Results of the 2018-2019 Campus Travel Survey

September 2019

A Research Report from the National Center for Sustainable Transportation

Amy Lee, University of California, Davis

National Center for Sustainable Transportation

ITS UCDAVIS INSTITUTE OF TRANSPORTATION STUDIES

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Disclaimer

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NCST

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Institute of Transportation Studies

and

Transportation and Parking Services

University of California, Davis

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Summer 2019

Table of Contents

Table of Figures

Table of Tables

EXECUTIVE SUMMARY

The UC Davis Campus Travel Survey is an annual survey led by Transportation and Parking Services (TAPS) and the National Center for Sustainable Transportation, part of the Institute of Transportation Studies at UC Davis. It collects a rich set of data about travel to the UC Davis campus, demographics, and attitudes toward travel.

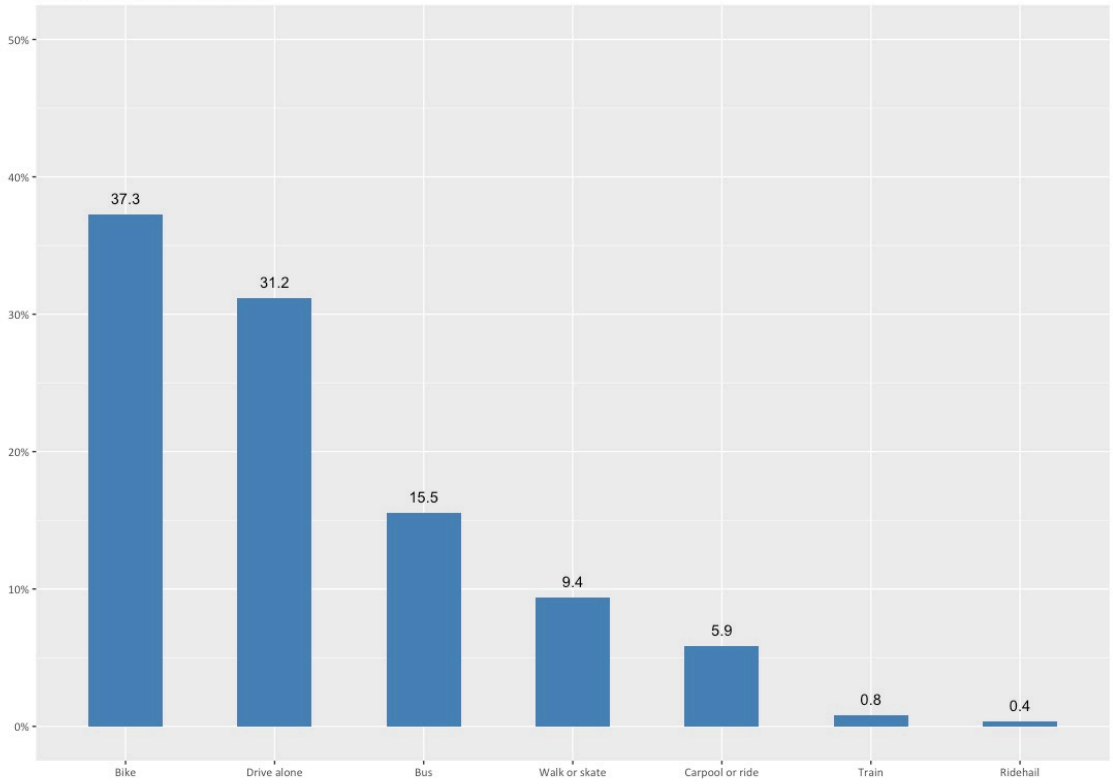
The 2018-19 survey collected data from 4,014 people affiliated with UC Davis about their travel to campus during a single week in October 2018. It used a stratified random sampling method with the intent to gather a representative sample of the campus population. Over 20 percent of those invited responded to this year's survey. For the statistics presented throughout this report, we weight the responses by campus role (freshman, sophomore, junior, senior, Master's, PhD, faculty, and staff) and gender so that the proportion of respondents in each group reflects their proportion in the campus population.

Main Findings

Overall Mode Share

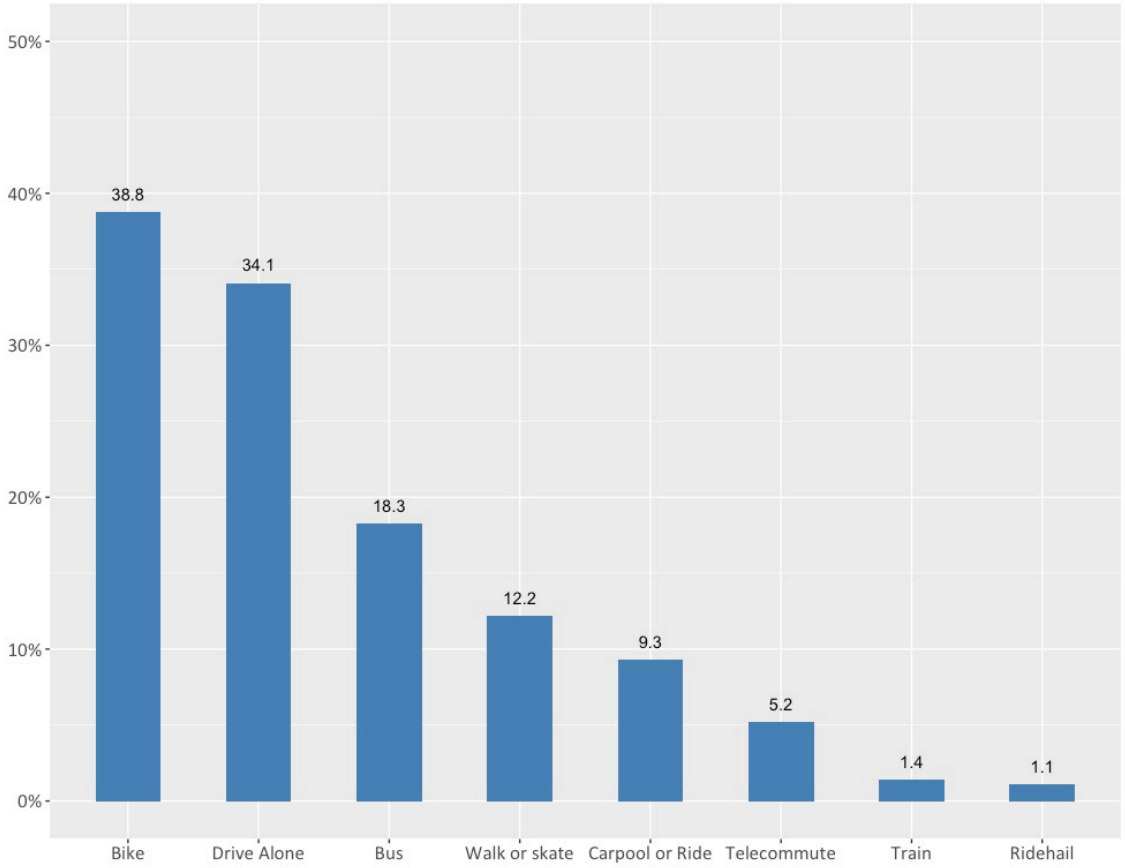
On an average weekday, about 84 percent of people physically travel to campus (approximately 45,000 people, including those living on campus). Among these, 37 percent bike to get there, 31 percent drive alone, 16 percent ride the bus, 9 percent walk or skate, 6 percent carpool or get a ride, nearly 1 percent ride the train, and 0.4 percent use ridehailing services (see Figure 1). These figures represent the percent of people using each means of transportation as their primary mode (that is, for the greatest share of their distance) from wherever they live to their campus destination on an average weekday.

Figure 1. Overall Mode Share, 2018-19



Because some people use different travel modes on different days, the total number of people who bicycle or ride transit, for instance, is substantially larger than the number using each mode on any given day. In particular, about 44 percent reported biking as their primary means at least once during the week. Similarly, about 29 percent drove alone, 17 percent rode the bus, 14 percent walked or skated, 9 percent carpooled or got a ride, 1.5 percent rode the train, and 1.3 percent used ridehailing services at least once during the week for most of the distance to campus. See Figure 2.

Figure 2. Used mode at least once during reference week, 2018-19



Change in Mode Share, 2017-18 to 2018-19

One of the main purposes of the Campus Travel Survey is to collect comparable data each year in order to assess trends over time. The questions and calculations used to estimate mode share in this year's survey are identical to those used in the 2017-18 survey. In addition, the results of each year are weighted by role and gender to correct for differences in response rates between subsets of the population over time. Table ES-1 shows the change in mode share between the 2017-18 and 2018-19 surveys.

Table ES- 1. Percentage Point Change in Mode Share on an Average Weekday

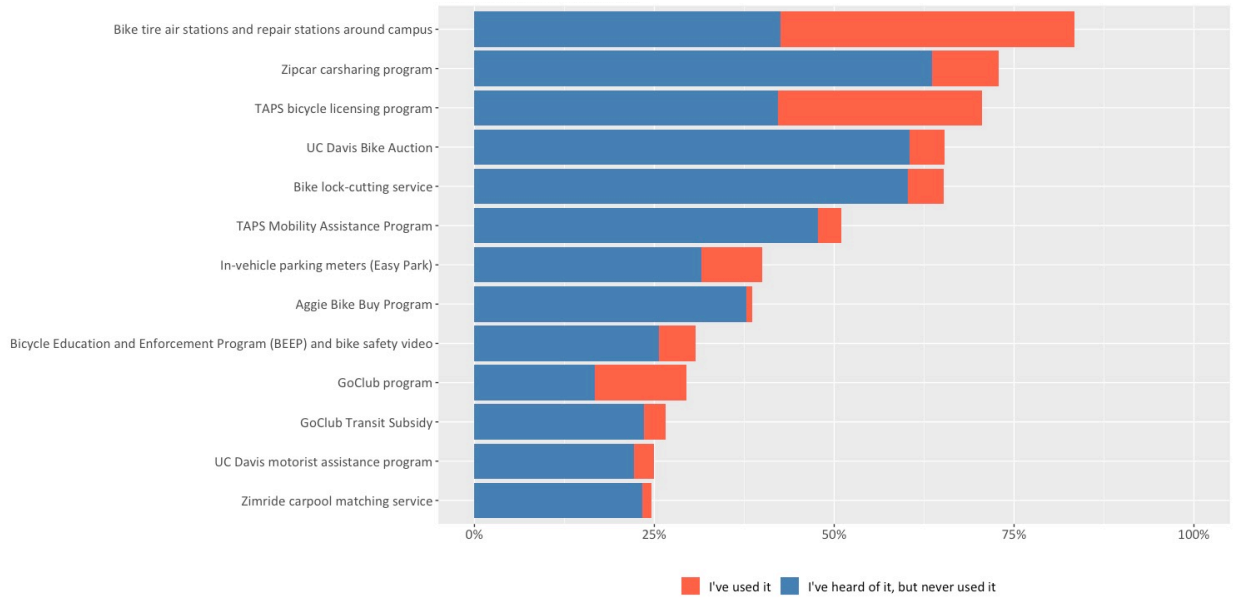
		Of those who physically traveled to campus					
	Physically Travelled	**Bike**	**Walk or Skate**	**Drive Alone**	**Carpool or Ride**	**Bus**	**Train**
2018-19, Overall	84.6%	37.7%	9.3%	30.8%	5.8%	15.6%	0.7%
2017-18, Overall	86.5%	40.1%	8.8%	27.8%	4.7%	17.8%	0.6%
Difference	-1.9%	-2.4%	0.5%	3.0%	1.1%	-2.2%	0.1%

Data are weighted for both years by campus role and gender.

Familiarity with TAPS Programs

Several services that promote bicycling are well-known and highly utilized across the campus population. The bike tire air stations on campus are the best known and most highly used transportation service, with 40 percent of respondents having used them (Figure 3).

Figure 3. Familiarity with TAPS Programs



Bicycling Aptitude

We asked all respondents to rate their ability to ride a bike, specifying that we were interested in "whether you know how to ride a bike, regardless of whether it is practical or desirable for you to do so

as a means of transportation to campus." Figure 4 shows results to this question broken down by men and women; Figure 5 shows results to this question by campus role (undergraduates, graduate students, staff, and faculty).

Figure 4. Bicycling Aptitude of Men and Women

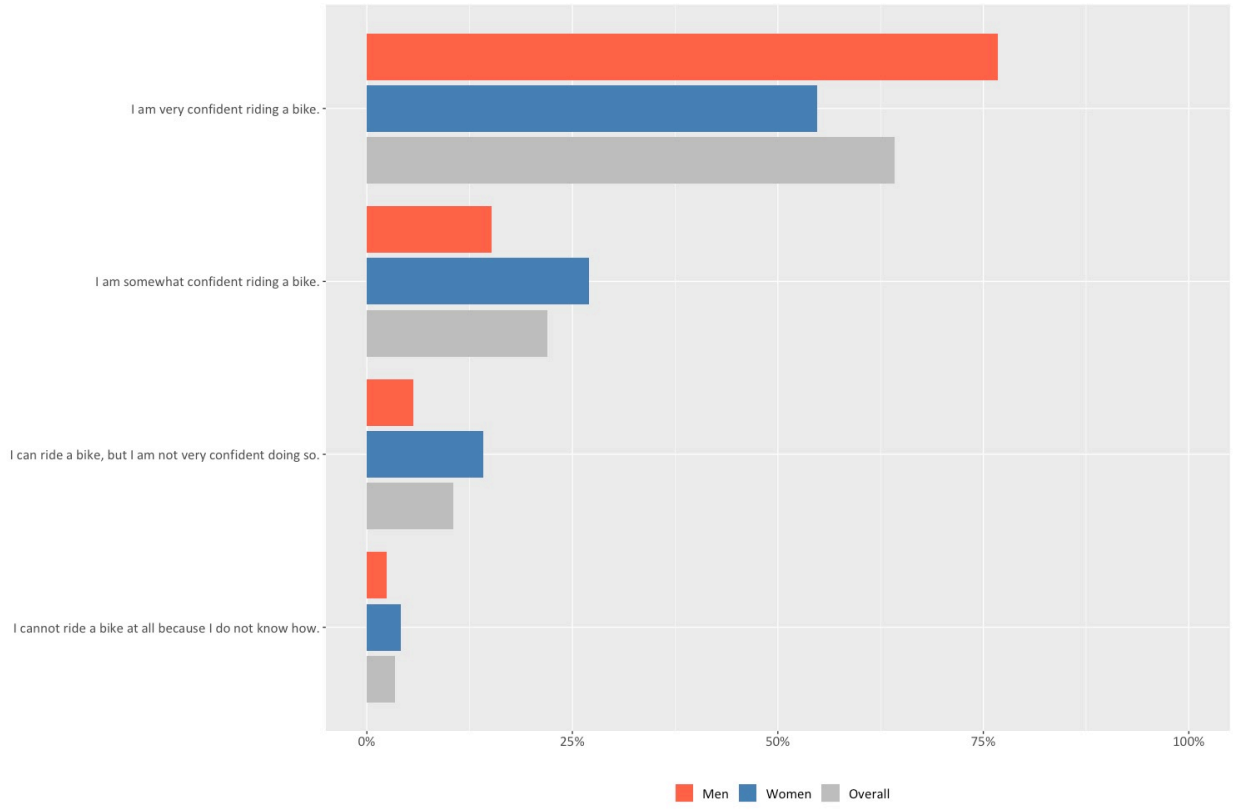
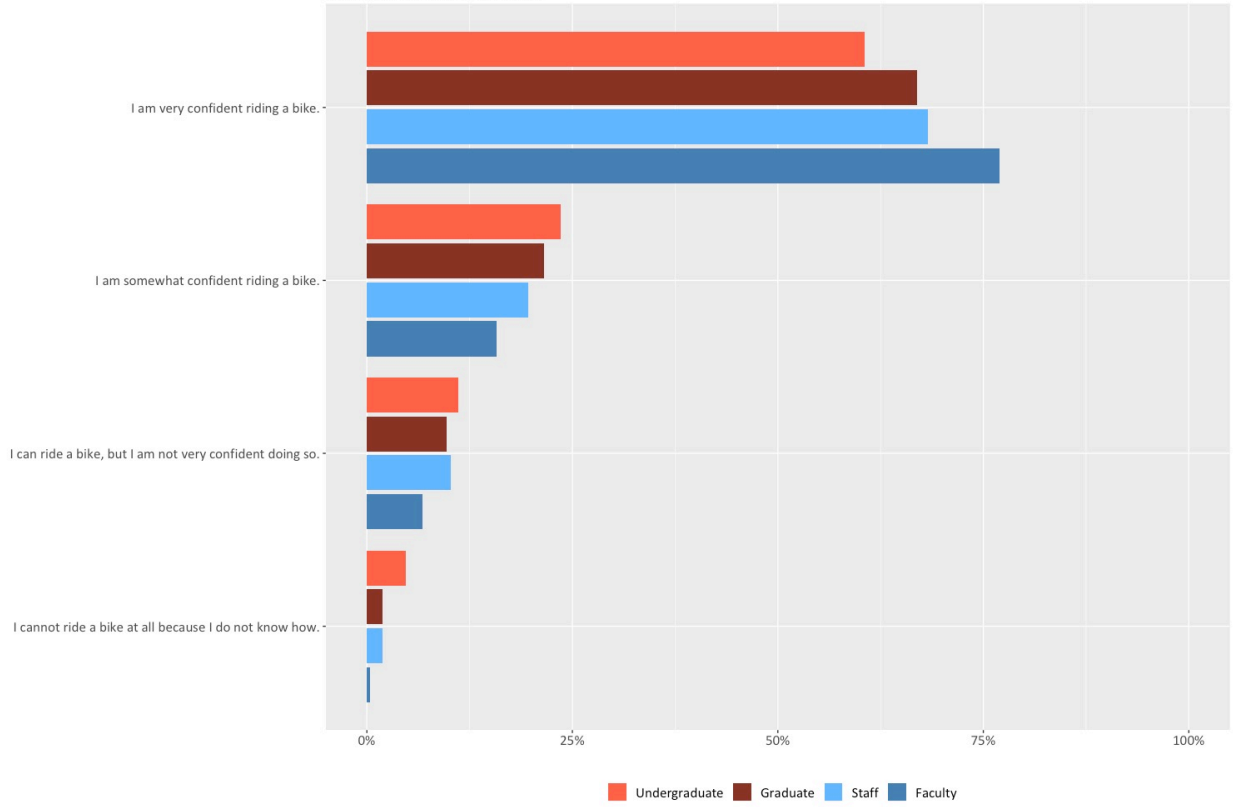


Figure 5. Bicycling Aptitude by Campus Role



BACKGROUND

In 2003 the University of California adopted the *UC Policy on Sustainable Practices*, which charges UC campuses with the task of measuring and promoting sustainable commuting. System-wide targets for assessing the sustainability of transportation systems include annual estimation and reporting of Average Vehicle Ridership (AVR) and carbon dioxide equivalent emissions (CO_2e) for each UC campus. The *UC Policy on Sustainable Practices* also lists mechanisms for reducing commute emissions, including the construction of on-campus housing and expansion of Transportation Demand Management (TDM) programs.

In addition to the sustainable transportation goals of the University of California, many universities and colleges around the world face additional reasons to promote alternatives to driving. Some concerns include high costs of expanding parking facilities, air pollution, and traffic congestion. It is essential that campus planners and travel demand managers have current and accurate information about commuting at their institutions so that they may implement targeted transportation policies, evaluate the effectiveness of current services, share best practices with other institutions, and track commuting behavior over time.

About the Campus Travel Survey

The UC Davis Campus Travel Survey is a joint effort by Transportation and Parking Services (TAPS) on campus and the National Center for Sustainable Transportation, part of the Institute of Transportation Studies at UC Davis. Since 2007 the survey has been administered each fall by a graduate student at the Institute of Transportation Studies. The main purpose of the survey is to collect annual data about how the UC Davis community travels to campus, including mode choice, vehicle occupancy, distances traveled, and carbon emissions.

Over the past ten years, the travel survey results have been used to assess awareness and utilization of campus transportation services and estimate demand for new services designed to promote sustainable commuting at UC Davis. Data from the campus travel survey have also provided researchers with valuable insights about the effects of attitudes and perceptions of mobility options on commute mode choice. This year's survey is the thirteenth administration of the campus travel survey.

Survey Development & Administration

The content of the survey was based on the previous year's survey, retaining key questions relating to mode choice and residential location, among others. An ongoing attempt to refine question wording has meant that some variables are not directly comparable across years. (See "Appendix A: Survey instrument, 2018-19 Campus Travel Survey" for a full copy of the survey instrument. See "Appendix B: Changes from the 2017-18 survey instrument" for a summary of changes from the previous year.)

The online survey was prepared and hosted using the Qualtrics Survey website (www.qualtrics.com). Staff at Transportation and Parking Services as well as faculty and students affiliated with the Institute of Transportation Studies provided feedback on survey content and assisted with pre-testing of the online survey.

The 2018-19 survey was administered online in October and November 2019, distributed by email to a stratified random sample of 17,888 students, faculty, and staff (out of an estimated total population of 53,886). See Table B-1 for a summary of the random sample stratified by campus role.

Sample & Response

As in previous years, the goal of the sampling procedure was to draw a sufficiently large sample for reliable statistical estimates within the following groups: freshmen, sophomores, juniors, seniors, Master's/professional students, PhD students, faculty, and staff. We used standard statistical techniques to determine the minimum sample size needed for estimates with a +/- 5% margin of error, based on the assumed response rate for each of the groups.

A stratified random sample of 17,888 was drawn from ostensibly complete lists of UC Davis email addresses maintained at two different departments within the university. The sampling of student and employee email addresses was conducted by the Budget and Institutional Analysis (BIA) office. Student email addresses were screened based on students' class level and departmental affiliation, including all academic and professional students except medical students, who are not based on the Davis campus. Employees were screened to exclude those affiliated with the UC Davis Medical Center or field stations, those without salary, emeritus faculty, faculty at UC Davis Extension, temporary employees, and employees without email addresses. BIA staff compiled a spreadsheet containing only email addresses and role groups of those individuals selected for inclusion in the sample.

Each person in the selected sample received an initial email inviting them to take the survey. Those individuals who had not completed the survey one week later were sent a reminder email. Those individuals who had not completed the survey after the second week were sent an additional reminder email the following week. See "Appendix C: Text of the recruitment emails" for copies of these recruitment emails.

Offering a chance to win a desirable prize is thought to increase overall response to a survey. This year, Transportation Services provided incentives in the form of 40 $50 Visa gift cards and two grand prizes of Amazon Fire tablets to participants of the survey. Entry into this drawing was mentioned in the initial and follow-up recruitment emails, as well as on the first welcome page of the online survey. On the final page of the survey, respondents were asked to indicate whether it would be okay for us to contact them again (1) with questions about their survey or (2) if they win the drawing, or if instead they preferred not to be contacted.

A total of 4,611 respondents at least started the survey (responding to question *Q2*), representing 25.8 percent of those invited. Of those who began the survey, 87 percent (4,014 respondents) completed the survey through question *Q38*, which asked respondents about their mode choice on each day of the reference week. Table B-1 shows response rates for this year's survey compared to the previous year.

Table B-2 shows the number of valid responses at three key points in the survey: those who answered the first question about role in the university, those who gave valid responses to questions about primary mode and gender, and those whose addresses were successfully geocoded in addition to meeting the previous criteria.

Table B- 1. Response Rates for 2018 versus 2017-18

Role	Assumed Population	Number Invited	Actual Responses	Target Response Rate	2018-19 Actual Response Rate	2017-18 Actual Response Rate
Student	37,593	15,306	3,360	14%	22%	19%
Undergraduate	30,810	11,269	2,281	13%	20%	18%
Freshman	6,567	2,729	765	13%	28%	18%
Sophomore	5,443	2,805	426	13%	15%	18%
Junior	8,388	2,300	511	16%	22%	21%
Senior	10,412	3,435	579	11%	17%	15%
Graduate	6,783	4,037	1,079	17%	27%	21%
Master's	2,662	2,662	550	13%	21%	16%
PhD	4,121	1,375	529	26%	38%	31%
Employee	16,293	2,582	654	27%	25%	33%
Faculty	2,152	991	303	33%	31%	38%
Staff	14,141	1,591	351	24%	22%	28%
Overall Percent	100%	33%	22%	16%	22%	20.4%
Overall	53,886	17,888	4,014	2,849	22%	3,748

Table B- 2. Number of Valid Responses by Role

Role	Population	Invited	Target (5% margin of error)	Valid role (started survey)	Mode and gender (weighted for bulk of analysis)	Geocoded (weighted for CO2 emissions, VMT)
Student	37,593	15,306	2,149	3,884	3,360	3,282
Undergraduate	30,810	11,269	1,461	2,522	2,281	2,235
Freshman	6,567	2,729	363	859	765	759
Sophomore	5,443	2,805	359	484	426	415
Junior	8,388	2,300	368	553	511	501
Senior	10,412	3,435	371	626	579	560
Graduate	6,783	4,037	688	1,362	1,079	1,047
Master's	2,662	2,662	336	757	550	531
PhD	4,121	1,375	352	605	529	516
Employee	16,293	2,582	700	727	654	627
Faculty	2,152	991	326	328	303	292
Staff	14,141	1,591	374	399	351	335
Overall percent	100%	33.2%	15.9%	25.8%	22.4%	21.9%
Overall	53,886	17,888	2,849	4,611	4,014	3,909

Weighting Responses by Role and Gender

For the purposes of analysis, we assume that respondents are roughly similar to the rest of the population within their role group (freshmen, sophomores, etc.) with respect to socio-demographics or other attributes that may matter for transportation choices. For this reason, we weight the sample by role group. In particular, as described above, respondents were assigned to one of eight role groups based on their responses to questions *Q2* through *Q7*: freshmen, sophomores, juniors, seniors (and fifth-years and post-baccalaureate), Master's students (and professional students such as law, business, and Ed.D.), PhD students, faculty, or staff (including Post-docs).

All results presented in this report are weighted to be representative of the campus population by these role groups. That is, we apply a weight factor to each case in a given role group so that the group's proportion in the sample is the same as their proportion in the overall projected population. As in previous surveys, the sample is disproportionately comprised of women. In addition to weighting by role in the university, we correct for these differences in response rates among men and women in each role group so that the share of men and women in the weighted sample is equal to the share of men and women in each role group in the population.

Table B-3 and Table B-4 show the differences in gender distribution between the unweighted and weighed results.

Table B- 3. Unweighted Gender Distribution of Respondents

Role	Men	Women	Unweighted Sample	Projected Population
Undergraduate	28%	72%	2,281	30,810
Graduate	37%	63%	1,079	6,783
Faculty	49%	51%	303	2,152
Staff	30%	70%	351	14,141

Table B- 4. Weighted Gender Distribution of Respondents

	Men	Women	Weighted Sample	Projected Population
Undergraduate	39%	61%	2,295	30,810
Graduate	46%	54%	505	6,783
Faculty	59%	41%	160	2,152
Staff	46%	54%	1,053	14,141

Confidence Intervals

Table B-5 shows the margin of error of findings for each role group, to the extent that the proportions and figures estimated in the report differ by role group. For statistics about the population as a whole, we are 95 percent confident that our estimates are within 1.5 percent of their true value. These expectations are particularly important for mode share estimates, given that some year-to-year changes are significant, while others are not.

For example, when we report later that 37.3 percent of students and employees bike to campus, our margin of error indicates that – to the extent to which the survey results are unbiased – the true share of persons that bike to campus is between 35.8 and 38.8 percent.

Table B- 5. Margins of Error, by Role Group

Role	Sample Size	Population Size	Margin of Error
Student	3,360	37,593	1.61%
Undergraduate	2,281	30,810	1.97%
Freshman	765	6,567	3.33%
Sophomore	426	5,443	4.56%
Junior	511	8,388	4.20%
Senior	579	10,412	3.96%
Graduate	1,079	6,783	2.74%
Master's	550	2,662	3.72%
PhD	529	4,121	3.98%
Employee	654	16,293	3.75%
Faculty	303	2,152	5.22%
Staff	351	14,141	5.17%
Overall	4,014	53,886	1.49%

FINDINGS

This section summarizes key results from the survey. Data presented in this section are weighted by role and gender, as described above. When "unweighted sample" size is reported it reflects the number of actual respondents in this category; "weighted sample" size reflects the number that would be in each category if the distribution of roles and genders in the sample matched the distribution in the population (so the total number in the weighted sample equals the number in the unweighted sample, but numbers within subgroups may change). "Projected population" size is a projection of the weighted proportions to the full campus population, calculated by multiplying each response by an expansion factor based on role and gender.

Many statistics are presented by role group (freshmen, sophomores, juniors, seniors, Master's students, PhD students, faculty, or staff). Where applicable, some are broken down by students (including freshmen through PhD students), undergraduates (freshmen through senior students), graduate students (Master's and PhD students), employees (faculty and staff), within Davis (those living on campus or elsewhere in Davis among all role groups), and outside Davis (those living outside of Davis among all role groups).

Physical Travel to Campus

Table 1 shows the share of each role group who traveled to campus on each day of the reference week. For those living on campus, "travel to campus" on a given day means the respondent indicated traveling to a campus destination for school or work. Overall, about 88 percent of university affiliates physically traveled to campus on each day Monday through Thursday, with a low of 81 percent traveling to campus on Friday. Faculty travel to campus least often, while sophomores travel to campus most often.

Table 1. Share Physically Travelling to Campus by Weekday

	Share physically traveling to campus by weekday							
Role	**Monday**	**Tuesday**	**Wed.**	**Thursday**	**Friday**	**No Days**	**Weighted Sample**	**Projected Population**
Student	89.5%	89.0%	90.9%	88.5%	84.0%	4.4%	2,800	37,593
Undergraduate	89.6%	89.0%	91.0%	88.6%	85.0%	4.4%	2,295	30,810
Freshman	84.3%	83.4%	84.8%	82.3%	85.3%	7.3%	489	6,567
Sophomore	92.9%	92.5%	93.8%	92.4%	91.1%	2.8%	405	5,443
Junior	91.7%	91.9%	93.0%	91.8%	84.9%	2.9%	625	8,388
Senior	89.7%	88.3%	91.8%	88.0%	81.8%	4.6%	776	10,412
Graduate	88.9%	89.3%	90.4%	88.3%	79.0%	4.6%	505	6,783
Master's	87.5%	88.8%	88.4%	88.1%	71.0%	4.8%	198	2,662
PhD	89.8%	89.6%	91.6%	88.4%	84.2%	4.4%	307	4,121
Employee	82.3%	85.6%	83.9%	83.4%	74.0%	6.9%	1,214	16,293
Faculty	75.3%	81.6%	80.5%	79.4%	67.5%	4.7%	160	2,152
Staff	83.4%	86.2%	84.5%	84.0%	75.0%	7.2%	1,053	14,141
Overall	87.3%	88.0%	88.8%	87.0%	81.0%	5.2%	4014	53,886
Weighted Sample	3,505	3,531	3,564	3,491	3,250	208	4,014	NA
Projected Population	47,048	47,408	47,841	46,869	43,623	2,788	NA	53,886

In addition to trends by day of the week, there are substantial differences in the frequency of physical travel to campus among those living in different locations (Table 2). Overall, those living in Davis travel to campus more often than those living outside Davis (88 percent versus 79 percent).

Table 2. Physical Travel to Campus by Residential Location

Role	Overall	On Campus	West Village	Off Campus in Davis	Outside Davis	Weighted Sample	Projected Population
Student	85.7%	80.2%	85.3%	89.1%	79.0%	2,727	37,593
Undergraduate	85.7%	79.6%	85.2%	88.9%	83.0%	2,235	30,810
Freshman	77.9%	77.2%	82.2%	81.4%	88.2%	476	6,567
Sophomore	91.1%	94.1%	89.3%	91.5%	87.1%	395	5,443
Junior	88.6%	86.0%	79.1%	91.1%	79.2%	608	8,388
Senior	85.4%	82.1%	86.4%	86.1%	83.1%	755	10,412
Graduate	85.7%	86.0%	86.3%	89.7%	71.0%	492	6,783
Master's	83.1%	88.2%	80.3%	87.2%	71.4%	193	2,662
PhD	87.4%	84.8%	100.0%	91.0%	70.4%	299	4,121
Employee	82.0%	70.9%	100.0%	85.2%	79.8%	1,182	16,293
Faculty	75.4%	62.3%	0.0%	80.9%	64.9%	156	2,152
Staff	83.0%	71.9%	100.0%	86.4%	81.0%	1,026	14,141
Overall	84.6%	79.9%	85.6%	88.2%	79.5%	3,909	53,886
Weighted Sample	3,306	545	109	1,905	746	3,909	NA
Projected Population	45,576	7,517	1,508	26,261	10,290	NA	53,886

About 5 percent of the sample did not physically travel to campus on any day during the reference week. These respondents were asked to give the reason they were away all week (Table 3). Employees were more likely to be away all week than students, with work travel and vacation, sickness, or personal leave being the most common reasons given for being away.

Employees (but not students) who were away from campus just some of the days during the week were also asked to give the reason they did not travel to campus for each weekday they were away (Table 4). Eighteen percent of employees did not travel to campus on an average weekday (Table 4). The most common reasons for being away from campus are working from home (telecommuting) and regularly scheduled day off.

Table 3. Share Away from Campus All Week and Reasons Given, by Role

Role	Share Away All Week	*Of those away all week*						Weighted Sample	Projected Population
		Didn't Say	Study Abroad or Sabbatical	Telecommuting (working from home or remotely)	Temporary Appointment Elsewhere	Vacation, Sickness, or Personal Leave	Work- or School-Related Travel or Field Work		
Student	4.4%	1.9%	11.8%	2.5%	3.7%	14.2%	8.5%	124	1,664
Undergraduate	4.4%	1.6%	14.0%	0.0%	3.7%	13.3%	3.9%	101	1,356
Freshman	7.3%	1.6%	1.6%	0.0%	1.6%	11.1%	3.2%	36	477
Sophomore	2.8%	0.0%	14.4%	0.0%	0.0%	14.4%	0.0%	11	152
Junior	2.9%	0.0%	29.6%	0.0%	5.6%	20.4%	9.2%	18	247
Senior	4.6%	3.1%	18.3%	0.0%	6.1%	11.6%	3.1%	36	480
Graduate	4.6%	3.2%	2.1%	13.3%	3.5%	18.0%	28.5%	23	309
Master's	4.8%	7.8%	0.0%	11.2%	3.4%	10.3%	19.9%	10	128
PhD	4.4%	0.0%	3.6%	14.7%	3.6%	23.5%	34.7%	13	181
Employee	6.9%	5.4%	1.8%	6.3%	0.0%	11.1%	23.7%	84	1,124
Faculty	4.7%	0.0%	19.9%	8.7%	0.0%	0.0%	48.5%	7	100
Staff	7.2%	6.0%	0.0%	6.1%	0.0%	12.2%	21.3%	76	1,024
Overall	5.2%	3.3%	7.8%	4.0%	2.2%	13.0%	14.6%	208	2,788
Weighted Sample	208	7	16	8	5	27	30	208	NA
Projected Population	2,788	93	217	112	62	362	407	NA	2,788

Table 4. Share of employees not traveling to campus on an average weekday, and reason

	Share Away from Campus on an Average Weekday	*Of those not travelling to campus*						Weighted Sample	Projected Population
		Telecommuting (working from home or remotely)	Work- or School-Related Activities Elsewhere	Regularly Scheduled Day Off	Vacation, Sickness, or Personal Leave	Day Off as Part of a Compressed Work Week	Other		
Employee	18.7%	42.9%	9.2%	9.8%	22.3%	1.6%	14.1%	1,214	16,293
Faculty	24.3%	52.6%	22.3%	6.2%	10.7%	0.3%	7.9%	160	2,152
Staff	17.8%	44.7%	11.6%	9.1%	20.1%	1.4%	13.0%	1,053	14,141
Weighted Sample	227	97	21	22	51	4	32	4,014	NA
Projected Population	3,045	1,307	281	298	678	50	430	NA	53,886

Mode Share for Primary Means of Transportation

For physical trips to campus, mode choice was determined by responses to the statement, "Please select which means of transportation you used on your way to your first campus destination each day. (If you used more than one means, select whatever you did for most of the distance)" (*Q38*). Thus, modes identified are those used for most of the trip, and only on the way to campus at the beginning of the day. Throughout this report, we refer to answers to this question as a respondent's "primary" mode, meaning what they did for most of the trip to campus.

For each respondent, we calculate the share of days out of the five-day week that a given mode was used as a primary mode. (For instance, if someone biked one day of five days traveled to campus, her bike share for the week would be 20 percent.) The overall mode share represents the average shares across all respondents, which is equivalent to the share of all people using each mode on an average weekday. For the purpose of validating the method we use to calculate mode share, we also asked respondents about the mode they "usually" use to travel to campus.

Respondents were asked to report their residential location as the place from which they usually travel to campus. In some cases, respondents may travel to campus from another location (e.g. a family member's residence), resulting in seemingly impossible or at least improbable primary mode choices. For example, someone may report living on campus but traveling by train to campus. Since there are very few cases in which these improbable modes appear, results are reported as is, and discretion should be used in interpreting these cases.

Tables 5 through 11 show the overall mode share among those physically traveling to campus on a given weekday. Table 5 shows mode share among the entire sample. Tables 6 through 11 show mode share by residential location, as outlined below. The results suggest that mode splits vary substantially by neighborhood.

- Table 6 shows the mode share among those who live within Davis. This category includes students and employees who live on campus, off campus in Davis, and in the West Village apartments.

- Table 7 shows the mode share among those who live on campus, defined as the area south of Russell Boulevard, west of A St., north of I-80, and east of Highway 113. Bicycling and walking understandably predominate among the students who live on campus (only a few employees reported living on campus).

- Table 8 shows the mode shares among those living in the West Village apartments. Because the sample sizes in most role groups are very low, role-specific mode shares should be interpreted with some degree of caution. However, the overall mode share estimates for West Village are consistent with expectations for travel distances greater than "on campus" locations but generally less than "off campus in Davis" locations.

- Table 9 shows the mode share results for those living off-campus in Davis (excluding West Village). Among those living off-campus in Davis, undergraduate students and staff are less likely to bike than graduate students and faculty. Undergraduate students have high bus ridership rates (35 percent), whereas graduate students and employees in Davis who do not bike are more likely to commute by car.

- Table 10 shows the mode share for students and employees who live outside Davis (an estimated 12,937 people). Among those traveling from outside Davis, 81.4 percent commute by car, 9 percent carpool or get a ride, 3.5 percent ride the bus, and 2.2 percent ride the train.

- Table 11 shows the mode share for those living off-campus in Davis (excluding West Village apartments) by their neighborhood in Davis. To determine neighborhood, we asked respondents who lived off-campus in Davis to identify which part of Davis they lived in by using a series of maps as references (see "Appendix A: Survey instrument, 2018-19 Campus Travel Survey").

Table 5. Sharing Using Each Mode on an Average Weekday, by Role Group (All Locations)

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
Student	85.2%	43.7%	12.0%	18.5%	4.4%	20.8%	0.6%	0.5%	2,800	37,593
Undergraduate	85.1%	42.7%	13.2%	15.7%	3.7%	24.2%	0.6%	0.5%	2,295	30,810
Freshman	77.5%	63.9%	28.2%	3.9%	1.9%	2.0%	0.2%	0.7%	489	6,567
Sophomore	90.0%	40.4%	6.4%	11.0%	4.8%	37.2%	0.2%	0.4%	405	5,443
Junior	88.2%	38.2%	12.4%	17.4%	3.0%	28.4%	0.5%	0.7%	625	8,388
Senior	84.8%	35.4%	8.9%	23.8%	4.7%	26.2%	1.0%	0.4%	776	10,412
Graduate	85.4%	48.4%	6.4%	31.0%	7.6%	5.5%	1.0%	0.3%	505	6,783
Master's	82.7%	43.4%	5.6%	36.5%	6.2%	6.8%	1.5%	0.4%	198	2,662
PhD	87.2%	51.5%	7.0%	27.6%	8.5%	4.7%	0.8%	0.2%	307	4,121
Employee	81.3%	21.7%	3.2%	61.8%	9.4%	2.7%	1.1%	0.0%	1,214	16,293
Faculty	75.7%	43.2%	5.7%	39.2%	5.8%	3.7%	2.4%	0.2%	160	2,152
Staff	82.2%	18.7%	2.9%	65.0%	9.9%	2.6%	1.0%	0.0%	1,053	14,141
Overall	84.0%	37.3%	9.4%	31.2%	5.9%	15.5%	0.8%	0.4%	4,014	53,886
Weighted Sample	3,371	1,256	317	1,051	198	523	27	12	4,014	NA
Projected Population	45,260	16,866	4,250	14,107	2,656	7,024	356	160	NA	53,886

Table 6. Share Using Each Mode on an Average Weekday, from within Davis

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
Student	86.5%	48.3%	12.8%	12.0%	4.0%	22.7%	0.3%	0.5%	2,449	33,765
Undergraduate	85.9%	46.5%	13.8%	9.9%	3.3%	26.1%	0.4%	0.6%	2,049	28,244
Freshman	77.4%	66.5%	29.2%	0.6%	1.4%	2.1%	0.2%	0.7%	458	6,307
Sophomore	91.4%	43.5%	6.6%	6.7%	4.9%	38.1%	0.1%	0.4%	373	5,139
Junior	89.5%	41.2%	12.6%	11.7%	3.1%	31.1%	0.3%	0.7%	553	7,627
Senior	85.8%	40.4%	9.6%	15.9%	3.8%	29.5%	0.7%	0.5%	665	9,171
Graduate	89.1%	57.2%	7.5%	22.3%	7.0%	5.7%	0.2%	0.3%	401	5,521
Master's	87.1%	55.5%	6.9%	24.5%	4.8%	7.6%	0.6%	0.5%	144	1,980
PhD	90.2%	58.2%	7.9%	21.1%	8.2%	4.7%	0.0%	0.2%	257	3,541
Employee	84.8%	46.9%	5.3%	36.0%	9.5%	2.4%	0.0%	0.0%	521	7,184
Faculty	80.6%	58.5%	6.9%	28.4%	4.7%	1.4%	0.0%	0.1%	104	1,439
Staff	85.9%	44.1%	4.9%	37.8%	10.6%	2.6%	0.0%	0.0%	417	5,745
Overall	86.2%	48.0%	11.5%	16.1%	4.9%	19.2%	0.3%	0.4%	2,971	40,949
Weighted Sample	2,560	1,230	294	412	126	491	7	11	2,971	NA
Projected Population	35,286	16,954	4,048	5,682	1,735	6,765	102	154	NA	40,949

Table 7. Share Using Each Mode on an Average Weekday, from On-Campus

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
Student	80.2%	63.9%	28.2%	2.5%	1.5%	3.6%	0.2%	0.4%	664	9,155
Undergraduate	79.6%	63.7%	28.4%	2.4%	1.5%	3.9%	0.2%	0.4%	607	8,361
Freshman	77.2%	67.7%	29.5%	0.1%	1.4%	1.0%	0.2%	0.6%	438	6,036
Sophomore	94.1%	71.9%	6.3%	3.7%	3.2%	15.0%	0.0%	0.0%	22	301
Junior	86.0%	53.1%	28.7%	6.5%	2.0%	9.4%	0.3%	0.0%	92	1,265
Senior	82.1%	48.5%	28.9%	11.8%	0.5%	10.2%	0.0%	0.0%	55	760
Graduate	86.0%	65.9%	27.0%	3.9%	1.9%	1.3%	0.0%	0.4%	58	794
Master's	88.2%	67.7%	23.6%	5.0%	1.1%	2.6%	0.0%	0.0%	20	276
PhD	84.8%	64.9%	28.9%	3.2%	2.3%	0.6%	0.0%	0.6%	38	518
Employee	70.9%	2.0%	3.3%	79.8%	14.9%	0.0%	0.0%	0.0%	18	249
Faculty	62.3%	24.2%	39.4%	36.4%	0.0%	0.0%	0.0%	0.0%	2	24
Staff	71.9%	0.0%	0.0%	83.8%	16.2%	0.0%	0.0%	0.0%	16	226
Overall	79.9%	62.5%	27.6%	4.3%	1.8%	3.5%	0.1%	0.4%	682	9,405
Weighted Sample	545	341	151	24	10	19	1	2	682	NA
Projected Population	7,517	4,696	2,078	327	139	266	11	32	NA	9,405

Table 8. Share Using Each Mode on an Average Weekday, from West Village

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
Student	85.3%	52.0%	10.9%	2.9%	0.8%	31.1%	2.3%	0.4%	125	1,729
Undergraduate	85.2%	51.6%	11.3%	1.8%	0.7%	32.2%	2.4%	0.3%	117	1,618
Freshman	82.2%	55.9%	36.9%	0.0%	1.8%	5.4%	0.0%	1.8%	7	103
Sophomore	89.3%	46.0%	12.1%	2.5%	0.0%	39.4%	0.0%	0.0%	44	608
Junior	79.1%	53.4%	13.3%	0.8%	2.4%	25.3%	4.8%	0.8%	32	444
Senior	86.4%	56.6%	2.9%	2.3%	0.0%	34.2%	4.1%	0.0%	34	463
Graduate	86.3%	58.8%	5.7%	18.5%	1.2%	15.8%	0.0%	1.2%	8	111
Master's	80.3%	65.8%	0.0%	17.8%	1.9%	14.5%	0.0%	1.9%	6	77
PhD	100.0%	46.0%	16.0%	19.8%	0.0%	18.1%	0.0%	0.0%	2	34
Employee	100.0%	40.0%	0.0%	60.0%	0.0%	0.0%	0.0%	0.0%	2	33
Faculty	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0
Staff	100.0%	40.0%	0.0%	60.0%	0.0%	0.0%	0.0%	0.0%	2	33
Overall	85.6%	51.8%	10.7%	4.2%	0.7%	30.5%	2.2%	0.4%	128	1,762
Weighted Sample	109	57	12	5	1	33	2	0	128	NA
Projected Population	1,508	781	161	63	11	459	33	5	NA	1,762

Table 9. Share Using Each Mode on an Average Weekday, from Off-Campus within Davis

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
Student	89.1%	42.4%	7.3%	16.0%	5.1%	28.9%	0.3%	0.6%	1,660	22,881
Undergraduate	88.9%	39.0%	8.1%	13.6%	4.3%	34.7%	0.3%	0.6%	1,325	18,264
Freshman	81.4%	32.4%	14.0%	19.0%	0.0%	34.6%	0.0%	2.2%	12	168
Sophomore	91.5%	41.1%	5.8%	7.6%	5.8%	39.7%	0.1%	0.5%	307	4,230
Junior	91.1%	38.0%	9.3%	13.4%	3.3%	35.9%	0.1%	0.8%	429	5,918
Senior	86.1%	38.7%	8.3%	17.0%	4.4%	31.0%	0.6%	0.5%	577	7,948
Graduate	89.7%	55.8%	4.4%	25.4%	8.0%	6.2%	0.2%	0.3%	335	4,617
Master's	87.2%	53.0%	4.4%	28.2%	5.6%	8.2%	0.7%	0.5%	118	1,628
PhD	91.0%	57.2%	4.4%	24.0%	9.3%	5.2%	0.0%	0.1%	217	2,989
Employee	85.2%	48.3%	5.4%	34.5%	9.4%	2.4%	0.0%	0.0%	501	6,902
Faculty	80.9%	59.0%	6.5%	28.3%	4.8%	1.5%	0.0%	0.1%	103	1,415
Staff	86.4%	45.7%	5.1%	36.0%	10.5%	2.7%	0.0%	0.0%	398	5,487
Overall	88.2%	43.7%	6.9%	20.2%	6.0%	23.0%	0.2%	0.4%	2,161	29,783
Weighted Sample	1,905	833	131	384	115	438	4	8	2,161	NA
Projected Population	26,261	11,477	1,810	5,292	1,584	6,040	57	116	NA	29,783

Table 10. Share Using Each Mode on an Average Weekday, from Outside Davis

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
Student	79.0%	3.3%	4.3%	77.3%	8.2%	4.1%	2.8%	0.3%	278	3,828
Undergraduate	83.0%	3.3%	5.5%	77.9%	7.8%	3.8%	1.7%	0.3%	186	2,566
Freshman	88.2%	12.7%	7.3%	73.7%	6.3%	0.0%	0.0%	0.0%	19	260
Sophomore	87.1%	0.0%	0.0%	78.1%	3.9%	15.4%	2.5%	0.0%	22	304
Junior	79.2%	1.4%	9.6%	81.1%	2.3%	3.3%	2.3%	0.9%	55	761
Senior	83.1%	3.2%	4.1%	76.8%	12.3%	2.1%	1.5%	0.0%	90	1,241
Graduate	71.0%	3.3%	1.4%	75.9%	9.2%	4.8%	5.5%	0.3%	92	1,262
Master's	71.4%	2.3%	1.7%	77.1%	10.3%	4.1%	4.5%	0.2%	49	682
PhD	70.4%	4.5%	1.0%	74.4%	7.9%	5.6%	6.6%	0.3%	42	580
Employee	79.8%	1.6%	0.8%	83.1%	9.4%	3.2%	2.0%	0.0%	661	9,109
Faculty	64.9%	5.5%	3.3%	67.2%	6.6%	9.9%	7.4%	0.4%	52	713
Staff	81.0%	1.3%	0.6%	84.2%	9.6%	2.7%	1.6%	0.0%	609	8,396
Overall	79.5%	2.1%	1.8%	81.4%	9.0%	3.5%	2.2%	0.1%	938	12,937
Weighted Sample	746	16	13	607	68	26	17	1	938	NA
Projected Population	10,290	214	184	8,374	931	357	230	10	NA	12,937

Table 11. Share Using Each Mode on an Average Weekday, by Neighborhood in Davis

Role	Physically Travelled	*Of those who physically travelled to campus*							Weighted Sample	Projected Population
		Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Ridehail		
North	87.9%	37.9%	4.1%	16.8%	5.9%	35.0%	0.4%	0.5%	444	6,114
South	84.4%	33.7%	4.3%	29.1%	6.9%	25.2%	0.7%	1.3%	337	4,648
East	88.7%	43.6%	5.7%	24.7%	7.7%	18.3%	0.0%	0.5%	422	5,818
West	90.9%	40.9%	1.9%	23.8%	8.1%	25.3%	0.1%	0.1%	424	5,840
Central	89.2%	56.8%	12.4%	12.0%	3.0%	15.8%	0.1%	0.2%	367	5,056
Downtown	85.8%	58.4%	24.0%	6.8%	1.8%	9.0%	0.0%	0.0%	164	2,264
Overall	88.2%	43.7%	6.9%	20.2%	6.0%	23.0%	0.2%	0.4%	2,161	29,783
Weighted Sample	1,905	833	131	384	115	438	4	8	2,161	NA
Projected Population	26,261	11,477	1,810	5,292	1,584	6,040	57	116	NA	29,783

Comparison of 2018-19 Mode Share with 2017-18

One of the main purposes of the Campus Travel Survey is to collect comparable data each year in order to assess trends over time. The questions and calculations used to estimate mode share in this year's survey are nearly identical to those used in last year's survey. In addition, the results of each year shown in this analysis are weighted by role and gender to correct for differences in response rates between subsets of the population over time. Table 12 shows mode share estimates for 2017-18 and 2018-19. Data for both years are weighted by role and gender.

Table 12. Comparison of Mode Shares, 2018-19 to 2017-18

		Of those who physically travelled, mode share on an average weekday							
	Physically Travelled	Bike	Walk or Skate	Drive Alone	Carpool or Ride	Bus	Train	Weighted Sample	Projected Population
2018-19									
Student	85.7%	44.1%	12.0%	18.1%	4.4%	20.9%	0.6%	2,727	37,593
Undergraduate	85.7%	43.0%	13.1%	15.3%	3.7%	24.3%	0.5%	2,235	30,810
Graduate	85.7%	48.9%	6.6%	30.5%	7.4%	5.6%	1.0%	492	6,783
Employee	82.0%	22.2%	2.8%	61.6%	9.4%	2.8%	1.1%	1,182	16,293
Outside Davis	79.5%	2.1%	1.8%	81.4%	9.0%	3.5%	2.2%	938	12,937
Within Davis	86.2%	48.0%	11.5%	16.1%	4.9%	19.2%	0.3%	2,971	40,949
Overall	84.6%	37.7%	9.3%	30.8%	5.8%	15.6%	0.7%	3,909	53,886
2017-18									
Student	87.3%	46.5%	10.2%	16.7%	4.0%	22.0%	0.4%	2,635	36,708
Undergraduate	88.1%	45.0%	11.2%	14.6%	3.6%	25.4%	0.2%	2,144	29,865
Graduate	83.8%	53.5%	5.7%	26.5%	6.3%	6.5%	1.5%	491	6,843
Employee	84.1%	19.4%	4.3%	63.6%	7.0%	4.2%	1.4%	847	11,797
Outside Davis	82.8%	1.6%	3.2%	79.5%	8.6%	4.1%	3.0%	766	10,674
Within Davis	87.5%	50.4%	10.3%	14.0%	3.7%	21.5%	0.0%	2,716	37,831
Overall	86.5%	40.1%	8.8%	27.8%	4.7%	17.8%	0.6%	3,482	48,505

Mode Access

All respondents were asked whether they have a driver's license, as well as what modes they have available to them for commuting to campus (*Q19*). Table 13 shows the share of respondents who have a driver's license, can drive alone, or can bicycle to campus for their commute.

Table 13. Driver's License, Car and Bicycle Access

	Driver's License	Access to a Car	Access to a Bike	Weighted Sample	Projected Population
Student	80.4%	50.1%	75.0%	2,727	37,593
Undergraduate	79.8%	45.8%	75.1%	2,235	30,810
Freshman	61.8%	14.7%	84.3%	476	6,567
Sophomore	72.1%	36.5%	82.3%	395	5,443
Junior	85.4%	54.4%	68.5%	608	8,388
Senior	90.7%	63.2%	70.8%	755	10,412
Graduate	83.3%	69.9%	74.9%	492	6,783
Master's	79.8%	69.6%	66.9%	193	2,662
PhD	85.5%	70.0%	80.0%	299	4,121
Employee	99.1%	93.4%	51.1%	1,182	16,293
Faculty	97.5%	91.9%	71.8%	156	2,152
Staff	99.3%	93.6%	47.9%	1,026	14,141
Outside Davis	98.4%	94.8%	26.4%	938	12,937
Within Davis	82.2%	53.2%	80.9%	2,971	40,949
Overall	86.1%	63.2%	67.8%	3,909	53,886
Weighted sample	3,364	2,470	2,650	3,909	NA
Projected population	46,377	34,051	36,526	NA	53,886

Potential for Bicycling

We include a question to assess the potential mode share of biking. In *Q19*, we asked respondents "What options are available to you for getting to campus?" Answers to this question might be used as a proxy for the highest potential share of each mode, since those who do not consider a particular mode as viable will be very unlikely to choose it. Table 14 shows the differences between the share of respondents who consider biking to campus an option and the share that actually bikes to campus on an average weekday. About 78 percent of respondents living less than 5 miles from the center of campus (i.e. living in Davis) consider bicycling an option, with a steep drop in the perceived availability, and corresponding mode share, of bicycling beyond that distance.

Table 14. Potential for Bicycling

Residence	Share Biking on an Average Weekday	Share Who Consider Biking an Option
Within 1 mile	56.8%	82.5%
1 to 2.9 miles	40.9%	80.6%
3 to 4.9 miles	26.9%	78.2%
5 to 9.9 miles	1.7%	29.8%
10 to 19.9 miles	1.9%	32.2%
20 miles or more	0.5%	20.0%
Overall	34.2%	68.2%

Carpoolers, Ridesharers, and Drivers

We ask those who indicate carpooling (multiple people in a vehicle arriving on campus together) or getting a ride to campus (rideshare, where the driver continues on to another destination after the drop-off) how many other people were in the vehicle. These data enable us to accurately account for carpooling and ridesharing in our estimation of vehicle-miles traveled from person-miles traveled. The average vehicle occupancies for carpools and rides are shown in Table 15.

Among those who carpooled at any point during the reference week, the average number of passengers was 2.6, including the driver. Most people dropped off on campus were the sole passenger with an average of 1.3 passengers dropped off per ride to campus, excluding the driver.

Table 15. Average Carpool Size

	Average Occupancy for those who carpooled or got a ride at least once		Weighted Sample		Projected Population	
Role	**Carpool**	**Ride**	**Weighted Carpoolers**	**Weighted Riders**	**Projected Carpoolers**	**Projected Riders**
Undergraduate	2.7	1.3	247.4	220.4	3,409.8	3,038.6
Graduate	2.4	1.2	65.7	31.1	905.1	428.9
Faculty	2.6	1.2	14.6	7.1	200.8	97.5
Staff	2.5	1.4	117.3	63.6	1,617.2	876.7
Outside Davis	2.6	1.2	125.7	47.3	1,733.0	651.6
Within Davis	2.4	1.3	276.0	202.2	3,805.0	2,787.8
Overall	2.6	1.3	444.9	322.2	6,133.0	4,441.6

Number of Vehicles on Campus

Estimates of the number of people driving alone, carpooling, and getting a ride can be combined with average vehicle occupancy findings to estimate the total number of vehicles arriving on campus. We estimate the total number of vehicles as the number of people driving alone, plus fractional vehicles counted in proportion to vehicle occupancy. That is, if a respondent reports arriving in a four-person carpool, we count this as 0.25 vehicles arriving on campus on behalf of that respondent. We weight and expand the sample to project the total number of vehicles for the entire campus population, using the expansion factors shown in Table 16.

Table 16. Projected Vehicles Arriving on an Average Weekday, by Occupancy & Role

Role	Projected number of vehicles on an average weekday				Projected Population
	Drive Alone	Carpool	Ride	Total	
Student	5,826	361	458	6,645	37,593
Undergraduate	4,051	227	366	4,645	30,810
Freshman	199	10	42	251	6,567
Sophomore	524	72	54	650	5,443
Junior	1,288	44	103	1,435	8,388
Senior	2,041	112	167	2,321	10,412
Graduate	1,775	142	92	2,009	6,783
Master's	798	43	36	877	2,662
PhD	977	99	56	1,132	4,121
Employee	8,230	357	371	8,957	16,293
Faculty	640	28	15	683	2,152
Staff	7,589	330	356	8,275	14,141
Outside Davis	8,374	269	230	8,873	12,937
Within Davis	5,355	444	520	6,318	31,545
Overall	14,056	711	828	15,595	53,886

Average Vehicle Ridership

Average vehicle ridership (AVR) is a statistic calculated at each UC campus that represents the ratio of the number of people arriving on campus to the number of personal vehicles brought to campus. We use a formula developed by the South Coast Air Quality Management District, intended to count weekday arrivals of employees from off-campus (only) and making adjustments for employees who telecommute, who adopt a compressed work week schedule, or who use a zero-emission vehicle to commute to campus (see "Appendix D: Calculation of Average Vehicle Ridership (AVR)" for details on the calculation of AVR). If everyone drove alone to campus, the campus AVR would be equal to one. Values greater than one indicate more carpooling, bus or train use, or the use of active modes of transportation.

Among those traveling from off-campus, AVR is estimated to be 2.52 campus-wide, and 1.63 among non-student employees only (Table 17). This means that for every car coming to campus, there are an estimated 2.52 off-campus people coming to campus or telecommuting. This ratio is higher than it was last year.

Table 17 and Table 18 shows the AVR estimates over the last ten years. Because the method for estimating campus population, used in calculating weights, was modified for the 2015-16 and subsequent analyses, comparisons with earlier years may not be valid.

Table 17. Average Vehicle Ridership (AVR) 2009-10 through 2018-19, Off-Campus Only

	Only Off-Campus Residents									
Role	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16***	**2016-17***	**2017-18***	**2018-19***
Student	4.28	4.49	5.29	6.05	5.59	5.66	5.16	3.99	4.08	3.71
Undergraduate	5.11	5.38	6.42	7.23	6.44	6.33	5.9	4.31	4.46	4.13
Freshman	4.69	3.26	3.66	5.06	2.31	4.24	2.73	2.52	2.09	1.88
Sophomore	9.38	8.37	15.93	17.51	10.93	10.64	11.14	6.97	9.7	7.09
Junior	5.48	5.59	6.24	7.85	6.59	6.64	6.23	4.02	4.06	4.25
Senior	3.88	4.57	5.26	5.62	5.85	5.31	4.75	3.92	3.85	3.44
Graduate	2.57	2.79	3.14	3.55	3.57	3.99	3.44	3.11	3.11	2.75
Master's	2.6	2.73	3.34	3.15	2.76	3.04	3.11	3.07	2.81	2.49
PhD	2.56	2.82	3.03	3.84	4.32	4.78	3.77	3.13	3.43	2.95
Employee	**1.66**	**1.75**	**1.78**	**1.7**	**1.75**	**1.61**	**1.83**	**1.55**	**1.6**	**1.63**
Faculty	2.37	2.24	2.76	3.06	3.24	2.81	2.77	2.27	2.76	2.80
Staff	1.56	1.66	1.65	1.52	1.54	1.49	1.74	1.48	1.49	1.53
Non-Student and Student Employees	2.2	NA	2.45	2.51	2.58	2.57	2.61	2.25	2.32	2.16
Outside Davis	1.26	1.34	1.39	1.34	1.3	1.27	1.25	1.25	1.26	1.26
Within Davis	4.99	4.99	5.98	6.24	6.53	7.25	5.85	4.79	4.93	4.29
Overall	2.83	3	3.26	3.34	3.3	3.23	3.27	2.7	2.76	2.52

Bold indicates the official AVR statistic reported by UC campuses.

*Based on new method for estimating campus population.

Table 18. Average Vehicle Ridership (AVR) 2009-10 through 2018-19, On- and Off-Campus

	All (On- and Off-Campus Residents)									
Role	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16***	**2016-17***	**2017-18***	**2018-19***
Student	5.25	5.53	6.41	7.25	6.74	6.93	6.46	5.08	5.34	4.38
Undergraduate	6.36	6.72	8.01	8.77	7.96	7.92	7.61	5.71	6.09	4.98
Freshman	21.84	32.75	34.61	33.67	15.45	31.58	33.12	27.93	21.35	14.89
Sophomore	9.53	9.11	16.54	18.88	11.86	11.94	11.83	7.37	10.81	7.33
Junior	6.04	6.23	6.88	8.3	7.41	7.2	6.66	4.42	4.87	4.56
Senior	4.09	4.79	5.68	5.96	6.14	5.67	5.04	4.11	4.21	3.51
Graduate	2.95	3.18	3.45	4.03	3.88	4.4	3.77	3.29	3.42	2.96
Master's	2.84	2.94	3.57	3.43	2.92	3.35	3.34	3.2	3.1	2.68
PhD	3.01	3.33	3.39	4.47	4.75	5.28	4.18	3.36	3.77	3.17
Employee	1.66	1.75	1.8	1.7	1.75	1.61	1.83	1.55	1.61	1.62
Faculty	2.38	2.24	2.78	3.06	3.24	2.81	2.78	2.28	2.76	2.79
Staff	1.55	1.67	1.67	1.52	1.55	1.49	1.74	1.48	1.51	1.53
Non-Student and Student Employees	2.31	NA	2.59	2.64	2.69	2.7	2.72	2.35	2.49	2.22
Outside Davis	1.26	1.34	1.39	1.34	1.3	1.27	1.25	1.25	1.26	1.26
Within Davis	5.99	6.04	7.14	7.36	7.74	8.75	7.12	6.01	4.93	4.29
Overall	3.3	3.51	3.78	3.82	3.8	3.77	3.86	3.22	3.39	2.82

*Based on new method for estimating campus population.

Vehicle Types

If respondents commuted to campus by vehicle during the reference week, we asked them what kind of vehicle they used. The sampled and projected vehicles by fuel type (internal combustion, hybrid, all-electric, et cetera) are shown in Table 19.

Table 19. Type of Vehicle Used During Reference Week

	All-Electric	Compressed Natural Gas (CNG)	Conventional Hybrid	Gas or Diesel	Hydrogen Fuel Cell	Plug-in Hybrid Electric	Total
Weighted Sample	32	5	176	1,765	2	31	2,011
Projected Population	430	63	2,360	23,696	31	416	26,996

Parking Permits

Whether or not they reported having a car, we asked all respondents whether they currently have a UC Davis parking permit, and if so which type (*Q20*).

About 19 percent of respondents reported having an annual parking permit and 13 percent reported having a monthly or quarterly permit: a projected 9,695 and 6,660 people, respectively (Table 20). We also asked respondents whether they use daily parking permits (either purchased or received through the GoClub program) or an in-vehicle EasyPark Personal Parking Meter. About 11 percent of the population, or a projected 5,741 people use a daily permit. 2 percent of respondents, or a projected 791 people, indicated using an EasyPark meter.

Table 20. Share of People with a Parking Permit

Role	Either Annual or Monthly/Quarterly Permit		Annual or Multi-Year Permit		Monthly or Quarterly Permit		Daily or GoClub Daily Permit		EasyPark Meter		Projected population
	Share of Sample	Projected Population	Share of Sample	Projected Population	Share of Sample	Projected Population	Share of Sample	Projected Population	Share of Sample	Projected Population	
Student	19%	7,078	5%	1,681	15%	5,396	8%	3,047	1%	467	36,690
Undergraduate	16%	4,923	3%	896	13%	4,027	7%	2,068	1%	342	30,094
Freshman	4%	258	1%	49	3%	208	1%	38	0%	0	6,518
Sophomore	13%	706	2%	112	11%	594	4%	210	1%	55	5,289
Junior	23%	1,853	3%	229	20%	1,625	5%	440	1%	114	8,223
Senior	21%	2,107	5%	506	16%	1,600	14%	1,381	2%	173	10,064
Graduate	33%	2,154	12%	785	21%	1,369	15%	979	2%	125	6,596
Master's	36%	934	8%	207	28%	728	12%	309	2%	59	2,570
PhD	30%	1,220	14%	579	16%	641	17%	669	2%	66	4,026
Employee	59%	9,278	51%	8,014	8%	1,264	17%	2,693	2%	324	15,596
Faculty	48%	1,005	44%	919	4%	86	26%	537	1%	14	2,075
Staff	61%	8,273	52%	7,095	9%	1,178	16%	2,156	2%	310	13,521
Outside Davis	75%	9,337	49%	6,074	26%	3,263	8%	959	1%	139	12,433
Within Davis	21%	6,528	11%	3,257	11%	3,271	15%	4,613	2%	612	30,581
Overall	31%	16,356	19%	9,695	13%	6,660	11%	5,741	2%	791	52,286

Transit Ridership

If respondents indicated that they rode a bus or a train at any point on their way to campus any day during the prior week, we asked them to indicate which transit service(s) they used ("Check all that apply"). Table 21 and Table 22 show the share of bus and train users who used each service at least once during the reference week. Of the 783 respondents who indicated riding the bus in the past week, most reported using Unitrans at least once, followed distantly by use of Yolobus and the UCD/UCDMC shuttle. No respondent reported taking Sacramento Regional Transit or the UCD/UC Berkeley Shuttle.

Table 21. Share Using Specific Bus Services at Least Once during the Reference Week

	Of those riding the bus to campus at least once						
Role	**Unitrans**	**Yolobus**	**UCD/UCDMC Shuttle**	**Sacramento Regional Transit**	**UCD/UC Berkeley Shuttle**	**Weighted Sample**	**Projected Population**
Undergraduate	95.3%	2.1%	1.8%	0.0%	0.9%	645	8,665
Graduate	83.5%	5.3%	10.3%	0.0%	0.9%	40	535
Faculty	45.1%	5.9%	39.2%	0.0%	9.8%	9	120
Staff	61.4%	3.9%	27.0%	0.0%	7.7%	39	522
Overall	91.8%	2.4%	4.3%	0.0%	1.4%	733	9,842

Table 22. Share Using Specific Train Services at Least Once during the Reference Week

	Of those riding the train to campus at least once				
Role	**Amtrak**	**BART**	**Sacramento Regional Transit**	**Weighted Sample**	**Projected Population**
Undergraduate	97%	3%	0%	24	318
Graduate	100%	0%	0%	9	122
Faculty	100%	0%	0%	7	100
Staff	100%	0%	0%	16	218
Overall	99%	1%	0%	56	756

Origins & Destinations

Residential Location

Travel behavior varies substantially by residential location so each year we ask respondents about their residential location, defined as the place of residence from which they regularly travel to campus. The four broad categories included are: the on campus area, the West Village apartments, off-campus elsewhere in Davis, and outside of Davis (*Q21*).

The results suggest that 17.5 percent live on campus (an estimated 9,405 people), 3.3 percent live in West Village (1,762 people), 55.3 percent live off-campus in Davis (29,783 people), and 24 percent live outside of Davis (12,937 people) (Table 23). Individuals who indicated that they live outside of Davis are most likely to live in the nearby cities of Woodland, Sacramento, Vacaville, West Sacramento, Dixon, Elk Grove, and Winters.

Table 23. Residential Location by Role Group

	On Campus	West Village	Off-Campus in Davis	Outside Davis	Weighted Sample	Projected Population
Student	24.4%	4.6%	60.9%	10.2%	2,727	37,593
Undergraduate	27.1%	5.3%	59.3%	8.3%	2,235	30,810
Freshman	91.9%	1.6%	2.6%	4.0%	476	6,567
Sophomore	5.5%	11.2%	77.7%	5.6%	395	5,443
Junior	15.1%	5.3%	70.6%	9.1%	608	8,388
Senior	7.3%	4.4%	76.3%	11.9%	755	10,412
Graduate	11.7%	1.6%	68.1%	18.6%	492	6,783
Master's	10.4%	2.9%	61.2%	25.6%	193	2,662
PhD	12.6%	0.8%	72.5%	14.1%	299	4,121
Employee	1.5%	0.2%	42.4%	55.9%	1,182	16,293
Faculty	1.1%	0.0%	65.8%	33.1%	156	2,152
Staff	1.6%	0.2%	38.8%	59.4%	1,026	14,141
Overall	17.5%	3.3%	55.3%	24.0%	3,909	53,886
Weighted Sample	682	128	2,161	938	3,909	NA
Projected Population	9,405	1,762	29,783	12,937	NA	53,886

Distance to Campus

For the purpose of estimating vehicle-miles traveled and carbon dioxide emissions from travel to campus, respondents were asked more detailed information about where they live, including the set of cross-streets nearest where they live and their zip code, if outside of Davis, in questions *Q23* and *Q24*. This information was geocoded in ArcGIS, enabling a variety of spatial analyses (see "Appendix E: Geocoding and network distances" for details on the methodology).

We used the geocoded addresses to estimate the distance that respondents travel (along a shortest-time route) to get to campus (in particular, to the Silo) on a daily basis. Table 24 summarizes distances traveled by role group, showing that employees tend to live farther from campus than students. The

median distance traveled among students is about 1.6 miles, versus 2.71 miles among faculty and nearly 12 miles among staff (Table 24).

Table 24. Average Distance from Residence to Campus, by Role Group

		Of those geocoded, distance from campus (miles)					
	Geocoded	**Mean**	**Median**	**Minimum**	**Maximum**	**Weighted Sample**	**Projected Population**
Student	97.7%	4.11	1.60	0.38	154.80	2,727	37,593
Undergraduate	98.0%	3.57	1.33	0.38	102.71	2,235	30,810
Freshman	99.2%	1.71	0.77	0.77	102.71	476	6,567
Sophomore	97.4%	3.11	1.81	0.48	74.03	395	5,443
Junior	98.0%	4.01	1.75	0.38	92.06	608	8,388
Senior	96.7%	4.64	1.88	0.38	101.95	755	10,412
Graduate	97.0%	6.52	1.98	0.39	154.80	492	6,783
Master's	96.5%	8.08	1.98	0.45	130.66	193	2,662
PhD	97.5%	5.52	1.98	0.39	154.80	299	4,121
Employee	95.9%	13.10	3.87	0.36	150.11	1,182	16,293
Faculty	96.4%	12.52	2.71	0.43	150.11	156	2,152
Staff	95.4%	13.18	11.84	0.36	72.65	1,026	14,141
Outside Davis	92.5%	22.98	18.39	0.36	154.80	938	12,937
Within Davis	97.9%	2.00	1.88	0.38	101.95	2,288	31,545
Overall	97.4%	6.82	1.77	0.36	154.80	3,909	53,886
Weighted Sample	3,807	NA	NA	NA	NA	NA	NA

Destination on Campus

We asked employees and graduate students the location of their office, lab, or department. This was in part to screen out those whose offices or labs were outside of Davis, who are excluded from the sample for this study. The summary of these results are in Table 25.

Table 25. Destination on Campus, among Employees and Graduate Students

Role	Main Campus	West Campus Area (west of SR 113)	South Campus (south of I-80)	Off-Campus but in Davis	Outside of Davis	Weighted Sample	Projected Population
Graduate	84.1%	8.3%	5.1%	2.6%	0.0%	505	6,783
Master's	86.2%	4.2%	7.1%	2.5%	0.0%	198	2,662
PhD	82.7%	10.8%	3.8%	2.6%	0.0%	307	4,121
Employee	77.0%	6.9%	3.7%	12.4%	0.0%	1,214	16,293
Faculty	95.6%	2.1%	0.7%	1.6%	0.0%	160	2,152
Staff	74.2%	7.6%	4.2%	14.0%	0.0%	1,053	14,141
Overall	79.1%	7.3%	4.1%	9.5%	0.0%	1,719	23,076
Weighted Sample	1,354	125	70	163	0	4,014	NA
Projected Population	18,177	1,675	945	2,185	0	NA	23,076

Vehicle Miles Traveled & Greenhouse Gas Emissions

For estimates of the number of miles traveled to and from campus, we rely on the calculated distances between respondents' geocoded home locations and a centroid on campus, located at the Silo. We assume respondents take the fastest path to and from campus on the days they report having traveled to campus. This method likely underestimates the true number of miles traveled to and from campus because it does not take into account side trips that respondents might make on the way to or from campus (e.g. stopping at the store, picking up children, or visiting friends), diversions from the shortest time path for a more pleasant or less congested route, or trips away from campus during the middle of the day (e.g. going to lunch or to an off-site meeting).

Vehicle Miles Traveled

We estimate the number of miles traveled to and from campus each day as the doubled network distance between respondents' geocoded home locations and the Silo on campus (as described in "Appendix E: Geocoding and network distances"), multiplied by the percent of weekdays a respondent traveled to campus. Thus, if a person lives 10 miles from campus and traveled to campus all five days, her average daily miles traveled would be 20 miles; by contrast, if she traveled to campus only one day, her average daily miles traveled would be 4 miles. We then attribute miles traveled to each mode based on the share of weekdays a respondent used each mode. Thus, if a respondent biked one day and drove four, we count 20 percent of her miles as bike miles and 80 percent as driving miles. Summed across all respondents, this figure represents the number of miles traveled by each mode on an average weekday.

To estimate the number of miles traveled annually, we first assume that respondents travel the same number of days per week and using the same modes as in the reference week for the entire 36 weeks of the academic year. To estimate summer travel, we rely on responses to questions *Q42* and *Q43* about the number of weeks and average number of days per week traveled to campus during the summer, assuming respondents used the same modes as during the survey reference week throughout the summer. For example, annual miles biked = (distance from campus × 2) × (share of days biked during reference week) × [(36 weeks × 5 days/week) + (weeks traveled to campus during the summer ×

days/week traveled during summer)]. In order to estimate the daily miles traveled by each person on an average day we calculate a weighted average of summer and academic-year travel.

Vehicle-miles traveled (VMT) is the miles traveled for each vehicle. Since different vehicles traveling to campus have varying occupancy (i.e. car vs bus vs train), person-miles traveled (PMT) accounts for both vehicles used and occupancy per mile. To estimate PMT for any travel in a personal vehicle or public transit vehicle (including driving alone, carpooling, getting a ride, riding a bus, and riding a train), we assume that each vehicle-mile traveled contributes a fractional person-mile equivalent of one divided by vehicle occupancy. We assume that travel by walking, biking, or skating contributes no PMT. Vehicle occupancy for carpooling and getting a ride varies for each respondent, as reported in questions *Q39* and *Q144* for those carpooling/vanpooling or getting a ride, respectively. If a respondent lives 10 miles from campus and traveled in a 3-person carpool all five weekdays, her average daily PMT would be (10 miles × 2) / 3 = 6.67 miles. Vehicle occupancy for those driving alone and for those who got a ride and were the only person dropped off on campus by the person giving them a ride is assumed to be one.

In addition to PMT for personal vehicles, we estimate PMT for buses and trains for the purpose of calculating the carbon dioxide equivalent emissions generated from commuting to campus (see next section). For bus and train occupancy, we assume average occupancy for all trips on those modes. We estimated average bus occupancy based on annual ridership data from Unitrans, since 91% of all bus riders use Unitrans. According to Unitrans' figures from FY 2017-18, Unitrans had an average of about 10 passengers per mile.[1] Thus, for someone who lives 10 miles from campus and traveled by bus all five weekdays, average bus PMT per day is (10 miles × 2) / 10 ≈ 2 person-miles.

We estimate train occupancy based on annual ridership data from Amtrak's Capitol Corridor, since they provide nearly all of train rides to campus. According to figures in the Capitol Corridor Annual Business Plan, the Capitol Corridor had an average of 85.7 passengers per mile in FY 2015-16.[2] If a respondent lives 100 miles from campus and traveled by train all five days, her average train PMT per day is estimated to be (100 miles × 2) / 85.7 = 2.33 person-miles.

Our estimates for person-miles traveled, by mode and role, are shown in Table 26 and Table 27.

[1] Unitrans General Manager's Report, Fiscal Year 2017-18.

[2] Capitol Corridor Joint Powers Authority. Capitol Corridor Intercity Passenger Rail Service Business Plan Update FY 2016-17 – FY 2017-18, Appendix C.

Table 26. Person-Miles-Traveled (PMT) Daily and Annually, by Mode

Mode	Daily		Annually		Share of Total PMT	Share of Population	Projected Population
	Total PMT	PMT per Person	Total PMT	PMT per Person			
No travel	0	0.0	0	0	0.0%	15.4%	8,310
No vehicle (bike, walk, or skate)	0	0.0	0	0	0.0%	39.7%	21,401
Personal vehicles	413,505	24.7	92,703,596	5,544	98.9%	31.0%	16,722
Drive alone	386,229	27.5	86,723,070	6,170	92.4%	26.1%	14,056
Carpool or ride	27,276	10.2	5,980,526	2,243	6.5%	4.9%	2,666
Bus	4,190	0.6	865,030	121	1.0%	13.2%	7,121
Train	238	0.7	48,911	147	0.1%	0.6%	332
Total	417,933	7.8	93,617,537	1,737	100.0%	100.0%	53,886

Table 27. Person-Miles-Traveled (PMT), Daily and Annually, by Role Group

Role	Daily		Annually		Share of total PMT	Share of Population	Projected Population
	Total PMT	PMT per person	Total PMT	PMT per person			
Student	143,945	3.83	27,704,580	737	34.4%	69.8%	37,593
Undergraduate	102,944	3.34	19,472,524	632	24.6%	57.2%	30,810
Freshman	8,452	1.29	1,543,465	235	2.0%	12.2%	6,567
Sophomore	13,610	2.50	2,569,486	472	3.3%	10.1%	5,443
Junior	31,604	3.77	5,828,244	695	7.6%	15.6%	8,388
Senior	49,278	4.73	9,531,328	915	11.8%	19.3%	10,412
Graduate	41,001	6.04	8,232,056	1,214	9.8%	12.6%	6,783
Master's	21,322	8.01	4,166,107	1,565	5.1%	4.9%	2,662
PhD	19,679	4.78	4,065,950	987	4.7%	7.6%	4,121
Employee	273,987	16.82	65,912,957	4,045	65.6%	30.2%	16,293
Faculty	17,508	8.14	3,593,921	1,670	4.2%	4.0%	2,152
Staff	256,480	18.14	62,319,036	4,407	61.4%	26.2%	14,141
Outside Davis	383,615	29.65	86,255,416	6,668	91.8%	24.0%	12,937
Within Davis	34,318	0.84	7,362,121	180	8.2%	76.0%	40,949
On Campus	686	0.07	147,123	16	0.2%	17.5%	9,405
West Village	314	0.18	61,259	35	0.1%	3.3%	1,762
Off Campus	33,318	1.12	7,153,738	240	8.0%	55.3%	29,783
Overall	417,933	7.76	93,617,537	1,737	100.0%	100.0%	53,886

Greenhouse Gas Emissions

We estimate the amount of greenhouse gases produced by campus travelers by assuming that each travel mode generates a certain quantity of carbon dioxide-equivalent (CO_2e) emissions per person-mile traveled, and multiplying this quantity by our estimate of miles traveled by each mode on an average weekday. In particular, we assume driving alone generates 1.1 pounds-equivalent of CO_2e per vehicle-mile (regardless of vehicle type), and that carpooling/getting a ride, riding a bus, and riding a train produce some fractional amount of the emissions produced for the entire vehicle, adjusted for the total number of passengers in the vehicle.

For carpooling and getting rides, we adjust vehicle occupancies based on those reported by the respondents themselves. For transit, we assume average occupancies apply for all respondents. For Unitrans (about 91% of bus use for the entire campus), we use emissions estimates specific to the Unitrans fuel mix and passenger occupancy. For other bus services and Amtrak we estimate emissions based on national travel fuel use and emissions averages. See Appendix I for the calculation of average weekday pounds of greenhouse gas emissions by mode.

Using these assumptions, we estimate the greenhouse gas emissions generated by travel to campus. These estimates are summarized in Table 28 through Table 31.

Table 28. Daily Pounds of CO2e Emitted, by Mode and Role

Role	Pounds-equivalent of CO_2e generated on an average weekday						Average lbs per Person	Share of Total CO2e	Share of Population	Projected Population
	Drive Alone	Carpool	Ride	Bus	Train	Total				
Student	128,794	5,228	5,878	15,881	3,915	159,696	4.25	36.1%	69.8%	37,593
Undergraduate	90,793	3,550	5,086	14,366	2,125	115,920	3.76	26.2%	57.2%	30,810
Freshman	7,894	363	119	160	5	8,541	1.30	1.9%	12.2%	6,567
Sophomore	11,872	429	437	3,888	410	17,036	3.13	3.8%	10.1%	5,443
Junior	29,320	277	953	4,244	636	35,430	4.22	8.0%	15.6%	8,388
Senior	41,707	2,481	3,577	6,074	1,074	54,913	5.27	12.4%	19.3%	10,412
Graduate	38,001	1,678	792	1,515	1,790	43,775	6.45	9.9%	12.6%	6,783
Master's	19,823	904	344	650	935	22,656	8.51	5.1%	4.9%	2,662
PhD	18,178	774	448	865	854	21,119	5.12	4.8%	7.6%	4,121
Employee	255,424	11,755	4,273	6,034	5,583	283,070	17.37	63.9%	30.2%	16,293
Faculty	16,213	752	249	1,005	1,675	19,895	9.24	4.5%	4.0%	2,152
Staff	239,211	11,004	4,024	5,029	3,908	263,175	18.61	59.4%	26.2%	14,141
Outside Davis	357,217	14,625	8,135	8,901	9,366	398,244	30.78	89.9%	24.0%	12,937
Within Davis	27,001	2,358	2,016	13,015	132	44,521	1.09	10.1%	76.0%	40,949
On Campus	501	43	97	197	7	845	0.09	0.2%	17.5%	9,405
West Village	166	2	20	600	36	824	0.47	0.2%	3.3%	1,762
Off Campus	26,335	2,313	1,898	12,218	89	42,852	1.44	9.7%	55.3%	29,783
Overall	384,218	16,983	10,151	21,915	9,498	442,766	8.22	100.0%	100.0%	53,886

Table 29. Annual Tons of CO2e Emitted, by Mode and Role

Role	Annual Tons of CO_2e Emissions						Average Tons per Person	Share of Total CO2e	Share of Population	Projected Population
	Drive Alone	Carpool	Ride	Bus	Train	Total				
Student	14,605	593	667	1,801	444	18,109	0.48	36%	70%	37,593
Undergraduate	10,296	403	577	1,629	241	13,145	0.43	26%	57%	30,810
Freshman	895	41	13	18	1	969	0.15	2%	12%	6,567
Sophomore	1,346	49	50	441	46	1,932	0.35	4%	10%	5,443
Junior	3,325	31	108	481	72	4,018	0.48	8%	16%	8,388
Senior	4,730	281	406	689	122	6,227	0.60	12%	19%	10,412
Graduate	4,309	190	90	172	203	4,964	0.73	10%	13%	6,783
Master's	2,248	102	39	74	106	2,569	0.97	5%	5%	2,662
PhD	2,061	88	51	98	97	2,395	0.58	5%	8%	4,121
Employee	28,965	1,333	485	684	633	32,100	1.97	64%	30%	16,293
Faculty	1,839	85	28	114	190	2,256	1.05	4%	4%	2,152
Staff	27,126	1,248	456	570	443	29,844	2.11	59%	26%	14,141
Outside Davis	40,508	1,658	923	1,009	1,062	45,160	3.49	90%	24%	12,937
Within Davis	3,062	267	229	1,476	15	5,049	0.12	10%	76%	40,949
On Campus	57	5	11	22	1	96	0.01	0%	17%	9,405
West Village	19	0	2	68	4	93	0.05	0%	3%	1,762
Off Campus	2,986	262	215	1,386	10	4,859	0.16	10%	55%	29,783
Overall	43,570	1,926	1,151	2,485	1,077	50,209	0.93	100%	100%	53,886

Table 30. Daily Pounds of CO2e Emitted, by Mode and Role (not including Unitrans)

Role	Pound-equivalent of CO_2e emissions generated on an average weekday						Average lbs per person	Share of total CO2e	Share of Population	Projected Population
	Drive Alone	Carpool	Ride	Bus	Train	Total				
Student	128,794	5,228	5,878	4,315	3,915	148,130	3.94	34.4%	69.8%	37,593
Undergraduate	90,793	3,550	5,086	3,356	2,125	104,910	3.41	24.3%	57.2%	30,810
Freshman	7,894	363	119	40	5	8,421	1.28	2.0%	12.2%	6,567
Sophomore	11,872	429	437	925	410	14,073	2.59	3.3%	10.1%	5,443
Junior	29,320	277	953	843	636	32,029	3.82	7.4%	15.6%	8,388
Senior	41,707	2,481	3,577	1,547	1,074	50,386	4.84	11.7%	19.3%	10,412
Graduate	38,001	1,678	792	960	1,790	43,220	6.37	10.0%	12.6%	6,783
Master's	19,823	904	344	404	935	22,410	8.42	5.2%	4.9%	2,662
PhD	18,178	774	448	555	854	20,810	5.05	4.8%	7.6%	4,121
Employee	255,424	11,755	4,273	5,745	5,583	282,780	17.36	65.6%	30.2%	16,293
Faculty	16,213	752	249	969	1,675	19,858	9.23	4.6%	4.0%	2,152
Staff	239,211	11,004	4,024	4,776	3,908	262,922	18.59	61.0%	26.2%	14,141
Outside Davis	357,217	14,625	8,135	8,857	9,366	398,201	30.78	92.4%	24.0%	12,937
Within Davis	27,001	2,358	2,016	1,203	132	32,709	0.80	7.6%	76.0%	40,949
On Campus	501	43	97	29	7	677	0.07	0.2%	17.5%	9,405
West Village	166	2	20	122	36	346	0.20	0.1%	3.3%	1,762
Off Campus	26,335	2,313	1,898	1,052	89	31,686	1.06	7.4%	55.3%	29,783
Overall	384,218	16,983	10,151	10,060	9,498	430,910	8.00	100.0%	100.0%	53,886

Table 31. Annual Tons of CO2e Emitted, by Mode and Role (not Including Unitrans)

Role	Annual Tons of CO_2e Emissions						Average Tons per Person	Share of Total CO2e	Share of Population	Projected Population
	Drive Alone	Carpool	Ride	Bus	Train	Total				
Student	14,605	593	667	489	444	16,798	0.45	34.4%	69.8%	37,593
Undergraduate	10,296	403	577	381	241	11,897	0.39	24.3%	57.2%	30,810
Freshman	895	41	13	5	1	955	0.15	2.0%	12.2%	6,567
Sophomore	1,346	49	50	105	46	1,596	0.29	3.3%	10.1%	5,443
Junior	3,325	31	108	96	72	3,632	0.43	7.4%	15.6%	8,388
Senior	4,730	281	406	175	122	5,714	0.55	11.7%	19.3%	10,412
Graduate	4,309	190	90	109	203	4,901	0.72	10.0%	12.6%	6,783
Master's	2,248	102	39	46	106	2,541	0.95	5.2%	4.9%	2,662
PhD	2,061	88	51	63	97	2,360	0.57	4.8%	7.6%	4,121
Employee	28,965	1,333	485	651	633	32,067	1.97	65.6%	30.2%	16,293
Faculty	1,839	85	28	110	190	2,252	1.05	4.6%	4.0%	2,152
Staff	27,126	1,248	456	542	443	29,815	2.11	61.0%	26.2%	14,141
Outside Davis	40,508	1,658	923	1,004	1,062	45,155	3.49	92.4%	24.0%	12,937
Within Davis	3,062	267	229	136	15	3,709	0.09	7.6%	76.0%	40,949
On Campus	57	5	11	3	1	77	0.01	0.2%	17.5%	9,405
West Village	19	0	2	14	4	39	0.02	0.1%	3.3%	1,762
Off Campus	2,986	262	215	119	10	3,593	0.12	7.4%	55.3%	29,783
Overall	43,570	1,926	1,151	1,141	1,077	48,864	0.91	100.0%	100.0%	53,886

Awareness of TAPS Programs

We presented respondents with a list of campus transportation services and asked them to indicate their familiarity with them (i.e. “It’s new to me and I would like to know more,” “I’ve heard of it, but never used it,” or “I’ve used it.” Table 32 summarizes the responses for each service, and Table 33 compares responses for the past six years for those services that appeared on each of the surveys.

Table 32. Awareness of Transportation Programs & Services

Program	I've used it	I've heard of it, but never used it	I've never heard of it
GoClub program	12.8%	16.7%	70.5%
GoClub Transit Subsidy	3.0%	23.6%	73.4%
Aggie Bike Buy Program	0.8%	37.8%	61.4%
Bike tire air stations and repair stations around campus	40.9%	42.5%	16.6%
Bicycle Education and Enforcement Program (BEEP) and bike safety video	5.1%	25.7%	69.2%
Zipcar carsharing program	9.2%	63.6%	27.2%
Zimride carpool matching service	1.2%	23.3%	75.5%
In-vehicle parking meters (Easy Park)	8.4%	31.6%	60.0%
UC Davis motorist assistance program	2.8%	22.1%	75.1%
Bike lock-cutting service	5.0%	60.3%	34.8%
UC Davis Bike Auction	4.8%	60.5%	34.7%
TAPS Mobility Assistance Program	3.2%	47.8%	49.0%
TAPS bicycle licensing program	28.4%	42.2%	29.4%

Table 33. Awareness of Transportation Programs & Services, 2010 through 2018-19

Program	Change 2017-18 to 2018-19	Percent who have heard of it or used it								
		2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13	2011-12	2010-11
Zimride carpool matching service	-3%	25%	28%	27%	31%	67%	38%	41%	31%	24%
TAPS motorist assistance program	-7%	25%	32%	32%	54%	79%	53%	59%	52%	60%
Zipcar carsharing program	-1%	73%	74%	77%	79%	90%	78%	82%	76%	75%
Bike lock-cutting service	1%	65%	65%	69%	66%	83%	58%	63%	57%	43%
GoClub program	-4%	29%	34%	37%	37%	69%	46%	45%	43%	33%
In-vehicle parking meters (Easy Park)	-7%	40%	47%	45%	44%	68%	37%	36%	35%	NA
Emergency Ride Home Program for goClub members	NA	NA	NA	NA	NA	NA	25%	26%	25%	24%
UC Davis Bike Auction	-3%	65%	68%	76%	74%	89%	79%	83%	84%	86%
Bike commuter showers and lockers (ARC)	NA	NA	NA	NA	NA	NA	35%	36%	38%	NA
Bicycle Education and Enforcement Program (BEEP) and bike safety video	-1%	31%	32%	35%	34%	70%	31%	24%	28%	NA
TAPS Mobility Assistance Program	-1%	51%	52%	56%	52%	81%	33%	NA	NA	NA
Aggie Bike Buy Program	-4%	39%	43%	44%	43%	65%	34%	30%	NA	NA
Bike tire air stations and repair stations around campus	-3%	83%	87%	88%	91%	95%	91%	92%	NA	NA
TAPS bicycle licensing program	-3%	71%	74%	76%	79%	91%	NA	NA	NA	NA
GoClub Transit Subsidy	NA	27%	NA	NA	NA	NA	25%	27%	35%	32%

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APPENDICES

Appendix A: Survey Instrument, 2018-19 Campus Travel Survey

2018-19 Campus Travel Survey

Start of Block: Welcome Page

Q1 Welcome to the 2018-19 Campus Travel Survey! This annual survey is intended for everyone who regularly travels to UC Davis for school or work. The results of this survey provide campus planners with valuable feedback on how people get to campus and their experiences with various transportation programs. UC Davis graduate students also use the data from this survey in their research.

Your feedback is important to us! Participating in this research survey takes 10-15 minutes to complete. Doing so is voluntary, and we assure you that all responses are confidential and the results will only be published in the aggregate, without connection to any individual. You must be at least 18 years old to complete this survey. We're going to ask you questions in the following areas:

- Your role at UC Davis
- Your travel to and from campus
- Your experience with campus transportation programs and infrastructure
- Some background information about you

To reward you for your time and input, you will be entered into a drawing for 40 $50 Visa gift cards and two grand prizes of Amazon Fire tablets! If you are unable to complete the survey but would like to be included in the drawing, please email us at travelsurvey@ucdavis.edu to be entered.

Thanks for participating!

Amy Lee, PhD Student, Institute of Transportation Studies (aelee@ucdavis.edu)
Susan Handy, Professor, Institute of Transportation Studies (slhandy@ucdavis.edu)
Cliff Contreras, Director, Transportation and Parking Services

End of Block: Welcome Page

Start of Block: Section 1 - Role

Q2 What is your primary role at UC Davis? If you are a student who is also employed by the university, please select your student role.

- ○ Undergraduate student (including Post-baccalaureate)
- ○ Graduate student
- ○ Faculty
- ○ Staff
- ○ Visiting scholar
- ○ Post doc
- ○ Faculty emeritus
- ○ I'm no longer affiliated with UC Davis
- ○ Other: _____

Q3 What is your current faculty status?

- ○ Ladder rank (senate)
- ○ Non-ladder rank (federation)
- ○ Unsure

Q4 What year are you?

- ○ Freshman
- ○ Sophomore
- ○ Junior
- ○ Senior
- ○ Fifth-year senior
- ○ Post-baccalaureate
- ○ Visiting / exchange student
- ○ Other: _____

Q5 Did you transfer to UC Davis from a college, university, or community college?

- ○ Yes
- ○ No

Q6 What type of graduate program are you in?

- ○ Master's
- ○ PhD
- ○ Law
- ○ MBA
- ○ Veterinary
- ○ Ed.D. or CANDEL
- ○ Other: _____

Q7 What is your campus role?

- ○ Freshman
- ○ Sophomore
- ○ Junior
- ○ Senior
- ○ Master's student
- ○ PhD student
- ○ Post doc
- ○ Faculty
- ○ Other: _____

Q8 As a student, are you also a paid employee of UC Davis?

- ○ Yes
- ○ No

Q9 Where is your office, lab, or department? (That is, wherever you usually spend your time when you travel to work or school at UC Davis)

- ○ Main Campus area (this is most people)
- ○ On the Davis campus, in the West Campus area (west of SR 113)
- ○ On the Davis campus, in the South Campus area (south of I-80)
- ○ Technically off-campus, but within the City of Davis
- ○ Outside of Davis

Q10 Where outside of Davis is your office, lab, or department?

_____

Q11 Thank you for taking this shortened version of the 2017-18 Campus Travel Survey. Since your office or department is outside of UC Davis, we do not need any further information from you at this time.

Q12 Thank you for taking this shortened version of the 2017 -18 Campus Travel Survey. Since you are no longer affiliated with UC Davis, we do not need any further information from you at this time.

End of Block: Section 1 - Role

Start of Block: Section 2a - General Background Information

Q13 Next, we have a few questions about you.

Q14 Where were you born?

- ○ In California
- ○ Outside of California, but in the United States
- ○ Outside the United States, from: _____

Q15 Do you currently have a driver's license?

- ○ Yes, a California driver's license
- ○ Yes, a non-California (but from the United States) driver's license
- ○ Yes, driver's license issued by another country
- ○ No

Page Break

Q16 Do you have any physical or other personal conditions that prevent or limit you from...

	Yes	No
Walking	○	○
Bicycling	○	○
Driving	○	○
Using public transit	○	○

Page Break

Q17 With which gender do you most identify?

- ○ Woman
- ○ Man
- ○ Non-binary
- ○ Not listed: _____
- ○ Prefer not to say

Page Break

Q18
We are interested in your available means of transportation.

Select all options that are available to you for getting to campus, whether or not you use them on a regular basis? Include options you would only use for part of the way.

- [ ] Walk (or wheelchair)
- [ ] Bike
- [ ] Skate, skateboard, or scooter
- [ ] Drive alone in a car (or other vehicle)
- [ ] Carpool and/or vanpool with others going to campus
- [ ] Get dropped off by a friend or family (the driver continues on elsewhere)
- [ ] Lyft, Uber, or other ride-hailing service
- [ ] Motorcycle or Vespa-like scooter
- [ ] Bus and/or shuttle
- [ ] Train and/or light rail
- [ ] Other: _____

Page Break

Q19 You mentioned you have the following options available for getting to campus:

${Q18/ChoiceGroup/SelectedChoices}

Q20 What kind of bike is available to you? Select all that apply.

- [ ] Bike that I own
- [ ] Electric bike that I own
- [ ] Bike that I borrow or rent
- [ ] Bike share (e.g. JUMP)

Q21 What kind of skates, skateboard, or scooter is available to you? Select all that apply.

- [ ] Rollers skates or rollerblades
- [ ] Skateboard
- [ ] Electric skateboard
- [ ] Scooter
- [ ] Electric scooter

Q22 Do you have access to a carpool, vanpool, or both?

- [ ] Carpool
- [ ] Vanpool

Q23 Which bus or shuttle is available to you? Select all that apply.

- [ ] Unitrans
- [ ] Yolobus
- [ ] Sacramento Regional Transit
- [ ] UCD/UCDMC Intercampus Shuttle
- [ ] UC Berkeley/Davis Shuttle
- [ ] Other: _____

Q24 Which train or light rail is available to you? Select all that apply.

- [ ] Amtrak/Capitol Corridor
- [ ] BART
- [ ] Sacramento Regional Transit

Page Break

Q25 Do you currently have a UC Davis parking permit?

- ○ No - I don't have one
- ○ No - I purchase a daily permit when I need one
- ○ Yes - Annual (or multi-year) permit
- ○ Yes - Monthly or quarterly permit
- ○ Yes - Complimentary GoClub parking permit
- ○ Yes - EasyPark Personal in-vehicle parking meter

Page Break

Q26 Do you currently have a multi-ride transit pass?

- ○ Yes - with my student ID card
- ○ Yes - Monthly ticket
- ○ Yes - Multi-ride ticket (e.g. 10-rides)
- ○ Yes - Other: _____
- ○ No - I pay with a single-ride ticket when I need one

End of Block: Section 2a - General Background Information

Start of Block: Section 2b – Background Information about Residence

Q27 Where do you live now?

- ○ On the UC Davis main campus (includes Cuarto and the area east of SR 113, south of Russell Blvd, west of A St, and north of I-80)
- ○ On-campus in the West Village apartments
- ○ Off-campus elsewhere in the city of Davis
- ○ Outside of Davis

Q28 Which part of Davis do you live in? Scroll down and click on your neighborhood.

- ○ North Davis (north of West Covell and west of F St.)
- ○ South Davis (south of I-80)
- ○ East Davis (east of H St., except for Downtown Davis)
- ○ West Davis (west of Hwy 113)
- ○ Central Davis (see map)
- ○ Downtown Davis (see map)
- ○ Not sure
- ○ Other (my location is not in any of these areas)

Page Break

Q29
What intersection is nearest to your home?

(Please answer for where you live when you are traveling to campus on a regular basis. This information will only be used to calculate the approximate distance you travel to campus and to help plan facility needs around campus. It will be kept confidential and will not be used in any other way.)

- Street #1: _____
- Street #2: _____

Q30 What is your zip code?

_____

Page Break

Q31 Do you regularly (at least once per week) spend the night at a second residence **outside of Davis** from which you sometimes commute to campus? (E.g. Home of partner/spouse, second home)

- ○ Yes
- ○ No
- ○ Prefer not to answer

Q32 Where is this secondary residence?

- ○ City or nearest city: _____

Q33 Do you regularly (at least once per week) stay at a second residence from which you sometimes commute to campus? (E.g. Home of partner/spouse, apartment near work or school, second home)

- ○ Yes
- ○ No
- ○ Prefer not to answer

Q34 Where is this secondary residence?

- ○ In Davis
- ○ Outside of Davis, in (city): _____

Q35 About how many days per week do you typically commute to campus from the secondary residence?

▼ 1 ... 7

End of Block: Section 2b – Background Information about Residence

Start of Block: Section 3 - Travel to campus - Days traveled last week

Q36 Consider your activities during the last week, from Monday (October 28) through Sunday (November 4).

If you use a day planner or Google Calendar, it might be useful to look at the last week's activities as you complete this section. Your best guess is also okay!

Q37
Did you go somewhere on campus any day last week (October 28 – November 4) for school or work?

If you live on campus, but went to other campus locations for school or work, please count those trips. If you went to a UC Davis office or lab that is technically off-campus, but within the City of Davis, please count that as well.

- ○ Yes, I traveled to campus destinations for school or work last week
- ○ No, I was away all week

Q38 On which days last week (October 28 – November 4) did you go somewhere on campus? If you went to a UC Davis office or lab that is technically off-campus, but within the city of Davis, please count that as well.

- ☐ Monday
- ☐ Tuesday
- ☐ Wednesday
- ☐ Thursday
- ☐ Friday
- ☐ Saturday
- ☐ Sunday

End of Block: Section 3 - Travel to campus - Days traveled last week

Start of Block: Section 4 - Travel to Campus - Days not traveled last week

Q39 What was the main reason you did not go to campus destinations last week for school or work?

- ○ Study abroad or sabbatical
- ○ Vacation, sickness, or personal leave
- ○ Work or school-related travel (e.g. meeting, conference, field work)
- ○ Telecommuting (working from home or another remote location)
- ○ Temporary appointment elsewhere (internship, visiting scholar, teaching appointment, exchange program, etc.)
- ○ Other: _____

Q40
You mentioned you did not travel to campus on the following days last week.

What was the main reason you did not travel to campus? Please answer for each day individually.

	Monday	Telecommuting (working from home or another remote location)	Tuesday	Work or school-related travel (e.g. meeting, conference, field work)	Wednesday	Regularly scheduled day off	Thursday	Vacation, sickness, or personal leave	Friday	Day off as part of a compressed work week (i.e. 4/40, 9/80, or 3/36 schedule)	Other
Telecommuting (working from home or another remote location)	○	○	○	○	○	○	○	○	○	○	○
Monday	○	○	○	○	○	○	○	○	○	○	○
Work or school-related travel (e.g. meeting, conference, field work)	○	○	○	○	○	○	○	○	○	○	○
Tuesday	○	○	○	○	○	○	○	○	○	○	○
Regularly scheduled day off	○	○	○	○	○	○	○	○	○	○	○
Wednesday	○	○	○	○	○	○	○	○	○	○	○

Vacation, sickness, or personal leave	○	○	○	○	○	○	○	○	○	○	○
Thursday	○	○	○	○	○	○	○	○	○	○	○
Day off as part of a compressed work week (i.e. 4/40, 9/80, or 3/36 schedule)	○	○	○	○	○	○	○	○	○	○	○
Friday	○	○	○	○	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○	○	○	○	○

Q41 Where did you go for work or school-related travel?

○ City, State, Country: _____

Q42 Do you expect to resume regular travel to campus for school or work this academic year?

○ Yes

○ No

Q43 Thank you for taking this shortened version of the 2017-18 Campus Travel Survey. Since you do not intend to resume regular travel to campus, we do not need any further information from you at this time.

End of Block: Section 4 - Travel to Campus - Days not traveled last week

Start of Block: Section 5 - Travel to Campus - Usual travel to campus

Q44 When you are regularly traveling to campus, about how many days per week do you **typically** travel to campus for school or work?

- ○ Less than once a week
- ○ 1 day per week
- ○ 2 days per week
- ○ 3 days per week
- ○ 4 days per week
- ○ 5 days per week
- ○ 6 days per week
- ○ 7 days per week

Page Break

Q45 What means of transportation do you **usually use to get to campus**? (If you usually use more than one mode of transportation, please select the one you usually use for **most of the distance**).

- ○ Walk (or wheelchair)
- ○ Bike
- ○ Skate, skateboard, or scooter
- ○ Drive alone in a car (or other vehicle)
- ○ Carpool and/or vanpool with others going to campus
- ○ Get dropped off by a friend or family (the driver continues on elsewhere)
- ○ Lyft, Uber, or other ride-hailing service
- ○ Motorcycle or Vespa-like scooter
- ○ Bus and/or shuttle
- ○ Train and/or light rail
- ○ Other:

Q46 What means of transportation do you usually use to **get around campus**?

- Walk (or wheelchair)
- Bike
- Skate, skateboard, or scooter
- Drive alone in a car (or other vehicle)
- Carpool
- Get a dropped off by a friend or family
- Lyft, Uber, or other ride-hailing service
- Motorcycle or Vespa-like scooter
- Bus or shuttle
- Other: _____

Q47 What kind of bike do you **usually** use to **get around campus**?

- Bike that I own
- Electric bike that I own
- Bike that I borrow or rent
- Bike share (e.g. JUMP)

Q48 When do you typically arrive on campus?

▼ Before 7:00 am ... Noon or later

End of Block: Section 5 - Travel to Campus - Usual travel to campus

Start of Block: Section 6 - Travel to Campus - Modes used last week

Q49 Consider how you traveled to campus **last week**.

Q50 **First think back to the entire week (Monday, October 28 - Sunday, November 4).** Please tell us ***all*** the different means of transportation you used at some point on your way to school or work, from the moment you left home to when you arrived at your first destination on campus – even if it was just for part of the way – on any day that week. Select **all** that apply.

- ☐ Walk (or wheelchair)
- ☐ Bike
- ☐ Skate, skateboard, or scooter
- ☐ Drive alone in a car (or other vehicle)
- ☐ Carpool and/or vanpool with others going to campus
- ☐ Get dropped off by a friend or family (the driver continues on elsewhere)
- ☐ Lyft, Uber, or other ride-hailing service
- ☐ Motorcycle or Vespa-like scooter
- ☐ Bus and/or shuttle
- ☐ Train and/or light rail
- ☐ Other: _____

Q51 **Next, consider each day specifically.** Please select how you got to your first campus destination each day. (If you used more than one mode of transportation, select whatever you did for **most of the distance**.)

	Walk (or wheelchair)	Bike	Skate, skateboard, or scooter	Drive alone in a car (or other vehicle)	Carpool and/or vanpool with others going to campus	Get dropped off by a friend or family (the driver continues on elsewhere)	Lyft, Uber, or other ride-hailing service	Motorcycle or Vespa-like scooter	Bus and/or shuttle	Train and/or light rail	Other:
Monday	○		○	○	○	○	○	○	○	○	○
Tuesday	○		○	○	○	○	○	○	○	○	○
Wednesday	○		○	○	○	○	○	○	○	○	○
Thursday	○		○	○	○	○	○	○	○	○	○
Friday	○		○	○	○	○	○	○	○	○	○
Saturday	○		○	○	○	○	○	○	○	○	○
Sunday	○		○	○	○	○	○	○	○	○	○

End of Block: Section 6 - Travel to Campus - Modes used last week

Start of Block: Section 8 - Travel to campus - More details about mode last week

X→

Q52 What kind of bike did you use **last week**?

- [ ] Bike that I own
- [ ] Electric bike that I own
- [ ] Bike that I borrow or rent
- [ ] Bike share (e.g. JUMP)

X→

Q53 What kind of skates, skateboard, or scooter did you use **last week**?

- [ ] Rollers skates or rollerblades
- [ ] Skateboard
- [ ] Electric skateboard
- [ ] Scooter
- [ ] Electric scooter

Q54 During the times when you got dropped off by a friend or family **last week**, how many people did your driver usually drop off?

- ○ 1 (just you)
- ○ 2 people
- ○ 3 people
- ○ 4 people
- ○ 5 people
- ○ 6 people
- ○ 7 people
- ○ 8 people
- ○ 9 people
- ○ 10 people
- ○ 11 or more people

Q55 Which type of vehicle did you use to get to campus **last week**?

- ○ Gasoline or diesel vehicle
- ○ Conventional hybrid vehicle (does not plug into the electricity grid)
- ○ Plug-in hybrid electric vehicle
- ○ All-electric vehicle
- ○ CNG fueled vehicle
- ○ Biofuel vehicle
- ○ Hydrogen fuel cell vehicle

Q56 What is the Year, Make (i.e. Honda) and Model (i.e. Civic) of the vehicle you used to get to campus last week?

- ○ Year _____
- ○ Make _____
- ○ Model _____

Q57 Do you use on-campus electric vehicle charging stations? If so, how often do you use them?

- ○ No
- ○ Yes - Every day
- ○ Yes - Several times a week
- ○ Yes - Once a week
- ○ Yes - Several times a month
- ○ Yes - Once a month
- ○ Yes - Less than once a month

Q58 Are you able to charge your vehicle at home?

- ○ Yes
- ○ No

Page Break

Q59 When you drive to Davis for school or work, do you **usually** park on-campus or off-campus?

- ○ On-campus
- ○ Off-campus

X→

Q60 How do you **usually** get from your parked car to campus?

- ○ Walk (or wheelchair)
- ○ Personal bike
- ○ Bike share (e.g. JUMP)
- ○ Skate, skateboard, or scooter
- ○ Get dropped off by a friend or family
- ○ Lyft, Uber, or other ride-hailing service
- ○ Bus and/or shuttle
- ○ Other: _____

Q61 You mentioned that you carpooled or vanpooled last week. Which was it?

- ○ Carpool
- ○ Vanpool

Q62 During the times when you carpooled or vanpooled last week, about how many people were in your carpool or vanpool (including yourself)?

- 2 (you plus one other person)
- 3 people
- 4 people
- 5 people
- 6 people
- 7 people
- 8 people
- 9 people
- 10 people
- 11 people
- 12 or more people

Q63 Which bus or shuttle did you use on your way to campus last week? If you used more than one, please select the service used for the greater distance of your trip.

- ○ Unitrans
- ○ Yolobus
- ○ Sacramento Regional Transit
- ○ UCD/UCDMC Intercampus Shuttle
- ○ UC Berkeley/Davis Shuttle
- ○ Other:

Page Break

Q64 How do you **usually** get between your **home** and the place **where you catch** the bus or shuttle? Think of both the to and from trips.

- ○ Walk (or wheelchair)
- ○ Personal bike
- ○ Bike share (e.g. JUMP)
- ○ Skate, skateboard, or scooter
- ○ Drive alone in a car (or other vehicle)
- ○ Carpool and/or vanpool with others
- ○ Get dropped off by a friend of family
- ○ Lyft, Uber, or other ride-hailing service
- ○ Motorcycle or Vespa-like scooter
- ○ Bus and/or shuttle
- ○ Train and/or light rail
- ○ Other: _____

Page Break

Q65 How do you **usually** get between the place where the bus or shuttle **drops you off** and your **destination on campus**? Think of both the to and from trips.

- ○ Walk (or wheelchair)
- ○ Personal bike
- ○ Bike share (e.g. JUMP)
- ○ Skate, skateboard, or scooter
- ○ Get dropped off by a friend or family
- ○ Lyft, Uber, or other ride-hailing service
- ○ Bus and/or shuttle
- ○ Other: _____

X→

Q66 Which train or light rail did you use on your way to campus last week? If you used more than one, please select the service you used for the greater portion of your trip.

- ○ Amtrak/Capitol Corridor
- ○ BART
- ○ Sacramento Regional Transit

Page Break

Q67 How do you usually get between your **home** and the **Amtrak or light rail station**? Think of both the to and from trips.

- ○ Walk (or wheelchair)
- ○ Personal bike
- ○ Bike share (e.g. JUMP)
- ○ Skate, skateboard, or scooter
- ○ Drive alone in a car (or other vehicle)
- ○ Carpool and/or vanpool with others
- ○ Get dropped off by a friend of family
- ○ Lyft, Uber, or other ride-hailing service
- ○ Motorcycle or Vespa-like scooter
- ○ Bus and/or shuttle
- ○ Train and/or light rail
- ○ Other:

Page Break

Q68 How do you usually get between the **Amtrak station** and your **destination on campus**? Think of both the to and from trips.

- ○ Walk (or wheelchair)
- ○ Personal bike
- ○ Bike share (e.g. JUMP)
- ○ Skate, skateboard, or scooter
- ○ Get dropped off by a friend or family
- ○ Lyft, Uber, or other ride-hailing service
- ○ Bus and/or shuttle
- ○ Other: _____

Page Break

Q69 Just including the costs of fuel and parking, about how much do you spend **per day** to commute to campus?

○ $ _____

End of Block: Section 8 - Travel to campus - More details about mode last week

Start of Block: Section 7 - Travel to campus - in the summer

Q70 Now consider this past summer, from June 25 - September 14, 2018.

Q71 How much time did you spend at UC Davis over the summer? We're interested in the number of weeks you spent last summer traveling to and from campus destinations on a regular basis. Please estimate how many weeks you were on campus at least once a week during this period.

If you went to a UC Davis office or lab that is technically off-campus, but within the city of Davis, please count that as well. (Note: There were a total of 14 weeks in the academic summer.)

- ○ All summer / 14 weeks (June 25 - September 14)
- ○ 13 weeks
- ○ 12 weeks
- ○ 11 weeks
- ○ 10 weeks
- ○ 9 weeks
- ○ 8 weeks
- ○ 7 weeks
- ○ 6 weeks (equivalent to just ONE summer session, I or II)
- ○ 5 weeks
- ○ 4 weeks
- ○ 3 weeks
- ○ 2 weeks
- ○ 1 week
- ○ None

Q72 During this summer, how many days per week were you typically on campus?

- 1 day per week
- 2 days per week
- 3 days per week
- 4 days per week
- 5 days per week
- 6 days per week
- 7 days per week

End of Block: Section 7 - Travel to campus - in the summer

Start of Block: Section 9 - Campus transportation programs

Q73 Are you familiar with any of these campus programs?

	I've used it	I've heard of it, but never used it	I've never heard of it
GoClub program	○	○	○
Aggie Bike Buy Program	○	○	○
Transit Pass Subsidies	○	○	○
Bike tire air stations and repair stations around campus	○	○	○
Bicycle Education and Enforcement Program (BEEP) and bike safety video	○	○	○
Zipcar carsharing program	○	○	○
Zimride carpool matching service	○	○	○
In-vehicle parking meters (Easy Park)	○	○	○
UC Davis motorist assistance program	○	○	○
TAPS bike lock-cutting service	○	○	○
UC Davis bicycle theft reporting system	○	○	○
UC Davis Bike Auction	○	○	○
TAPS Mobility Assistance Program	○	○	○
TAPS bicycle licensing program	○	○	○

End of Block: Section 9 - Campus transportation programs

Start of Block: Add On - Bike Security & Theft

Q74 Have you **ever** had a bicycle (or parts of a bike) stolen on campus?

- Yes
- No

Q75 Have you had a bicycle stolen in the **last year**?

- Yes
- No
- Not applicable; I haven't had a bike on campus in the last year

JS

Q76 Where was your bike when it was stolen? Type an address or campus building and then drop a pin on the map below.

_____

Q77 Did you report this theft to campus?

- Yes
- No

Q78 What time of day was your bike (or parts of a bike) stolen?

- ○ Morning (7 am – 12 pm)
- ○ Afternoon (12 pm – 5 pm)
- ○ Evening (5 pm – 10 pm)
- ○ Night (10 pm – 7 am)
- ○ Don't know

Q79 How was your bike (or bike part) locked when it was stolen?

- ○ With a cable lock
- ○ With a chain lock
- ○ With a U-lock
- ○ With another type of lock: _____
- ○ It wasn't locked

Q80 What was your bike **locked to** when it was stolen?

- ○ A bike rack
- ○ A pole, railing, tree, or other fixed object
- ○ To itself only

End of Block: Add On - Bike Security & Theft

Start of Block: Add On - Commute Satisfaction/Attitudes & TNCs

Q81 Thanks for staying with us!

Q82 We'd like to ask about your opinions with respect to transportation. There are no right or wrong answers; we want only your true opinions.

To what extent do you agree or disagree with the following statements?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Travel time is generally wasted time.	○	○	○	○	○
I like riding a bike.	○	○	○	○	○
Environmental concerns affect the choices I make about my daily travel.	○	○	○	○	○
I like driving.	○	○	○	○	○
I need a car to do many of the things I like to do.	○	○	○	○	○
My schedule makes it hard or impossible for me to use public transit.	○	○	○	○	○
I feel safe biking on campus.	○	○	○	○	○
My commute is expensive.	○	○	○	○	○
I like using public transit.	○	○	○	○	○
I often need to use my own vehicle to travel to different sites during the day.	○	○	○	○	○
I already bicycle as often as I can.	○	○	○	○	○

I try to limit my driving as much as possible.	○	○	○	○	○
Getting around is easier than ever with my smartphone.	○	○	○	○	○
I need to dress professionally for my job.	○	○	○	○	○
Traveling to campus stresses me out.	○	○	○	○	○

Page Break

Q83 How would you **rate your ability** to ride a bike? In particular, we are interested in **whether you know how to ride a bike**, regardless of whether it is practical or desirable for you to do so as a means of transportation to campus.

- ○ I cannot ride a bike at all because I do not know how
- ○ I can ride a bike, but I am not very confident doing so
- ○ I am somewhat confident riding a bike
- ○ I am very confident riding a bike

Q84 In general, how comfortable would you be riding a bicycle on a **four-lane street (two lanes in either direction) without a bicycle lane**, in daylight and good weather?

- ○ Uncomfortable and I wouldn't ride on it
- ○ Uncomfortable but I would ride on it
- ○ Comfortable

Q85 What type of lock do you think is most secure for locking your bike?

- ○ Cable lock
- ○ Chain lock
- ○ U-lock
- ○ Not sure
- ○ Other: _____

Page Break

Q86 We are interested in your familiarity with and use of these transportation services. Please check the single most appropriate answer for each service below:

	I have never heard of it.	I have heard of it but I've never used it.	I have used it in Davis.	I have used it outside of Davis.	I have used it in Davis AND outside of Davis.
Bike share (e.g. JUMP)	○	○	○	○	○
Carsharing (e.g. Zipcar, City CarShare)	○	○	○	○	○
On-demand ridehailing (e.g. Uber, Lyft)	○	○	○	○	○
Shared ridehailing (e.g. UberPOOL, Lyft Line)	○	○	○	○	○

Q87 Please indicate **how often** you use the following transportation services.

	I used it in the past, but I don't use it anymore.	I use it less than once a **month**.	I use it 1-3 times a **month**.	I use it 1-2 times a **week**.	I use it 3-4 times a **week**.	I use it 5 or more times a **week**.
Bike share (e.g. JUMP)	○	○	○	○	○	○
Carsharing (e.g. Zipcar, City CarShare)	○	○	○	○	○	○
On-demand ridehailing (e.g. Uber, Lyft)	○	○	○	○	○	○
Shared ridehailing (e.g. UberPOOL, Lyft Line)	○	○	○	○	○	○

Page Break

Q88 Thinking about the **last trip** you made with **Lyft, Uber, or another ridehailing company**, which of the following categories best describes the **main purpose of your trip**?

- ○ Commuting to/from campus
- ○ Other school- or work-related trip
- ○ Visiting friends and/or family
- ○ Shopping or running errands
- ○ Traveling to/from the airport
- ○ Traveling to/from an Amtrak station or other transportation hub
- ○ Going to/from a restaurant
- ○ Going to/from a bar
- ○ Going to a special event (e.g. sporting event, concert, etc.)
- ○ Other (please specify): _____

Page Break

Q89 Have you ever been a **driver** for Lyft or Uber?

- ○ Yes
- ○ No, but I've thought about it
- ○ No, and I haven't considered it

Q90 How often do you **drive** for Lyft or Uber?

- ○ I drove in the past, but I don't drive for them anymore.
- ○ Less than once a month
- ○ 1 - 3 times a month
- ○ 1 - 2 times a week
- ○ 3 - 4 times a week
- ○ 5 or more times a week

Q91 Where did you drive for Lyft of Uber?

- ○ Only in Davis
- ○ Only outside of Davis. Please specify city or cities:
  _____
- ○ In Davis and outside of Davis. Please specify city or cities:
  _____

End of Block: Add On - Commute Satisfaction/Attitudes & TNCs

Start of Block: Add On - AVs

Q92 How familiar are you with the concept of self-driving vehicles? These are also known as autonomous or driverless vehicles.

- ○ I have never heard of them
- ○ I have heard of them but am not familiar with them
- ○ I have heard of them and am somewhat familiar with them
- ○ I have heard of them and am very familiar with them

Page Break

Q93 Based on your current familiarity with self-driving vehicles...

Q94 How safe would you feel sharing campus streets with a self-driving vehicle?

- Very unsafe
- Somewhat unsafe
- Neutral
- Somewhat safe
- Very safe

Q95 How do you feel about the concept of self-driving vehicles?

- Very negative
- Somewhat negative
- Neither negative nor positive
- Somewhat positive
- Very positive

Q96 How likely are you to take a ride in a self-driving vehicle if one were operated as a shuttle service on campus?

- Very unlikely
- Somewhat unlikely
- Undecided
- Somewhat likely
- Very likely

End of Block: Add On - AVs

Start of Block: Add On - E-Skateboards & E-Scooters

Q97 We're interested in your electric skateboard or scooter!

Q98 If you didn't have an electric skateboard or electric scooter, how would you get to and around campus?

- Walk
- Bike
- Non-electric skateboard
- Non-electric scooter
- Drive alone
- Carpool
- Motorcycle or Vespa-like scooter
- Bus
- Other: _____

Q99 Select all the reasons you bought your electric skateboard or scooter.

- [ ] To travel faster
- [ ] For convenience
- [ ] Because it's fun
- [ ] To sweat less
- [ ] Because it's cool
- [ ] I can keep it with me
- [ ] Other: _____

End of Block: Add On - E-Skateboards & E-Scooters

Start of Block: Add On - JUMP Bikes

Q100 We're interested in your experience with bike share systems and particularly JUMP. JUMP bikes are the red bikes now available in Davis and Sacramento (and elsewhere), shown in the photo below.

Q101

Q102 Have you used JUMP bike share?

- Yes, in Davis
- Yes, outside of Davis
- Yes, both in Davis and outside of Davis
- No

Page Break

Q103
How available are JUMP bikes when you want one?

- Almost always
- Usually
- Sometimes
- Rarely
- Almost never

Q104 When a JUMP bike is available, how often is the bike adequately charged for your intended use?

- Almost always
- Usually
- Sometimes
- Rarely
- Almost never

Page Break

Q105 If a JUMP bike was regularly available and adequately charged when you needed one, how often would you use JUMP for any part of your trip **to campus**?

- Almost always
- Usually
- Sometimes
- Rarely
- Almost never

Q106 If a JUMP bike was regularly available and adequately charged when you needed one, how often would you use JUMP to **get around campus**?

- Almost always
- Usually
- Sometimes
- Rarely
- Almost never

End of Block: Add On - JUMP Bikes

Start of Block: Add On - E-bike Questions - Owners

Q107 What type of e-bike do you have?

- ○ Pedal assist (class 1): electric drive system is only activated through pedaling
- ○ Throttle on demand (class 2): electric drive system can be activated through a grip-twist, trigger or button but is limited to low speeds
- ○ Speed pedelec (class 3): electric drive system can be activated through pedaling to reach higher top speeds
- ○ Unsure

Q108 Please write in the make and model of your e-bike:

- ○ Make: _____
- ○ Model: _____

Q109 If you didn’t have an e-bike, how would you get to campus on the days you normally ride your e-bike?

- ○ Walk
- ○ Skate or skateboard
- ○ Bike
- ○ Motorcycle or Scooter
- ○ Drive alone in a car (or other vehicle)
- ○ Carpool or vanpool with others going to campus (either as driver or passenger)
- ○ Get a ride (the driver continues to elsewhere)
- ○ Bus
- ○ Train or light rail
- ○ Taxi Services
- ○ Uber or Lyft services
- ○ Other: _____

End of Block: Add On - E-bike Questions - Owners

Start of Block: Add On - E-bike Questions - Familiarity

Q110 Do you know what an electric assist bicycle is? They are also known as "e-bikes".

- ○ Yes
- ○ No

Q111 How familiar are you with e-bikes?

- ○ I've heard of them but don't know much about them
- ○ I've read about them or talked to someone about them
- ○ I know a lot about them

Q112 Have you ever ridden an e-bike?

- ○ Yes
- ○ No

Q113 Have you ever thought about riding an e-bike to campus?

- ○ Yes
- ○ No

Q114 How likely are you to buy a personal e-bike?

- ○ Very likely
- ○ Somewhat likely
- ○ Unlikely
- ○ Not going to buy one

End of Block: Add On - E-bike Questions - Familiarity

Start of Block: Add On - ADUs & Residential Preference

Q115 A few more questions about where you live...

Q116 What type of place is your current residence? Please pick the option that best describes your unit.

- ○ Building with 4 or fewer units or apartments
- ○ Building with 5 or more units or apartments
- ○ Duplex (two units, side-by-side or two stories, with separate front doors)
- ○ Accessory dwelling unit (smaller unit behind, beside, or attached to a main house, also called a "granny" or "in-law" unit)
- ○ House (stand-alone unit usually intended for a single family)
- ○ Mobile home or trailer
- ○ Other: _____

Page Break

Q117 How long have you lived at your current residence?

- ○ Less than a year
- ○ Between 1 and 2 years
- ○ Between 2 and 4 years
- ○ Between 4 and 10 years
- ○ Between 10 and 20 years
- ○ More than 20 years

Q118 Do you rent or own?

- ○ Rent
- ○ Own (with or without a mortgage)
- ○ Other

Q119 Is there an accessory dwelling unit (smaller unit behind, beside, or attached to a main house, also called a "granny" or "in-law" unit) on your property?

- ○ Yes
- ○ No
- ○ Not sure

Q120 Have you considered building an accessory dwelling unit?

- ○ No, I have never considered building one
- ○ Yes, I have considered building one in the past
- ○ Yes, I am currently considering building one

Q121 Do you rent out your accessory dwelling unit?

- ○ Yes, I rent it out to tenants
- ○ Yes, I rent it out to short-term guests (e.g. via Airbnb, vacation rental)
- ○ No

Q122 How comfortable would you be with your neighbor renting an accessory dwelling unit?

- ○ I wouldn't like it and I would actively oppose it
- ○ I wouldn't like it but I wouldn't actively oppose it
- ○ I'd be fine with it but I wouldn't actively support it
- ○ I'd be fine with it and I would support it
- ○ I'm not sure

Q123 May we contact you for a future research study regarding accessory dwelling units and neighborhood preferences?

- ○ Yes, my email is: _____
- ○ No

Q124 Did you consider an accessory dwelling unit (smaller unit behind, beside, or attached to a main house, also called a "granny" or "in-law" unit) when you made your last residential move?

- ○ Yes
- ○ No

Q125 Would you consider an accessory dwelling unit as your **next** residence?

- ○ Definitely not
- ○ Probably not
- ○ Undecided
- ○ Probably
- ○ Definitely - my top choice

Page Break

Q126 Besides cost, how important were the following factors when you were choosing where to live?

	Not at all important	Slightly important	Moderately important	Very important
My commute time	○	○	○	○
Commute time for another person in my household	○	○	○	○
Close to public transportation	○	○	○	○
Spacious homes	○	○	○	○
Close to shops, restaurants, services, etc.	○	○	○	○
Variety or quality of shops, restaurants, services, etc.	○	○	○	○
Good schools	○	○	○	○
Close to parks or nature	○	○	○	○
Walkable or bikeable neighborhood	○	○	○	○
Easy to drive places	○	○	○	○
Quiet neighborhood	○	○	○	○
Safe neighborhood	○	○	○	○
Parking availability	○	○	○	○

Page Break

Q127 Would you prefer to live in Davis?

- ○ Yes
- ○ Maybe
- ○ No

Q128 Which factors influenced your decision to live outside of Davis? Select all that apply.

- ☐ Cost
- ☐ Commute time for another person in my household
- ☐ Public transportation access
- ☐ Availability of housing
- ☐ Housing options or choice
- ☐ Proximity to family or friends
- ☐ Proximity to shops, restaurants, services, etc.
- ☐ Variety or quality of shops, restaurants, services, etc.
- ☐ Safe neighborhoods
- ☐ School choice
- ☐ Proximity to parks or nature
- ☐ Walkable or bikeable neighborhoods
- ☐ Ease of driving places
- ☐ Quiet neighborhoods
- ☐ Other: _____

End of Block: Add On - ADUs & Residential Preference

Start of Block: Section 13 - More background information about you - demographic characteristics

Q129 This section asks a few more questions about you. We use this information to help understand travel choices and how the people taking the survey might represent the UC Davis community as a whole. Your answers are confidential and will not be used for any other purposes.

Q130 In what year were you born?

_____

Q131 What is your highest level of education completed?

- ○ No formal education
- ○ Grade school or junior high school
- ○ High school diploma or equivalent
- ○ Associates degree or technical school certificates
- ○ Four-year bachelor's degree
- ○ Graduate degree(s)

Q132 What is the highest level of education completed by whichever parent/guardian has the most education?

- ○ No formal education
- ○ Grade school or junior high school
- ○ High school diploma or equivalent
- ○ Associates degree or technical school certificates
- ○ Four-year bachelor's degree
- ○ Graduate degree(s)

Page Break

Q133 Do you live alone or with other people? Please choose **all** that apply.

- [ ] I live alone
- [ ] I live with roommate(s), housemate(s), or in a dorm
- [ ] I live with family, a partner, or others with whom I share some income – we'll call them your "household"

Q134 Do you share the rent for your bedroom with one or more other people?

- ○ Yes
- ○ No

Q135 Please indicate how many **other** people live in your **household** in each age category. Don't include yourself.

- ○ Age under 6 _____
- ○ Age 6-15 _____
- ○ Age 16-17 _____
- ○ Age 18 or older _____

Q136 We want to understand how housing costs are impacting the Davis community. About how much do you **individually** spend on housing per month (e.g. $800)? If you share rent or a mortgage with others in your household, please state **your share.**

- ○ $ _____

Q137 About what percentage of your monthly expenses (e.g. utilities, groceries) do you spend on housing?

- ○ Under 20%
- ○ 20-50%
- ○ Over 50%

Q138 You indicated that you have access to a car. Do you receive financial support from your parent(s) or guardian(s) for driving related expenses such as gas, insurance, and vehicle maintenance?

- ○ No - None at all
- ○ Yes - For some things
- ○ Yes - For most things
- ○ Yes - For everything

End of Block: Section 13 - More background information about you - demographic characteristics

Start of Block: Section 14 - Optional

Q139 Please let us know if we may contact you in the future for the following purposes. We will only contact you for the purposes you've approved below.

Q140 Would you be willing to participate in a UC Davis e-bike study in the future?

- ○ Yes
- ○ No

Q141 Would you be willing to participate in a UC Davis self-driving vehicle study in the future?

- ○ Yes
- ○ No

Q142 As mentioned at the start of the survey, we are offering a chance to win 40 $50 Visa gift cards and grand prizes of two Amazon Fire tablets for survey respondents who wish to enter our drawing. We would need your name and email address in order to participate in the drawing. Would you like to enter your name in our drawing?

- ○ Yes
- ○ No

Q143 May we contact you should we have any questions regarding your survey responses?

- ○ Yes
- ○ No

Q144 Please provide the following contact information. This information will ONLY be used for the purposes you specified.

- ○ Name _____
- ○ Your UC Davis email address _____

Q145 Optional: Is there anything else you would like to tell us about transportation at UC Davis? We welcome any additional comments in the space below.

_____

_____

_____

_____

_____

End of Block: Section 14 - Optional

Start of Block: Section 15 - TAPS Programs

Q146 Thanks for completing this survey! We know your time is valuable. The results of this survey will be used both to help the campus improve its transportation system and services and for research purposes. To learn more about TAPS programs and services, please click here.

Q147 Below you will find information on TAPS programs you indicated in this survey were unfamiliar to you.

Q148 GoClub program: The goClub offers benefits and incentives to thousands of UC Davis students, staff and faculty who choose to give up their single-vehicle parking permit in favor of a green transportation option. There are resources available for those who commute by bus, train, carpool, vanpool, bike, and walk. Some incentives include discounted train and transit passes, emergency ride home, and complimentary, occasional use parking permits. For more information about the goClub or consultation on the green commute options available to you please contact the goClub at goclub@ucdavis.edu. More information is also available online at http://goclub.ucdavis.edu.

Q149 **Transit Pass Subsidies:** Transit pass subsidies are available through the GoClub! GoClub members can purchase discounted bus passes and discounted Amtrak vouchers at TAPS. Staff and faculty who are members of the GoClub can enroll in pre-tax payroll deduction for transit passes. More information is available at goclub.ucdavis.edu/commuteoptions/gotrain and goclub.ucdavis.edu/commuteoptions/gobus.

Q150 Aggie Bike Buy Program: The ASUCD Bike Barn offers the Aggie Bike Buy program to new and returning students, staff and faculty. A customer may select a bike, customize it with accessories, and add a service plan online at an affordable rate. This program is ideal for new students, staff, and faculty who would like to have a quality bike ready for pick-up when they arrive on campus.

Q151 Bike repair stations around campus: There are currently over a dozen self-service bike repair stations on campus with more on the way. Each repair station allows you to mount your bike to the station and contains a flathead and Phillips screwdriver, a set of box and Allen wrenches, two tire levers, a Torx wrench and a tire pump. If you find that a repair station is damaged, please contact the TAPS Bicycle Program at (530) 752-2453.

Q152 Bicycle Education and Enforcement Program (BEEP): When a bicyclist is issued a citation on campus, they are given the option to take an online bike safety course for a reduced fee to have the citation dismissed. BEEP offers an educational and more affordable option for those who are cited. Anyone can take the online course for free if they have not been issued a citation by visiting http://bikesafety.ucdavis.edu.

Q153 Zipcar carsharing program: Zipcar provides convenient access to vehicles parked on campus, available for hourly or daily rental 24/7. With a Zipcar membership, you may rent a Zipcar online or by phone and have access to a vehicle within minutes. Fuel and insurance are included with the cost of rental. You may join or learn more at http://www.zipcar.com/ucd.

Q154 Zimride carpool matching service: Zimride provides a free, online rideshare service exclusively for UC Davis students, staff and faculty. You can post a one-time trip or find a carpool partner for your regular commute. The system allows you to include schedule flexibility and other preferences. You may set up a Zimride account using your UC Davis email address at http://zimride.com.

Q155 Personal in-vehicle parking meters (Easy Park): The EasyPark PPM is a small device that you activate and display in your vehicle while you are parked on campus to “pay as you go” for parking. While the PPM is on, it deducts funds from a pre-paid bank account programmed on the device so you no longer need to worry about feeding coins in a traditional parking meter. The PPM is valid in Visitor, “C” and metered parking areas on the main UC Davis campus and is available for anyone to use. More information is available by phone at (530) 752-8277 or online at http://taps.ucdavis.edu/parking/permits/easypark.cfm.

Q156 TAPS motorist assistance program: Complimentary on-campus motorist assistance services may be obtained during regular parking enforcement hours for the following: lock-out service, flat tire, out of gas, dead battery. Call (530)752-8277 for assistance.

Q157 Bike lock-cutting service: If your bike is on UC Davis Property, and you have lost your bike keys or your bike lock is malfunctioning, TAPS can help. Call the Bicycle Program at 530-752-2453 and we can come out and cut your lock. We do require that the bike have a valid California Bicycle License when we cut the lock. If it doesn't, we can renew or register the bike anew when we cut the lock. A valid photo I.D. (e.g. student registration card or drivers license) will also be required.

Q158 **Bike theft reporting:** If your bike is stolen, be sure to report it to the police. Call (530) 752-1230 to report thefts on campus, and (530) 747-5400 if your bike is missing within city limits. Bicycle thefts that occur in the city can also be reported online at police.cityofdavis.org/online-crime-reporting.

Q159 UC Davis Bike Auction: TAPS disposes of abandoned, unclaimed bicycles through two live, public auctions per year. Over 400 bikes are sold at each auction. Information about the next bike auction can be found here: http://taps.ucdavis.edu/bicycle/auctions/.

Q160 Mobility Assistance Program: The Mobility Assistance Shuttle (MAS) provides shuttle service to current UC Davis students, faculty, and staff with documented disabilities (temporary or permanent). The MAS provides on-campus rides to specified locations for academic or work-related purposes year-round. More information can be found at http://cru.ucdavis.edu/content.cfm?contentID=400 or by calling Campus Recreation and Unions at (530) 752-1730.

End of Block: Section 15 - TAPS Programs

Appendix B: Changes from the 2017-18 survey instrument

The following sections have been added, omitted, reduced, or altered:

1. JUMP bike questions
2. Bike security and theft
3. Electric skateboards and electric scooters
4. Accessory dwelling units and residential preference
5. Secondary residences

The reference week was scheduled for a similar week as the previous year's survey, and we sent participants two reminders via email one and two weeks after the initial invitation, respectively.

Appendix C: Text of the recruitment emails

Initial recruitment email:
From: UCD Travel Survey <travelsurvey@ucdavis.edu>
To: <...@ucdavis.edu>
Subject: 2018-19 Campus Travel Survey

Dear UC Davis Student / Employee,

You are invited to participate in the 2018-2019 UC Davis Campus Travel Survey. This annual survey provides campus planners with valuable feedback on how people get to campus and their experiences with various transportation programs. It is intended for everyone who regularly travels to UC Davis for school or work.

Your feedback helps improve the campus!

UC Davis Transportation and Parking Services (TAPS) and graduate students from the Institute of Transportation Studies have used the results from this survey to:

- Identify trends in the way that people get to campus from year to year
- Prioritize bike infrastructure improvements on campus
- Estimate UCD's greenhouse gas emissions
- Better understand the factors that encourage biking in our community
- Develop new TAPS programs to serve the campus community

Participating in this research survey takes **10-15 minutes** to complete. Doing so is voluntary, and we assure you that **all responses are confidential** and the results will only be published in the aggregate, without connection to any individual. You must be at least 18 years old to complete this survey.

We're going to ask you questions in the following areas:

- Your role at UC Davis
- Your travel to and from campus
- Your experience with campus transportation programs and infrastructure
- Some background information about you

In appreciation for your time, we're offering anyone who completes the survey entry into a drawing for **40 $50 Visa gift cards and two grand prizes of Amazon Fire tablets!**

To start the survey, click on the link below:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

Thanks for your participation in this year's survey!

Sincerely,
Ralph J. Hexter
Provost and Executive Vice Chancellor

Follow the link to opt out of future emails:
${l://OptOutLink?d=Click here to unsubscribe}

Reminder recruitment email:
From: UCD Travel Survey <travelsurvey@ucdavis.edu>
To: <...@ucdavis.edu>
Subject: 2018-19 Campus Travel Survey

Dear UC Davis Student / Employee,

Last week we invited you to take the 2018-2019 Campus Travel Survey. If you finished the survey last week, thank you! Your responses have been recorded, and you can disregard the rest of this message.

If not, we encourage you to complete the survey today. This annual survey provides valuable data about the travel preferences of the entire UC Davis community, and the more who participate, the better the data. Every response matters.

To start the survey, click on the link below:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

Participating in this research survey takes 10-15 minutes to complete. Doing so is voluntary, and we assure you that all responses are confidential and the results will only be published in the aggregate, without connection to any individual. You must be at least 18 years old to complete this survey.

In appreciation for your time, we're offering anyone who completes the survey entry into a drawing for **40 $50 Visa gift cards and two grand prizes of Amazon Fire tablets!**

UC Davis Transportation and Parking Services (TAPS) and graduate students from the Institute of Transportation Studies have used the results from this survey to:

- Identify trends in the way that people get to campus from year to year
- Prioritize bike infrastructure improvements on campus
- Estimate UCD's greenhouse gas emissions
- Better understand the factors that encourage biking in our community
- Develop new TAPS programs to serve the campus community

Your feedback helps improve the campus! Thanks for being a participant in this year's survey.

Sincerely,
Ralph J. Hexter
Provost and Executive Vice Chancellor

Follow the link to opt out of future emails:
${l://OptOutLink?d=Click here to unsubscribe}

Appendix D: Calculation of Average Vehicle Ridership (AVR)

AVR (average vehicle ridership) is a ratio of the number of person-arrivals to private-vehicle-arrivals. If everyone drove alone to campus, the campus AVR would be equal to one. AVR values greater than 1.0 indicate more carpooling and/or use of active modes of transportation.

To compare AVR statistics on the Davis campus with other UC campuses, we calculate AVR using a standard formula developed by the South Coast Air Quality Management District (AQMD) in "Rule 2202 – On Road Motor Vehicle Mitigation Options."[3] We attempt to adhere to the AQMD formula, although our overall survey methodology deviates to some extent from that prescribed by the AQMD.[4] The AQMD formula excludes weekend travel (considering Monday through Friday only) and excludes on-campus residents (considering travel among off-campus residents only). It includes adjustments for vehicle occupancy and the use of zero-emission vehicles (ZEV).

In particular, we use the following formula:

$$AVR = \frac{Total\ weekly\ arrivals}{weekly\ vehicle\ arrivals} = \frac{arrivals\ by\ all\ modes + employee\ telecommuting\ days + CWW\ days}{drive\ alone\ arrivals + fractionalcarpool\ arrivals}$$

with:

Arrivals by all modes = a count of all respondents arriving by bus, driving, carpooling, getting a ride, walking, biking, skating, and riding transit on Monday, plus the same for Tuesday, Wednesday, etc. through Friday (using *Q51* in the 2018-19 survey).

Employee telecommuting days = a count of respondents telecommuting on Monday, plus those doing so on Tuesday, etc. through Friday. These are based on responses to questions *Q37* and *Q40* for any respondents who traveled some days and telecommuted other days. But for respondents who indicated no travel during any of the five days of the reference week (in *Q37*) and then indicated the reason for no travel was telecommuting (in *Q40*), we assume the respondent telecommuted all five days of the reference week.

Employee CWW days = a count of respondents reporting that they did not travel on Monday because they had a CWW (compressed work week) day off, plus those who did so for Tuesday, Wednesday, etc. through Friday (using responses to questions *Q37* and *Q40*).

Drive-alone arrivals = a count of respondents arriving by driving alone on Monday, plus those doing so on Tuesday, Wednesday, etc. through Friday (using responses to *Q51*). As an adjustment for the use of ZEV vehicles, we exclude from the count any arrivals by a respondent who has indicated using an all-electric or fuel cell vehicle for their travel during the reference week (in question *Q55*).

Fractional carpool arrivals = A count of the fractions of vehicle-arrivals accounted for those arriving in carpools (or getting rides) for each day Monday through Friday. In particular, for each day a respondent carpools (or gets a ride, using *Q51*) we add to the arrival count a fraction equal to one divided by the

[3] As of July 2017, this rule is available online (http://www.aqmd.gov/docs/default-source/rule-book/reg-xxii/rule-2202.pdf?sfvrsn=4).

[4] For instance, the AQMD specifies that response to the survey must be 90 percent response rate, whereas we rely on surveying only a sample and weighting the responses.

total number of people in the carpool (using *Q54*) or the number of passengers dropped off by the driver (using *Q62*). We exclude from the count any arrivals by a respondent who has indicated using an all-electric or hydrogen vehicle (in question *Q55*).

In all cases, the estimated number of arrivals for the entire campus community is a projection. In particular, we weight (and expand) the sample responses by role and gender based on the valid responses to question *Q45*.

We calculate AVR both excluding and including on-campus residents, and by each role group. The AQMD and most other UC campuses exclude on-campus residents and most only calculate AVR for employees rather than for students. The inclusion of student employees can greatly change AVR statistics, though to a different extent at different campuses. We include a question about whether student respondents are also paid employees of UC Davis (question *Q8*) to allow us to estimate AVR including student employees.

Appendix E: Geocoding and network distances

We used the ESRI Streetmap USA dataset to do all of the geocoding and network route assignments. It is based on the TIGER/Line 2000 streets dataset produced by the U.S. Census Bureau, and has been enhanced by ESRI and Tele Atlas. If the exact street was not available, then we geocoded the point to the nearest pre-existing road. In all cases, the differences were minor and expected to be negligible.

Geocoding residential locations

We used address information to geocode points to the ESRI Streetmap USA dataset. First, we used the statistical computing language, R, to filter out empty records and to divide the data into separate tables for each subcategory (On Campus, West Village, Off Campus in Davis, and Outside Davis), and concatenate the street names into a single field. This allowed us to input the data into an appropriate address locator that would be able to automatically geocode as many addresses as possible.

Inputting the data directly into an address locator resulted in successful matching of nearly all addresses. Because there was the potential for a small percentage of addresses to be matched incorrectly by the address locator, we also manually verified that the match address was the same as the input address. We geocoded unmatched addresses by manually placing points in the correct locations, or by modifying the input addresses so that they matched correctly using an automatic address locator.

Network distance

The network route assignments were created using the ArcGIS Network Analyst extension and the ESRI Streetmap USA dataset (the same dataset used to geocode the residential locations). For those living off campus in Davis (excluding West Village) and outside Davis, distances were calculated from the geocoded residential location points to a point located on the UC Davis campus at the corner of Hutchison Drive and California Avenue, near the Silo. The network route assignments were calculated by optimizing for the fastest travel times (based on assumptions about the expected speed of travel on each facility type), which was deemed to produce more realistic routes than optimizing for distance, because it produces routes that favor major roads and highways where possible.

We assign an average distance from campus destinations for all on-campus respondents equal to the mean calculated network distance for on-campus respondents. This distance is equal to 0.77 miles and reflects our best estimate of the average distance from residential locations within the “on campus” area to campus destinations. For the respondents living in the West Village apartments, we assumed that distance from campus is equal to the calculated network distance from the center of the West Village complex to the Silo (traveling along Hutchison Drive). This distance is equal to 1.3 miles and reflects our best estimate of the average distance from residential locations in West Village to campus destinations.

Comparability with results from previous surveys

We used the same procedures to geocode and calculate network distances as were used in the Campus Travel Surveys from 2008-09 through 2017-18, so results from this survey should be comparable with these surveys. Because the 07-08 survey employed a different method both to collect data on the respondents’ residential locations (allowing respondents to click on a map versus typing cross streets into a text field); to geocode points; and to calculate network distances, the estimated distances and calculations based on them (miles traveled and emissions) are not comparable to later survey years.

Appendix F: Imputation of Valid Responses

To make the most out of the available data, the following process was used to impute missing data to question *Q51*, the primary mode used to get to campus for each day of the reference week:

1. Missing answers were only coded for days on which the respondent indicated traveling to campus (*Q38*) but did not indicate a primary mode.
2. In cases where all answers were missing for *Q38* and *Q51*, the answer to *Q38* about "usual mode" was imputed for each day traveled in *Q33*.
3. In cases where only one answer was given for *Q38* (all modes used to get to campus), missing answers to *Q33* were recoded as this answer.
4. In one case where usual mode was listed and only some answers to *Q33* were missing, the missing modes were imputed so that the "usual" mode made up the majority and the "secondary" mode made up the minority of days traveled.

Appendix G: Sampling Plan

Table G-1. Sampling Plan for 2014-15 through 2018-19, percent invited

Role Group	2018-19		Percent Invited				
	Assumed Population	Number Invited	2018-19	2017-18	2016-17	2015-16	2014-15
Student	37,593	15,306	41%	45%	60%	63%	89%
Undergraduate	30,810	11,269	37%	40%	57%	59%	90%
Freshman	6,567	2,729	42%	43%	81%	58%	100%
Sophomore	5,443	2,805	52%	50%	64%	77%	100%
Junior	8,388	2,300	27%	33%	50%	48%	64%
Senior	10,412	3,435	33%	34%	50%	59%	98%
Graduate	6,783	4,037	60%	69%	77%	80%	86%
Master's	2,662	2,662	100%	93%	100%	100%	85%
PhD	4,121	1,375	33%	45%	58%	63%	86%
Employee	16,293	2,582	16%	28%	30%	61%	28%
Faculty	2,152	991	46%	118%	100%	100%	100%
Staff	14,141	1,591	11%	12%	19%	48%	15%
Overall percent	100%	–	33%	41%	53%	62%	73%
Overall number	53,886	17,888	–	19,796	24,029	27,429	30,815

Table G-2. Sampling Plan for 2014-15 through 2018-19, response rates

Role Group	2018-19			Actual Response				
	Assumed Population	Number Invited	Target Response	2018-19	2017-18	2016-17	2015-16	2014-15
Student	37,593	15,306	14%	22%	19%	15%	10%	11%
Undergraduate	30,810	11,269	13%	20%	18%	14%	9%	10%
Freshman	6,567	2,729	13%	28%	18%	14%	11%	11%
Sophomore	5,443	2,805	13%	15%	18%	15%	10%	12%
Junior	8,388	2,300	16%	22%	21%	16%	10%	12%
Senior	10,412	3,435	11%	17%	15%	12%	6%	8%
Graduate	6,783	4,037	17%	27%	21%	18%	14%	16%
Master's	2,662	2,662	13%	21%	16%	13%	10%	10%
PhD	4,121	1,375	26%	38%	31%	25%	16%	18%
Employee	16,293	2,582	27%	25%	33%	33%	12%	14%
Faculty	2,152	991	33%	31%	38%	31%	13%	13%
Staff	14,141	1,591	24%	22%	28%	35%	11%	16%
Overall percent	100%	–	16%	22%	20%	17%	10%	11%
Overall number	53,886	17,888	2,849	4,014	3,748	4,132	2,834	3,389

Appendix H: Weighting by role and gender

The appropriate weight factor is a ratio of the population share to the sample share for each role group. That is, with N total population, n in the sample, and N_i in role and gender group i in the population (for instance, female freshmen), and n_i of that group i in the sample, we apply the weight factor $W_i = (N_i/N) / (n_i/n)$ to all cases in group i. Applying the weight factors alters the apparent distribution of respondents by role and gender, but the overall sample size is unchanged. In instances where we would like to expand the sample to a projection of the full population, we weight each case by an *expansion* factor E_i, equal to (N_i / n_i). Applying the expansion factors alters both the distribution of respondents by role, and inflates the sample to the size of the population.

Although the number of valid responses varies from question to question (that is, n and n_i), we use the same set of weight factors for most variables, based on the distribution of roles among the n = 4,014 valid responses to question *Q51*, the main question relating to mode choice on each day during the travel week. For variables relying on geocoding of respondents' residential location, we generated a separate set of weight factors, based on the 3,909 cases successfully geocoded (by cross streets and zip code given in questions Q29 and Q30; see "Appendix E: Geocoding and network distances"). Both sets of weights are shown in Table H1.

Table H-1. Weight factors, applied by role, gender, mode, and geocoding

Role	Gender	Population (N)	Factors by role, gender, & mode				Factors by role, gender, mode, & geocoding			
			Valid Responses (n)	Weight Factor (Ni/N)/(ni/n)	Expansion Factor (Ni/ni)	Weighted Sample Size	Valid Responses (n)	Weight Factor (Ni/N)/(ni/n)	Expansion Factor (Ni/ni)	Weighted Sample Size
Freshman	**Women**	4,255	562	0.564	7.571	317	557	0.554	7.639	309
	Men	2,312	203	0.848	11.389	172	202	0.830	11.446	168
Sophomore	**Women**	3,386	310	0.814	10.923	252	304	0.808	11.138	246
	Men	2,057	116	1.321	17.733	153	111	1.344	18.532	149
Junior	**Women**	4,974	361	1.026	13.778	371	354	1.019	14.051	361
	Men	3,414	150	1.695	22.760	254	147	1.685	23.224	248
Senior	**Women**	6,049	413	1.091	14.646	451	400	1.097	15.123	439
	Men	4,363	166	1.958	26.283	325	160	1.978	27.269	317
Master's	**Women**	1,499	341	0.327	4.396	112	329	0.331	4.556	109
	Men	1,163	209	0.415	5.565	87	202	0.418	5.757	84
PhD	**Women**	2,188	337	0.484	6.493	163	327	0.485	6.691	159
	Men	1,933	192	0.750	10.068	144	189	0.742	10.228	140
Faculty	**Women**	876	156	0.418	5.615	65	150	0.424	5.840	64
	Men	1,276	147	0.647	8.680	95	142	0.652	8.986	93
Staff	**Women**	7,664	245	2.330	31.282	571	233	2.386	32.893	556
	Men	6,477	106	4.552	61.104	482	102	4.606	63.500	470
Overall		53,886	4,014	0.000	13.425	4,014	3,909	0.000	13.785	3,909