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A Research Report from the National Center
for Sustainable Transportation

Calvin Thigpen, University of California, Davis



About the National Center for Sustainable Transportation

The National Center for Sustainable Transportation is a consortium of leading universities committed to advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders. Consortium members include: University of California, Davis; University of California, Riverside; University of Southern California; California State University, Long Beach; Georgia Institute of Technology; and University of Vermont. More information can be found at: ncst.ucdavis.edu.

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Results of the 2014-2015 Campus Travel Survey

A National Center for Sustainable Transportation Research Report

September 2015

Calvin Thigpen, Institute of Transportation Studies, University of California, Davis

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Research Report – UCD-ITS-RR-15-15

Results of the 2014-15 Campus Travel Survey

September 2015

Calvin Thigpen

RESULTS OF THE 2014-15 CAMPUS TRAVEL SURVEY

Institute of Transportation Studies

and

Transportation and Parking Services

University of California, Davis

Prepared by

Calvin Thigpen
Institute of Transportation Studies

September 2015

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EXECUTIVE SUMMARY

About the Campus Travel Survey

The UC Davis Campus Travel Survey is a joint effort by the Transportation & Parking Services (TAPS) 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 seven 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 eighth administration of the campus travel survey.

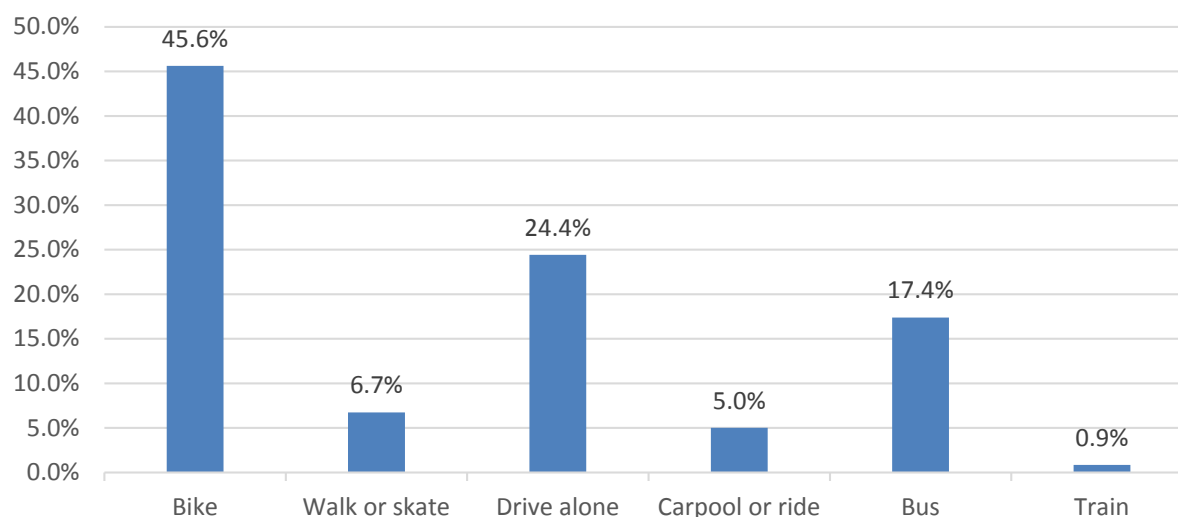
The 2014-15 survey was administered online in October 2014, distributed by email to a stratified random sample of 30,815 students, faculty, and staff (out of an estimated total population of 42,405). About 14 percent (4,224 individuals) of those contacted responded to this year's survey, with 11.4 percent 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 85.4 percent of people physically travel to campus (approximately 36,205 people, including those living on campus). Among these, 46 percent bike to get there, 7 percent walk or skate, 24 percent drive alone, 5 percent carpool or get a ride, 17 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, 2014-15



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 56 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 26 percent rode the bus at least once during the week for most of the distance to campus.

Change in mode share, 2013-14 to 2014-15

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 2013-14 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. Notably, the overall share biking to campus decreased by 2.6 percentage points over the last year (after increasing by 2.9 percentage points the previous year), while the share walking to campus increased by 1.8 percentage points. The share of the university population physically traveling to campus on an average weekday decreased.

Table 1. One year change in overall mode share, 2013-14 to 2014-15

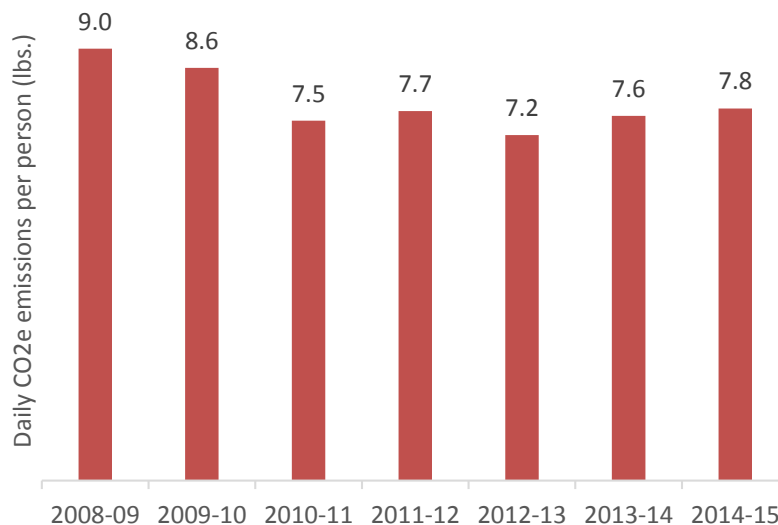
Percentage-point change in share of people doing each on an average weekday							
Years of comparison	Physically travelling	Among those physically traveling to campus					
		Bike	Walk or skate	Drive alone	Carpool or ride	Bus	Train
2013-14 to 2014-15	-2.6%	-1.2%	1.8%	0.5%	-0.3%	-0.6%	-0.1%

Data are weighted for both years by role and gender.

Carbon dioxide-equivalent emissions

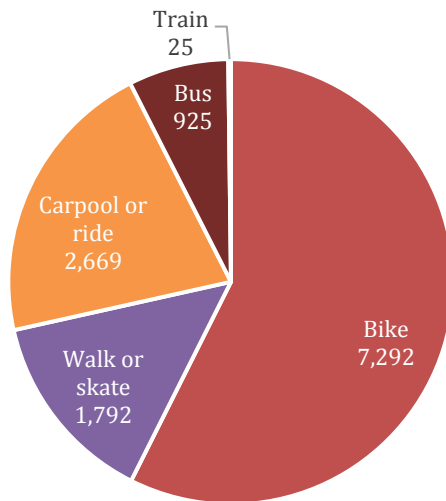
Each year, we use data on mode share, vehicle occupancy, and travel distance to estimate the amount of carbon dioxide-equivalent (CO₂e) emitted from commuting to campus. We estimate that travel by UC Davis students and employees to campus generates a total of 328,784 pounds of CO₂e on an average weekday, or 7.8 pounds of CO₂e per capita, compared to 7.6 pounds in 2013-14, 7.2 pounds in 2012-13, and 7.7 pounds in 2011-12 (see Figure 2).

Figure 2. Daily CO₂e emissions per capita, 2008-09 through 2014-15



To assess the extent that alternative transportation reduces CO₂e 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 12,703 annual metric tons of CO₂e, compared to 37,283 tons overall. Figure 3 shows the contribution of each alternative, when compared to driving alone, to the total CO₂e 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 alternative modes of transportation. The official 2014-15 AVR for non-student employees living off-campus is 1.61 person-arrivals per vehicle-arrival (Table 2). The AVR for the entire campus community is 3.23 excluding on-campus residents and 3.77 including on-campus residents. This means that for every car coming to campus, there are an estimated 3.77 people coming to campus or telecommuting.

Table 2. Average vehicle ridership (AVR) 2007-08 through 2014-15

Role	Off campus only							
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Student	1.67	4.76	4.28	4.49	5.29	6.05	5.59	5.66
Employee	1.67	1.69	1.66	1.75	1.78	1.70	1.75	1.61
Outside Davis	1.33	1.32	1.26	1.34	1.39	1.34	1.30	1.27
Within Davis	4.60	5.17	4.99	4.99	5.98	6.24	6.53	7.25
Overall	2.75	2.99	2.83	3.00	3.26	3.34	3.30	3.23
Role	All (on and off campus)							
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Student	5.04	5.91	5.25	5.53	6.41	7.25	6.74	6.93
Employee	1.67	1.71	1.66	1.75	1.80	1.70	1.75	1.61
Outside Davis	1.33	1.32	1.26	1.34	1.39	1.34	1.30	1.27
Within Davis	5.61	6.32	5.99	6.04	7.14	7.36	7.74	8.75
Overall	3.20	3.51	3.30	3.51	3.78	3.82	3.80	3.77

Bold indicates the official AVR statistic reported by UC campuses. See "Appendix D: Calculation of Average Vehicle Ridership (AVR)" for details on AVR calculations.

Figure 4. Average vehicle ridership, 2007-08 through 2014-15

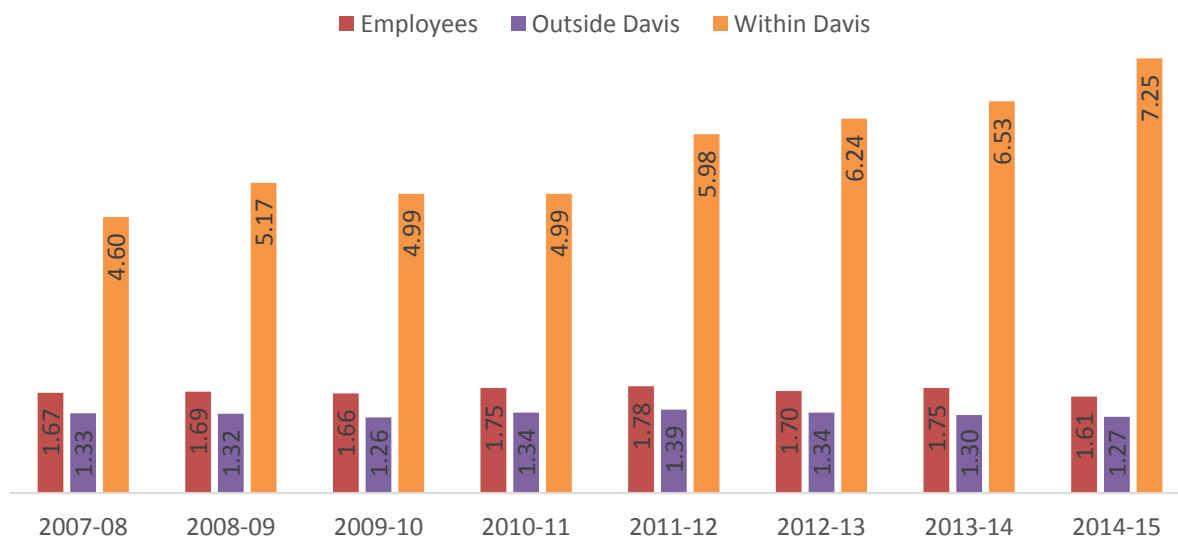


Figure 4 shows the differences in AVR between all employees, employees and students living within Davis, and employees and students living outside Davis. As shown, the 2014-15 AVR of those living in Davis is somewhat higher than in previous years, while the AVR of those living outside Davis has remained relatively constant over time, decreasing slightly this year. 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.

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.

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

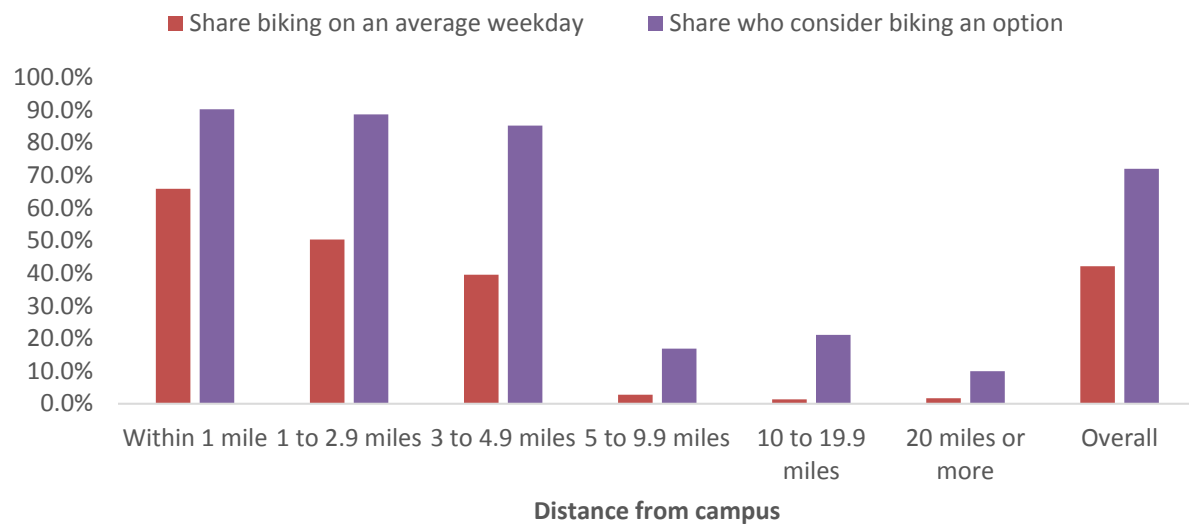
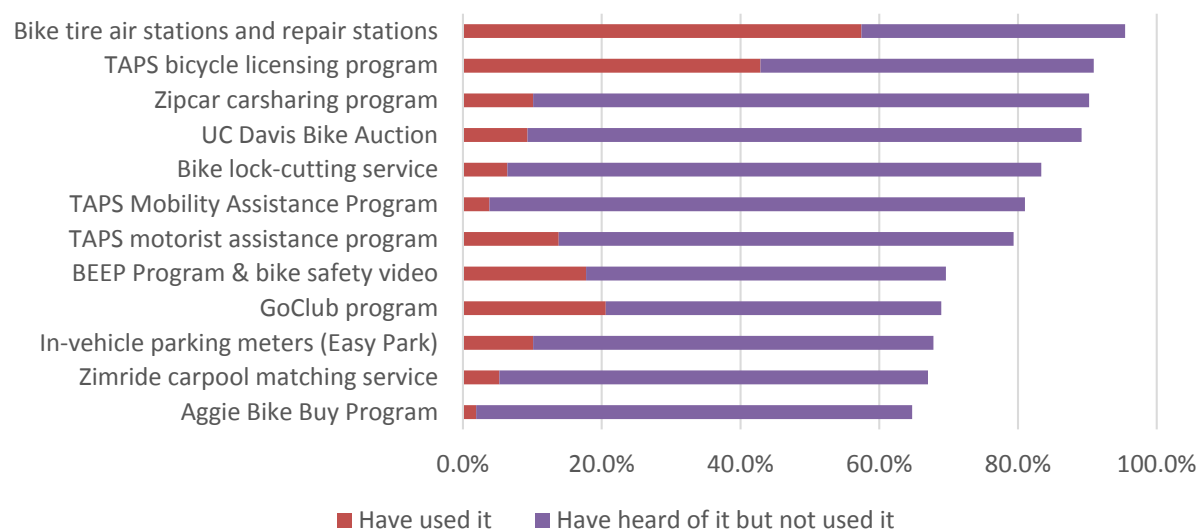


Figure 6. Familiarity with TAPS programs



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 (CO₂e) 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 & Parking Services (TAPS) on campus 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 seven 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 seventh 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 six 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), and 2013-14 (Popovich, 2014). The next administration of the survey is planned for October 2015.

The 2014-15 survey was administered online in October and November 2014, distributed by email to a stratified random sample of 30,815 students, faculty, and staff (out of an estimated total population of 42,405). About 13.7 percent (4,224 individuals) responded to this year's survey, with about 11.4 percent (3,507) actually completing it. For the statistics we present 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,

2014-15 Campus Travel Survey” for a full copy of the 2014-15 survey instrument. See “Appendix B: Changes from the 2013-14 survey instrument” for a summary of changes in the 2014-15 survey compared to the 2013-14 survey.) The online survey was prepared using the Lime Survey software (<http://www.limesurvey.org/>), hosted using the server virtualization service offered by the office of Information Educational Technology (IET), and administered by Ning Wan, Jeremy Dalbeck, and Jonathan Villavert. Staff at TAPS 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 $\pm 5\%$ 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 increased the share of the population sampled to 73 percent (30,815 people). (See “Appendix G: Sampling Plan” for more information on this year’s sampling plan.)

A stratified random sample of 30,815 was drawn from ostensibly complete lists of UC Davis email addresses maintained at two different departments within the university. The sampling of student email addresses was conducted by the Institutional Analysis branch of the Student Research and Information (SRI) 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. In the case of the student sample, we received a spreadsheet from SRI containing only those names and email addresses of individuals selected for inclusion in the sample. A list of employee (faculty and staff) email addresses was drawn by Payroll Personnel System (PPS) staff from the Accounting and Financial Services office. Employees were screened to exclude those affiliated with the Medical Center or field stations, those without salary, Emeritus faculty, Extension School faculty, temporary employees, and employees without email addresses. PPS staff compiled two separate Excel spreadsheets, one for faculty and one for staff. Since for staff there were more email addresses in each spreadsheet than needed according to the sampling plan, the following procedure was used to draw a random sample from each spreadsheet: since each row contained the email address for one staff employee, a column was added to each row with a randomly generated number between 1 and 1,000,000. Rows were then sorted by this column of random numbers, and the top 2,210 rows of staff were selected, while all 1,646 faculty in the email list were invited to participate.

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. See “Appendix C: Text of the recruitment emails” for copies of these recruitment emails.

As we did for last year's survey, we utilized the server virtualization service offered by Information Educational Technology (IET) at UC Davis, which allows extra computing power to be added if loading time problems arise. In addition to hosting the server computing, IET performed load testing prior to the survey launch under various system configurations until the server demonstrated a capacity to handle the anticipated responses without page loading delays. Though the 2014-15 survey was administered with no technical difficulties, a conflict with a UC Davis library survey of faculty required a compromise in survey dates for the faculty. Students and staff were sent email invitations a week before faculty to accommodate the library survey. On Monday, October 27th, nine hourly batches were sent out to students and staff (between 1,740 and 4,667 email addresses in each half-hourly batch) until all student and staff respondents were invited. On the following Monday, November 3rd, 1 email batch was sent out to faculty. Reminder invitations were sent out on Monday, November 3rd to the students and staff who had not yet participated and on Monday, November 10th to the faculty who had not yet participated.

Offering a chance to win a desirable prize is thought to increase overall response to a survey. This year, TAPS allocated \$1,500 for incentives in the form of 75 \$20 Downtown Davis gift cards to participate in the survey, which is one and a half times the budget allocated for incentives in the 2013-14 survey. These cards are accepted at more than 200 businesses located in Davis and are expected to appeal to all demographics and roles in the UC Davis community. 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 for a \$20 Downtown Davis gift card, or if instead they preferred not to be contacted. There were 2,774 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 75 with the lowest values as the winners, who were notified via email on December 2nd, 2014 and instructed to pick up their gift cards at the TAPS office.

Response rate

A total of 4,224 respondents at least started the survey (responding to question *Q01*), representing 13.7 percent of those invited. This rate is slightly lower than last year's survey's response rate (14.5 percent). Of those who began the survey, 83 percent (3,507 respondents) completed the survey through question *Q34*, 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 declined over time. This decline is likely influenced by two factors: there is an increasing proportion of invited respondents who have taken the survey in previous years and who may not feel the need to take the travel survey again; and the estimated time to complete the survey (as described in the email invite) has increased. This year, the invitations to take the campus travel survey mentioned explicitly the ways in which the survey data are used and the importance of taking and completing the survey each year. It also assured respondents that the survey would take less than ten minutes to complete.

Table 3. Response rates for 2014-15 versus 2007-08 through 2013-14

Role group	2014-15				2014-15	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08
	Assumed population	Number invited	Actual responses	Target response rate	Actual response rate							
Student	31,207	27,713	3,066	7.6%	11.1%	12%	13%	12%	18%	25%	22%	23%
Undergraduate	25,450	22,780	2,300	6.3%	10.1%	11%	12%	11%	17%	24%	20%	22%
Freshman	3,924	3,924	419	8.9%	10.7%	11%	15%	13%	23%	30%	22%	26%
Sophomore	4,667	4,667	542	7.6%	11.6%	12%	13%	12%	16%	26%	21%	22%
Junior	6,872	4,380	519	8.3%	11.8%	13%	14%	13%	18%	22%	22%	21%
Senior	9,987	9,809	820	3.8%	8.4%	9%	10%	9%	12%	19%	17%	20%
Graduate	5,757	4,933	766	13.6%	15.5%	15%	16%	16%	22%	28%	27%	24%
Master's	2,047	1,740	181	18.6%	10.4%	14%	11%	11%	16%	19%	18%	19%
PhD	3,710	3,193	585	10.9%	18.3%	16%	21%	23%	34%	40%	35%	28%
Employee	11,198	3,102	441	22.0%	14.2%	22%	18%	19%	29%	34%	35%	45%
Faculty	1,646	1,646	213	19.0%	12.9%	14%	16%	16%	22%	27%	30%	37%
Staff	9,552	1,456	228	25.4%	15.7%	30%	22%	24%	37%	42%	39%	50%
Overall percent	100%	73%	11.4%	9.1%	11.4%	13%	14%	13%	20%	27%	26%	28%
Overall	42,405	30,815	3,507	2,794	3,507	3,663	3,982	3,116	3,084	3,569	3,577	3,849

*4,224 people began the survey, but these response rates reflect only those respondents who reported valid mode and gender (3,507)

^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. As shown, Master's students, faculty, and staff did not meet the target response rates for a five percent margin of error. Margins of error based on responses by role group are shown later in Table 8. As in previous years, response rates were highest among staff and PhD students, and lowest among undergraduate 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	31,207	27,713	2,112	3,586	3,066	3,029
Undergraduate	25,450	22,780	1,439	2,704	2,300	2,277
Freshman	3,924	3,924	350	551	419	412
Sophomore	4,667	4,667	355	627	542	539
Junior	6,872	4,380	364	592	519	514
Senior	9,987	9,809	370	934	820	812
Graduate	5,757	4,933	673	882	766	752
Master's	2,047	1,740	324	217	181	178
PhD	3,710	3,193	349	665	585	574
Employees	11,198	3,102	682	499	441	438
Faculty	1,646	1,646	312	230	213	212
Staff	9,552	1,456	370	269	228	226
Overall percent	100%	73%	9.1%	13.3%	11.4%	11.3%
Overall	42,405	30,815	2,794	4,085	3,507	3,467

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 *Q01*, we screened 139 respondents who failed to provide a valid role group (who were then skipped to the end of the survey - see "Appendix A: Survey instrument, 2014-15 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. We thought this was a potential issue for employees and graduate students, but not undergraduate students. Thus we screened graduate student and employee office locations in question Q08 (“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 51 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 51 respondents were redirected to the end of the survey (see Appendix A) 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 that did not answer whether they traveled to campus during the reference week. Lastly, 11 respondents who were away all week indicated in Q28 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 Q01 through Q03: 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. Men comprise 26.9 percent of the sample versus 42.7 percent of the population of undergraduate students, and 39 percent of respondents versus 48.8 percent of the population of graduate students.¹ 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 women in each role group in the population.

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 3,507 valid responses to question Q34, 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 3,467 cases successfully geocoded (by cross-streets and zip code given in questions Q22 and Q23; see “Appendix E: Geocoding and network distances”) and with non-missing mode data from question Q34. (See “Appendix G: Sampling Plan” for more information on weighting and a list of weight factors by role and gender.)

¹ Figures for the composition of the campus population by gender are drawn from three sources. The student gender split was derived from the Budget and Institutional Analysis document: “FALL ENROLLMENTS BY GENDER AND STUDENT FEE LEVEL”. The faculty gender split was determined using the 2013 UC Davis Fact Sheet, and the staff gender split was determined using Table 11b “Personnel Headcount by Ethnicity, Personnel Program, and Gender: Davis” from *The University of California Statistical Summary and Students and Staff, Fall 2012*.

Table 5. Unweighted gender distribution of respondents

Role group	Male	Female	Unweighted sample	Projected population
Undergraduate	26.9%	73.1%	2,300	25,450
Graduate	39.0%	61.0%	766	5,757
Faculty	56.3%	43.7%	213	1,646
Staff	29.8%	70.2%	228	9,552

Table 6. Weighted gender distribution of respondents

Role groups	Male	Female	Weighted sample	Projected population
Undergraduate	42.7%	57.3%	2,105	25,450
Graduate	48.8%	51.2%	476	5,757
Faculty	64.0%	36.1%	136	1,646
Staff	39.5%	60.5%	790	9,552

Table 5 and Table 6 show the difference in gender distribution between the unweighted and weighted results. As described in last year's report, we find 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 may 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 second year that we asked about weekend travel, so our reference week encompasses seven days rather than five, as in past surveys. Due to a conflict with a UC Davis library survey of faculty, we split the email recruitment efforts into two groups: students and staff, who were invited to participate on Monday, October 27th, and faculty, who were invited to participate on Monday, November 3rd. Because the faculty invitees were offset a week from students and staff, their reference weeks are also offset. For students and staff, this year's first reference week was October 20-26, 2014 (Monday-Sunday), while faculty's first reference week was October 27-November 2, 2014. As with previous years, we followed the initial email with a reminder email a week later to individuals who had not yet participated. The students and staff were sent their reminder emails on Monday, November 3rd, and faculty were sent their reminder on Monday, November 10th.

Figure 7. Survey launch and reference week schedule, October- November, 2014

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Oct 20 • 1st reference week (staff + students)	21	22	23	24	25	26
27 • Initial invitations sent (staff + students) • 1st reference week (faculty) • 2nd reference week (staff + students)	28	29	30	31 Halloween	Nov 1	2
3 • Initial invitations sent (faculty) • Reminder invitations sent (staff + students) • 2nd reference week (faculty)	4	5	6	7	8	9
10 • Reminder invitations sent (faculty)	11	12	13	14	15	16

Table 7 displays weather during the three reference weeks. This year, both reference weeks were notably cooler than in past years. The period from late October to mid-November was again one of the driest in history. The Halloween holiday fell on the Friday during which initial invitations were sent, though it is unlikely this coincidence had an effect on response rates, as most individuals respond early in the week.

Table 7. Weather during reference weeks

Day	Temperature range	Mean (max) wind speed	Precipitation levels
Week 1: October 20 – 26, 2014			
Monday	55 – 73 °F	6 (14) mph	0 in.
Tuesday	46 – 71 °F	4 (12) mph	0 in.
Wednesday	46 – 75 °F	1 (7) mph	0 in.
Thursday	57 – 75 °F	3 (9) mph	0 in.
Friday	51 – 77 °F	5 (13) mph	0.02 in.
Saturday	55 – 71 °F	11 (20) mph	0.14 in.
Sunday	48 – 68 °F	4 (18) mph	0 in.
Week 2: October 27 – November 2, 2014			
Monday	42 – 71 °F	3 (13) mph	0 in.
Tuesday	42 – 75 °F	1 (8) mph	0 in.
Wednesday	48 – 80 °F	3 (8) mph	0 in.
Thursday	51 – 75 °F	2 (10) mph	0 in.
Friday	55 – 62 °F	6 (10) mph	0.44 in.
Saturday	48 – 64 °F	2 (7) mph	0 in.
Sunday	48 – 66 °F	8 (17) mph	0 in.
Week 3: November 3-9, 2014			
Monday	44 – 66 °F	4 (8) mph	0 in.
Tuesday	42 – 69 °F	2 (8) mph	0 in.
Wednesday	44 – 71 °F	1 (7) mph	0 in.
Thursday	48 – 73 °F	1 (7) mph	0 in.
Friday	50 – 75 °F	3 (10) mph	0 in.
Saturday	48 – 75 °F	2 (7) mph	0 in.
Sunday	46 – 75 °F	1 (6) 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 1.6 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 45.6 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 44.0 and 47.2 percent. Master’s students, staff, and faculty 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	3,066	31,207	1.7%
Undergraduate	2,300	25,450	1.9%
Freshman	419	3,924	4.5%
Sophomore	542	4,667	4.0%
Junior	519	6,872	4.1%
Senior	820	9,987	3.3%
Graduate	766	5,757	3.3%
Master's	181	2,047	7.0%
PhD	585	3,710	3.7%
Employee	441	11,198	4.6%
Faculty	213	1,646	6.3%
Staff	228	9,552	6.4%
Overall	3,507	42,405	1.6%

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 82 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	92.0%	93.3%	93.4%	92.9%	84.1%	2.7%	2,581	31,207
Undergraduate	92.7%	93.8%	94.0%	93.6%	85.9%	2.6%	2,105	25,450
Freshman	91.6%	91.6%	92.6%	89.8%	91.4%	3.5%	325	3,924
Sophomore	95.8%	94.1%	96.4%	94.9%	93.5%	1.7%	386	4,667
Junior	92.3%	93.3%	93.3%	93.3%	84.8%	3.2%	568	6,872
Senior	91.9%	95.0%	94.0%	94.8%	80.9%	2.2%	826	9,987
Graduate	88.9%	91.2%	90.5%	89.4%	76.5%	3.0%	476	5,757
Master's	91.0%	87.7%	88.9%	89.0%	65.7%	5.5%	169	2,047
PhD	87.8%	93.1%	91.3%	89.7%	82.4%	1.6%	307	3,710
Employee	82.1%	84.5%	82.2%	84.0%	75.7%	6.8%	926	11,198
Faculty	78.1%	83.1%	82.0%	76.0%	71.3%	6.2%	136	1,646
Staff	82.8%	84.7%	82.2%	85.3%	76.5%	6.9%	790	9,552
Overall	89.4%	91.0%	90.4%	90.5%	81.9%	3.7%	3,507	42,405
Weighted sample	3,134	3,192	3,171	3,174	2,872	131	3,507	-
Projected population	37,898	38,594	38,342	38,379	34,732	1,586	-	42,405

Results are based on responses to questions Q24 and Q25. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 (87 percent versus 79 percent). Master’s students and faculty living outside of Davis are least likely to travel to campus, with only about 68 percent and 67 percent, respectively, traveling to campus on an average weekday day. By contrast, 86 percent of Master’s students and 82 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	87.9%	91.1%	88.3%	88.3%	78.4%	2,551	31,207
Undergraduate	88.5%	91.1%	88.3%	88.5%	81.9%	2,081	25,450
Freshman	91.3%	91.8%	100.0%	85.7%	88.9%	321	3,924
Sophomore	89.0%	91.9%	90.1%	89.0%	81.1%	382	4,667
Junior	88.3%	88.0%	85.5%	89.5%	82.2%	562	6,872
Senior	87.3%	91.0%	89.6%	87.8%	81.1%	817	9,987
Graduate	85.1%	91.1%	89.1%	87.7%	71.1%	471	5,757
Master's	82.0%	86.3%	60.0%	85.6%	68.2%	167	2,047
PhD	86.8%	93.7%	97.0%	88.8%	73.1%	303	3,710
Employee	79.8%	0.0%	80.0%	80.0%	79.7%	916	11,198
Faculty	77.1%	0.0%	80.0%	81.8%	67.3%	135	1,646
Staff	80.3%	0.0%	0.0%	79.4%	80.7%	781	9,552
Overall	85.7%	91.1%	88.3%	86.9%	79.3%	3,467	42,405
Weighted sample	2,973	451	105	1,760	657	3,467	-
Projected population	36,361	5,514	1,285	21,524	8,039	-	42,405

Results are based on responses to question Q25 (days traveling to campus) and Q20 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57). Only three employees and nine graduate students indicated living in West Village.

About 3.7 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). 6.8 percent of employees were away all week (Table 11). 20.7 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 work related travel.

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	Intermittent classes	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	2.7%	46.6%	4.5%	12.7%	7.5%	4.1%	9.4%	15.2%	69	830
Undergraduate	2.6%	50.7%	0.0%	14.8%	7.4%	4.4%	10.3%	12.3%	54	656
Freshman	3.5%	77.9%	0.0%	0.0%	0.0%	0.0%	11.0%	11.2%	11	139
Sophomore	1.7%	56.0%	0.0%	0.0%	0.0%	0.0%	8.8%	35.2%	6	77
Junior	3.2%	53.5%	0.0%	14.5%	22.4%	4.8%	0.0%	4.8%	18	218
Senior	2.2%	29.2%	0.0%	29.7%	0.0%	8.1%	20.6%	12.4%	18	222
Graduate	3.0%	31.2%	21.3%	4.6%	7.9%	3.0%	6.1%	25.9%	14	174
Master's	5.5%	29.3%	32.8%	0.0%	12.1%	0.0%	0.0%	25.8%	9	113
PhD	1.6%	34.7%	0.0%	13.2%	0.0%	8.7%	17.4%	26.0%	5	61
Employee	6.8%	28.1%	0.0%	3.2%	0.0%	1.7%	39.4%	27.7%	63	757
Faculty	6.2%	12.6%	0.0%	23.6%	0.0%	12.6%	6.3%	44.9%	8	101
Staff	6.9%	30.5%	0.0%	0.0%	0.0%	0.0%	44.5%	25.0%	54	655
Overall	3.7%	37.8%	2.3%	8.2%	3.9%	2.9%	23.7%	21.1%	131	1,586
Weighted sample	131	50	3	11	5	4	31	28	131	-
Projected population	1,586	600	37	129	62	47	376	335	-	1,586

Results are based on responses to question Q26. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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	20.7%	19.3%	9.1%	20.5%	31.8%	9.1%	10.2%	926	11,198
Faculty	23.1%	54.8%	23.8%	4.8%	7.1%	0.0%	9.5%	136	1,646
Staff	20.3%	27.5%	12.5%	16.8%	26.1%	7.0%	10.1%	790	9,552
Weighted sample	192	37	17	39	61	17	20	3,507	-
Projected population	2,318	448	211	474	737	211	237	-	42,405

Results are based on responses to question Q27 for individual days absent and on responses to Q26 for those absent all week; reasons given in Q26 are assumed to apply to all five weekdays. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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, 83.2 percent reported locations in the central campus area (an estimated 14,141 people), including 89.3 percent of graduate students, 92.6 percent of faculty, and 77.8 percent of staff (Table 13). A total of 7.7 percent of respondents reported office locations in west campus, 2.6 percent in south campus, and 6.5 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	89.3%	6.5%	2.6%	1.6%	476	5,757
Master's	88.7%	7.3%	2.6%	1.4%	169	2,047
PhD	89.7%	6.1%	2.6%	1.7%	307	3,710
Employee	80.0%	8.3%	2.6%	9.1%	926	11,198
Faculty	92.6%	4.5%	0.9%	2.0%	136	1,646
Staff	77.8%	9.0%	2.8%	10.3%	790	9,552
Overall	83.2%	7.7%	2.6%	6.5%	1,402	16,955
Weighted sample	1,170	108	36	92	1,402	-
Projected population	14,141	1,305	435	1,111	-	16,955

Results are based on responses to question Q08. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 the on campus area, the West Village apartments, off-campus elsewhere in Davis, and outside of Davis (Q20). The results suggest that 14.3 percent live on campus (an estimated 6,052 people), 3.4 percent live in the West Village apartments (1,455 people), 58.4 percent live elsewhere in Davis (24,757 people), and 22.8 percent live outside of Davis (10,140 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	19.4%	4.6%	66.0%	9.9%	2,551	31,207
Undergraduate	21.7%	5.3%	64.8%	8.2%	2,081	25,450
Freshman	88.7%	0.8%	7.0%	3.6%	321	3,924
Sophomore	11.1%	7.2%	77.3%	4.5%	382	4,667
Junior	12.5%	7.9%	70.9%	8.7%	562	6,872
Senior	6.7%	4.4%	77.5%	11.4%	817	9,987
Graduate	9.2%	1.6%	71.5%	17.7%	471	5,757
Master's	9.2%	1.0%	69.9%	19.9%	167	2,047
PhD	9.3%	2.0%	72.4%	16.4%	303	3,710
Employee	0.0%	0.1%	37.1%	62.8%	916	11,198
Faculty	0.0%	0.5%	67.6%	31.8%	135	1,646
Staff	0.0%	0.0%	31.8%	68.2%	781	9,552
Overall	14.3%	3.4%	58.4%	23.9%	3,467	42,405
Weighted sample	495	119	2,024	829	3,467	-
Projected population	6,052	1,455	24,757	10,140	-	42,405

Results are based on responses to question Q20. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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)” (Q34). 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 36 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, 45.6 percent bike (an estimated 16,516 people), 29.2 percent arrive by car (12,291 people), and 19 percent ride public transit (8,023 people)². 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	87.6%	53.7%	8.1%	12.6%	3.7%	21.4%	0.5%	2,581	31,207
Undergraduate	88.2%	52.6%	8.4%	10.9%	3.3%	24.5%	0.2%	2,105	25,450
Freshman	90.8%	70.4%	20.5%	2.4%	1.2%	5.2%	0.3%	325	3,924
Sophomore	89.1%	53.3%	4.3%	7.5%	2.2%	32.6%	0.0%	386	4,667
Junior	87.7%	47.4%	9.1%	11.8%	4.0%	27.7%	0.0%	568	6,872
Senior	87.1%	48.5%	5.0%	15.4%	4.2%	26.4%	0.5%	826	9,987
Graduate	84.7%	58.7%	6.4%	20.4%	5.5%	6.9%	2.0%	476	5,757
Master's	81.3%	55.2%	5.2%	28.1%	4.9%	6.2%	0.2%	169	2,047
PhD	86.6%	60.5%	7.1%	16.4%	5.7%	7.3%	2.9%	307	3,710
Employee	79.3%	20.8%	2.6%	60.8%	9.0%	5.0%	1.8%	926	11,198
Faculty	76.9%	46.8%	5.8%	37.2%	6.3%	0.9%	3.0%	136	1,646
Staff	79.7%	16.5%	2.0%	64.7%	9.5%	5.7%	1.6%	790	9,552
Overall	85.4%	45.6%	6.7%	24.4%	5.0%	17.4%	0.9%	3,507	42,405
Weighted sample	2,994	1,366	201	731	150	520	25	3,507	-
Projected population	36,205	16,516	2,435	8,843	1,811	6,291	308	-	42,405

Results are based on responses to question Q25 (whether they traveled to campus each day) and question Q34 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

² It should be noted that this year’s results may not be directly comparable to last year’s, which were slightly skewed by a minor incorrect calculation.

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 and juniors are the least likely to bike to campus (50 and 51 percent, respectively), and staff are most likely to drive alone (34.5 percent) from within Davis, while freshmen are the least likely to do so (0.4 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	89.0%	58.7%	8.7%	7.0%	2.7%	22.8%	0.1%	2,293	28,041
Undergraduate	89.1%	56.8%	9.0%	5.6%	2.6%	25.9%	0.1%	1,908	23,332
Freshman	91.4%	72.9%	21.1%	0.4%	0.6%	4.8%	0.1%	309	3,776
Sophomore	89.4%	55.6%	4.5%	3.8%	2.0%	34.0%	0.0%	365	4,466
Junior	88.9%	50.8%	9.5%	6.8%	3.3%	29.6%	0.0%	512	6,261
Senior	88.1%	54.4%	5.6%	8.0%	3.3%	28.6%	0.1%	722	8,828
Graduate	88.3%	68.3%	7.5%	13.5%	3.4%	7.1%	0.2%	385	4,710
Master's	86.0%	65.8%	6.4%	18.0%	3.4%	6.4%	0.0%	132	1,615
PhD	89.5%	69.5%	8.0%	11.3%	3.4%	7.5%	0.2%	253	3,094
Employee	80.8%	52.8%	3.5%	31.4%	8.1%	4.3%	0.0%	338	4,132
Faculty	81.8%	61.1%	7.8%	23.0%	6.9%	1.3%	0.0%	92	1,128
Staff	80.4%	49.6%	1.9%	34.5%	8.5%	5.4%	0.0%	246	3,003
Overall	87.9%	58.0%	8.1%	9.8%	3.4%	20.6%	0.1%	2,631	32,173
Weighted sample	2,313	1,341	188	227	78	477	2	2,631	-
Projected population	28,281	16,399	2,298	2,781	953	5,833	19	-	32,173

Results are based on responses to questions Q25 (daily travel) and Q34 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 (no 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	91.1%	72.3%	21.5%	1.0%	0.8%	4.3%	0.1%	495	6,052
Undergraduate	91.1%	72.3%	21.5%	1.1%	0.7%	4.4%	0.1%	451	5,521
Freshman	91.8%	74.5%	22.5%	0.4%	0.5%	2.0%	0.1%	284	3,479
Sophomore	91.9%	75.9%	13.4%	0.3%	0.3%	10.2%	0.0%	42	516
Junior	88.0%	56.5%	28.6%	4.5%	1.7%	8.7%	0.0%	70	856
Senior	91.0%	77.6%	13.3%	0.6%	1.3%	7.3%	0.0%	55	669
Graduate	91.1%	72.4%	22.0%	0.9%	1.1%	3.7%	0.0%	43	531
Master's	86.3%	68.0%	25.8%	1.2%	1.2%	3.7%	0.0%	15	188
PhD	93.7%	74.6%	20.0%	0.7%	1.0%	3.7%	0.0%	28	343
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	91.1%	72.3%	21.5%	1.0%	0.8%	4.3%	0.1%	495	6,052
Weighted sample	451	326	97	5	3	20	0	495	-
Projected population	5,514	3,986	1,186	57	42	240	3	-	6,052

Results are based on responses to questions Q25 and Q34. 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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57). 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	88.3%	52.9%	6.6%	2.5%	1.1%	37.0%	0.0%	118	1,447
Undergraduate	88.3%	51.5%	6.4%	2.5%	1.2%	38.5%	0.0%	111	1,354
Freshman	100.0%	80.0%	15.0%	0.0%	0.0%	5.0%	0.0%	3	31
Sophomore	90.1%	54.5%	5.5%	0.9%	0.0%	39.1%	0.0%	27	336
Junior	85.5%	53.0%	5.7%	2.5%	1.4%	37.4%	0.0%	44	544
Senior	89.6%	45.1%	7.2%	3.8%	1.9%	41.9%	0.0%	36	443
Graduate	89.1%	73.2%	9.8%	2.4%	0.0%	14.6%	0.0%	8	93
Master's	60.0%	0.0%	0.0%	16.7%	0.0%	83.3%	0.0%	2	20
PhD	97.0%	85.5%	11.4%	0.0%	0.0%	3.1%	0.0%	6	73
Employee	80.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	1	9
Faculty	80.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	1	9
Staff	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0	0
Overall	88.3%	52.6%	6.6%	3.0%	1.1%	36.8%	0.0%	119	1,455
Weighted sample	105	55	7	3	1	39	0	119	-
Projected population	1,285	676	84	39	14	472	0	-	1,455

Results are based on responses to question Q25 (whether they traveled to campus each day) and question Q34 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Table 19 shows the mode share results for those living off-campus in Davis, but excluding the 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 (32.5 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	88.3%	54.9%	5.0%	9.0%	3.4%	27.5%	0.1%	1,685	20,604
Undergraduate	88.5%	51.8%	4.9%	7.5%	3.4%	32.5%	0.1%	1,348	16,488
Freshman	85.7%	50.4%	2.0%	0.7%	2.0%	45.0%	0.0%	22	273
Sophomore	89.0%	52.6%	3.2%	4.6%	2.5%	37.1%	0.0%	295	3,607
Junior	89.5%	49.4%	6.5%	7.7%	3.8%	32.6%	0.0%	398	4,872
Senior	87.8%	52.9%	4.8%	8.9%	3.5%	29.8%	0.1%	632	7,735
Graduate	87.7%	67.7%	5.4%	15.4%	3.8%	7.5%	0.2%	337	4,117
Master's	85.6%	66.4%	3.8%	20.0%	3.7%	6.0%	0.0%	117	1,431
PhD	88.8%	68.4%	6.3%	13.0%	3.9%	8.2%	0.3%	220	2,685
Employee	80.0%	53.0%	3.5%	31.1%	8.1%	4.3%	0.0%	340	4,153
Faculty	81.8%	62.0%	7.9%	21.9%	7.0%	1.3%	0.0%	91	1,113
Staff	79.4%	49.6%	1.9%	34.5%	8.5%	5.4%	0.0%	249	3,040
Overall	86.9%	54.6%	4.8%	12.4%	4.2%	23.9%	0.1%	2,024	24,757
Weighted sample	1,760	961	84	219	73	421	1	2,024	-
Projected population	21,524	11,758	1,028	2,678	896	5,148	16	-	24,757

Results are based on responses to question Q25 (whether they traveled to campus each day) and question Q34 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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, 2014-15 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	89.8%	50.8%	2.7%	9.1%	2.8%	34.7%	0.0%	360	4,408
South	82.2%	42.7%	3.5%	14.5%	7.3%	32.0%	0.0%	284	3,473
East	86.5%	48.2%	2.0%	23.8%	6.1%	19.6%	0.2%	337	4,126
West	86.4%	54.1%	1.8%	13.0%	5.2%	25.9%	0.0%	384	4,702
Central	90.5%	65.7%	7.9%	8.4%	2.1%	15.9%	0.0%	381	4,655
Downtown	84.5%	64.3%	12.0%	6.1%	2.0%	15.4%	0.3%	277	3,392
Overall	86.9%	54.6%	4.8%	12.4%	4.2%	23.9%	0.1%	2,024	24,757
Weighted sample	1,760	961	84	219	73	421	1	2,024	-
Projected population	21,524	11,758	1,028	2,678	896	5,148	16	-	24,757

Results are based on responses to question Q25 (whether they traveled to campus each day) and question Q77 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Table 21 shows the mode share for students and employees who live outside Davis (an estimated 10,232 people). Among those traveling from outside Davis, 75.2 percent commute by car, 10.6 carpool or ride, 6 percent ride the bus, and 3.6 percent ride the train. Carpooling is especially prevalent among PhD students and freshmen, while freshmen were the most likely to take the bus from outside of Davis. PhD students were 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	78.3%	4.5%	1.7%	68.0%	13.3%	7.2%	5.4%	259	3,166
Undergraduate	82.2%	3.4%	2.1%	73.1%	11.5%	7.6%	2.2%	173	2,118
Freshman	89.5%	7.0%	3.5%	54.4%	18.7%	11.7%	4.7%	12	148
Sophomore	80.5%	0.0%	0.0%	92.0%	8.0%	0.0%	0.0%	16	201
Junior	82.5%	7.6%	6.0%	66.8%	11.5%	8.1%	0.0%	50	611
Senior	81.4%	1.2%	0.2%	75.9%	11.1%	8.1%	3.5%	95	1,159
Graduate	70.3%	7.0%	0.9%	55.8%	17.4%	6.2%	12.7%	86	1,047
Master's	66.7%	6.9%	0.0%	73.9%	12.4%	5.5%	1.4%	35	432
PhD	72.9%	7.1%	1.4%	44.3%	20.6%	6.6%	20.0%	50	616
Employee	79.2%	1.8%	2.0%	78.4%	9.5%	5.5%	2.9%	578	7,066
Faculty	66.9%	8.7%	0.4%	75.1%	4.8%	0.0%	11.1%	42	518
Staff	80.2%	1.3%	2.1%	78.6%	9.8%	5.9%	2.3%	536	6,549
Overall	78.9%	2.6%	1.9%	75.2%	10.6%	6.0%	3.6%	837	10,232
Weighted sample	661	17	13	497	70	40	24	837	-
Projected population	8,077	211	155	6,075	858	486	293	-	10,232

Results are based on responses to question Q25 (whether they traveled to campus each day) and question Q34 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 other 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	87.6%	53.7%	8.1%	12.6%	3.7%	21.4%	0.5%	0.0%	2,581	31,207
Undergraduate	88.2%	52.6%	8.4%	10.9%	3.3%	24.5%	0.2%	0.0%	2,105	25,450
Freshman	90.8%	70.4%	20.5%	2.4%	1.2%	5.2%	0.3%	0.0%	325	3,924
Sophomore	89.1%	53.3%	4.3%	7.5%	2.2%	32.6%	0.0%	0.0%	386	4,667
Junior	87.7%	47.4%	9.1%	11.8%	4.0%	27.7%	0.0%	0.0%	568	6,872
Senior	87.1%	48.5%	5.0%	15.4%	4.2%	26.4%	0.5%	0.0%	826	9,987
Graduate	84.7%	58.7%	6.4%	20.4%	5.5%	6.9%	2.0%	0.0%	476	5,757
Master's	81.3%	55.2%	5.2%	28.1%	4.9%	6.2%	0.2%	0.0%	169	2,047
PhD	86.6%	60.5%	7.1%	16.4%	5.7%	7.3%	2.9%	0.0%	307	3,710
Employee	79.3%	20.8%	2.6%	60.8%	9.0%	5.0%	1.8%	3.3%	926	11,198
Faculty	76.9%	46.8%	5.8%	37.2%	6.3%	0.9%	3.0%	11.0%	136	1,646
Staff	79.7%	16.5%	2.0%	64.7%	9.5%	5.7%	1.6%	2.1%	790	9,552
Overall	85.4%	45.6%	6.7%	24.4%	5.0%	17.4%	0.9%	0.8%	3,507	42,405
Weighted sample	2,994	1,366	201	731	150	520	25	24	3,507	-
Projected population	36,205	16,516	2,435	8,843	1,811	6,291	308	296	-	42,405

Results are based on responses to question Q25 (whether they traveled to campus each day), question Q34 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

³ Only employees were asked question Q27 (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 45.6 percent of individuals bike to campus as their primary means of transportation on an average weekday (Table 15), 56.3 percent bike to campus as their primary means of transportation at least once during the week (Table 23). So while about 16,516 people bike as their primary means of travel on an average day, about 20,394 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 3,649 (versus 1,811) and 478 (versus 308) 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	87.6%	65.5%	15.1%	20.0%	8.7%	32.3%	1.0%	0.0%	2,581	31,207
Undergraduate	88.2%	64.5%	15.6%	17.0%	7.7%	36.4%	0.3%	0.0%	2,105	25,450
Freshman	90.8%	83.2%	33.8%	3.4%	3.0%	8.8%	0.6%	0.0%	325	3,924
Sophomore	89.1%	66.1%	9.1%	11.6%	6.7%	47.4%	0.2%	0.0%	386	4,667
Junior	87.7%	60.6%	16.3%	19.0%	7.9%	40.9%	0.0%	0.0%	568	6,872
Senior	87.1%	58.7%	10.8%	23.7%	10.0%	39.3%	0.5%	0.0%	826	9,987
Graduate	84.7%	70.1%	12.6%	33.8%	13.0%	13.4%	4.0%	0.0%	476	5,757
Master's	81.3%	66.0%	12.4%	43.5%	12.3%	13.3%	1.2%	0.0%	169	2,047
PhD	86.6%	72.2%	12.8%	28.8%	13.4%	13.4%	5.5%	0.0%	307	3,710
Employee	79.3%	28.2%	5.1%	81.8%	14.5%	8.1%	2.3%	3.3%	926	11,198
Faculty	76.9%	58.2%	9.4%	59.7%	12.4%	1.9%	6.2%	11.0%	136	1,646
Staff	79.7%	23.3%	4.3%	85.5%	14.8%	9.1%	1.7%	2.1%	790	9,552
Overall	85.4%	56.3%	12.6%	35.2%	10.1%	26.3%	1.3%	0.8%	3,507	42,405
Weighted sample	2,994	1,687	378	1,053	302	788	40	24	3,507	-
Projected population	36,205	20,394	4,566	12,727	3,649	9,530	478	296	-	42,405

Results are based on responses to questions Q25 (whether traveled to campus) and Q34 (primary means of transportation each day). Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Comparison of 2014-15 mode share with 2013-14

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.

Table 24 shows mode share estimates for 2013-14 and 2014-15, which are very similar across the two years. Data for both years are weighted by role and gender.

Table 24. Comparison of mode shares, 2013-14 to 2014-15

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		
2014-15									
Student	87.9%	53.8%	8.1%	12.5%	3.7%	21.4%	0.6%	2,551	31,207
Undergraduate	88.5%	52.6%	8.5%	10.9%	3.3%	24.5%	0.2%	2,081	25,450
Graduate	85.1%	59.1%	6.5%	19.9%	5.5%	7.0%	2.0%	471	5,757
Employee	79.8%	20.8%	2.6%	60.8%	8.9%	5.0%	1.8%	916	11,198
Outside Davis	79.3%	2.4%	1.9%	75.7%	10.7%	5.7%	3.6%	829	10,140
Within Davis	87.8%	58.0%	8.1%	9.8%	3.4%	20.7%	0.1%	2,638	32,265
Overall	85.7%	45.7%	6.7%	24.4%	5.0%	17.4%	0.9%	3,467	42,405
2013-14									
Student	91.6%	54.0%	5.8%	12.9%	3.3%	23.3%	0.7%	2,629	30,228
Undergraduate	92.8%	53.2%	5.9%	11.0%	2.6%	26.9%	0.3%	2,146	24,671
Graduate	86.1%	57.5%	5.1%	22.0%	6.6%	6.2%	2.5%	483	5,557
Employee	83.8%	20.8%	2.5%	54.4%	10.8%	3.5%	1.8%	1,034	11,887
Outside Davis	78.5%	1.3%	1.4%	74.1%	12.3%	6.0%	4.8%	837	9,620
Within Davis	89.2%	58.5%	5.8%	11.0%	3.5%	21.1%	0.0%	2,923	32,495
Overall	88.3%	46.9%	4.9%	23.9%	5.3%	18.0%	1.0%	3,663	42,115

Data are weighted for both years by role and gender (see Table 57).

Table 25 shows percentage-point changes in the overall mode share. After an increase in bicycling from 2012-13 to 2013-14 of 2.9 percentage points, this past year has seen the rate of bicycling return closer to 2012-13 levels with a decline of 1.2 percentage points. However, the drop in bicycling seems to have been mostly fueled by an increase in walking and skateboarding. More people drove alone to school in 2014-15 than 2013-14, while fewer carpooled or took the bus. The share of the campus community physically traveling to campus decreased by 2.6 percentage points.

Table 25. One year change in overall mode share, 2013-14 to 2014-15

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
2013-14 to 2014-15	-2.6%	-1.2%	1.8%	0.5%	-0.3%	-0.6%	-0.1%

Data are weighted for both years by role and gender (see Table 57).

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 2.4 (including the driver). Most people dropped off on campus were the sole passenger, with an average of 1.5 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	1.6	300	171	3,670	2,090
Graduate	2.3	1.5	53	30	644	368
Faculty	2.4	1.2	12	7	142	85
Staff	2.1	1.1	107	25	1,306	311
Outside Davis	2.3	1.1	125	32	1,525	395
Within Davis	2.5	1.6	346	201	4,236	2,459
Overall	2.4	1.5	471	233	5,761	2,853

Vehicle occupancy is based on responses to question Q35 for those carpooling and to question Q36 for those who got a ride. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 57. We estimate that 9,839 vehicles come to campus on an average weekday (Table 27). About 580 of these contain carpools and 403 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	3,420	296	265	3,982	31,207
Undergraduate	2,445	203	222	2,870	25,450
Freshman	88	8	22	117	3,924
Sophomore	300	24	30	354	4,667
Junior	716	70	65	851	6,872
Senior	1,341	103	106	1,550	9,987
Graduate	975	98	43	1,116	5,757
Master's	462	31	10	503	2,047
PhD	513	67	33	613	3,710
Employee	5,436	308	137	5,881	11,198
Faculty	473	22	28	523	1,646
Staff	4,964	287	109	5,360	9,552
Outside Davis	6,083	321	117	6,521	10,140
Within Davis	2,774	270	285	3,329	32,265
Overall	8,856	580	403	9,839	42,405

Results are based on responses to questions Q25 (days physically traveling to campus), Q34 (mode of transportation used each day), Q35 (carpool size), and Q36 (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 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 3.23 campus-wide, and 1.61 among non-student employees only (Table 28). This means that for every car coming to campus, there are an estimated 3.30 off-campus people coming to campus or telecommuting. This ratio is slightly lower than it was last year, but still higher than the first four years of Campus Travel Survey data. Table 28 shows the AVR estimates over the last eight years.

Table 28. Average vehicle ridership (AVR) 2007-08 through 2014-15

Role	<i>Off campus only</i>							
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Student	1.67	4.76	4.28	4.49	5.29	6.05	5.59	5.66
Undergraduate	4.24	5.80	5.11	5.38	6.42	7.23	6.44	6.33
Freshman	5.32	5.35	4.69	3.26	3.66	5.06	2.31	4.24
Sophomore	6.46	10.24	9.38	8.37	15.93	17.51	10.93	10.64
Junior	4.05	6.26	5.48	5.59	6.24	7.85	6.59	6.64
Senior	3.55	4.39	3.88	4.57	5.26	5.62	5.85	5.31
Graduate	3.43	2.81	2.57	2.79	3.14	3.55	3.57	3.99
Master's	3.22	2.71	2.60	2.73	3.34	3.15	2.76	3.04
PhD	3.55	2.86	2.56	2.82	3.03	3.84	4.32	4.78
Employee	1.67	1.69	1.66	1.75	1.78	1.70	1.75	1.61
Faculty	2.23	2.34	2.37	2.24	2.76	3.06	3.24	2.81
Staff	1.58	1.60	1.56	1.66	1.65	1.52	1.54	1.49
Non-student and student employees	-	-	2.20	-	2.45	2.51	2.58	2.57
Outside Davis	1.33	1.32	1.26	1.34	1.39	1.34	1.30	1.27
Within Davis	4.60	5.17	4.99	4.99	5.98	6.24	6.53	7.25
Overall	2.75	2.99	2.83	3.00	3.26	3.34	3.30	3.23
	<i>All (on and off campus)</i>							
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Student	5.04	5.91	5.25	5.53	6.41	7.25	6.74	6.93
Undergraduate	5.04	7.37	6.36	6.72	8.01	8.77	7.96	7.92
Freshman	26.39	33.40	21.84	32.75	34.61	33.67	15.45	31.58
Sophomore	6.78	10.67	9.53	9.11	16.54	18.88	11.86	11.94
Junior	4.46	6.56	6.04	6.23	6.88	8.30	7.41	7.20
Senior	3.77	4.67	4.09	4.79	5.68	5.96	6.14	5.67
Graduate	3.94	3.21	2.95	3.18	3.45	4.03	3.88	4.40
Master's	3.49	2.94	2.84	2.94	3.57	3.43	2.92	3.35
PhD	4.20	3.36	3.01	3.33	3.39	4.47	4.75	5.28
Employee	1.67	1.71	1.66	1.75	1.80	1.70	1.75	1.61
Faculty	2.23	2.35	2.38	2.24	2.78	3.06	3.24	2.81
Staff	1.58	1.62	1.55	1.67	1.67	1.52	1.55	1.49
Non-student and student employees	-	-	2.31	-	2.59	2.64	2.69	2.70
Outside Davis	1.33	1.32	1.26	1.34	1.39	1.34	1.30	1.27
Within Davis	5.61	6.32	5.99	6.04	7.14	7.36	7.74	8.75
Overall	3.20	3.51	3.30	3.51	3.78	3.82	3.80	3.77

Bold indicates the official AVR statistic reported by UC campuses. AVR estimates from 2010-11 through 2014-15 are weighted by role and gender. See "Appendix D: Calculation of Average Vehicle Ridership (AVR)" for details on AVR calculations.

Table 29 shows AVR statistics for 2014-15 at UC Davis with those at other UC campuses for which AVR statistics are available. At the time of this report, the most recent AVR for most UC campuses is the one documented in the *Systemwide Transportation Survey Matrix 14-15*. Dashes indicate no new AVR was available for that year. To the extent that the most recently reported AVR statistics at other UC campuses reflect travel patterns in 2014-15, the comparison suggests that UC Davis has the highest (best) AVR for all the UC campuses except UCLA.

Table 29. AVR at UC Davis versus other UC campuses

UC Campus	2010-11	2013-14	2014-15	Notes on reported AVR	Comparable UC Davis AVR 2014-15
Berkeley	-	-	-	-	1.61
Irvine	1.87	1.92	-	Includes grad student employees	2.57
Los Angeles	-	1.67	1.68	Official (off campus employees only)	1.61
Merced	-	-	-	-	1.61
Riverside	1.53	1.58	-	Official (off campus employees only)	1.61
San Diego	1.60	-	-	Official (off campus employees only)	1.61
San Francisco	-	2.34	-	Off campus students and employees	3.23
Santa Barbara	-	1.35	-	Averaged for faculty (1.4) and staff (1.3)	1.61
Santa Cruz	1.94	2.17	2.56	Off campus students and employees	3.23

See "Appendix D: Calculation of Average Vehicle Ridership (AVR)" for details on the calculation of the Davis AVR. Other campus figures are from the Systemwide Transportation Survey Matrix 08-09, 09-10, 10-11, and 13-14 available online at: http://www.universityofcalifornia.edu/sustainability/trans_pres.html.

Zero-emission vehicles

For the purposes of calculating AVR statistics, we asked anyone who reported driving, carpooling, or getting a ride at any point on their way to campus during the reference week which type of vehicle they used to arrive to campus (Q39). 9 (weighted) respondents reported using a zero-emission vehicle to travel to campus during the reference week, all of which were all-electric vehicles (none were hydrogen vehicles) – amounting to a projected 106 ZEVs for the entire campus (Table 30). In addition to the zero emission vehicles, 4 (weighted) respondents reported driving compressed natural gas (CNG) fueled vehicles and 1 (weighted) respondent reported driving a plug-in hybrid electric vehicle, for a projected total of 42 CNG and 13 PHEVs on campus.

Table 30. Zero-emission vehicles on the UC Davis campus

	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
Weighted sample	1322	111	1	9	4	7	0
Projected population	15988	1346	13	106	42	79	0

Data are weighted by role and gender (see Table 57).

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 Q19). About 19 percent of respondents reported having an annual parking permit and 5.5 percent reported having a monthly or quarterly permit: a projected 8,071 and 2,319 people, respectively (Table 31). This year 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. About 6 percent of the population, or a projected 2,579 people have a daily permit. Four percent of respondents, or a projected 1,836 people, indicated owning an in-vehicle parking meter, a substantial increase over the one percent of respondents who owned an in-vehicle parking meter in the 2013-14 survey.

Table 31. 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	12.8%	3,997	6.9%	2,144	5.9%	1,853	6.3%	1,964	2.3%	729	31,207
Undergraduate	11.3%	2,885	5.8%	1,466	5.6%	1,419	5.9%	1,495	1.3%	334	25,450
Freshman	2.6%	102	1.8%	70	0.8%	31	0.8%	31	0.0%	0	3,924
Sophomore	8.5%	398	4.7%	222	3.8%	176	3.9%	183	0.1%	7	4,667
Junior	12.2%	838	6.5%	450	5.6%	388	6.5%	448	1.5%	102	6,872
Senior	15.5%	1,547	7.3%	724	8.2%	823	8.3%	832	2.3%	225	9,987
Graduate	19.3%	1,112	11.8%	678	7.5%	435	8.1%	469	6.8%	394	5,757
Master's	25.5%	523	17.1%	350	8.4%	172	9.6%	196	4.1%	83	2,047
PhD	15.9%	590	8.8%	327	7.1%	262	7.4%	273	8.4%	311	3,710
Employee	57.1%	6,392	52.9%	5,927	4.2%	465	5.5%	614	9.9%	1,107	11,198
Faculty	49.0%	807	44.2%	728	4.8%	78	4.8%	78	14.8%	244	1,646
Staff	58.5%	5,586	54.4%	5,199	4.1%	387	5.6%	536	9.0%	863	9,552
Outside Davis	67.3%	6,822	55.0%	5,582	12.2%	1,240	14.0%	1,420	3.2%	323	10,140
Within Davis	11.1%	3,567	7.7%	2,489	3.3%	1,078	3.6%	1,159	4.7%	1,513	32,265
Overall	24.5%	10,389	19.0%	8,071	5.5%	2,319	6.1%	2,579	4.3%	1,836	42,405

Results are based on responses to question Q19. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 32 and Table 33 show the share of bus and train users who used each service at least once during the reference week. Of the 788 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.

Table 32. 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	88.6%	5.9%	2.9%	0.6%	1.9%	675	8,163
Graduate	81.3%	5.0%	10.5%	0.7%	2.5%	54	652
Faculty	100.0%	0.0%	0.0%	0.0%	0.0%	2	24
Staff	35.6%	33.6%	23.0%	0.0%	7.8%	57	691
Overall	85.2%	7.4%	4.6%	0.6%	2.3%	788	9,530

Results are based on responses to questions Q33 (whether a bus was ever used) and Q43 (which bus services). Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Of the 40 respondents who indicated riding the train in the past week, nearly all rode the Amtrak Capitol Corridor (Table 33). Given the relatively small sample size, the weighted and projected estimates for train service ridership have large uncertainty relative to their estimated size.

Table 33. 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	86.8%	8.9%	4.3%	6	77
Graduate	83.4%	16.6%	0.0%	16	195
Faculty	100.0%	0.0%	0.0%	6	78
Staff	78.0%	0.0%	22.0%	11	128
Overall	85.3%	8.2%	6.5%	40	478

Results are based on responses to questions Q33 (whether a train was ever used) and Q44 (which train services). Data are weighted by role group based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 Q22 and Q23. 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. Note that in this analysis, we used the street network, which was not augmented to include additional bike- and pedestrian-only links, which are especially prevalent in Davis. Since some pedestrians and bicyclists may choose routes based on shortest distance, the estimated distances for these groups should be interpreted as likely over-estimates of the actual distance traveled. Table 34 and Table 35 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 1.7 miles, versus 2.8 among faculty and 12.9 among staff (Table 34).

Table 34. 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	98.8%	4.25	1.66	0.43	212.99	2,551	31,207
Undergraduate	99.0%	3.61	1.48	0.43	212.99	2,081	25,450
Freshman	98.3%	1.70	0.77	0.77	59.65	321	3,924
Sophomore	99.4%	2.52	1.86	0.66	72.46	382	4,667
Junior	99.0%	3.51	1.74	0.62	56.32	562	6,872
Senior	99.0%	4.94	1.91	0.43	212.99	817	9,987
Graduate	98.2%	7.06	1.97	0.58	105.49	471	5,757
Master's	98.3%	7.37	1.96	0.58	102.88	167	2,047
PhD	98.1%	6.90	1.97	0.58	105.49	303	3,710
Employee	99.3%	14.74	5.28	0.58	133.38	916	11,198
Faculty	99.5%	12.19	2.77	0.58	133.38	135	1,646
Staff	99.1%	15.19	12.87	0.89	108.50	781	9,552
Outside Davis	98.5%	24.00	18.87	3.10	212.99	829	10,140
Within Davis	100.0%	1.68	1.51	0.43	4.98	2,638	32,265
Overall	98.9%	7.02	1.81	0.43	212.99	3,467	42,405
Weighted sample	3,427	-	-	-	-	-	-

Distances are calculated as the shortest-time network distance between respondents’ geocoded cross-streets (given in questions Q22 and Q23 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 3,467 cases successfully geocoded and with non-missing mode choice data in question Q34.

While 90 percent of undergraduates live within 3 miles of campus, only 57 percent of faculty and 25 percent of staff do (Table 35). About 14 percent of the campus population lives more than 10 miles away, and 7 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 10 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 10 miles away.

Table 35. 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	0.1%	0.1%	0.0%	0.0%	0.0%
1 mile	28.2%	35.6%	19.1%	10.4%	0.9%
1.5 miles	42.1%	50.8%	34.7%	18.4%	2.2%
2 miles	59.3%	69.4%	51.7%	30.7%	8.8%
2.5 miles	73.1%	84.0%	64.9%	45.8%	16.4%
3 miles	80.5%	89.6%	76.3%	57.1%	24.8%
4 miles	84.3%	91.9%	82.4%	67.5%	30.1%
6 miles	84.9%	92.2%	83.0%	69.8%	31.9%
8 miles	85.1%	92.2%	83.1%	71.2%	33.2%
10 miles	85.7%	92.4%	83.5%	71.7%	38.5%
12 miles	87.1%	93.0%	85.0%	74.1%	46.9%
14 miles	88.1%	93.2%	86.2%	75.0%	54.9%
16 miles	90.0%	94.3%	89.1%	78.8%	60.6%
18 miles	91.8%	94.9%	91.6%	82.1%	69.5%
20 miles	93.2%	95.8%	92.4%	84.4%	77.9%
25 miles	94.8%	97.0%	93.4%	86.8%	84.1%
30 miles	96.1%	98.1%	93.9%	87.7%	91.6%
40 miles	97.0%	98.9%	94.3%	88.7%	94.7%
50 miles	97.6%	99.3%	95.5%	89.6%	96.0%
60 miles	98.4%	99.7%	96.4%	90.1%	98.7%
70 miles	99.3%	99.8%	98.7%	96.2%	99.1%
100 miles	99.8%	99.9%	99.7%	99.5%	99.6%
More than 100 miles	100.0%	100.0%	100.0%	100.0%	100.0%
Weighted sample	3,467	2,081	471	135	781
Projected population	42,405	25,450	5,757	1,646	9,552
Group's percent of the overall population	100.0%	60.0%	13.6%	3.9%	22.5%

Distances are calculated as the shortest-time network distance between geocoded cross-streets (given in questions Q22 and Q23 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 (Q30). 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 36 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 36. 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	94.2%	72.7%	13.9%	2.8%	1.9%	8.7%	0.0%	817	9,988
1 to 2.9 miles	93.1%	57.5%	1.4%	10.6%	2.4%	28.0%	0.1%	1,668	20,402
3 to 4.9 miles	92.3%	44.6%	1.0%	28.0%	7.3%	19.1%	0.0%	160	1,952
5 to 9.9 miles	95.2%	4.0%	0.0%	82.9%	12.1%	1.1%	0.0%	62	754
10 to 19.9 miles	91.0%	0.5%	0.0%	76.0%	12.8%	10.0%	0.7%	435	5,322
20 miles or more	91.6%	0.0%	0.0%	74.2%	11.7%	2.8%	11.2%	326	3,987
Overall	93.0%	47.3%	4.1%	24.7%	4.8%	18.0%	1.1%	3,467	42,405
Weighted sample	3,223	1,508	130	789	153	573	36	3,467	-
Projected population	39,416	18,449	1,591	9,645	1,872	7,003	443	-	42,405

Mode data are based on responses to question Q30, and distance data are calculated network distances between the geocoded cross-streets (given in Q22 and Q23 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 3,467 cases successfully geocoded and with non-missing mode choice data in question Q34 (see Table 57).

This year we asked respondents how they usually travel between on-campus destinations, in order to understand how the campus community travels once they have arrived on campus and how that might be affected by the primary mode they used to travel to campus. Table 37 shows that those who ride their bicycle to school are most likely to continue bicycling between campus destinations, followed distantly by walking. Individuals who walk or skateboard to campus tend to continue to do so between campus destinations, while a small minority then uses a bicycle to travel around campus. Individuals who drive alone to campus are most likely to walk to their other campus destinations, while a sizeable minority continues driving alone or uses a bicycle parked on campus to travel between campus destinations. Carpoolers and bus riders are most likely to walk between campus destinations, while train riders are more likely to use a bicycle.

Table 37. Secondary mode between campus destinations, by usual mode to campus

Usual mode to campus	Secondary mode between campus destinations							
	Walk	Skate or skateboard	Bike	Motorcycle or scooter	Drive alone	Carpool	Get a ride	Bus
Bike	3,121	24	15,606	46	81	29	15	69
Walk or skate	1,354	197	59	0	0	0	17	18
Drive alone	6,637	61	1,411	25	2,138	108	16	0
Carpool or ride	959	8	358	0	282	170	8	5
Bus	5,626	66	1,119	0	10	30	10	431
Train	184	10	245	0	55	0	0	0

Data are weighted for both years by role and gender (see Table 57).

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 person-miles would be 20 miles; by contrast, if she traveled to campus only one day, her average daily person-miles would be 4 miles. We then attribute person-miles 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 person-miles traveled by each mode on an average weekday.

To estimate the number of person-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 Q37 and Q38 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 person-miles traveled by each person on an average day we calculate a weighted average of summer and academic-year travel.

Vehicle-miles traveled (VMT) accounts for vehicle use and occupancy per mile. To estimate VMT 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 person-mile contributes a fractional vehicle-mile

equivalent to one divided by vehicle occupancy. We assume that travel by walking, biking, or skating contributes no VMT. Vehicle occupancy for carpooling and getting a ride varies for each respondent, as reported in questions Q35 and Q36 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 VMT would be $(10 \text{ miles} \times 2) / 3 = 6.67 \text{ miles}$. 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 VMT for personal vehicles, we estimate VMT 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 2014-15 figures from the Unitrans, Unitrans served 3,972,587 annual passengers and 847,834 annual vehicle revenue miles, suggesting an average of about 4.57 passengers per mile.⁴⁵ Thus, for someone who lives 10 miles from campus and traveled by bus all five weekdays, average bus VMT per day is $(10 \text{ miles} \times 2) / 4.57 \approx 4.4 \text{ vehicle-miles}$. In general, each mile someone travels by bus contributes $1 / 4.57 \approx 0.22 \text{ vehicle-miles per passenger-mile}$.

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 Update, the Capitol Corridor had an average of 79.7 passengers per mile in FY 2013-14.⁶ If a respondent lives 100 miles from campus and traveled by train all five days, her average train VMT per day is estimated to be $(100 \text{ miles} \times 2) / 79.7 = 2.51 \text{ vehicle-miles}$. In general, each mile someone travels by train contributes $1 / 79.7 \approx 0.013 \text{ vehicle-miles per passenger-mile}$.

Our estimates for vehicle-miles traveled, by mode and role, are shown in Table 38 and Table 39.

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 (CO₂e) 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 CO₂e 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 (provided by National Transit Database). For other bus services and Amtrak we estimate emissions based on national travel fuel use⁷ and emissions

⁴ Palmere, A. Unitrans Quarterly Report to the City of Davis, April-June 2015.

⁵ It should be noted that previous studies used the incorrect numerator in this calculation. The numerator should be passengers, not passenger-miles, otherwise the division will result in passengers per vehicle rather than passengers per mile.

⁶ Capitol Corridor Joint Powers Authority. Capitol Corridor Intercity Passenger Rail Service Business Plan Update FY 2015-16- FY 2016-17, Appendix C.

http://www.capitolcorridor.org/downloads/board_meetings/ccjpaboardfeb2015_supplemental.pdf.

⁷ Neff, J., and M. Dickens. 2014 *Public Transportation Fact Book*. Washington, D.C., 2014.

averages⁸⁹ (Table 40).

This is the second 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 2014, Unitrans buses consumed 274,598 gallons of CNG and 19,038 gallons of diesel while providing 8,470,948 passenger-miles of service.¹⁰ Assuming 22.14 and 0.89 pounds of carbon per gallon of diesel and CNG¹¹, respectively, then Unitrans operations generated 665,894 pounds of carbon in fiscal year 2014, or 0.079 pounds per passenger-mile of service, about 1/10th 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. Vehicle-miles-traveled (VMT), daily and annually, by mode group

Mode	Daily		Annually		Share of total VMT	Share of population	Projected population
	Total VMT	VMT per person	Total VMT	VMT per person			
No travel	0	0.0	0	0	0.0%	14.3%	6,044
No vehicle (bike, walk, or skate)	0	0.0	0	0	0.0%	45.0%	19,065
Personal vehicles	296,305	27.8	66,626,480	6,246	97.3%	25.2%	10,668
Drive alone	275,536	31.1	62,025,315	7,004	90.4%	20.9%	8,856
Carpool or ride	20,770	11.5	4,601,165	2,540	6.8%	4.3%	1,811
Bus	7,989	1.3	1,701,778	269	2.6%	14.9%	6,317
Train	344	1.1	70,650	227	0.1%	0.7%	311
Total	304,639	7.2	68,398,908	1,613	100.0%	100.0%	42,405

Mode groups are the estimated number using each means of transportation on a typical weekday, based on responses to questions Q25 and Q34. Vehicle-miles are calculated as described in the text, drawing on data from questions Q25, Q34, Q22, Q23, 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 3,467 cases successfully geocoded (based on Q22 and Q23) and with non-missing mode choice data in question Q34 (see Table 57).

⁸ U.S. Energy Information Administration. Carbon Dioxide Emissions Coefficients by Fuel.
http://www.eia.gov/environment/emissions/co2_vol_mass.cfm.

⁹ U.S. Energy Information Administration. United States Electricity Profile 2013.
<http://www.eia.gov/electricity/state/unitedstates/>.

¹⁰ As described in (Popovich, 2014)

¹¹ As described in (Lovejoy, 2009)

Table 39. Vehicle-miles-traveled (VMT), daily and annually, by role group

Role	Daily		Annually		Share of total VMT	Share of Population	Projected population
	Total VMT	VMT per person	Total VMT	VMT per person			
Student	110,516	3.54	22,074,367	707	36.3%	73.6%	31,207
Undergraduate	82,920	3.26	16,466,190	647	27.2%	60.0%	25,450
Freshman	4,555	1.16	829,007	211	1.5%	9.3%	3,924
Sophomore	7,856	1.68	1,511,777	324	2.6%	11.0%	4,667
Junior	20,788	3.03	4,067,073	592	6.8%	16.2%	6,872
Senior	49,722	4.98	10,058,332	1,007	16.3%	23.6%	9,987
Graduate	27,596	4.79	5,608,177	974	9.1%	13.6%	5,757
Master's	12,711	6.21	2,514,399	1,228	4.2%	4.8%	2,047
PhD	14,885	4.01	3,093,778	834	4.9%	8.7%	3,710
Employee	194,122	17.34	46,324,542	4,137	63.7%	26.4%	11,198
Faculty	14,929	9.07	3,180,956	1,933	4.9%	3.9%	1,646
Staff	179,194	18.76	43,143,586	4,517	58.8%	22.5%	9,552
Outside Davis	284,818	28.09	64,112,102	6,323	93.5%	23.9%	10,140
Within Davis	31,814	0.99	4,286,807	133	10.4%	76.1%	32,265
On Campus	353	0.06	41,920	7	0.1%	14.3%	6,052
West Village	2,518	1.73	80,929	56	0.8%	3.4%	1,455
Off Campus	32,722	1.32	4,163,958	168	10.7%	58.4%	24,757
Overall	304,639	7.18	68,398,908	1,613	100.0%	100.0%	42,405

Vehicle-miles are calculated as described in the text, drawing on data from questions Q25, Q34, Q22, Q23, 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 3,467 cases successfully geocoded (based on Q22 and Q23) and with non-missing mode choice data in question Q34 (see Table 57).

Table 40. 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 vehicle-miles traveled (this is the equivalent of adjusting person-miles by the reported carpool size)
Bus (Unitrans)	0.079 lbs / mile × aggregated average weekday person-miles traveled by bus
Bus (other)	0.73 lbs / mile × aggregated average weekday person-miles traveled by bus
Train	0.46 lbs / mile × aggregated average weekday person-miles by train

Using these assumptions, we estimate that travel to campus generates a total of 328,784 pounds of CO₂e on an average weekday, or 7.75 pounds per person (Table 41), and about 37,283 metric tons of CO₂e annually, or 0.88 metric tons per person (Table 42). Undergraduate students, particularly freshmen and sophomores, contribute much less to campus-wide CO₂e emissions than their share of the population. Employees, and especially staff, contribute the most CO₂e relative to their share of the campus

population, comprising 28 percent of the population and contributing 65 percent of CO₂e on an average weekday.

To assess the extent that alternative transportation reduces CO₂e 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 12,703 annual metric tons of CO₂e, compared to 37,283 tons overall (Table 43). Figure 8 shows the contribution of each alternative, when compared to driving alone, to the total CO₂e emissions avoided.

Table 41. Daily pounds of CO₂e emitted, by mode and role

Role	Pounds-equivalent of CO ₂ e generated on an average weekday						Average lbs per person	Share of total CO ₂ e	Share of population	Projected population
	Drive alone	Carpool	Ride	Bus	Train	Total CO ₂ e				
Student	103,566	7,824	3,624	1,212	75	116,301	3.73	35.4%	73.6%	31,207
Undergraduate	77,730	4,599	3,092	959	25	86,405	3.40	26.3%	60.0%	25,450
Freshman	3,983	296	501	83	4	4,867	1.24	1.5%	9.3%	3,924
Sophomore	6,979	261	162	123	0	7,525	1.61	2.3%	11.0%	4,667
Junior	19,186	1,101	930	279	0	21,496	3.13	6.5%	16.2%	6,872
Senior	47,581	2,941	1,499	474	21	52,517	5.26	16.0%	23.6%	9,987
Graduate	25,836	3,225	532	253	50	29,896	5.19	9.1%	13.6%	5,757
Master's	12,758	972	36	94	2	13,862	6.77	4.2%	4.8%	2,047
PhD	13,078	2,253	496	160	48	16,034	4.32	4.9%	8.7%	3,710
Employee	199,523	9,511	1,887	1,477	83	212,483	18.98	64.6%	26.4%	11,198
Faculty	15,796	439	111	1	28	16,373	9.95	5.0%	3.9%	1,646
Staff	183,728	9,073	1,777	1,477	55	196,109	20.53	59.6%	22.5%	9,552
Outside Davis	289,296	15,788	4,447	2,142	158	311,832	30.75	94.8%	23.9%	10,140
Within Davis	13,793	1,547	1,065	547	0	16,952	0.53	5.2%	76.1%	32,265
On Campus	97	8	42	8	0	156	0.03	0.0%	14.3%	6,052
West Village	113	12	17	35	0	177	0.12	0.1%	3.4%	1,455
Off Campus	13,583	1,526	1,005	504	0	16,619	0.67	5.1%	58.4%	24,757
Overall	303,090	17,335	5,511	2,690	158	328,784	7.75	100.0%	100.0%	42,405

Data are weighted for both years by role and gender (see Table 57).

Table 42. Annual tons of CO₂e emitted, by mode and role

Role	Annual tons of CO ₂ e emissions						Average tons per person	Share of total CO ₂ e	Share of population	Projected population
	Drive alone	Carpool	Ride	Bus	Train	Total CO ₂ e				
Student	11,744	887	411	137	9	13,188	0.42	35.4%	73.6%	31,207
Undergraduate	8,814	522	351	109	3	9,798	0.38	26.3%	60.0%	25,450
Freshman	452	34	57	9	0	552	0.14	1.5%	9.3%	3,924
Sophomore	791	30	18	14	0	853	0.18	2.3%	11.0%	4,667
Junior	2,176	125	106	32	0	2,438	0.35	6.5%	16.2%	6,872
Senior	5,396	333	170	54	2	5,955	0.60	16.0%	23.6%	9,987
Graduate	2,930	366	60	29	6	3,390	0.59	9.1%	13.6%	5,757
Master's	1,447	110	4	11	0	1,572	0.77	4.2%	4.8%	2,047
PhD	1,483	255	56	18	5	1,818	0.49	4.9%	8.7%	3,710
Employee	22,626	1,079	214	168	9	24,095	2.15	64.6%	26.4%	11,198
Faculty	1,791	50	13	0	3	1,857	1.13	5.0%	3.9%	1,646
Staff	20,834	1,029	201	167	6	22,238	2.33	59.6%	22.5%	9,552
Outside Davis	32,806	1,790	504	243	18	35,361	3.49	94.8%	23.9%	10,140
Within Davis	1,564	175	121	62	0	1,922	0.06	5.2%	76.1%	32,265
On Campus	11	1	5	1	0	18	0.00	0.0%	14.3%	6,052
West Village	13	1	2	4	0	20	0.01	0.1%	3.4%	1,455
Off Campus	1,540	173	114	57	0	1,885	0.08	5.1%	58.4%	24,757
Overall	34,370	1,966	625	305	18	37,283	0.88	100.0%	100.0%	42,405

Data are weighted for both years by role and gender (see Table 57).

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

Role	Annual tons of CO ₂ e avoided						Average savings/person	Projected population
	Bike	Walk or skate	Carpool or ride	Bus	Train	Total		
Students	5,765	853	1,330	671	12	8,631	0.28	31,207
Undergraduate	4,336	667	901	603	4	6,511	0.26	25,450
Freshman	543	163	49	23	1	779	0.20	3,924
Sophomore	842	49	37	130	0	1,058	0.23	4,667
Junior	1,310	311	243	174	0	2,038	0.30	6,872
Senior	1,642	144	572	276	3	2,636	0.26	9,987
Graduate	1,430	186	429	68	8	2,120	0.37	5,757
Master's	431	24	120	22	0	597	0.29	2,047
PhD	999	162	310	45	8	1,523	0.41	3,710
Employees	1,527	940	1,338	254	13	4,072	0.36	11,198
Faculty	443	48	94	1	4	589	0.36	1,646
Staff	1,084	892	1,245	253	9	3,483	0.36	9,552
Outside Davis	988	1,182	2,459	357	25	5,011	0.49	10,140
Within Davis	6,304	610	210	568	0	7,692	0.24	32,265
On campus	765	228	2	9	0	1,005	0.17	6,052
West Village	224	28	1	32	0	285	0.20	1,455
Off campus	5,315	354	206	527	0	6,403	0.26	24,757
Overall	7,292	1,792	2,669	925	25	12,703	0.30	42,405

Bike savings = 1.1 lbs./mile*annual person-miles biked

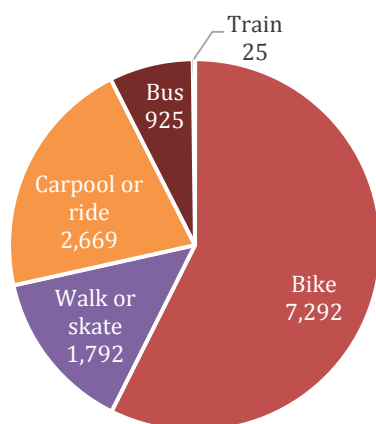
Walk or skate savings = 1.1 lbs./mile*annual person-miles walked or skated

Carpool or ride savings = 1.1 lbs./mile*(carpool or ride PMT- carpool or ride VMT)

Bus savings = (1.1 lbs./mile - 0.079 lbs./mile)*annual bus PMT. "Unitrans" estimates are used to conservatively estimate savings.

Train savings = (1.1 lbs./mile - 0.46 lbs./mile)*annual train PMT

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



Driver's license, car and bicycle access

All respondents were asked whether they have a driver's license and when they got it, as well as if they have access to a bicycle for riding to campus. About 88 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 50 percent of those living in Davis have access to a car, compared to 92 percent of those living outside Davis. About 72 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 (89 percent compared to 17 percent for those outside of Davis). Overall, more people consider bicycling to be a feasible option to get to campus (30,349) than those who consider driving to be a feasible option (25,388), 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	87.1%	47.9%	81.7%	2,551	31,207
Undergraduate	86.0%	42.7%	82.0%	2,081	25,450
Freshman	69.8%	8.0%	87.9%	321	3,924
Sophomore	81.1%	29.6%	90.8%	382	4,667
Junior	88.3%	46.2%	82.3%	562	6,872
Senior	93.0%	60.0%	75.5%	817	9,987
Graduate	92.2%	70.8%	80.1%	471	5,757
Master's	91.5%	73.2%	75.6%	167	2,047
PhD	92.6%	69.5%	82.5%	303	3,710
Employees	98.4%	93.3%	43.4%	916	11,198
Faculty	96.7%	91.3%	70.2%	135	1,646
Staff	98.6%	93.6%	38.8%	781	9,552
Outside Davis	97.5%	91.5%	16.9%	829	10,140
Within Davis	87.7%	49.9%	88.7%	2,638	32,265
Overall	90.1%	59.9%	71.6%	3,467	42,405
Weighted sample	3,123	2,076	2,481	3,467	-
Projected population	38,199	25,388	30,349	-	42,405

Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, Q18, and Q24-34 (see Table 57). Car access reflects those respondents who indicated they have the option to drive alone to campus.

Injuries resulting from bike falls or crashes on and off campus

All respondents who indicated biking on campus at some point in the last year were asked if they experienced "a fall or crash that resulted in personal injury to you" while "biking on campus" or biking "between home and campus." Of the 57.2 percent of respondents who indicated biking on campus within the last year, 29 percent (an estimated 7,026 people) said they had experienced a bike crash on campus that resulted in personal injury, and 18 percent (an estimated 4,375 people) experienced a crash between home and campus (Table 45). Freshmen, sophomores, and seniors who ride a bike on campus are most likely to experience on campus bike crashes that result in injury.

Table 45. Injuries resulting from bike falls or crashes, by role group

Role	Share who biked on campus in the past year	Of those who biked on campus in the past year				Role group share of biking population	Role group share of injuries	Population who biked on campus in the past year	Projected campus population
		Injured biking on campus		Injured biking between home and campus					
		Share	Projected number	Share	Projected number				
Student	74.4%	31.6%	7,334	18.0%	4,183	88.8%	93.8%	23,219	31,207
Undergraduate	76.5%	35.2%	6,847	20.0%	3,887	74.4%	87.9%	19,461	25,450
Freshman	70.9%	41.7%	1,159	9.6%	268	10.6%	12.7%	2,782	3,924
Sophomore	93.2%	54.8%	2,384	22.7%	989	16.6%	27.1%	4,348	4,667
Junior	77.8%	19.6%	1,045	25.8%	1,379	20.5%	18.0%	5,346	6,872
Senior	70.1%	33.9%	2,373	17.3%	1,207	26.8%	31.3%	6,997	9,987
Graduate	65.6%	13.7%	517	8.9%	335	14.4%	6.5%	3,774	5,757
Master's	46.3%	16.1%	152	16.1%	152	3.6%	1.7%	947	2,047
PhD	71.7%	13.2%	351	7.4%	196	10.2%	4.5%	2,659	3,710
Employee	26.1%	15.5%	454	18.1%	530	11.2%	6.2%	2,923	11,198
Faculty	58.4%	5.2%	50	13.2%	127	3.7%	1.8%	961	1,646
Staff	20.4%	20.2%	394	20.2%	394	7.5%	4.3%	1,949	9,552
Overall	57.2%	29.0%	7,026	18.0%	4,375	92.8%	90.5%	24,259	42,405

Results are based on responses to questions Q53-54. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

This year we asked respondents who had bicycle access about the types of bicycle lights they possessed (Table 46). Freshmen were the most likely to own front lights, graduate students and employees were most likely to own rear lights, and employees were most likely to own rear reflectors. The higher ownership rate of rear lights in particular among graduate students and employees may contribute to their lower rates of bicycle injuries (Table 45).

Table 46. Bicycle light ownership, by role group

Role	Bike access		Of those who have bicycle access			Weighted sample	Projected population
			Front light	Rear light	Rear reflector		
Student	25,267	81.0%	78.6%	52.1%	64.4%	2,581	31,207
Undergraduate	20,711	81.4%	77.9%	50.2%	65.3%	2,105	25,450
Freshman	3,387	86.3%	87.3%	50.9%	74.4%	325	3,924
Sophomore	4,224	90.5%	75.7%	54.0%	61.5%	386	4,667
Junior	5,602	81.5%	74.7%	49.5%	68.0%	568	6,872
Senior	7,498	75.1%	77.3%	48.4%	61.4%	826	9,987
Graduate	4,556	79.1%	81.7%	60.5%	60.2%	476	5,757
Master's	1,523	74.4%	79.5%	50.3%	58.1%	169	2,047
PhD	3,033	81.7%	82.8%	65.6%	61.3%	307	3,710
Employee	4,874	43.5%	82.7%	64.4%	78.0%	926	11,198
Faculty	1,151	69.9%	80.9%	63.6%	75.5%	136	1,646
Staff	3,723	39.0%	83.3%	64.7%	78.8%	790	9,552
Overall	30,141	71.1%	79.3%	54.1%	66.6%	3,507	42,405
Weighted sample	2,493	2,493	1,976	1,348	1,661	3,507	-
Projected population	30,141	30,141	23,889	16,299	20,079	-	42,405

Data are weighted for both years by role and gender (see Table 57).

Self-reported bicycling aptitude

Question Q68 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 1.6 percent indicated that they cannot ride a bike, and 6.5 percent of respondents indicated that they could but were “not very confident” doing so. Overall, about 92 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 47).

Table 47. Self-reported bicycling aptitude, by role group

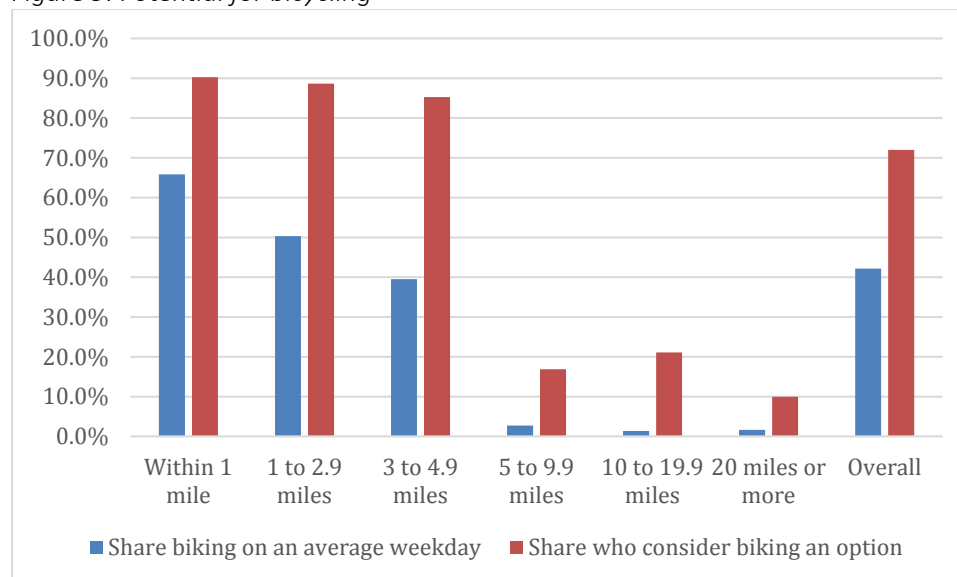
Role	Self-rated ability to ride a bike				Weighted sample
	I cannot ride a bike at all because I do not know how.	I can ride a bike, but I am not very confident doing so.	I am somewhat confident riding a bike.	I am very confident riding a bike.	
Student	2.2%	6.8%	21.3%	69.7%	2,581
Undergraduate	2.5%	6.6%	21.5%	69.4%	2,105
Freshman	1.8%	8.6%	39.4%	50.2%	325
Sophomore	2.1%	4.9%	21.7%	71.2%	386
Junior	3.7%	7.5%	18.2%	70.7%	568
Senior	2.1%	6.0%	16.4%	75.5%	826
Graduate	1.1%	7.6%	20.0%	71.3%	476
Master's	0.6%	8.0%	19.0%	72.5%	169
PhD	1.3%	7.4%	20.6%	70.7%	307
Employee	0.1%	5.6%	19.0%	75.4%	926
Faculty	0.4%	2.3%	17.0%	80.3%	136
Staff	0.0%	6.2%	19.4%	74.5%	790
Male	1.7%	2.8%	12.5%	83.0%	1,531
Female	1.6%	9.3%	26.9%	62.2%	1,976
Overall	1.6%	6.5%	20.6%	71.2%	3,507

Results are based on responses to questions Q68. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Potential for bicycling

We include a question to assess the potential mode share of biking. In *Q18*, 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 85 to 90 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 *Q18*, *Q22*, *Q23*, *Q25*, and *Q34*. Data are weighted by role and gender based on the 3,507 valid responses to questions *Q01*, *Q10*, and *Q24-34* (see Table 57).

Perceptions of bicycle traffic law enforcement and safety biking on campus

In addition to bicycling aptitude, we ask respondents questions about their perceptions of bicycle traffic law enforcement and safety on campus. These questions were presented in the form of statements with Likert-scale responses, and respondents were asked to rate their level of agreement or disagreement with each statement.

About 40 percent of the sample agreed or strongly agreed that, “bicycle traffic laws are adequately enforced on campus” (Table 48). About 28 percent indicated they were neutral or unsure, 19 percent disagreed, and almost 13 percent strongly disagreed. Employees and graduate students are most likely to disagree, while sophomores are most likely to agree that there is adequate enforcement.

Table 48. Perceptions of bicycle traffic law enforcement on campus

Role	"Bicycle traffic laws are adequately enforced on campus."					Weighted sample
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Student	8.6%	16.5%	30.4%	35.7%	8.7%	2,581
Undergraduate	7.4%	15.0%	30.9%	37.9%	8.8%	2,105
Freshman	2.2%	10.4%	35.8%	44.2%	7.3%	325
Sophomore	4.2%	17.2%	25.7%	46.5%	6.4%	386
Junior	7.6%	15.3%	31.9%	33.9%	11.3%	568
Senior	10.8%	15.7%	30.6%	34.2%	8.7%	826
Graduate	14.2%	23.2%	28.4%	25.6%	8.5%	476
Master's	15.1%	20.0%	32.4%	26.4%	6.1%	169
PhD	13.8%	24.9%	26.3%	25.2%	9.7%	307
Employee	23.5%	26.1%	22.0%	21.5%	6.8%	926
Faculty	23.6%	20.4%	23.0%	25.8%	7.2%	136
Staff	23.5%	27.2%	21.9%	20.8%	6.7%	790
Male	12.5%	16.2%	27.7%	32.9%	10.7%	1,531
Female	12.7%	21.3%	28.6%	31.1%	6.3%	1,976
Overall	12.6%	19.1%	28.2%	31.9%	8.2%	3,507

Results are based on responses to question Q66. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Table 49 summarizes the levels of agreement and disagreement about the safety of biking on campus. While most respondents indicated feeling safe biking on campus, about 16 percent of respondents strongly disagreed or disagreed with the statement, “I feel safe biking on campus.” An additional 19 percent indicated they were neutral or unsure about the statement.

Table 49. Perceptions of safety biking on campus

Role	<i>"I feel safe biking on campus."</i>					Weighted sample
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Student	3.4%	9.4%	18.2%	45.8%	23.2%	2,581
Undergraduate	3.0%	8.6%	18.0%	47.1%	23.4%	2,105
Freshman	1.5%	6.0%	18.4%	46.6%	27.5%	325
Sophomore	2.3%	7.4%	17.0%	47.5%	25.7%	386
Junior	4.1%	11.3%	16.1%	45.8%	22.7%	568
Senior	3.0%	8.3%	19.8%	48.0%	20.9%	826
Graduate	5.4%	13.0%	18.8%	40.3%	22.5%	476
Master's	6.1%	16.4%	18.2%	34.3%	25.0%	169
PhD	5.1%	11.3%	19.0%	43.4%	21.2%	307
Employee	8.5%	18.0%	22.5%	35.1%	15.8%	926
Faculty	7.4%	11.3%	16.5%	36.6%	28.2%	136
Staff	8.7%	19.2%	23.7%	34.9%	13.6%	790
Male	2.4%	8.7%	17.6%	45.4%	26.0%	1,531
Female	6.6%	14.0%	20.7%	41.1%	17.6%	1,976
Overall	4.8%	11.7%	19.3%	43.0%	21.3%	3,507

Results are based on responses to question Q67. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Bicycle theft

Table 50 shows the incidence of bicycle theft and vandalism on the UC Davis campus between October 20, 2013 and October 20, 2014, the year before the first reference week. Among the 57 percent of the weighted sample who rode a bike on campus during this period, 6 percent reported their entire bike was stolen, 10 percent reported parts of their bike were stolen, and 1.5 percent reported their bike was vandalized. Since these categories were not mutually exclusive, the same respondent could indicate an entire bike theft, a partial bike theft, and a vandalism—therefore these percentages should not be added to reflect the total incidence of bike theft and vandalism. Overall, we estimate that 1,356 people had an entire bike stolen from campus during this period.

Table 50. Incidence of bike theft over one year, by role

Role	Share who biked on campus in the past year	Of those who biked on campus in the past year			Weighted sample	Projected population
		Entire bike was stolen	Only parts of bike were stolen	Bike was vandalized		
Student	74.4%	6.4%	11.4%	1.8%	2,581	31,207
Undergraduate	76.5%	5.9%	11.8%	2.2%	2,105	25,450
Freshman	70.9%	0.0%	7.7%	0.0%	325	3,924
Sophomore	93.2%	0.0%	17.2%	0.0%	386	4,667
Junior	77.8%	10.6%	7.4%	3.9%	568	6,872
Senior	70.1%	8.2%	14.5%	3.2%	826	9,987
Graduate	65.6%	9.0%	9.7%	0.0%	476	5,757
Master's	46.3%	0.0%	0.0%	0.0%	169	2,047
PhD	71.7%	10.8%	11.7%	0.0%	307	3,710
Employee	26.1%	1.5%	1.5%	0.0%	926	11,198
Faculty	58.4%	4.6%	4.6%	0.0%	136	1,646
Staff	20.4%	0.0%	0.0%	0.0%	790	9,552
Overall	57.2%	5.6%	9.8%	1.5%	3,507	42,405
Weighted sample	2,006	112	197	31	3,507	-
Projected population	24,259	1,356	2,385	372	-	42,405

Results are based on responses to questions Q55 (theft in the last year). Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

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 51 summarizes the responses for each service, and Table 52 compares responses for the past six years, for those items that appeared on each of the surveys. The most utilized services in 2014-15 were the bike tire air stations, TAPS bicycle licensing program, and the GoClub program.

Table 51. Awareness of transportation services

Service	Have used it	Have only heard of it	Have never heard of it
Bike tire air stations and repair stations around campus	57.4%	38.0%	4.6%
TAPS bicycle licensing program	42.9%	48.0%	9.1%
GoClub program	20.6%	48.4%	31.1%
Bicycle Education and Enforcement Program (BEEP) and bike safety video	17.7%	51.9%	30.4%
TAPS motorist assistance program	13.8%	65.6%	20.6%
Zipcar carsharing program	10.1%	80.1%	9.8%
In-vehicle parking meters (Easy Park)	10.1%	57.7%	32.2%
UC Davis Bike Auction	9.3%	79.9%	10.8%
Bike lock-cutting service	6.4%	77.0%	16.6%
Zimride carpool matching service	5.2%	61.8%	33.0%
TAPS Mobility Assistance Program	3.8%	77.2%	19.0%
Aggie Bike Buy Program	1.9%	62.9%	35.3%

Results are based on responses to question Q64. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57).

Barriers to using alternative transportation

In past surveys, we included two questions to better understand why some individuals do not utilize the alternative transportation options, particularly bicycling and bus, available to them. This year, we asked instead why respondents had driven to campus. Respondents who lived off campus, either in Davis or outside Davis, and had driven alone to campus in the past week were asked to select up to three reasons why they chose to drive. The weighted number of agreements with each given statement is shown in Table 53. The top two reasons were likely due structural constraints - the respondent felt they lived too far from campus or it would take too long to use another mode - and the third most common reason was that they enjoyed driving.

Table 52. Awareness of transportation services, 2009-10 through 2014-15

Service	Change 2013-14 to 2014-15	Percent who have heard of it or used it					
		2014-15	2013-14	2012-13	2011-12	2010-11	2009-10
Zimride carpool matching service	28.7%	67.0%	38.3%	41.0%	31.2%	24.2%	15.4%
TAPS motorist assistance program	26.9%	79.4%	52.5%	58.6%	51.7%	60.3%	51.3%
Zipcar carsharing program	12.5%	90.2%	77.7%	81.9%	75.9%	75.1%	57.3%
Bike lock-cutting service	25.8%	83.4%	57.6%	62.5%	57.3%	42.7%	40.9%
GoClub program	23.3%	68.9%	45.6%	45.4%	42.8%	32.8%	17.5%
In-vehicle parking meters (Easy Park)	30.4%	67.8%	37.4%	36.1%	34.7%	-	-
Emergency Ride Home Program for goClub members	-	-	24.6%	25.9%	24.5%	23.6%	16.3%
UC Davis Bike Auction	10.4%	89.2%	78.8%	83.2%	83.9%	86.3%	81.5%
Bike commuter showers and lockers (ARC)	-	-	34.8%	36.3%	37.7%	-	-
Bicycle Education and Enforcement Program (BEEP) and bike safety video	38.5%	69.6%	31.1%	23.9%	28.3%	-	-
Discount transit passes for those without a parking permit	-	-	24.9%	27.4%	34.8%	32.3%	30.2%
TAPS Mobility Assistance Program	47.6%	81.0%	33.4%	-	-	-	-
Aggie Bike Buy Program	30.6%	64.7%	34.1%	30.2%	-	-	-
Bike tire air stations and repair stations around campus	4.4%	95.4%	91.0%	91.6%	-	-	-
TAPS bicycle licensing program	-	90.9%	-	-	-	-	-

Data for 2014-15 are based on responses to question Q64. See 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, Lovejoy, *et al.* (2009) for results from 2008-09, and Congleton (2009) for results from 2007-08.

Table 53. Reasons for driving to campus, by role and gender

Role	Of those who drove to campus, why they drove									
	Last week was a fluke; I usually use a different travel mode.	The distance from my house to campus is too far for me to bike or walk.	I can avoid bad weather better in a car.	I do not have access to other travel modes.	Other travel modes take too long.	Other travel modes are too expensive.	Other travel modes are not as safe.	Other travel modes are less professional.	I like to drive.	Carpooling or vanpooling is inconvenient.
Student	115	249	172	49	234	26	37	12	168	36
Undergraduate	82	186	133	33	172	17	26	3	127	20
Freshman	1	8	1	1	6	1	1	0	1	1
Sophomore	9	24	28	3	23	0	4	1	19	5
Junior	18	48	39	11	40	7	11	0	32	6
Senior	54	107	65	18	103	8	10	2	76	9
Graduate	33	63	39	16	62	8	12	10	40	17
Master's	12	29	17	9	25	3	6	4	18	8
PhD	21	34	22	7	37	6	6	5	22	8
Employee	25	351	67	58	199	15	12	16	85	147
Faculty	6	24	11	5	20	1	4	1	5	4
Staff	18	327	56	53	179	14	8	15	80	143
Outside of Davis	9.4%	82.2%	21.4%	89.9%	61.6%	96.1%	34.6%	27.8%	35.8%	89.9%
Within Davis	90.6%	17.8%	78.6%	10.1%	38.4%	3.9%	65.4%	72.2%	64.2%	10.1%
Weighted sample	140	600	239	106	433	40	49	29	252	183
Projected population	1,690	7,253	2,891	1,285	5,232	485	592	349	3,052	2,214

Results are based on responses to question Q52. Data are weighted by role and gender based on the 3,507 valid responses to questions Q01, Q10, and Q24-34 (see Table 57). Respondents were able to select up to three barriers so the projected population choosing these barriers does not match the total projected population of individuals.

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APPENDICES

Appendix A: Survey instrument, 2014-15 Campus Travel Survey

Below is the full text of the survey instrument, shown without the formatting as it would have appeared to online survey-takers. Notes about the conditional display of questions based on respondents' prior answers are shown in brackets. Answer options that were offered as checkboxes in the online survey (allowing respondents to select more than one response) are denoted here with a ☐. Answer options that were implemented either as radio buttons or as part of a dropdown list in the online survey (allowing respondents to select only one response) are denoted here with a ☐. Questions that were required for respondents to proceed are denoted here with an asterisk. As in past surveys, the dates of the reference week changed after one week.

Welcome to the 2014-15 Campus Travel Survey!

This annual survey is intended for everyone who regularly travels to UC Davis for school or work. This research effort provides campus planners with valuable feedback on how people get to campus and their experiences with various transportation programs. Your feedback is important to us! Participating in this research survey takes 10-15 minutes to complete. Doing so is voluntary, and we assure you that all responses are confidential and the results will only be published in the aggregate, without connection to any individual. You must be at least 18 years old to complete this survey.

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

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

In appreciation for your time, we're offering anyone who completes the survey entry into a drawing to win one of **fifty \$20 Downtown Davis gift cards!**

Thanks for participating!

Calvin Thigpen, Graduate student, Institute of Transportation Studies (cgthigpen@ucdavis.edu)
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Cliff Contreras, Director, Transportation and Parking Services

Section 1. **Role**

First, we have a few questions about your role at UC Davis.

Q01. What is your primary role at UC Davis?*

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

[If faculty]

Q02. What is your current faculty status?

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

[If undergraduate student]

Q03. What year are you?*

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

[If sophomore, junior, senior, fifth-year, post-bac]

Q04. Did you transfer to UC Davis from a college, university, or community college?

- ☐ Yes
- ☐ No

[If graduate student]

Q05. What type of graduate program are you in?*

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

[if visiting scholar]

Q06. What is your campus role? *

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

[For graduate and undergraduate students only]

Q07. As a student, are you also a paid employee of UC Davis?

- ☐ Yes
- ☐ No

[If employee or grad student]

Q08. 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

[If located outside of Davis, ask this question, then skip to end, to "Optional" page]

Q09. Where outside of Davis is your office, lab, or department?

[write-in]

Section 2. Background information about you

Next, we have a few questions about you.

Q10. What is your gender?

- ☐ Female
- ☐ Male

Q11. 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	☐	☐

Q12. Where were you born?

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

[“Outside US” to previous question, for both students and employees]

Q13. In what year did you come to the United States?

[Numerical write-in] (for example, 1980)

Q14. Do you currently have a driver’s license?

- ☐ Yes, a CA driver’s license
- ☐ Yes, a non-CA driver’s license
- ☐ No

[if no to driver’s license]

Q15. Have you ever had a driver’s license?

- ☐ Yes
- ☐ No

[if yes to driver’s license]

Q16. At what age did you get your driver’s license?

[numeric write-in] years old
(for example, 17 years old)

[if “Outside US” and is a student]

Q17. When you first moved to the United States, were the US road signs and traffic rules easy or difficult to understand?

- ☐ Very easy to understand
- ☐ Easy to understand

- ☐ Difficult to understand
- ☐ Very difficult to understand

Q18. 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

[If has access to a car]

Q19. Do you currently have a UC Davis parking permit?

- ☐ **No**, I don't have one

Yes, I have (select type):

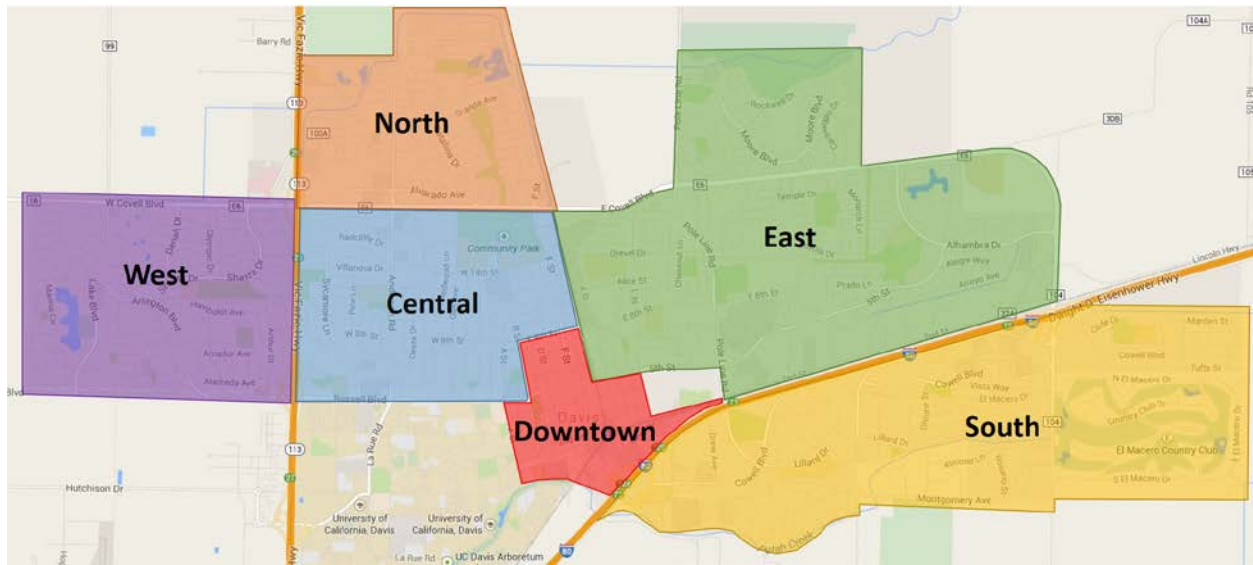
- ☐ Annual (or multi-year) permit
- ☐ Monthly or quarter permit
- ☐ Daily permit
- ☐ Complimentary GoClub parking permit
- ☐ EasyPark Personal in-vehicle parking meter

Q20. Where do you live now?

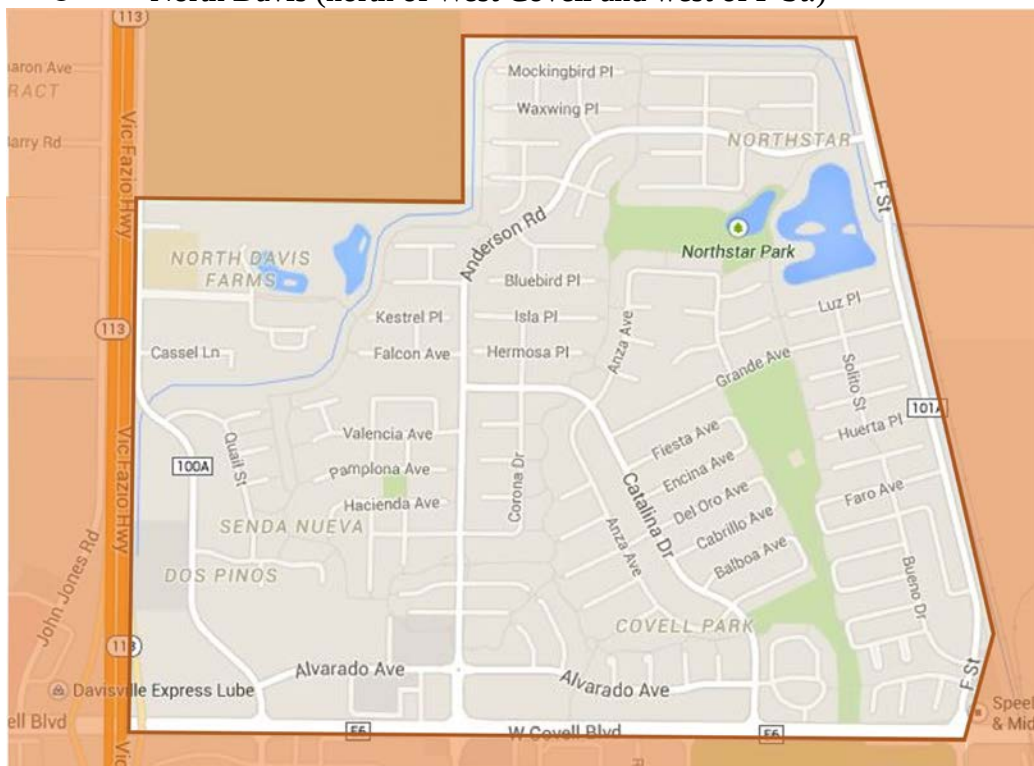
- ☐ On the UC Davis campus (includes Cuarto and the area east of SR 113, south of Russell Blvd, west of A St, and north of I-80)
- ☐ Off-campus, in the West Village apartments
- ☐ Off-campus elsewhere, in the city of Davis
- ☐ Outside of Davis

[If resides off-campus in the city of Davis]

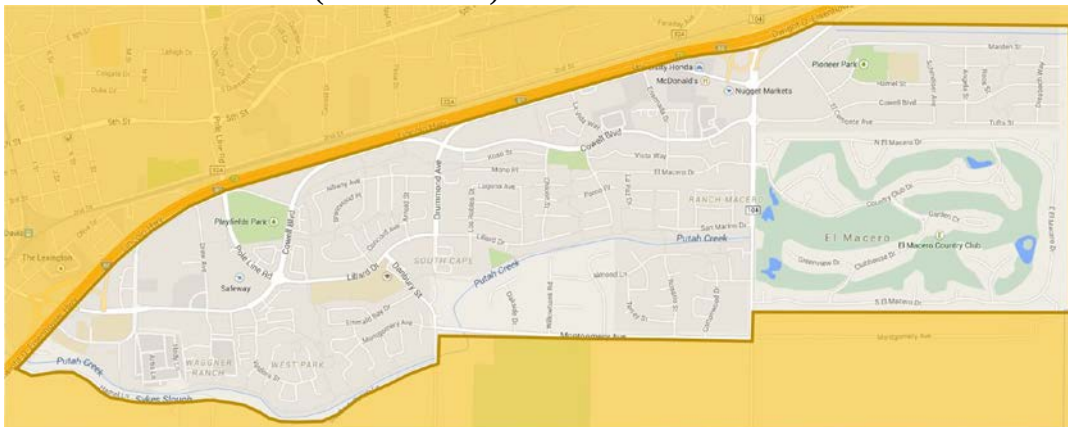
Q21. Which part of Davis do you live in? (scroll down to see all options)



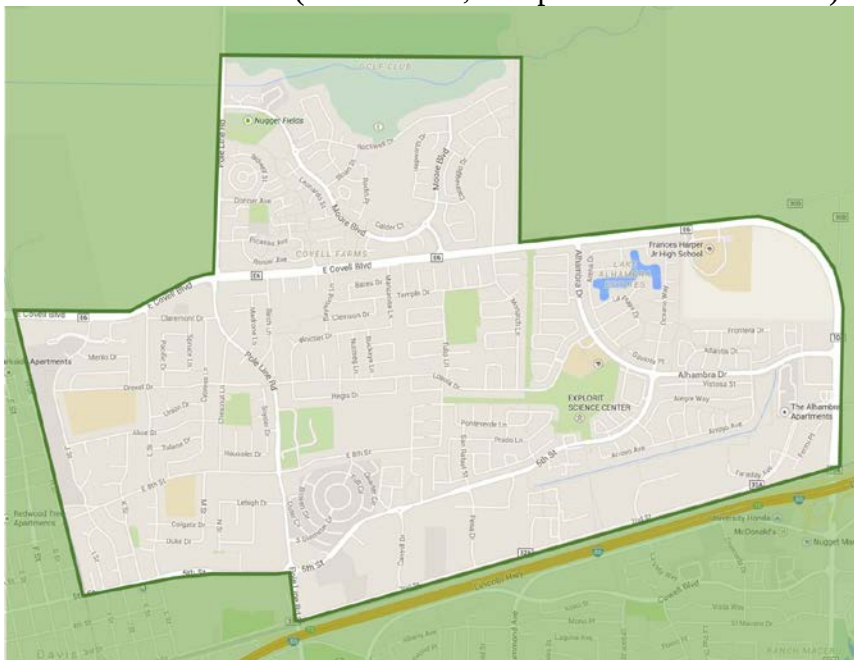
- North Davis (north of West Covell and west of F St.)



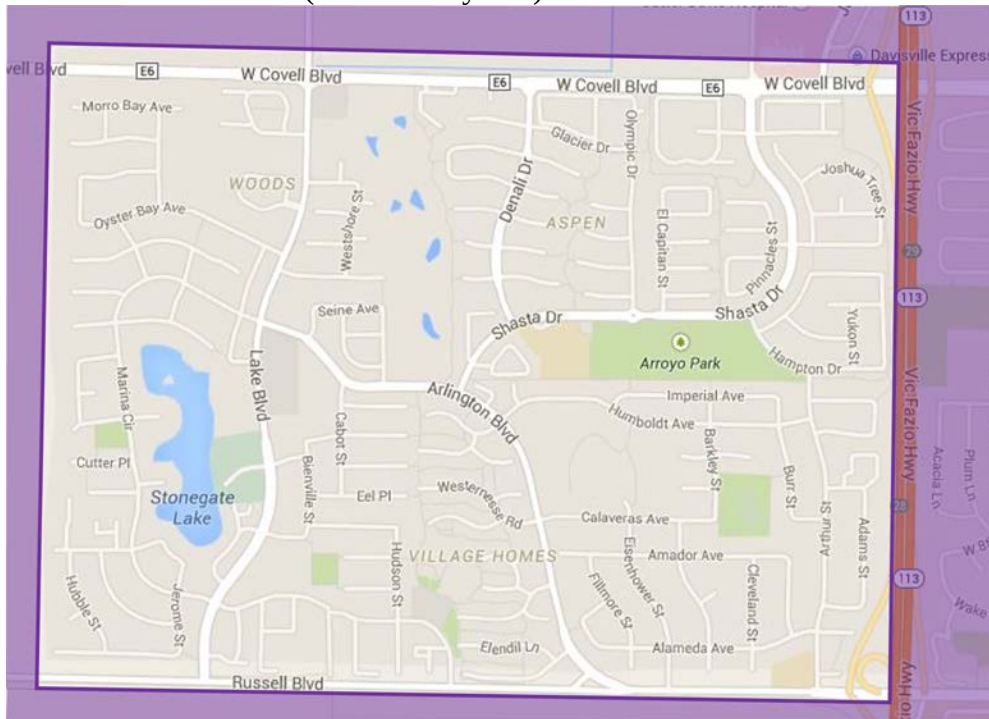
○ South Davis (south of I-80)



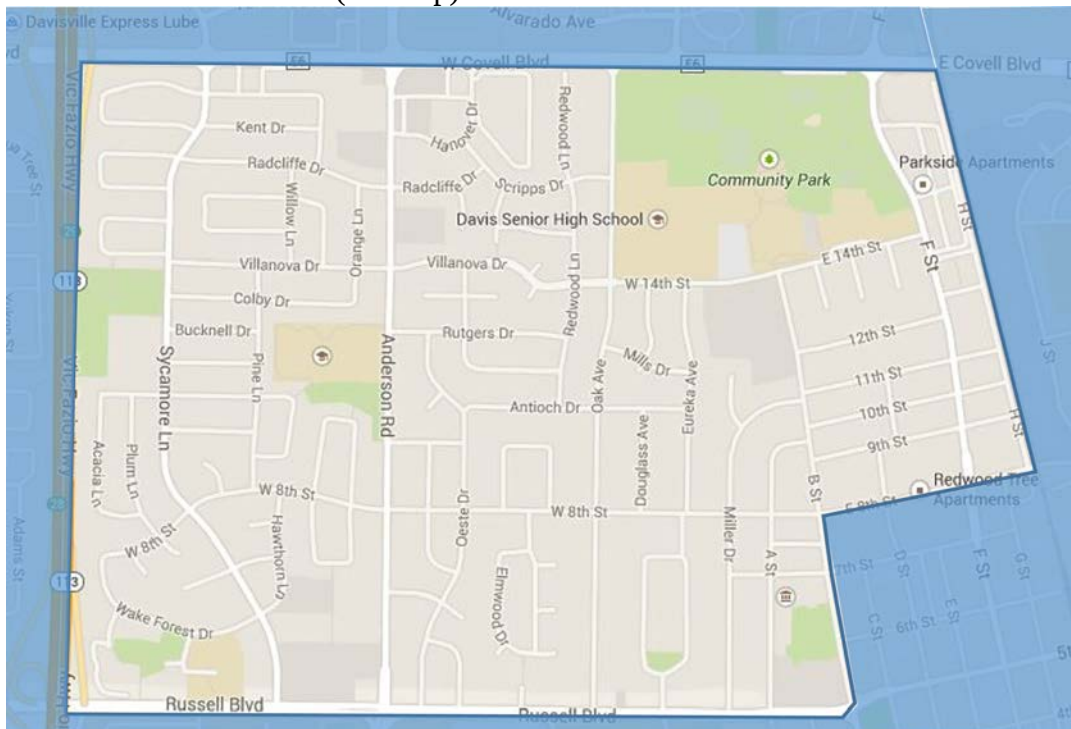
○ East Davis (east of H St., except for Old North Davis)



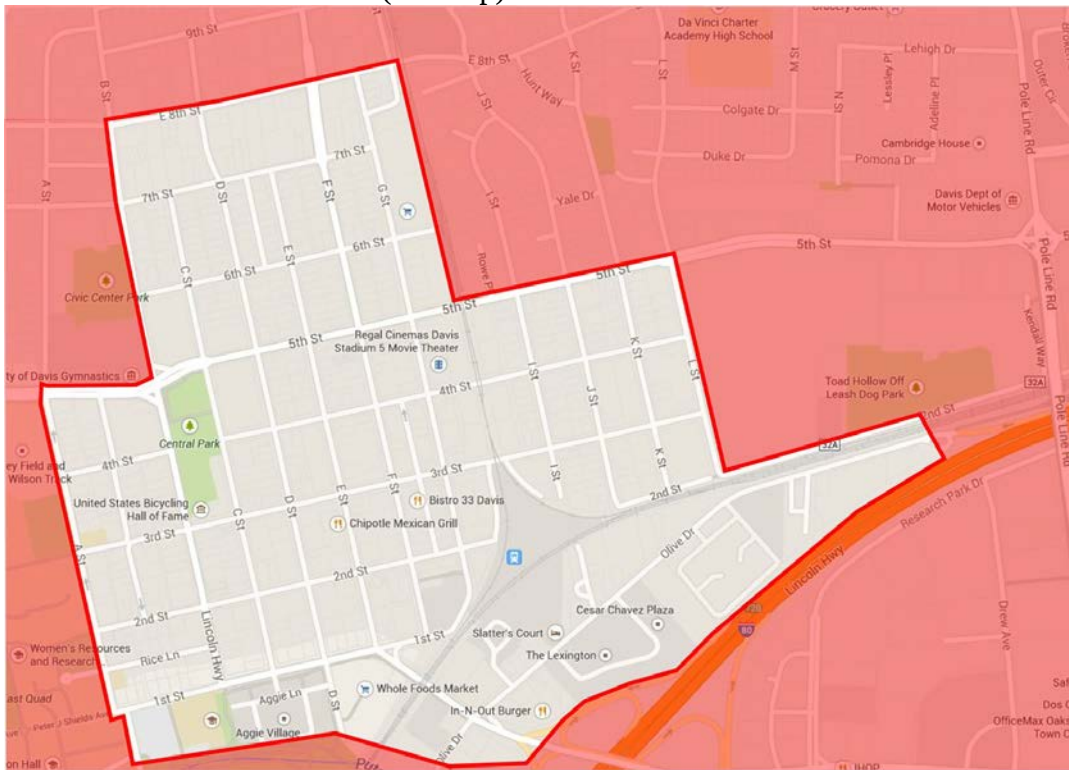
○ West Davis (west of Hwy 113)



○ Central Davis (see map)



☐ Downtown Davis (see map)



☐ Not sure

☐ Other (my location is not in any of these areas)

[If resides off campus (in Davis or outside of Davis)]

Q22. 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. It will be kept confidential and will not be used in any other way.)

Your street: _____

Nearest cross-street: _____

[If resides outside of Davis]

Q23. What is your zip code?

Each answer must be between 00000 and 99999

Zip Code: _____

Section 3. Travel to campus - days traveled last week

Consider your activities during the last week, from Monday (Nov. 3) through Sunday (Nov. 9). If you have a day planner, it might be useful to look at the last week's activities as you complete this section.

[If does not work outside of Davis]

Q24. Did you go somewhere on campus any day last week (Oct. 13 - 19) 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. 3 – Nov. 9

[If went to campus last week]

Q25. 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

Section 4. Travel to Campus - Days not traveled last week

[If no travel to campus all week, for all role groups]

Q26. 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: _____

[For faculty, visiting scholar, staff, post-doc, if travelled to campus between 1 and 4 weekdays of the reference week]

Q27. What was the main reason you did not travel to work? Please answer for each day individually.

- ☐ Telecommuting (working from home or another remote location)
- ☐ Work or school-related activities elsewhere (field work, meeting, teaching appointment, etc.)
- ☐ Regularly scheduled day off
- ☐ Vacation, sickness, or personal leave
- ☐ Day off as part of a compressed work week (i.e. 4/40, 9/80, or 3/36 schedule)
- ☐ Other

[If no travel to campus all week]

Q28. Do you expect to resume regular travel to campus for school or work this academic year?

- ☐ Yes
- ☐ No

Section 5. Travel to Campus - Usual travel to campus

Q29. 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

Q30. What mode 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 or 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
- ☐ Other: _____

Q31. What mode of transportation do you usually use to travel between on-campus destinations?

- ☐ Walk
- ☐ Skate or skateboard
- ☐ Bike or 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: _____

[if staff]

Q32. When do you typically arrive on campus?

[write-in]

(For example, 8:30 am)

Section 6. Travel to Campus - Modes used last week

Consider how you traveled to campus last week.

[If traveled at least one day last week and will resume travel this year]

Q33. **First think back to the entire week (Monday, Nov. 3 - Sunday, Nov. 9).** 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 or 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
- ☐ Other: _____

[For any days that respondent traveled]

Q34. **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 or 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
Monday	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tuesday	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wednesday	☐	☐	☐	☐	☐	☐	☐	☐	☐
Thursday	☐	☐	☐	☐	☐	☐	☐	☐	☐
Friday	☐	☐	☐	☐	☐	☐	☐	☐	☐
Saturday	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Walk	Skate or skateboard	Bike or 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
y									
Sunday	☐	☐	☐	☐	☐	☐	☐	☐	☐

[If carpooled last week]

Q35. 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

[If got a ride last week]

Q36. 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

Section 7. Travel to campus – in the summer

Now consider this past summer, from June 12 - September 29, 2014.

[for everyone unless not resuming travel to campus this year]

Q37. 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 12 – September 29)
- ☐ 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

[For any answer other than “None”]

Q38. 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

Section 8. Travel to campus – more details about mode

[If motorcycled, drove alone, carpooled, or got a ride last week]

Q39. 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

[If motorcycled, drove alone, carpooled, or got a ride last week, or usually drives to campus]

Q40. What is the year, make, and model of your vehicle? Or, if you don't remember or would rather not say, what would you estimate the fuel economy (miles-per-gallon) of your vehicle to be?

Year (e.g. 1999) [Write-in]

Make (e.g. Ford, Honda) [Write-in]

Model (e.g. Mustang, Civic) [Write-in]

Miles per gallon (e.g. 26) [Write-in]

[If lives outside of Davis, motorcycled, drove alone, carpooled, or got a ride last week, or usually drives to campus]

Q41. When you drive to Davis for school or work, do you park on campus or off-campus?

- ☐ On-campus
- ☐ Off campus

[If park off-campus]

Q42. How do you get from your parked car to campus?

- ☐ Walk
- ☐ Bike
- ☐ Skateboard
- ☐ Bus
- ☐ Other: _____

[If rode the bus last week]

Q43. Which bus service(s) did you use on your way to campus last week?

- ☐ Unitrans
- ☐ Yolobus
- ☐ UCD / UCDCMC Shuttle
- ☐ Sacramento Regional Transit
- ☐ UC Berkeley / UC Davis shuttle
- ☐ Other:

[If rode the train last week]

Q44. Which train service(s) did you use on your way to campus last week?

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

[If respondent answered “yes” to has a bike available to them OR usually rides bike to campus OR biked at least one day last week]

Q45. You indicated that you have a bike available to you. Where did you get your bike? If you have multiple bikes, answer for the bike you usually ride to campus.

- ☐ UC Davis Bike Barn
- ☐ UC Davis bike auction
- ☐ Bike store in Davis
- ☐ Local bike store in a different city
- ☐ Big box store (e.g. Target)
- ☐ A friend or family member
- ☐ Internet, used (e.g. craigslist)
- ☐ Internet, new (e.g. Amazon)
- ☐ Thrift store or yard sale
- ☐ Other _____

[If respondent answered “yes” to has a bike available to them OR usually rides bike to campus OR biked at least one day last week]

Q46. Which of the following items does your bike have? Check all that apply:

- ☐ Front light
- ☐ Rear light
- ☐ Rear reflector

[if checked on any of previous question options]

Q47. Where did you get your bike light(s)?

- ☐ Bike store
- ☐ Online
- ☐ Friend, family member, or second-hand
- ☐ Free give-away

[if free give-away]

Q48. Where did you get your free bike light?

- ☐ DavisBicycles!
- ☐ City of Davis
- ☐ UCD Police
- ☐ TAPS
- ☐ Other _____

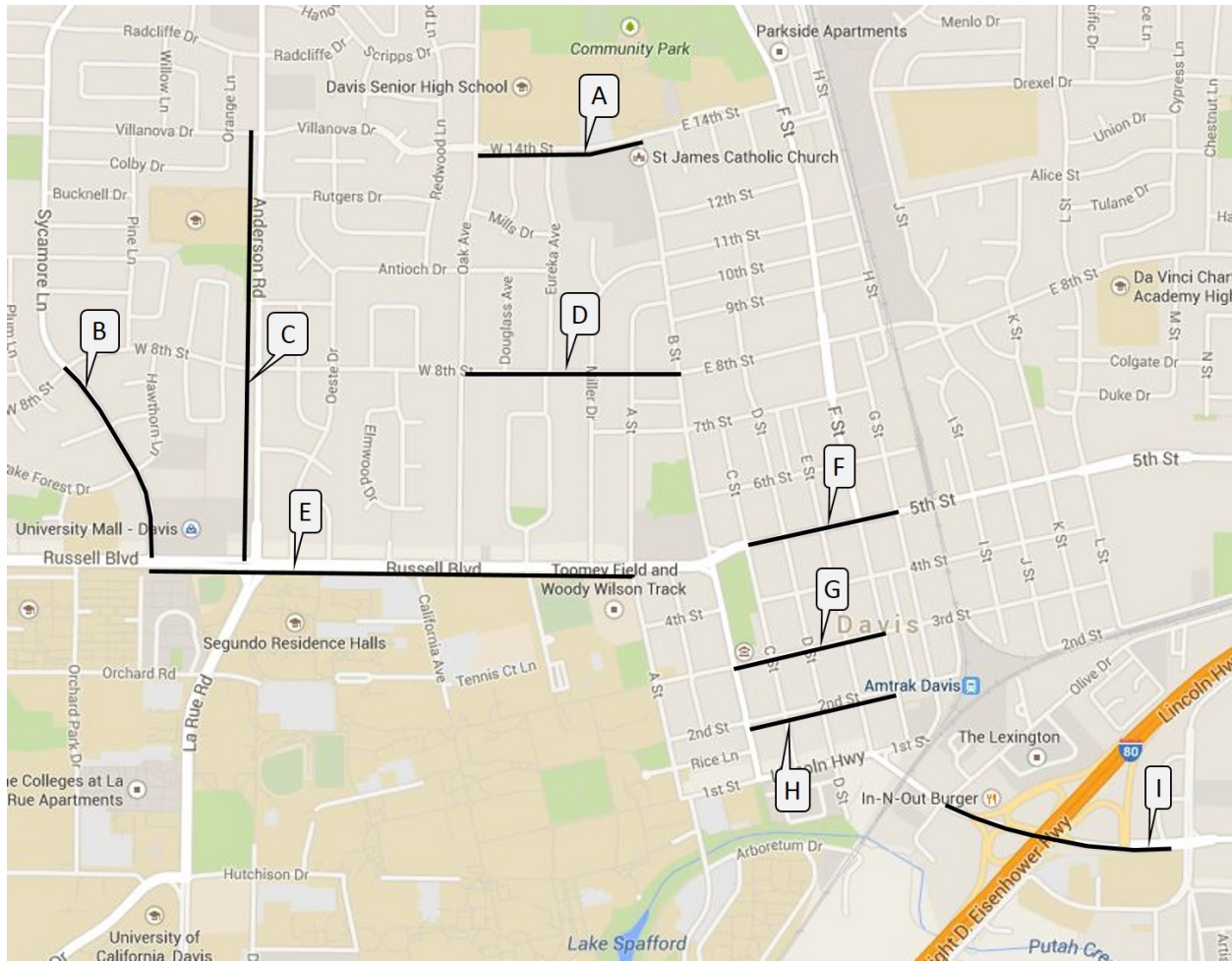
[If lives in East Davis, Central Davis, or downtown Davis, and biked to school or work at least once in the past week or usually bikes to campus]

Q49. For your usual route to campus, which of the following streets do you bike on between A St and L St? Check all that apply.

- ☐ 1st St
- ☐ 2nd St
- ☐ 3rd St
- ☐ 4th St
- ☐ 5th St
- ☐ 6th St
- ☐ 7th St
- ☐ 8th St
- ☐ Alice St
- ☐ Drexel Dr
- ☐ 14th St
- ☐ Covell Blvd
- ☐ A St
- ☐ B St
- ☐ C St
- ☐ D St
- ☐ E St
- ☐ F St
- ☐ G St
- ☐ H St
- ☐ I St
- ☐ J St
- ☐ K St
- ☐ Not sure
- ☐ Other: _____

[if usually bikes or biked last week, does not have a handicap]

Q50. In general, how comfortable would you be riding a bicycle in the following Davis roads in daylight and good weather? By comfortable, we mean how often you fear a serious collision. Only rate those streets that you can recall from your experience; if you are not sure you know a segment, please indicate "Don't know".



	<i>Very comfortable</i>	<i>Comfortable</i>	<i>Uncomfortable</i>	<i>Very uncomfortable</i>	<i>Don't know</i>
(A) 14 th St between B St and Oak St	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(B) Sycamore Ln between Russell Blvd and 8 th St	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(C) Anderson Rd between Russell Blvd and Villanova Dr	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(D) 8 th St between Oak St and B St	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(E) Russell Blvd between Sycamore Ln and A St	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(F) 5 th St between C St.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

and G St (current configuration)					
(G) 3 rd St between B St and F St	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(H) 2 nd St between B St and F St	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
(I) Richards Blvd over the freeway	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

[if usually bikes or biked last week, does not have a handicap]

Q51. Please select all attributes that make you fear serious collisions while bicycling on campus or around the city of Davis, in daylight and good weather.

- ☐ Car speed
- ☐ Traffic volume
- ☐ Presence of trucks
- ☐ No bike lane
- ☐ Narrow bike lane
- ☐ Presence of on-street car parking
- ☐ Other bicyclists
- ☐ Pedestrians
- ☐ Debris or other objects
- ☐ Bad visibility at intersections
- ☐ Poor pavement quality

[If lives in outside of Davis or off-campus in Davis, traveled in the past week, and traveled alone in a car or by motorcycle]

Q52. Why did you drive to campus last week? (Please select up to THREE reasons)

- ☐ Last week was a fluke; I usually use a different travel mode.
- ☐ The distance from my house to campus is too far for me to bike or walk.
- ☐ I can avoid bad weather better in a car.
- ☐ I do not have access to other travel modes.
- ☐ Other travel modes take too long.
- ☐ Other travel modes are too expensive.
- ☐ Other travel modes are not as safe.
- ☐ Other travel modes are less professional.
- ☐ I like to drive.
- ☐ Carpooling or vanpooling is inconvenient.
- ☐ Other: _____

Not too much farther!

Section 9. Travel to campus – incidents

Now think back to ALL of last year (from November 9, 2013 through November 9, 2014).

Q53. Did you ride a bicycle on campus at least once during the past year (that is, anytime from November 9, 2013 to November 9, 2014)?

- ☐ Yes
☐ No

[If biked on campus in past year]

Q54. During this period, did you experience a fall or crash that resulted in personal injury to you while doing any of the following?

	Yes	No
Biking on campus	☐	☐
Biking off campus, on my way between home and campus	☐	☐

[If biked on campus in past year]

Q55. Have you been the victim of bicycle theft or vandalism on the UC Davis campus in the past year (November 9, 2013 through November 9, 2014)? If you experienced multiple incidents of bike theft or vandalism on campus in the past year, please check all that apply.

- ☐ Yes, my entire bike was stolen
☐ Yes, but only parts of my bike were stolen (seat, wheel, accessories)
☐ My bike was vandalized (damaged but not stolen)
☐ No, I had a bike on campus in the past year but did not experience a theft or vandalism
☐ Not applicable: I haven't had a bike on campus in the last year

Section 10. Skateboarding

[If skateboarded to school once or usually or between on-campus destinations]

Q56. How much experience do you have skateboarding?

[numeric write-in] years

Q57. Please indicate your level of agreement with the following statements:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Skateboarding is an easy way to get around campus.	☐	☐	☐	☐	☐
Skateboarding is almost as fast as bicycling.	☐	☐	☐	☐	☐
Skateboarding is much faster than walking.	☐	☐	☐	☐	☐
Having to carry my skateboard around while I am not riding it is a big hassle.	☐	☐	☐	☐	☐
Being able to carry my skateboard into a classroom and not having to park it, like a bike, is convenient.	☐	☐	☐	☐	☐
Skateboarding is a safe way to travel.	☐	☐	☐	☐	☐
Skateboarding is a fun way to travel.	☐	☐	☐	☐	☐
Skateboarding is an inexpensive way to travel.	☐	☐	☐	☐	☐
I know well what traffic laws apply to skateboarders.	☐	☐	☐	☐	☐
Traveling by skateboard gives me a sense of accomplishment.	☐	☐	☐	☐	☐

[If skateboarded to school once or usually or between on-campus destinations]

Q58. Have you ever been involved in a collision with another traveler or object while traveling on your skateboard?

- ☐ Yes
- ☐ No

[If “yes” to previous question]

Q59. Who or what did you collide with? If you have been involved in multiple collisions, indicate what occurred during your most recent collision.

- ☐ A motor vehicle
- ☐ A bicyclist
- ☐ A pedestrian
- ☐ Another skateboarder
- ☐ An object (curb, tree, pole, etc.)

[If “yes” to previous question]

Q60. Did you suffer any injuries in the crash?

- ☐ Yes, and I sought medical treatment
- ☐ Yes, and I did not seek medical treatment

- ☐ No

[If selected “motor vehicle”, “bicyclist”, “pedestrian”, or “skateboarder”]

Q61. In your opinion, who was at fault in the collision?

- ☐ I was at fault
☐ The other person(s) was/were at fault
☐ Both I and the other person were at fault

[If involved in crash]

Q62. Where did the collision occur? If on-campus, please note the intersection, path, or building nearest to the collision. If off-campus, please write the street and nearest cross-street, and note where you were on the streets – the street, sidewalk, bike lane, etc.

[write-in]

Q63. UC Davis Transportation and Parking Services (TAPS) is considering installing new skateboard racks around campus. Where would you like a new skateboard rack to be installed?

[write-in]

Section 11. Campus transportation programs, infrastructure, and improvements

Q64. Are you familiar with any of these programs?

	It's new to me	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)	☐	☐	☐
TAPS motorist assistance program	☐	☐	☐
Bike lock-cutting service	☐	☐	☐
UC Davis Bike Auction	☐	☐	☐
TAPS Mobility Assistance Program	☐	☐	☐
TAPS bicycle licensing program	☐	☐	☐

Q65. If you would like to learn more about any of these programs, please follow the link to the TAPS website at the end of the survey.

Section 12. More background information about you – opinions about travel

Not too much further!

Q66. 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	Disagree	Neutral or don't know	Agree	Strongly agree
Travel time is generally wasted time.	☐	☐	☐	☐	☐
Environmental concerns affect the choices I make about my daily travel.	☐	☐	☐	☐	☐
I like riding a bike.	☐	☐	☐	☐	☐
Bicycle traffic laws are adequately enforced on campus.	☐	☐	☐	☐	☐
I need a car to do many of the things I like to do.	☐	☐	☐	☐	☐
I like driving.	☐	☐	☐	☐	☐

Q67. To what extent do you agree or disagree with the following statements? (continued)

	Strongly disagree	Disagree	Neutral or don't know	Agree	Strongly agree
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.	☐	☐	☐	☐	☐

	Strongly disagree	Disagree	Neutral or don't know	Agree	Strongly agree
I already bicycle for transportation as often as I can.	☐	☐	☐	☐	☐
I try to limit my driving as much as possible.	☐	☐	☐	☐	☐

[If not physically limited from biking]

Q68. 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

Section 13. **More background information about you – driver’s license ownership**

The following questions refer to your travel options, attitudes, and experiences during **your first year of high school, or when you were about 14 years old.**

[For all of the following questions, must be from US]

Q69. **How would you describe the place where you lived during your first year of high school?**

- ☐ City neighborhood
- ☐ Suburban neighborhood
- ☐ Small town
- ☐ Rural area
- ☐ Other _____

Q70. **What was your zip code at the home you lived in during your first year of high school?**

[Numerical write-in]

Q71. **About how many miles away did you live from your high school?**

[Numeric write-in] miles

Q72. **What was the earliest age that you could get a driver’s license where you lived?**

Years: [numeric write-in]

Months: [numeric write-in]

Q73. **What options were available for you to get to school?**

- ☐ Walk
- ☐ Skate or skateboard
- ☐ Bicycle
- ☐ Ride in a car
- ☐ Bus or school bus
- ☐ Other _____

Q74. **How did you usually travel to school?**

- ☐ Walk
- ☐ Skate or skateboard
- ☐ Bicycle
- ☐ Ride in a car
- ☐ Bus or school bus
- ☐ Other _____

Q75. **How did your friends usually travel to school during your first year of high school?**

- ☐ Walk
- ☐ Skate or skateboard
- ☐ Bicycle
- ☐ Ride in a car

- ☐ Bus or school bus
- ☐ Other: _____

Q76. During your first year of high school, how did your parents travel to work?

- ☐ Walk
- ☐ Bicycle
- ☐ Car
- ☐ Bus or other public transit
- ☐ Other _____

Q77. At the age you could drive in high school, did you have access to a car that you could primarily use?

- ☐ Yes
- ☐ No

Q78. We'd like to ask about your experiences and opinions with respect to travel *during your first year in high school*. To the best of your recollection, to what extent did you agree or disagree with the following statements?

	Strongly disagree	Disagree	Neutral or don't know	Agree	Strongly agree
My parents/guardians allowed me to go places on my own.	☐	☐	☐	☐	☐
I got my driver's license as soon as possible.	☐	☐	☐	☐	☐
I liked riding a bicycle.	☐	☐	☐	☐	☐
I could rely on my parents/guardians to drive me places.	☐	☐	☐	☐	☐
Driving was considered the coolest way to get to school.	☐	☐	☐	☐	☐
I liked the idea of driving.	☐	☐	☐	☐	☐
My parents/guardians encouraged me to get my driver's	☐	☐	☐	☐	☐

	Strongly disagree	Disagree	Neutral or don't know	Agree	Strongly agree
license.					
The traffic congestion getting in and out of school was a major hassle.	☐	☐	☐	☐	☐
I valued independence from my parents.	☐	☐	☐	☐	☐
Lots of people took the bus in my community.	☐	☐	☐	☐	☐
My friends got their driver's licenses as soon as possible.	☐	☐	☐	☐	☐
I liked riding the bus or public transit.	☐	☐	☐	☐	☐

Q79. How many days did you usually participate in after-school activities at school or elsewhere?

- ☐ 5
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1
- ☐ Rarely/never

Q80. During your first year in high school, what was the highest level of education completed by whichever parent/guardian had the most education?

- ☐ Some high school
- ☐ High school
- ☐ Some college
- ☐ Associate degree
- ☐ Bachelor degree
- ☐ Advanced degree
- ☐ Don't know
- ☐ Other _____

Q81. Did you own a cell phone?

- ☐ Yes, a basic cell phone

- ☐ Yes, a smartphone
- ☐ No, but I had friends with cell phones
- ☐ No, cell phones did not exist.

[if student]

Q82. The following question asks about your current plans for life after you graduate from UC Davis.

[if student]

Q83. Of the following options, where would you most like to live after you graduate from UC Davis?

- ☐ City neighborhood
- ☐ Suburban neighborhood
- ☐ Small town
- ☐ Rural area

Q84. The following questions refer to your current travel options, attitudes, and experiences.

[if does not have a license and is student]

Q85. You indicated you do not have a driver's license. To what extent do you agree or disagree with the following statements explaining why you do not have a driver's license?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I don't need a license to do what I want to do.	☐	☐	☐	☐	☐
The costs of driving a car are too high.	☐	☐	☐	☐	☐
There are plenty of other available transportation alternatives.	☐	☐	☐	☐	☐
It is not important to me to have a driver's license.	☐	☐	☐	☐	☐
My parents are against it.	☐	☐	☐	☐	☐
I am concerned about the safety of driving.	☐	☐	☐	☐	☐
Electronic communications (email, texting, Facebook, etc.) reduce my need for driving.	☐	☐	☐	☐	☐
I am concerned about the impact of driving on the environment.	☐	☐	☐	☐	☐

[if does not have a license]

Q86. Do you plan to get a driver's license?

- ☐ Yes
- ☐ No

[if does not have license and is student]

Q87. Which three of the following factors would most likely lead you to get a driver's license?

- ☐ Having more money
- ☐ Having a job in a location without other transportation alternatives
- ☐ Living in a location without other transportation alternatives
- ☐ Graduating from college
- ☐ Moving to a different city/location
- ☐ Getting married or in a long term relationship
- ☐ Getting divorced or ending a long term relationship
- ☐ Having a child
- ☐ Being less busy so that I have the time to get a license
- ☐ Other _____

Section 14. **More background information about you – demographic characteristics**

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.

[If grad, faculty, staff, post-doc]

Q88. How many full years have you been at UC Davis (in any role)?

- ☐ 0 (this is my first year)
- ☐ 1 year
- ☐ 2 years
- ☐ 3 years
- ☐ 4 years
- ☐ 5 years
- ☐ 6-10 years
- ☐ 11-15 years
- ☐ 16-20 years
- ☐ More than 20 years

Q89. In what year were you born?

[Numerical write-in]

For example: 1980

Q90. Which of the following best describes your race?

- ☐ Black or African American
- ☐ Asian
- ☐ White
- ☐ Mexican or Hispanic
- ☐ American Indian or Alaska Native
- ☐ Native Hawaiian or other Pacific Islander
- ☐ Multiracial
- ☐ Other _____

[Employees and NOT an undergrad]

Q91. 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)

[Undergraduate student]

Q92. 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)

Q93. 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*

[if lives with with family, partner or others that share income]

Q94. 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 18-64: _____
 age 65 or older: _____

[for all]

Q95. About what percent of your monthly income do you spend each month on rent or mortgage payments?

[numerical write-in]
 help text: "e.g. 20%"

[To undergraduate and graduate students that have access to a car]

Q96. 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

[for staff or faculty living outside of Davis]

Q97. Did you move after getting a job at UC Davis?

- ☐ Yes
- ☐ No

[for students living outside of Davis]

Q98. Did you move after becoming a student at UC Davis?

- ☐ Yes
- ☐ No

[for anyone living outside of Davis]

Q99. How important were each of the following factors in your decision to live outside of Davis?

	Not at all important	Somewhat important	Important	Extremely important
Desire for a good primary school system	☐	☐	☐	☐
Housing cost	☐	☐	☐	☐
Desire for large lot size	☐	☐	☐	☐
Desire for large dwelling unit size	☐	☐	☐	☐
Desire for better weather/topography	☐	☐	☐	☐
Desire for a rural environment	☐	☐	☐	☐
Desire for an urban environment	☐	☐	☐	☐
Safety from crime	☐	☐	☐	☐
Desire for proximity to family	☐	☐	☐	☐
Desire for proximity to friends	☐	☐	☐	☐
Living with others with jobs outside of Davis	☐	☐	☐	☐
Desire for a community with values in line with my own	☐	☐	☐	☐
Desire for a family-friendly community	☐	☐	☐	☐
Desire for proximity to shopping and entertainment	☐	☐	☐	☐
Infrequent trips to campus	☐	☐	☐	☐

Section 15. Optional

[If indicated that work/school location is outside Davis (in Q07)]

Q100. Thank you for taking this shortened version of the 2014-15 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.

[If indicated that recently graduated (in Q01)]

Q101. Thank you for taking this shortened version of the 2014-15 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.

[If indicated “retiree” in (Q01)]

Q102. Thank you for taking this shortened version of the 2014-15 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.

Q103. Is it okay for us to contact you again in the future? Please check all that apply:

- ☐ No, I prefer not to be contacted again.
- ☐ Yes, with questions about my survey.
- ☐ Yes, if I win the drawing for a [\\$20 Downtown Davis gift card](#).

[If yes, okay to contact]

Q104. Please provide the following contact information. This information will ONLY be used for the purposes you specified.

Name: _____

Campus email address: _____

Q105. 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.

Write-in: _____

[If access to bike = YES]

Q106. This fall, the UC Davis Institute of Transportation Studies will be studying the physiological response to bicycling. This study would ask you to ride your bicycle on a few different routes while measuring your physiological response. Participants will be entered into a raffle to win one of five \$25 Downtown Davis gift cards. Your participation is voluntary and your responses will be completely confidential. Please indicate if you would like to participate in this study:

- ☐ Yes, I would like to participate in this study.
- ☐ No, I would prefer not to be contacted again.

[if yes to bicycle study]

Q107. Please enter your contact information in the space below so that the research team can get in touch with you.

Name: _____

Campus email address: _____

[If live outside of Davis]

Q108. Researchers at the UC Davis Institute of Transportation Studies are working with UC Davis Transportation and Parking Services to evaluate a prospective program for commuters like you. This study will ask you more detailed questions about how you travel to and from campus. Participants will be entered into a raffle to win a \$100 prepaid debit card. Your participation is voluntary and your responses will be completely confidential.

Please indicate if you would like to participate in this study:

- ☐ Yes, I would like to participate in this survey
- ☐ No, I would prefer not to be contacted again

[If “yes” to question above]

Q109. Please enter your contact information in the space below so that the research team can get in touch with you:

Name: _____

Campus email address: _____

Q110. 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](#).

Appendix B: Changes from the 2013-14 survey instrument

1. A few questions were added to cover issues that have not been addressed in previous surveys:
 - a. Bicycle light ownership
 - b. Visiting scholars were asked more about their campus role
 - c. Secondary mode
2. The following one-time sections have been eliminated:
 - a. E-bicycles
 - b. Bike sharing system
 - c. Open-ended question about how to encourage bicycling
 - d. Where bicyclists entered campus
3. The following section has been eliminated, hopefully to return next year:
 - a. Income
4. The following sections have been reduced:
 - a. Bike crashes
 - b. Bike theft
 - c. Barriers to bicycling and bus use has been consolidated to reasons for driving
5. The following one time research sections were included this year:
 - a. Bicycle Route Comfort
 - i. Bicyclists were asked about their comfort on different streets in Davis, CA. For Dillon Fitch's research.
 - b. Driver's licensing
 - i. Individuals were asked about many aspects of their high school experience, including when they got their driver's license, the type of neighborhood where they grew up, and how they got to school in high school. For Calvin Thigpen's proposed dissertation work.
 - c. Skateboarding
 - i. Questions about skateboarders' experience and attitudes. For Kevin Fang's dissertation.
6. The following section was repeated from last year:
 - a. Use of 5th Street as Bicycle Route to Campus
 - i. Individuals who lived in Central, Downtown, or East Davis and had biked at least once in the past week were asked about whether or not they use 5th street during their commute to campus.

The first reference week was scheduled for the same week as the previous year's survey, October 20 - 26, with the second reference week taking place during Oct. 27 - Nov. 2 (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: 2014-15 Campus Travel Survey

Dear UC Davis Student [Employee],

You are invited to participate in the 2014-2015 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 to **win one of fifty \$20 Downtown Davis gift cards!**

To start the survey, click on the link below:

<http://travel.its.ucdavis.edu>

Thanks for your participation in this year's survey!

Best regards,

Calvin Thigpen, Graduate student, Institute of Transportation Studies (cgthigpen@ucdavis.edu)

Susan Handy, Professor, Institute of Transportation Studies (slhandy@ucdavis.edu)

Cliff Contreras, Director, Transportation and Parking Services

Reminder recruitment email:

From: Campus Travel Survey <travelsurvey@ucdavis.edu>

To: <...@ucdavis.edu>

Subject: 2014-15 Campus Travel Survey

Dear UC Davis Student [Employee],

Last week we invited you to take the 2014-2015 Campus Travel Survey. If you finished the survey last week, thank you! Your responses have been recorded, and you can disregard the rest of this message. If not, we encourage you to complete the survey today. This annual survey provides valuable data about the travel preferences of the entire UC Davis community, and the more who participate, the better the data. Every response matters.

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 to **win one of fifty \$20 Downtown Davis gift cards!**

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

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To start the survey, click on the link below:

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Thanks for your participation in this year's survey!

Best regards,

Calvin Thigpen, Graduate student, Institute of Transportation Studies (cgthigpen@ucdavis.edu)

Susan Handy, Professor, Institute of Transportation Studies (slhandy@ucdavis.edu)

Cliff Contreras, Director, Transportation and Parking Services

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 alternative 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.”¹² We attempt to adhere to the AQMD formula, although our overall survey methodology deviates to some extent from that prescribed by the AQMD.¹³ 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:

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

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 Q34 in the 2014-15 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 Q25 and Q27 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 Q24) and then indicated the reason for no travel was telecommuting (in Q26), 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 Q25 and Q27).

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 Q34). 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 Q39).

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

¹² As of September 2015, this rule is available online (<http://www.aqmd.gov/docs/default-source/rule-book/reg-xxii/rule-2202.pdf?sfvrsn=4>).

¹³ 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.

carpools (or gets a ride, using *Q34*) we add to the arrival count a fraction equal to one divided by the total number of people in the carpool (using *Q35*) or the number of passengers dropped off by the driver (using *Q36*). We exclude from the count any arrivals by a respondent who has indicated using an all-electric or hydrogen vehicle (in question *Q39*).

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 3,507 valid responses to question *Q34* (see Table 57).

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 *Q07*) 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. While this is especially appropriate for those traveling by car, manual inspection of alternative routes indicated that the shortest-time routes also seemed to be more realistic for bike and walk trips, where differences existed. Note that in this analysis, we used the street network, which was *not* augmented to include additional bike- and pedestrian-only links, which are especially prevalent in Davis.

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 2013-14, so results from the 2014-15 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 Q34, 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 (Q25) but did not indicate a primary mode.
2. In cases where all answers were missing for Q33 and Q34, the answer to Q30 about “usual mode” was imputed for each day traveled in Q34.
3. In cases where only one answer was given for Q33 (all modes used to get to campus), missing answers to Q34 were recoded as this answer.
4. In one case where usual mode was listed and only some answers to Q34 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 54 shows the number of valid cases for each major step in the data validation process. Starting with 4,085 initial responses who provided a valid role, cases were excluded due to missing or invalid data, resulting in 3,507 responses that had valid answers for role, gender, and whether the individual traveled to campus, and general residential location. These 3,507 cases were selected for the bulk of the weighted analysis in this report, with the remainder using the 3,467 cases that had valid answers for role, gender, whether the individual traveled to campus, and general residential location.

Table 54. Valid responses

Variables (description)	Valid cases (N = 4,032)
Role (8 categories)	4,085
Gender (male/female)	3,758
Traveled to campus	3,796
Physically traveled	3,676
Residential location	3,805
Role + Gender (for weighted analysis)	3,507
Role + Gender + Residential location (for geocoded weighted analysis)	3,467

Appendix G: Sampling Plan

Table 55 and Table 56 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 four percent among seniors to 25 percent among staff.

Table 55. Sampling plan for 2007-08 through 2014-15, percent invited

Role	2014-15		2014-15 ^b	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08
	Population ^a	Number invited	Percent invited							
Students	31,207	27,713	89%	77%	83%	70%	45%	37%	38%	36%
Undergraduate	25,450	22,780	90%	78%	86%	73%	40%	32%	32%	31%
Freshmen	3,924	3,924	100%	88%	100%	71%	55%	41%	39%	40%
Sophomores	4,667	4,667	100%	100%	100%	100%	51%	40%	39%	36%
Juniors	6,872	4,380	64%	59%	68%	57%	35%	29%	31%	32%
Seniors	9,987	9,809	98%	77%	87%	74%	33%	26%	24%	21%
Graduate	5,757	4,933	86%	74%	70%	59%	64%	60%	61%	60%
Masters	2,047	1,740	85%	100%	100%	100%	100%	98%	86%	84%
PhD	3,710	3,193	86%	59%	53%	36%	31%	39%	48%	48%
Employees	11,198	3,102	28%	38%	37%	29%	23%	22%	31%	28%
Faculty	1,646	1,646	100%	89%	100%	100%	71%	63%	78%	65%
Staff	9,552	1,456	15%	24%	21%	13%	12%	13%	20%	20%
Overall percent	100%	-	73%	66%	70%	59%	39%	33%	36%	34%
Overall number	42,405	30,815	-	27,798	28,838	23,953	15,704	13,322	14,031	13,770

^a Population figures are based on those provided by the Budget and Institutional Analysis department. For employees, this consisted of a tabulation they prepared at our request 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, and SSP). For students, figures are based on the 2013-2014 student population summary three-quarter average (available online at http://budget.ucdavis.edu/data-reports/documents/enrollment-reports/eenrsum_a1314.pdf). "Seniors" includes post-baccalaureate (teaching credential) students; "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, 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. 2007-08 through 2013-14 displayed percent of population group invited compared to actual response rates.

^b See 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, Lovejoy, *et al.* (2009) for results from 2008-09, and Congleton (2009) for results from 2007-08.

Table 56. Sampling plan for 2007-08 through 2014-15, response rates

Role	2014-15		2014-15 ^b	2013-14	2012-13	2011-12	2010-11	2009-10	2008-09	2007-08
	Population ^a	Number invited	Target response	Actual Response						
Students	31,207	27,713	8%	12%	13%	12%	18%	25%	22%	23%
Undergraduate	25,450	22,780	6%	11%	12%	11%	17%	24%	20%	22%
Freshmen	3,924	3,924	9%	11%	15%	13%	23%	30%	22%	26%
Sophomores	4,667	4,667	8%	12%	13%	12%	16%	26%	21%	22%
Juniors	6,872	4,380	8%	13%	14%	13%	18%	22%	22%	21%
Seniors	9,987	9,809	4%	9%	10%	9%	12%	19%	17%	20%
Graduate	5,757	4,933	14%	15%	16%	16%	22%	28%	27%	24%
Masters	2,047	1,740	19%	14%	11%	11%	16%	19%	18%	19%
PhD	3,710	3,193	11%	16%	21%	23%	34%	40%	35%	28%
Employees	11,198	3,102	22%	22%	18%	19%	29%	34%	35%	45%
Faculty	1,646	1,646	19%	14%	16%	16%	22%	27%	30%	37%
Staff	9,552	1,456	25%	30%	22%	24%	37%	42%	39%	50%
Overall percent	100%	73%	9%	13%	14%	13%	20%	27%	26%	28%
Overall number	42,405	30,815	2,794	3,663	3,982	3,116	3,084	3,569	3,577	3,849

^a Population figures are based on those provided by the Budget and Institutional Analysis department. For employees, this consisted of a tabulation they prepared at our request 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, and SSP). For students, figures are based on the 2013-2014 student population summary three-quarter average (available online at http://budget.ucdavis.edu/data-reports/documents/enrollment-reports/eenrsum_a1314.pdf). "Seniors" includes post-baccalaureate (teaching credential) students; "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, 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. 2007-08 through 2013-14 displayed percent of population group invited compared to actual response rates.

^b See 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, Lovejoy, *et al.* (2009) for results from 2008-09, and Congleton (2009) for results from 2007-08.

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 42,405.

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 $n = 3,507$ valid responses to question *Q34*, 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 3,467 cases successfully geocoded (by cross streets and zip code given in questions *Q22* and *Q23*; see "Appendix E: Geocoding and network distances"). Both sets of weights are shown in Table 57.

Table 57. Weight factors, applied by role and gender

Role	Gender	Population (N)	Factors by role, gender, and mode ^a				Factors by role, gender, mode, and geocoded ^b			
			Valid responses (n)	Weight factor	Expansion factor	Weighted sample size	Valid responses (n)	Weight factor	Expansion factor	Weighted sample size
				(Ni/N)/(ni/n)	(Ni/ni)			(Ni/N)/(ni/n)	(Ni/ni)	
Freshman	Female	2,484	326	0.630	7.620	205	321	0.633	7.738	203
	Male	1,440	93	1.281	15.484	119	91	1.294	15.824	118
Sophomore	Female	2,954	435	0.562	6.791	244	433	0.558	6.822	242
	Male	1,713	107	1.324	16.009	142	106	1.321	16.160	140
Junior	Female	3,718	354	0.869	10.503	307	352	0.864	10.563	304
	Male	3,154	165	1.581	19.115	261	162	1.592	19.469	258
Senior	Female	5,423	567	0.791	9.564	448	562	0.789	9.649	443
	Male	4,564	253	1.492	18.040	377	250	1.493	18.256	373
Master's	Female	1,050	108	0.804	9.722	87	106	0.810	9.906	86
	Male	997	73	1.130	13.658	82	72	1.132	13.847	82
PhD	Female	1,896	359	0.437	5.281	157	350	0.443	5.417	155
	Male	1,814	226	0.664	8.027	150	224	0.662	8.098	148
Faculty	Female	593	93	0.527	6.376	49	92	0.527	6.446	48
	Male	1,053	120	0.726	8.775	87	120	0.717	8.775	86
Staff	Female	5,779	160	2.987	36.119	478	159	2.972	36.346	472
	Male	3,773	68	4.589	55.485	312	67	4.604	56.313	308
Overall	-	42,405	3,507	-	12.092	3,507	3,467	-	12.231	3,467

^a Based on valid responses to Q10 and Q34^b Based on valid responses to Q10, Q34 and successful geocoding of home location (from questions Q22-Q23)