

**TOMNET and D-STOP USDOT Tier 1 University Transportation Centers present
The ABCs (Attitudes – Behaviors – Choices) of Future Mobility**

Future Vehicle Ownership Patterns in an Era of AVs

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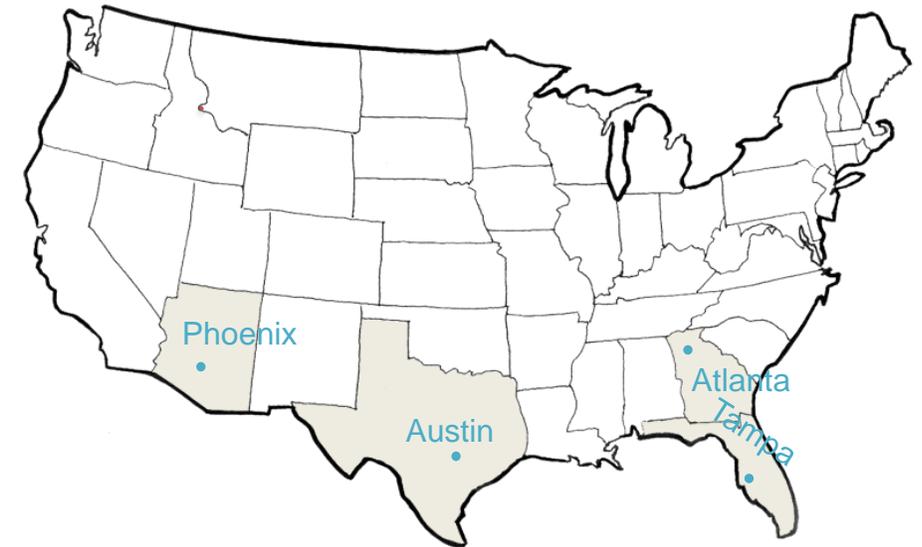
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TOMNET **D-STOP Transformative Technologies in Transportation Survey (T4 Survey)**

- Phoenix, Atlanta, Austin, and Tampa metro areas
- Summer and Fall 2019
- Random address-based sample with online instrument
- Comprehensive attitudinal survey on MaaS and AV
- Weighted to better represent Census distributions



	Phoenix, AZ	Atlanta, GA	Austin, TX	Tampa, FL	Total
Sample Size	1,027	944	1,127	260	3,358
%	30.6%	28.1%	33.6%	7.8%	100%

Survey Instrument



Attitudes
and
Preferences



Vehicles
You Have
and Where
You Live



Current
Travel
Patterns



Mobility on
Demand
and Shared
Mobility
Services



Autonomous
Vehicles



Background
Information

Introduction

Predictions of AV Market Penetration

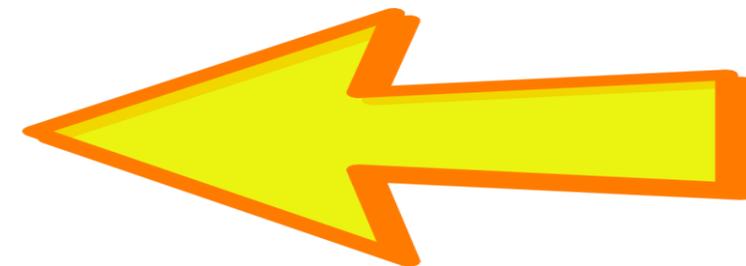
- Are people buying AVs?
 - *When? Now or Later?*
- Why are they waiting to buy?
- Will they give up their ability to drive to purchase an AV?
 - *What impacts this decision?*
 - *Travel time? Travel cost? Vehicle cost?*
- Will they trust and use AV ridesharing?

Companies plan to produce self-driving vehicles this year or very soon, so what is going to happen?

Company	Autonomous Vehicle Majority Market Penetration Prediction
Ford	True Self-Driving by 2021
GM	Self-Driving Beyond 2020
Honda	Self-Driving on the Highway by 2020
Toyota	Self-Driving on the Highway by 2020
Renault-Nissan	2020 for Autonomous Cars in Urban Conditions, 2025 for Truly Driverless Cars
Volvo	Self-Driving on the Highway by 2021
Hyundai	Highway 2020, Urban Driving 2030
Daimler and BMW	Nearly Fully Autonomous by Early 2020's
Fiat-Chrysler	CEO expects there to be some self driving on the road by 2021
Tesla	Beginning of 2020

For on-road vehicles

		 Human driver	 Automated system		
		Steering and acceleration/ deceleration	Monitoring of driving environment	Fallback when automation fails	Automated system is in control
Human driver monitors the road	0 NO AUTOMATION				N/A
	1 DRIVER ASSISTANCE				SOME DRIVING MODES
	2 PARTIAL AUTOMATION				SOME DRIVING MODES
Automated driving system monitors the road	3 CONDITIONAL AUTOMATION				SOME DRIVING MODES
	4 HIGH AUTOMATION				SOME DRIVING MODES
	5 FULL AUTOMATION				



Source: <https://medium.com/@BabakShah/levels-of-automation-for-self-driving-cars-d410a4f679b7>

WHAT?

Type of vehicle?



WHEN?

Will you purchase?

WHAT?



Regular Vehicle



Autonomous Vehicle



Rely on AV Ride-hailing Services only

Survey Question: What will you purchase?

Stated Preference Question

What would you do when faced with your next car purchase decision in each of the following scenarios?

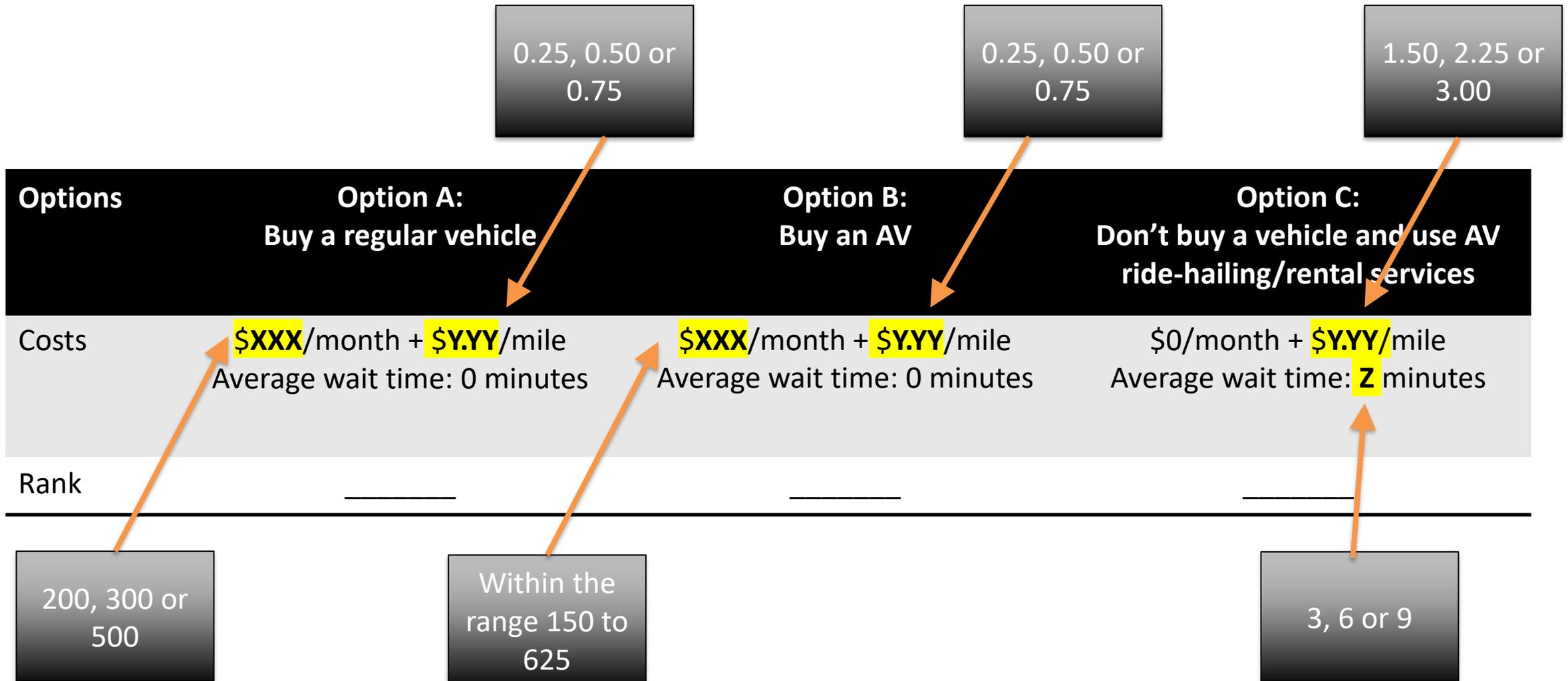
Each respondent was presented 2 Scenarios

Respondents ranked 1 as most preferred, 3 as least preferred

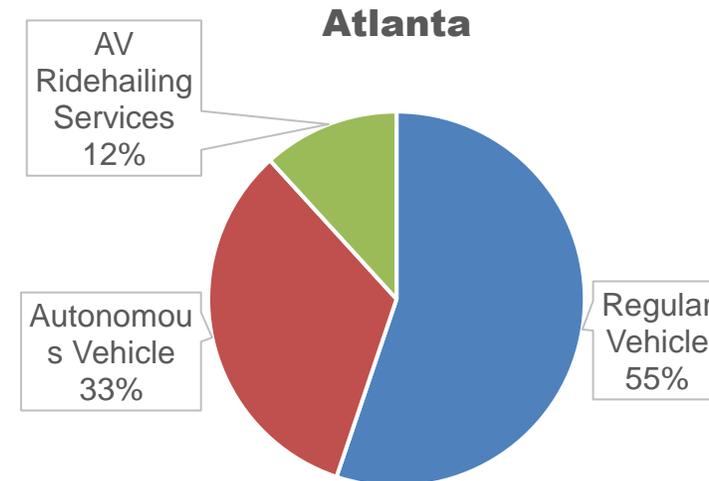
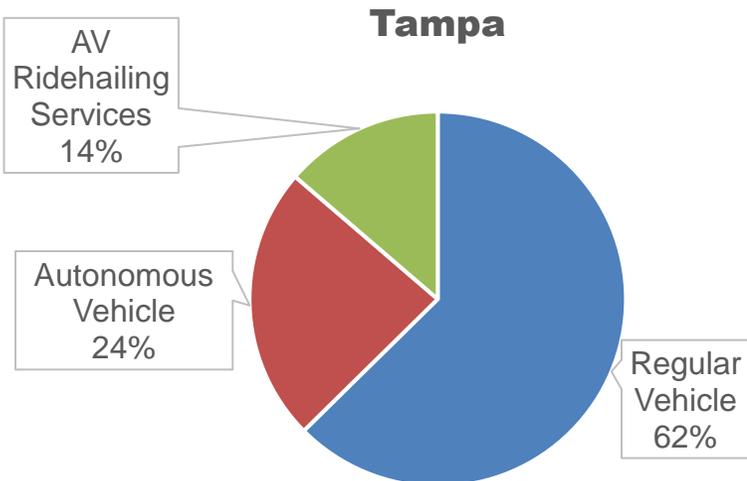
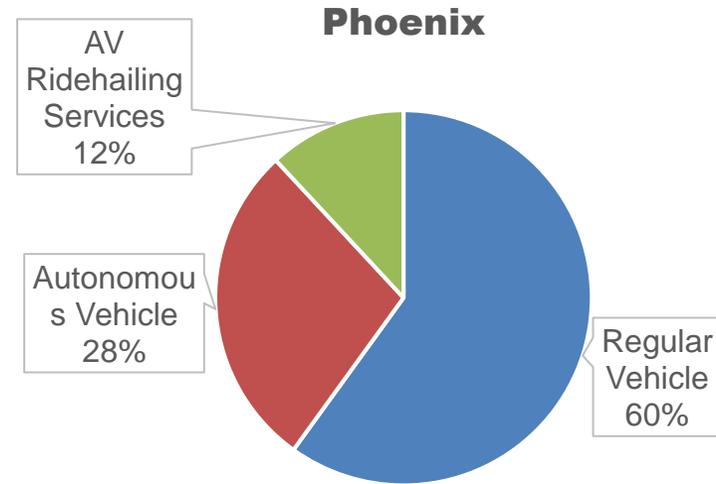
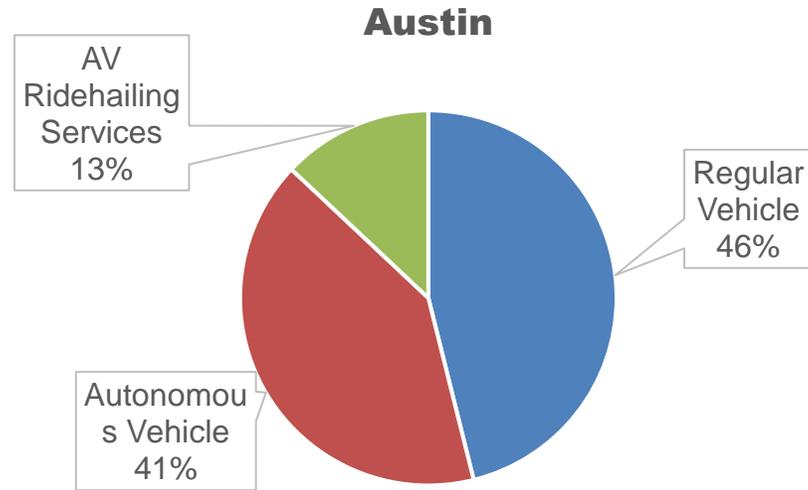
Options	Option A: Buy a regular vehicle	Option B: Buy an AV	Option C: Don't buy a vehicle and use AV ride-hailing/rental services
Costs	\$ XXX /month + \$ Y.YY /mile Average wait time: 0 minutes	\$ XXX /month + \$ Y.YY /mile Average wait time: 0 minutes	\$ XXX /month + \$ Y.YY /mile Average wait time: Z minutes
Rank	_____	_____	_____

Values highlighted vary for each respondent based on random block design

Survey Question: What will you purchase?

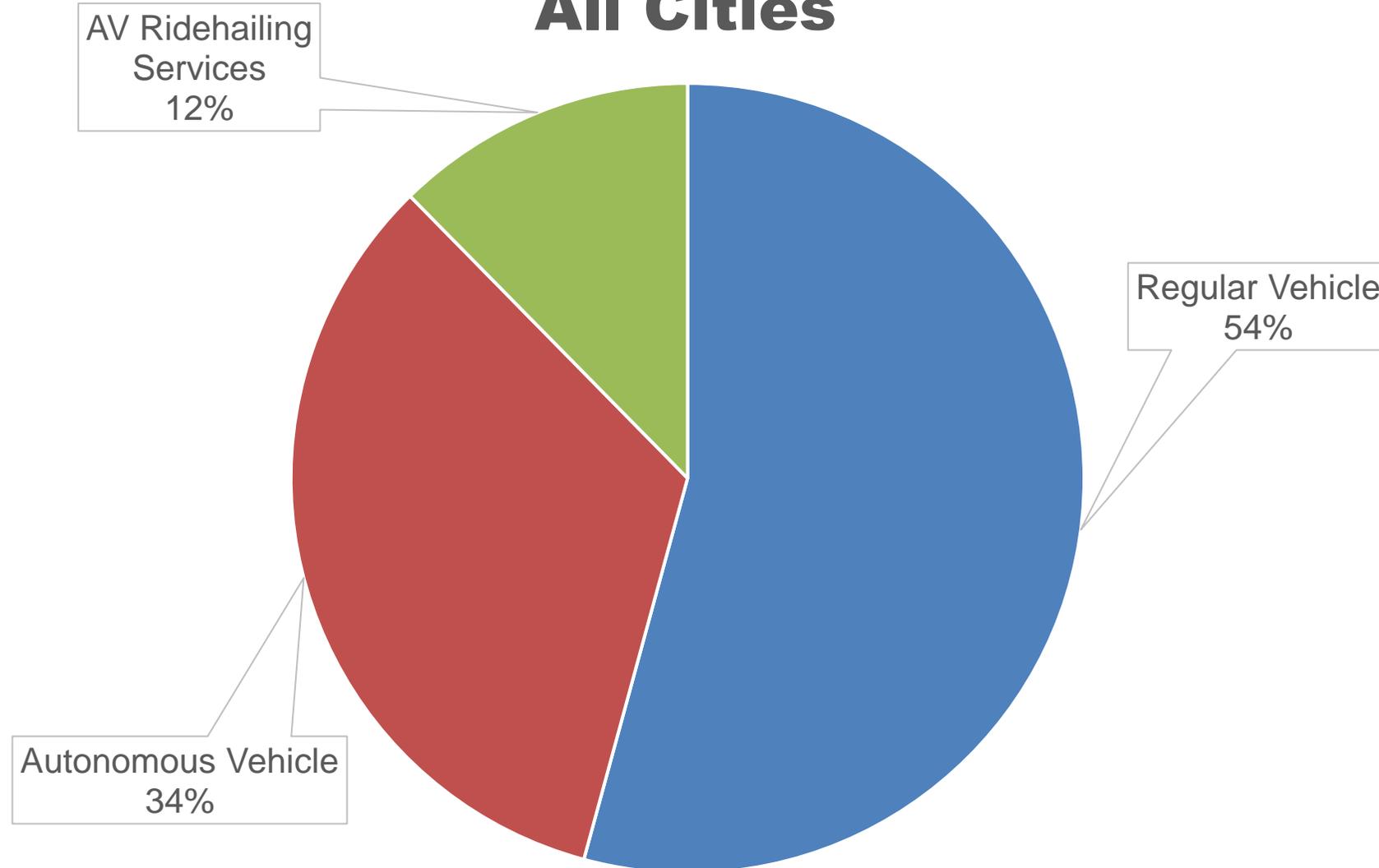


What will you purchase?



What will you purchase?

All Cities



What will you purchase?

First Choice

Regular Vehicle



Autonomous Vehicle

Autonomous Vehicle



Regular Vehicle

Autonomous Ride-hailing

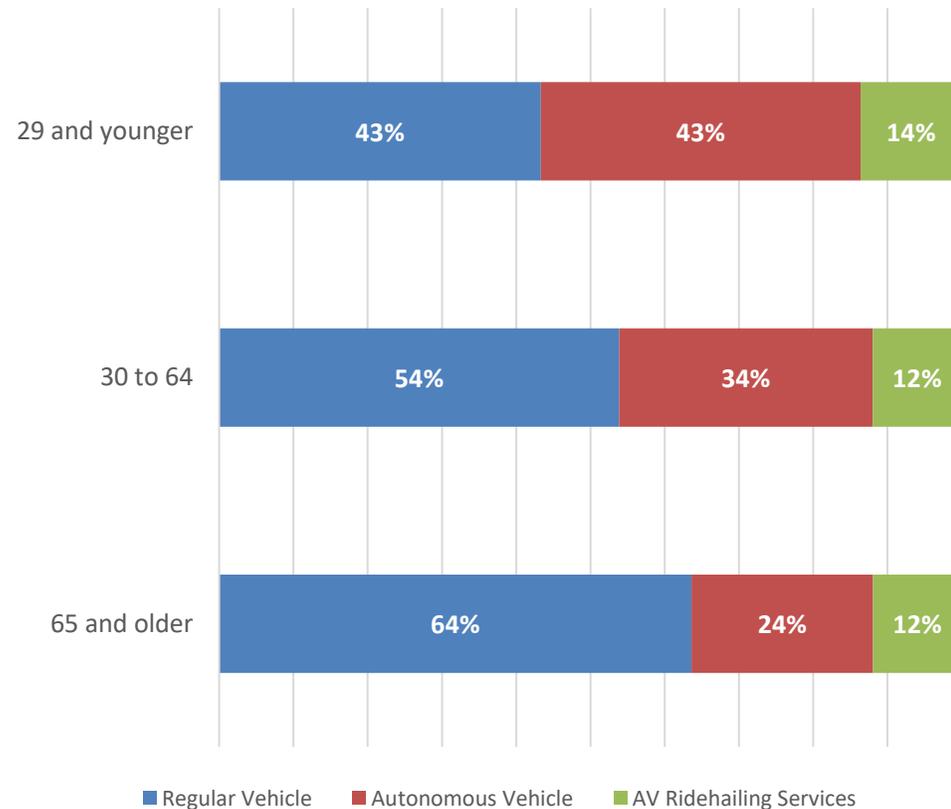


Autonomous Vehicle

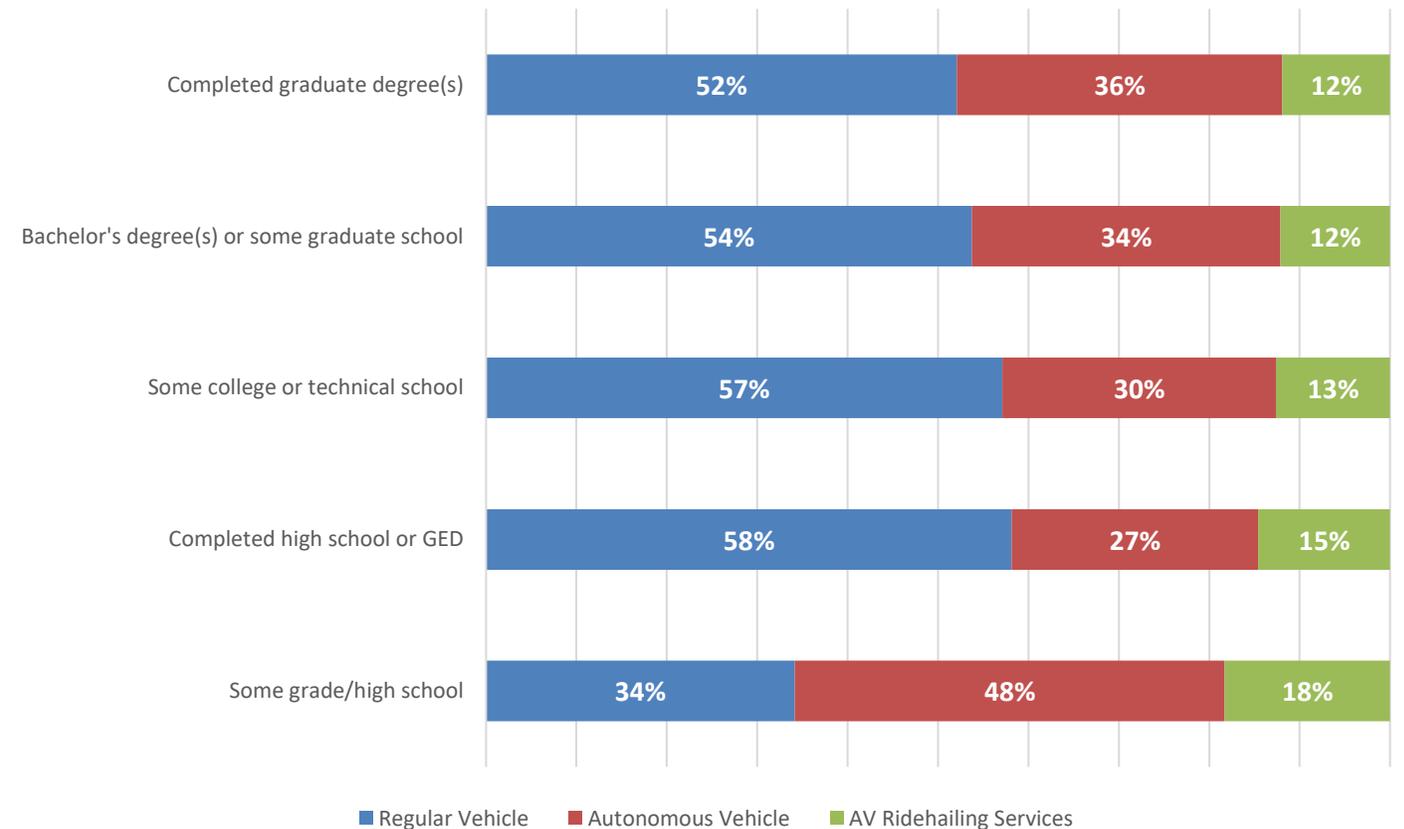
Second Choice

What will you purchase? *Demographic Data*

Age

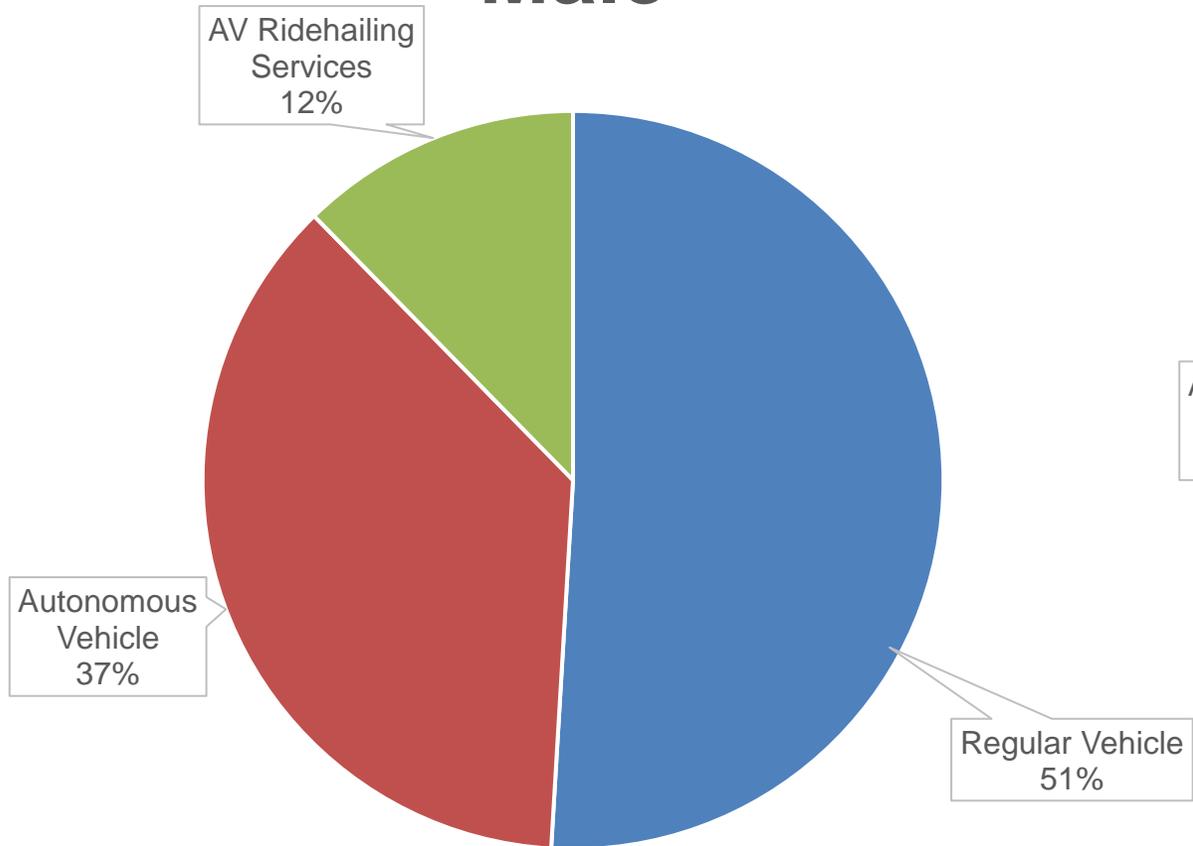


Educational Background

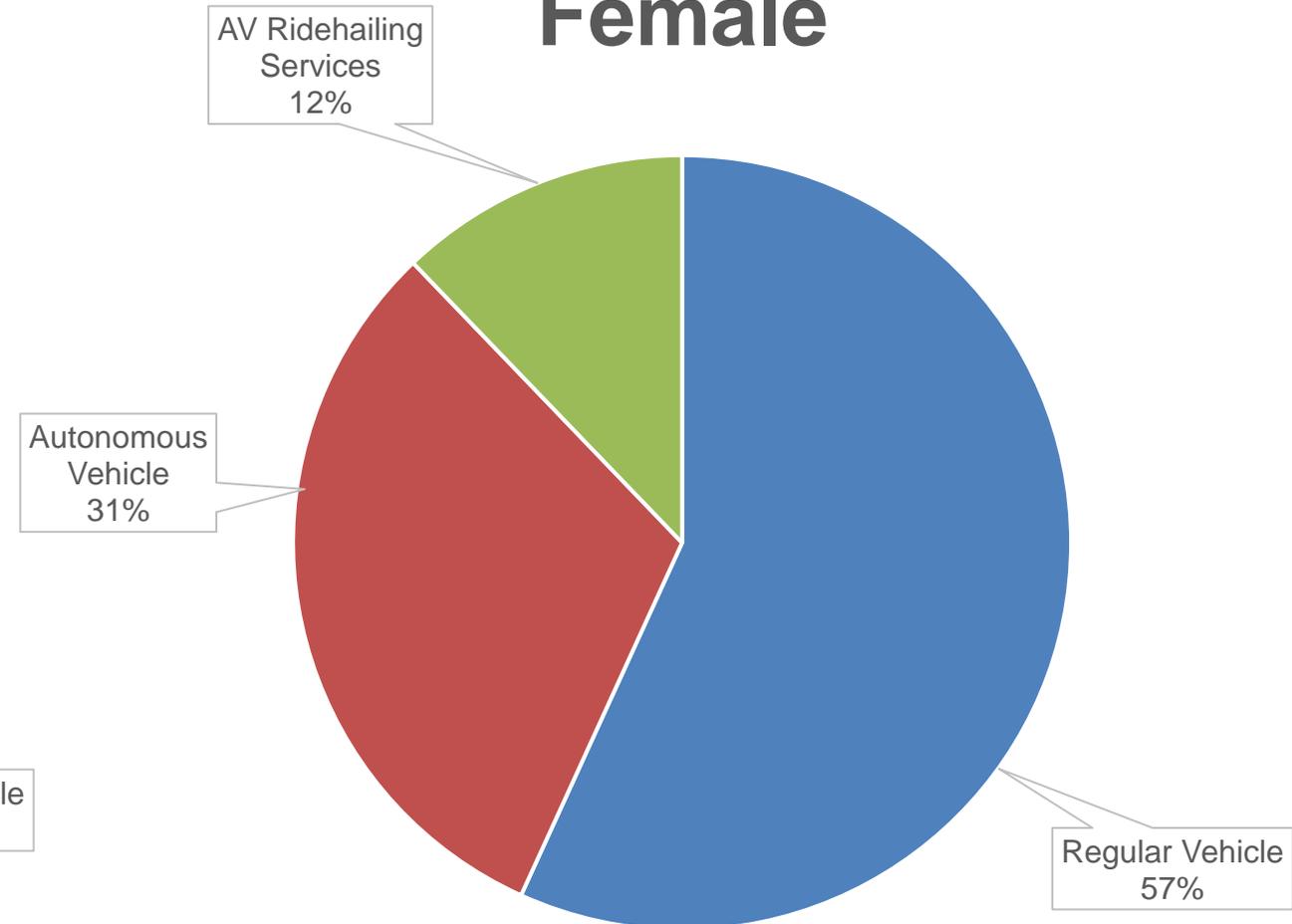


What will you purchase? *Demographic Data*

Male

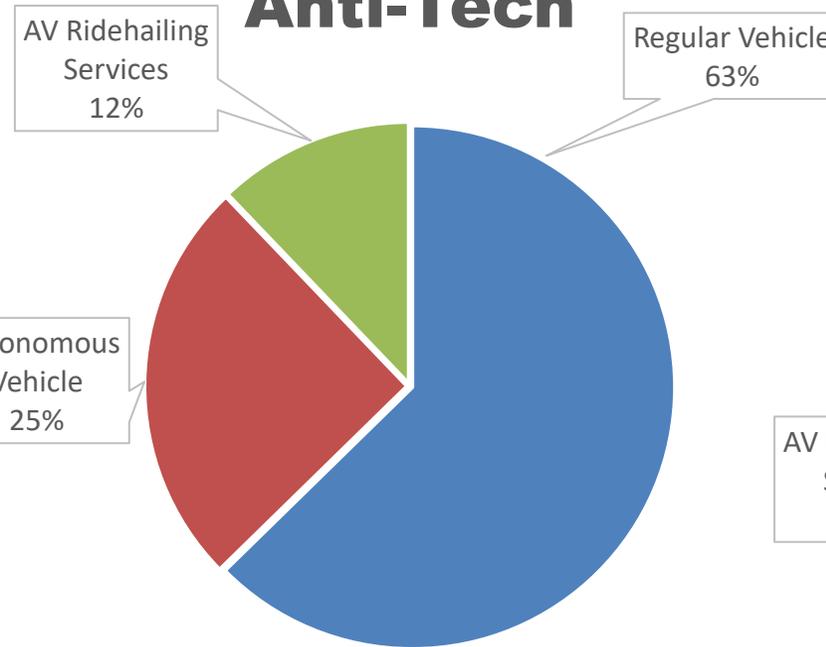


Female

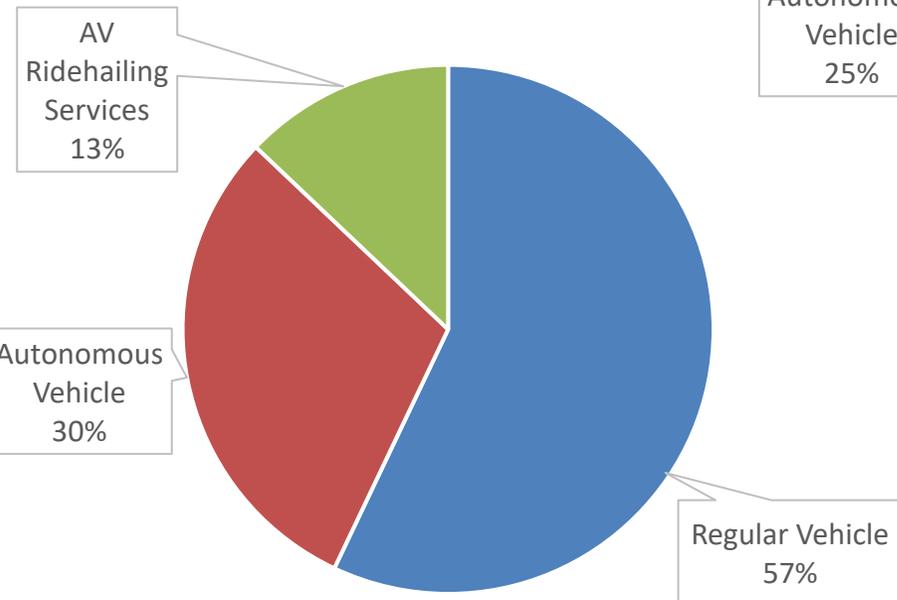


What will you purchase? *Attitudinal Data*

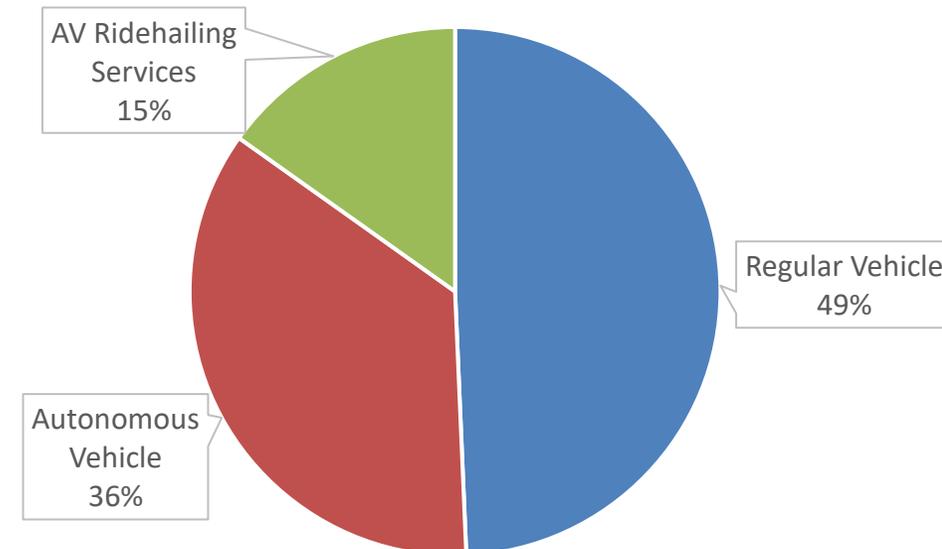
Anti-Tech



Happy Commuter

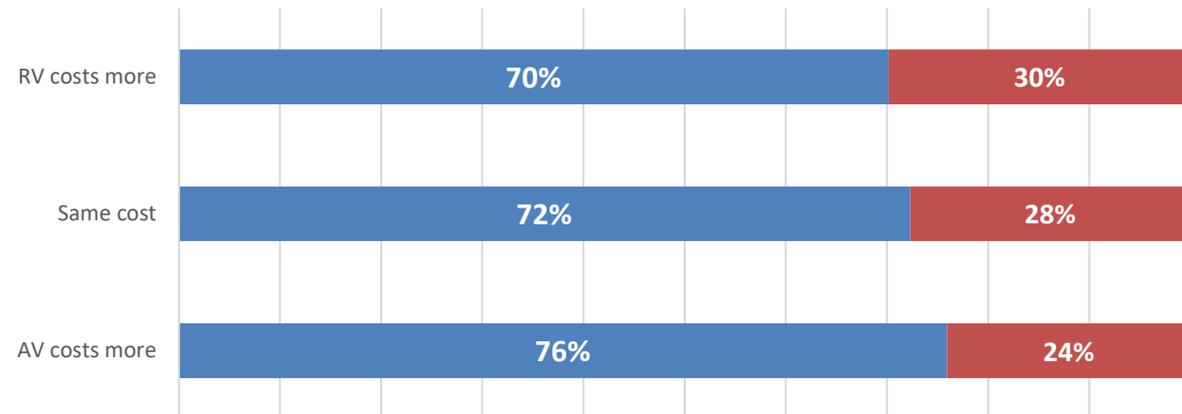


Pro-Environment

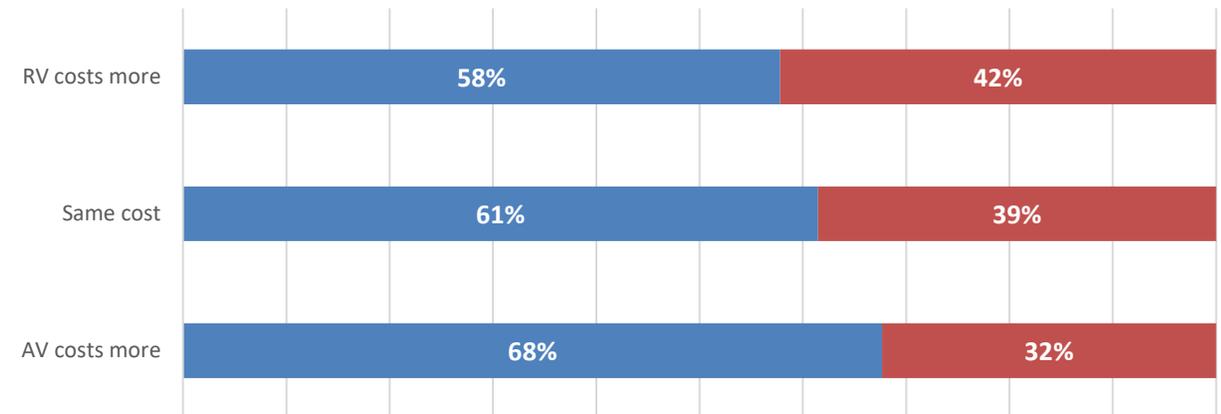


What will you purchase? *Willingness to Pay*

Anti-Tech



Solo Unitasker

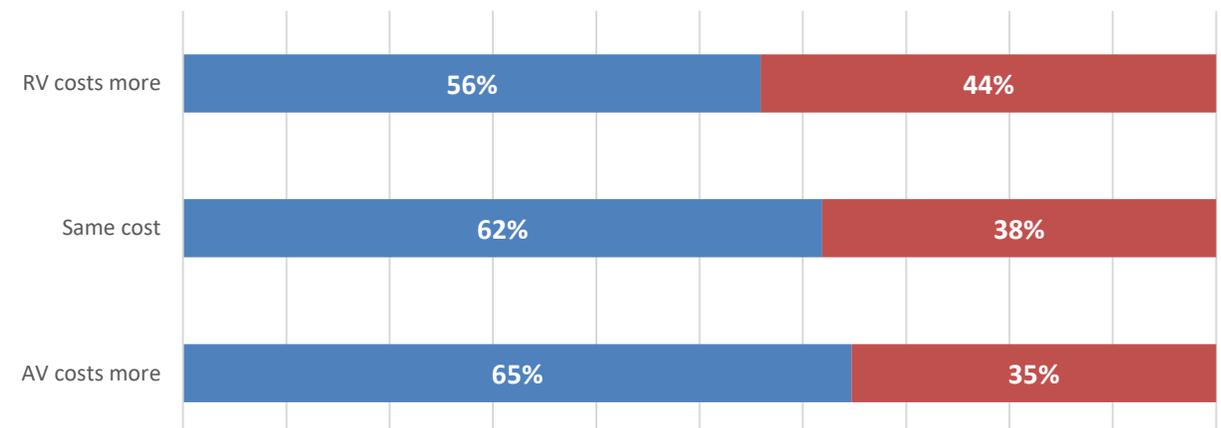


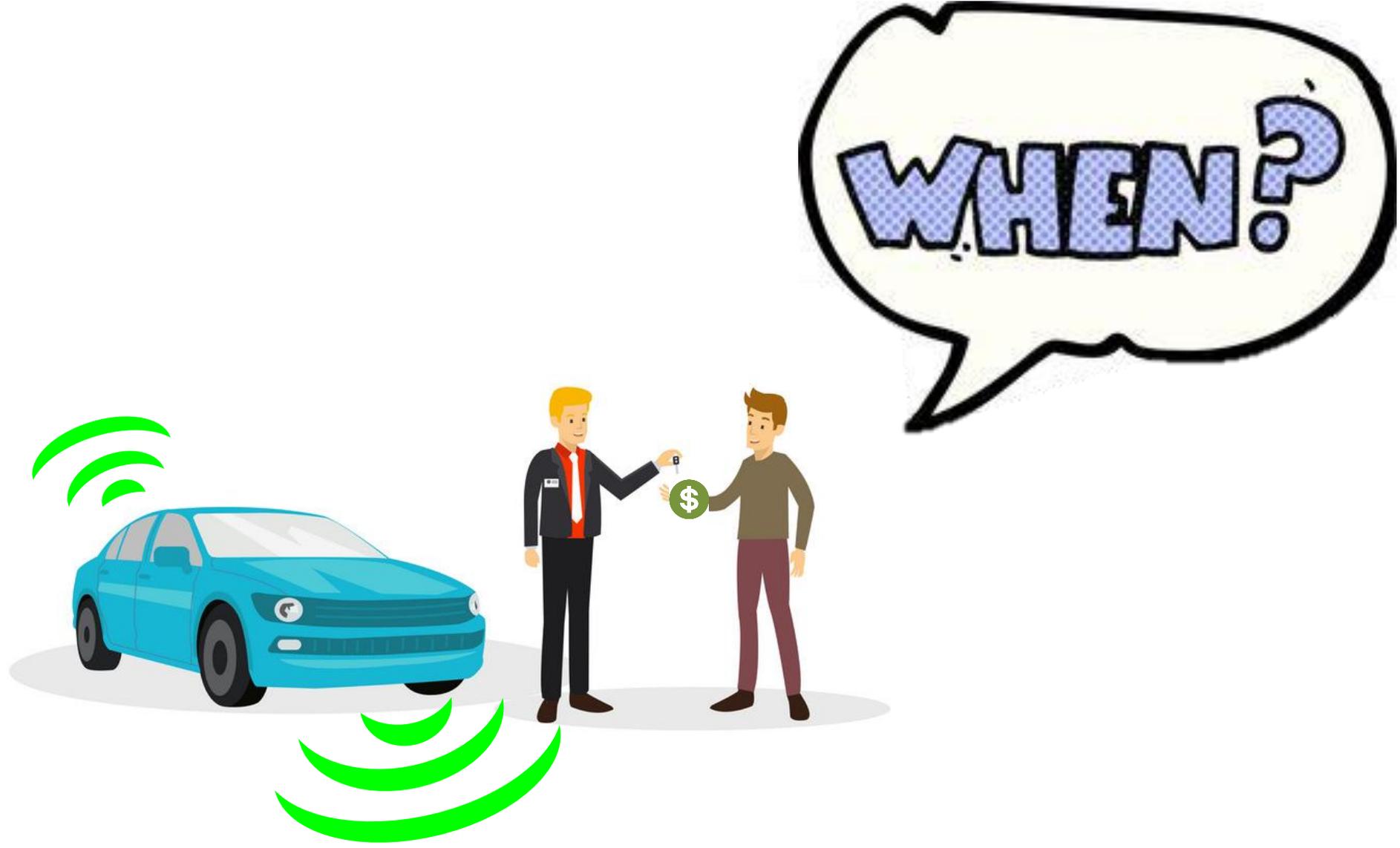
Cost per month

Choose Regular Vehicle

Choose Autonomous Vehicle

Contemporary Efficient

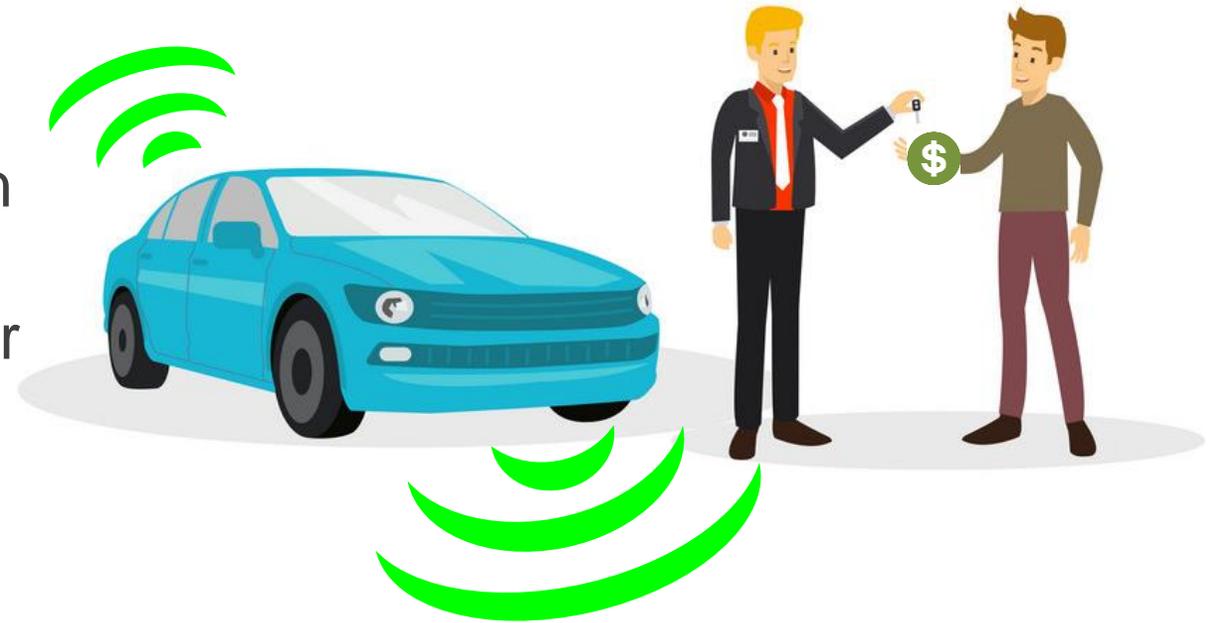




Survey Question: When will you purchase?

When do you expect to buy an AV?

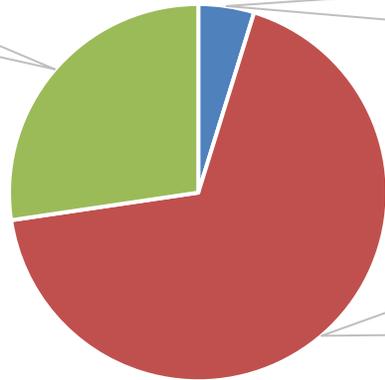
- I will be one of the first people to buy an AV.
- I will eventually buy an AV, but only after these vehicles are in common use.
- I will never buy an AV.



When will you purchase?

Austin

I will never buy an AV.
27%

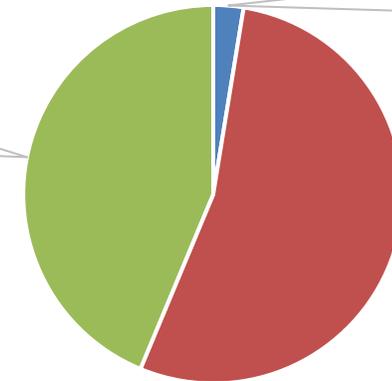


I will be one of the first people to buy an AV.
5%

I will eventually buy an AV, but only after these vehicles are in common use.
68%

Phoenix

I will never buy an AV.
44%

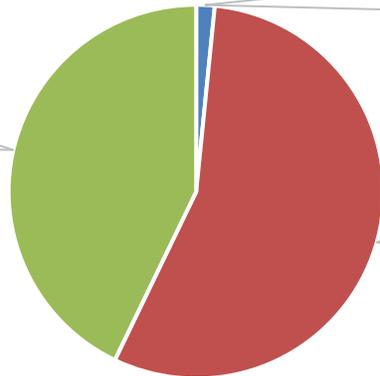


I will be one of the first people to buy an AV.
2%

I will eventually buy an AV, but only after these vehicles are in common use.
54%

Tampa

I will never buy an AV.
43%

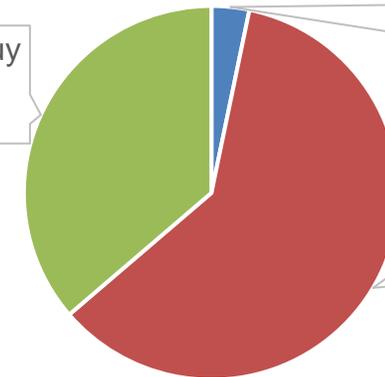


I will be one of the first people to buy an AV.
2%

I will eventually buy an AV, but only after these vehicles are in common use.
55%

Atlanta

I will never buy an AV.
36%

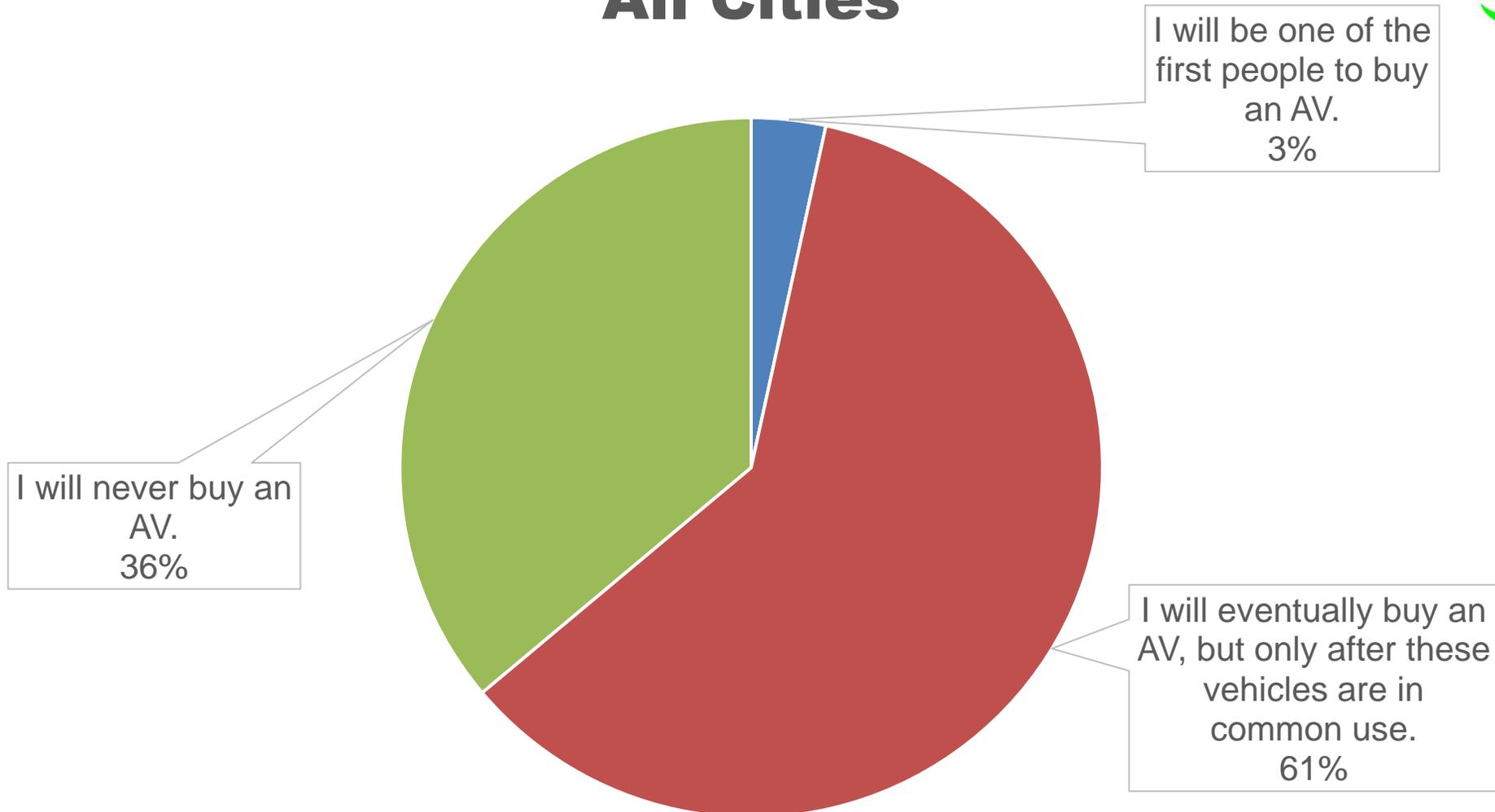


I will be one of the first people to buy an AV.
3%

I will eventually buy an AV, but only after these vehicles are in common use.
61%

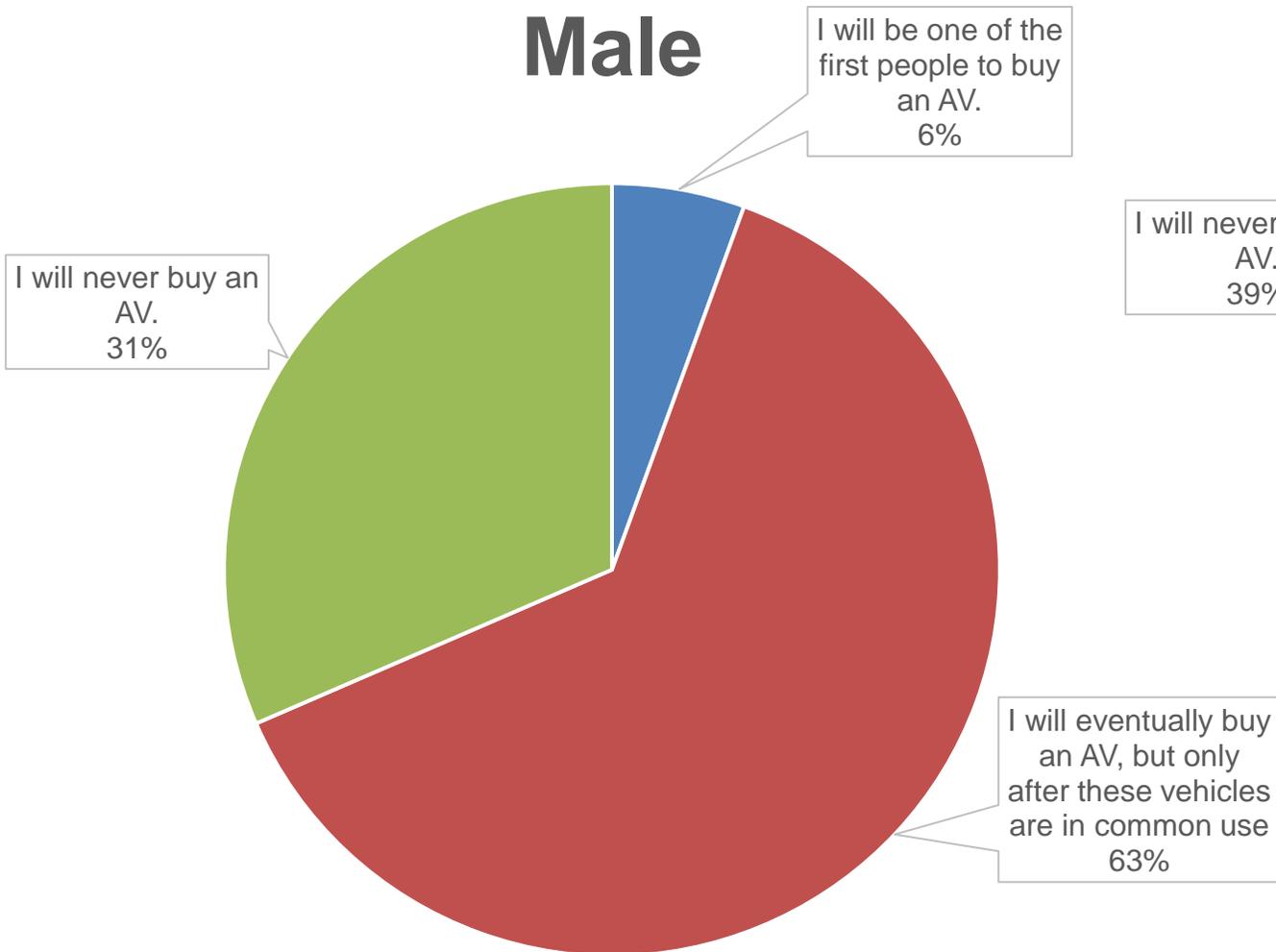
When will you purchase?

All Cities

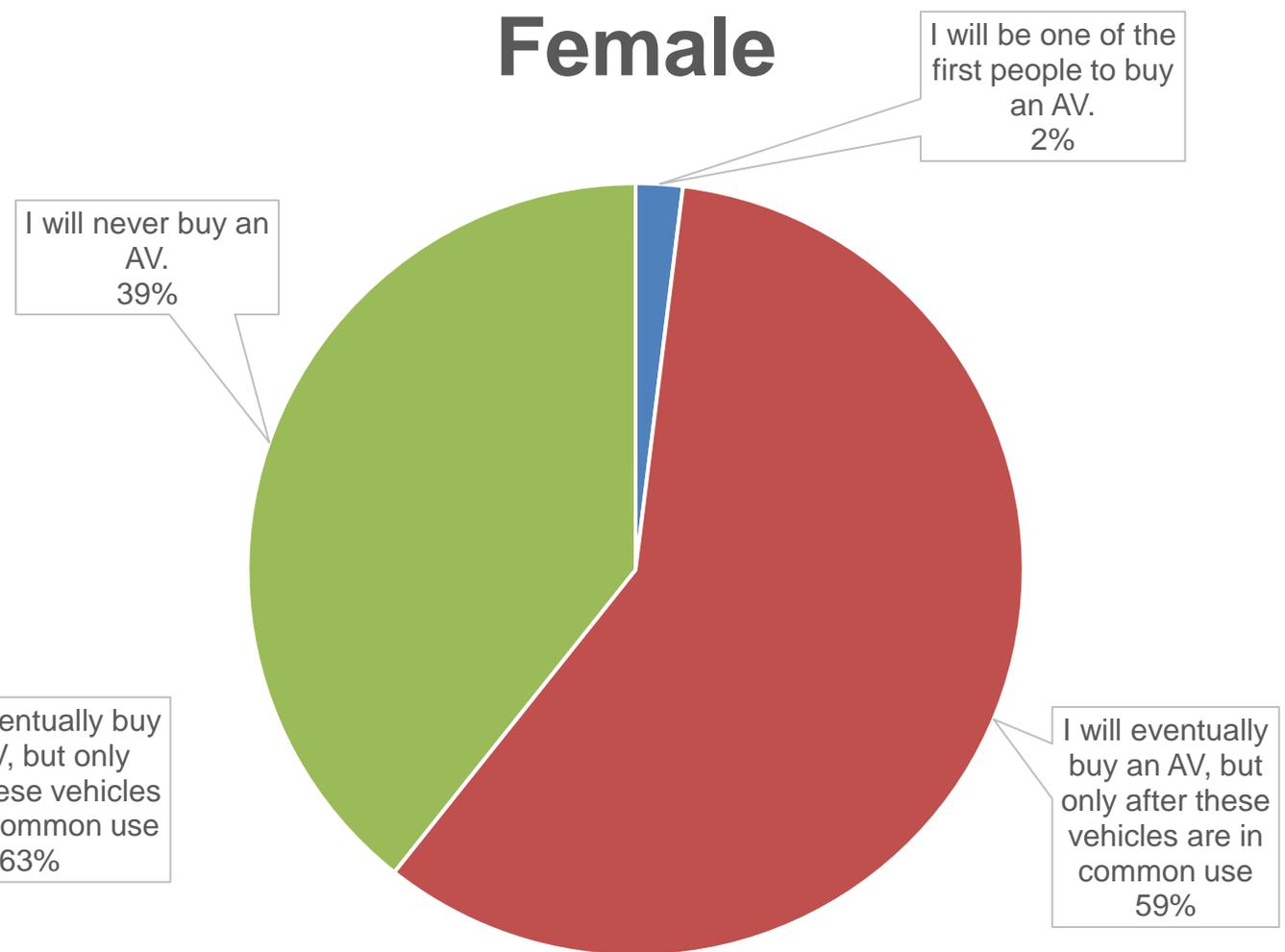


When will you purchase? *Demographic Data*

Male

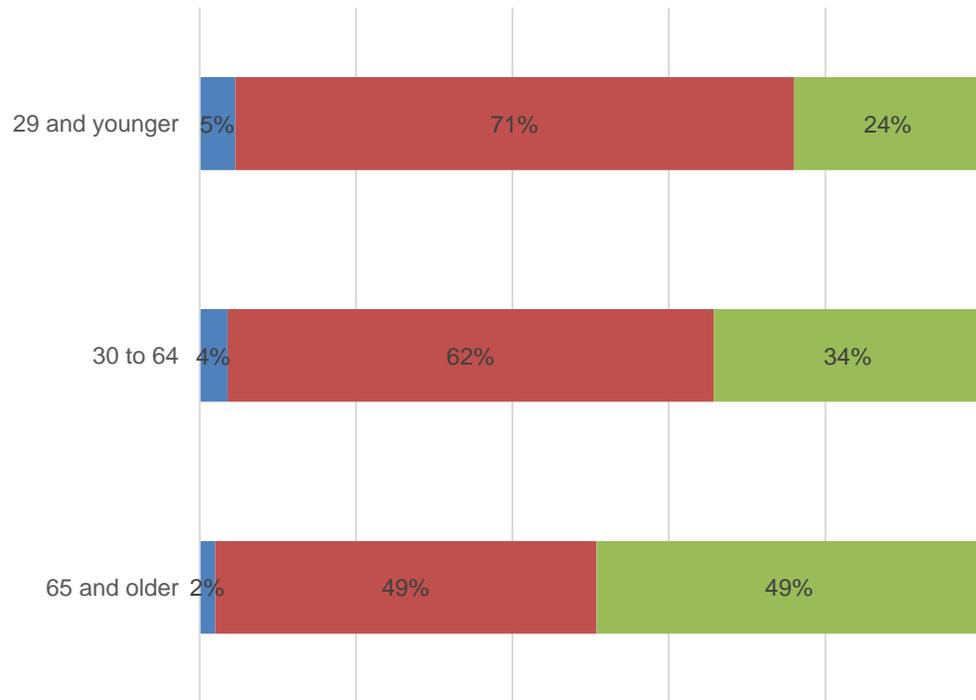


Female



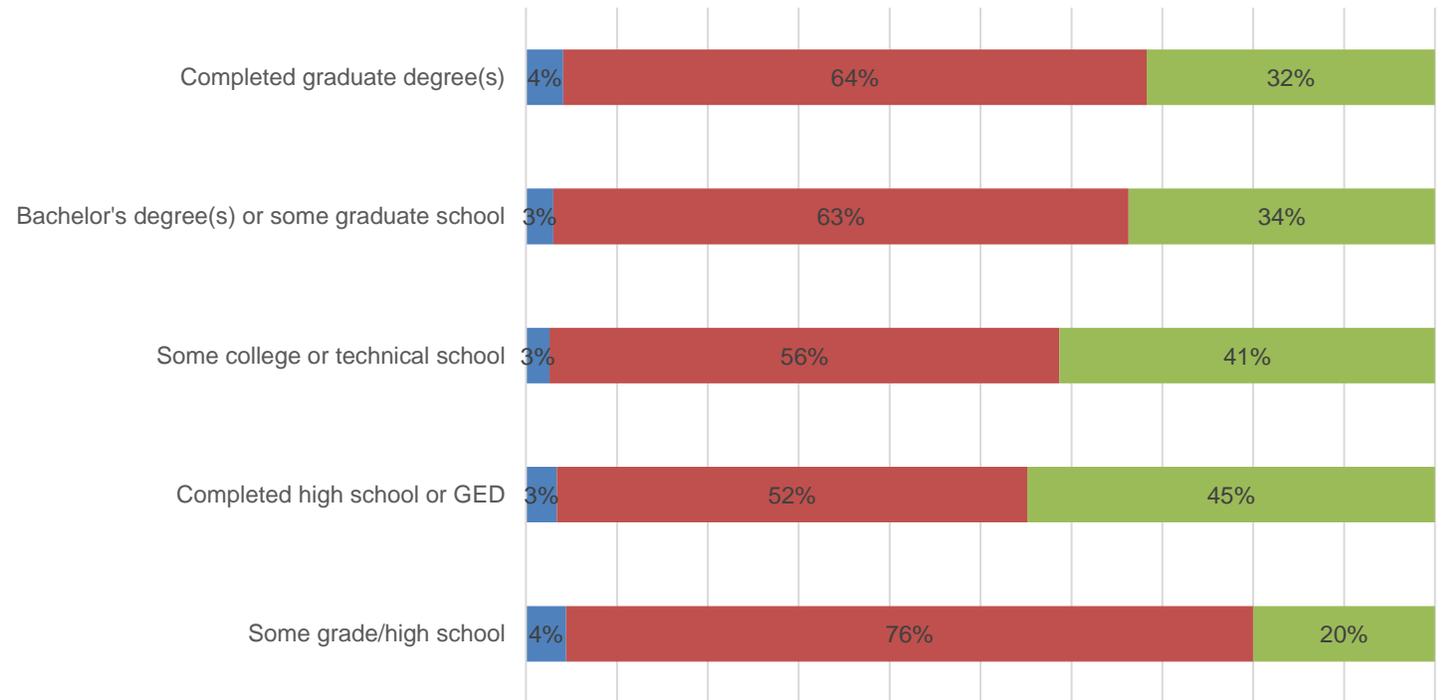
When will you purchase? *Demographic Data*

Age



- I will be one of the first people to buy an AV.
- I will eventually buy an AV, but only after these vehicles are in common use
- I will never buy an AV.

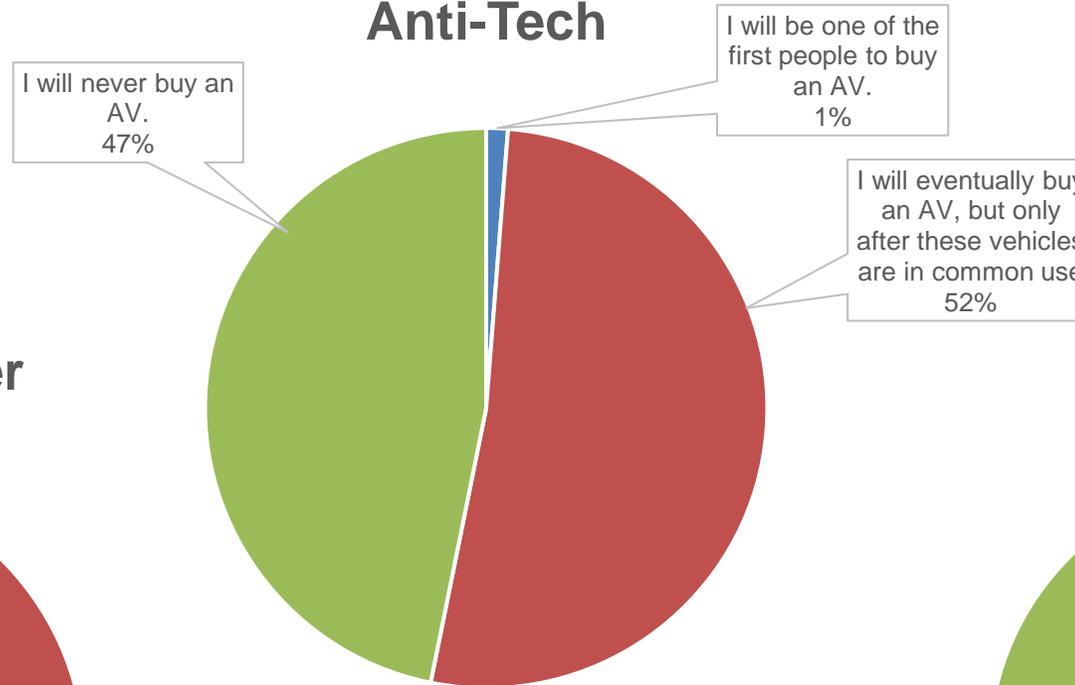
Educational Background



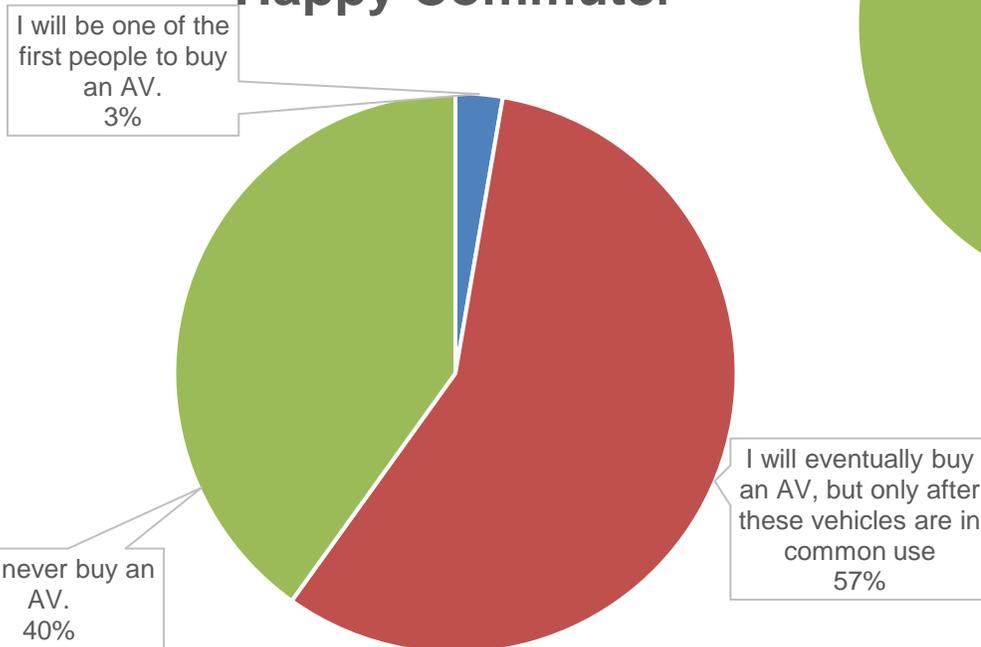
- I will be one of the first people to buy an AV.
- I will eventually buy an AV, but only after these vehicles are in common use
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When will you purchase? *Attitudinal Data*

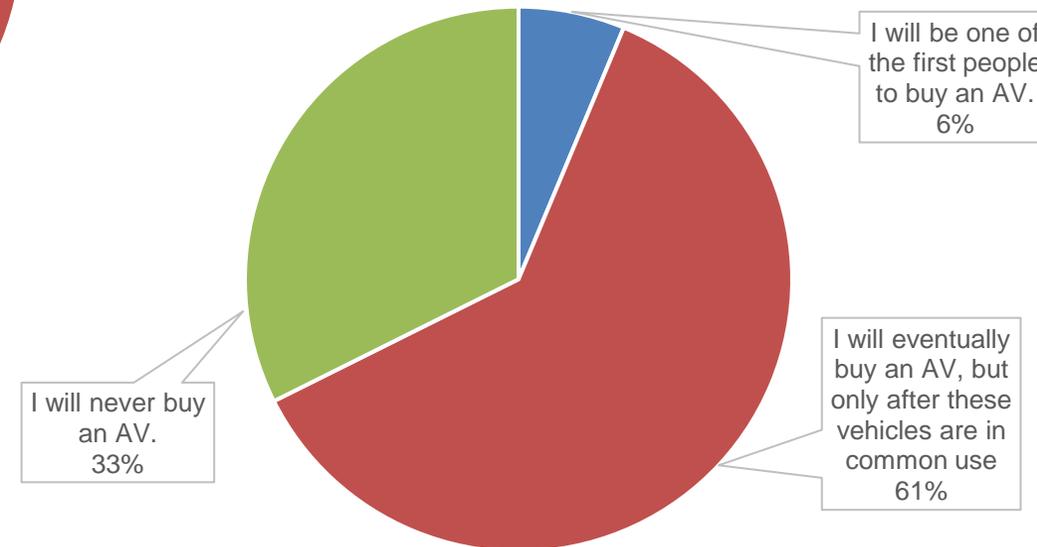
Anti-Tech

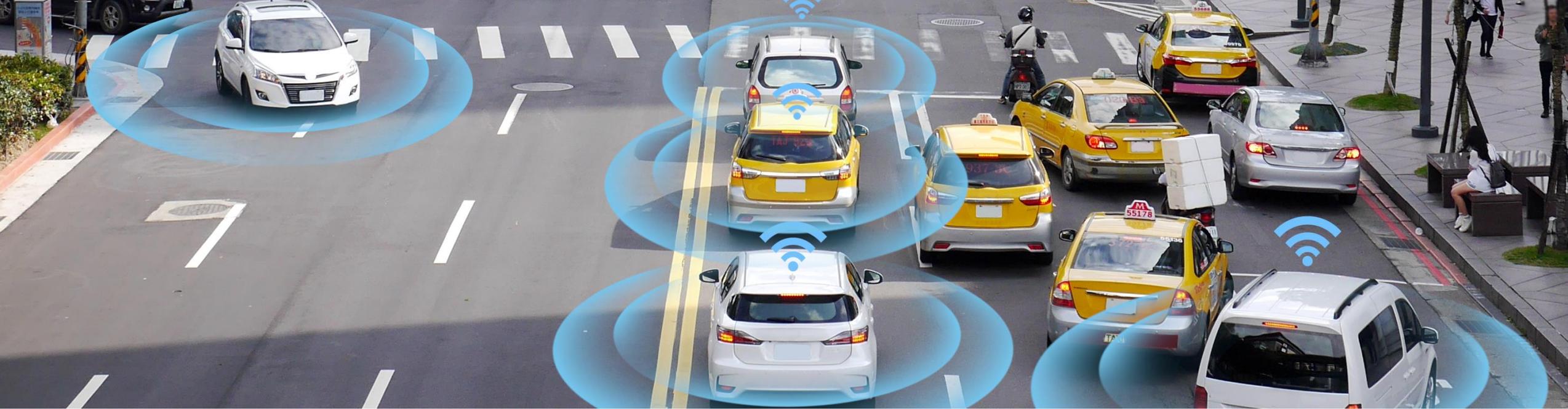


Happy Commuter



Pro-Environment





Thank you!

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