Results of the 2017-2018 Campus Travel Survey

June 2018

A Research Report from the National Center for Sustainable Transportation

Albee Wei, 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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Research Report – UCD-ITS-RR-18-15

Results of the 2017-18 Campus Travel Survey

June 2018

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Results of the 2017-18 Campus Travel Survey

Institute of Transportation Studies

and

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June 2018

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About the Campus Travel Survey

The UC Davis Campus Travel Survey is a joint effort by the Transportation Services and the Sustainable Transportation Center, 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 on 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 eleventh administration of the campus travel survey.

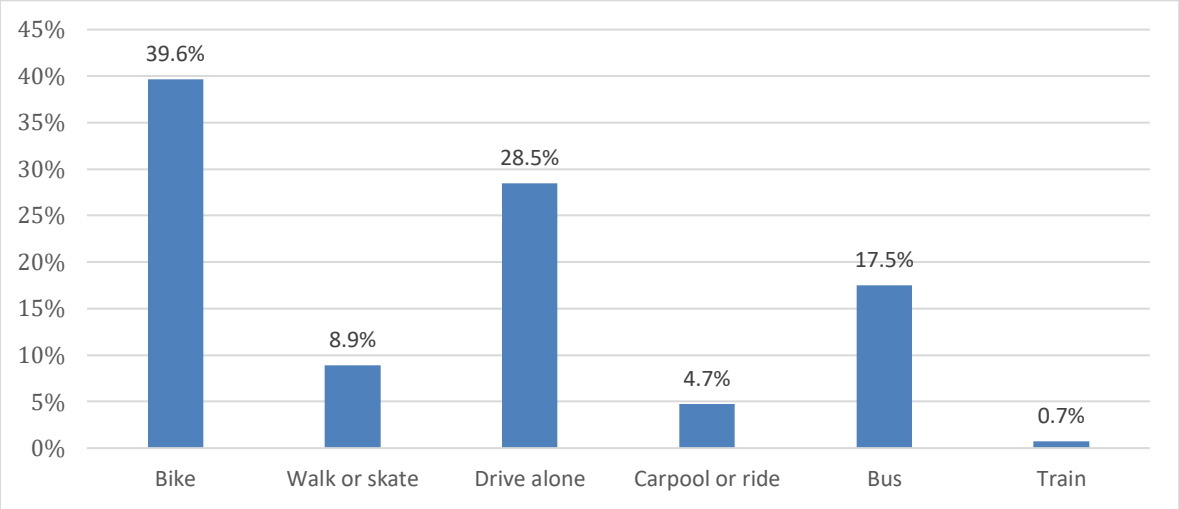
The 2017-18 survey was administered online in October and November 2017, distributed by email to a stratified random sample of 19,796 students, faculty, and staff (out of an estimated total population of 47,450). Over 20 percent (4,059 individuals) of those contacted responded to this year's survey, with 18.9 percent actually completing it. For the statistics presented throughout this report, we weight the responses by role (freshman, sophomore, junior, senior, Master's student, PhD student, 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 84.6 percent of people physically travel to campus (approximately 41,035 people, including those living on campus). Among these, 40 percent bike to get there, 9 percent walk or skate, 29 percent drive alone, 5 percent carpool or get a ride, 18 percent ride the bus, and 1 percent ride the train (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, 2017-18



Because some people use different travel modes on different days, the total number of regular bicyclists or transit-riders, for instance, is substantially larger than the number using each mode on any given day. In particular, about 49 percent reported biking as their primary means at least once during the week. Similarly, about 10 percent carpooled or got a ride to campus and 25 percent rode the bus at least once during the week for most of the distance to campus.

Change in mode share, 2016-17 to 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 identical to those used in the 2016-17 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. Compared to the previous year, the share of biking to campus increased by 2.5 percentage points. The share walking to campus increased by 0.4 percentage points. The share of driving alone, carpooling, or taking the bus decreased. The share of the university population physically traveling to campus on an average weekday increased.

Table 1. One year change in overall mode share, 2016-17 to 2017-18

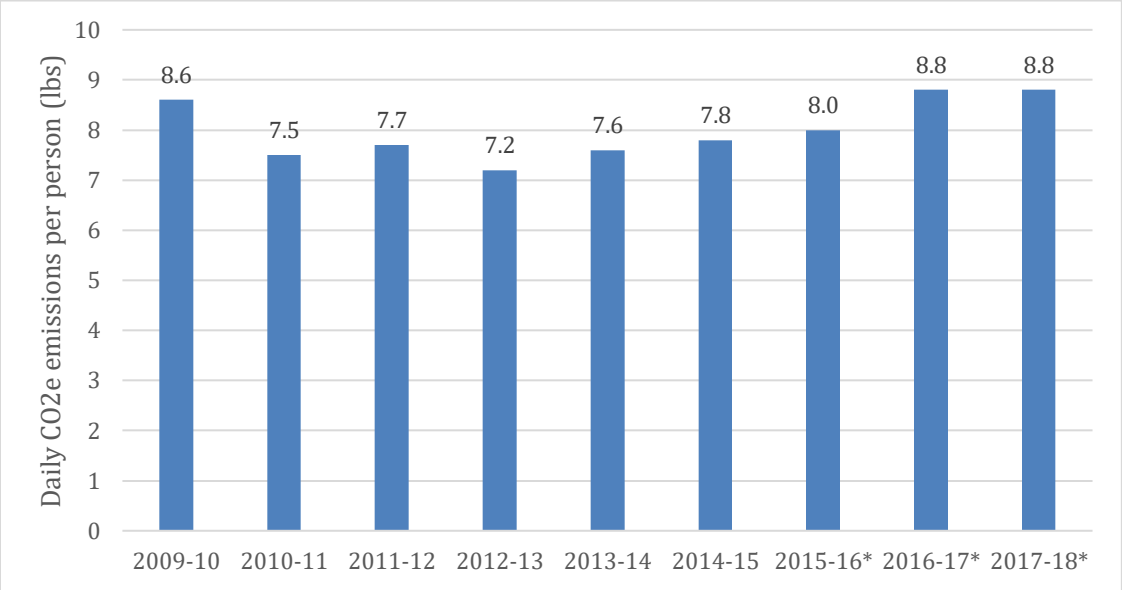
Percentage-point change in share of people doing each on an average weekday							
Years of comparison	**Physically travelling**	***Among those physically traveling to campus***					
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train
2016-17 to 2017-18	3.1%	2.5%	0.4%	-1.7%	-0.6%	-0.5%	-0.1%

Data are weighted for both years by role and gender.

Carbon dioxide-equivalent emissions

Each year, we use data on mode share, vehicle occupancy, and travel distance to estimate the amount of carbon dioxide-equivalent (CO_2e) emitted from commuting to campus. We estimate that travel by UC Davis students and employees to campus generates a total of 426,837 pounds of CO_2e on an average weekday, or 8.8 pounds of CO_2e per capita, compared to 8.8 pounds in 2016-17, and 8.0 pounds in 2015-16[1] (see Figure 2).

Figure 2. Daily CO_2e emissions per capita, 2009-10 through 2017-18

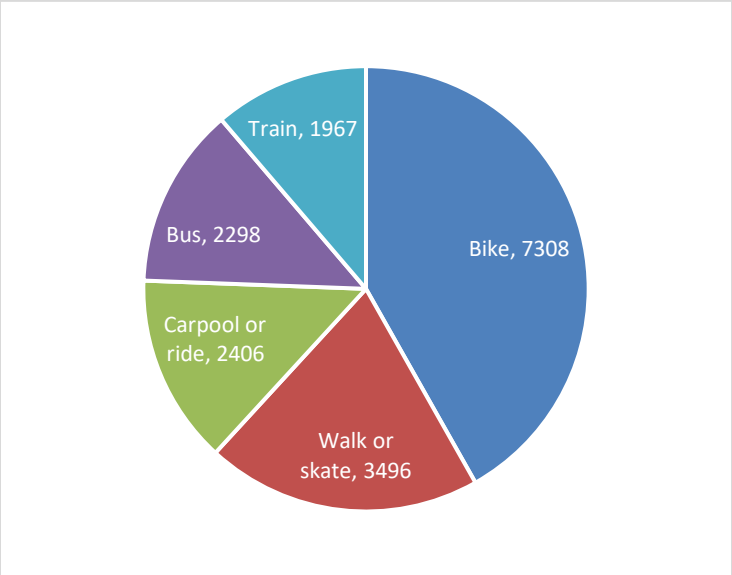


*Based on new method for estimating campus population.

[1] A new method for estimating the student population, used to calculate the weights for the survey sample, was adopted in 2017 and applied in the analysis of the 2015-16, 2016-17, and 2017-18 surveys. Comparisons to previous years may not be valid. See Handy (2017) for more information.

To assess the extent that alternative transportation reduces CO_2e emissions, we consider the hypothetical case that everyone were to drive alone to campus but all else were unchanged (e.g. distances and frequency of travel). In this scenario, the campus would produce an additional 17,479 annual metric tons of CO_2e. Figure 3 shows the contribution of each alternative, when compared to driving alone, to the total CO_2e emissions avoided.

Figure 3. Annual CO2e emissions avoided



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. If everyone drove by themselves to campus, the campus AVR would be equal to one. Values greater than 1.0 indicate more carpooling or the use of active modes of transportation. The official 2017-18 AVR for non-student employees living off-campus is 1.6 person-arrivals per vehicle-arrival (

Table 2). The AVR for the entire campus community is 2.76 excluding on-campus residents and 3.39 including on-campus residents. This means that for every car coming to campus, there are an estimated 3.39 people coming to campus or telecommuting. 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.

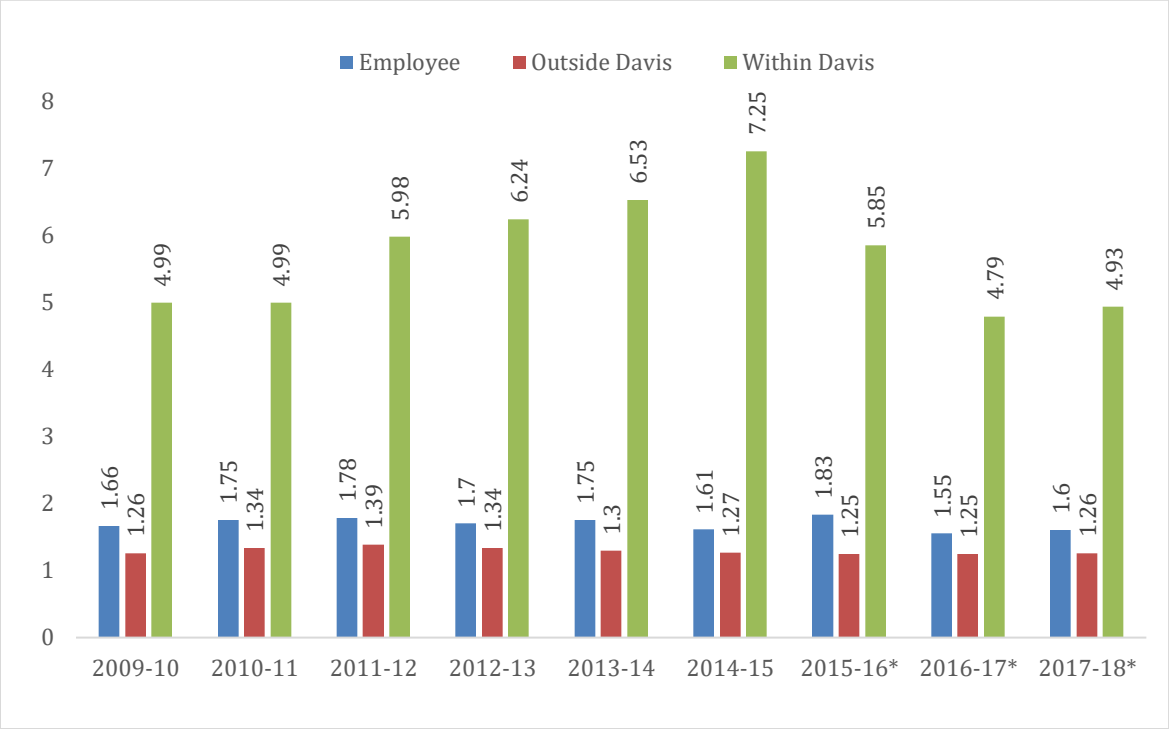
Table 2. Average vehicle ridership (AVR) 2009-10 through 2017-18

Role	*Off campus only*								
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16*	2016-17*	2017-18*
Student	4.28	4.49	5.29	6.05	5.59	5.66	5.16	3.99	4.08
Employee	**1.66**	**1.75**	**1.78**	**1.7**	**1.75**	**1.61**	**1.83**	**1.55**	**1.60**
Outside Davis	1.26	1.34	1.39	1.34	1.3	1.27	1.25	1.25	1.26
Within Davis	4.99	4.99	5.98	6.24	6.53	7.25	5.85	4.79	4.93
Overall	2.83	3	3.26	3.34	3.3	3.23	3.27	2.70	2.76
	All (on and off campus)								
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16*	2016-17*	2017-18*
Student	5.25	5.53	6.41	7.25	6.74	6.93	6.46	5.08	5.34
Employee	1.66	1.75	1.8	1.7	1.75	1.61	1.83	1.55	1.61
Outside Davis	1.26	1.34	1.39	1.34	1.3	1.27	1.25	1.25	1.26
Within Davis	5.99	6.04	7.14	7.36	7.74	8.75	7.12	6.01	4.93
Overall	3.3	3.51	3.78	3.82	3.8	3.77	3.86	3.22	3.39

Bold indicates the official AVR statistic reported by UC campuses. See "Appendix D: Calculation of Average Vehicle Ridership (AVR)" for details on AVR calculations.
*Based on new method for estimating campus population.

Figure 4 shows the differences in AVR between all employees, employees and students living within Davis, and employees and students living outside Davis. As shown, the 2017-18 AVR of those living in Davis continues to decrease over the last few years, while the AVR of those living outside Davis has remained relatively constant over time. These results suggest that there is still much progress to be made in providing housing options in Davis for all university affiliates regularly traveling to campus. 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.

Figure 4. Average vehicle ridership, 2009-10 through 2017-18

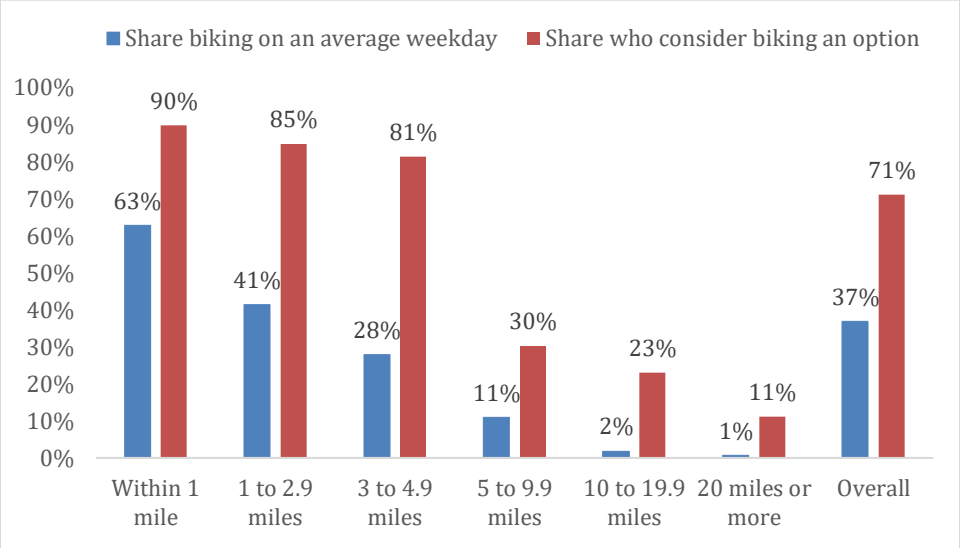


*Based on new method for estimating campus population.

Potential for bicycling

We include a question to assess the potential mode share of biking: "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. Figure 5 shows the differences between the share of respondents who consider biking to campus to be an option and the share that actually bikes to campus on an average weekday.

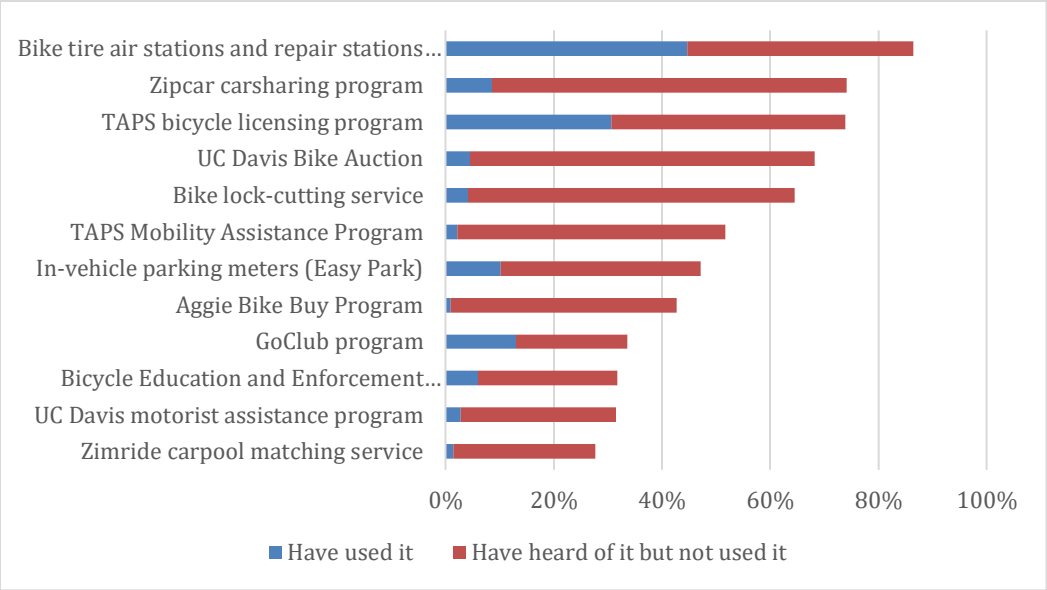
Figure 5. Share who bikes to campus compared to share who considers biking an option, by distance from campus



Awareness of TAPS and other transportation services

Several services that promote bicycling are well-known and highly utilized across the campus population. The bike tire air stations and repair stations on campus are the most highly utilized transportation services, with over 50 percent of respondents having used them (Figure 6).

Figure 6. Familiarity with TAPS programs



INTRODUCTION

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 the Transportation Services 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 on 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 twelfth administration of the campus travel survey. The survey was first administered in the spring of 2006-07 as a pilot effort, with a second survey conducted in the fall of 2007-08 (Congleton, 2009), and ten subsequent surveys conducted in the fall of 2008-09 (Lovejoy, Handy *et al*., 2009), 2009-10 (Lovejoy, 2010), 2010-11 (Miller, 2011), 2011-12 (Miller, 2012), 2012-13 (Driller, 2013), 2013-14 (Popovich, 2014), 2014-15 (Thigpen, 2015), 2015-16 (Gudz, Heckathorn *et al*., 2016), 2016-17 (Heckathorn, 2017), and 2017-18 (Wei, 2018). The next administration of the survey is planned for October 2018.

The 2017-18 survey was administered online in October and November 2017, distributed by email to a stratified random sample of 19,796 students, faculty, and staff (out of an estimated total population of 47,450). Over 20 percent (4,059 individuals) of those contacted responded to this year's survey, with 18.9 percent actually completing it. For the statistics presented throughout this report, we weight the responses by role (freshman, sophomore, junior, senior, Master's student, PhD student, faculty, and staff) and gender so that the proportion of respondents in each group reflects their proportion in the campus population.

Development of the survey instrument

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, 2017-18 Campus Travel Survey" for a full copy of the 2017-18 survey instrument. See "Appendix B: Changes from the 2016-17 survey instrument" for a summary of changes in the 2017-18 survey compared to the 2016-17 survey.) The online survey was prepared and hosted using the Qualtrics Survey website (http://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.

Sampling procedure

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. In past years, we found that response was higher among some role groups (PhD students, faculty, and staff) and lower among others (seniors and Master's/professional students). Since the 2009-10 implementation of the survey, we have varied invitation rates by stratum to account for these differences, assuming that response rates by stratum in previous years would remain relatively consistent. To ensure that we reached minimum sample size targets even with some variation in response rates, we set the share of the population sampled to 42 percent (19,796 people). (See "Appendix G: Sampling Plan" for more information on this year's sampling plan.)

A stratified random sample of 19,796 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.

Survey administration and recruitment of participants

We invited the randomly selected students, faculty, and staff to participate in the survey via email to their UC Davis addresses. In these emails, faculty and staff recipients were addressed "Dear UC Davis Employee" and students were addressed "Dear UC Davis Student." Each person in the selected sample received an initial email inviting him or her 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 30 $50 Visa gift cards and a grand prize of an

Amazon Fire tablet 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. There were 2,949 respondents who indicated they were willing to be contacted if they won the drawing and provided contact information. We assigned each of these respondents a random number and selected the 31 with the lowest values as the winners, who were notified via email on November 27th, 2017 and instructed to pick up their prizes at the Transportation Services office.

Response rate

A total of 4,059 respondents at least started the survey (responding to question *Q01*), representing 20.5 percent of those invited. This rate is slightly higher than last year's survey's response rate (18.5 percent). Of those who began the survey, 92 percent (3,748 respondents) completed the survey through question *Q33*, which asked respondents about their mode choice on each day of the reference week. Table 3 shows response rates for this year's survey compared to the previous seven surveys. As shown, overall response rates have gradually increased since 2014. For the past three years, the email invitations to participate in the survey were signed by Provost Hexter. The invitations explicitly mentioned the ways in which the survey data are used and the importance of taking and completing the survey each year. The improvement in response rate may also reflect the increasingly attractive prizes offered in the drawing by Transportation and Parking Services.

Table 3. Response rates for 2017-18 versus 2010-11 through 2017-18

Role group	2017-18				2017-18	2016-17	2015-16	2014-15	2013-14	2012-13	2011-12	2010-11
	Assumed population	Number invited	Actual responses	Target response rate	Actual response rate							
Student	36,708	16,114	3,005	13.35%	18.65%	15%	11%	11%	12%	13%	12%	18%
Undergraduate	29,865	11,837	2,105	12.33%	17.78%	14%	11%	10%	11%	12%	11%	17%
Freshman	6,133	2,623	481	13.80%	18.34%	14%	10%	11%	11%	15%	13%	23%
Sophomore	5,510	2,769	492	13.00%	17.77%	15%	13%	12%	12%	13%	12%	16%
Junior	8,125	2,659	557	13.80%	20.95%	16%	12%	12%	13%	14%	13%	18%
Senior	10,097	3,786	575	9.80%	15.19%	12%	9%	8%	9%	10%	9%	12%
Graduate	6,843	4,277	900	16.18%	21.04%	18%	14%	16%	15%	16%	16%	22%
Master's	3,393	2,746	431	12.60%	15.70%	13%	9%	10%	14%	11%	11%	16%
PhD	3,450	1,531	469	22.60%	30.63%	25%	20%	18%	16%	21%	23%	34%
Employee	11,797	2,272	743	30.15%	32.70%	33%	23%	14%	22%	18%	19%	29%
Faculty	1,719	1,019	386	30.81%	37.88%	31%	20%	13%	14%	16%	16%	22%
Staff	10,078	1,253	357	29.61%	28.49%	35%	25%	16%	30%	22%	24%	37%
Overall percent	100%	37.9%	20.4%	15.4%	20.4%	17%	14%	11%	13%	14%	13%	20%
Overall	48,505	18,386	3,748	2,837	3,748	4,132	3,781	3,507	3,663	3,982	3,116	3,084

**4,059 people began the survey, but these response rates reflect only those respondents who reported valid mode and gender (3,748)*

[a] This actual response rate is based on valid responses for primary mode and gender. These cases are weighted by role and gender and used for the bulk of the analysis.

Table 4 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. An underestimation of the on-campus staff population during the sampling process led to a total number of responses below the target for a five percent margin of error, despite the high response rate.
Margins of error based on responses by role group are shown later in Table 8. As in previous years, response rates were highest among faculty, staff and PhD students, and lowest among undergraduate and Master's students of all years.

Table 4. Number of valid responses by role

Role group	Population	Invited	Target	Valid role	Mode and gender	Geocoded
			(5% margin of error)	(started survey)	(weighted for bulk of analysis)	(weighted for CO2 emissions, VMT)
Students	36,708	16,114	2,152	3,224	3,005	2,798
Undergraduate	29,865	11,837	1,460	2,168	2,105	1,966
Freshman	6,133	2,623	362	495	481	473
Sophomore	5,510	2,769	360	506	492	449
Junior	8,125	2,659	367	571	557	511
Senior	10,097	3,786	371	596	575	533
Graduate	6,843	4,277	692	1,056	900	832
Master's	3,393	2,746	346	558	431	393
PhD	3,450	1,531	346	498	469	439
Employees	11,797	2,272	685	807	743	684
Faculty	1,719	1,019	314	418	386	364
Staff	10,078	1,253	371	389	357	320
Overall percent	100%	37.9%	15.4%	21.9%	20.4%	18.9%
Overall	48,505	18,386	2,837	4,031	3,748	3,482

Screening respondents for eligibility

While incomplete survey responses were retained in the dataset, cases were excluded based on two criteria: role and office location. In particular, we wanted to include only respondents who are current students or employees affiliated with the campus in Davis (rather than in locations beyond the campus or city of Davis) and whose role at UC Davis is known. Although the sample frame was supposed to only include current students and employees affiliated with the main campus, we have learned that university records are not always accurate, either due to a student or employee's recent change in status or due to ambiguity about the geographic location associated with a nominal departmental affiliation. We have attempted to improve our screening of these exceptions in recent surveys through more explicit questions about roles and office locations.

From the responses to *Q2*, we screened 8 respondents who failed to provide a valid role group (who were then skipped to the end of the survey- see "Appendix A: Survey instrument, 2017-18 Campus Travel Survey"). Regarding office locations, we intended to include in the sample anyone who usually travels to campus regularly, even if temporarily stationed elsewhere-- such as for sabbatical, teaching abroad, field work, a joint appointment at another campus, or on leave (bereavement, maternity, etc.)-- but exclude those whose main work is elsewhere. This is a potential issue for employees and graduate students, but not undergraduate students. Thus we screened graduate student and employee office locations in question *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.") There were 178 respondents who indicated that their offices were located outside of Davis. These most commonly included the Graduate School of Management Center in San Ramon and the UC Davis Medical Center in Sacramento. These 178 respondents were redirected to the end of the survey (see Appendix A: Survey instrument, 2017-18 Campus Travel Survey) and are excluded from the analysis.

In addition, we excluded respondents that indicated traveling to campus but failed to provide answers to questions about primary mode used during the reference week, as well as respondents who did not answer whether they traveled to campus during the reference week. Lastly, 14 respondents who were away all week indicated in *Q30* that they do not plan to resume travel to campus. Since our survey targets only those who regularly travel to the UC Davis campus, these respondents were also excluded from the analysis.

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 and business and Ed.D. or CANDEL), 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. Men comprise 27.4 percent of the sample versus 40.6 percent of the population of undergraduate students, and 36percent of respondents versus 47.3 percent of the population of graduate students.[2]

Although the number of valid responses varies from question to question, we use the same set of weight factors for most variables, based on the distribution of roles among the 3,748 valid responses to question *Q33*, the main question relating to mode choice on each day during the travel week. However, for variables relying on geocoding of respondents' residential location, we generated a separate set of weight factors, based on the 3,482 cases successfully geocoded (by cross-streets and zip code given in questions *Q23* and *Q24*; see "Appendix E: Geocoding and network distances") and with non-missing mode data

[2] Figures for the composition of the campus population by gender were drawn from data on the on-campus population data in Fall 2017 as provided by the Budget and Institutional Analysis office.

from question *Q33*. (See "Appendix G: Sampling Plan" for more information on weighting and a list of weight factors by role and gender.)

Table 5. Unweighted gender distribution of respondents

Role group	Male	Female	Unweighted sample	Projected population
Undergraduate	27.41%	72.59%	2105	30182
Graduate	36.00%	64.00%	900	6718
Faculty	51.81%	48.19%	386	2025
Staff	31.37%	68.63%	357	8525

Table 6. Weighted gender distribution of respondents

Role groups	Male	Female	Weighted sample	Projected population
Undergraduate	40.63%	59.36%	2308	30182
Graduate	47.33%	52.63%	529	6718
Faculty	58.62%	41.25%	133	2025
Staff	43.19%	56.78%	779	8525

Table 5 and Table 6 show the difference in gender distribution between the unweighted and weighted results. In previous reports, we have found that women are less likely to bike and more likely to ride the bus than are men. Without correcting for differences in response rates between men and women, the estimated bike mode share might be lower (and bus mode share higher) than they are in the actual population. Other biases might exist if there are other ways that the sample of respondents differs systematically from the rest of the population, though we have few ways of knowing the extent to which it does.

Reference week

The main statistics that we report are based on questions that ask respondents about their travel activity during each of the five weekdays prior to receiving the invitation to complete the survey. We schedule the reference week for approximately the same time each year that the survey is administered, and to coincide with the biannual campus traffic counts of vehicles entering campus, usually conducted the last week in October or the first week in November (see Figure 7 for the full timeline of the survey launch and reference weeks). This was the sixth year that we asked about weekend travel, so our reference week encompasses seven days rather than five, as in past surveys. This year's reference week was October 16-22, 2017 (Monday-Sunday). The initial email was sent on Monday, October 23rd. As with previous years, we followed the initial email with a reminder email a week later to individuals who had not yet participated and an additional reminder email the following week. The reminder emails were sent on Monday, October 30th and Monday, November 6th.

Figure 7. Survey launch and reference week schedule, October- November, 2017

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Oct 16 *Reference week*	17	18	19	20	21	22
23 Initial invitations sent *2nd reference week*	24	25	26	27	28	29
30 Reminder invitations sent *3rd reference week*	31	1	2	3	4	5
6 Second reminder invitations sent	7	8	9	10	11	12

Table 7 displays weather during the three reference weeks. The Halloween holiday fell on the Tuesday of the third reference week. The bicycle commute share is generally lower and the bus commute share is generally higher during days with significant precipitation.

Table 7. Weather during reference weeks

Day	Temperature range	Mean (max) wind speed	Precipitation levels
Week 1: October 16 – 22, 2017			
Monday	50 – 84 ºF	4 (9) mph	0 in.
Tuesday	46 – 80 ºF	2 (6) mph	0 in.
Wednesday	44 – 80 ºF	3 (10) mph	0 in.
Thursday	50 – 71 ºF	9 (17) mph	0.03 in.
Friday	46 – 64 ºF	6 (13) mph	0.10 in.
Saturday	42 – 69 ºF	3 (7) mph	0 in.
Sunday	44 – 75 ºF	5 (13) mph	0 in.
Week 2: October 23 – 29, 2017			
Monday	53 – 82 ºF	6 (16) mph	0 in.
Tuesday	51 – 89 ºF	2 (13) mph	0 in.
Wednesday	51 – 86 ºF	1 (9) mph	0 in.
Thursday	50 – 86 ºF	2 (8) mph	0 in.
Friday	50 – 86 ºF	1 (7) mph	0 in.
Saturday	50 – 84 ºF	1 (6) mph	0 in.
Sunday	48 – 80 ºF	2 (10) mph	0 in.
Week 3: October 30 – November 5, 2017			
Monday	48 – 68 ºF	5 (14) mph	0 in.
Tuesday	41 – 68 ºF	2 (9) mph	0 in.
Wednesday	42 – 68 ºF	5 (8) mph	0 in.
Thursday	48 – 68 ºF	6 (15) mph	0 in.
Friday	55 – 64 ºF	5 (14) mph	0 in.
Saturday	53 – 62 ºF	7 (12) mph	0.16 in.
Sunday	37 – 59 ºF	4 (8) mph	0 in.

Weather data are for Davis, CA, as reported in *Weather Underground*, available online by city and date at http://www.wunderground.com/history/.

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).

Confidence intervals

Table 8 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 36.6 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 35.1 and 38.1 percent. Master's students have the highest margins of error due to low response rates.

Table 8. Margins of error, by role group

Role groups	Sample Size	Population Size	Margin of Error
Student	3,005	36,900	1.71%
Undergraduate	2,105	30,182	2.06%
Freshman	481	6,133	4.29%
Sophomore	492	5,510	4.22%
Junior	557	8,104	4.01%
Senior	575	10,435	3.97%
Graduate	900	6,718	3.04%
Master's	431	3,169	4.39%
PhD	469	3,549	4.22%
Employee	743	10,550	3.47%
Faculty	386	2,025	4.49%
Staff	357	8,525	5.08%
Overall	3,748	47,450	1.54%

Physical travel to campus

Table 9 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 90 percent of university affiliates physically traveled to campus on each day Monday through Thursday, with a low of 83 percent traveling to campus on Friday. Faculty travel to campus least often, while sophomores travel to campus most often.

Table 9. Share physically traveling to campus by weekday

Role	***Share physically travelling to campus by weekday***						**Weighted sample**	**Projected population**
	Monday	Tuesday	Wed.	Thursday	Friday	No days		
Student	91.1%	90.5%	91.5%	90.9%	84.4%	4.0%	2,836	36,708
Undergraduate	92.1%	91.5%	92.4%	91.5%	86.3%	3.5%	2,308	29,865
Freshman	89.4%	88.4%	89.7%	89.4%	89.4%	4.2%	474	6,133
Sophomore	94.4%	92.5%	94.4%	92.3%	93.6%	3.2%	426	5,510
Junior	93.3%	92.2%	93.3%	91.7%	84.4%	3.1%	628	8,125
Senior	91.6%	92.3%	92.3%	92.3%	82.0%	3.5%	780	10,097
Graduate	86.4%	86.3%	87.6%	87.9%	76.4%	6.0%	529	6,843
Master's	84.2%	84.7%	84.4%	88.0%	67.6%	7.3%	262	3,393
PhD	88.6%	87.9%	90.7%	87.9%	85.1%	4.8%	267	3,450
Employee	84.1%	84.5%	86.1%	85.5%	78.5%	5.7%	912	11,797
Faculty	77.1%	77.2%	80.3%	76.2%	66.5%	5.3%	133	1,719
Staff	85.3%	85.7%	87.1%	87.1%	80.5%	5.7%	779	10,078
Overall	89.4%	89.1%	90.2%	89.6%	83.0%	4.4%	3,748	48,505
Weighted sample	3,349	3,338	3,381	3,357	3,111	164	3,748	NA
Projected population	43,345	43,200	43,750	43,444	40,258	2,118	NA	48,505

Results are based on responses to questions *Q26* and *Q27*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2*, *Q15*, and *Q26-38* (see Table 51).

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 10). Overall, those living in Davis travel to campus more often than those living outside Davis (89 percent versus 83 percent). Faculty living outside of Davis are least likely to travel to campus, with only about 65 percent traveling to campus on an average weekday day. By contrast, 81 percent of faculty who live off campus in Davis travel to campus on an average weekday. (See Table 14 for the overall percent of people living in each location, by role group.)

Table 10. Physical travel to campus, by role group and residential location

Role	Overall	On campus	West Village	Off campus in Davis	Outside Davis	Weighted sample	Projected population
Student	87.3%	81.6%	89.8%	90.1%	82.5%	2,635	36,708
Undergraduate	88.1%	81.4%	90.0%	90.9%	87.5%	2,144	29,865
Freshman	82.3%	81.4%	81.4%	94.5%	93.9%	440	6,133
Sophomore	92.1%	89.7%	92.7%	92.8%	83.4%	396	5,510
Junior	88.4%	77.4%	92.0%	90.5%	86.3%	583	8,125
Senior	89.0%	81.4%	87.4%	90.0%	88.1%	725	10,097
Graduate	83.8%	83.4%	88.4%	87.0%	72.0%	491	6,843
Master's	80.3%	79.2%	90.8%	84.5%	68.6%	244	3,393
PhD	87.1%	88.0%	86.4%	89.2%	77.1%	248	3,450
Employee	84.1%	49.4%	0.0%	86.1%	83.0%	847	11,797
Faculty	75.1%	40.0%	0.0%	80.5%	65.2%	123	1,719
Staff	85.7%	50.0%	0.0%	87.7%	84.8%	723	10,078
Overall	86.5%	81.2%	89.8%	89.4%	82.8%	3,482	48,505
Weighted sample	3,012	496	106	1,775	634	3,482	NA
Projected population	41,953	6,915	1,479	24,723	8,836	NA	48,505

Results are based on responses to question *Q26* (days traveling to campus) and *Q21* (residential location). Shares are calculated by taking the average across groups of the percent of the five weekdays that each individual traveled to campus. See Table 14 for the overall percent living in each location by role group. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2*, *Q15*, and *Q26-38* 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51). Fourteen graduate students and zero employees indicated living in West Village.

About 4.4 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 11). Employees were more likely to be away all week than students, with work travel and sickness/personal leave being the most common reasons given for being away.

Employees (and 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 12). 5.7 percent of employees were away all week (Table 11). 18.1 percent of employees did not travel to campus on an average weekday (Table 12). The most common reasons for being away from campus are working from home (telecommuting) and regularly scheduled day off.

Table 11. Share away from campus all week and reasons given, by role

Role	Share away from campus all week	*Of those away from campus all week*						Weighted sample	Projected population
		Didn't say	Study abroad or sabbatical	Telecommuting (working from home or another remote location)	Temporary appointment elsewhere	Vacation, sickness, or personal leave	Work or school-related travel or field work		
Student	4.0%	63.4%	7.2%	4.2%	13.7%	4.5%	7.0%	112	1,451
Undergraduate	3.5%	70.8%	10.0%	1.2%	9.9%	4.0%	4.1%	80	1,041
Freshman	4.2%	78.1%	10.9%	0.0%	0.0%	4.3%	6.6%	20	257
Sophomore	3.2%	79.4%	5.2%	0.0%	5.2%	10.3%	0.0%	14	179
Junior	3.1%	75.8%	4.8%	4.8%	4.8%	4.8%	4.8%	19	249
Senior	3.5%	57.6%	15.5%	0.0%	23.0%	0.0%	3.9%	27	355
Graduate	6.0%	44.8%	0.0%	12.0%	23.2%	5.8%	14.2%	32	411
Master's	7.3%	52.4%	0.0%	15.5%	23.1%	3.0%	6.0%	19	247
PhD	4.8%	33.3%	0.0%	6.8%	23.3%	10.0%	26.5%	13	164
Employee	5.7%	38.2%	2.5%	7.2%	4.1%	19.0%	29.1%	52	667
Faculty	5.3%	23.6%	18.1%	9.7%	4.2%	19.4%	25.0%	7	91
Staff	5.7%	40.5%	0.0%	6.8%	4.1%	18.9%	29.7%	44	576
Overall	4.4%	55.5%	5.7%	5.2%	10.6%	9.1%	13.9%	164	2,118
Weighted sample	164	91	9	8	17	15	23	164	NA
Projected population	2,118	1,176	121	109	226	192	295	NA	2,118

Results are based on responses to question *Q28*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 12. Share of employees not traveling to campus on an average weekday, and reason

Role	Share away from campus on an average weekday	Among those not traveling 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	18.1%	29.9%	16.4%	23.1%	20.1%	3.7%	6.7%	912	11,797
Faculty	27.0%	53.5%	25.1%	10.5%	5.1%	0.5%	5.4%	133	1,719
Staff	16.5%	36.3%	18.8%	19.7%	16.0%	2.8%	6.3%	779	10,078
Weighted sample	165	49	27	38	33	6	11	3,748	NA
Projected population	2,132	636	350	493	430	80	143	NA	48,505

Results are based on responses to question *Q29* for individual days absent and on responses to *Q28* for those absent all week; reasons given in Q28 are assumed to apply to all five weekdays. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Destination on campus

Employees and graduate students were asked 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. Among the included respondents, 79.3 percent reported locations in the central campus area (an estimated 14,798 people), including 82 percent of graduate students, 96.4 percent of faculty, and 74.5 percent of staff (Table 13). A total of 8.1 percent of respondents reported office locations in west campus, 4.4 percent in south campus, and 8.2 percent off-campus but within the city of Davis.

Table 13. 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	Weighted sample	Projected population
Graduate	82.0%	8.4%	5.5%	4.0%	529	6,843
Master's	81.4%	7.9%	6.7%	4.1%	262	3,393
PhD	82.7%	8.9%	4.4%	4.0%	267	3,450
Employee	77.7%	7.9%	3.8%	10.7%	912	11,797
Faculty	96.4%	2.1%	1.0%	0.5%	133	1,719
Staff	74.5%	8.9%	4.3%	12.4%	779	10,078
Overall	79.3%	8.1%	4.4%	8.2%	1,440	18,640
Weighted sample	1,143	116	63	118	1,440	NA
Projected population	14,798	1,504	822	1,530	NA	18,640

Results are based on responses to question *Q9*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Residential location

Since travel behavior varies substantially by residential location, each year respondents are asked 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 17.6 percent live on campus (an estimated 8,516 people), 3.4 percent live in the West Village apartments (1,647 people), 57 percent live elsewhere in Davis (27,669 people), and 22 percent live outside of Davis (10,647 people) (Table 14). Individuals who indicated that they live outside of Davis are most likely to live in the nearby cities of Sacramento, Woodland, Vacaville, West Sacramento, Dixon, Elk Grove, and Winters.

Table 14. Residential location by role group

Role	On campus	West Village	Off campus in Davis	Outside Davis	Weighted sample	Projected population
Student	22.9%	4.5%	61.1%	11.5%	2,635	36,708
Undergraduate	26.3%	4.9%	59.3%	9.6%	2,144	29,865
Freshman	91.7%	1.4%	3.3%	3.6%	440	6,133
Sophomore	8.9%	7.0%	80.0%	4.1%	396	5,510
Junior	12.3%	6.0%	67.9%	13.8%	583	8,125
Senior	7.4%	4.9%	75.0%	12.7%	725	10,097
Graduate	8.3%	2.9%	68.9%	19.9%	491	6,843
Master's	8.8%	2.6%	64.2%	24.4%	244	3,393
PhD	7.8%	3.1%	73.5%	15.5%	248	3,450
Employee	0.8%	0.0%	44.5%	54.7%	847	11,797
Faculty	0.3%	0.0%	65.5%	34.2%	123	1,719
Staff	0.9%	0.0%	41.0%	58.2%	723	10,078
Overall	17.6%	3.4%	57.0%	22.0%	3,482	48,505
Weighted sample	611	118	1,986	766	3,482	NA
Projected population	8,516	1,647	27,669	10,674	NA	48,505

Results are based on responses to question *Q21*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Mode split 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)" (*Q33*). 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 split

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. See Table 35 for a comparison of results for "usual" and "primary" modes.

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 dissonant primary mode choices. Similarly, someone may report living on campus but traveling by train to campus. Since there are very few cases in which these dissonant modes appear, results are reported as is, and discretion should be used in interpreting these cases.

Table 15 through Table 21 show the overall mode split among those physically traveling to campus on a given weekday. Results are shown by role group and general residential location in Table 15 and by role group for each category of residential location in the next six tables. On an average weekday, we estimate that of those physically traveling to campus, 39.6 percent bike (an estimated 16,269 people), 8.9 percent walk or skate (3,652 people), 33.2 percent arrive by car (13,623 people), and 18.2 percent ride public transit (7,483 people). Freshmen, most of whom live on campus, have the highest rate of bicycling.

Table 15. Share using each mode on an average weekday, by role group (all locations)

Role	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Student	85.5%	46.1%	10.3%	17.4%	4.1%	21.7%	0.4%	2,836	36,708
Undergraduate	86.2%	44.5%	11.3%	15.3%	3.6%	25.1%	0.2%	2,308	29,865
Freshman	82.2%	69.0%	21.9%	4.3%	1.8%	2.7%	0.2%	474	6,133
Sophomore	89.2%	44.5%	5.8%	8.5%	2.9%	38.2%	0.0%	426	5,510
Junior	86.7%	39.3%	7.8%	19.5%	4.4%	28.8%	0.2%	628	8,125
Senior	86.6%	34.5%	11.2%	22.0%	4.4%	27.6%	0.2%	780	10,097
Graduate	82.2%	53.1%	5.3%	27.1%	6.3%	6.5%	1.6%	529	6,843
Master's	78.4%	49.8%	5.4%	30.1%	6.0%	7.6%	1.1%	262	3,393
PhD	85.9%	56.2%	5.3%	24.3%	6.5%	5.6%	2.2%	267	3,450
Employee	81.9%	18.8%	4.5%	64.4%	6.9%	3.9%	1.6%	912	11,797
Faculty	73.0%	40.7%	7.4%	41.3%	4.3%	2.4%	4.0%	133	1,719
Staff	83.5%	15.6%	4.0%	67.8%	7.3%	4.1%	1.2%	779	10,078
Overall	84.6%	39.6%	8.9%	28.5%	4.7%	17.5%	0.7%	3,748	48,505
Weighted sample	3,171	1,257	282	902	150	556	22	3,748	NA
Projected population	41,038	16,269	3,652	11,677	1,946	7,194	289	NA	48,505

Results are based on responses to question *Q26* (whether they traveled to campus each day) and question *Q33* (primary means of transportation each day). All mode split percentages are calculated as follows: we first calculate the percent of five weekdays that an individual used a particular mode and then take the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 16 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. Staff are the least likely to bike to campus (37.4 percent) and are most likely to drive alone (43.5 percent) from within Davis, while freshmen are the least likely to do so (1.1 percent). The train is not a feasible means of traveling to campus from within Davis.

Table 16. Share using each mode on an average weekday, from within Davis

Role	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Student	87.9%	51.8%	10.9%	9.8%	3.4%	24.0%	0.0%	2,332	32,484
Undergraduate	88.1%	49.3%	11.8%	8.3%	2.9%	27.5%	0.0%	1,939	27,005
Freshman	81.9%	72.6%	23.0%	1.1%	1.0%	2.0%	0.2%	424	5,911
Sophomore	92.5%	46.5%	5.4%	4.8%	2.9%	40.3%	0.0%	379	5,282
Junior	88.8%	46.1%	8.3%	10.2%	3.4%	31.9%	0.0%	503	7,001
Senior	89.2%	39.4%	11.7%	13.5%	3.8%	31.7%	0.0%	632	8,810
Graduate	86.7%	64.2%	6.3%	17.2%	5.4%	6.8%	0.0%	393	5,479
Master's	84.1%	62.4%	6.3%	19.1%	4.7%	7.4%	0.0%	184	2,565
PhD	89.0%	65.7%	6.3%	15.6%	6.0%	6.4%	0.0%	209	2,914
Employee	85.5%	41.4%	6.7%	40.5%	5.8%	5.5%	0.0%	384	5,347
Faculty	80.3%	57.6%	8.9%	28.5%	2.8%	2.2%	0.0%	81	1,130
Staff	86.9%	37.4%	6.2%	43.5%	6.6%	6.3%	0.0%	303	4,217
Overall	87.5%	50.4%	10.3%	14.0%	3.7%	21.5%	0.0%	2,716	37,831
Weighted sample	2,377	1,198	246	334	88	510	1	2,716	NA
Projected population	33,117	16,688	3,425	4,652	1,224	7,108	10	NA	37,831

Results are based on responses to questions *Q26* (daily travel) and *Q33* (travel mode). All mode split percentages are determined by calculating the percent of five weekdays that an individual used a specific mode and then taking the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 17 shows the mode share among those who live on campus, defined as the area south of Russell Blvd., 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 17. Share using each mode on an average weekday, from on campus

Role	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Student	81.6%	69.1%	25.6%	0.9%	1.3%	2.8%	0.1%	605	8,423
Undergraduate	81.4%	69.6%	25.7%	0.7%	1.3%	2.5%	0.1%	564	7,856
Freshman	81.4%	73.4%	24.1%	0.5%	1.0%	0.8%	0.2%	404	5,622
Sophomore	89.7%	65.8%	16.4%	0.5%	1.4%	15.9%	0.0%	35	489
Junior	77.4%	60.5%	33.3%	0.3%	1.3%	4.6%	0.0%	72	1,002
Senior	81.4%	54.7%	35.5%	3.0%	2.9%	3.4%	0.0%	53	743
Graduate	83.4%	63.0%	24.0%	4.5%	1.9%	6.2%	0.0%	41	567
Master's	79.2%	60.4%	24.1%	4.7%	2.3%	7.7%	0.0%	21	298
PhD	88.0%	65.7%	23.9%	4.2%	1.5%	4.7%	0.0%	19	269
Employee	49.4%	19.1%	76.4%	0.0%	0.0%	4.6%	0.0%	7	93
Faculty	40.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0	5
Staff	50.0%	20.0%	80.0%	0.0%	0.0%	0.0%	0.0%	6	88
Overall	81.2%	68.8%	26.0%	0.9%	1.3%	2.8%	0.1%	611	8,516
Weighted sample	496	341	129	5	7	14	1	611	NA
Projected population	6,915	4,757	1,795	65	91	193	9	NA	8,516

Results are based on responses to questions *Q26* and *Q33*. All mode split percentages are determined by calculating the percent of five weekdays that an individual used a particular mode and then taking the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51). Very few employees indicated living within the area considered "on-campus," therefore these mode splits may not be characteristic of all employees living in this area.

Table 18 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 18. Share using each mode on an average weekday, from West Village

Role	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Student	89.8%	53.8%	7.2%	4.8%	1.2%	33.0%	0.0%	118	1,647
Undergraduate	90.0%	51.3%	6.7%	4.6%	1.1%	36.3%	0.0%	104	1,451
Freshman	81.4%	63.9%	0.0%	3.3%	3.3%	29.5%	0.0%	6	85
Sophomore	92.7%	49.4%	2.2%	6.2%	0.0%	42.2%	0.0%	28	384
Junior	92.0%	48.8%	9.3%	0.0%	0.0%	41.9%	0.0%	35	486
Senior	87.4%	53.3%	8.9%	8.2%	2.8%	26.7%	0.0%	36	495
Graduate	88.4%	72.5%	10.5%	6.6%	2.1%	8.3%	0.0%	14	195
Master's	90.8%	71.8%	0.0%	10.2%	0.0%	18.0%	0.0%	6	88
PhD	86.4%	73.0%	19.5%	3.6%	3.8%	0.0%	0.0%	8	107
Employee	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0
Faculty	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0
Staff	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0
Overall	89.8%	53.8%	7.2%	4.8%	1.2%	33.0%	0.0%	118	1,647
Weighted sample	106	57	8	5	1	35	0	118	NA
Projected population	1,479	795	106	71	18	488	0	NA	1,647

Results are based on responses to question *Q26* (whether they traveled to campus each day) and question *Q33* (primary means of transportation each day). All mode split percentages are calculated as follows: we first calculate the percent of five weekdays that an individual used a particular mode and then take the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 19 shows the mode share results for those living off-campus in Davis (excluding West Village apartments). Among those living elsewhere in Davis, undergraduate students and staff are less likely to bike than graduate students and faculty. Undergraduate students have high bus ridership rates (36.7 percent), whereas graduate students and employees in Davis who do not bike are more likely to commute by car.

Table 19. Share using each mode on an average weekday, from off-campus within Davis

Role	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Student	90.1%	45.8%	6.2%	13.2%	4.2%	30.6%	0.0%	1,609	22,415
Undergraduate	90.9%	41.2%	6.7%	11.7%	3.8%	36.7%	0.0%	1,270	17,698
Freshman	94.5%	55.4%	7.0%	15.3%	0.0%	22.3%	0.0%	15	204
Sophomore	92.8%	44.2%	4.5%	5.2%	3.3%	42.7%	0.0%	316	4,409
Junior	90.5%	43.7%	4.4%	12.7%	4.1%	35.2%	0.0%	396	5,513
Senior	90.0%	37.1%	9.7%	14.7%	3.9%	34.5%	0.0%	544	7,572
Graduate	87.0%	64.0%	4.1%	19.1%	5.9%	6.8%	0.0%	339	4,717
Master's	84.5%	62.3%	4.3%	21.3%	5.2%	6.9%	0.0%	156	2,179
PhD	89.2%	65.4%	4.0%	17.3%	6.5%	6.8%	0.0%	182	2,537
Employee	86.1%	41.7%	6.0%	40.9%	5.9%	5.5%	0.0%	377	5,254
Faculty	80.5%	57.8%	8.9%	28.5%	2.8%	2.0%	0.0%	81	1,125
Staff	87.7%	37.6%	5.3%	44.0%	6.7%	6.4%	0.0%	296	4,129
Overall	89.4%	45.0%	6.2%	18.3%	4.5%	26.0%	0.0%	1,986	27,669
Weighted sample	1,775	799	109	324	80	461	0	1,986	NA
Projected population	24,723	11,136	1,523	4,516	1,115	6,427	1	NA	27,669

Results are based on responses to question *Q26* (whether they traveled to campus each day) and question *Q33* (primary means of transportation each day). All mode split percentages are calculated as follows: we first calculate the percent of five weekdays that an individual used a particular mode and then take the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

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, 2017-18 Campus Travel Survey"). Table 20 shows the mode share for those living off-campus in Davis (excluding West Village apartments) by their location in Davis. The results suggest that mode splits vary substantially by neighborhood. Bicycling to campus is especially prevalent among individuals living in Central and Downtown Davis. Those living in Downtown Davis are much more likely to walk to campus than individuals living elsewhere. Driving to campus is more common from the neighborhoods of West, East, and South Davis, and taking the bus to campus is more common from North and South Davis.

Table 20. Share using each mode on an average weekday, by neighborhood

Neighborhood	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
North	91.1%	36.6%	4.0%	15.6%	4.7%	39.1%	0.0%	425	5,916
South	89.9%	33.2%	6.0%	22.9%	5.1%	32.8%	0.0%	295	4,103
East	88.5%	40.4%	4.9%	26.0%	6.6%	22.2%	0.0%	371	5,165
West	89.5%	44.5%	2.7%	19.4%	4.8%	28.5%	0.0%	358	4,987
Central	86.9%	64.3%	7.8%	10.0%	3.1%	14.8%	0.0%	344	4,787
Downtown	89.7%	61.4%	18.1%	11.3%	1.3%	7.9%	0.0%	173	2,406
Overall	89.4%	45.0%	6.2%	18.3%	4.5%	26.0%	0.0%	1,986	27,669
Weighted sample	1,775	799	109	324	80	461	0	1,986	NA
Projected population	24,723	11,136	1,523	4,516	1,115	6,427	1	NA	27,669

Results are based on responses to question *Q26* (whether they traveled to campus each day) and question *Q33* (primary means of transportation each day). All mode split percentages are calculated as follows: we first calculate the percent of five weekdays that an individual used a particular mode and then take the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 21 shows the mode share for students and employees who live outside Davis (an estimated 10,674 people). Among those traveling from outside Davis, 79.5 percent commute by car, 8.6 percent carpool or get a ride, 4.1 percent ride the bus, and 3 percent ride the train. Carpooling is more prevalent among seniors and Master's students, while freshmen are the most likely to take the bus from outside of Davis. Master's students are the least likely to drive alone from outside of Davis.

Table 21. Share using each mode on an average weekday, from outside Davis

Role	Physically travelling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Student	82.5%	3.1%	4.6%	73.5%	9.7%	5.5%	3.5%	303	4,224
Undergraduate	87.5%	3.7%	5.4%	74.2%	9.4%	5.7%	1.5%	205	2,860
Freshman	93.9%	0.0%	4.3%	73.3%	9.8%	12.6%	0.0%	16	222
Sophomore	83.4%	4.2%	3.2%	81.2%	6.1%	5.3%	0.0%	16	228
Junior	86.3%	4.7%	4.8%	72.8%	8.9%	7.5%	1.3%	81	1,124
Senior	88.1%	3.5%	6.4%	74.5%	10.4%	3.1%	2.2%	92	1,287
Graduate	72.0%	1.6%	2.6%	71.8%	10.5%	5.0%	8.6%	98	1,364
Master's	68.6%	2.3%	3.4%	69.9%	12.2%	6.7%	5.5%	59	828
PhD	77.1%	0.5%	1.3%	74.4%	8.2%	2.6%	12.9%	39	536
Employee	83.0%	0.6%	2.3%	83.3%	7.9%	3.2%	2.6%	463	6,450
Faculty	65.2%	3.5%	3.3%	69.9%	7.6%	3.0%	12.6%	42	589
Staff	84.8%	0.4%	2.2%	84.4%	8.0%	3.2%	1.8%	421	5,861
Overall	82.8%	1.6%	3.2%	79.5%	8.6%	4.1%	3.0%	766	10,674
Weighted sample	634	10	20	504	55	26	19	766	NA
Projected population	8,836	143	283	7,023	764	362	261	NA	10,674

Results are based on responses to question *Q26* (whether they traveled to campus each day) and question *Q33* (primary means of transportation each day). All mode split percentages are calculated as follows: we first calculate the percent of five weekdays that an individual used a particular mode and then take the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 22 shows the mode share by role if we include telecommuting as a travel mode, since it is sometimes considered an alternative to physical travel. The denominator for these estimates is the number of people who physically traveled to campus plus those who worked from home on a given weekday, but excluding those who did not travel for another reason. If working from home was indicated as a reason for not traveling to campus the entire week, we assumed that the individual did so on all five weekdays.[3] Faculty are much more likely to report telecommuting during the reference week than staff.

Table 22. Share using each mode on an average weekday, including telecommuting

Role	Physically travelling	*Of those physically traveling to campus*							Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train	Work at home		
Student	85.5%	46.1%	10.3%	17.4%	4.1%	21.7%	0.4%	0.0%	2,836	36,708
Undergraduate	86.2%	44.5%	11.3%	15.3%	3.6%	25.1%	0.2%	0.0%	2,308	29,865
Freshman	82.2%	69.0%	21.9%	4.3%	1.8%	2.7%	0.2%	0.0%	474	6,133
Sophomore	89.2%	44.5%	5.8%	8.5%	2.9%	38.2%	0.0%	0.0%	426	5,510
Junior	86.7%	39.3%	7.8%	19.5%	4.4%	28.8%	0.2%	0.0%	628	8,125
Senior	86.6%	34.5%	11.2%	22.0%	4.4%	27.6%	0.2%	0.0%	780	10,097
Graduate	82.2%	53.1%	5.3%	27.1%	6.3%	6.5%	1.6%	0.0%	529	6,843
Master's	78.4%	49.8%	5.4%	30.1%	6.0%	7.6%	1.1%	0.0%	262	3,393
PhD	85.9%	56.2%	5.3%	24.3%	6.5%	5.6%	2.2%	0.0%	267	3,450
Employee	81.9%	18.8%	4.5%	64.4%	6.9%	3.9%	1.6%	3.8%	912	11,797
Faculty	73.0%	40.7%	7.4%	41.3%	4.3%	2.4%	4.0%	12.1%	133	1,719
Staff	83.5%	15.6%	4.0%	67.8%	7.3%	4.1%	1.2%	2.6%	779	10,078
Overall	84.6%	39.6%	8.9%	28.5%	4.7%	17.5%	0.7%	0.9%	3,748	48,505
Weighted sample	3,171	1,257	282	902	150	556	22	29	3,748	NA
Projected population	41,038	16,269	3,652	11,677	1,946	7,194	289	371	NA	48,505

Results are based on responses to question *Q26* (whether they traveled to campus each day), question *Q33* (primary means of transportation each day). See footnote regarding student telecommuting. All mode split percentages are calculated as follows: we first calculate the percent of five weekdays that an individual used a particular mode and then take the average over all respondents. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

[3] Only employees were asked question *Q23* (reasons for not traveling to campus on particular days of the week), and so only employees could indicate telecommuting on these days.

While Table 15 through Table 22 present estimates for the share using various modes on an average weekday, Table 23 shows the share using each mode as a primary mode at least once during the five-day week. Although 39.6 percent of individuals bike to campus as their primary means of transportation on an average weekday (Table 15), 48.8 percent bike to campus as their primary means of transportation at least once during the week (Table 23). So while about 16,300 people bike as their primary means of travel on an average day, about 20,000 people are regular bicyclists (at least once per week). The number of regular carpoolers and train-riders is also substantially greater than the average number of people traveling by these modes on a given day, projected to be 4,170 (versus 1,946) and 371 (versus 289) for carpooling and train-riding, respectively.

Table 23. Share using each as a primary mode at least once during the reference week

Role	Physically travelling	*Of those physically traveling to campus*							Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train	Work at home		
Student	85.5%	56.3%	17.1%	25.0%	9.6%	30.6%	0.7%	0.0%	2,836	36,708
Undergraduate	86.2%	54.6%	18.7%	22.0%	8.6%	34.5%	0.3%	0.0%	2,308	29,865
Freshman	82.2%	80.2%	33.5%	5.9%	5.5%	5.7%	0.7%	0.0%	474	6,133
Sophomore	89.2%	54.2%	12.0%	13.4%	7.0%	49.3%	0.0%	0.0%	426	5,510
Junior	86.7%	48.2%	12.9%	25.9%	9.9%	39.7%	0.2%	0.0%	628	8,125
Senior	86.6%	45.3%	18.6%	32.8%	10.3%	38.7%	0.3%	0.0%	780	10,097
Graduate	82.2%	63.9%	9.7%	39.1%	14.1%	12.4%	2.6%	0.0%	529	6,843
Master's	78.4%	61.7%	9.1%	44.1%	14.3%	13.9%	1.5%	0.0%	262	3,393
PhD	85.9%	65.9%	10.3%	34.6%	13.9%	11.1%	3.5%	0.0%	267	3,450
Employee	81.9%	24.4%	7.9%	81.2%	12.0%	5.6%	2.4%	3.8%	912	11,797
Faculty	73.0%	53.8%	12.8%	68.2%	11.5%	5.3%	9.7%	12.1%	133	1,719
Staff	83.5%	20.0%	7.2%	83.2%	12.0%	5.6%	1.3%	2.6%	779	10,078
Overall	84.6%	48.8%	14.9%	38.3%	10.2%	24.7%	1.1%	0.9%	3,748	48,505
Weighted sample	3,171	1,547	473	1,213	322	783	35	29	3,748	NA
Projected population	41,038	20,016	6,127	15,702	4,170	10,130	447	371	NA	48,505

Results are based on responses to questions Q26 (whether traveled to campus) and Q33 (primary means of transportation each day). Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Comparison of 2017-18 mode share with 2016-17

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 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. However, a different methodology was used to calculate faculty and staff population for the campus (See "Appendix G: Sampling Plan" for more information on this year's sampling plan).

Table 24 shows mode share estimates for 2016-17 and 2017-18. Data for both years are weighted by role and gender.

Table 24. Comparison of mode shares, 2016-17 to 2017-18

Role	Physically travelling	*Of those physically traveling, share using each mode on an average weekday*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
20117-18									
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
2016-17									
Student	84.8%	44.3%	9.9%	18.4%	4.2%	22.6%	0.4%	3,061	35,333
Undergraduate	85.7%	42.9%	10.7%	16.6%	3.6%	25.7%	0.4%	2,528	29,179
Graduate	80.6%	51.4%	5.7%	27.4%	7.1%	7.4%	0.9%	533	6,154
Employee	79.4%	17.1%	3.9%	63.4%	8.8%	4.9%	1.7%	1,071	12,363
Outside Davis	78.4%	1.0%	2.3%	78.8%	9.6%	4.8%	3.4%	920	11,353
Within Davis	86.4%	48.8%	10.1%	14.5%	4.1%	22.5%	0.0%	2,946	36,343
Overall	83.4%	37.6%	8.4%	29.5%	5.3%	18.3%	0.7%	4,132	47,696

Data are weighted for both years by role and gender (see Table 51).

Table 25 shows percentage-point changes in the overall mode share. This past year the rate of bicycling increased by 2.5 percentage points. Fewer people drove alone or took the bus to school in 2017-18 than 2016-17. The share of the campus community physically traveling to campus increased by 3.1 percentage points.

Table 25. One year change in overall mode share, 2016-17 to 2017-18

Percentage-point change in share of people doing each on an average weekday							
Years of comparison	**Physically travelling**	***Among those physically traveling to campus***					
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train
2016-17 to 2017-18	3.1%	2.5%	0.4%	-1.7%	-0.6%	-0.5%	-0.1%

Data are weighted for both years by role and gender (see Table 51).

Carpooling and ridesharing

Each year we ask those who indicate carpooling (multiple people in a vehicle arriving on campus together) or getting a ride to campus (where the driver continues on to another destination after the drop-off) how many other people were in the vehicle. This data enables 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 26. 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 1.6 passengers dropped off per ride to campus (excluding the driver).

Table 26. Average carpool size

Role	***Average occupancy for those that carpooled or got a ride at least once***		***Weighted sample***		***Projected population***	
	Carpool	Ride	Carpoolers	Riders	Carpoolers	Riders
Undergraduate	2.6	1.7	344	194	4,786	2,698
Graduate	2.7	1.3	69	30	959	423
Faculty	2.6	1.1	13	4	184	57
Staff	2.3	1.2	79	35	1,098	487
Outside Davis	2.5	1.2	94	32	1,311	442
Within Davis	2.4	1.5	326	171	4,546	2,385
Overall	2.6	1.6	504	263	7,026	3,666

Vehicle occupancy is based on responses to question *Q39* for those carpooling and to question *Q40* for those who got a ride. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

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 51. We estimate that 12,758 vehicles come to campus on an average weekday (Table 27). About 568 of these contain carpools and 515 are vehicles just dropping passengers off.

Table 27. Projected vehicles arriving on an average weekday, by occupancy and role

Role	***Projected number of vehicles on an average weekday***				**Projected population**
	Drive alone	Carpool	Ride	Total	
Student	5,360	369	318	6,047	36,708
Undergraduate	3,840	260	250	4,350	29,865
Freshman	205	10	33	248	6,133
Sophomore	391	43	40	474	5,510
Junior	1,342	83	92	1,517	8,125
Senior	1,902	140	86	2,127	10,097
Graduate	1,520	108	68	1,696	6,843
Master's	809	54	20	883	3,393
PhD	712	53	48	813	3,450
Employee	6,314	214	197	6,724	11,797
Faculty	527	18	9	554	1,719
Staff	5,787	197	188	6,172	10,078
Outside Davis	7,023	248	138	7,409	10,674
Within Davis	4,516	327	329	5,171	27,669
Overall	11,674	568	515	12,758	48,505

Results are based on responses to questions *Q26* (days physically traveling to campus), *Q33* (mode of transportation used each day), *Q39* (carpool size), and *Q40* (number given a ride). "Drive alone" includes driving alone in a vehicle as well as driving a motorcycle or scooter. The distinction between carpools and rides is whether the driver's destination is campus: Carpool is defined as "Carpool or vanpool with others also going to campus (either as driver or passenger)" and ride is defined as "Get a ride (someone drops you off and continues on elsewhere)." Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

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 2.75 campus-wide, and 1.56 among non-student employees only (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 *28*. Average vehicle ridership (AVR) 2010-11 through 2017-18, off campus only). This means that for every car coming to campus, there are an estimated 2.75 off-campus people coming to campus or telecommuting. This ratio is lower than it was last year. Table 28 and Table 29 shows the AVR estimates over the last nine 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 28. Average vehicle ridership (AVR) 2010-11 through 2017-18, off campus only

Role	*Off campus only*							
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16*	2016-17*	2017-18*
Student	4.49	5.29	6.05	5.59	5.66	5.16	3.99	4.08
Undergraduate	5.38	6.42	7.23	6.44	6.33	5.9	4.31	4.46
Freshman	3.26	3.66	5.06	2.31	4.24	2.73	2.52	2.09
Sophomore	8.37	15.93	17.51	10.93	10.64	11.14	6.97	9.70
Junior	5.59	6.24	7.85	6.59	6.64	6.23	4.02	4.06
Senior	4.57	5.26	5.62	5.85	5.31	4.75	3.92	3.85
Graduate	2.79	3.14	3.55	3.57	3.99	3.44	3.11	3.11
Master's	2.73	3.34	3.15	2.76	3.04	3.11	3.07	2.81
PhD	2.82	3.03	3.84	4.32	4.78	3.77	3.13	3.43
Employee	**1.75**	**1.78**	**1.70**	**1.75**	**1.61**	**1.83**	**1.55**	**1.60**
Faculty	2.24	2.76	3.06	3.24	2.81	2.77	2.27	2.76
Staff	1.66	1.65	1.52	1.54	1.49	1.74	1.48	1.49
Non-student and student employees	NA	2.45	2.51	2.58	2.57	2.61	2.25	2.32
Outside Davis	1.34	1.39	1.34	1.30	1.27	1.25	1.25	1.26
Within Davis	4.99	5.98	6.24	6.53	7.25	5.85	4.79	4.93
Overall	3.00	3.26	3.34	3.30	3.23	3.27	2.7	2.76

Bold indicates the official AVR statistic reported by UC campuses. AVR estimates from 2010-11 through 2017-18 are weighted by role and gender. See "Appendix D: Calculation of Average Vehicle Ridership (AVR)" for details on AVR calculations.
*Based on new method for estimating campus population.

Table 29. Average vehicle ridership (AVR) 2010-11 through 2017-18, on and off campus

Role	*All (on and off campus)*							
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16*	2016-17*	2017-18*
Student	5.53	6.41	7.25	6.74	6.93	6.46	5.08	5.34
Undergraduate	6.72	8.01	8.77	7.96	7.92	7.61	5.71	6.09
Freshman	32.75	34.61	33.67	15.45	31.58	33.12	27.93	21.35
Sophomore	9.11	16.54	18.88	11.86	11.94	11.83	7.37	10.81
Junior	6.23	6.88	8.30	7.41	7.20	6.66	4.42	4.87
Senior	4.79	5.68	5.96	6.14	5.67	5.04	4.11	4.21
Graduate	3.18	3.45	4.03	3.88	4.40	3.77	3.29	3.42
Master's	2.94	3.57	3.43	2.92	3.35	3.34	3.2	3.10
PhD	3.33	3.39	4.47	4.75	5.28	4.18	3.36	3.77
Employee	1.75	1.80	1.70	1.75	1.61	1.83	1.55	1.61
Faculty	2.24	2.78	3.06	3.24	2.81	2.78	2.28	2.76
Staff	1.67	1.67	1.52	1.55	1.49	1.74	1.48	1.51
Non-student and student employees	NA	2.59	2.64	2.69	2.70	2.72	2.35	2.49
Outside Davis	1.34	1.39	1.34	1.30	1.27	1.25	1.25	1.26
Within Davis	6.04	7.14	7.36	7.74	8.75	7.12	6.01	4.93
Overall	3.51	3.78	3.82	3.80	3.77	3.86	3.22	3.39

*Based on new method for estimating campus population.

Parking permits

Whether or not they reported having a car, all respondents were asked whether they currently have a UC Davis parking permit, and if so which type (question *Q20*). About 18.7 percent of respondents reported having an annual parking permit and 7.9 percent reported having a monthly or quarterly permit: a projected 8,339 and 3,538 people, respectively (Table 30). We also asked respondents whether they had a daily parking permit (either purchased or received through the GoClub program) or an in-vehicle EasyPark Personal Parking Meter. About5.4 percent of the population, or a projected 2,432 people have a daily permit. 1.8 percent of respondents, or a projected 823 people, indicated owning an in-vehicle parking meter.

Table 30. Share of people with a parking permit, by role

Role	Either annual or monthly/quarterly permit		Annual or multi-year permit		Monthly or quarterly permit		Daily or GoClub daily permit		EasyPark in-vehicle parking 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	17.0%	5,778	9.4%	3,193	7.6%	2,585	3.9%	1,317	2.0%	675	34,050
Undergraduate	14.8%	4,118	7.7%	2,127	7.2%	1,991	1.9%	541	1.8%	497	27,739
Freshman	3.5%	212	2.7%	162	0.8%	50	0.2%	11	0.0%	0	6,038
Sophomore	10.1%	506	5.2%	263	4.9%	243	0.9%	46	0.6%	28	5,016
Junior	20.5%	1,523	11.9%	880	8.7%	643	2.6%	195	2.3%	168	7,420
Senior	20.2%	1,876	8.9%	821	11.4%	1,054	3.1%	288	3.2%	301	9,265
Graduate	26.3%	1,660	16.9%	1,066	9.4%	594	12.3%	776	2.8%	178	6,311
Master's	29.2%	905	15.8%	490	13.4%	415	11.5%	355	2.7%	85	3,097
PhD	23.5%	755	17.9%	576	5.6%	179	13.1%	422	2.9%	93	3,215
Employee	57.3%	6,099	48.4%	5,146	9.0%	953	10.5%	1,115	1.4%	148	10,637
Faculty	46.8%	760	42.7%	694	4.1%	66	18.8%	306	2.4%	39	1,625
Staff	59.2%	5,339	49.4%	4,452	9.8%	887	9.0%	809	1.2%	109	9,012
Outside Davis	72.0%	6,971	51.0%	4,942	21.0%	2,030	3.9%	379	1.5%	143	9,685
Within Davis	18.6%	4,704	12.9%	3,265	5.7%	1,439	7.5%	1,889	2.4%	612	25,309
Overall	26.6%	11,877	18.7%	8,339	7.9%	3,538	5.4%	2,432	1.8%	823	44,688

Results are based on responses to question *Q20*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Ridership by transit provider

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, they were asked to indicate which transit service(s) they used ("Check all that apply"). Table 31 and Table 32 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 31. Share using specific bus services at least once during the week

Role	***Of those riding the bus to campus at least once***					**Weighted sample**	**Projected population**
	Unitrans	Yolobus	UCD/UCDMC shuttle	Sacramento Regional Transit	UCD/UC Berkeley shuttle		
Undergraduate	95.5%	2.7%	1.8%	0.0%	0.0%	687	8,890
Graduate	87.8%	3.9%	8.3%	0.0%	0.0%	54	699
Faculty	54.3%	23.9%	21.8%	0.0%	0.0%	5	67
Staff	74.2%	16.8%	9.0%	0.0%	0.0%	37	475
Overall	93.6%	3.6%	2.8%	0.0%	0.0%	783	10,130

Results are based on responses to questions *Q38* (whether a bus was ever used) and *Q49* (which bus services). Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Of the 35 respondents who indicated riding the train in the past week, nearly all rode the Amtrak Capitol Corridor (Table 32). Given the relatively small sample size, the weighted and projected estimates for train service ridership have large uncertainty relative to their estimated size.

Table 32. Share using specific train services at least once during the week

Role	***Of those riding the train to campus at least once***			**Weighted sample**	**Projected population**
	Amtrak	BART	Sacramento Regional Transit		
Undergraduate	69.4%	6.7%	24.0%	6	72
Graduate	100.0%	0.0%	0.0%	11	144
Faculty	100.0%	0.0%	0.0%	9	121
Staff	100.0%	0.0%	0.0%	8	109
Overall	89.8%	2.2%	8.0%	35	447

Results are based on responses to questions *Q38* (whether a train was ever used) and *Q50* (which train services). Data are weighted by role group based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Distance from 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 respondents travel (along a shortest-time route) to get to campus (in particular, to the Silo) on a daily basis. Table 33 and Table 34 summarize distances traveled by role group, showing that employees tend to travel from farther away than students. The median distance traveled among students is about 1.8 miles, versus 2.9 among faculty and 11 among staff (Table 33).

Table 33. Average distance from campus, by role group

Role	Geocoded	*Of those geocoded, distance from campus (miles)*				Weighted sample	Projected population
		Mean	Median	Minimum	Maximum		
Student	93.1%	4.43	1.76	0.38	180.18	2,635	36,708
Undergraduate	93.4%	3.72	1.60	0.38	93.26	2,144	29,865
Freshman	98.3%	1.53	0.77	0.77	52.94	440	6,133
Sophomore	91.3%	2.63	1.82	0.38	63.34	396	5,510
Junior	91.7%	5.03	1.87	0.49	93.26	583	8,125
Senior	92.7%	4.60	1.87	0.38	59.22	725	10,097
Graduate	92.4%	7.48	2.02	0.43	180.18	491	6,843
Master's	91.2%	8.41	2.11	0.57	180.18	244	3,393
PhD	93.6%	6.57	1.98	0.43	111.09	248	3,450
Employee	92.1%	12.98	3.91	0.54	228.12	847	11,797
Faculty	94.3%	13.67	2.91	0.54	228.12	123	1,719
Staff	89.6%	12.86	11.38	0.63	69.72	723	10,078
Outside Davis	87.1%	23.49	18.42	1.01	228.12	766	10,674
Within Davis	92.6%	2.03	1.92	0.38	6.03	1,986	27,669
Overall	92.9%	6.50	1.88	0.38	228.12	3,482	48,505
Weighted sample	3,235	NA	NA	NA	NA	NA	NA

Distances are calculated as the shortest-time network distance between respondents' geocoded cross-streets (given in questions *Q23* and *Q24* or contact information provided at the end of the survey) and a centroid on campus near the Silo (see "Appendix E: Geocoding and network distances"). Data are weighted by role and gender group for the 3,482 cases successfully geocoded and with non-missing mode choice data in question *Q33*.

While 88 percent of undergraduates live within 3 miles of campus, only 53 percent of faculty and 29 percent of staff do (Table 34). About 18 percent of the campus population lives more than 10 miles away, and 8 percent more than 20 miles away. Note that the threshold for living within Davis is about 5 miles, and that very few people live 5 to 8 miles from campus, given the agricultural belt that surrounds Davis. That is, once they live outside of Davis, it is likely that they live more than 8 miles away.

Table 34. Cumulative percent of people living within each distance from campus, by role

Distance from campus	Overall	Students		Employees	
		Undergraduate	Graduate	Faculty	Staff
Less than 0.5 miles	0.3%	0.5%	0.1%	0.0%	0.0%
1 mile	24.8%	37.1%	12.6%	5.2%	3.1%
1.5 miles	35.5%	47.5%	27.4%	15.1%	6.3%
2 miles	53.5%	67.4%	48.7%	23.4%	14.4%
2.5 miles	67.7%	82.2%	64.5%	36.5%	22.8%
3 miles	76.3%	88.5%	75.8%	52.7%	29.4%
4 miles	80.0%	90.6%	78.8%	62.6%	36.9%
6 miles	81.4%	91.3%	80.3%	66.2%	40.9%
8 miles	81.6%	91.4%	80.3%	66.5%	41.6%
10 miles	82.5%	91.8%	80.9%	68.1%	46.3%
12 miles	84.2%	92.5%	82.7%	71.2%	52.5%
14 miles	85.4%	92.8%	83.7%	72.3%	60.0%
16 miles	87.9%	93.4%	86.4%	77.2%	70.0%
18 miles	90.1%	94.3%	89.8%	80.5%	76.9%
20 miles	91.8%	95.2%	91.7%	82.7%	80.9%
25 miles	93.7%	96.7%	93.1%	84.9%	86.3%
30 miles	95.4%	98.2%	93.8%	86.8%	91.9%
40 miles	96.4%	98.9%	94.5%	87.6%	96.3%
50 miles	97.2%	99.2%	95.7%	89.3%	98.1%
60 miles	98.0%	99.7%	96.8%	90.4%	99.7%
70 miles	99.3%	99.8%	98.8%	97.0%	100.0%
100 miles	99.8%	100.0%	99.4%	99.5%	100.0%
More than 100 miles	100.0%	100.0%	100.0%	100.0%	100.0%
Weighted sample	3,482	2,144	491	123	723
Projected population	48,505	29,865	6,843	1,719	10,078
Group's percent of the overall population	100.0%	61.6%	14.1%	3.5%	20.8%

Distances are calculated as the shortest-time network distance between geocoded cross-streets (given in questions *Q23* and *Q24* or contact information provided at the end of the survey) and a centroid on campus near the Silo. Data are unweighted. See "Appendix E: Geocoding and network distances" for more details.

Usual mode to campus and between campus destinations

For the purpose of validating the method we use to calculate mode share, we asked respondents about the mode they "usually" use to travel to campus (*Q33*). This variable captures what respondents consider to be their "usual" mode, even if they traveled to campus using a different primary mode during the reference week. In addition, this variable captures the mode usually used by respondents who did not travel to campus during the reference week. For each distance category, Table 35 shows the share "usually" using each mode among those physically traveling to campus. The resulting mode share estimates derived from the "usual" mode question are very close to the estimates derived from the standard "reference week" primary mode questions. This consistency is important, since it indicates the mode share estimates of the Campus Travel Survey adequately capture what respondents consider to be their "usual" travel mode.

Table 35. Usual mode, by distance from campus

Distance group	Physically traveling	*Of those physically traveling to campus*						Weighted sample	Projected population
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train		
Within 1 mile	90.8%	71.2%	17.1%	2.6%	3.1%	5.8%	0.2%	827	11,520
1 to 2.9 miles	95.7%	46.7%	2.0%	16.3%	3.3%	31.6%	0.1%	1,704	23,742
3 to 4.9 miles	93.5%	32.3%	2.4%	33.2%	8.5%	23.5%	0.0%	180	2,504
5 to 9.9 miles	100.0%	10.2%	5.9%	78.4%	5.5%	0.0%	0.0%	60	830
10 to 19.9 miles	94.5%	0.2%	0.0%	81.2%	8.5%	7.9%	2.2%	403	5,607
20 miles or more	94.4%	0.0%	0.0%	82.6%	9.2%	0.9%	7.3%	309	4,301
Overall	94.2%	41.4%	5.1%	28.6%	4.7%	19.3%	1.0%	3,482	48,505
Weighted sample	3,281	1,347	168	931	153	627	32	3,482	NA
Projected population	45,709	18,763	2,335	12,968	2,125	8,739	445	NA	48,505

Mode data are based on responses to question *Q33*, and distance data are calculated network distances between the geocoded cross-streets (given in *Q23* and *Q24* or contact information provided at the end of the survey) and a centroid on campus near the Silo (see "Appendix E: Geocoding and network distances"). Data are weighted by role group and gender for the 3,482 cases successfully geocoded and with non-missing mode choice data in question *Q33* (see Table 51).

Vehicle-miles-traveled to campus

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).

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 *Q40* 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 85% of all bus riders use Unitrans. According to FY 2015-16 figures from Unitrans, Unitrans had an average of about 4.66 passengers per mile.[4] 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) / 4.66 ≈ 4.3 person-miles.

We estimate train occupancy based on annual ridership data from Amtrak's Capitol Corridor, since they provide the majority of train rides to campus. According to figures in the Capitol Corridor Business Plan

[4] Palmere, A. Unitrans Quarterly Report to the City of Davis, April-June 2016.

Update, the Capitol Corridor had an average of 85.7 passengers per mile in FY 2015-16.[5] 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 36 and Table 37.

Table 36. Person-miles-traveled (PMT), daily and annually, by mode group

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	0.00	0	0	0.0%	13.5%	6,552
No vehicle (bike, walk, or skate)	0	0.00	0	0	0.0%	42.4%	20,539
Personal vehicles	341,278	24.98	76,021,232	5,564	98.7%	28.2%	13,663
Drive alone	321,851	27.57	71,692,080	6,141	93.1%	24.1%	11,674
Carpool or ride	19,428	9.77	4,329,152	2,178	5.6%	4.1%	1,988
Bus	4,272	0.57	882,637	118	1.2%	15.4%	7,470
Train	296	1.09	61,838	228	0.1%	0.6%	271
Total	345,846	7.13	76,965,708	1,587	100.0%	100.0%	48,494

Mode groups are the estimated number using each means of transportation on a typical weekday, based on responses to questions *Q26* and *Q33*. Vehicle-miles are calculated as described in the text, drawing on data from questions *Q26, Q33, Q23, Q24,* and the average number of passengers per mile on Unitrans and Amtrak's Capitol Corridor. All data are weighted by role and gender group for the 3,482 cases successfully geocoded (based on *Q23* and *Q24*) and with non-missing mode choice data in question *Q33* (see Table 51).

[5] Capitol Corridor Joint Powers Authority. Capitol Corridor Intercity Passenger Rail Service Business Plan Update FY 2016-17- FY 2017-18, Appendix C. http://www.capitolcorridor.org/wp-content/uploads/2016/05/CCJPA_Business_Plan_2016-2017.pdf.

Table 37. 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	148,586	4.05	29,286,669	798	43.0%	75.7%	36,708
Undergraduate	107,045	3.58	20,937,626	701	31.0%	61.6%	29,865
Freshman	7,216	1.18	1,314,243	214	2.1%	12.6%	6,133
Sophomore	9,000	1.63	1,687,190	306	2.6%	11.4%	5,510
Junior	43,092	5.30	8,117,687	999	12.5%	16.8%	8,125
Senior	47,737	4.73	9,818,506	972	13.8%	20.8%	10,097
Graduate	41,542	6.07	8,349,043	1,220	12.0%	14.1%	6,843
Master's	24,743	7.29	4,826,575	1,423	7.2%	7.0%	3,393
PhD	16,798	4.87	3,522,469	1,021	4.9%	7.1%	3,450
Employee	197,259	16.72	47,679,039	4,042	57.0%	24.3%	11,797
Faculty	15,851	9.22	3,300,185	1,920	4.6%	3.5%	1,719
Staff	181,408	18.00	44,378,853	4,404	52.5%	20.8%	10,078
Outside Davis	318,550	29.84	71,035,968	6,655	92.1%	22.0%	10,674
Within Davis	27,296	0.72	5,929,739	157	7.9%	78.0%	37,831
On Campus	206	0.02	42,122	5	0.1%	17.6%	8,516
West Village	343	0.21	64,904	39	0.1%	3.4%	1,647
Off Campus	26,748	0.97	5,822,713	210	7.7%	57.0%	27,669
Overall	345,846	7.13	76,965,708	1,587	100.0%	100.0%	48,505

Vehicle-miles are calculated as described in the text, drawing on data from questions *Q26, Q33, Q23*, *Q24,* and the average number of passengers per mile on Unitrans and Amtrak's Capitol Corridor. All data are weighted (and expanded) by role and gender group for the 3,482 cases successfully geocoded (based on *Q23* and *Q24*) and with non-missing mode choice data in question *Q33* (see Table 51).

Carbon dioxide-equivalent 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 85% 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[6] and emissions averages[7][8] (Table 38).

This is the fourth year where we estimate two sets of bus emissions, one for Unitrans and one for other bus services. Unitrans emissions are lower than national averages, because of more reliance on compressed natural gas (CNG) rather than diesel fuel for Unitrans buses, and because of the relatively high numbers of riders per bus, on average. In particular, for fiscal year 2016, Unitrans buses consumed 351,215 therms of CNG while providing 885,123 vehicle-miles of service. Assuming 11.7 pounds of carbon per therm of CNG[9] then Unitrans operations generated 4,109,216 pounds of carbon in fiscal year 2016, or 4.64 pounds per vehicle-mile of service, about 3/4th of the national average. These estimates are used to calculate emissions for the portion of the population that used Unitrans, while the national average is used for the bus (other) estimates.

We do not take into account emissions associated with the manufacture of bicycles or vehicles, or of home energy use for those working from home, assuming that biking, walking, skating, working from home, or otherwise not traveling contributes no emissions. As with our estimates of total miles traveled on which these estimates are based, side trips made on the way to or from campus, and any trips made in the middle of the day are not taken into account.

Table 38. Formula for calculating average weekday pounds of CO2e emissions

Mode	Formula
Drive alone	1.1 lbs / mile × aggregated average weekday person-miles traveled (or equivalently, vehicle-miles traveled) by driving alone
Carpool /ride	1.1 lbs / mile × aggregated average weekday carpool/ride person-miles traveled (this is the equivalent of adjusting person-miles by the reported carpool size)
Bus (Unitrans)	4.64 lbs / mile × aggregated average weekday person-miles traveled by bus
Bus (other)	6.3 lbs / mile × aggregated average weekday person-miles traveled by bus
Train	39.96 lbs / mile × aggregated average weekday person-miles by train

Using these assumptions, we estimate that travel to campus generates a total of 426,837 pounds of CO_2e on an average weekday, or 8.8 pounds per person (Table 39), and about 48,403 metric tons of CO_2e annually, or 1.0 metric tons per person (Table 40). Some air quality reporting standards require us to not include Unitrans emissions as part of the aggregate calculation (in these cases the Unitrans emissions are already included elsewhere in the calculation). Table 41 and Table 42 show the emissions results if Unitrans is not included. Undergraduate students, particularly freshmen and sophomores, contribute much less to campus-wide CO_2e emissions than their share of the population. Employees, and especially staff, contribute the most CO_2e relative to their share of the campus population, comprising 20.8 percent of the population and contributing 50.3 percent of CO_2e on an average weekday.

To assess the extent that active transportation reduces CO_2e emissions, we consider the hypothetical case that everyone were to drive alone to campus but all else were unchanged (e.g. distances and frequency of

[6] Neff, J., and M. Dickens. *2016 Public Transportation Fact Book*. Washington, D.C., 2016.
[7] U.S. Energy Information Administration. Carbon Dioxide Emissions Coefficients by Fuel. http://www.eia.gov/environment/emissions/co2_vol_mass.cfm.
[8] U.S. Energy Information Administration. United States Electricity Profile 2015. http://www.eia.gov/electricity/state/unitedstates/.
[9] Palmere, A. Unitrans Quarterly Report to the City of Davis, April-June 2016.

travel). In this scenario, the campus would produce an additional 17,479 annual metric tons of CO_2e, compared to 48,403 tons overall (Table 43).

shows the contribution of each alternative, when compared to driving alone, to the total CO_2e emissions avoided.

Figure 8. Annual CO2e emissions avoided by using active transportation modes

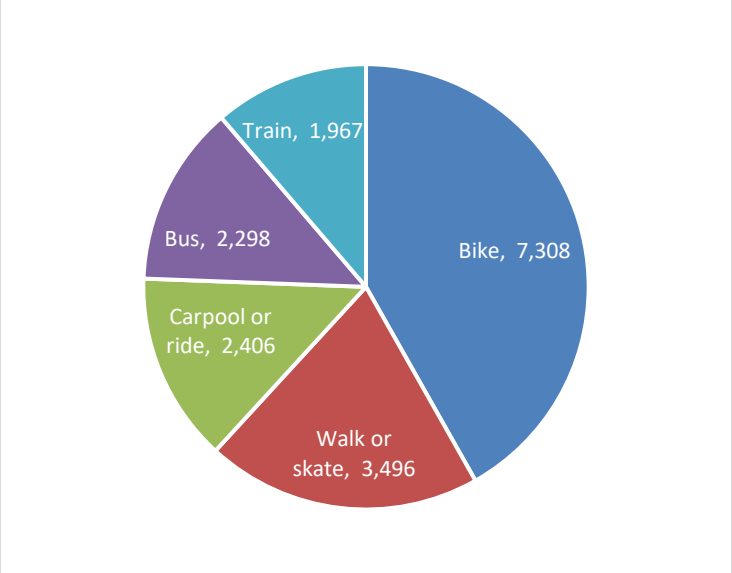


Table 39. Daily pounds of CO_2e emitted, by mode and role

Role	*Pounds-equivalent of CO_2e generated on an average weekday*						Average lbs per person	Share of total CO_2e	Share of population	Projected population
	Drive alone	Carpool	Ride	Bus	Train	Total CO_2e				
Student	156,567	8,077	1,987	18,224	6,383	191,237	5.21	44.8%	75.7%	36,708
Undergraduate	111,987	6,266	1,111	16,384	1,350	137,098	4.59	32.1%	61.6%	29,865
Freshman	7,811	78	264	776	6	8,934	1.46	2.1%	12.6%	6,133
Sophomore	8,948	364	108	3,880	-	13,301	2.41	3.1%	11.4%	5,510
Junior	45,015	2,812	414	6,043	188	54,471	6.70	12.8%	16.8%	8,125
Senior	50,214	3,013	325	5,685	1,156	60,393	5.98	14.1%	20.8%	10,097
Graduate	44,580	1,811	876	1,840	5,033	54,139	7.91	12.7%	14.1%	6,843
Master's	26,523	1,187	484	1,134	1,578	30,905	9.11	7.2%	7.0%	3,393
PhD	18,057	624	392	706	3,455	23,234	6.73	5.4%	7.1%	3,450
Employee	213,662	8,973	3,311	4,208	5,446	235,600	19.97	55.2%	24.3%	11,797
Faculty	17,282	677	148	281	2,515	20,904	12.16	4.9%	3.5%	1,719
Staff	196,380	8,296	3,163	3,927	2,930	214,695	21.30	50.3%	20.8%	10,078
Outside Davis	345,566	15,158	3,743	8,902	11,819	385,188	36.09	90.2%	22.0%	10,674
Within Davis	24,663	1,892	1,554	13,530	9	41,649	1.10	9.8%	78.0%	37,831
On Campus	114	29	59	153	6	361	0.04	0.1%	17.6%	8,516
West Village	218	20	6	625	0	868	0.53	0.2%	3.4%	1,647
Off Campus	24,331	1,843	1,490	12,752	3	40,419	1.46	9.5%	57.0%	27,669
Overall	370,229	17,050	5,298	22,432	11,828	426,837	8.80	100.0%	100.0%	48,505

Data are weighted for both years by role and gender (see Table 51).

Table 40. Annual tons of CO_2e emitted, by mode and role

Role	*Annual tons of CO_2e emissions*						Average tons per person	Share of total CO_2e	Share of population	Projected population
	Drive alone	Carpool	Ride	Bus	Train	Total CO_2e				
Student	17,754	916	225	2,067	724	21,686	0.59	44.8%	75.7%	36,708
Undergraduate	12,699	711	126	1,858	153	15,547	0.52	32.1%	61.6%	29,865
Freshman	886	9	30	88	1	1,013	0.17	2.1%	12.6%	6,133
Sophomore	1,015	41	12	440	-	1,508	0.27	3.1%	11.4%	5,510
Junior	5,105	319	47	685	21	6,177	0.76	12.8%	16.8%	8,125
Senior	5,694	342	37	645	131	6,848	0.68	14.1%	20.8%	10,097
Graduate	5,055	205	99	209	571	6,139	0.90	12.7%	14.1%	6,843
Master's	3,008	135	55	129	179	3,505	1.03	7.2%	7.0%	3,393
PhD	2,048	71	44	80	392	2,635	0.76	5.4%	7.1%	3,450
Employee	24,229	1,018	375	477	618	26,717	2.26	55.2%	24.3%	11,797
Faculty	1,960	77	17	32	285	2,371	1.38	4.9%	3.5%	1,719
Staff	22,269	941	359	445	332	24,346	2.42	50.3%	20.8%	10,078
Outside Davis	39,187	1,719	425	1,009	1,340	43,680	4.09	90.2%	22.0%	10,674
Within Davis	2,797	215	176	1,534	1	4,723	0.12	9.8%	78.0%	37,831
On Campus	13	3	7	17	1	41	0.00	0.1%	17.6%	8,516
West Village	25	2	1	71	0	98	0.06	0.2%	3.4%	1,647
Off Campus	2,759	209	169	1,446	0	4,583	0.17	9.5%	57.0%	27,669
Overall	41,983	1,933	601	2,544	1,341	48,403	1.00	100.0%	100.0%	48,505

Data are weighted for both years by role and gender (see Table 51)

Table 41. Daily pounds of CO2e emitted, by mode and role (not including Unitrans)

Role	***Pounds-equivalent of CO_2e generated on an average weekday***						**Average lbs per person**	**Share of total CO_2e**	**Share of population**	**Projected population**
	Drive alone	Carpool	Ride	Bus	Train	Total CO_2e				
Student	156567	8077	1987	6259	6383	184978	5.04	44.4%	75.7%	36708
Undergraduate	111987	6266	1111	5018	1350	132081	4.42	31.7%	61.6%	29865
Freshman	7811	78	264	661	6	8273	1.35	2.0%	12.6%	6133
Sophomore	8948	364	108	441	0	12860	2.33	3.1%	11.4%	5510
Junior	45015	2812	414	2666	188	51805	6.38	12.4%	16.8%	8125
Senior	50214	3013	325	1249	1156	59144	5.86	14.2%	20.8%	10097
Graduate	44580	1811	876	1241	5033	52898	7.73	12.7%	14.1%	6843
Master's	26523	1187	484	872	1578	30032	8.85	7.2%	7.0%	3393
PhD	18057	624	392	369	3455	22865	6.63	5.5%	7.1%	3450
Employee	213662	8973	3311	3602	5446	231997	19.67	55.6%	24.3%	11797
Faculty	17282	677	148	253	2515	20652	12.01	5.0%	3.5%	1719
Staff	196380	8296	3163	3350	2930	211346	20.97	50.7%	20.8%	10078
Outside Davis	345566	15158	3743	8902	11819	376286	35.25	90.2%	22.0%	10674
Within Davis	24663	1892	1554	959	9	40689	1.08	9.8%	78.0%	37831
On Campus	114	29	59	45	6	317	0.04	0.1%	17.6%	8516
West Village	218	20	6	69	0	800	0.49	0.2%	3.4%	1647
Off Campus	24331	1843	1490	846	3	39573	1.43	9.5%	57.0%	27669
Overall	370229	17050	5298	9861	11828	416976	8.60	100.0%	100.0%	48505

Data are weighted for both years by role and gender (see Table 51)

Table 42. Annual tons of CO_2e emitted, by mode and role (not including Unitrans)

Role	***Annual tons of CO_2e emissions***						**Average tons per person**	**Share of total CO_2e**	**Share of population**	**Projected population**
	Drive alone	Carpool	Ride	Bus	Train	Total CO_2e				
Student	17,754	916	225	710	724	20,976	0.57	44.4%	75.7%	36,708
Undergraduate	12,699	711	126	569	153	14,978	0.50	31.7%	61.6%	29,865
Freshman	886	9	30	75	1	938	0.15	2.0%	12.6%	6,133
Sophomore	1,015	41	12	50	-	1,458	0.26	3.1%	11.4%	5,510
Junior	5,105	319	47	302	21	5,875	0.72	12.4%	16.8%	8,125
Senior	5,694	342	37	142	131	6,707	0.66	14.2%	20.8%	10,097
Graduate	5,055	205	99	141	571	5,999	0.88	12.7%	14.1%	6,843
Master's	3,008	135	55	99	179	3,406	1.00	7.2%	7.0%	3,393
PhD	2,048	71	44	42	392	2,593	0.75	5.5%	7.1%	3,450
Employee	24,229	1,018	375	409	618	26,308	2.23	55.6%	24.3%	11,797
Faculty	1,960	77	17	29	285	2,342	1.36	5.0%	3.5%	1,719
Staff	22,269	941	359	380	332	23,966	2.38	50.7%	20.8%	10,078
Outside Davis	39,187	1,719	425	1,009	1,340	42,670	4.00	90.2%	22.0%	10,674
Within Davis	2,797	215	176	109	1	4,614	0.12	9.8%	78.0%	37,831
On Campus	13	3	7	5	1	36	0.00	0.1%	17.6%	8,516
West Village	25	2	1	8	-	91	0.06	0.2%	3.4%	1,647
Off Campus	2,759	209	169	96	0	4,488	0.16	9.5%	57.0%	27,669
Overall	41,983	1,933	601	1,118	1,341	47,284	0.97	100.0%	100.0%	48,505

Data are weighted for both years by role and gender (see Table 51)

Table 43. Annual tons of CO2e emissions avoided compared to driving alone

Role	Annual tons of CO2e avoided						Average savings/person	Projected population
	Bike	Walk or skate	Carpool or ride	Bus	Train	Total		
Students	5,989	1,999	1,252	1,969	1,062	12,274	0.33	36,708
Undergraduate	4,460	1,643	824	1,806	225	8,962	0.30	29,865
Freshman	759	274	36	61	1	1,131	0.18	6,133
Sophomore	990	116	54	471	-	1,633	0.30	5,510
Junior	1,318	412	341	618	31	2,721	0.33	8,125
Senior	1,394	842	393	655	192	3,477	0.34	10,097
Graduate	1,529	356	427	163	837	3,313	0.48	6,843
Master's	662	227	315	94	262	1,561	0.46	3,393
PhD	867	128	112	69	575	1,751	0.51	3,450
Employees	1,318	1,497	1,154	329	906	5,205	0.44	11,797
Faculty	397	331	123	21	418	1,290	0.75	1,719
Staff	921	1,166	1,031	308	487	3,914	0.39	10,078
Outside Davis	635	2,441	2,117	621	1,966	7,779	0.73	10,674
Within Davis	6,672	1,055	290	1,677	2	9,700	0.26	37,831
On campus	956	361	8	17	1	1,344	0.16	8,516
West Village	276	37	3	76	0	392	0.24	1,647
Off campus	5,441	658	278	1,584	0	7,964	0.29	27,669
Overall	7,308	3,496	2,406	2,298	1,967	17,479	0.36	48,505

Bike savings = 1.1 lbs./mile*annual person-miles biked
Walk or skate savings = 1.1 lbs./mile*annual person-miles walked or skated
Carpool or ride savings = 1.1 lbs./mile*(carpool or ride PMT)
Bus savings = 1.1 lbs./mile – 4.64 lbs./mile*annual bus PMT. "Unitrans" estimates are used to conservatively estimate savings.
Train savings = 1.1 lbs./mile – 39.96 lbs./mile*annual train PMT

Driver's license, car and bicycle access

All respondents were asked whether they have a driver's license as well as if they have access to a bicycle for riding to campus. About 83 percent of those living within Davis have a driver's license, compared to 98 percent of those living outside Davis (Table 44). Car access varies substantially by residential location: only about 51 percent of those living in Davis have access to a car, compared to 94 percent of those living outside Davis. About 71 percent of university affiliates indicated they have the option to bike to campus, and those who live in Davis have substantially higher rates of bike access (86 percent compared to 18 percent for those outside of Davis). Overall, more people consider bicycling to be a feasible option to get to campus (34,358) than those who consider driving to be a feasible option (29,157), though these rates are substantially different among those living outside Davis.

Table 44. Driver's license, car and bicycle access

Role	Driver's license	Access to a car	Access to a bike	Weighted sample	Projected population
Students	82.2%	49.5%	77.5%	2,635	36,708
Undergraduate	81.4%	44.5%	78.2%	2,144	29,865
Freshman	61.6%	12.4%	87.4%	440	6,133
Sophomore	74.2%	33.8%	84.7%	396	5,510
Junior	87.1%	52.1%	70.7%	583	8,125
Senior	92.7%	63.9%	75.2%	725	10,097
Graduate	85.8%	71.3%	74.3%	491	6,843
Master's	84.8%	71.4%	69.1%	244	3,393
PhD	86.7%	71.3%	79.5%	248	3,450
Employees	99.1%	93.0%	50.1%	847	11,797
Faculty	98.0%	92.8%	69.0%	123	1,719
Staff	99.3%	93.1%	46.9%	723	10,078
Outside Davis	98.2%	93.9%	17.7%	766	10,674
Within Davis	83.0%	50.6%	85.8%	2,716	37,831
Overall	86.3%	60.1%	70.8%	3,482	48,505
Weighted sample	3,005	2,093	2,466	3,482	NA
Projected population	41,864	29,157	34,358	NA	48,505

Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2*, *Q15*, *Q18-19,* and *Q26-38* (see Table 51). Car access reflects those respondents who indicated they have the option to drive alone to campus.

Self-reported bicycling aptitude

Question *Q54* 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." Approximately 2.9 percent indicated that they cannot ride a bike, and 9.1 percent of respondents indicated that they could but were "not very confident" doing so. Overall, about 88 percent of respondents indicated that they were "somewhat" or "very confident" riding. Among all groups, freshmen are least likely to report being "very confident," and women are substantially less likely to report being "very confident" than men (Table 45).

Table 45. Self-reported bicycling aptitude, by role group

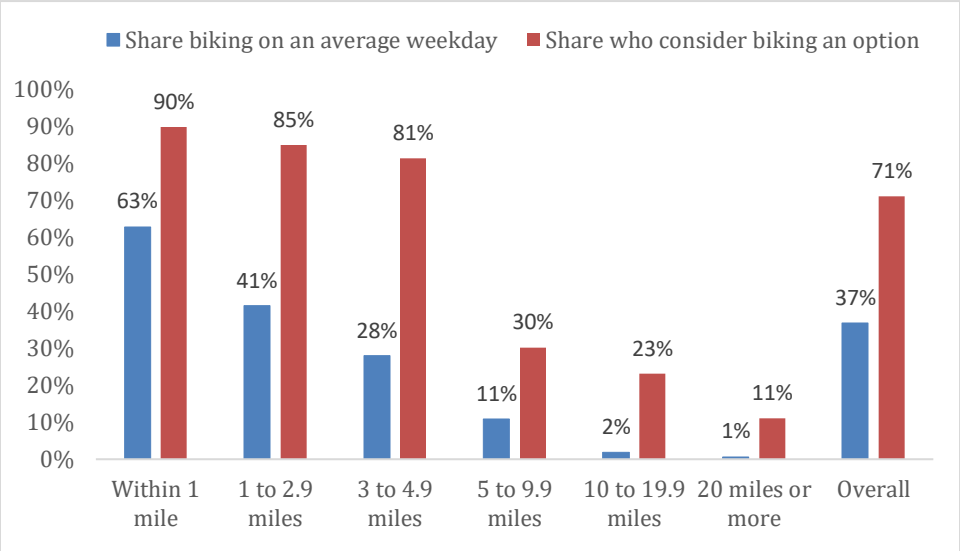
Role	***Self-rated ability to ride a bike***				**Weighted sample**
	I cannot ride a bike at all because I do not know how.	I can ride a bike, but I am not very confident doing so.	I am somewhat confident riding a bike.	I am very confident riding a bike.	
Student	3.0%	9.6%	23.2%	64.2%	2,836
Undergraduate	3.3%	9.6%	24.1%	63.1%	2,308
Freshman	3.4%	10.4%	35.9%	50.3%	474
Sophomore	4.2%	8.1%	21.9%	65.8%	426
Junior	3.7%	11.4%	23.3%	61.6%	628
Senior	2.5%	8.3%	19.2%	70.0%	780
Graduate	1.9%	9.6%	19.4%	69.1%	529
Master's	2.4%	11.0%	22.4%	64.2%	262
PhD	1.4%	8.2%	16.6%	73.8%	267
Employee	2.6%	7.8%	18.1%	71.6%	912
Faculty	1.1%	7.0%	19.3%	72.5%	133
Staff	2.8%	7.9%	17.8%	71.4%	779
Male	2.8%	4.4%	12.3%	80.5%	1,603
Female	3.0%	12.6%	29.0%	55.3%	2,145
Overall	2.9%	9.1%	21.9%	66.1%	3,748

Results are based on responses to questions *Q54*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Potential for bicycling

We include a question to assess the potential mode share of biking. In *Q19*, respondents were asked, "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. Figure 9 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 81 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.

Figure 9. Potential for bicycling



Results are based on responses to questions *Q19*, *Q23*, *Q24*, *Q26*, and *Q33*. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Awareness of TAPS and other transportation programs

Respondents were presented a list of services and asked to indicate, “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 46 summarizes the responses for each service, and

Table 47 compares responses for the past six years, for those items that appeared on each of the surveys. The most utilized services in 2017-18 were the bike tire air stations, TAPS bicycle licensing program, and the GoClub program. 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 46. Awareness of transportation services

Service	Have never heard of it	Have only heard of it	Have used it
Bike tire air stations and repair stations around campus	13.5%	41.8%	44.7%
TAPS bicycle licensing program	26.1%	43.3%	30.6%
GoClub program	66.4%	20.6%	13.0%
Bicycle Education and Enforcement Program (BEEP) and bike safety video	68.3%	25.8%	6.0%
TAPS motorist assistance program	48.3%	49.5%	2.2%
Zipcar carsharing program	25.9%	65.5%	8.6%
In-vehicle parking meters (Easy Park)	52.9%	36.9%	10.2%
UC Davis Bike Auction	31.8%	63.7%	4.5%
Bike lock-cutting service	35.5%	60.3%	4.2%
Zimride carpool matching service	72.3%	26.2%	1.5%
TAPS Mobility Assistance Program	68.5%	28.7%	2.8%
Aggie Bike Buy Program	57.3%	41.8%	0.9%

Results are based on responses to question Q51. Data are weighted by role and gender based on the 3,748 valid responses to questions *Q2, Q15*, and *Q26-38* (see Table 51).

Table 47. Awareness of transportation services, 2011-12 through 2017-18

Service	Change 2016-17 to 2017-18	Percent who have heard of it or used it						
		2017-18*	2016-17*	2015-16*	2014-15	2013-14	2012-13	2011-12
Zimride carpool matching service	0.3%	27.7%	0.274	0.305	0.67	0.383	0.41	0.312
TAPS motorist assistance program	-0.4%	31.5%	0.319	0.536	0.794	0.525	0.586	0.517
Zipcar carsharing program	-2.5%	74.1%	0.766	0.79	0.902	0.777	0.819	0.759
Bike lock-cutting service	-4.4%	64.5%	0.689	0.663	0.834	0.576	0.625	0.573
GoClub program	-3.1%	33.6%	0.367	0.374	0.689	0.456	0.454	0.428
In-vehicle parking meters (Easy Park)	2.1%	47.1%	0.45	0.443	0.678	0.374	0.361	0.347
Emergency Ride Home Program for goClub members	NA	NA	NA	NA	NA	0.246	0.259	0.245
UC Davis Bike Auction	-8.2%	68.2%	0.764	0.741	0.892	0.788	0.832	0.839
Bike commuter showers and lockers (ARC)	NA	NA	NA	NA	NA	0.348	0.363	0.377
Bicycle Education and Enforcement Program (BEEP) and bike safety video	-2.8%	31.7%	0.345	0.339	0.696	0.311	0.239	0.283
Discount transit passes for those without a parking permit	NA	NA	NA	NA	NA	0.249	0.274	0.348
TAPS Mobility Assistance Program	-4.5%	51.7%	0.562	0.515	0.81	0.334	NA	NA
Aggie Bike Buy Program	-1.3%	42.7%	0.44	0.425	0.647	0.341	0.302	NA
Bike tire air stations and repair stations around campus	-1.2%	86.5%	0.877	0.911	0.954	0.91	0.916	NA
TAPS bicycle licensing program	-2.2%	73.9%	0.761	0.788	0.909	NA	NA	NA

Data for 2017-18 are based on responses to question *Q51*.

*Based on new method for estimating campus population.

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APPENDICES

Appendix A: Survey instrument, 2017-18 Campus Travel Survey

Campus Travel Survey 2017-18

Start of Block: Welcome Page

Q1 Welcome to the 2017-18 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 5-10 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 30 $50 Visa gift cards and a grand prize of an Amazon Fire tablet! 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!
Albee Wei, Graduate Student, Institute of Transportation Studies (ywei@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?

- ○ Undergraduate student (including Post-baccalaureate)
- ○ Graduate student
- ○ Faculty
- ○ Staff
- ○ Visiting scholar
- ○ Post doc
- ○ Recent graduate
- ○ Retiree

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 a student at UC Davis, we do not need any further information from you at this time.

Q13 Thank you for taking this shortened version of the 2017-18 Campus Travel Survey. Since you are no longer an employee of UC Davis, we do not need any further information from you at this time.

End of Block: Section 1 - Role

Start of Block: Section 2 - Background information about you

Q14 Next, we have a few questions about you.

Q15 I identify as...

- ○ Female
- ○ Male
- ○ (please specify) _____

Q16 Do you have any temporary or permanent physical conditions that limit your ability to walk, bike, drive, or use public transit?

	Yes	No
Walk	○	○
Bike	○	○
Drive	○	○
Use public transit	○	○

Q17 Where were you born?

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

Q18 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

Q19 What options are available to you for getting to campus, whether or not you use them on a regular basis?

- [ ] Walk
- [ ] Skate or skateboard
- [ ] Bike
- [ ] Electric bike
- [ ] Motorcycle or scooter
- [ ] Drive alone in a car (or other vehicle)
- [ ] Carpool or vanpool with others also going to campus (either as driver or passenger)
- [ ] Get a ride (the driver continues on elsewhere)
- [ ] Bus
- [ ] Train or light rail

Q20 Do you currently have a UC Davis parking permit?

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

Q21 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

Q22 Which part of Davis do you live in? (scroll down to see all options)

- ○ 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)

Q23 What intersection is nearest to your home? (Please answer for where you live locally, 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: _____

---

*

Q24 What is your zip code?

_____

End of Block: Section 2 - Background information about you

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

Q25 Consider your activities during the last week, from Monday (Nov. 6) through Sunday (Nov. 12). If you have a day planner, it might be useful to look at the last week's activities as you complete this section.

Q26 Did you go somewhere on campus any day last week (Nov. 6- Nov. 12) 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, Nov.6- No.v 12

Q27 On which days last week did you go somewhere on campus for school or work? (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

Q28 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 or field work
- ○ Telecommuting (working from home or another remote location)
- ○ Temporary appointment elsewhere (internship, visiting scholar, teaching appointment, exchange program, etc.)
- ○ Other: _____

Q29 What was the main reason you did not travel to work? Please answer for each day individually.

	Monday	Telecommuting (working from home or another remote location)	Tuesday	Work or school-related activities elsewhere (field work, meeting, teaching appointment, etc.)	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 activities elsewhere (field work, meeting, teaching appointment, etc.)	○	○	○	○	○	○	○	○	○	○	○
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	○	○	○	○	○	○	○	○	○	○	○

Q30 Do you expect to resume regular travel to campus for school or work this academic year?

- ○ Yes
- ○ No

Q31 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

Q32 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

Q33 What means of transportation do you usually use to travel to campus for school or work? (If you usually use more than one mode of transportation, please select the one you usually use for most of the distance).

- ○ Walk
- ○ Skate or skateboard
- ○ Bike
- ○ Electric bike
- ○ Motorcycle or scooter
- ○ Drive alone in a car (or other vehicle)
- ○ Carpool or vanpool with others also going to campus (either as driver or passenger)
- ○ Get a ride (someone drops you off and continues on elsewhere)
- ○ Bus
- ○ Train or light rail
- ○ Taxi services
- ○ Uber or Lyft Services
- ○ Other: _____

Q34 What means of transportation do you usually use to travel between on-campus destinations?

- ○ Walk
- ○ Skate or skateboard
- ○ Bike
- ○ Electric bike
- ○ Motorcycle or scooter
- ○ Drive alone in a car (or other vehicle)
- ○ Carpool or vanpool (either as driver or passenger)
- ○ Get a ride (someone drops you off and continues on elsewhere)
- ○ Bus
- ○ Other: _____

Q35 When do you typically arrive on campus? (For example, 8:30 am)

_____

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

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

Q36 Consider how you traveled to campus last week.

Q37 First think back to the entire week (Monday, Nov. 6- Sunday, Nov. 12). 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.

- [ ] Walk
- [ ] Skate or skateboard
- [ ] Bike
- [ ] Electric 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 on elsewhere)
- [ ] Bus
- [ ] Train or light rail
- [ ] Taxi services
- [ ] Uber or Lyft Services
- [ ] Other: _____

Q38 **Next, consider each day specifically.** 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**.)

	Walk	Skate or skateboard	Bike	Electric bike	Motorcycle or scooter	Drive alone in a car (or other vehicle)	Carpool or vanpool with others also going to campus (either as driver or passenger)	Get a ride (someone drops you off and continues on elsewhere)	Bus	Train or light rail	Taxi services	Uber or Lyft services
Monday	○	○	○	○	○	○	○	○	○	○	○	○
Tuesday	○	○	○	○	○	○	○	○	○	○	○	○
Wednesday	○	○	○	○	○	○	○	○	○	○	○	○
Thursday	○	○	○	○	○	○	○	○	○	○	○	○
Friday	○	○	○	○	○	○	○	○	○	○	○	○
Saturday	○	○	○	○	○	○	○	○	○	○	○	○
Sunday	○	○	○	○	○	○	○	○	○	○	○	○

Q39 During the times when you carpooled with others last week, how many people on average 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

Q40 During the times when you got a ride on your way to campus last week, how many people on average did your driver 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

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

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

Q41 Now consider this past summer, from June 16- September 24, 2017.

Q42 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 16- September 24)
- 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

Q43 During this period, 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 8 - Travel to campus - more details about mode

Q44 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

Q45 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 _____

Q46 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

Q47 When you drive to Davis for school or work, do you *usually* park on-campus or off-campus?

- ○ On-campus
- ○ Off-campus

Q48 How do you get from your parked car to campus?

- ○ Walk
- ○ Bike
- ○ Skateboard
- ○ Bus
- ○ Taxi
- ○ Lyft or Uber Services
- ○ Other: _____

Q49 Which bus service did you use on your way to campus last week? If more than one bus service was

used, please select the service used for a greater portion of your trip.

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

Q50 Which train service did you use on your way to campus last week? If more than one train service was used, please select the service used for a greater portion of your trip.

- ○ Amtrak Capitol Corridor
- ○ BART
- ○ Sacramento Regional Transit
- ○ Other: _____

End of Block: Section 8 - Travel to campus - more details about mode

---

Start of Block: Section 9 - Campus transportation programs

Q51 Are you familiar with any of these campus programs?

	I've never heard of it	I've heard of it, but never used it	I've used it
GoClub program	○	○	○
Aggie Bike Buy Program	○	○	○
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 Bike Auction	○	○	○
TAPS Mobility Assistance Program	○	○	○
TAPS bicycle licensing program	○	○	○

End of Block: Section 9 - Campus transportation programs

Start of Block: Section 10 - More background information about your travel and your opinions

Q52 Not too much further!

Q53 We'd like to ask about your opinions with respect to travel. 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.	○	○	○	○	○
My commute trips mostly go well.	○	○	○	○	○
I like driving.	○	○	○	○	○
I need a car to do many of the things I like to do.	○	○	○	○	○
I am satisfied with my commute trips to campus.	○	○	○	○	○
My schedule makes it hard or impossible for me to use public transit.	○	○	○	○	○
My commute trips give me positive feelings.	○	○	○	○	○
I feel safe biking on campus.	○	○	○	○	○
I like using public transit.	○	○	○	○	○

I often need to use my own vehicle to travel to different sites during the day.	○	○	○	○	○
My commute trips are the best I can imagine.	○	○	○	○	○
I already bicycle as often as I can.	○	○	○	○	○
I try to limit my driving as much as possible.	○	○	○	○	○
When I recall my commute trips, the positive aspects outweigh the negative ones.	○	○	○	○	○
Getting around is easier than ever with my smartphone.	○	○	○	○	○
I need to dress professionally for my job.	○	○	○	○	○
Traveling to campus stresses me out.	○	○	○	○	○
I do not want to change anything about my commute trips.	○	○	○	○	○

Page Break

Q54 **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

Q55 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

Q56 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.
Carsharing (e.g. Zipcar, City CarShare)	○	○	○	○	○
On-demand ride services (e.g. Uber, Lyft)	○	○	○	○	○

Q57 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**.
Carsharing (e.g. Zipcar, City CarShare)	○	○	○	○	○	○
On-demand ride services (e.g. Uber, Lyft)	○	○	○	○	○	○

Q58 Thinking about the **last trip** you made with ***Uber/Lyft***, which of the following categories best describes the **main purpose of your trip**?

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

End of Block: Section 10 - More background information about your travel and your opinions

Start of Block: Section 11.1 - E-bike Questions

Q59 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

Q60 Please write in the make and model of your e-bike:

- ○ Make: _____
- ○ Model: _____

Q61 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: _____

Q62 What was the primary reason you bought an e-bike? (check one)

- ○ Travel more quickly from door to door
- ○ Travel with less effort from door to door
- ○ Haul cargo or children
- ○ Sweat less in summer
- ○ Other: _____

Q63 What was the primary reason you bought an e-bike? (check one)

- ○ Get more exercise
- ○ Save on parking costs
- ○ Save on gas and car maintenance costs
- ○ Get rid of a car
- ○ Reduce carbon footprint
- ○ Travel more quickly from door to door
- ○ Other: _____

Q64 How concerned are you about having your e-bike stolen?

- ○ Not at all concerned
- ○ Somewhat concerned
- ○ Very concerned

Q65 What steps do you take to prevent theft of your e-bike? Please check all that apply.

- ☐ Bring my e-bike into my office
- ☐ Use a really good lock
- ☐ Use a bike locker
- ☐ Never leave my e-bike locked outdoors overnight
- ☐ Other: _____

End of Block: Section 11.1 - E-bike Questions

Start of Block: Block 11.2 - E-bike Questions

Q66 Do you know what an electric assist bicycle is? They are also known as "e-bikes".

- ○ Yes
- ○ No

Q67 Have you ever ridden an e-bike?

- ○ Yes
- ○ No

Q68 Have you ever thought about riding an e-bike to campus?

- ○ Yes
- ○ No

Q69 How likely would you be to ride an e-bike to campus if one were available to you?

- ○ Not at all likely
- ○ Somewhat likely
- ○ Very likely
- ○ Definitely would

Q70 What are the primary reasons you do not use an e-bike for your commute to campus? Choose all that apply.

- ☐ Don't know where to go to buy or rent an e-bike
- ☐ Cost of buying an e-bike
- ☐ Cost of e-bike maintenance
- ☐ Nowhere to charge the e-bike
- ☐ Risk of having the e-bike stolen
- ☐ Weight of the e-bike
- ☐ Difficulty transporting the e-bike by car when needed
- ☐ Lack of good bicycle infrastructure
- ☐ Nowhere safe to park the e-bike on campus
- ☐ High speed of the e-bike
- ☐ Other: _____

End of Block: Block 11.2 - E-bike Questions

Start of Block: Section 12. Video Blocks Intro Text

Q71 Next you will view 5 short video clips (10 seconds each). For each clip, imagine that you are bicycling in the environment shown and then rate how comfortable you would feel.

Page Break

End of Block: Section 12. Video Blocks Intro Text

Start of Block: B1_1

Q72 Timing
First Click
Last Click
Page Submit
Click Count

Q73

- Very uncomfortable
- Moderately uncomfortable
- Slightly uncomfortable
- Neither comfortable nor uncomfortable
- Slightly comfortable
- Moderately comfortable
- Very comfortable

End of Block: B1_1

Start of Block: B1_2

Q74 Timing
First Click
Last Click
Page Submit
Click Count

Q75

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B1_2

Start of Block: B1_3

Q76 Timing
First Click
Last Click
Page Submit
Click Count

Q77

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B1_3

Start of Block: B1_4

Q78 Timing
First Click
Last Click
Page Submit
Click Count

Q79

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B1_4

Start of Block: B1_5

Q80 Timing
First Click
Last Click
Page Submit
Click Count

Q81

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B1_5

Start of Block: B2_1

Q82 Timing
First Click
Last Click
Page Submit
Click Count

Q83

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B2_1

Start of Block: B2_2

Q84 Timing
First Click
Last Click
Page Submit
Click Count

Q85

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B2_2

Start of Block: B2_3

Q86 Timing
First Click
Last Click
Page Submit
Click Count

Q87

- Very uncomfortable
- Moderately uncomfortable
- Slightly uncomfortable
- Neither comfortable nor uncomfortable
- Slightly comfortable
- Moderately comfortable
- Very comfortable

End of Block: B2_3

Start of Block: B2_4

Q88 Timing
First Click
Last Click
Page Submit
Click Count

Q89

- Very uncomfortable
- Moderately uncomfortable
- Slightly uncomfortable
- Neither comfortable nor uncomfortable
- Slightly comfortable
- Moderately comfortable
- Very comfortable

End of Block: B2_4

Start of Block: B2_5

Q90 Timing
First Click
Last Click
Page Submit
Click Count

Q91

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B2_5

Start of Block: B3_1

Q92 Timing
First Click
Last Click
Page Submit
Click Count

Q93

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B3_1

Start of Block: B3_2

Q94 Timing
First Click
Last Click
Page Submit
Click Count

Q95

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B3_2

Start of Block: B3_3

Q96 Timing
First Click
Last Click
Page Submit
Click Count

Q97

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B3_3

Start of Block: B3_4

Q98 Timing
First Click
Last Click
Page Submit
Click Count

Q99

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B3_4

Start of Block: B3_5

Q100 Timing
First Click
Last Click
Page Submit
Click Count

Q101

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B3_5

Start of Block: B4_1

Q102 Timing
First Click
Last Click
Page Submit
Click Count

Q103

- Very uncomfortable
- Moderately uncomfortable
- Slightly uncomfortable
- Neither comfortable nor uncomfortable
- Slightly comfortable
- Moderately comfortable
- Very comfortable

End of Block: B4_1

Start of Block: B4_2

Q104 Timing
First Click
Last Click
Page Submit
Click Count

Q105

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B4_2

Start of Block: B4_3

Q106 Timing
First Click
Last Click
Page Submit
Click Count

Q107

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B4_3

Start of Block: B4_4

Q108 Timing
First Click
Last Click
Page Submit
Click Count

Q109

- Very uncomfortable
- Moderately uncomfortable
- Slightly uncomfortable
- Neither comfortable nor uncomfortable
- Slightly comfortable
- Moderately comfortable
- Very comfortable

End of Block: B4_4

Start of Block: B4_5

Q110 Timing
First Click
Last Click
Page Submit
Click Count

Q111

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B4_5

Start of Block: B5_1

Q112 Timing
First Click
Last Click
Page Submit
Click Count

Q113

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B5_1

Start of Block: B5_2

Q114 Timing
First Click
Last Click
Page Submit
Click Count

Q115

- Very uncomfortable
- Moderately uncomfortable
- Slightly uncomfortable
- Neither comfortable nor uncomfortable
- Slightly comfortable
- Moderately comfortable
- Very comfortable

End of Block: B5_2

Start of Block: B5_3

Q116 Timing
First Click
Last Click
Page Submit
Click Count

Q117

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B5_3

Start of Block: B5_4

Q118 Timing
First Click
Last Click
Page Submit
Click Count

Q119

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B5_4

Start of Block: B5_5

Q120 Timing
First Click
Last Click
Page Submit
Click Count

Q121

- ○ Very uncomfortable
- ○ Moderately uncomfortable
- ○ Slightly uncomfortable
- ○ Neither comfortable nor uncomfortable
- ○ Slightly comfortable
- ○ Moderately comfortable
- ○ Very comfortable

End of Block: B5_5

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

Q122 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.

Q123 In what year were you born?

_____

Q124 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)

Q125 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)

Q126 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*

Q127 What type of housing unit do you live in? Please pick the option that best describes your unit.

- ○ Apartment
- ○ House (stand-alone unit usually intended for a single family)
- ○ Duplex (two units side-by-side sharing a wall but with separate front doors)
- ○ Townhouse (multiple units side-by-side, usually two stories, with separate front doors)
- ○ Accessory dwelling unit (smaller unit behind or beside a house; also known as a "granny flat" or an "in-law unit")

Q128 Do you split the rent for your bedroom with one or more other people?

- ○ Yes
- ○ No

Q129 If you live with family, a partner, or others with whom you share some income, please indicate how many OTHER members of your household are in each age category.

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

Q130 As you likely know, California is becoming a more expensive place to live. We want to understand how this is impacting the Davis Community. About how much do you spend on housing per month (e.g. 800)?

_____

Q131 About what percentage of your monthly budget do you spend on housing?

- ○ Under 20%
- ○ 20-50%
- ○ Over 50%

Q132 You indicated that you have access to a car. How much financial support do you receive from your parent(s)/guardian(s) for driving related expenses such as gas, insurance, and vehicle maintenance?

- ○ None at all
- ○ For some things
- ○ For most things
- ○ For everything

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

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Start of Block: Section 14 - Optional

Q133 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.

Q134
In the next year, UC Davis will be developing new programs and policies to support healthy transportation options on and off campus. Would you be interested in participating in a focus group in the next 6-9 months to provide input about potential strategies?

- ○ Yes
- ○ No

Q135 In the next few months, the research team will be investigating how different factors affect automobile drivers' beliefs and behaviors about interacting with other drivers, bicyclists, and pedestrians. The study will include a brief online cognitive test and a survey that will take 15-20 minutes to complete. Your responses to the survey will be anonymous, and your input will help researchers better understand

interactions in the roadway. Are you interested in receiving an invitation to participate in this research?

- ○ Yes
- ○ No

Q136 Would you be willing to participate in a UC Davis e-bike study in the future?

- ○ Yes
- ○ No

Q137 As mentioned at the start of the survey, we are offering a chance to win 30 $50 Visa gift cards and a grand prize of an Amazon Fire tablet 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

Q138 May we contact you should we have any questions regarding your survey responses?

- ○ Yes
- ○ No

Q139 Please provide the following contact information. This information will ONLY be used for the purposes you specified.

- ○ Name _____
- ○ Campus email address _____

Q140 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

Q141 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.

Q142 Below you will find information on TAPS programs you indicated in this survey were unfamiliar to you.

Q143 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 (530) 752-6453 or email at goclub@ucdavis.edu. More information is also available online at http://goclub.ucdavis.edu.

Q144 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.

Q145 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.

Q146 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.

Q147 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.

Q148 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.

Q149 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.

Q150 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.

Q151 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.

Q152 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/.

Q153 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 2016-17 survey instrument

1. The following sections have been added, reduced or altered:
    a. Demographics
    b. More background information about you
    c. E-bike Questions
    d. Video Blocks
    e. Optional Participation of future studies

The reference week was scheduled for a similar week as the previous year's survey, October 16 - 22 (see Figure 7 for additional details).

Appendix C: Text of the recruitment emails

Initial recruitment email:
From: Campus Travel Survey <travelsurvey@ucdavis.edu>
To: <...@ucdavis.edu>
Subject: 2017-18 Campus Travel Survey

Dear UC Davis Student / Employee,

You are invited to participate in the 2017-2018 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:

- Track changes 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 30 $50 Visa gift cards and a grand prize of an Amazon Fire tablet!**

Follow this link to take the survey:
[Insert link]

Thanks for your participation in this year's survey!

Sincerely,

Ralph J. Hexter
Provost and Executive Vice Chancellor

Reminder recruitment email:
From: Office of the Provost and Executive Vice Chancellor <campustravelsurvey@qualtrics.com>
To: <...@ucdavis.edu>
Subject: 2017-18 Campus Travel Survey

Dear UC Davis Student / Employee,

Last week we invited you to take the 2017-2018 Campus Travel Survey. If you have not finished the survey last week, 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.

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.

Your feedback helps improve the campus!

In appreciation for your time, we're offering anyone who completes the survey entry into a drawing for 30 $50 Visa gift cards and a grand prize of an Amazon Fire tablet!
UC Davis Transportation and Parking Services (TAPS) and graduate students from the Institute of Transportation Studies have used the results from this survey to:

- Track changes 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

Follow this link to the Survey:
[Insert link]

Thanks for your participation in this year's survey!

Sincerely,
Ralph J. Hexter
Provost and Executive Vice Chancellor

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."[10] We attempt to adhere to the AQMD formula, although our overall survey methodology deviates to some extent from that prescribed by the AQMD.[11] 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 *Q33* in the 2017-18 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 *Q26* and *Q29* 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 *Q26*) and then indicated the reason for no travel was telecommuting (in *Q28*), 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 *Q26* and *Q29*).

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 *Q33*). 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 *Q44*).

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 *Q33*) we add to the arrival count a fraction equal to one divided by the total

[10] 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).

[11] 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.

number of people in the carpool (using *Q39*) or the number of passengers dropped off by the driver (using *Q40*). We exclude from the count any arrivals by a respondent who has indicated using an all-electric or hydrogen vehicle (in question *Q44*).

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 3,748 valid responses to question *Q33* (see Table 51).

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. Then we used Microsoft Excel 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 most 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 2016-17, so results from the 2017-18 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 and valid responses

To make the most out of the available data, the following process was used to impute missing data to question *Q33*, 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 (*Q26*) but did not indicate a primary mode.
2. In cases where all answers were missing for *Q38* and *Q33*, 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.

Table 48 shows the number of valid cases for each major step in the data validation process. Starting with 4,059 initial responses who provided a valid role, cases were excluded due to missing or invalid data, resulting in 3,748 responses that had valid answers for role, gender, and whether the individual traveled to campus, and general residential location. These 3,748 cases were selected for the bulk of the weighted analysis in this report, with the remainder using the 3,482 cases that had valid answers for role, gender, whether the individual traveled to campus, and general residential location.

Table 48. Valid responses

Variables (description)	Valid cases (N = 4,059)
Role (8 categories)	4,031
Gender (male/female)	3,779
Traveled to campus	3,789
Physically traveled	3,686
Residential location	3,820
Role + Gender (for weighted analysis)	3,748
Role + Gender + Residential location (for geocoded weighted analysis)	3,482

Appendix G: Sampling Plan

Table 49 and

Table 50 show the percent of the campus population invited to take the survey, by role, and the expected response rates based on response rates in previous years. This year, expected response rates varied from 9.8 percent among seniors to 30.8 percent among faculty. Due to inaccurate estimation of employee population during the sampling process, over 100 percent of faculty and only 12 percent of staff to be invited. The employee counts have been revised from 2,025 to 1,719 for faculty and from 9,910 to 10,078 for staff during survey result analysis to reflect the most accurate population count.

Table 49. Sampling plan for 2009-010 through 2017-18, percent invited

Role	2017-18		2017-18	2016-17 [b]	2015-16	2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
	Population[a]	Number invited	Percent invited								
Students	36,708	16,526	45%	60%	63%	89%	77%	83%	70%	45%	37%
Undergraduate	29,865	11,820	40%	57%	59%	90%	78%	86%	73%	40%	32%
Freshmen	6,133	2,623	43%	81%	58%	100%	88%	100%	71%	55%	41%
Sophomores	5,510	2,771	50%	64%	77%	100%	100%	100%	100%	51%	40%
Juniors	8,125	2,652	33%	50%	48%	64%	59%	68%	57%	35%	29%
Seniors	10,997	3,774	34%	50%	59%	98%	77%	87%	74%	33%	26%
Graduate	6,843	4,706	69%	77%	80%	86%	74%	70%	59%	64%	60%
Masters	3,393	3,169	93%	100%	100%	85%	100%	100%	100%	100%	98%
PhD	3,450	1,537	45%	58%	63%	86%	59%	53%	36%	31%	39%
Employees	11,797	3,270	28%	30%	61%	28%	38%	37%	29%	23%	22%
Faculty	1,719	2,025	118%	100%	100%	100%	89%	100%	100%	71%	63%
Staff	10,078	1,245	12%	19%	48%	15%	24%	21%	13%	12%	13%
Overall percent	100%	-	41%	53%	62%	73%	66%	70%	59%	39%	33%
Overall number	48,505	19,796	-	24,029	27,429	30,815	27,798	28,838	23,953	15,704	13,322

[a] Population figures are based on those provided by the UC Davis Budget and Institutional Analysis division. This consists of a tabulation that included a breakdown of the total number of on-campus faculty (ladder faculty plus other faculty) and on-campus staff (including academic support, senior management, MSP, SSP, and affiliated (Agricultural and Natural Resources, and excluding employees without salary). "Masters" includes all academic-program masters students, plus professional-program students in Master of Law, JD, MBA (full time and working professional program), Forensic Science, Master of Advanced Study, and Master of Preventative Vet Med students, and excluding all School of Medicine students; "PhD" includes all academic-program doctoral (D1 and D2) students, plus professional-program students in Veterinary Medicine (DVM), excluding all School of Medicine students.

[b] See Heckathorn (2017) for results from 2016-17, Gudz, *et al.* (2016) for results from 2015-16, Thigpen (2015) for results from 2014-15, Popovich (2014) for results from 2013-14, Driller (2013) for results from 2012-13, Miller (2012) for results from 2011-12, Miller (2011) for results from 2010-11, and Lovejoy (2010) for results from 2009-10.

Table 50. Sampling plan for 2008-09 through 2017-18, response rates

Role	2017-18		2017-18	2016-17 [b]	2015-16	2014-15	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09
	Population[a]	Number invited	Target response	Actual Response								
Students	36,708	16,526	13.0%	15%	10%	11%	12%	13%	12%	18%	25%	22%
Undergraduate	29,865	11,820	12.4%	14%	9%	10%	11%	12%	11%	17%	24%	20%
Freshmen	6,133	2,623	13.8%	14%	11%	11%	11%	15%	13%	23%	30%	22%
Sophomores	5,510	2,771	13.0%	15%	10%	12%	12%	13%	12%	16%	26%	21%
Juniors	8,125	2,652	13.8%	16%	10%	12%	13%	14%	13%	18%	22%	22%
Seniors	10,997	3,774	9.8%	12%	6%	8%	9%	10%	9%	12%	19%	17%
Graduate	6,843	4,706	14.7%	18%	14%	16%	15%	16%	16%	22%	28%	27%
Masters	3,393	3,169	12.6%	13%	10%	10%	14%	11%	11%	16%	19%	18%
PhD	3,450	1,537	22.6%	25%	16%	18%	16%	21%	23%	34%	40%	35%
Employees	11,797	3,270	21.1%	33%	12%	14%	22%	18%	19%	29%	34%	35%
Faculty	1,719	2,025	30.8%	31%	13%	13%	14%	16%	16%	22%	27%	30%
Staff	10,078	1,245	29.6%	35%	11%	16%	30%	22%	24%	37%	42%	39%
Overall percent	100%	-	17.5%	17%	10%	11%	13%	14%	13%	20%	27%	26%
Overall number	48,505	19,796	-	4,132	2,834	3,389	3,663	3,982	3,116	3,084	3,569	3,577

[a] Population figures are based on those provided by the UC Davis Budget and Institutional Analsysis division. This consists of a tabulation that included a breakdown of the total number of on-campus faculty (ladder faculty plus other faculty) and on-campus staff (including academic support, senior management, MSP, SSP, and affiliated (Agricultural and Natural Resources, and excluding employees without salary). "Masters" includes all academic-program masters students, plus professional-program students in Master of Law, JD, MBA (full time and working professional program), Forensic Science, Master of Advanced Study, and Master of Preventative Vet Med students, and excluding all School of Medicine students; "PhD" includes all academic-program doctoral (D1 and D2) students, plus professional-program students in Veterinary Medicine (DVM), excluding all School of Medicine students.

[b] See Heckathorn (2017) for results from 2016-17, Gudz, *et al.* (2016) for results from 2015-16, Thigpen (2015) for results from 2014-15, Popovich (2014) for results from 2013-14, Driller (2013) for results from 2012-13, Miller (2012) for results from 2011-12, Miller (2011) for results from 2010-11, Lovejoy (2010) for results from 2009-10, and Lovejoy, *et al.* (2009) for results from 2008-09.

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, or 48,505.

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 = 3,748 valid responses to question *Q33*, 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 3,482 cases successfully geocoded (by cross streets and zip code given in questions Q23 and Q24; see "Appendix E: Geocoding and network distances"). Both sets of weights are shown in Table 51.

Table 51. Weight factors, applied by role and gender

Role	Gender	Population (N)	*Factors by role, gender, and mode*				*Factors by role, gender, mode, and geocoded*			
			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	Female	3,827	346	0.855	11.061	296	339	0.810	11.289	275
	Male	2,306	135	1.320	17.081	178	134	1.235	17.209	166
Sophomore	Female	3,433	372	0.713	9.228	265	341	0.723	10.067	246
	Male	2,077	120	1.337	17.308	160	108	1.381	19.231	149
Junior	Female	4,794	398	0.931	12.045	370	369	0.933	12.992	344
	Male	3,331	159	1.619	20.950	257	142	1.684	23.458	239
Senior	Female	5,675	412	1.064	13.774	439	389	1.047	14.589	407
	Male	4,422	163	2.096	27.129	342	144	2.204	30.708	317
Master's	Female	2,002	272	0.569	7.360	155	246	0.584	8.138	144
	Male	1,391	159	0.676	8.748	107	147	0.679	9.463	100
PhD	Female	1,601	304	0.407	5.266	124	287	0.400	5.578	115
	Male	1,849	165	0.866	11.206	143	152	0.873	12.164	133
Faculty	Female	710	186	0.295	3.817	55	172	0.296	4.128	51
	Male	1,009	200	0.390	5.045	78	192	0.377	5.255	72
Staff	Female	5,724	245	1.805	23.363	442	221	1.859	25.900	411
	Male	4,354	112	3.004	38.875	336	99	3.157	43.980	313
Overall	-	48,505	3,748	0.000	12.942	3,748	3,482	0.000	13.930	3,482

[a] Based on valid responses to *Q15* and *Q33*

[b] Based on valid responses to *Q15*, *Q33* and successful geocoding of home location (from questions *Q23-Q24*