

An aerial night view of a city, likely New York City, with a prominent blue network overlay of glowing nodes and connecting lines. The network is denser in the foreground and fades into the background. The city lights are visible through the network, and the sky is dark with a hint of sunset or sunrise on the horizon.

EVOLUTION OF MOBILITY 2.0

AUGUST 2021

COX AUTOMOTIVE
MOBILITY

Key findings

TRADITIONAL OWNERSHIP HOLDS STEADY

1

With COVID-19 halting the momentum of alternative methods of transportation (especially in urban areas), vehicle ownership is more important than ever.

If fact, more Americans plan to increase the number of cars in their garages in the next 5 years.

ALTERNATIVE OWNERSHIP

2

Alternative transportation methods are still important players in the transportation landscape, as many of us rely on them to supplement vehicle ownership.

We are eager to embrace alternative ownership in the future but currently face a lack of affordable, practical, flexible options in the space.

EMERGING TECHNOLOGY

3

Demand for ADAS features remains high as many of us gain more first-hand experience with them, and there is an expectation that they will be standard going forward.

Though we're increasingly hesitant about the safety of autonomous vehicles, there is promise for the future as more of us are letting go of control in other areas.

A photograph of a man and a woman sitting in the front seats of a car. The man is driving, smiling, and looking towards the right. The woman is in the passenger seat, also smiling and looking towards the man. The car's interior is visible, including the steering wheel, dashboard, and seats. The image has a dark blue overlay on the left side.

1

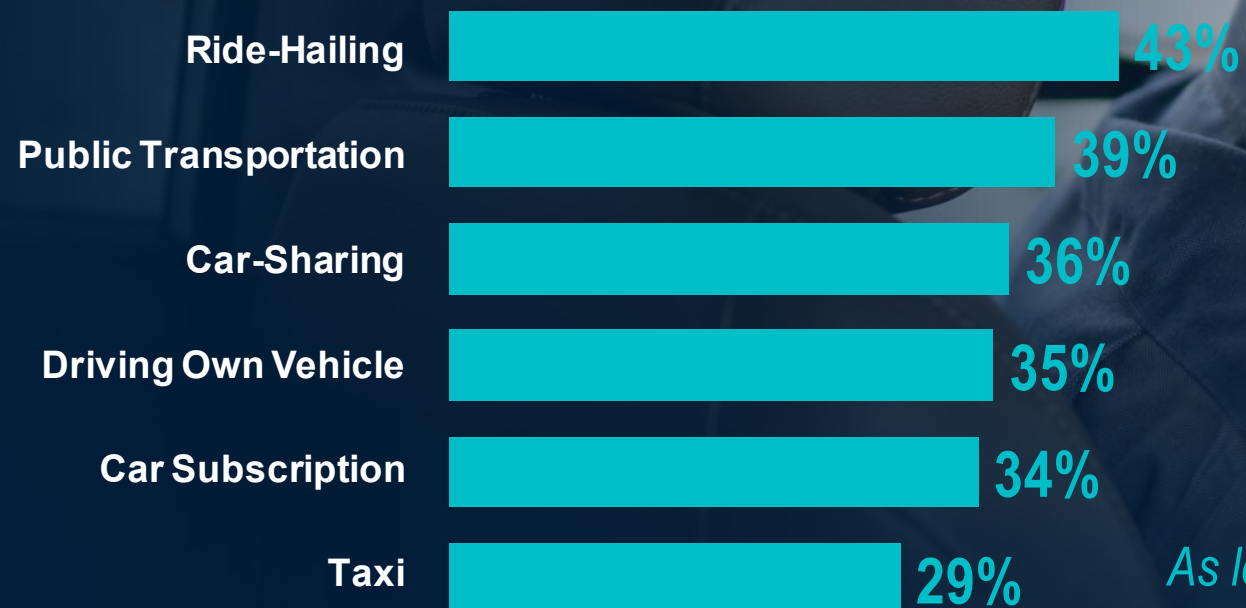
**TRADITIONAL OWNERSHIP
HOLDS STEADY**

COX AUTOMOTIVE
MOBILITY

We begin by acknowledging the staggering impact of COVID-19.

USE TRANSPORTATION METHOD SLIGHTLY OR SIGNIFICANTLY LESS DUE TO COVID-19

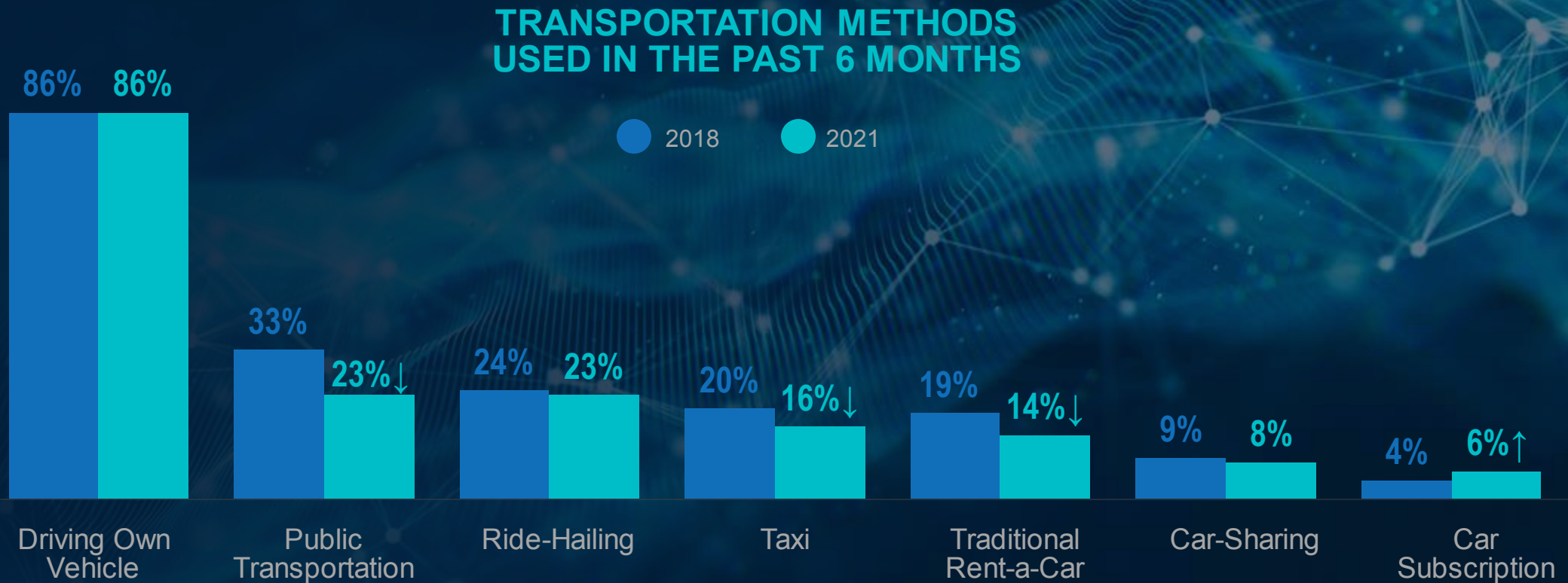
Among Those Who Have Used Each Transport Method



As lockdowns went into place, daily habits changed, and we dramatically reduced our use of all transportation methods.

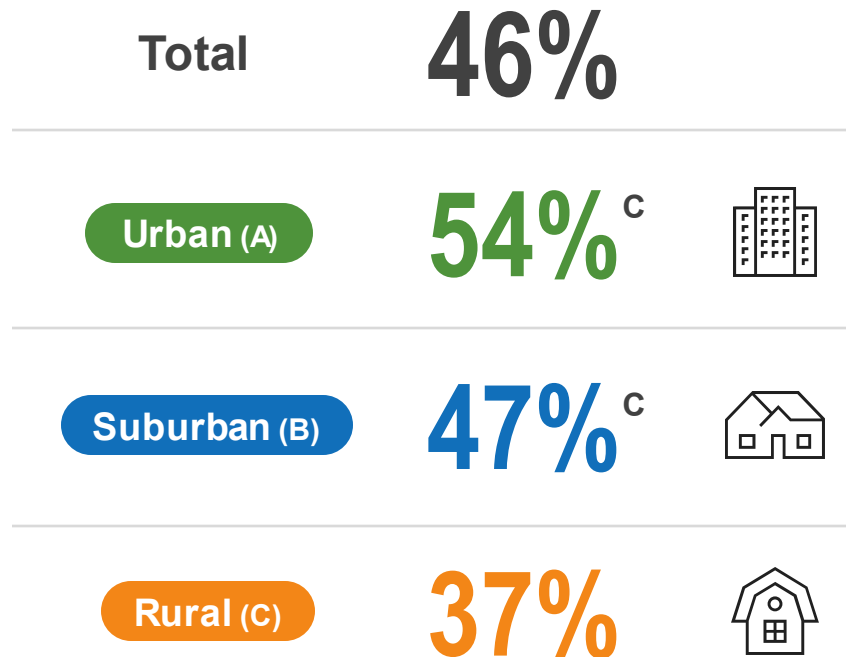
While restrictions lifted in 2021, people haven't automatically returned to their old habits and many alternative models have yet to bounce back to pre-pandemic levels.

What is clear: Americans prefer driving their own vehicles above all.

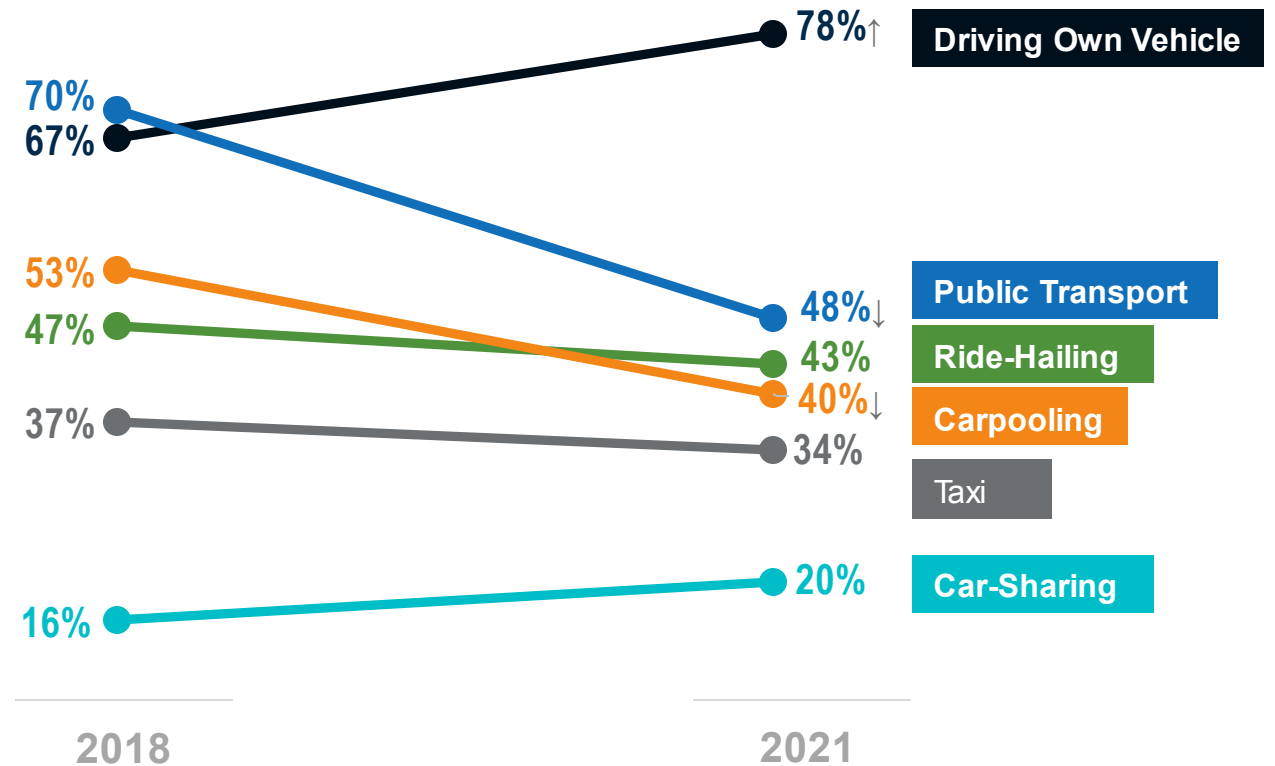


The pandemic impacted the driving habits of people living in urban areas the most.

TRANSPORTATION HABITS CHANGED SLIGHTLY/SIGNIFICANTLY DUE TO COVID-19



TRANSPORTATION METHODS USED IN THE PAST 6 MONTHS AMONG URBANITES



Urbanites have changed how they're thinking about the future.

*In 2018 they planned to use ride-hailing more often than their own vehicles.
...Now it's the other way around.*

TRANSPORTATION METHODS EXPECTED TO USE IN NEXT SIX MONTHS

Ride-Sharing/Ride-Hailing

2018

49%

2021

38%



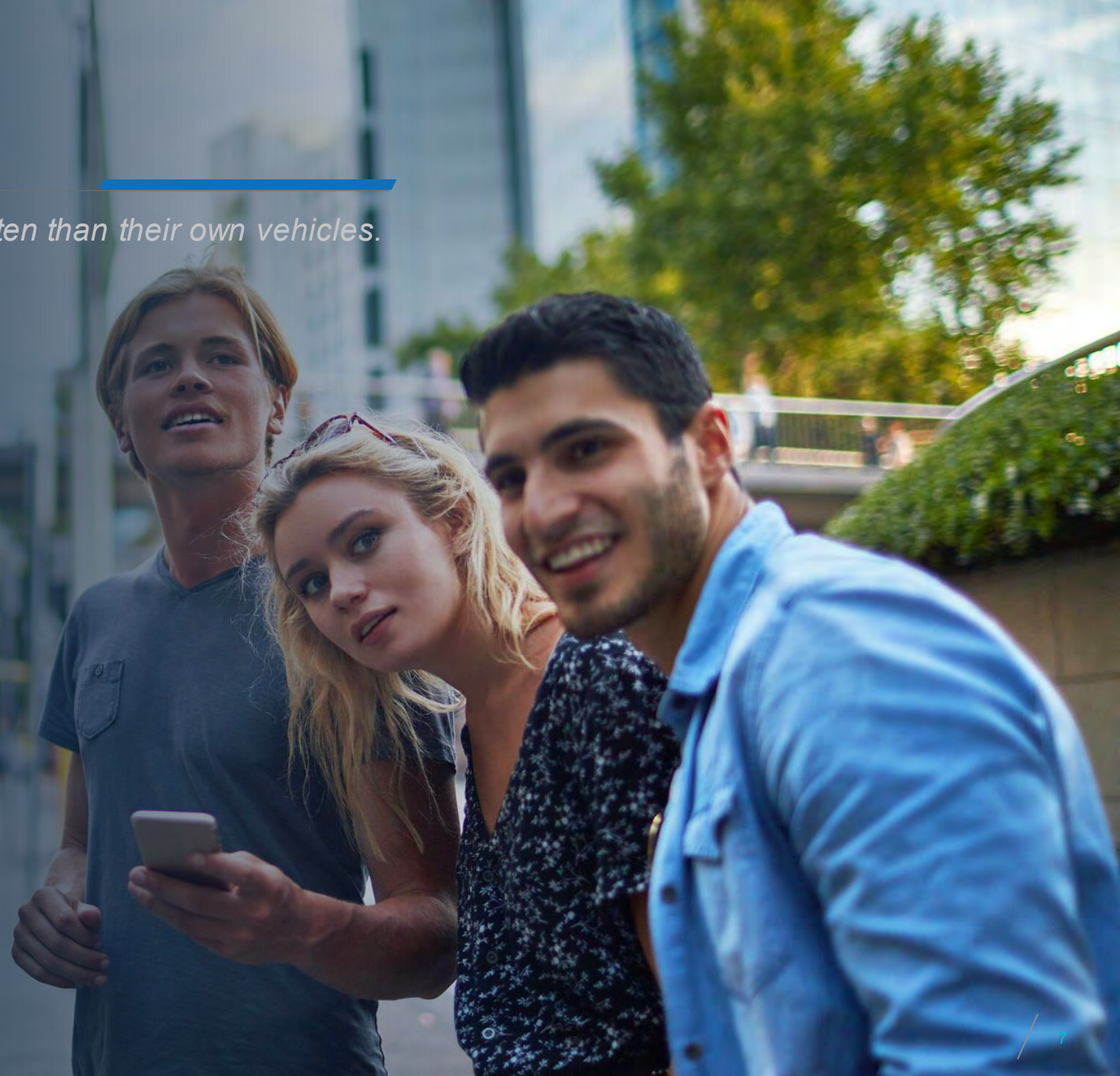
Driving your own vehicle (or one you've borrowed)

2018

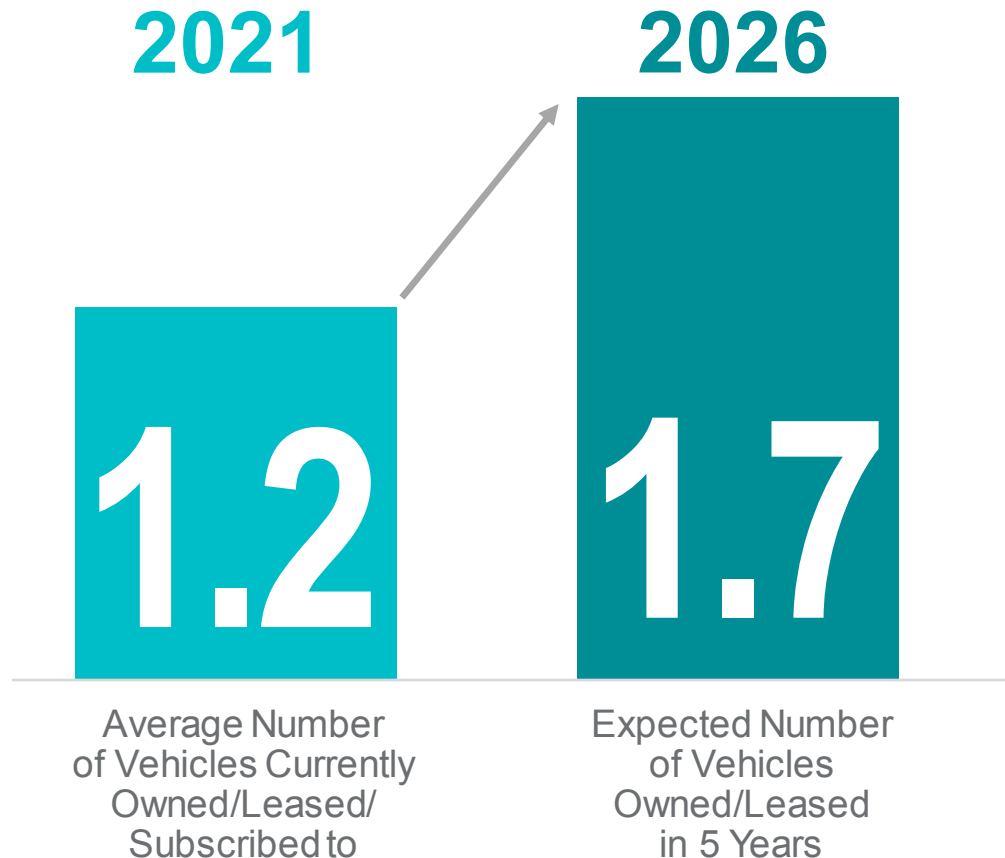
45%

2021

54%



Over the next five years more Americans plan to increase the number of cars in their garage



35% overall plan to increase the # of vehicles owned/ leased in 5 years

64% of Gen Z plan to increase

88% of non-owners plan to increase the size of their garage

23% of owners plan to increase the size of their garage

The increase in vehicles is driven by younger generations who primarily have not owned a vehicle before.

As attitudes are shifting towards more traditional ownership...

**I LIKE TO OWN
VEHICLES**

% Agree Strongly/Somewhat

67%

2018

73% ↑

2021

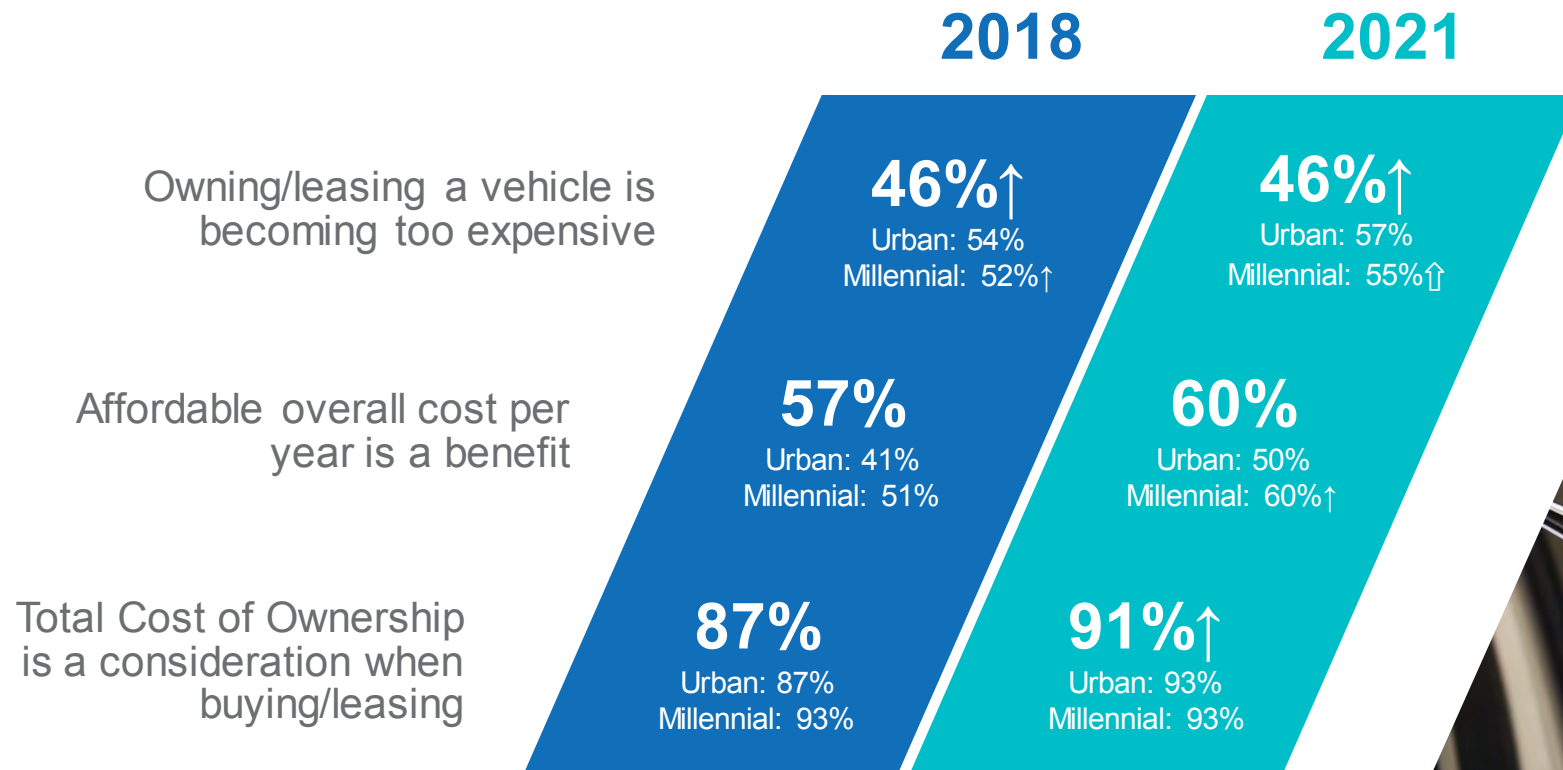
...ownership will remain on top as consumers' primary mode of transportation.

**PRIMARY MODE OF TRANSPORTATION
IN NEXT 5 YEARS**

	Total	Urban
Owning/leasing my own vehicle	60%	46%
Public Transportation	9%	18%
Ride-Hailing	9%	11%
Car-Sharing	5%	8%
Car Subscription	5%	6%
Something else (e.g., Walking, Biking)	12%	13%

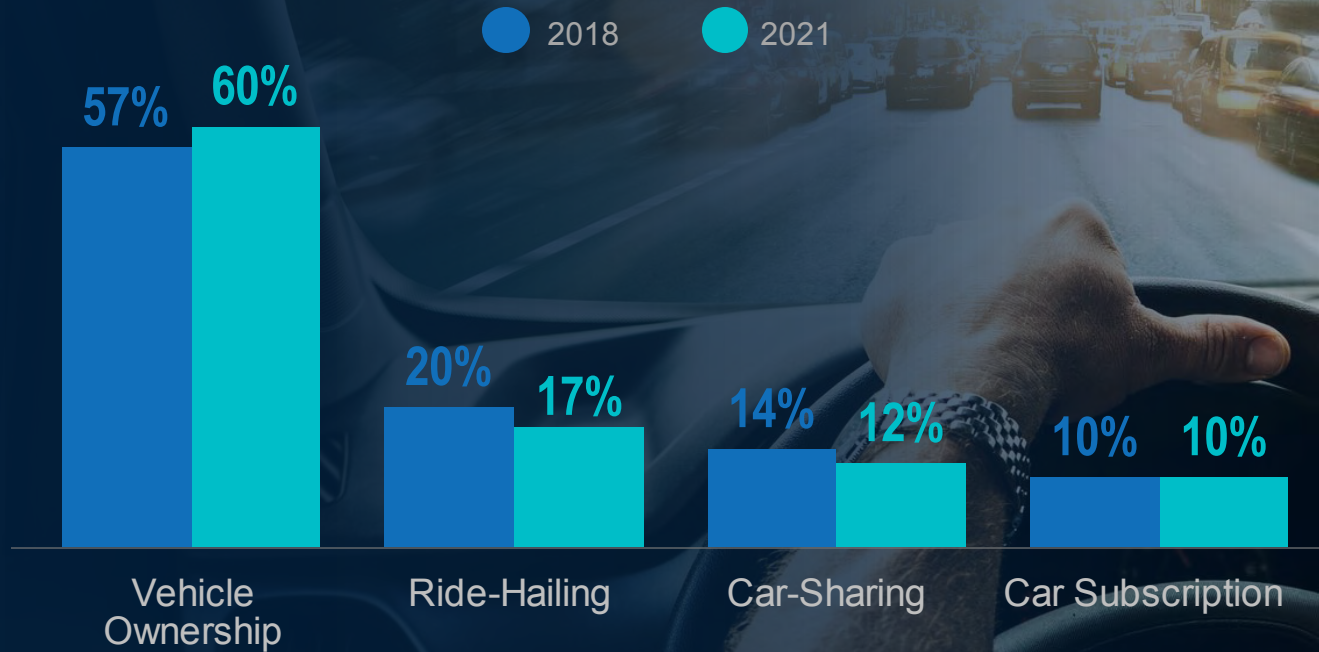
It's not just COVID. People want to drive their own cars more often for other reasons, with cost being a major factor.

Despite retail MSRP increases, the idea that ownership is too expensive has not increased. The total cost of ownership is increasingly seen as a benefit.



No doubt, ownership will continue to dominate in the foreseeable future because of COVID, but also because it is still the most affordable.

AFFORDABLE OVERALL COST PER YEAR

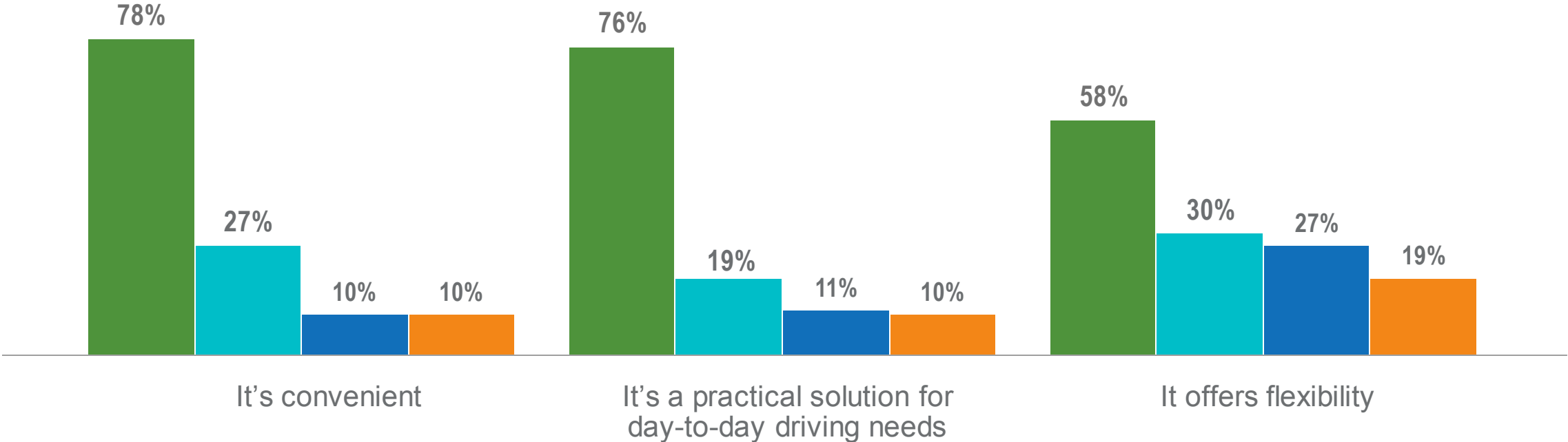


The average ticket price of a Lyft increased 45.9% over the first half of 2021 compared to the first half off 2019

In addition to being the most affordable, ownership is seen as the most convenient, practical and flexible option – solidifying its reign even further.

KEY BENEFITS OF TRANSPORTATION MODELS

● Vehicle Ownership ● Ride-Hailing ● Car Subscription ● Car-Sharing



2

ALTERNATIVE OWNERSHIP



COX AUTOMOTIVE
MOBILITY

While ownership still reigns, people are ready for alternatives. However, ownership is still the best option right now.

**HAVING TRANSPORTATION IS NECESSARY –
BUT OWNING A VEHICLE IS NOT**

**38% AGREE
COMPLETELY/SOMEWHAT**

Gen Z
(A)

46%^D

Millennials
(B)

44%^D

Gen X
(C)

39%^D

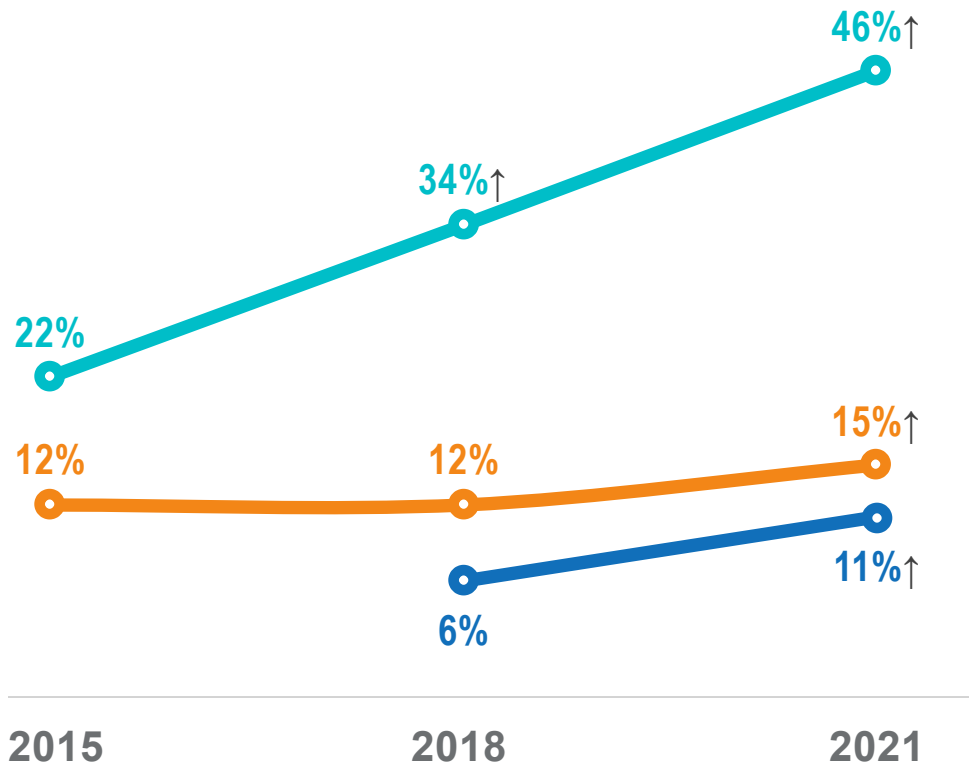
Baby Boomers
(D)

28%



Alternative transportation use continues to grow.

ALTERNATIVE TRANSPORTATION USAGE: EVER USED



2021

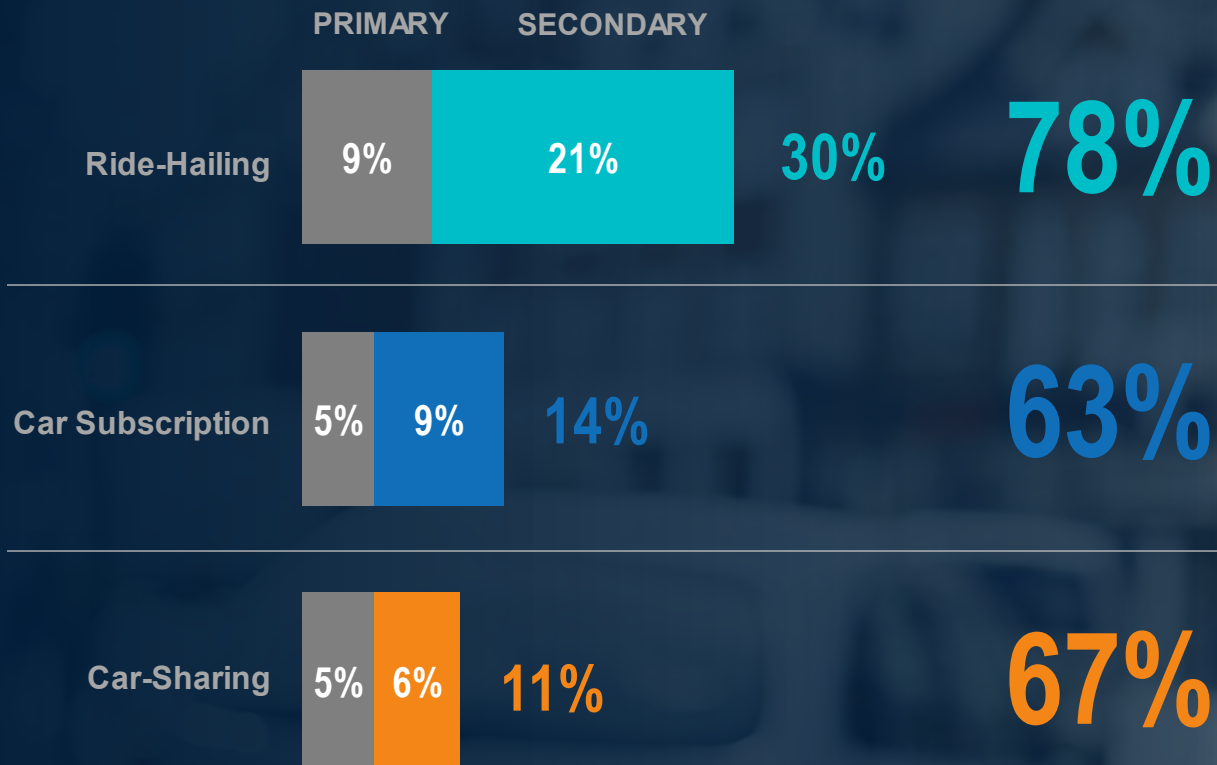
(x) change 2018 vs. 2021

	Gen Z (A)	Millennials (B)	Gen X (C)	Baby Boomers (D)
Ride-Hailing	59% ^{CD} (+5)	63% ^{CD} (+8)	44% ^D (+16↑)	26% (+6)
Car-Sharing	25% ^{CD} (+8)	28% ^{CD} (+3)	11% ^D (+2)	1% (-3↓)
Car Subscription	14% ^D (+6)	20% ^{CD} (+5)	10% ^D (+6↑)	1% (-)

While ownership will continue its reign because of its overall advantages for now, people will still use alternative methods as their secondary and supplemental mode.

TRANSPORTATION MODE IN THE NEXT 5 YEARS

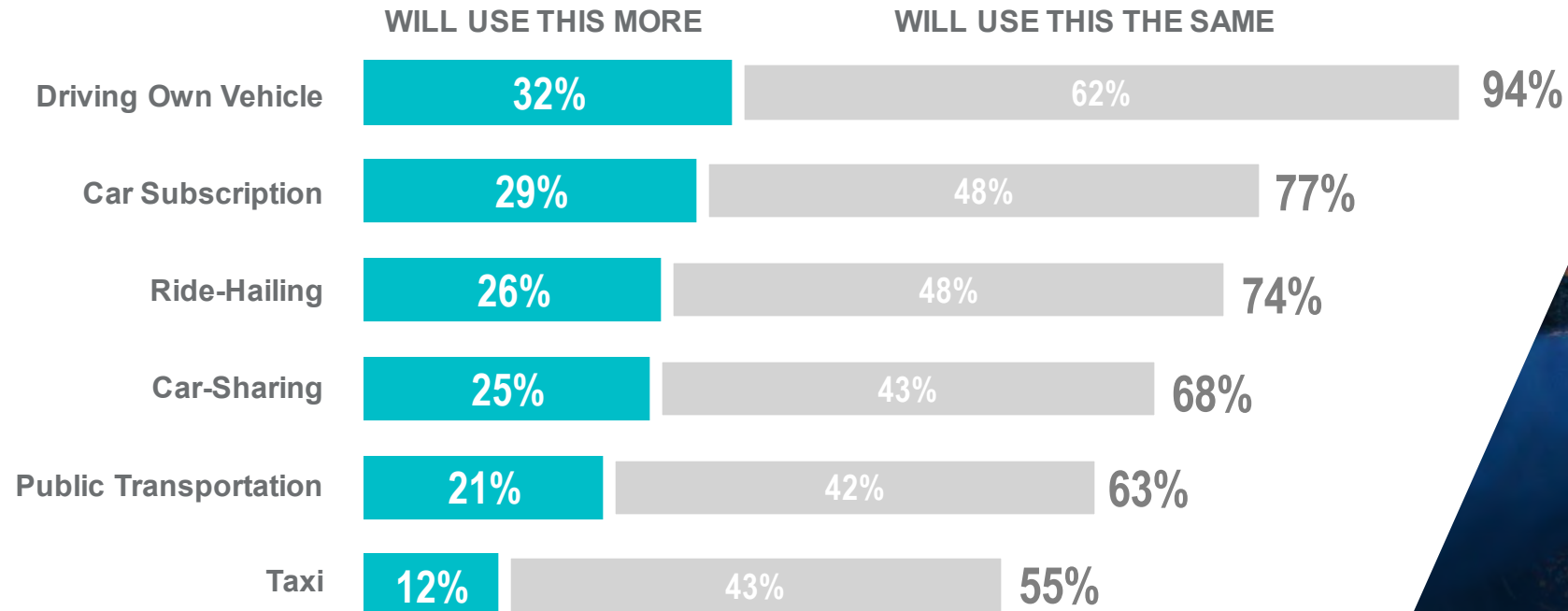
USE TRANSPORTATION METHOD SOMETIMES/RARELY



Even though alternative methods will be used by most as a secondary means, we do expect to see a post-pandemic bounce-back.

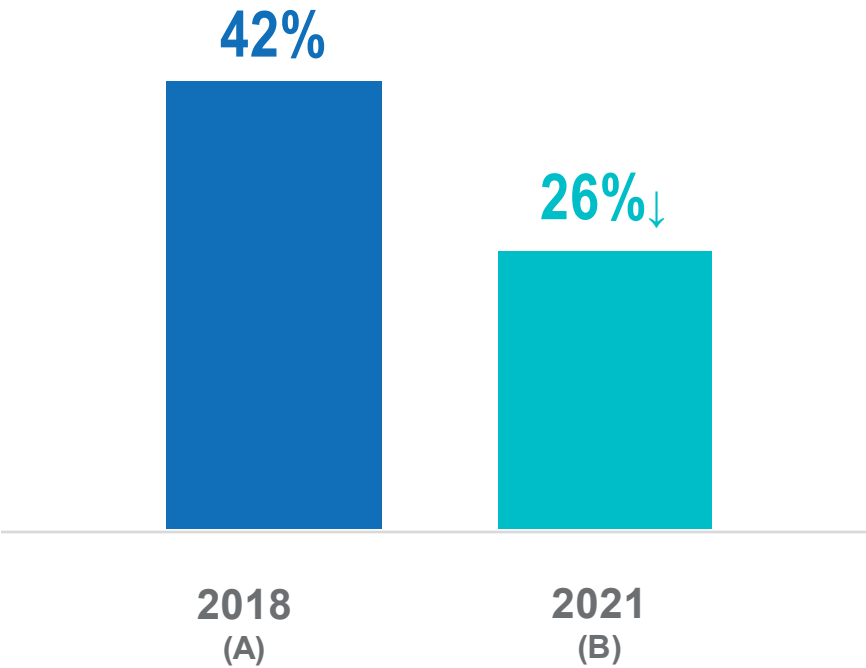
EXPECTED TRANSPORTATION METHOD CHANGE POST COVID-19

Among Those Who Have Used Each Transport Method

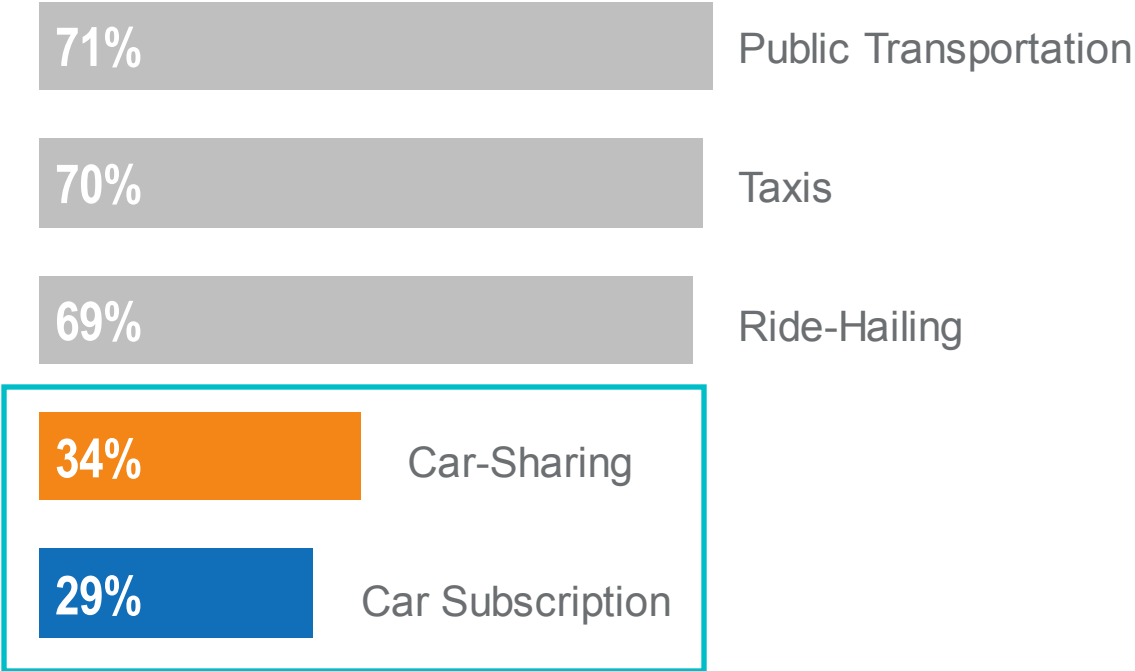


Lack of accessibility for car-sharing and car subscription also poses an issue.

CAR SUBSCRIPTION BARRIER: IT'S NOT AVAILABLE IN MY AREA



ACCESSIBILITY OF TRANSPORTATION METHODS



1 in 10 will try car subscription the next time they're in the market for a vehicle, with ride-hailing and car-sharing users being key targets.

10%
vs. 10% in 2018

WILL OPT FOR A
SUBSCRIPTION OVER
OWNING/LEASING THE NEXT
TIME THEY'RE IN THE MARKET

Ride-Hailing
Users

15%



Car-Sharing
Users

36%



SD 23°--'12.2"
TT 23°--'54.4"
WQ-3 NVGT A

4.5.6 / 333.4.5
SENSOR

DDP.E.RETV

3

EMERGING TECHNOLOGY



AUTONOMOUS

SAFE
1G-2 +
M. P. 100%

SENSOR ACTIVE
INT*3 +
TTS SENSOR GROUP 3-1Z

8E.0

7A

COX AUTOMOTIVE
MOBILITY

Modern vehicle technology has become table stakes, and people increasingly equate it with safety.

VEHICLE TECHNOLOGY ATTITUDES

Among Those Who Own/Lease a Vehicle
% Strongly/Somewhat Agree

39%

47% ↑

In-car technology makes or breaks my decision to purchase/lease a car

49%

56% ↑

The **more technology** features a vehicle has, the safer it is

53%

58% ↑

I put a lot of thought into the **technology features** I want in a vehicle

37%

42% ↑

I'd never buy a vehicle with **outdated technology**

● 2018

● 2021

Demand for autonomous safety features are growing among consumers.

Top autonomous features consumers want in their next vehicle: collision avoidance system & adaptive cruise control. Full list of features is in the appendix.

TECH FEATURE OWNERSHIP & INTEREST

Trendable AV Features (Net)

Currently Has

Among Those Who Purchased or Leased Primary Vehicle

Must Have/Nice to Have

Among Those Who Plan to Purchase or Lease

2018	2021	Change	2018	2021	Change
22%	31%↑	+9↑	92%	93%	+1

VEHICLE TECHNOLOGY ATTITUDES

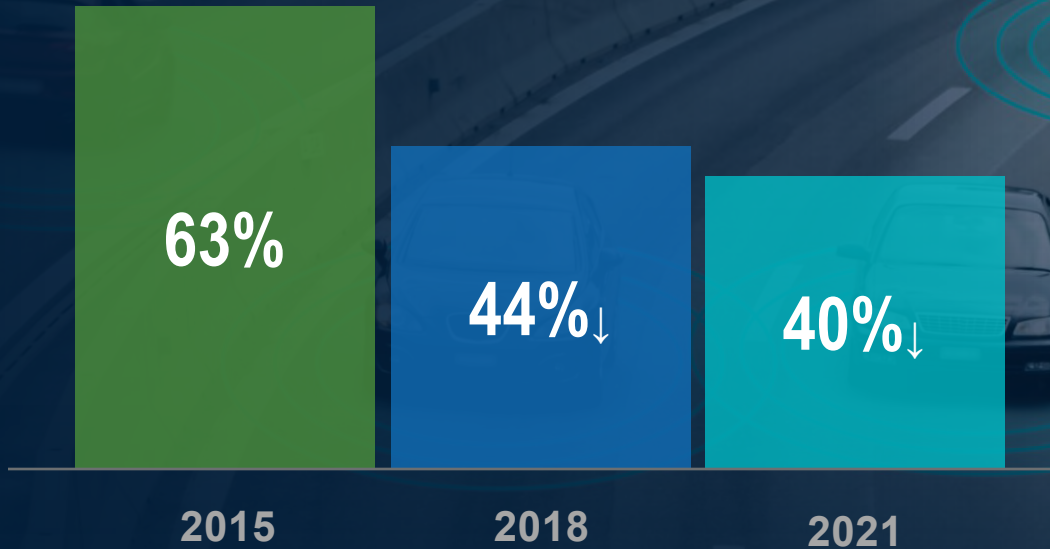
Among Those Who Own/Lease a Vehicle
% Strongly/Somewhat Agree

57% WOULD TRUST A VEHICLE MORE IF IT HAS ADVANCED DRIVER-ASSISTANCE SYSTEMS

Despite hesitations about the safety fully-autonomous vehicles...

ROADWAYS WOULD BE SAFER IF ALL VEHICLES WERE FULLY AUTONOMOUS

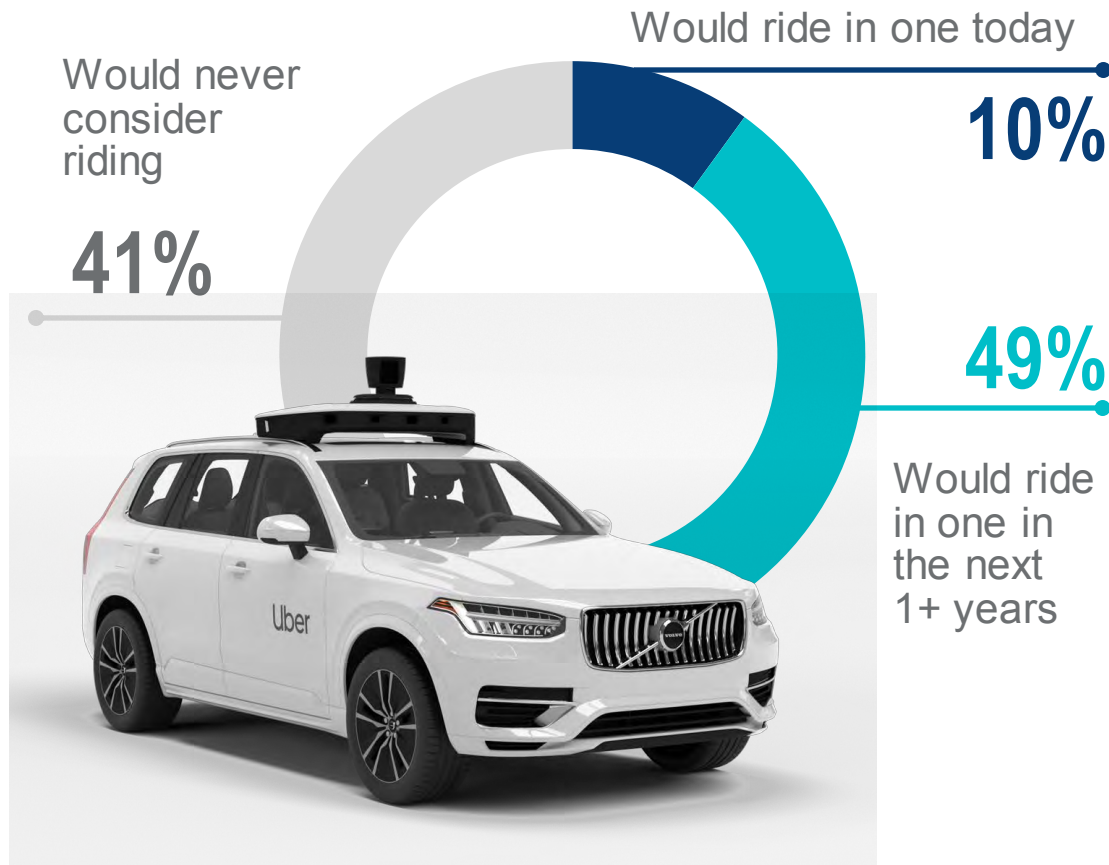
(vs. operated by people)



“ I would love to try them now, although I must admit that it gives me a little fear because I prefer to have at least a **small percentage of control** in the driving of my vehicle.

... most of us are open to riding in an AV when the technology is proven solid.

AV FUTURE INTENT TO ACCESS



Consumers believe that **34%** of vehicles will be fully self-driving in their lifetime

“ I think they’re a great idea if we can get the technology right. So many lives could be saved.”

For now, levels 2 and 3 autonomous vehicles are the most appealing to consumers.

/Autonomous
/Sensing
/Communication
/Battery
/Navigation
/Mirrorless
/Ecology

SAE (Society of Automotive Engineers) levels for automated driving systems

FORCED CHOICE OVERALL APPEAL

"Most appealing"

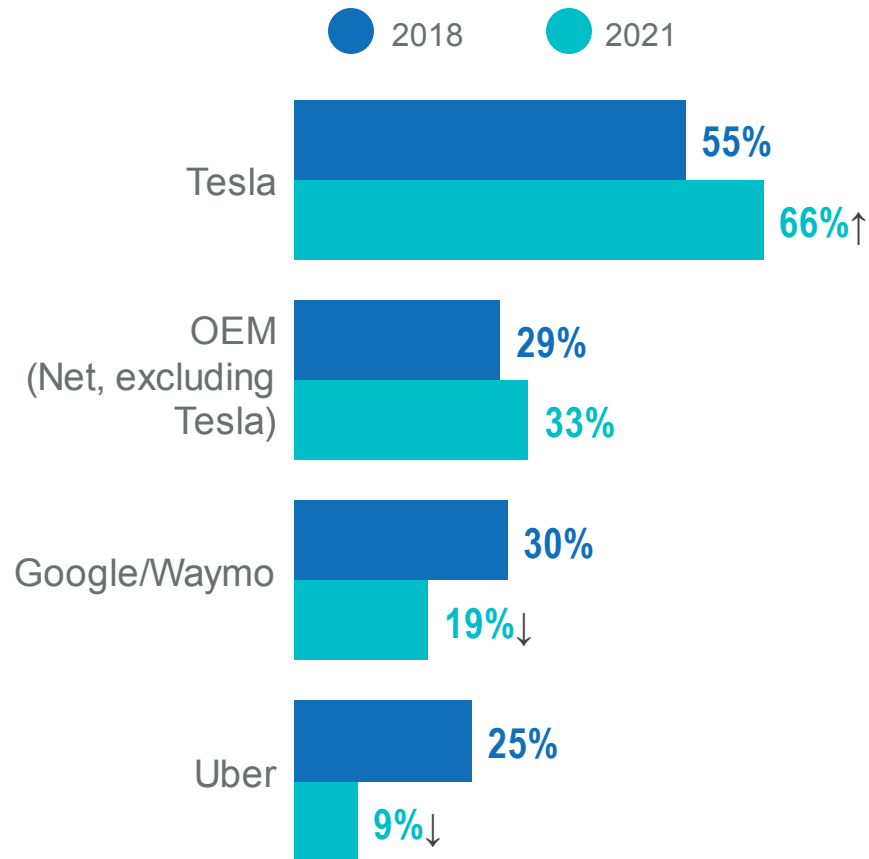
		2016	2018	2021
Level 5	Vehicles don't contain steering wheel or pedals, and can't be driven by humans	17%	8%↓	10%↓
Level 4	Vehicle can operate all aspects of driving Humans can still drive if they want to	30%	19%↓	19%↓
Level 3	Vehicle can take over driving in the city or on highways, but requires a human driver for unmarked roadways or highly congested areas	18%	22%↑	21%↑
Level 2	Corrects lane drifting and avoids forward/rear collisions	20%	30%↑	26%↓
Level 1	Cruise control, Anti-lock brakes, Lane-keeping assist	11%	14%↑	16%↑
Level 0	No Cruise control, Anti-lock brakes, or Lane-keeping assist	17%	8%↓	10%↓

Self-Driving

48 mph

Americans believe that a third of vehicles will be self-driving in their lifetime, and their enthusiasm for purchasing a Level 3 or 4 vehicle is on the rise.

AV BRAND LEADERS



WOULD BUY THE MOMENT IT BECOMES AVAILABLE

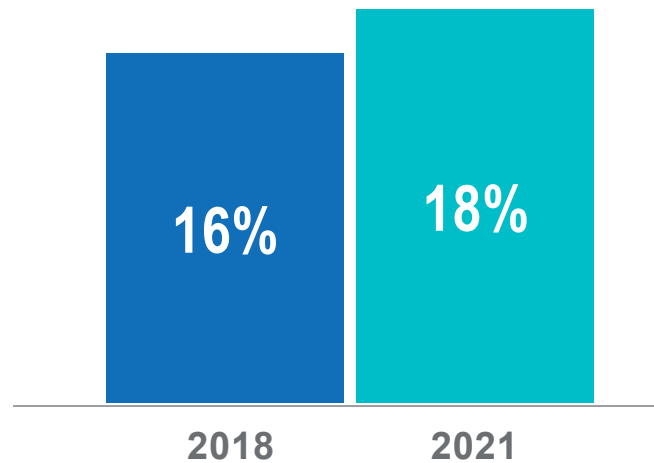
	2016	2018	2021	CHANGE 2021 vs. 2018
Level 5 Full autonomy (no human)	16%	7%↓	9%↓	+1
Level 4 Full autonomy (+ human)	21%	9%↓	16%↑	+6↑
Level 3 Partial autonomy	20%	12%↓	24%↑*	+12↑

“ I still like the thought of being allowed to drive—that’s why I like Level 4 so much.

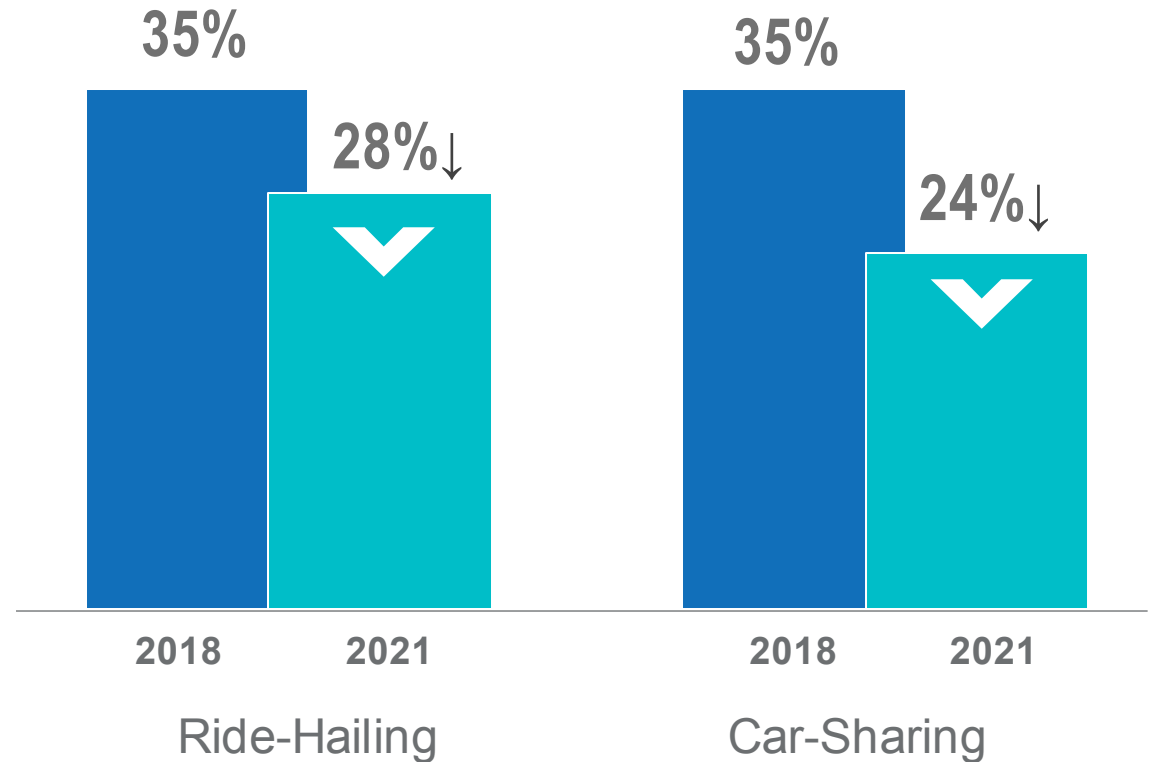
We're getting more comfortable with technology and letting go of control, which points to a very promising future for AVs.

I WOULD BE COMFORTABLE LETTING AN AUTONOMOUS VEHICLE DRIVE ME WITHOUT THE OPTION OF BEING ABLE TO TAKE CONTROL

(vs. should always have the option to drive themselves)



I WANT FULL CONTROL OF WHEN AND HOW I GET WHERE I'M GOING



APPENDIX

Methodology

2015

**Ride & Car Sharing
Trend Research**

2016

**Car Driver
of the Future:
*AUTONOMOUS VEHICLES***

2018

**Evolution
of Mobility**

2021

**Evolution of
Mobility Refresh**

Over the last six years, Cox Automotive has conducted research to investigate the trends in ride & car sharing, autonomous vehicles, and car technology. In 2018, the Evolution of Mobility study revisited these topics to see where the trends were headed and explored a newcomer to the scene, car subscription. Now, Cox Automotive is refreshing the Evolution of Mobility study to see what has changed and what has remained constant over the last three years.

**Emerging In-Vehicle
Car Technology**

**Evolution of
Mobility Conjoint**

Methodology

2021

Evolution of Mobility Refresh

Fielded: May 5th – May 20th, 2021

n=1,250

18+ n=1,011

12-17 n=239

Generations:

Gen Z: n=391

Millennials: n=263

Gen X: n=239

Baby Boomers: n=269

Silent Generation: n=34

Transport Density groups:

Urban: n=147

Suburban: n=674

Rural: n=190

Must have used one transportation method in the past 6 months

With the rise in vehicle prices, people are paying more attention to payments and interest rates ...

Cost of Ownership Considerations

Among Adults Who Own/Lease a Vehicle

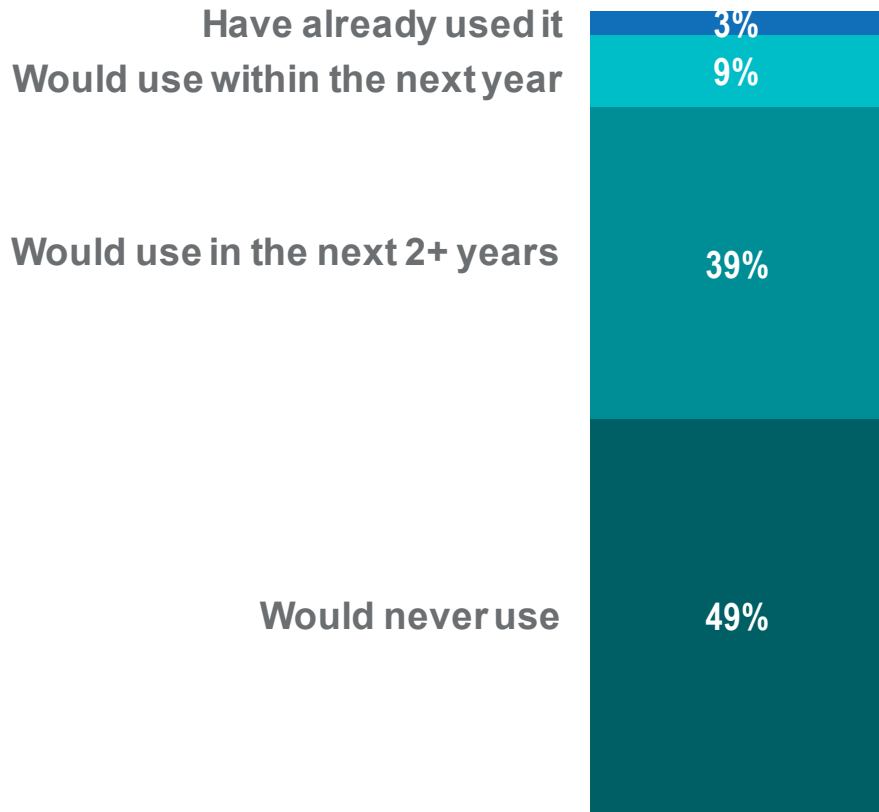
	2018	2021	Change
Fuel	88%	89%	+1
Regular maintenance	87%	87%	-
Insurance	86%	85%	-1
Repairs	84%	84%	-
Monthly payment	70%	75%↑	+5↑
Down payment	66%	71%↑	+5↑
% APR/interest	62%	69%↑	+7↑
Registration	66%	63%	-3
Depreciation	56%	57%	+1
Parking	38%	43%↑	+5↑
Cost of using other transportation methods	--	36%	
Car washes	39%	35%	-4
Subscriptions (e.g., Sirius XM, On-Star)	25%	31%↑	+6↑



15%
of Monthly Income is
Spent on Mobility

Newcomer aerial mobility already boasts solid awareness.

INTENT TO USE AERIAL MOBILITY



Who is more likely to have already used or intend to use it within the next year?

- 17% Males
- 46% Gig Drivers
- 17% Higher Income HHs
- 18% LGBTQ+
- 22% Millennials
- 17% Gen Z
- 16% New Vehicle Owners
- 26% Luxury Vehicle Owners

22%
have heard of
Aerial Mobility

Drivers are gaining more personal experience with technology features.

"With getting a newer car with more safety features that I was previously unaware of or didn't have much experience with, I have already become more comfortable with the features."

CURRENT TECH FEATURE OWNERSHIP

Among Those Who Purchased/Leased Primary Vehicle

TECH FEATURE INTEREST: MUST HAVE/NICE TO HAVE

Among Those Who Plan to Purchase/Lease

2021

Adaptive cruise control	22%↑
Blind spot monitoring	20%
Collision warning alert system	17%↑
Lane departure warning	15%
Rear cross traffic alert	14%
Collision avoidance system	12%↑
Adaptive headlights	11%↑
Lane keeping assist technology	10%
360-degree camera	9%↑
Active parking assist	7%↑
Heads-up display	6%
Piloted driving	6%
Driver monitoring	6%
Traffic sign recognition	5%
Fully automatic parking assist/remote parking	5%

81%↑
90%
88%
82%
85%
87%
81%
76%
80%
71%
70%↑
59%
70%
68%
67%

Connected car vehicle technology is becoming increasingly more popular and appealing, especially with younger generations.

FUTURE INTEREST IN CONNECTED CAR TECH

Among Those Who Plan To Buy/Lease A Vehicle

<i>Must have/nice to have</i>	Gen Z (A)	Millennials (B)	Gen X (C)	Baby Boomers (D)
Vehicle-to-Infrastructure <i>Vehicle connects wirelessly to the road infrastructure to get real-time road updates and prevent accidents</i>	78% ^{CD}	73% ^D	66% ^D	56%
Vehicle-to-Pedestrian <i>Vehicle wirelessly connects to the smartphones of pedestrians to alert to potential collisions</i>	73% ^{CD}	70% ^{CD}	58% ^D	45%
Vehicle-to-Cloud <i>Vehicle connects to cellular networks to connect to household cloud-based devices to do vehicle updates remotely or provide diagnostic data</i>	70% ^{CD}	63% ^{CD}	52% ^D	35%
Vehicle-to-Grid <i>Allows plug-in electric vehicle to supply its unused electricity to the power grid during peak hours, potentially providing owners with cash incentives</i>	69% ^{CD}	62% ^{CD}	50% ^D	28%
Vehicle-to-Vehicle <i>Vehicle wirelessly shares data with other vehicles around to help prevent accidents</i>	63% ^{CD}	61% ^{CD}	50% ^D	32%



While there are still some barriers as this new technology becomes more prevalent ...

BARRIERS TO CONNECTED CAR TECH

Among Adults Who Plan To Buy/Lease A Vehicle

