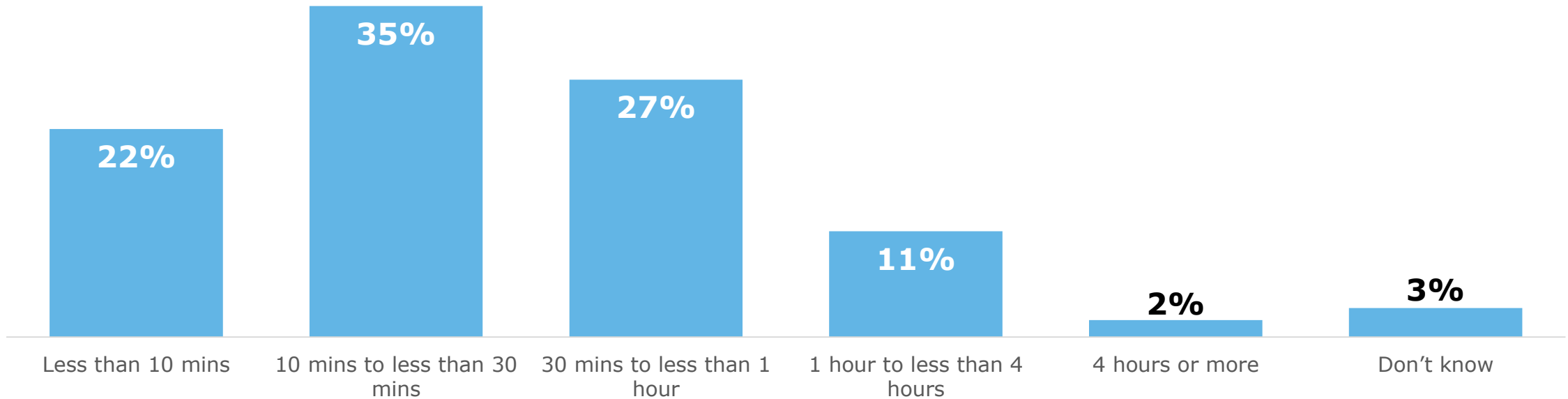
Sample size: Pre/boomers (470), Gen X (289), Gen Y/Z (520)

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Majority of consumers expect BEV recharging to take less than 30 minutes

In fact, 22% of consumers don't want to wait more than 10 minutes to fully recharge their BEV

Expected wait time to fully recharge an all battery-powered electric vehicle (BEV)



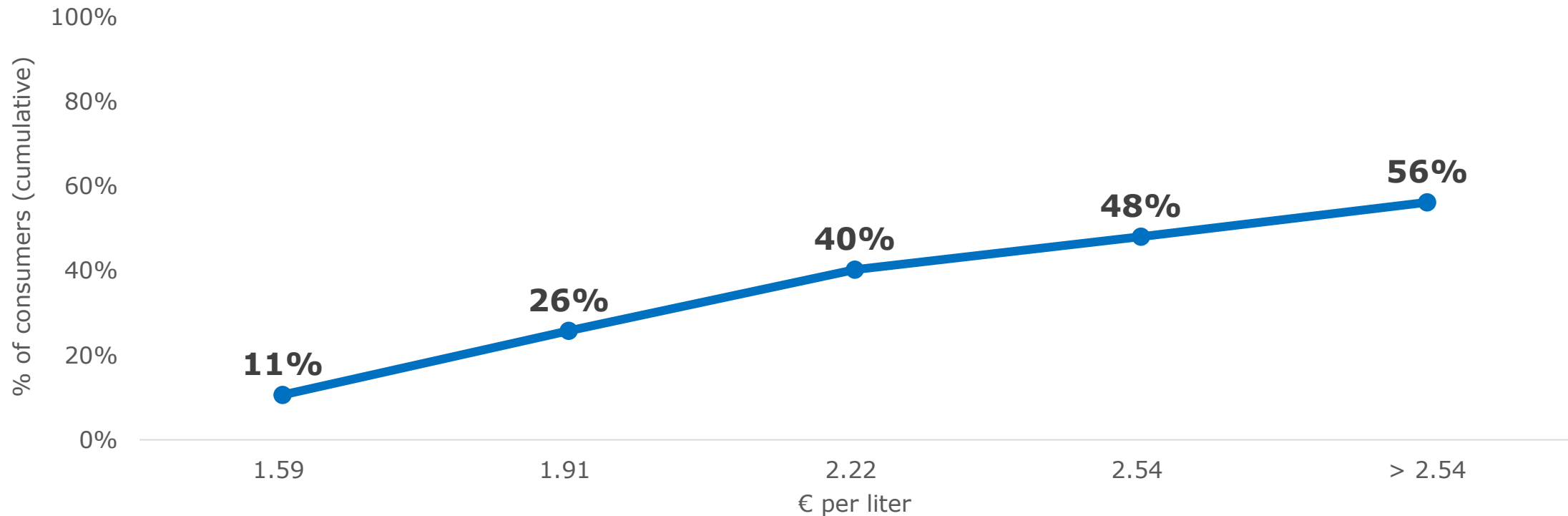
Q28: How long should it take to fully recharge an all battery-powered electric vehicle (BEV)?

Sample size: n= 1,279

Higher price of gasoline equals higher level of interest in BEVs

If gasoline were to exceed €2.22 per liter, 40% of consumers would be much more likely to consider buying an all battery-powered vehicle (BEV)

% of consumers who would consider buying a BEV if gasoline prices touch



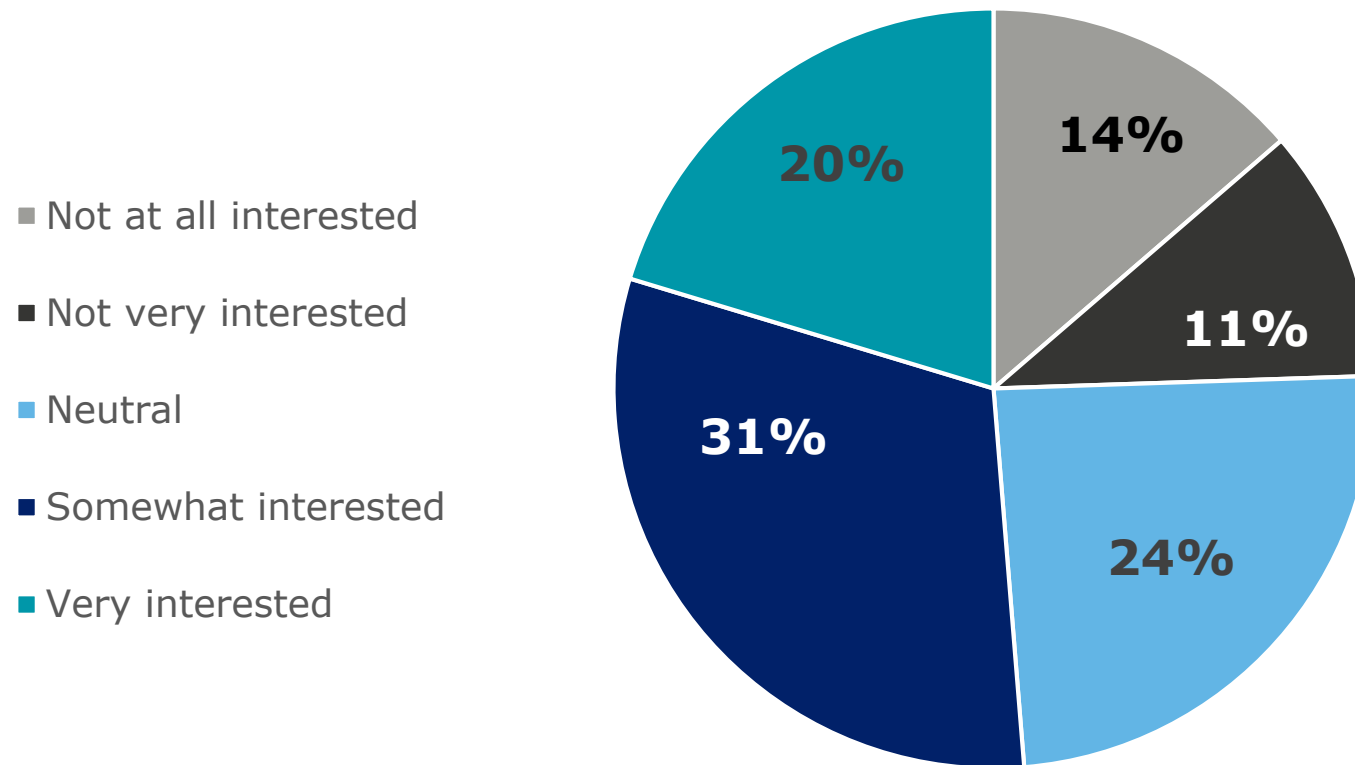
Q29: At what price for gasoline would you be much MORE likely to consider buying or leasing an all battery-powered electric vehicle (BEV)?

Sample size: n= 1,279

More than half of consumers interested in a BEV if there were more perks attached

Creative offers such as throwing in charging and maintenance costs for the first 3 years of ownership could be a way to incent people into the BEV market

Percentage of consumers who are interested to buy a BEV if charging and maintenance costs were covered for first 3 years of ownership



Q30. How interested would you be in buying an all battery-powered electric vehicle (BEV) if all charging and maintenance costs were covered for the first 3 years of ownership?

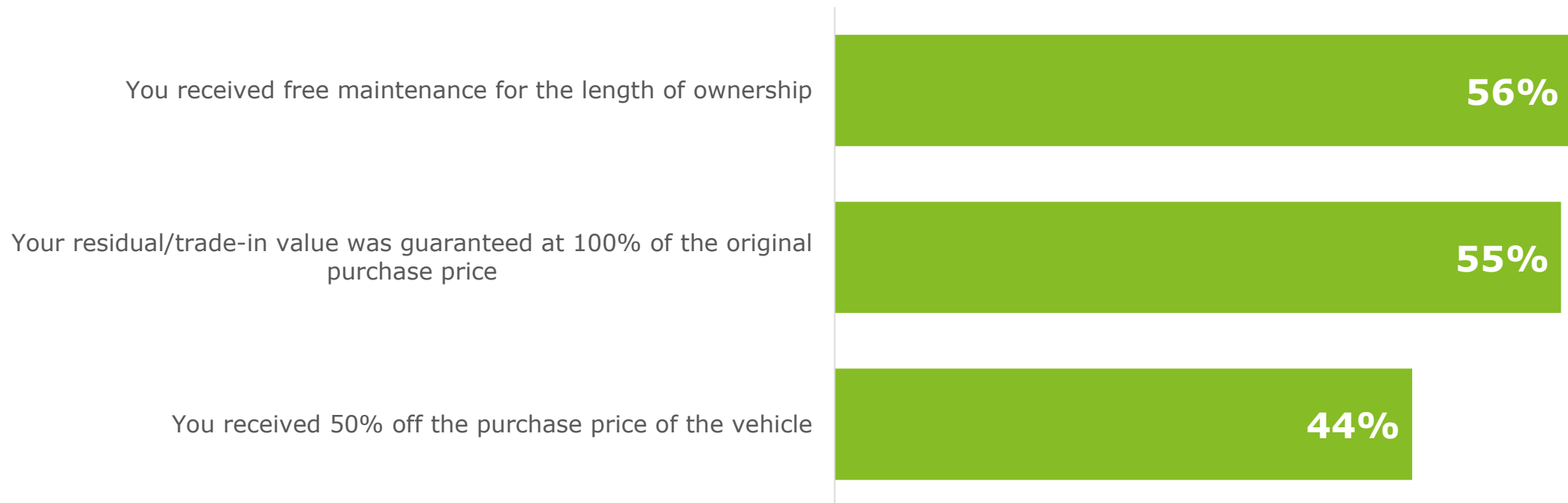
Sample size: n= 1,279

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In fact, there are a variety of ways to incent people to buy a BEV

Offering consumers free maintenance over the full length of ownership or guaranteeing residual value of their vehicle at 100 percent are other ways to potentially incent consumers

Percentage of consumers willing to pay the equivalent amount of filling a car with gasoline in order to charge BEV, if...



Note: Percentage of respondents who are somewhat willing or very willing have been added together

Q32. To what extent would you be willing to pay the equivalent amount of filling a car with gasoline in order to charge your all battery-powered electric vehicle (BEV) under the following scenarios?

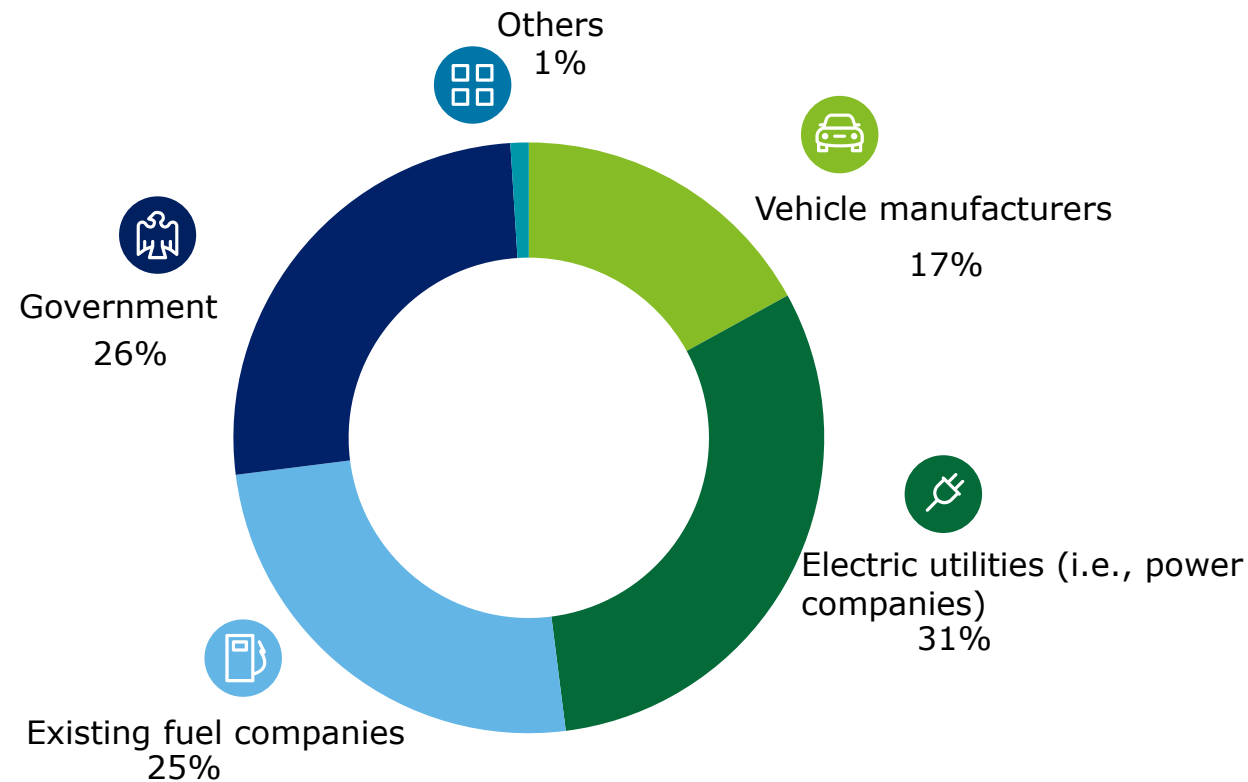
Sample size: n=1,279

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Consumers feel utilities are primarily responsible for building EV charging network

They also think that charging stations and EV infrastructure is the responsibility of entities like government and fuel companies, potentially opening the door to public-private partnerships

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



Q31. In your opinion, who should be primarily responsible for building publicly-accessible electric vehicle charging stations and other EV infrastructure?

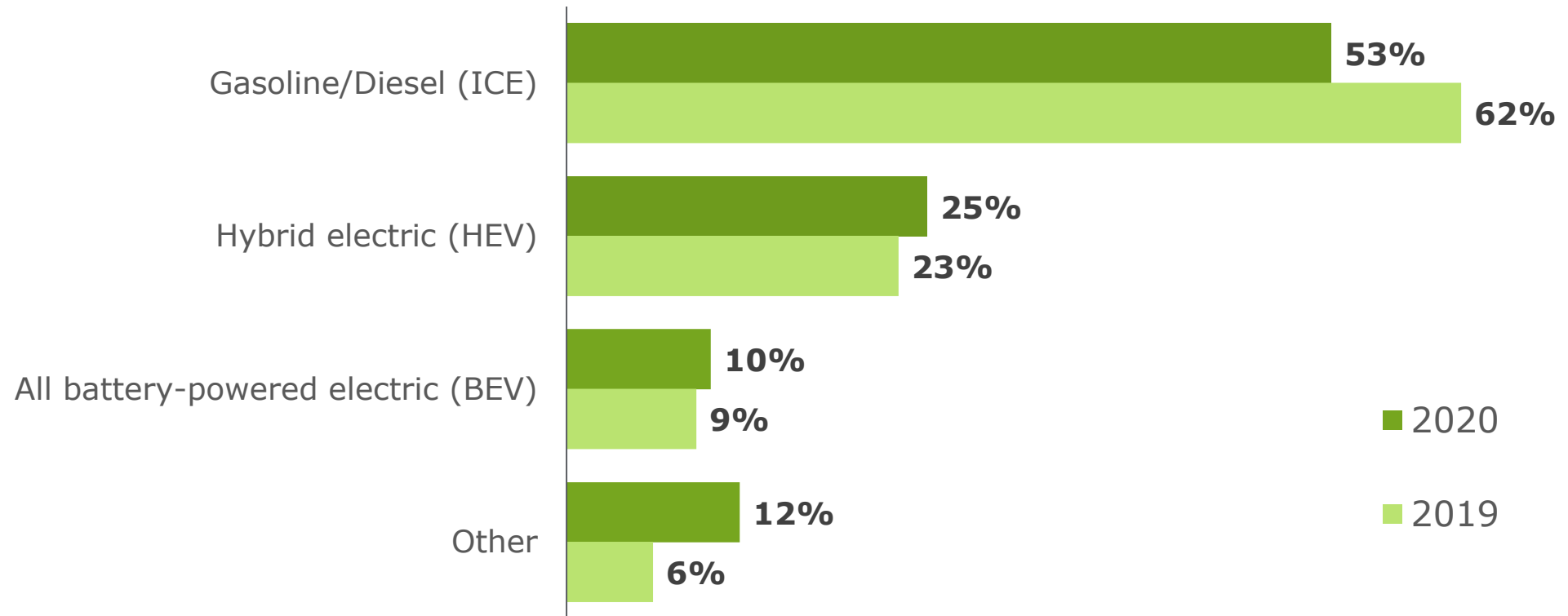
Sample size: n= 1,279

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Consumer preference for engine type looks to be shifting

Intention to remain with traditional ICE engines is starting to give way to greener options as interest in hybrid electric vehicles (HEVs) and fuel cells is growing

What type of engine do consumers want in their next vehicle?



Note: 'Other' category in 2020 data includes ethanol, CNG, and fuel cell
Q52. What type of engine would you prefer in your next vehicle?

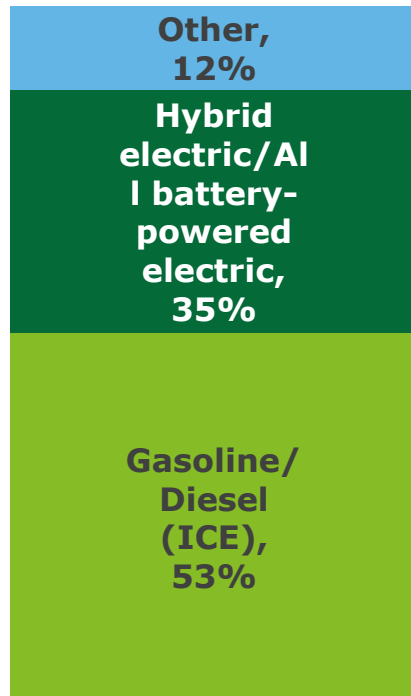
Sample size: n= 954 [2020]; 941 [2019]

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Lower emissions is the main reason to prefer EVs

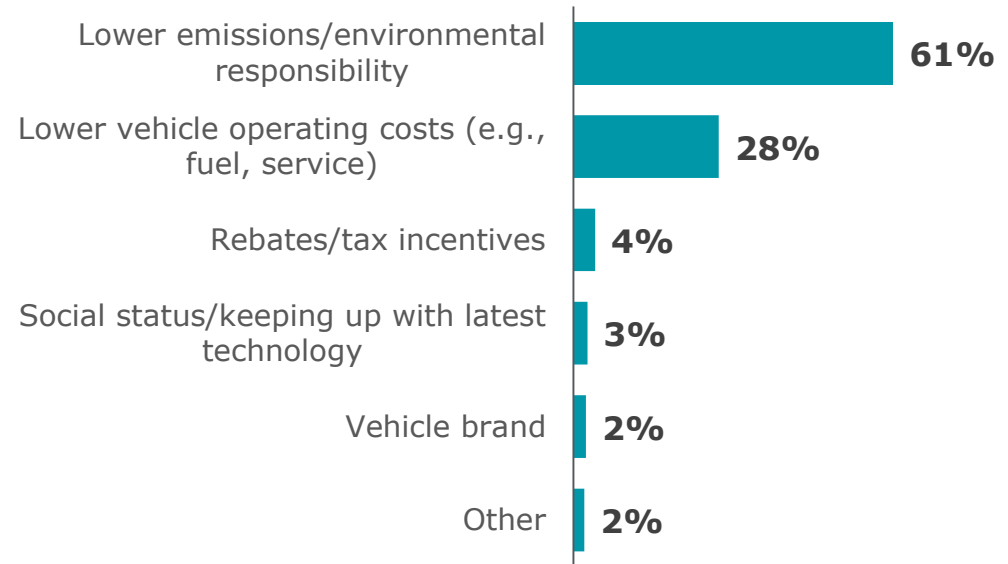
The other main reason for considering EVs is lower vehicle operating costs

Type of engine consumers want in their next vehicle



Q52. What type of engine would you prefer in your next vehicle?
Sample size: n=954

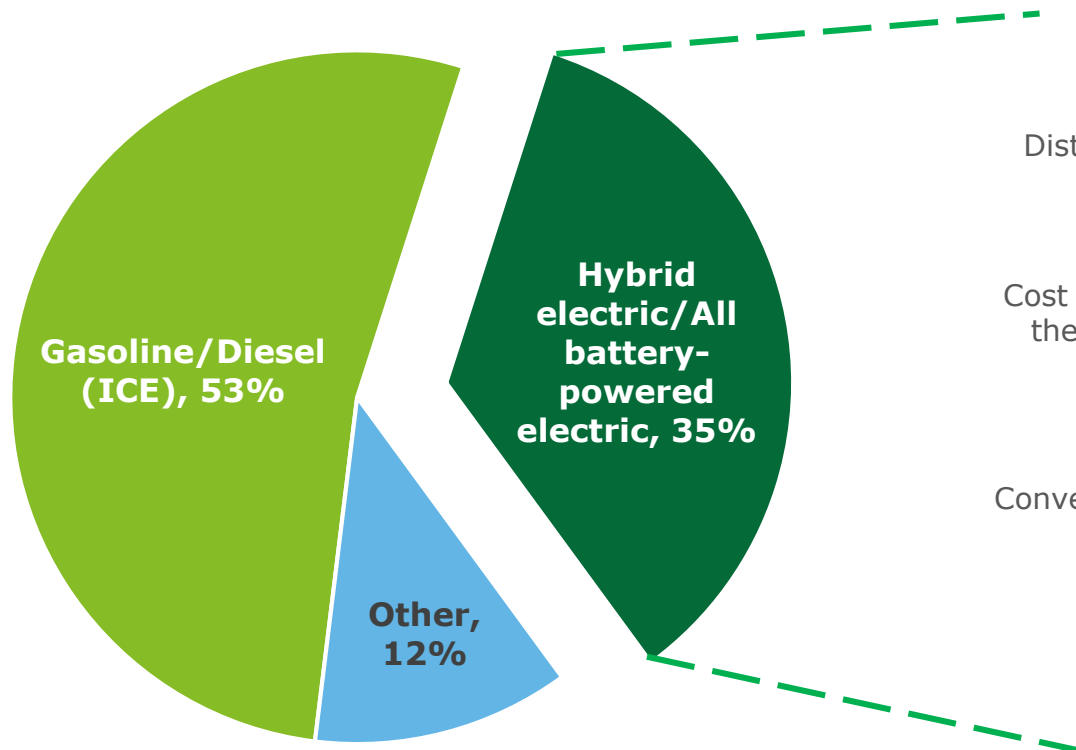
Reason for considering an electrified vehicle



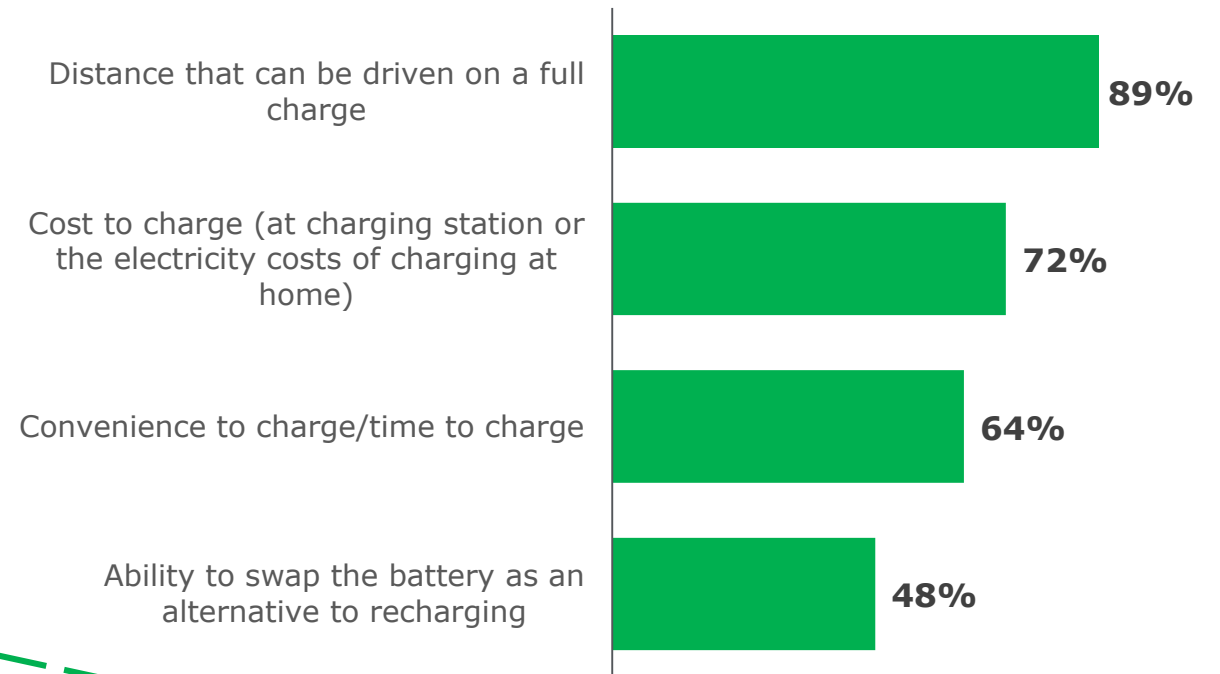
Q54. What is the main reason you are considering an electrified vehicle?
Sample size: n= 339

Driving range is the most important factor that consumers look for in an EV

For the 35 percent of consumers who intend to purchase an electrified vehicle, three most important factors are: driving range, cost to charge, and convenience/time to charge



Importance of various factors in choosing an electrified vehicle



Note: 'Other' category in 2020 data includes ethanol, CNG, and fuel cell
Q52. What type of engine would you prefer in your next vehicle?

Sample size: n= 954

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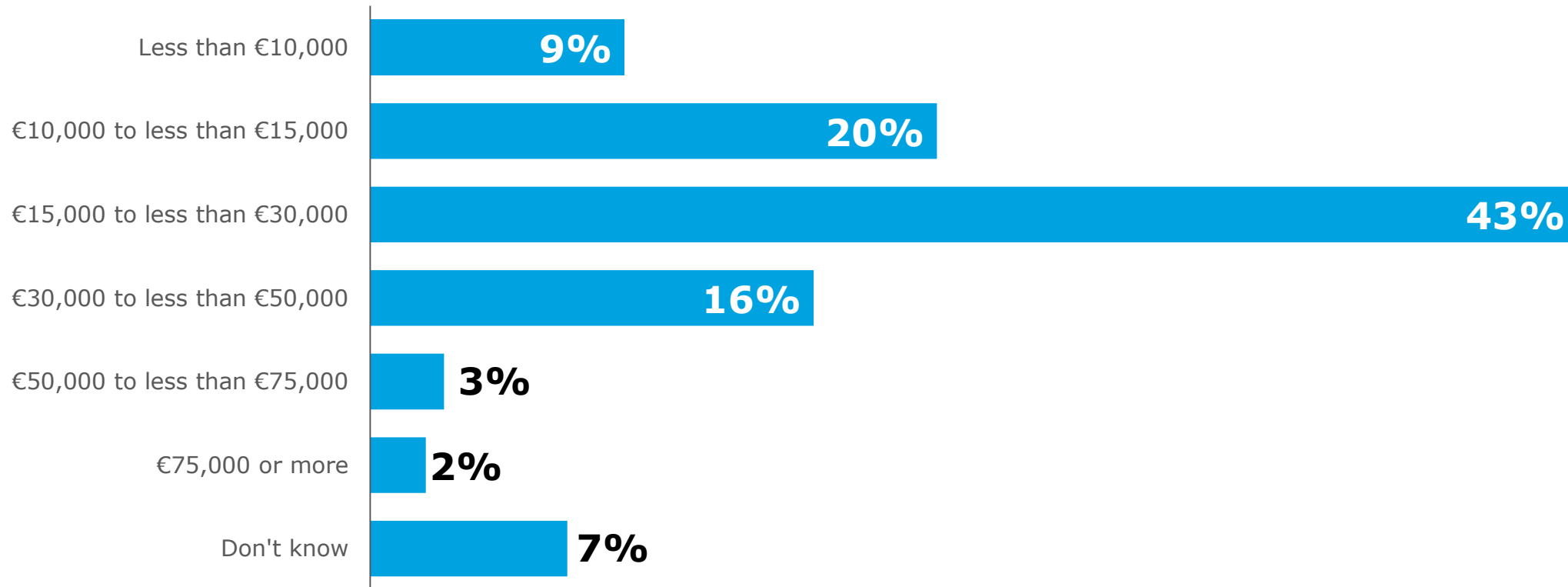
Note: Percentage of respondents who think very important or extremely important have been added together
Q53. How important are each of the following factors in your decision to want an electrified vehicle?

Sample size: n= 339

Consumers are ready to spend in the range of €15K to €30K for an EV

In fact, 72 percent of consumers plan to shop for an HEV/BEV that retails for less than €30K

Percentage of consumers willing to be shopping for an EV in the price range of...



Q55. In which of the following price ranges will you be shopping for an electrified vehicle? (Please indicate what you would expect to pay after any dealer or government incentives that might be available)

Sample size: n= 339

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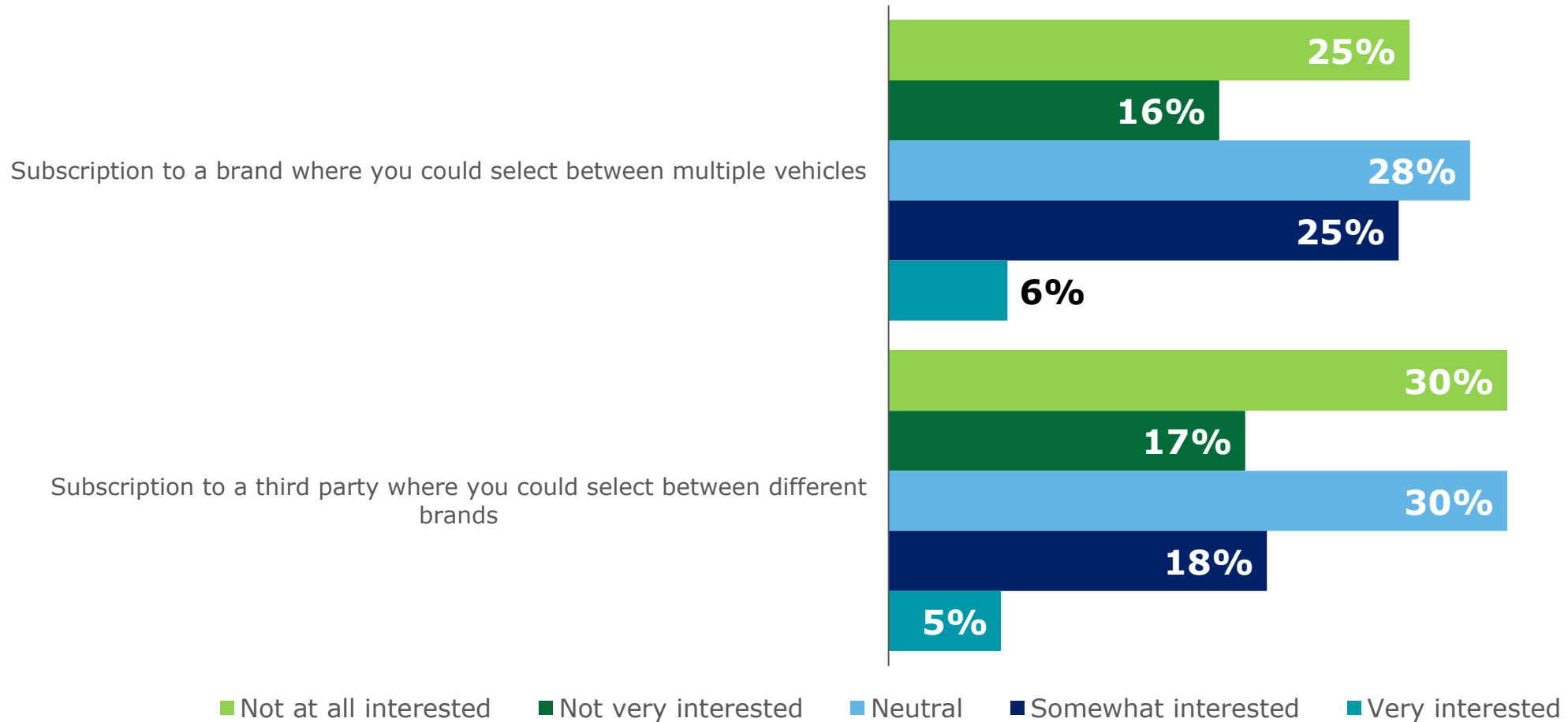


**Looking ahead to buying
your next vehicle....**

Majority of consumers are not looking to adopt a subscription ownership model

Less than a third of consumers are interested in subscribing to a brand where they have an option to select multiple vehicles – even fewer are looking for a multi-brand solution

Consumer interest in subscription ownership model



Q51. How interested are you in each of the following scenarios?

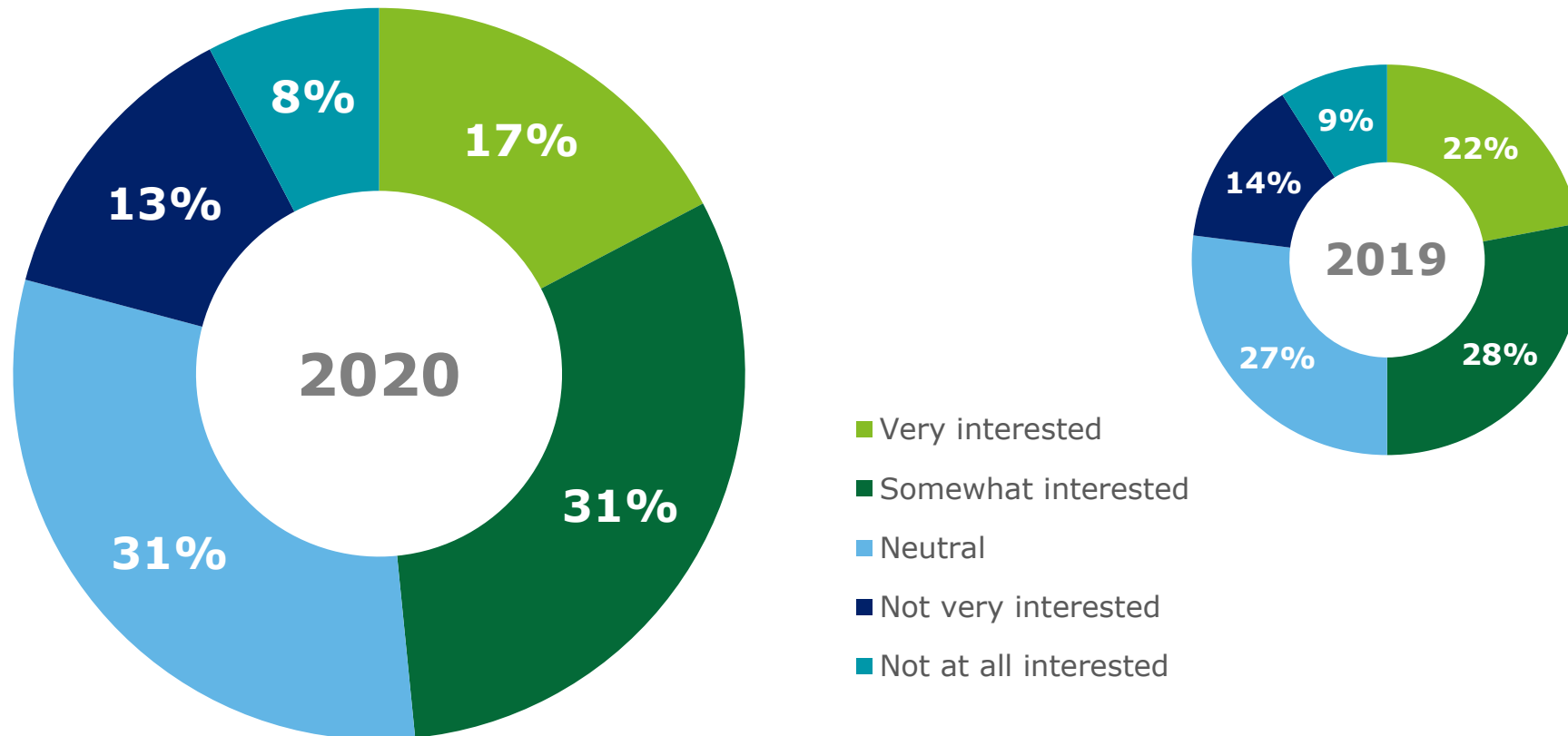
Sample size: n= 954

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Consumer desire to buy a vehicle online direct from an OEM may be slowing down

Consumers remain 'interested' in moving to a completely digital purchase experience for their next vehicle, but only 17 percent say they're completely bought into the idea

How interested are consumers in by-passing the dealer?



Q58. If you had the option to acquire your next vehicle directly from the manufacturer (via online process), how interested would you be?

Sample size: n= 954 [2020]; 941 [2019]

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