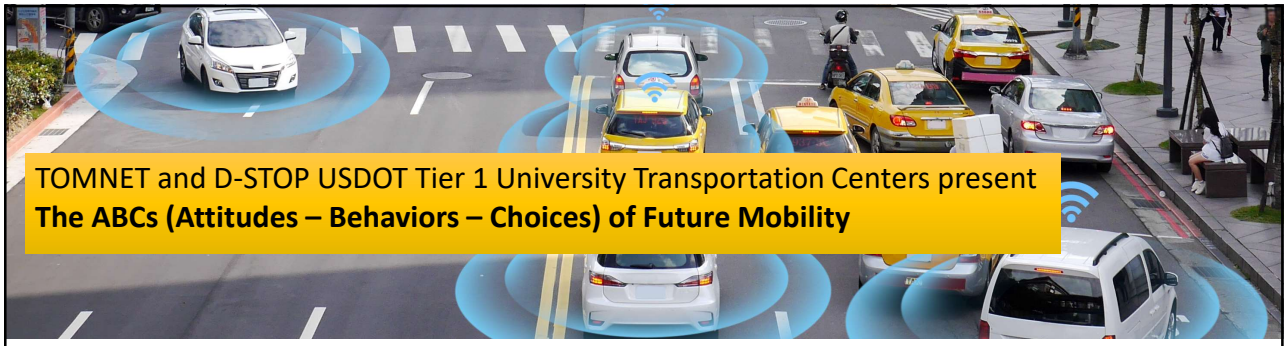

Future Vehicle Ownership Patterns in an Era of AVs

Katherine Asmussen, Aupal Mondal, and Chandra Bhat

Department of Civil, Architectural and Environmental Engineering

University of Texas At Austin

June 12, 2020

TOMNET Transportation Center
Teaching Old Models New Tricks
D-STOP
Arizona State University
Georgia Tech
The University of Texas at Austin
University of South Florida
University of Washington

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Full Citation

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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%

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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

4

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

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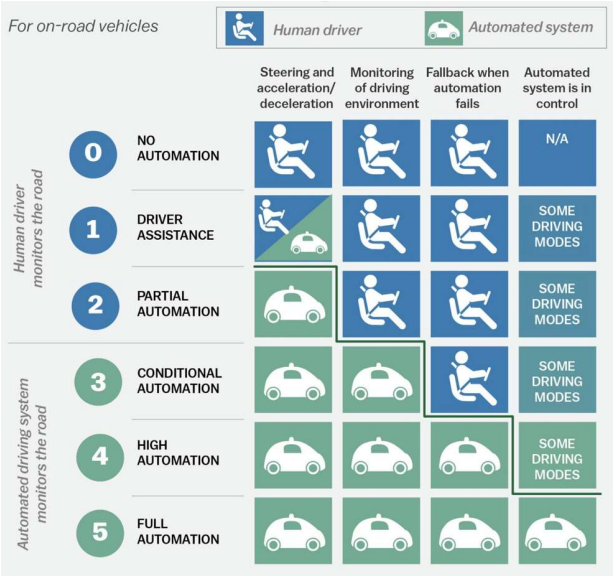

Source: https://medium.com/@BabakShah/levels-of-automation-for-self-driving-cars-d410a4f679b7

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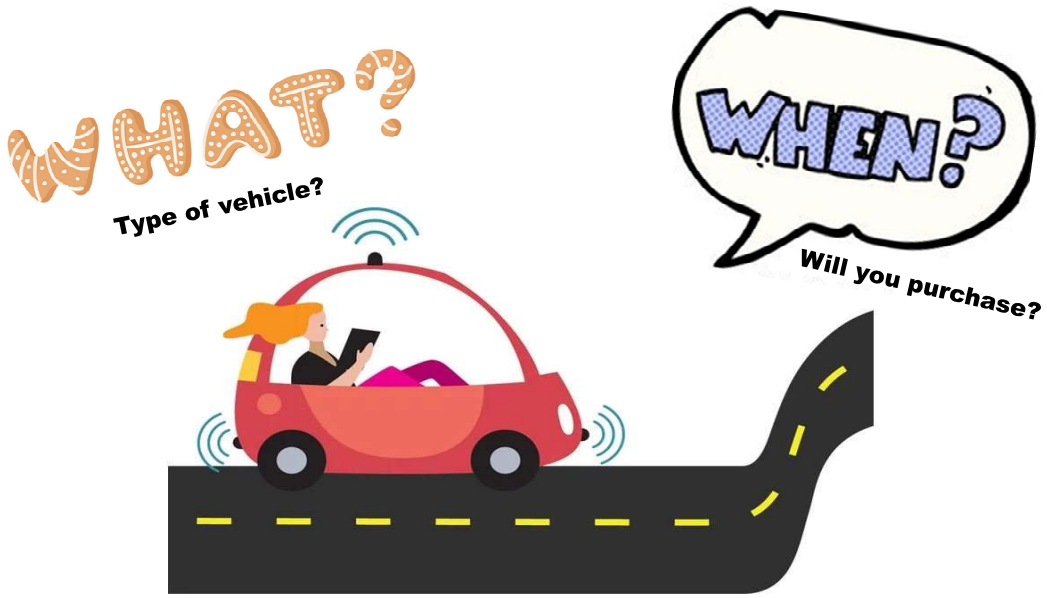

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Regular Vehicle

Autonomous Vehicle

Rely on AV Ride-hailing Services only

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Survey Question: What will you purchase?

Stated Preference Question

Each respondent was presented 2 Scenarios

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

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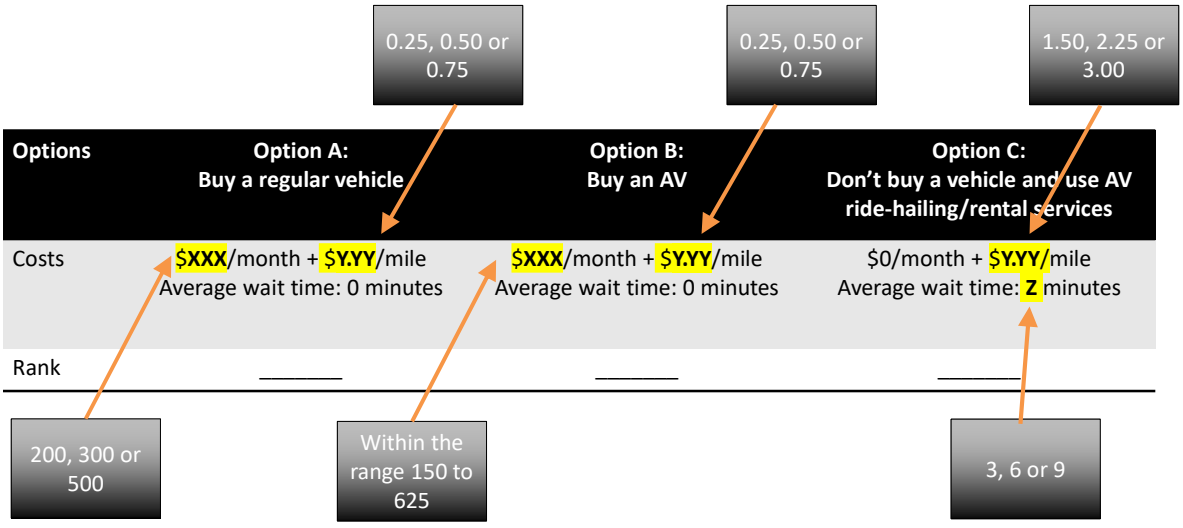
Survey Question: What will you purchase?



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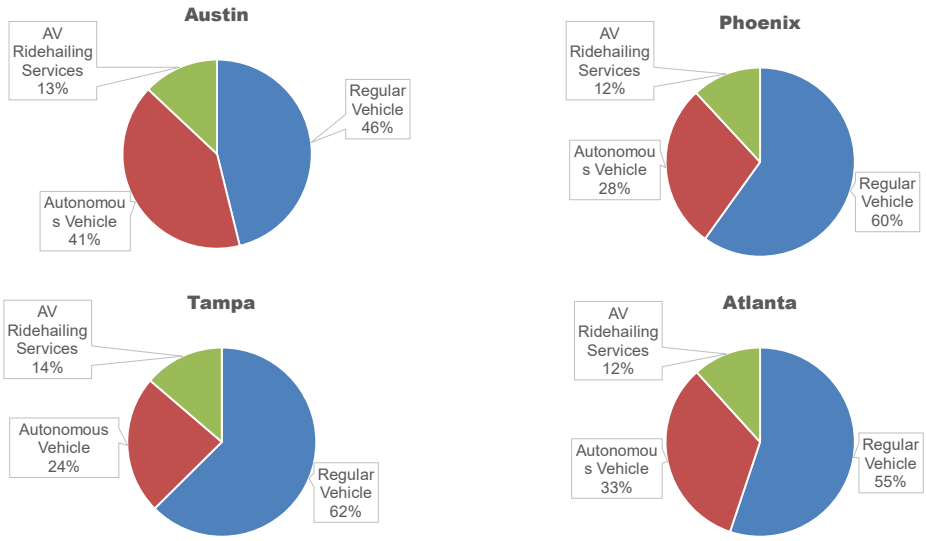
What will you purchase?



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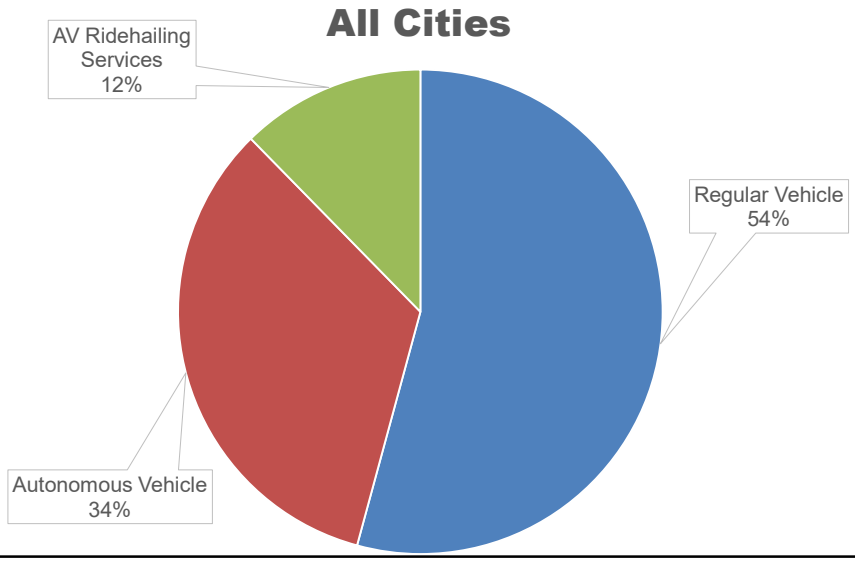

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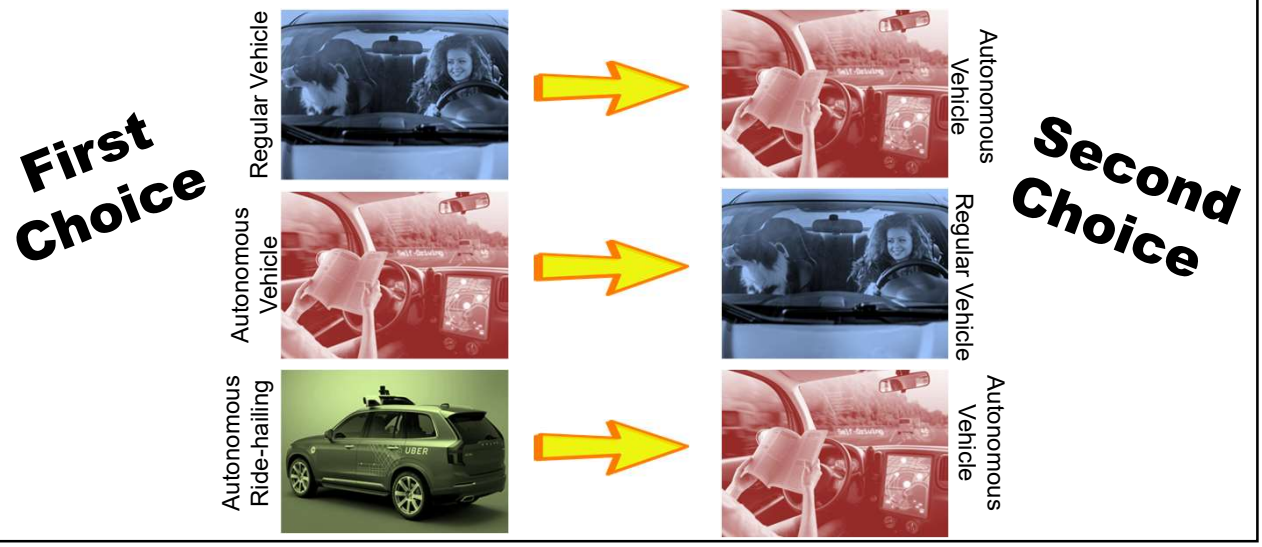

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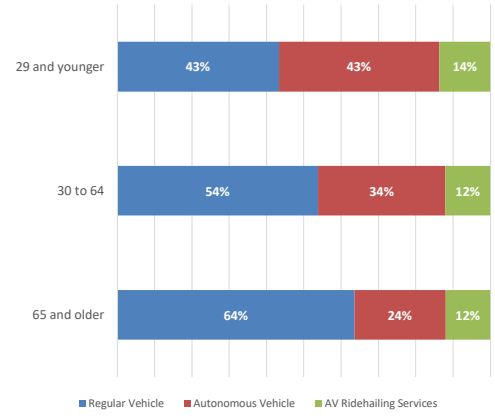
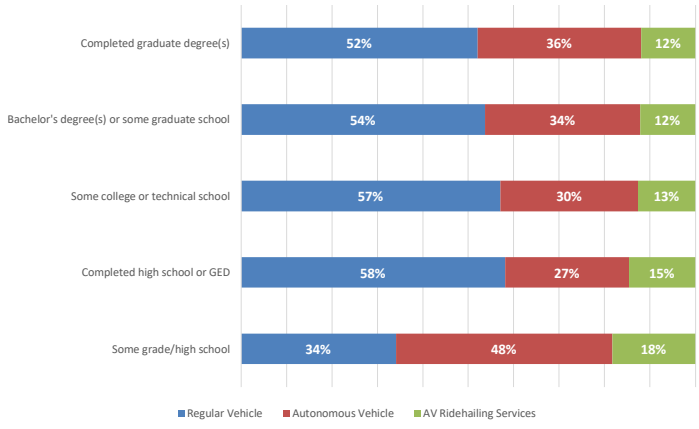
WHAT STARTS HERE CHANGES THE WORLD

What will you purchase? *Demographic Data*

Age



Educational Background



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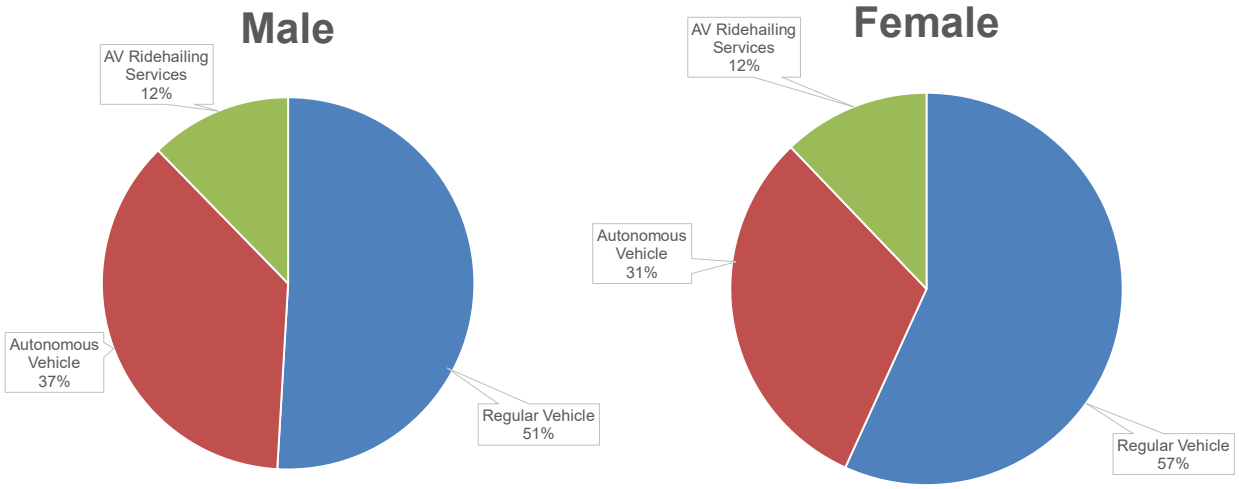
WHAT STARTS HERE CHANGES THE WORLD

What will you purchase? *Demographic Data*



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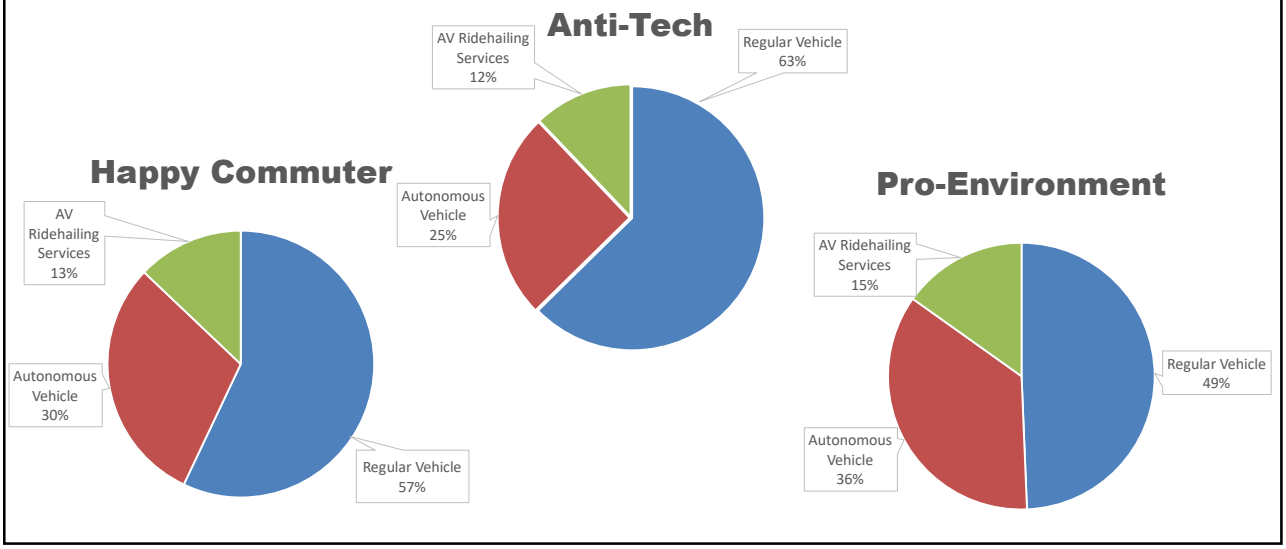
What will you purchase? *Attitudinal Data*



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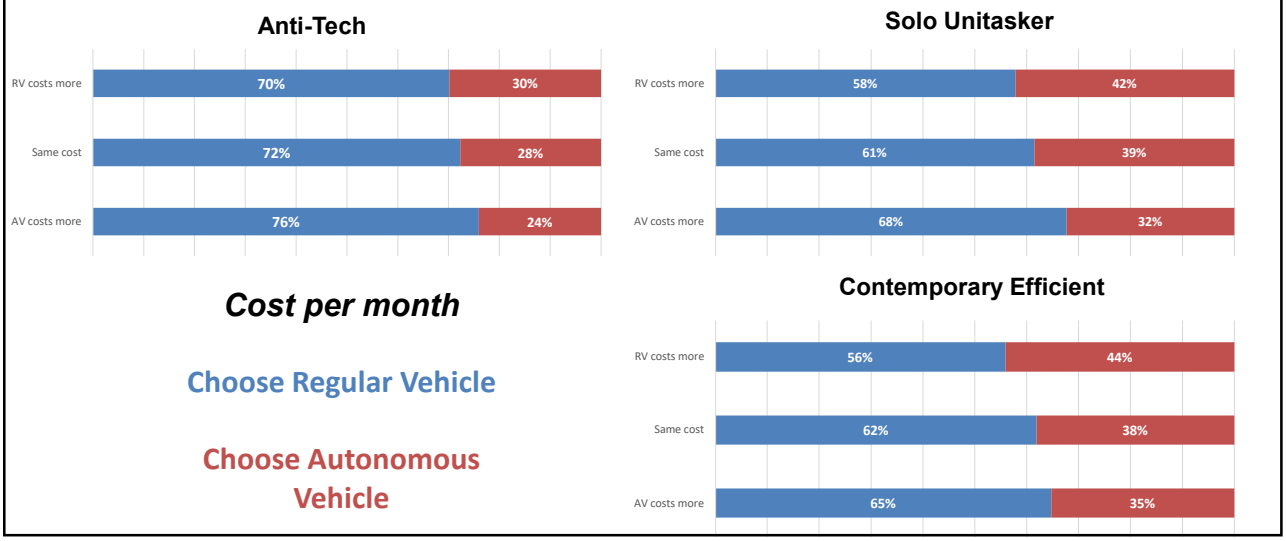
What will you purchase? *Willingness to Pay*



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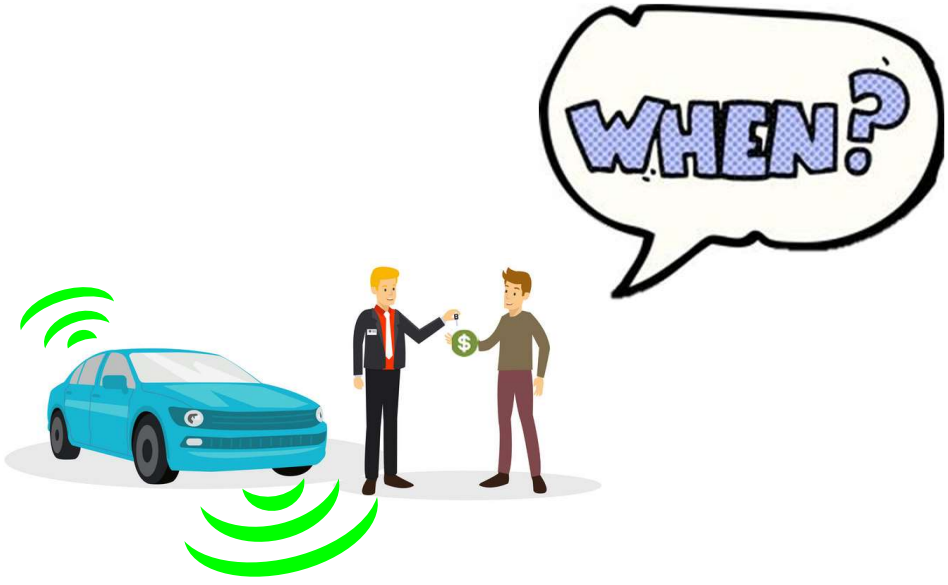

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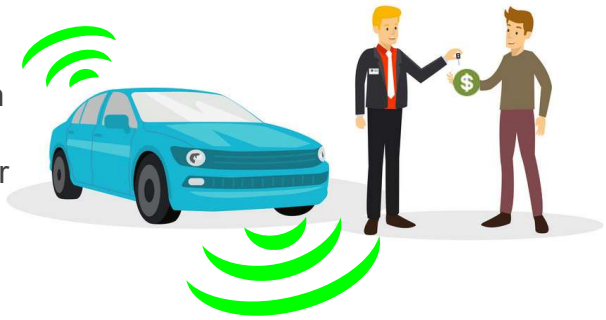
Survey Question: When will you purchase?

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.



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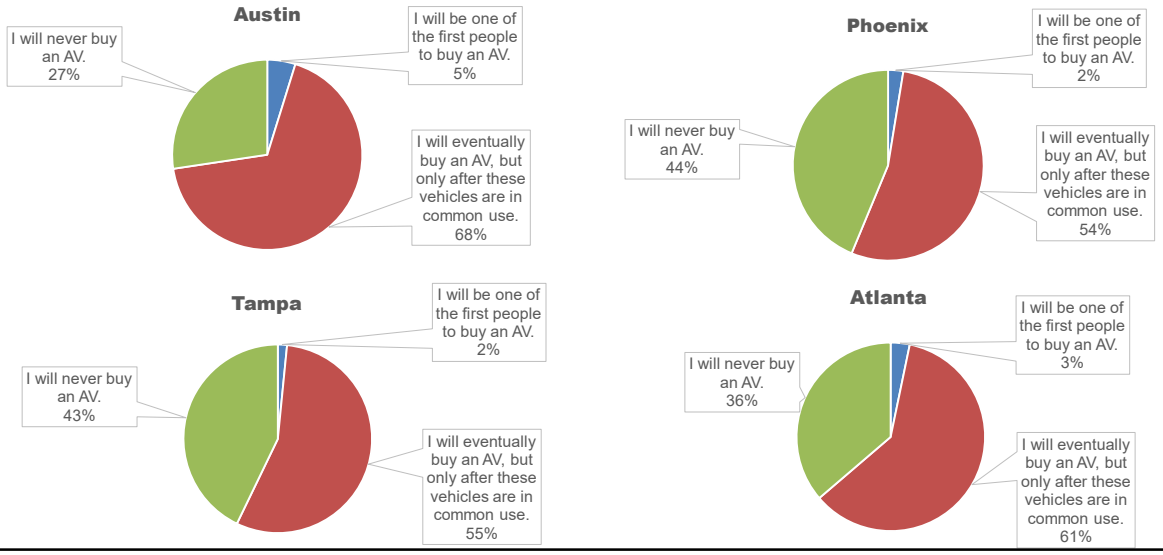
When will you purchase?



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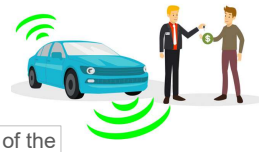
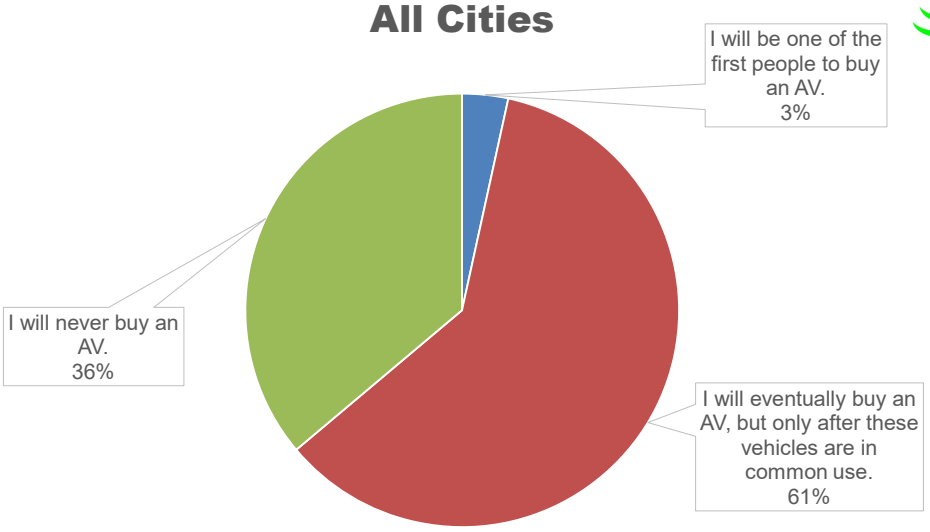
When will you purchase?



All Cities



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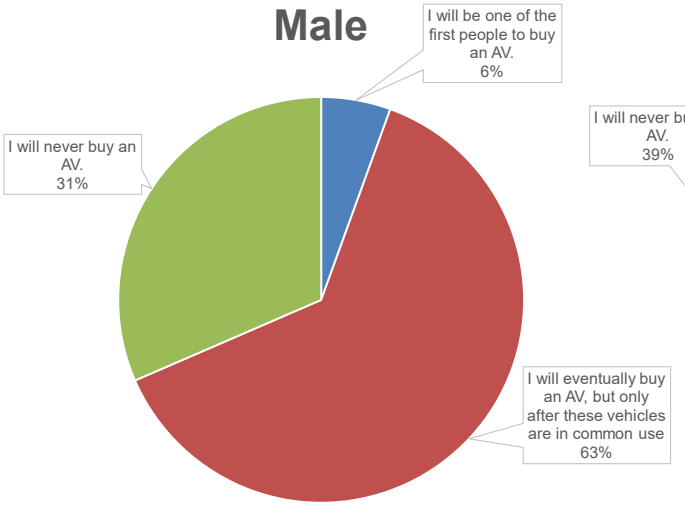
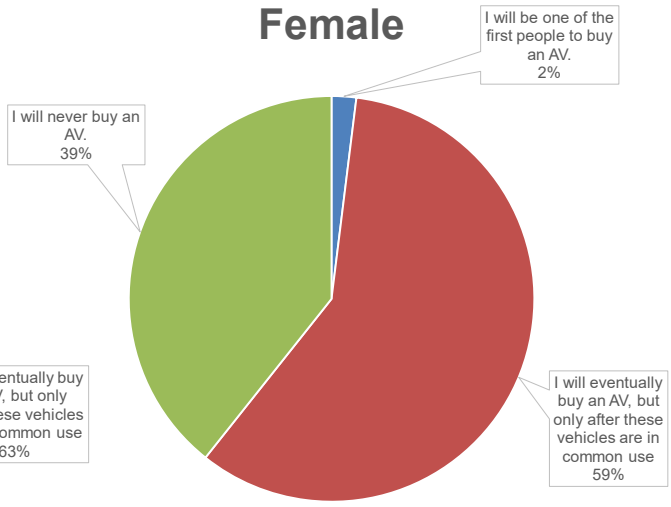
When will you purchase? *Demographic Data*

Male



Female



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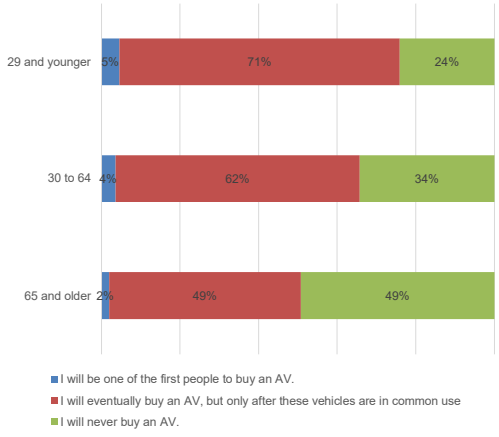
When will you purchase? *Demographic Data*

Age



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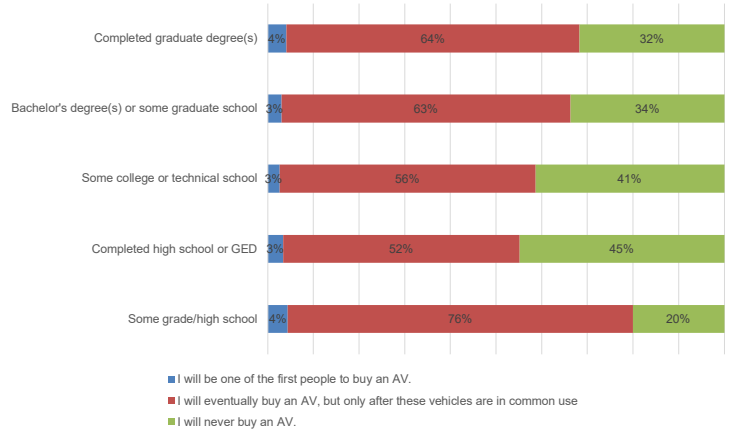

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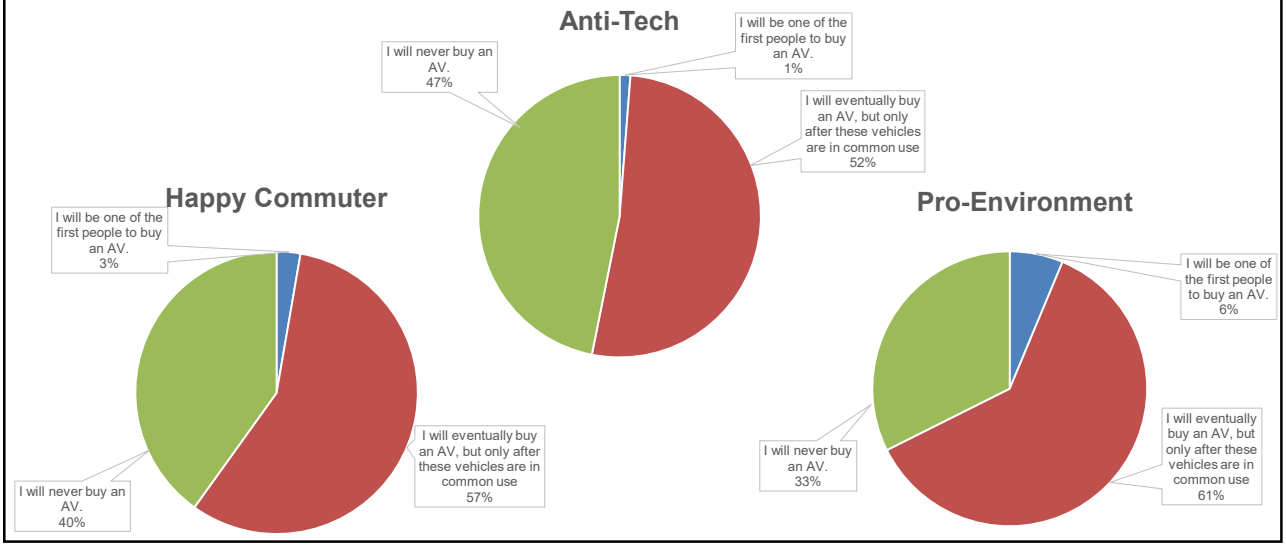
When will you purchase? *Attitudinal Data*



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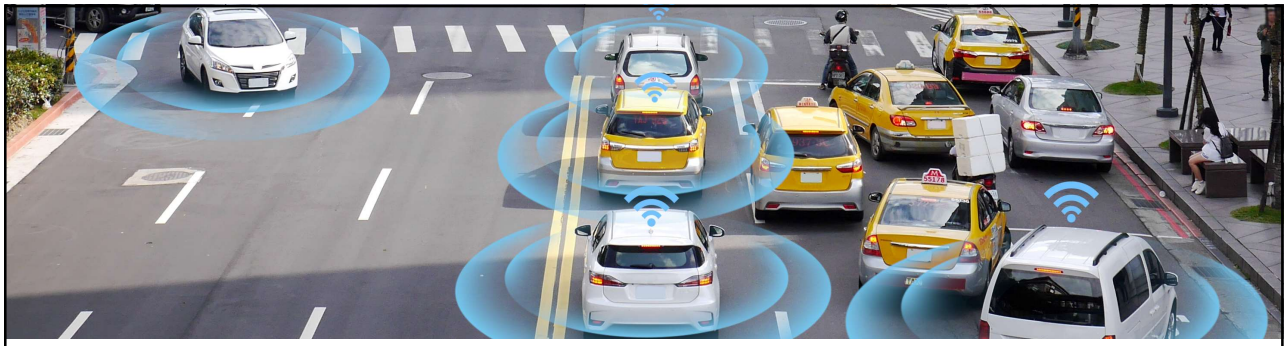

Thank you!

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A special thanks to Felipe Dias!

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