

Commute Time Quality:

Exploring the role of mode and other factors
using the UC Davis Campus Travel Survey

Susan Handy with Calvin Thigpen and Amy Lee

University of California, Davis

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Commute Quality Framework

Subjective well-being – life satisfaction - happiness

Commute well-being – commute satisfaction

Stress

Enjoyment

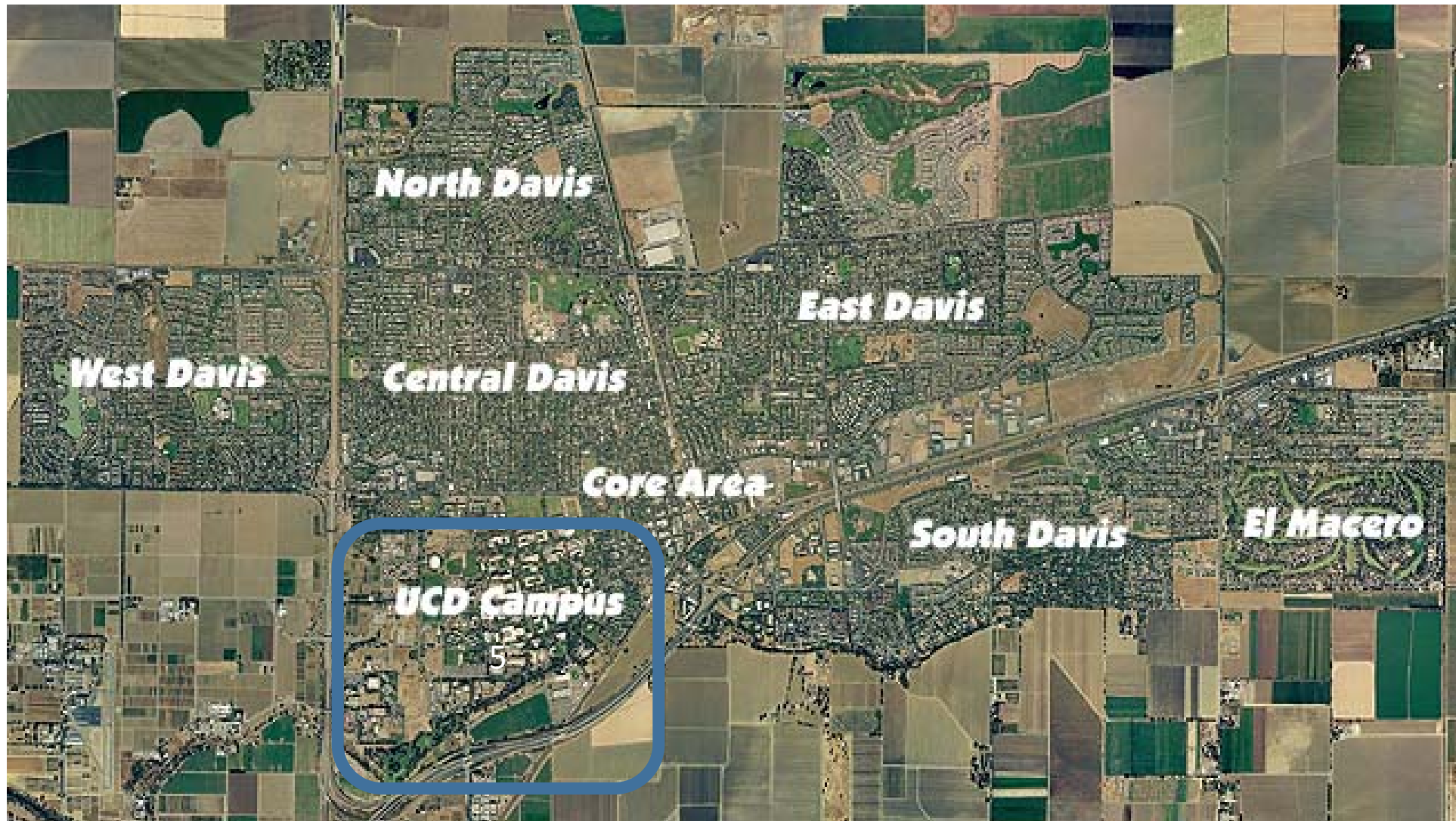
Positive
utility

Mode
liking

UC Davis Campus Travel Survey

- Annual survey of students, staff, and faculty
- Stratified random sample to ensure sufficient numbers in each role
- Email recruitment in three rounds with drawing for prizes
- Response rate for 2016 survey about 14% for about 4000 valid responses
- On-line survey programmed in Qualtrics with questions on:
 - Travel to campus
 - Attitudes
 - Demographics
 - Special topics





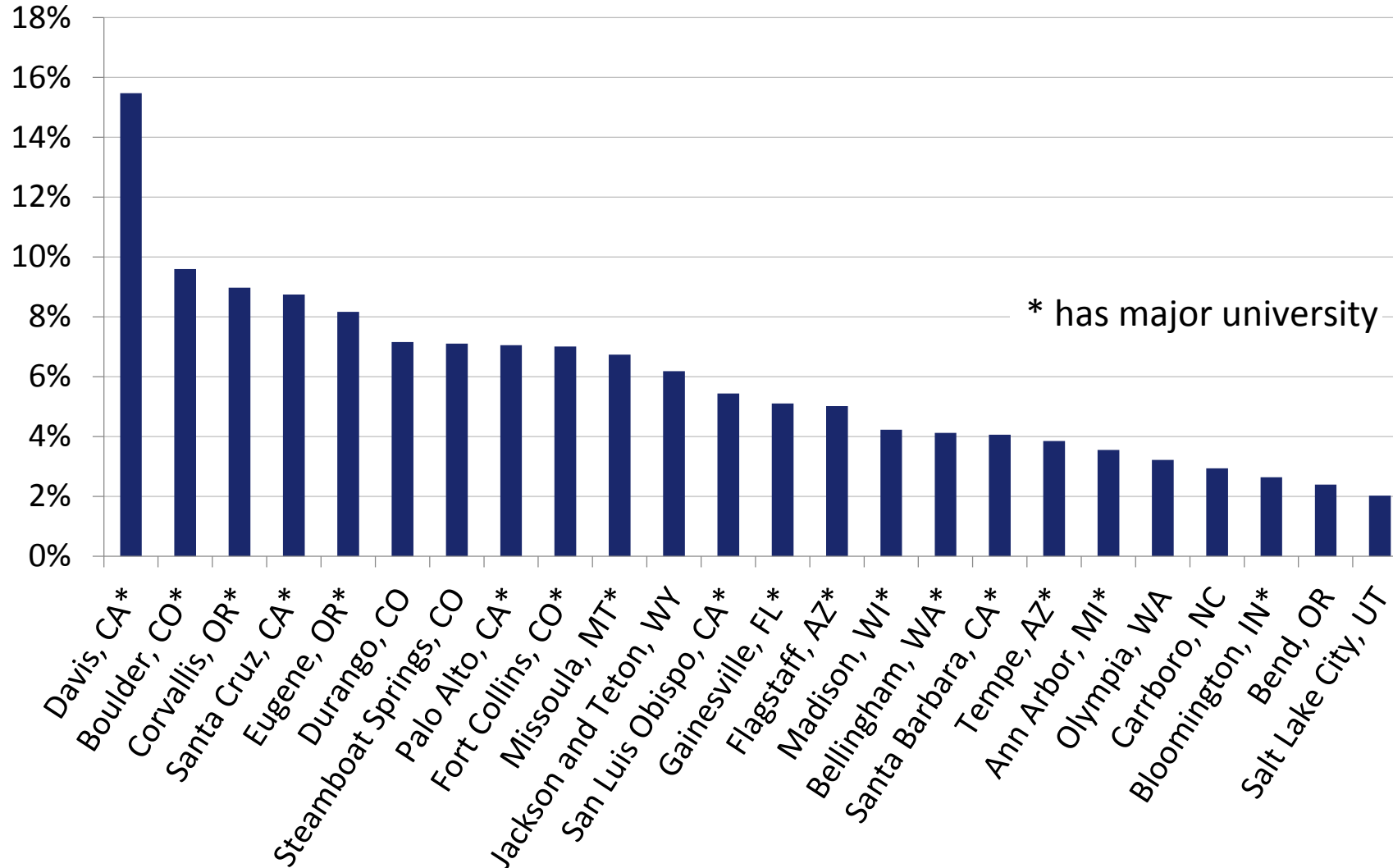
< 10 kilometers

Mode Options

	Living in Davis	Living outside Davis
Walking	X	
Bicycling	X	
Driving	X	X
Bus	X	X
Train		X



Percent Biking to Work in Smaller Cities

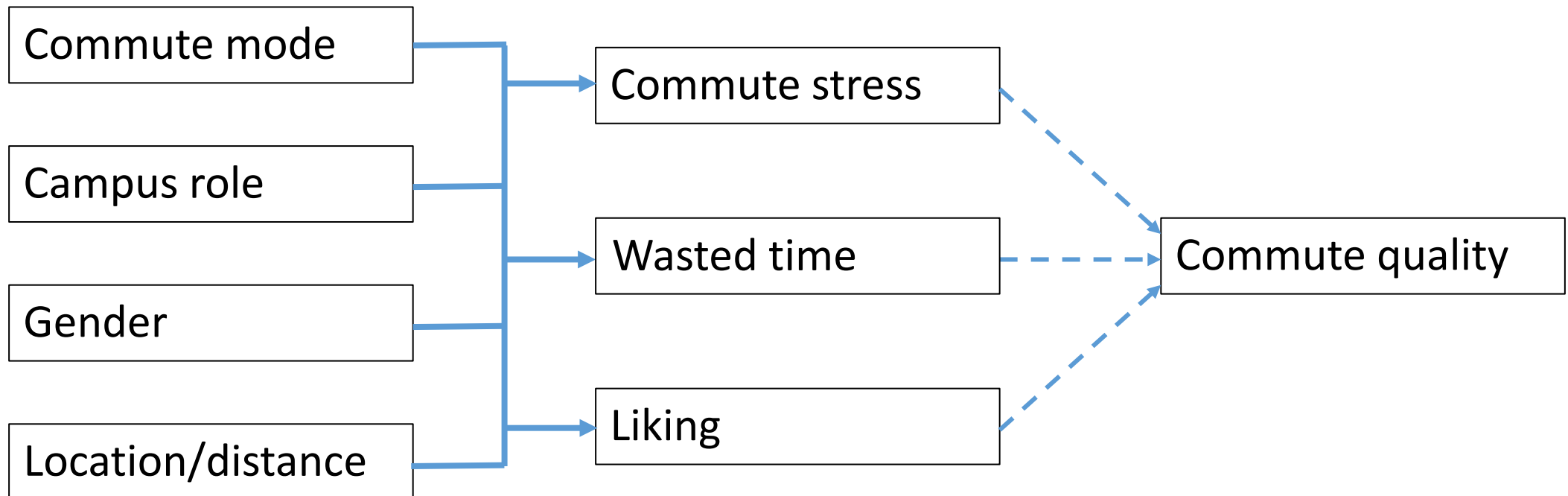


Measures of commute quality

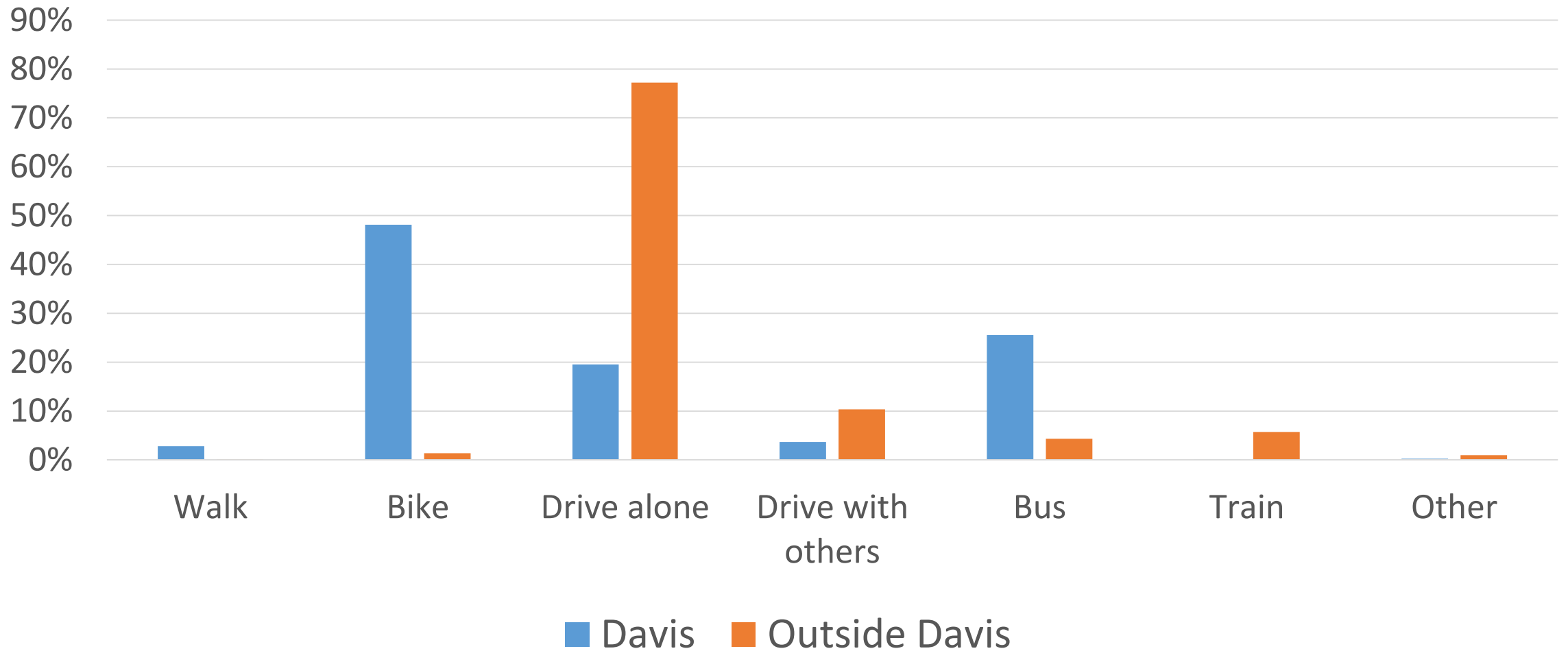
- Agreement that “Traveling to campus stresses me out”
- Agreement that “Travel time is wasted time”
- Mode liking constructed from:
 - Agreement that “I like biking”
 - Agreement that “I like driving”
 - Agreement “I like using transit”



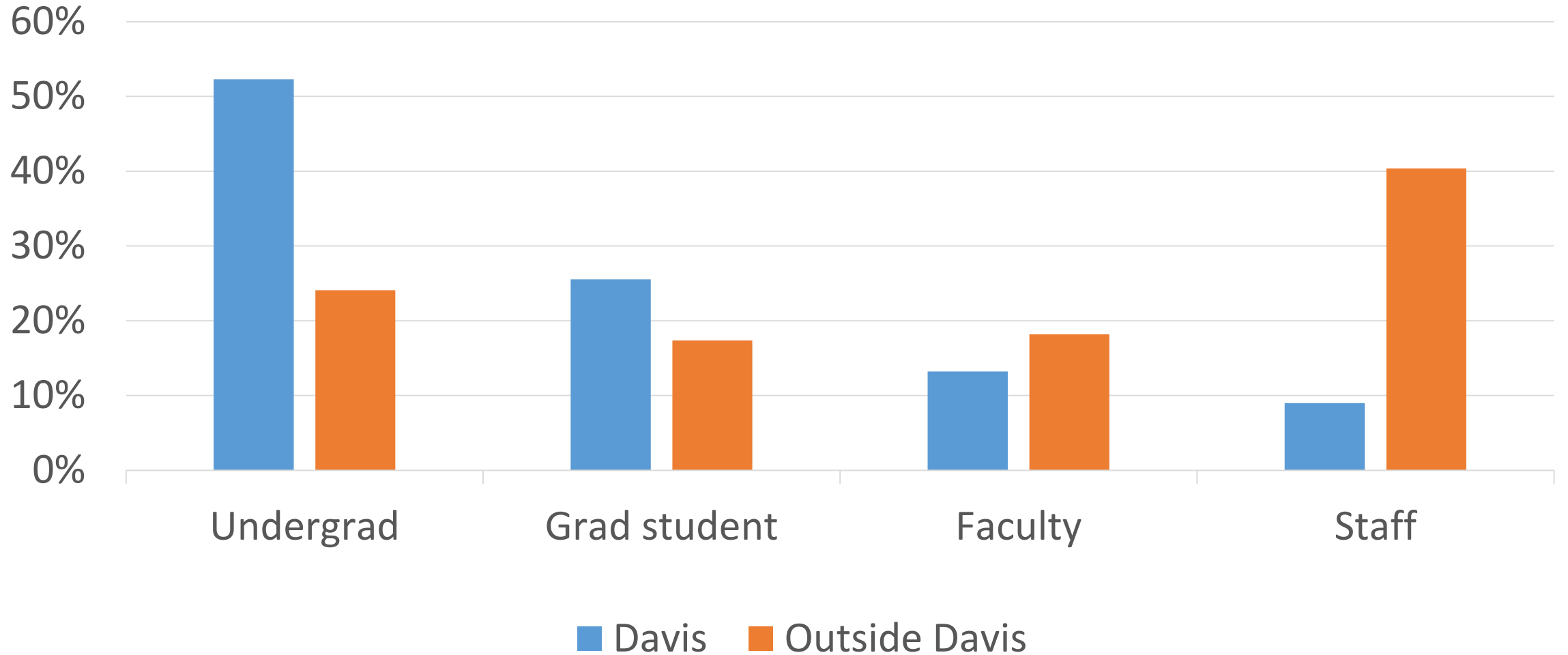
Framework for this analysis...



Mode by Location



Role by Location

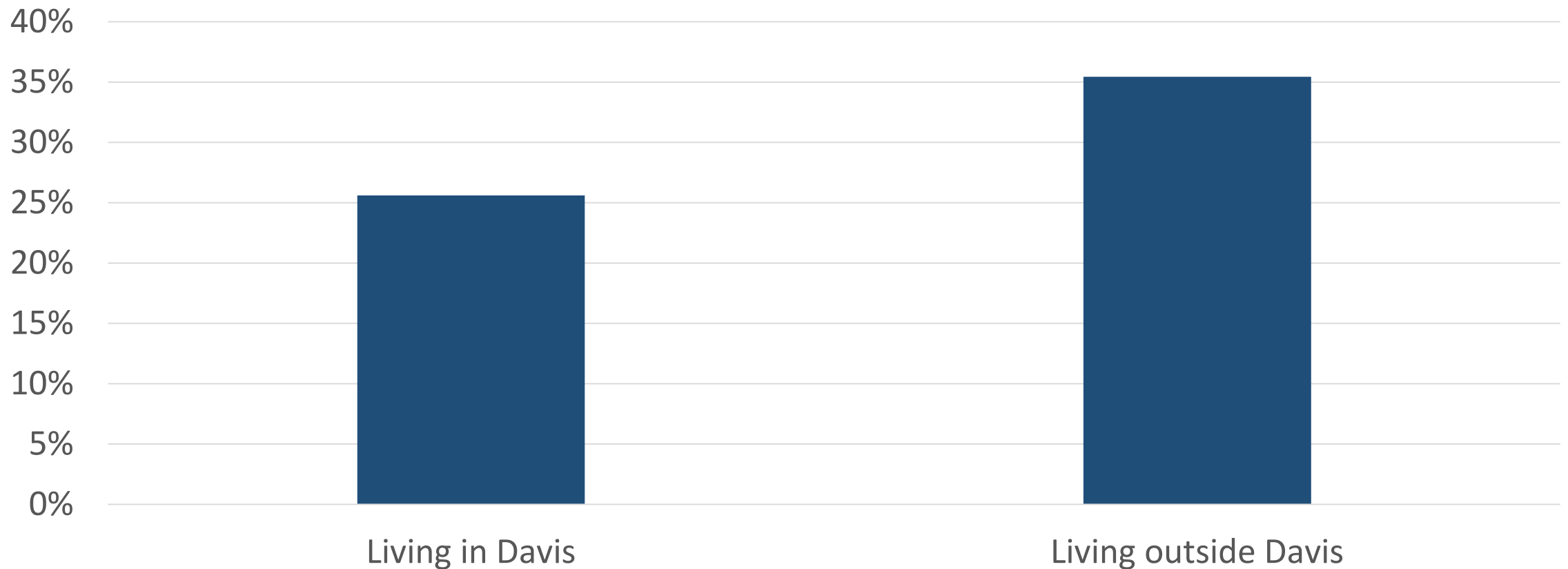


“Traveling to campus stresses me out”



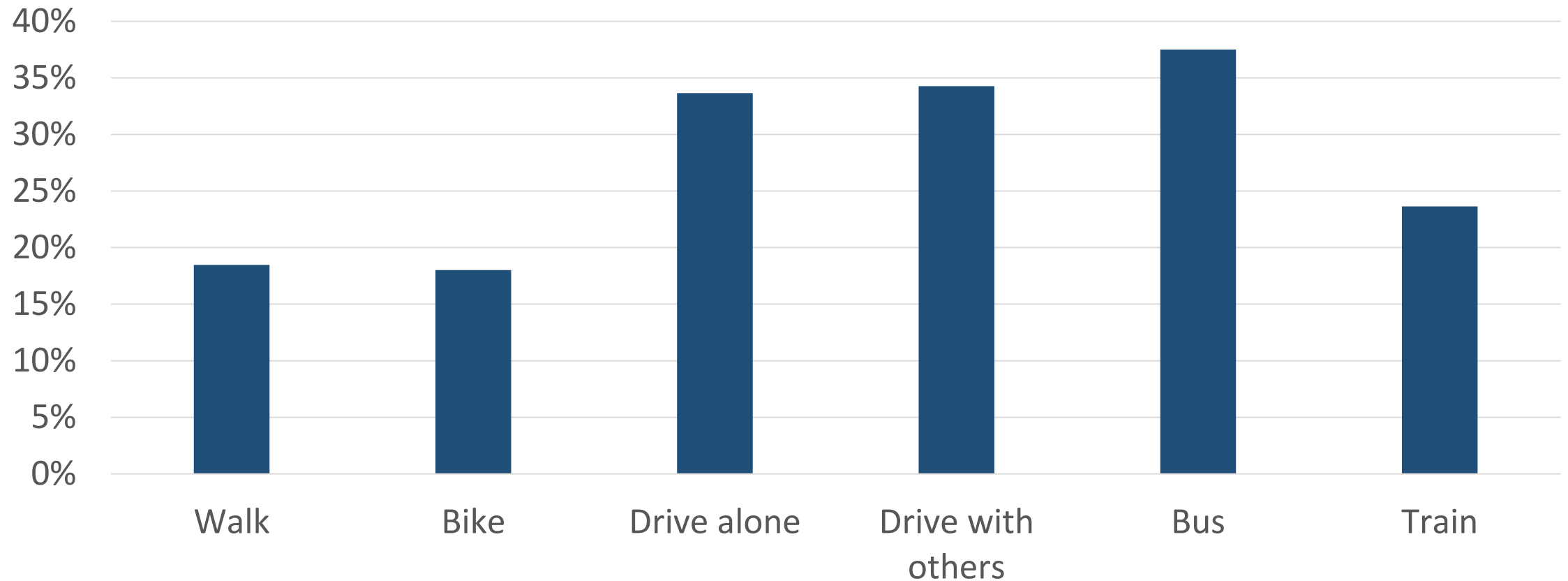
Commute stress by home location

Percent agreeing that “Traveling to campus stresses me out”



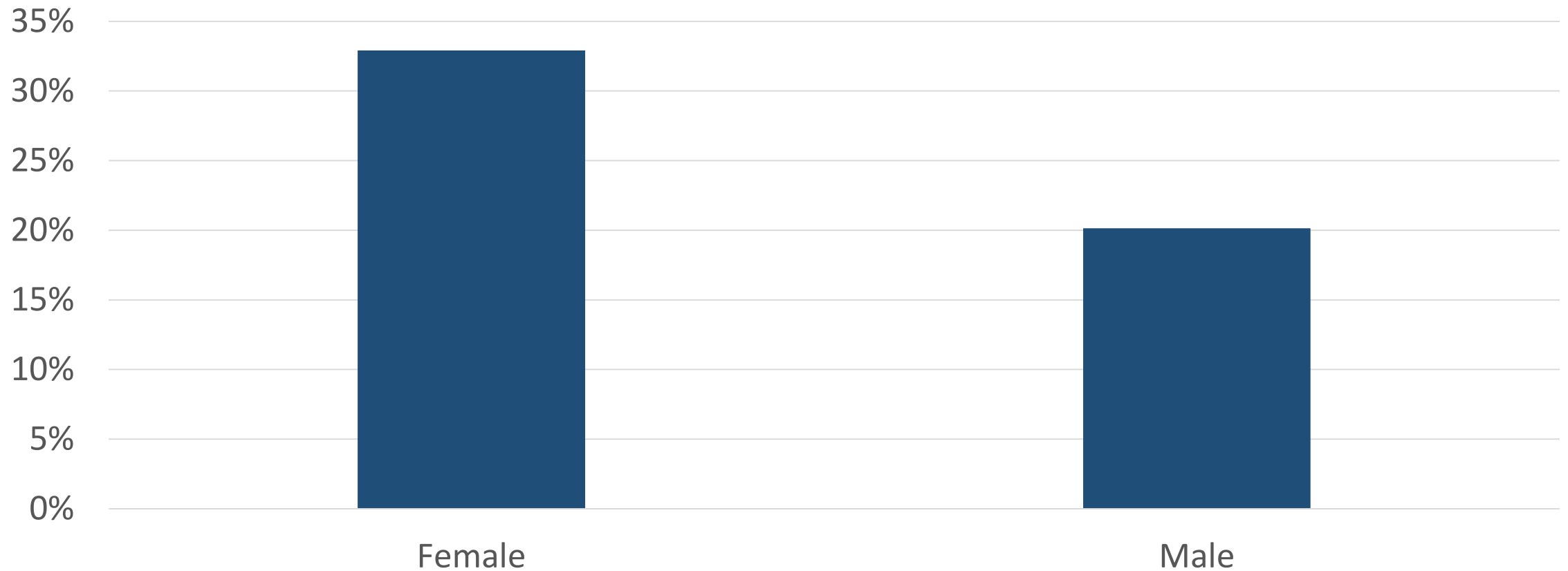
Commute stress by mode

Percent agreeing that “Traveling to campus stresses me out”



Commute stress by gender

Percent agreeing that “Traveling to campus stresses me out”



Stressed out – ordered logit model

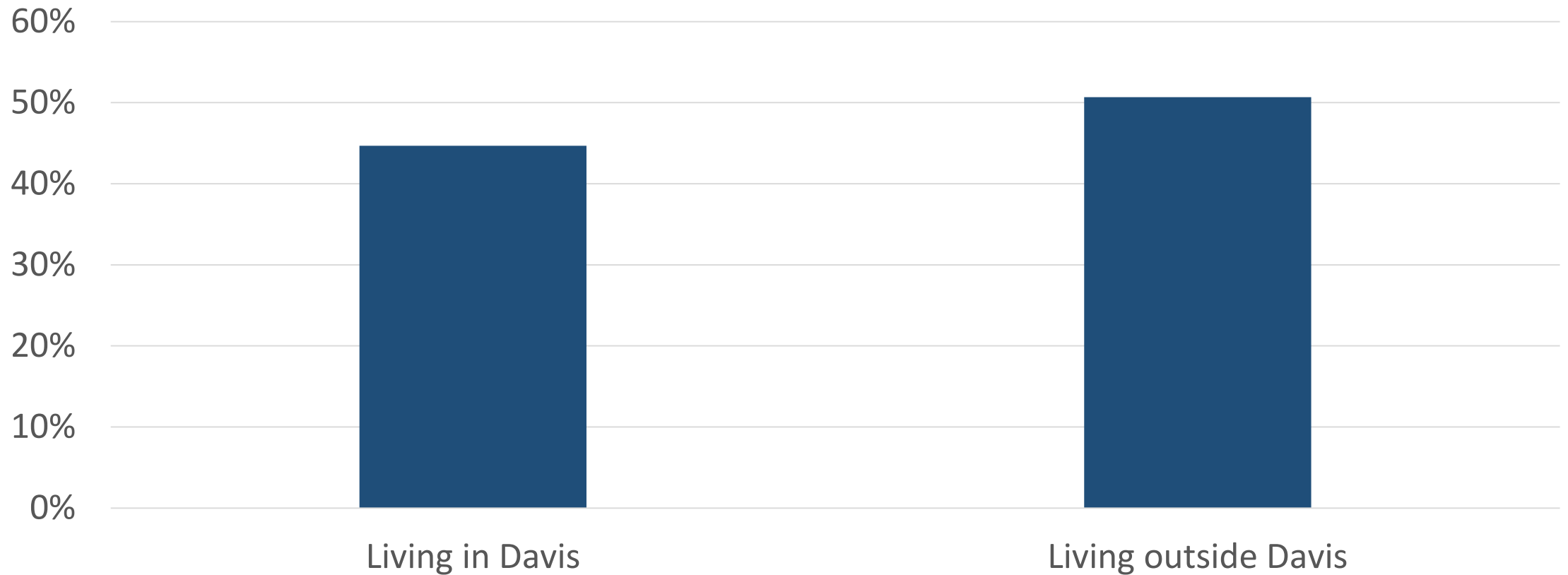
	Inside Davis				Outside Davis		
	B	Exp(B)	Sig.		B	Exp(B)	Sig.
Walk	-0.17	0.84	0.50		-	-	-
Bicycle	-0.68	0.51	0.00		-	-	-
Drive alone	0.18	1.20	0.16		0.53	1.70	0.06
Ride in car	0.21	1.24	0.34		0.56	1.75	0.08
Bus	ref	1.00			0.32	1.37	0.44
Train	-	-	-		ref	1.00	
Undergrad	1.02	2.76	0.00		0.91	2.49	0.00
Grad student	0.58	1.79	0.00		0.43	1.54	0.02
Staff	-0.22	0.81	0.22		-0.14	0.87	0.42
Faculty	ref	1.00			ref	1.00	
Not female	-0.59	0.56	0.00		-0.61	0.54	0.00
Female	ref	1.00			ref	1.00	
Commute time	0.04	1.04	0.17		0.01	1.01	0.00

“Travel time is generally wasted time”



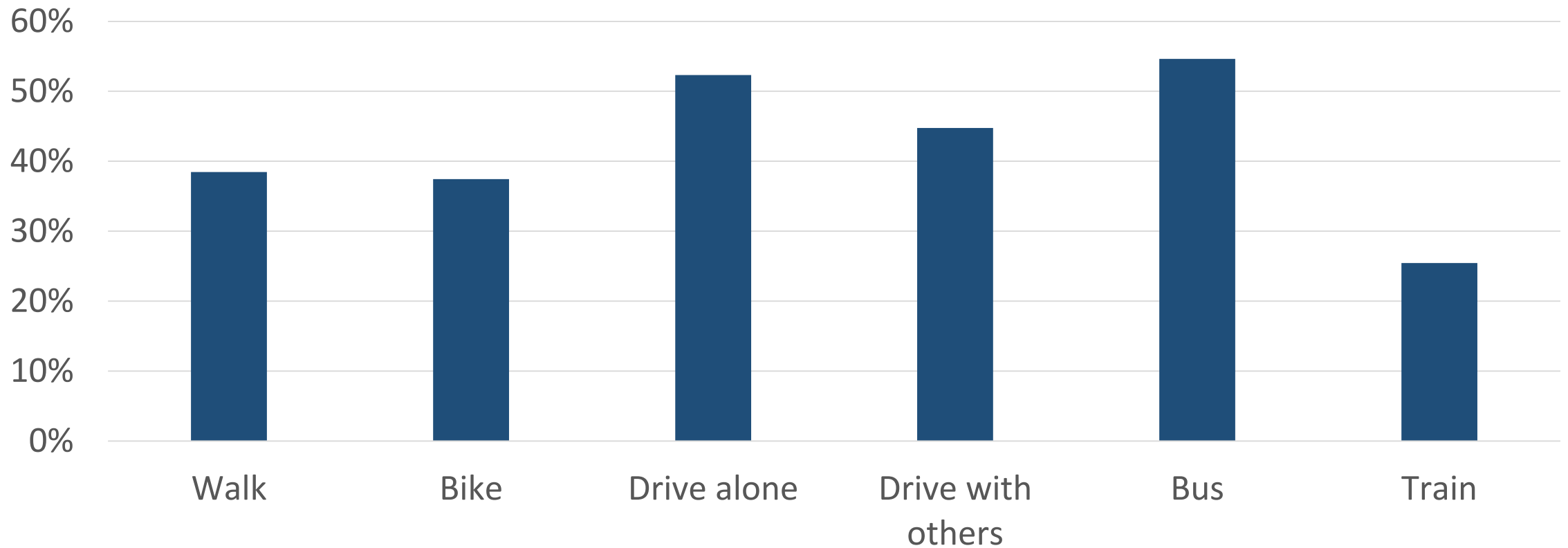
Wasted time by home location

Percent agreeing that "Travel time is generally wasted time"



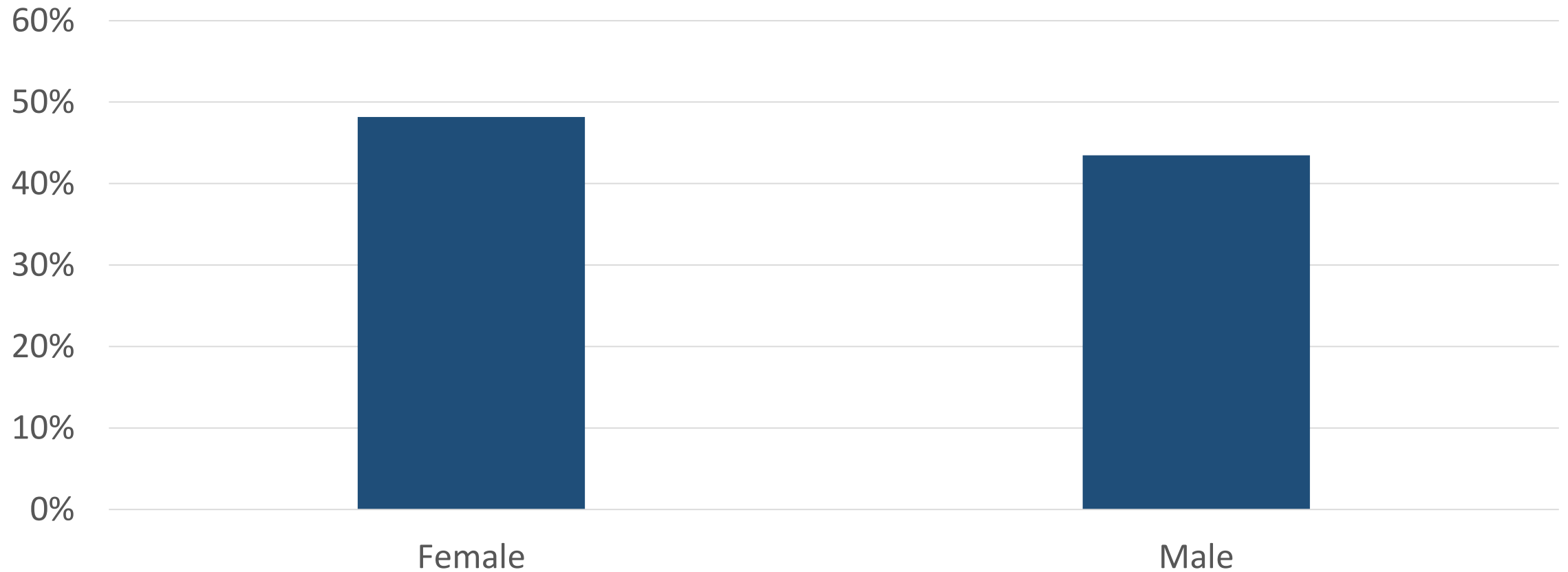
Wasted time by mode

Percent agreeing that “Travel time is generally wasted time”



Wasted time by gender

Percent agreeing that "Travel time is generally wasted time"



Wasted time – ordered logit model

	Inside Davis			Outside Davis		
	B	Exp(B)	Sig.	B	Exp(B)	Sig.
Walk	-0.43	0.65	0.09	-	-	-
Bicycle	-0.57	0.56	0.00	-	-	-
Drive alone	0.15	1.16	0.25	1.59	4.91	0.00
Ride in car	-0.23	0.80	0.31	1.35	3.84	0.00
Bus	ref	1.00		1.18	3.26	0.00
Train	-	-	-	ref	1.00	
Undergrad	0.76	2.14	0.00	0.62	1.85	0.00
Grad student	0.43	1.54	0.01	0.38	1.47	0.03
Staff	0.40	1.49	0.02	-0.18	0.84	0.32
Faculty	ref	1.00		ref	1.00	
Not female	-0.01	0.99	0.90	-0.01	0.99	0.96
Female	ref	1.00		ref	1.00	
Commute time	-0.01	0.99	0.70	0.00	1.00	0.96

Mode Liking

“I like biking”



“I like driving”

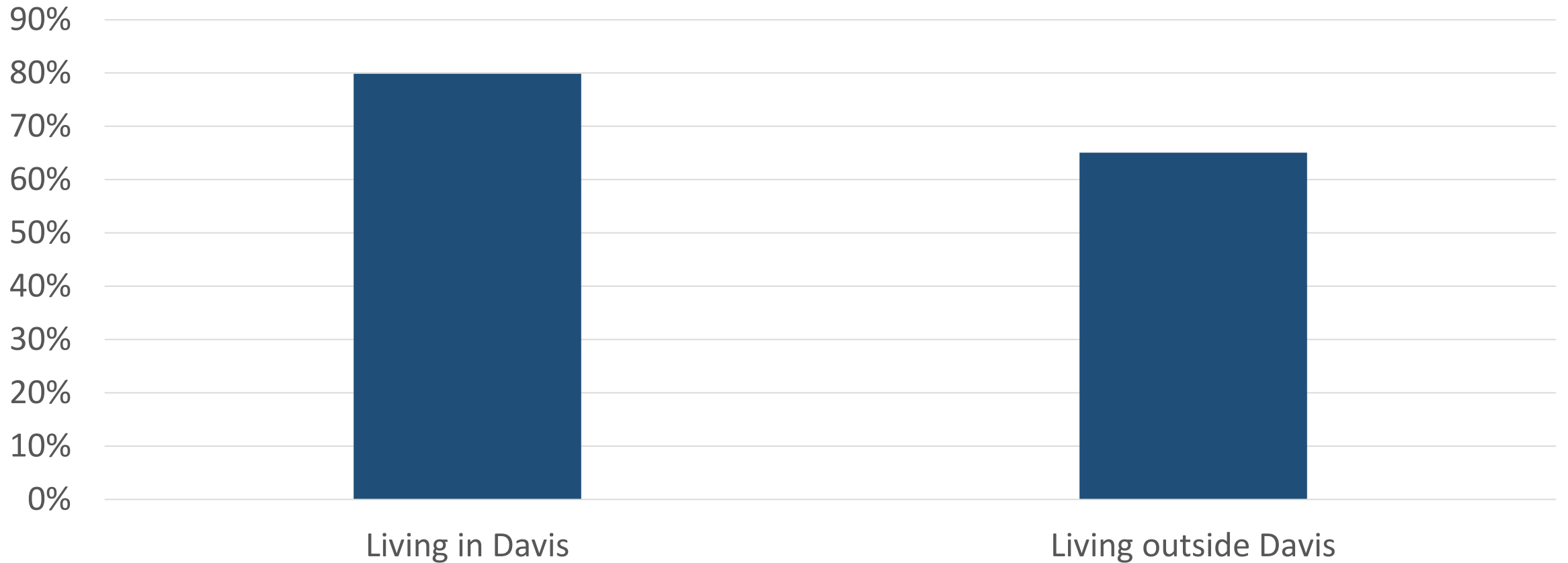


“I like using transit”



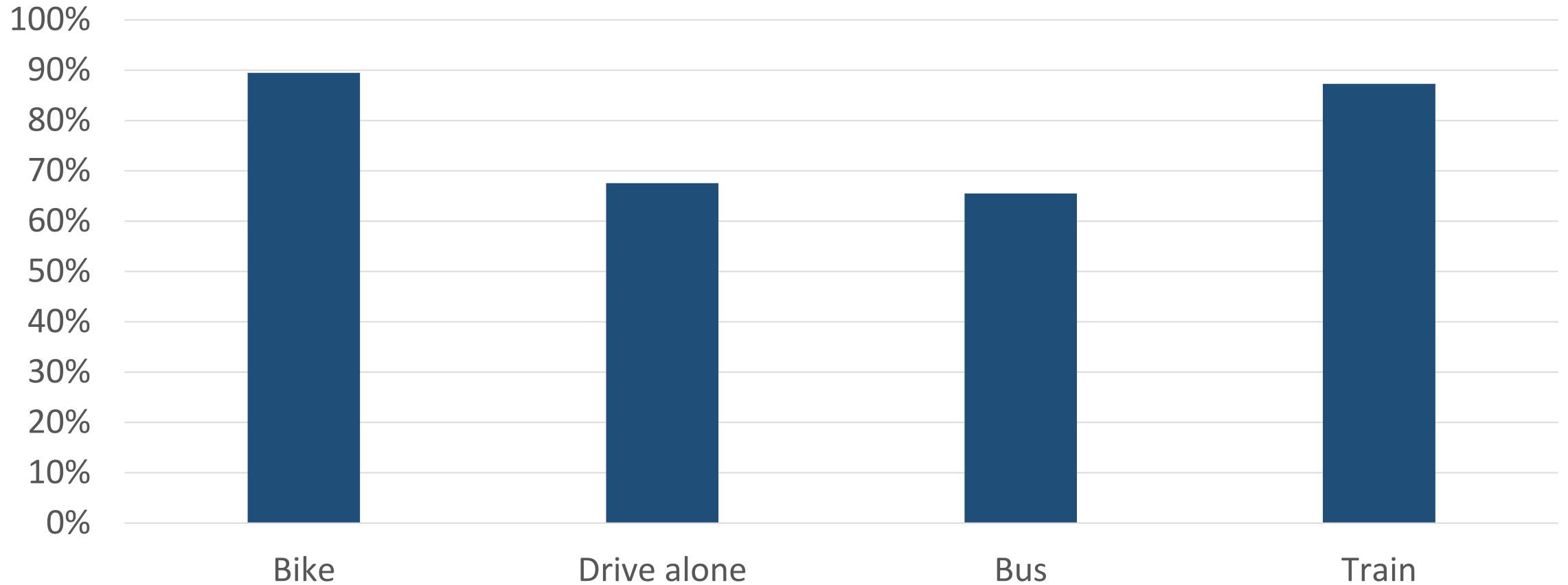
Mode liking by home location

Percent agreeing that they like their usual commute mode



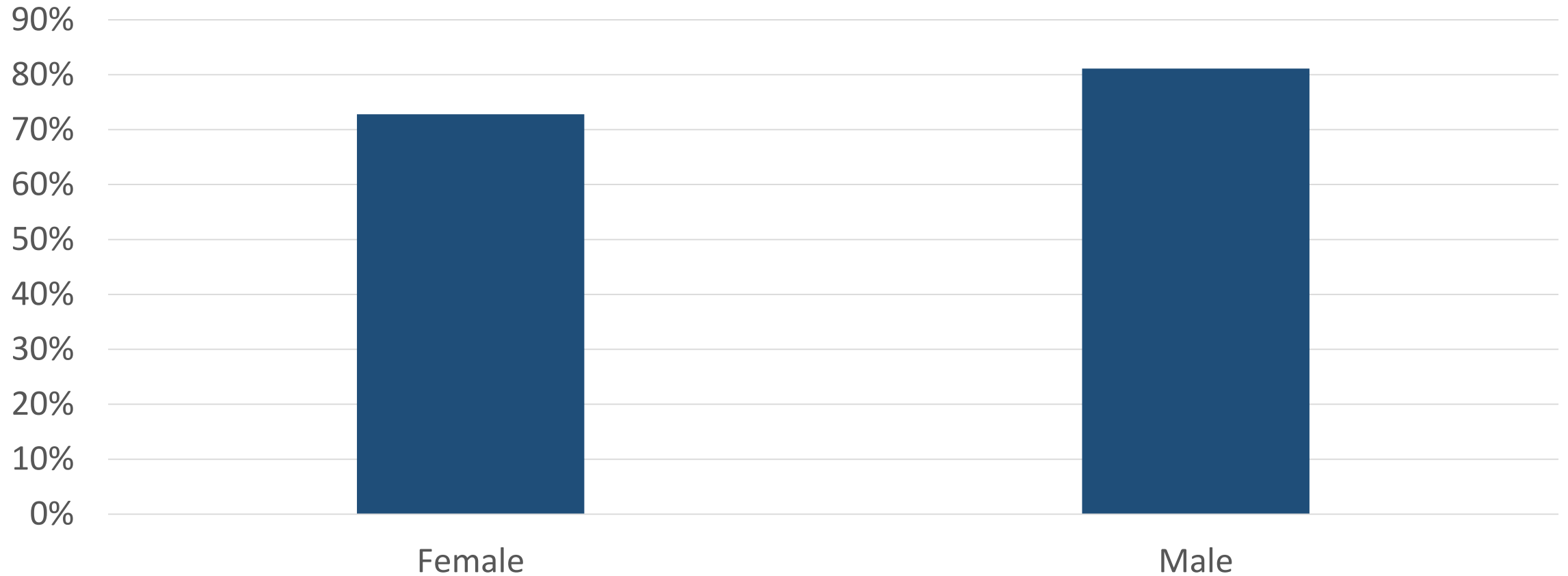
Mode liking by mode

Percent agreeing that they like their usual commute mode



Mode liking by gender

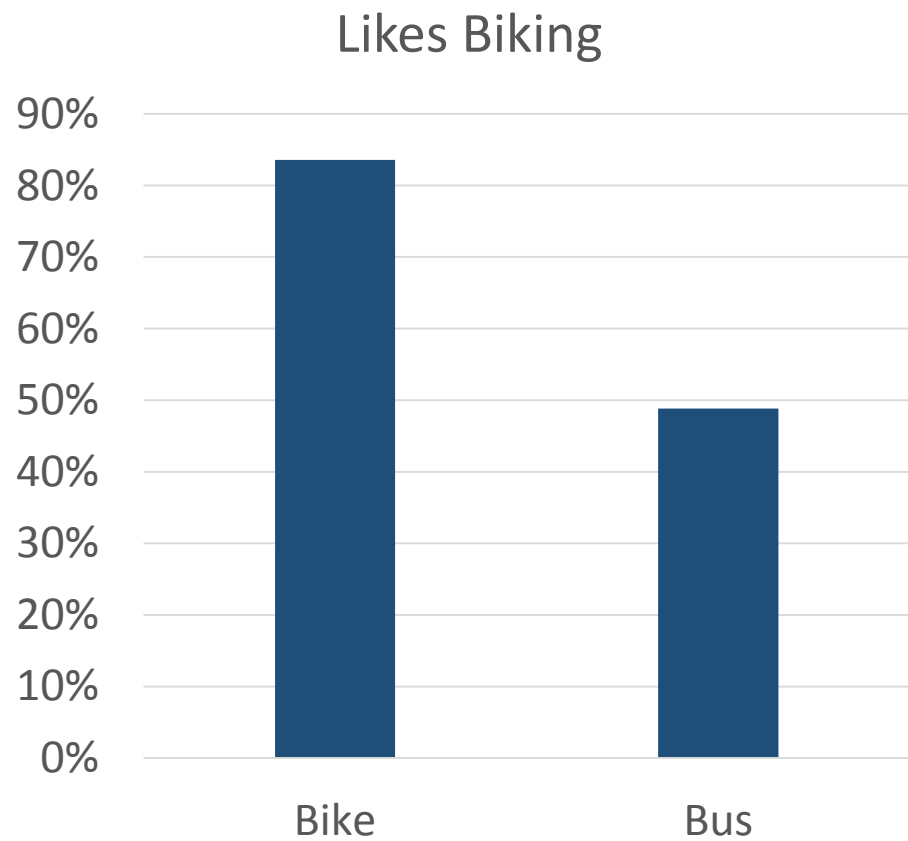
Percent agreeing that they like their usual commute mode



Mode liking – ordered logit model

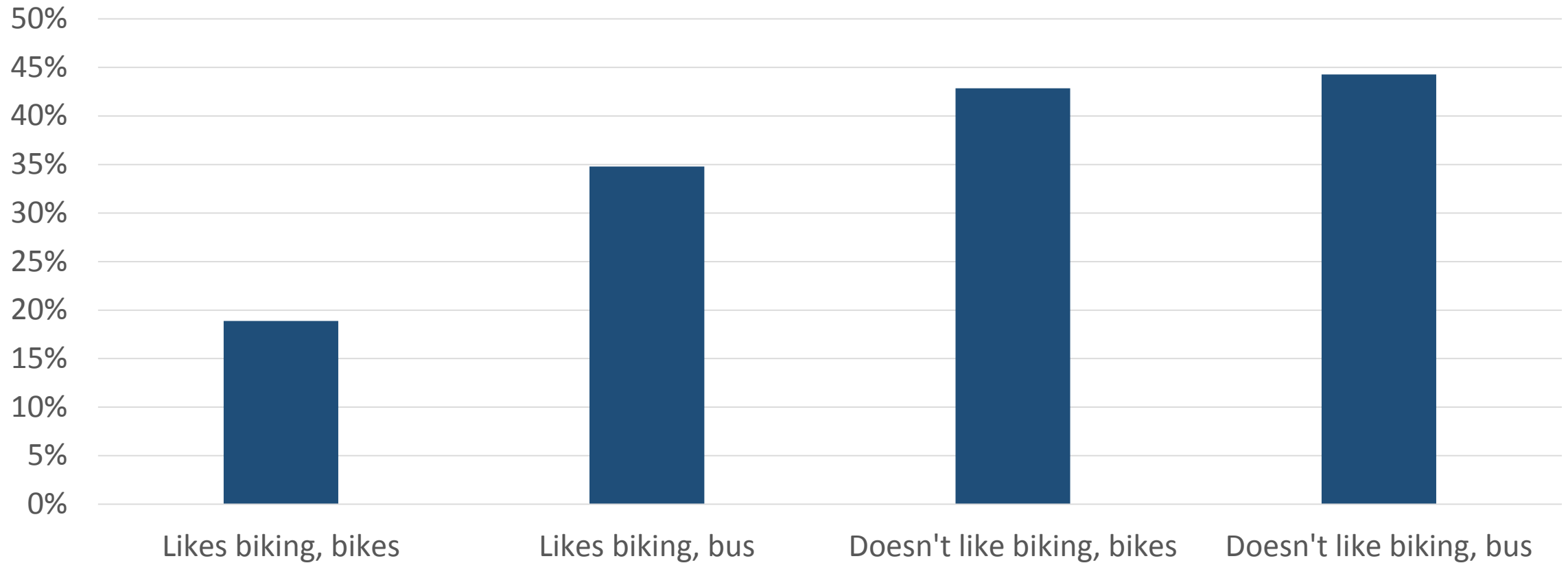
	Inside Davis				Outside Davis		
	B	Exp(B)	Sig.		B	Exp(B)	Sig.
Bicycle	1.18	3.27	0.00		-	-	-
Drive alone	0.29	1.33	0.03		-1.34	0.26	0.00
Bus	ref	1.00	0.00		-1.68	0.19	0.00
Train	-	-	-		ref	1.00	
Undergrad	-0.45	0.64	0.01		-0.25	0.78	0.15
Grad student	-0.08	0.92	0.63		-0.32	0.73	0.11
Staff	0.20	1.22	0.31		-0.31	0.74	0.11
Faculty	ref	1.00			ref	1.00	
Not female	0.30	1.35	0.00		0.57	1.77	0.00
Female	ref	1.00			ref	1.00	
Commute time	0.02	1.02	0.62		0.00	1.00	0.94

Undergraduates – liking biking by mode



Undergrads - commute stress by mode and liking

Percent agreeing that "Traveling to campus stresses me out"



Components of liking biking

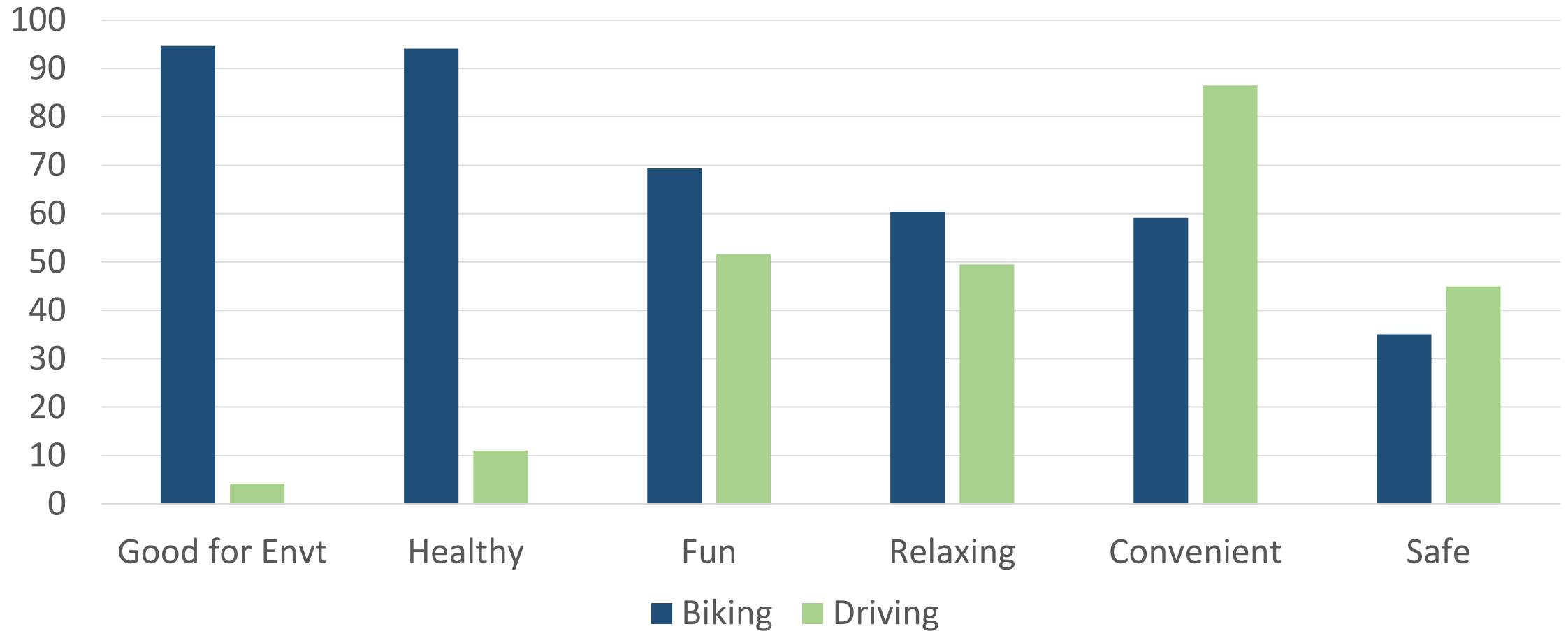


Components of liking driving



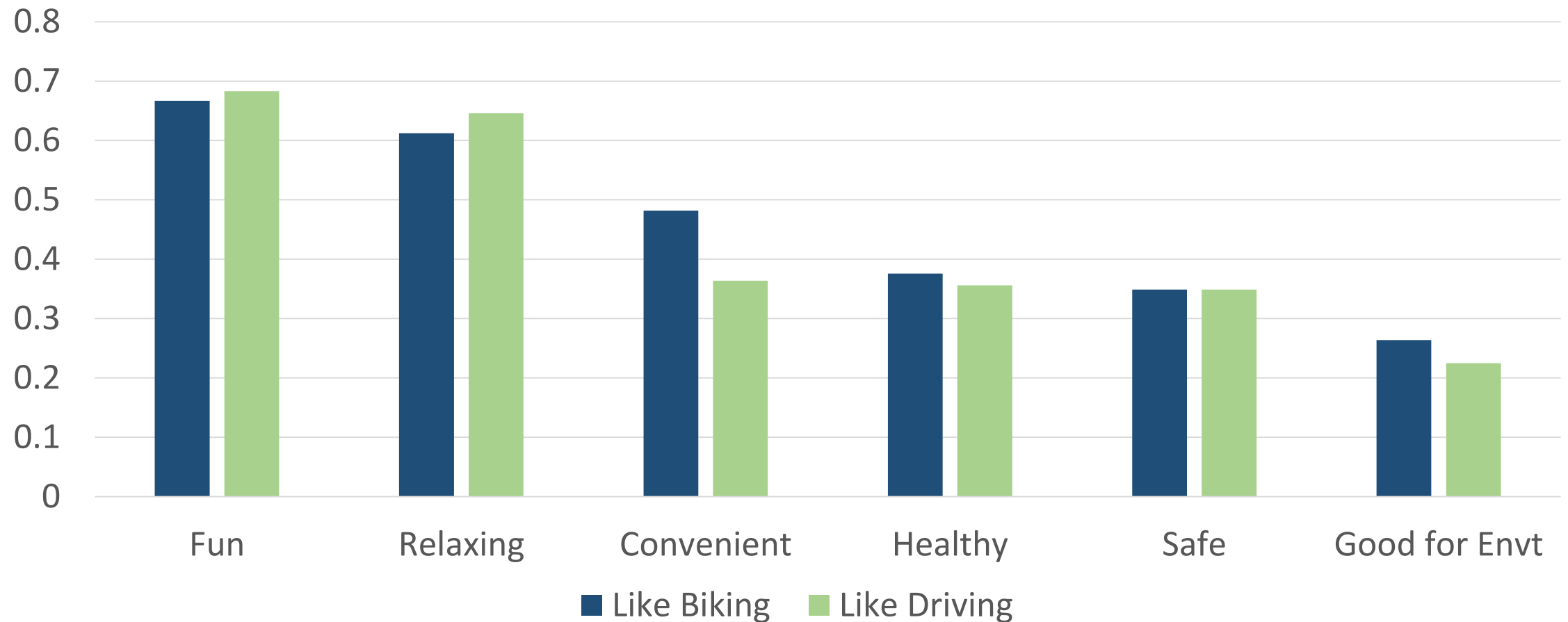
Mode beliefs – Biking vs. Driving

Percent agreeing that biking or driving is...



Components of mode liking

Spearman correlation coefficient between liking and belief



What is so fun about biking?

Using our 2012 in-depth interviews...



“And it’s just fun.”

“I love it. I just love it.”

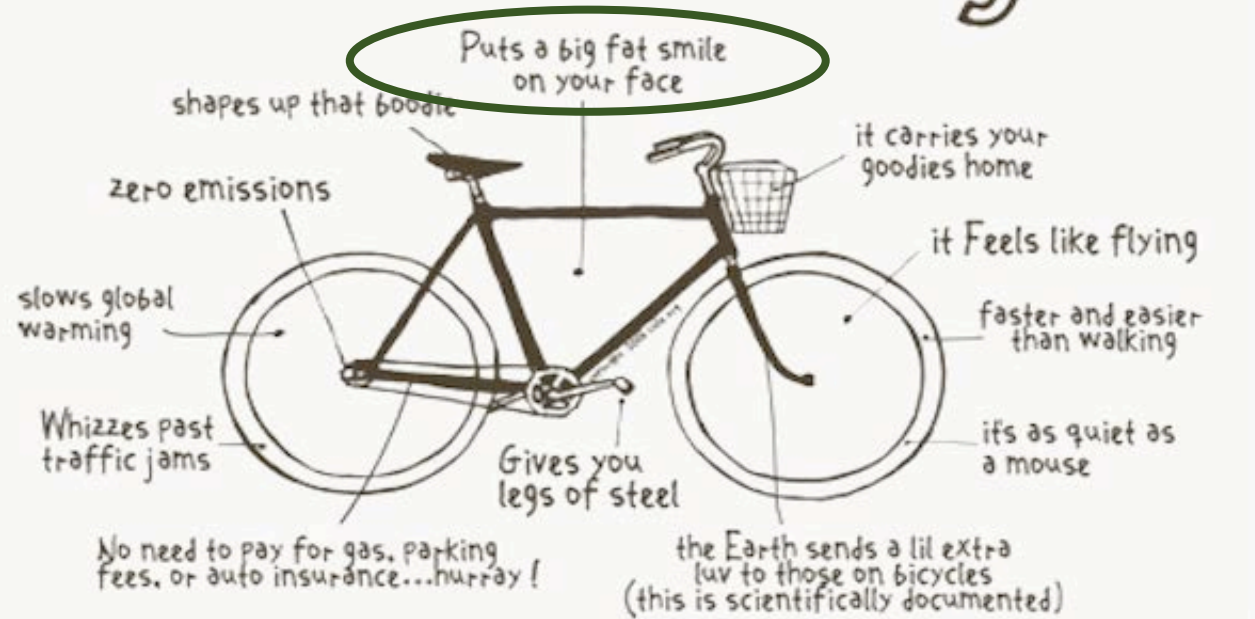
“It was fun. It was a lot of fun.”

“Well, it’s fun.”

“You can like pedal around and you sort of feel like a kid, and you’re outside and it’s fun.”

“It’s just fun.”

Benefits of a Bicycle



shirts by BikeNow.org

“You can’t buy happiness but you can buy a bicycle and that’s pretty close.”

Thinley Namgyel
Minister of the Environment
of Bhutan

Velo-City 2017

Take aways...

- Those poor undergraduates! Those who don't like biking are taking the bus, and it stresses them out and feels like wasted time.
- Women are more negatively affected by their commutes than men! Related to time pressures, household duties, safety concerns?
- Bicyclists are the happiest! Liking biking is more closely tied to biking to campus than liking driving is tied to driving to campus.
- Biking seen as far healthier and better for the environment than driving, but these differences don't factor into liking.
- The most important component of liking is "fun"!

How to increase commute quality?

- Improve quality of current mode? especially bus
- Encourage shift to higher quality modes? to bike and train
- Foster liking of higher quality modes? of bike and train

Same strategies as for increasing sustainability!



Thanks! Questions?

Susan Handy

slhandy@ucdavis.edu

