1. Attitudes Towards Climate Change and Sustainability

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Abstract

Climate change is an important issue in the world today and the University of Richmond has the ability to make a difference. The purpose of this project was to gain information about University of Richmond students' awareness, attitudes, and behaviors related to climate change and sustainability on campus. A short survey was composed and sent to students via email. Over the course of two weeks, 274 students completed the survey. The data from the survey was composed and analyzed. Based on the data, for the most part our community's behaviors have stayed consistent. Student awareness has slightly increased but they do not appear to be changing their behaviors based on that. Looking forward we need to engage our community in order to make necessary changes. Recommendations were made in three main areas: transportation, waste management, and education and outreach.

Introduction

The University of Richmond has made great strides to reduce its environmental impact and become a more sustainable community. In November of 2007 President Ayers signed the American College and University Presidents Climate Commitment, which requires Richmond to mitigate climate change. In response to this action, the Environmental Studies Senior Seminar class of 2008 created a report outlining the points of view in our community about these issues, and to offer recommendations for our campus.

We, the Environmental Studies and Geography Senior Seminar Class of 2014 chose to focus our capstone on climate change. We recognize that climate change is an imminent threat and that our community can make a difference in climate change mitigation. As a class, we have come to the conclusion that the key to prompting climate action on an individual, as well as – global, scale is communication. We need to determine the best way to communicate the complex concepts and high level issues surrounding climate change to the general public.

To that end, we chose to conduct a new survey of the student body to assess student knowledge and concern regarding climate change, and to determine how best to communicate with and engage UR students. This particular project had three goals: 1) reissue the 2008 survey to see how UR's campus attitudes have changed 2) compare our data to other schools 3) recommend new programs and options addressing climate change to the UR community.

Background

The Senior Seminar Class of 2008 conducted a survey of the student body to evaluate student awareness of climate change and how this level of awareness related to individual behavior. The survey was sent out to the entire student body, 2,795 people at the time, and was taken by 301 students over a period of two weeks. Students were asked to answer 29 questions and were entered into a raffle for $50 after the completion of the survey. In addition, fifteen personal interviews were conducted related to the material in the survey. Participation was voluntary, and participants were selected in locations on campus based on availability and the appropriate conditions for conducting an interview. Interviews lasted about fifteen minutes and included similar questions to the survey with the additional follow up questions and requests for clarification. Based on the results of the survey, the class composed a report including thirteen recommendations for programs and initiatives for UR to implement. Of those thirteen recommendations, five have already been implemented since 2008.

Research from Other Universities

Many other Universities have conducted similar surveys to measure student attitudes towards climate change and sustainability. We compared the results of several schools to our own. North Carolina State University (NC State) conducted a survey to assess student attitudes and behaviors regarding sustainability in February of 2012. The NC State survey was an update of an earlier survey from 2010 and included several replicated questions to facilitate comparison. An online questionnaire was sent to 5,000 randomly selected students, both undergraduate and graduate. The survey was open for twenty-three days and was completed by 827 students. Their survey was significantly longer than ours at 45 questions. Questions assessed student attitudes and behaviors relating to energy, transportation, waste reduction, and recycling. The key findings of this study included that 46% of students felt the school did not give enough attention to the issue of climate change. In addition, 83% of respondents thought it was important for Americans to conserve personal use of energy. The study also found that a smaller percentage of students thought it was important for the school to be a leader in sustainability and the environment in 2012 than in 2010. The number dropped from 85% in 2010 to 78% in 2012.

The Sustainable Development Department at Appalachian State University also completed a similar survey in 2013 entitled “Survey of Knowledge and Attitudes About Environmental Sustainability Among Members of the ASU Community”. The purpose of the survey was to evaluate the awareness and attitudes of students, faculty, and staff regarding sustainability. The goal was to gain information to improve the effectiveness of sustainability education and outreach programs. Students in a sustainable development course composed the survey. The survey was open for fifteen days and publicized primarily through student, faculty, and staff Listservs. The number of respondents ranged from 747-854 as a result of some respondents skipping questions. 66% of respondents were students, 15% were faculty, and 19% were staff. The key findings of this study included: Students ranked climate change as the #1 issue of concern for the global environment (56% chose it) and the #4 issue of concern for the

local environment (33% chose it); 67% of students strongly agreed or agreed that climate change is one of the most serious threats to health and safety; 83% agreed or strongly agreed that human actions are the cause of climate change.

Methods

The survey was created based on the original survey from 2008. Several questions were taken directly from the 2008 survey to facilitate direct comparisons between results. Many questions from the 2008 survey were obsolete based on changes to campus programming in the past six years. Questions were added to the survey to measure student behaviors on campus. New questions were added based on suggestions from the University's Sustainability Coordinator, Megan Zanella-Litke.

The survey was sent to approximately half the undergraduate students via email. The sample of students was selected by last name-those whose last name beginning with A-L. The total number of students who were sent the survey was 1,591. One follow-up email was sent out to all selected students over the course of a week. Over a period of fifteen days, 274 students completed the survey. The survey consisted of twenty-two questions. The first four questions established the subject's demographics and included gender, class year, major, and housing status. The next group of questions assessed the subject's attitudes towards and knowledge of climate change. The questions asked students whether they felt climate change was a major threat, what the consequences of global climate change are, whether global climate change is occurring due to human activity, and which activities they believed contributed to climate change. The next section addresses student concerns. The questions asked what concerned students the most from a given list of topics and whether or not they believed the University should be doing more to reduce greenhouse gas emissions. The final section addressed the students' behaviors on campus. Questions dealt with students' electricity use, transportation habits, recycling, and concern about the health of the Westhampton Lake. The content and methods of the survey were approved by the Institutional Review Board (IRB), which formally regulates research at the University of Richmond "as it pertains to the rights and welfare of human subjects." Survey and interview responses were confidential, and participant names were not connected to their responses.

Overall Results

Tables and graphs with our data for the 2014 survey are located in Appendix A.

Question 1: Gender

We asked a number of demographic questions to help determine which dimension of the student body was being surveyed. Looking at gender 71% of the students who took the survey identified

themselves as female. While only 28% of the students sampled were male. In this case the gender is clearly disproportionate and could have an affect on the data as males and females generally think differently.

Question 2: Year

We also assessed what year of school the students were in. In this regard we managed to get a fairly even distribution across classes. This is beneficial when from our perspective as all classes are equally represented, and there will be no age bias.

Question 3: Where do you live?

The majority of the students, 65%, who took this survey live in a residence hall on the UR campus. While 22% of the students lived in UR University Forest Apartments and 14% lived off campus. As most students choose to live on campus at UR, these results are not surprising and will give us an idea of what UR can do to be more sustainable in on-campus living.

Question 4: What is your major?

We had students from a wide variety of majors participate in this survey. Only 3% of those who took this survey were Environmental Studies majors indicating that, for the most part, other survey participants would not receive much information regarding climate change and sustainability through their course work. The most represented major was business, which seems to be likely as a large proportion of the UR student body matriculates in the business school.

Question 5: Climate Change is….

This question was used to determine how important the issue of climate change was to the University of Richmond community. In particular, we were trying to discover if students thought climate change was an issue that had the potential to threaten our way of life or was an unimportant issue. The results of this question indicate that 53% of the student body believes that climate change is a threat that needs to be addressed in the immediate future. Also, 25% of the students in this sample believe that climate change is a moderate threat to humans and ecosystems. This gives us reason to believe that 78% of the UR community believes that climate change is a threat humans. In addition only 5% of this sample do not believe in climate change or believe that it is a phenomenon that does not threaten humans or ecosystems. These results show that our campus does recognize climate change as a threat, and a majority of this sample believes that immediate action is necessary.

Question 6: Which of the following are consequences of global climate change?

In this question students were given nine different options of the consequences of climate change and asked to pick all of the options they thought were applicable. The most frequently selected consequence of climate change was ice cap melting. 94% of all students surveyed chose this option. This could potentially be explained by the widespread media coverage concerning the melting of the Arctic. The second most frequently picked consequence was sea level rise, with 90% of the sample selecting this option. The two least picked options were longer, more intense summers and shorter winters, and changes in the salt content of the ocean with 58% and 57% choosing these options respectively. Clearly, the student body at Richmond is generally well informed about the possible implications of climate change.

Question 7: Current global climate change is occurring due to human activity...

This question asked the students to what level they agreed with the statement above. A large proportion, 42%, of the students sampled selected that they strongly agreed with this statement. In addition 44% selected that they agreed climate change was due to human activity. This indicates that over 80% of the sample believed that humans are altering our surrounding environment and changing the climate. Only 8% disagreed or strongly disagreed that human activity was causing current global climate change.

Question 8: Rank these activities in terms of their contribution to climate change

For this question the students primarily rank coal-fired power plants as the number one contribution to climate change with 79 students ranking this first. Automobile emissions are also ranked highly indicating that students believe that this is a major cause of climate change. Of the students sampled 62 rank automobile emissions as number one, 75 rank this as number 2, and 65 as number 3. Additionally, students deem deforestation as an important issue as 56 students ranked this issue as number one. Students do not think that burning natural gas or modern agricultural practices are contributing as much to climate change. The burning of natural gas responses tends to be spread fairly evenly between the 1-6 rankings. Most students ranked modern agricultural practices as 4, 5, or 6. For the most part students seemed to be aware that nuclear power plants more carbon efficient than the other options on this list as 116 students ranked nuclear power plants as 6 out of 6.

Question 9: What concerns you the most?

This question was designed to assess how important climate change was to the University of Richmond student body. Recession was found to be the most concerning to students, with 23% selecting this answer. This is not surprising as students at UR are focused on applying to jobs and internships. This directly impacts every student and their immediate futures. Students also

indicated that they considered war to be concerning. Again, this is an expected result. Climate change and the spread of disease epidemics both had 15% of the student body indicate they found these events concerning.

Question 10: Do you think the University should be taking further action to reduce its greenhouse gas emissions?

When asked this question, 68% of students believed that the University should be taking further action to reduce its greenhouse gas emissions. Only 10% of the students said No, and 22% remained undecided about this issue. This result indicates the student body at large is in favor of creating more programs that would reduce greenhouse gas emissions. It is unclear if these participants actually know of the programs the University has in place to reduce emissions. If a future survey was implemented, it might be beneficial to learn how knowledgeable students are about the University's programs.

Question 11: How many of the following items do you have at school?

The majority of the students sampled had a wide variety of the items listed (desktop computer, laptop computer, television, refrigerator not supplied by UR, car, microwave, and desk/floor lamps). Almost all of the students indicated they owned a laptop computer, with 96% of students responding yes. This result is not surprising due to the fact that college students typically have their own personal computer. Laptops are also more efficient for college students as they are easy to transport. In direct contrast, only 3% of the students sampled owned a desktop computer. All other items were owned by at least or more than 50% of the students sampled except for printers, which only 45% of students owned. As the University provides printers on campus, it does not seem to be a necessary item for students to own.

Question 12: If you use a car on campus, how often do you use it?

Of the students sampled 46% indicated they do not own a car. As everything at UR is within walking distance, it is not surprising that a large proportion of the student body does not have a car. In addition UR has several options for student without cards, including Zipcars and a campus shuttle. This does, however, indicate that 54% of students do own a car. This result is also not surprising as the University has no car or parking restrictions. If a car was owned by the students 18% said that they drive 2-3 days a week and 18% said that they drove 6-7 days a week. It seems that if students own a car, then, they take advantage of this luxury.

Question 13: If you use a car, where do you drive?

Interestingly, 43% of the students answering this question said that they do not have a car, in comparison with the question above where 46% of the sample indicated that they do not have a car. This could be due to the phrasing of the question. Students often borrow other peoples' cars to go to a multitude of places, so they could be indicating either they do use a car or they just do not own one. Martin's and the CVS on Three Chopt Road was the most popular place visited, with 51% of students indicating they drive there. The second place that most students visited was Carytown with 43%. Most students indicated they did not drive to class, with only 20% choosing this answer. This seemingly high response is most likely due to the students who took this survey and live off campus.

Question 14: What mode of transportation do you usually use to go home?

Students used a variety of different modes of transportation to get home for breaks. At 38% a large proportion of student used their own vehicles to get home. This result is not surprising, as a large proportion of students do own a car on campus. At 33% planes were the second most mode of transportation that students used to get home on breaks. UR attracts students from all over the United States, and all over the globe, where planes would be the most attractive way to travel. Only 10% of the students indicated they used carpooling when going home on trips. As a lot of students have their own cars, it would be reasonable to have a larger amount of students utilizing carpooling.

Question 15: How often do you consider the environmental impact of burning gasoline when you drive?

Of the students sampled 37% of students said they do not usually consider the environmental impact of burning gasoline when they drive. Only 28% of students said they sometimes thought about the environmental impact of burning gasoline when they drive. The most surprising result to this question was that only 3% responded they always thought about the environmental impact of burning gasoline.

Question 16: Which of the following would motivate you to drive your car less frequently?

Of the students sampled 46% would be willing to drive their car less frequently if there was a campus loop shuttle that ran all day long. Surprisingly, 33% of the students indicated nothing could be changed that would motivate them to use their car less frequently. Only 19% of students were interested in a better or more accessible bike program. Parking tickets do not seem to be an effective tool for mitigating the frequency with which Richmond students drive.

Question 17: When you leave your residence for breaks do you….

When Richmond students leave for breaks 98% of the students sampled indicated they turned off the lights in their dorms/apartments. Only 39% of those surveyed turned off power strips. Of the students sampled only 29% said they unplugged major appliances before leaving for breaks. This is something that the Richmond community could improve upon.

Question 18: How often do you consider the environmental impact of your electricity use?

The largest proportion of students chose that they sometimes considered the environmental impact of their electricity use, at 37%. Only 6% of students said they always considered the environmental impact of their electricity use. The students who indicated they think about the environmental most of the time made up 23% of the students sampled. In this sample 10% said they never thought about the environmental impact of their electricity use, while 24% said they did not usually consider it. It is not necessary to consider the environmental impacts of your electricity use all the time. However, if the Richmond community could develop good habits regarding their electricity use, this could make a difference.

Question 19: How often do you recycle on campus?

Out of the 272 students sampled 50% of them responded that they recycle on campus most of the time. In addition 26% of students said they always recycled on campus. Only 3% said they never recycled and 3% responded they did not usually respond. It seems as if the majority of the students on Richmond's campus recycle consistently, thus this area may not need any improvement.

Question 20: What do you recycle on campus?

Students mostly recycle plastic bottles (98%). However, they also recycle large proportions of aluminum cans (74%), glass bottles (75%), mixed paper (78%), and other plastic containers (65%). The only item that students do not seem to consistently recycle are waxed beverage containers. This could be due to a lack of awareness regarding the recyclability of these containers.

2008 Survey and 2014 Survey Compared

Tables and graphs showing a comparison between the 2008 and 2014 surveys are located in Appendix B.

One of the purposes of this project was to determine how the attitudes of the UR student body have changed towards sustainability and climate change since 2008. For our purposes, we did not

have completely the same set of questions from the 2008 survey, but in this section we will outline the largest differences between the two years.

Question: Climate Change is….

In response to this question, it seems as if the threat of climate change is not as prominent as it was in 2008. In 2008 60.5% of the students sampled indicated that climate change was a major threat that needs to be addressed now, in contrast in 2014 only 53% selected this choice. However, 25% of students in 2014 selected that climate change was a moderate threat, while only 22.9% of students selected this option in 2008.

Question: Which of the following are consequences of global climate change?

For both surveys a large proportion of students selected that ice cap melting was a major consequence of climate change (2008 95.7%, 2014 94%). Sea level rising was selected as a consequence more frequently in 2014 with 90%, while in 2008 only 79.4% of students selected this option. This could be due to the increased publicity on this issue and the increased problems associated with this issue. The majority of the other options remained about the same from year to year.

Question: Current global climate change is occurring due to human activity?

The major change between the 2008 and 2014 for this question occurred in the strongly agree category. In 2008 35.9% of the students sampled selected that they "strongly agree" that human activity is causing global climate change, while in 2014 42% of the students selected this option. The other options for this question remained fairly similar between these two years.

Question: If you use a car on campus, how often do you use it?

In looking at this question it is surprising to see that fewer people in 2014 have a car compared with 2008. In our survey 46% of the students sampled did not own a car, however, in 2008 only 38% of students owned a car. Another change that occurred was that it seems as if the number of students who only use their car about once a week has decreased since 2008. In 2008 15% of students selected that if they owned a car they only used it about once a week, while in 2014 only 6% selected this option. One other change that occurred was the percentage of students who used their car 2-3 days per week. In 2008 it was reported that 24% of students selected this option, while in 2014 18% made this selection. The number of responses for students who used their car between 4-5 days a week remained fairly similar, with 11% of students selecting this option and 12% in 2014. There was a 6% increase between 2008 and 2014 in the percentage of students who use their cars 6-7 days a week, with 12% in 2008 and 18% in 2014.

Question: If you use a car, where do you drive?

As indicated in the earlier question less people have a car in 2014 than in 2008. Both in 2008 and 2014 29% of students indicated they use their cars to drive to Downtown Richmond. There was more than a 10% decrease between 2008 and 2014 of the students driving to shopping malls. In 2008 43% of students used their cars to drive to shopping malls while in 2014 only 30% of students drove to shopping malls. The percentage of students driving to Carytown remained fairly similar between the two years, with 42% in 2008 and 43% in 2014. There was a 5% decrease in the amount of student driving to Martins/CVS on Three Chopt Road between these two years. In 2008 56% drove to this location and in 2014 51% drove there. In the 2014 survey we added the option of driving to class into the survey, which indicated that 20% of students drove to class. We believe the majority of these students live off campus.

Question: What mode of transportation do you usually use to go home?

The amount of students who use a personal vehicle to go home decreased between 2014 and 2008. In 2014 38% indicated that they use their own vehicles, while in 2008 45% of students used their own vehicles. The amount of students carpooling to go home also decreased between 2008 and 2014. In 2008 14% of students carpooled to get home while in 2014 only 10% of students did this. The percentage of students who fly home has remained constant since 2008, as both surveys had 33% of the student sampled indicate they used a plane to get home. The percentage of students using the train doubled between 2008 and 2014 with 7% taking the train in 2008 and 14% in 2014.

Question: How often do you consider the environmental impact of burning gasoline when you drive?

In 2008 it seems as if students on the UR campus thought about the environmental impact of burning gasoline when they drove more than in 2014. In 2008 8% of students indicated that they "Always" thought about the environmental impact of burning gasoline when driving while in 2014 only 3% selected this option. Also, in 2008 22% of students said they thought about burning gasoline "Most of the time" however, in 2014 only 13% chose this response. For the option "Sometimes" 34% of the 2008 sample chose this and only 28% of the 2014 survey did. For the response "Not usually" there was a 7% increase between 2008 and 2014, with 30% in 2008 and 37% in 2014. Also, there was an 8% increase for the "Never" response between 2008 and 2014, with 11% in 2008 and 19% in 2014.

Recommendations

Transportation

Our research suggests that one of the areas the Richmond community can improve on is our transportation sector. Our community could easily mitigate our carbon emissions from vehicles by implementing a couple of different programs. In conducting our research, we discovered that the College of William and Mary has three different programs that could easily be applied to the University of Richmond's campus. William and Mary is a very similar community to the University of Richmond, which could make these programs feasible on our campus.

William and Mary has its own unique carbon offset program, which is run by their Committee on Sustainability. This program works directly with the facilities department to develop plans to directly reduce carbon emissions on campus. The carbon-offset program has pledged that 100% of your carbon offset will go to an energy-reducing project on William and Mary's campus. As a part of this program a pay scale has been developed using other carbon offset websites. You can choose to pay per how many miles you travel or for a certain time period. All of these funds are easily collected via William and Mary's website. If this plan was well advertised, this could become a viable program at Richmond.

In addition, William and Mary offers carpool incentives for commuter students and for faculty. Under this system the cost of the parking permit goes down when a group of students or faculty come in together. The college also reserves parking spots for those who carpool adding that as an incentive. To make it easy to find rides with people from the same area, William and Mary has created a profile with AlterNet Rides, to help facilitate the creation of carpools. This could easily be made available to the faculty and commuter students that go to Richmond. Another program that could be beneficial is creating a carpool for those students who move off campus when they come back from abroad. These students typically live in or near the Horsepen apartments and have to drive to campus every day. If some sort of carpool could be set up, this could definitely minimize carbon emissions. The other area where we could create a carpool network would be to facilitate rides home for break. The results of our survey indicated that only 10% of the student body utilizes carpooling as an option for returning home for break. If a well-known program was created we believe that a lot of people would benefit from this.

In addition, many students indicated they would be inclined to drive less if the campus loop were available all day. In discussing the campus loop with our class, there were a variety of different suggestions to make this system more effective. One thing our class suggested was to find a way for students to contact the campus loop to signal where the location of the students. A lot of times the campus loop is driving around its route, but does not know where the students are that would like to use this service. Also, at night students would rather drive back to their apartments than wait outside in the dark for the campus loop to come.

For additional information please refer to these two pages from the College of William and Mary:

- Carpooling: http://www.wm.edu/offices/auxiliary/parkingandtransportation/parking/carpool/index.php
- Carbon Offsets: http://offset.wm.edu

Waste

Although the majority of students indicated they recycle on campus, other data suggests the campus community can do more in terms of waste minimization. During the 2014 RecycleMania competition, the University reported a 26.891% recycling rate. Although that is a significant improvement from previous years, largely due to our new single-stream recycling program, other universities have had greater success in waste minimization. UR can improve our waste reduction efforts by adding an organic waste component to our current system. At American University, organic waste collection bins are placed alongside trash and recycling bins throughout campus and in residence halls and apartments. Their facilities staff then collects the organic waste and sends it to an off site composting facility. Food waste from campus dining facilities is collected and composted as well. Implementing organic waste collection on the UR campus would significantly reduce the amount of waste we send to landfills.

Another way to reduce waste production and encourage recycling is to distribute individual recycling bins for residence hall rooms. Currently, every University Forest Apartment is supplied with a recycling bin that is filled and emptied into larger recycling dumpsters by the apartment residents. A similar system could be put into place in University residence halls. Each room would be supplied with a recycling receptacle, which residents would be expected to empty into larger hall recycling bins on their own.

For additional information on UR's RecycleMania competition please refer to this webpage:

- http://sustainability.richmond.edu/involved/competitions/recyclemania.html

Education and Outreach

We believe education in the Richmond community will play an important role in mitigating our campus' impact on climate change. Firstly, as evidenced in the results of our survey, students have not developed habits that promote conserving electricity. For the most part students do not unplug their power strips, unplug major appliances, or shut down computers when leaving for breaks. We believe this is primarily due to the fact that the student body is unaware of the difference that these simple actions can make. We recommend these tips be posted on the UR website and go on the housing "To Do Before You Leave" list. This would make the students more aware and could potentially reduce electricity use on campus.

Another part of environmental education should take place before the students even arrive on campus. For new students it should required that all appliances brought to campus are

classified as energy star appliances. The school already mandates that students must purchase Fire Shield power strips and extension cords. In addition, the University should mandate that CFLs are the only light bulbs used by students. Duke University and William and Mary hand out CFLs on move in day to ensure the student body is conserving electricity.

Another potential way to raise money for carbon offset investment is a mandatory student green fee. University of Maryland-College Park established a Student Sustainability Fee in 2007 after their community overwhelmingly voted in favor of raising student fees to fund sustainability initiatives. Starting in the inaugural year, each student paid $4 toward the fund. The fee increased by $2 per student per year until it reached a total of $12 per student in the 2013-2014 academic year. At Maryland, the Student Sustainability Fee goes toward projects that reduce environmental impact or increase sustainability education and awareness on campus. At UR, a student green fund could work in one of two ways: a mandatory annual fee like that at Maryland, or a voluntary donation of any amount.

For more information about the Student Sustainability Fee at University of Maryland, refer to their website:

- http://www.sustainability.umd.edu/content/culture/student_fee.php

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Appendix A

Figure 1.1 Gender Distribution Data

Answer	Proportion	Response	Percentage
Male	0.284671533	78	28%
Female	0.708029197	194	71%
Transgender	0.003649635	1	0%
Other	0.003649635	1	0%
Prefer not to answer	0	0	0%
Total		274	100%

Figure 1.2 Gender Distribution Chart

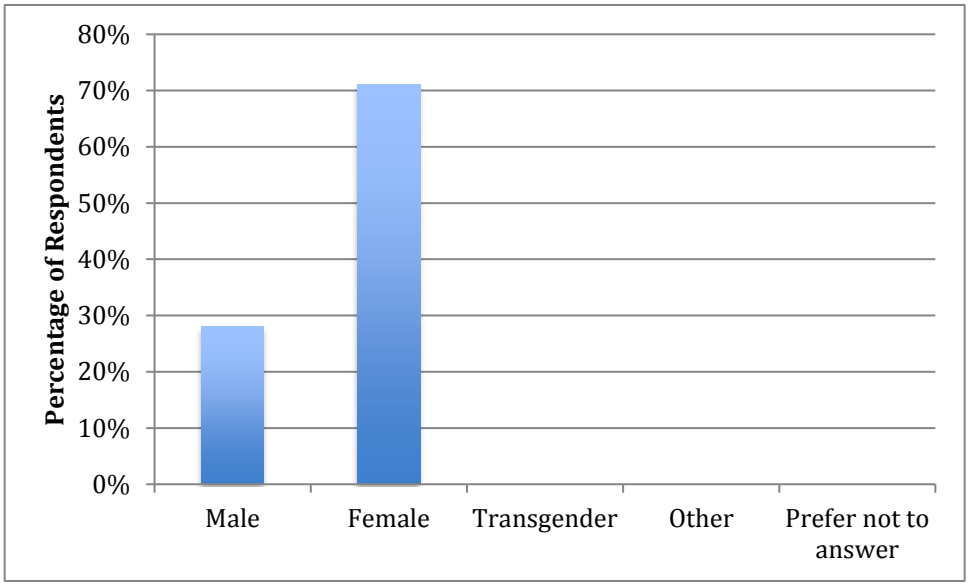


Figure 1.3 Year at UR Data

Answer	Proportion	Response	Percentage
First Year	0.259124088	71	26%
Sophomore	0.211678832	58	21%
Junior	0.262773723	72	26%
Senior	0.266423358	73	27%
Total		274	100%

Figure 1.4 Year at UR Chart

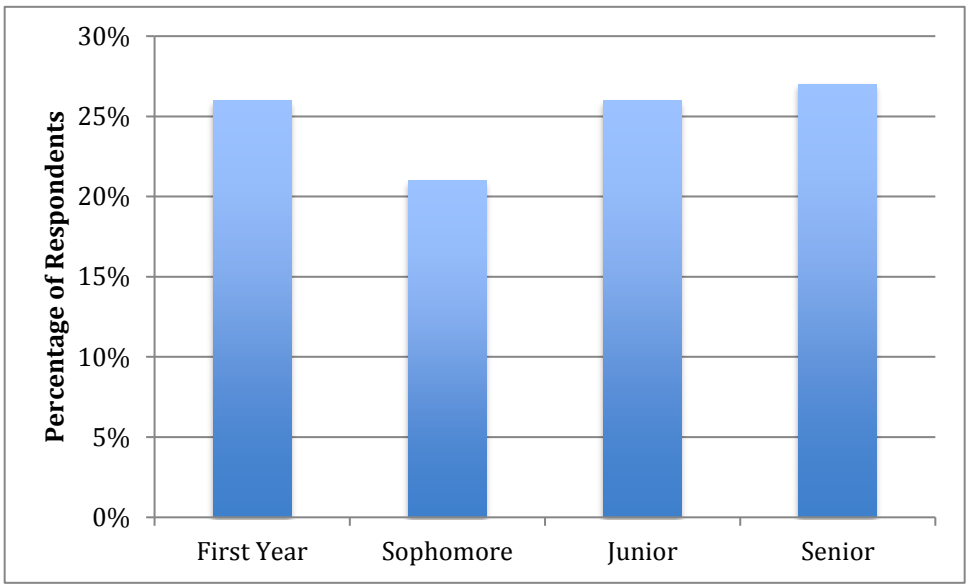


Figure 1.5 Where do you live? Data

Answer	Proportion	Response	Percentage
UR Residence Hall	0.645985401	177	65%
UR University Forest Apartments	0.215328467	59	22%
Off Campus	0.138686131	38	14%
Total		274	100%

Figure 1.6 Where do you live? Chart

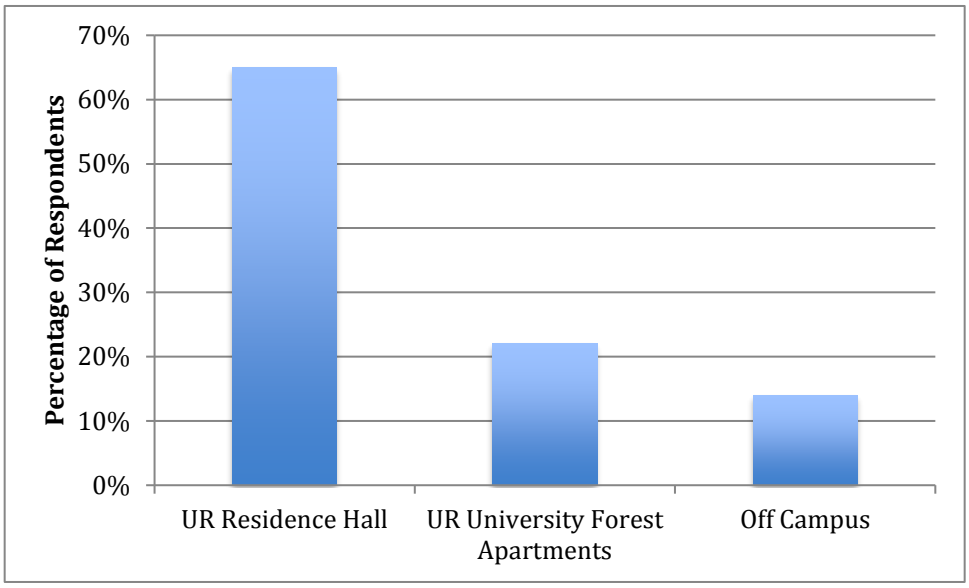


Figure 1.7 What is your major? Data

Answer	Proportion	Response	Percentage
Art	0	0	0%
Biology	0.098540146	27	10%
Business	0.273722628	75	27%
Chemistry	0.062043796	17	6%
Computer Science	0.02919708	8	3%
English	0.018248175	5	2%
Environmental Studies	0.032846715	9	3%
Foreign Language	0.01459854	4	1%
Geography	0.01459854	4	1%
History	0.018248175	5	2%
International Studies	0.069343066	19	7%
Leadership	0.083941606	23	8%
Music	0.003649635	1	0%
Math	0.010948905	3	1%
Physics	0.00729927	2	1%
Psychology	0.051094891	14	5%
Political Science	0.062043796	17	6%
Sociology	0.01459854	4	1%
Theater	0.00729927	3	1%

Other	0.127737226	35	1%
Total		274	100%

Figure 1.8 What is your major? Chart

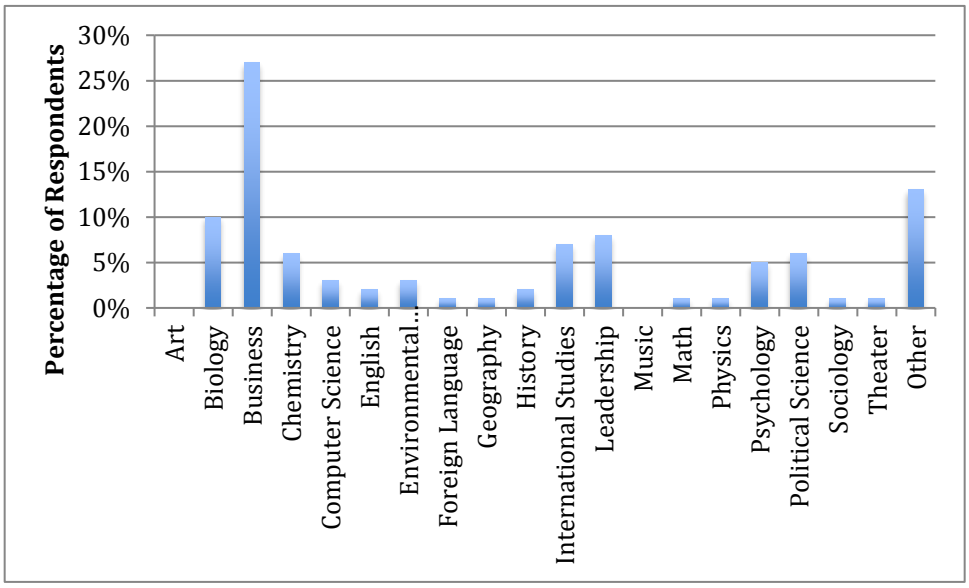


Figure 1.9 Climate change is…. Data

Answer	Proportion	Response	Percentage
Climate change is a major threat and needs to be addressed now	0.532846715	146	53%
A moderate threat to humans and ecosystems	0.248175182	68	25%
A potential future threat to humans and ecosystems	0.167883212	46	17%
A phenomenon that does not threaten humans or ecosystems	0.02919708	8	3%
I do not believe in climate change	0.02189781	6	2%
Total		274	100%

Figure 1.10 Climate Change is… Chart

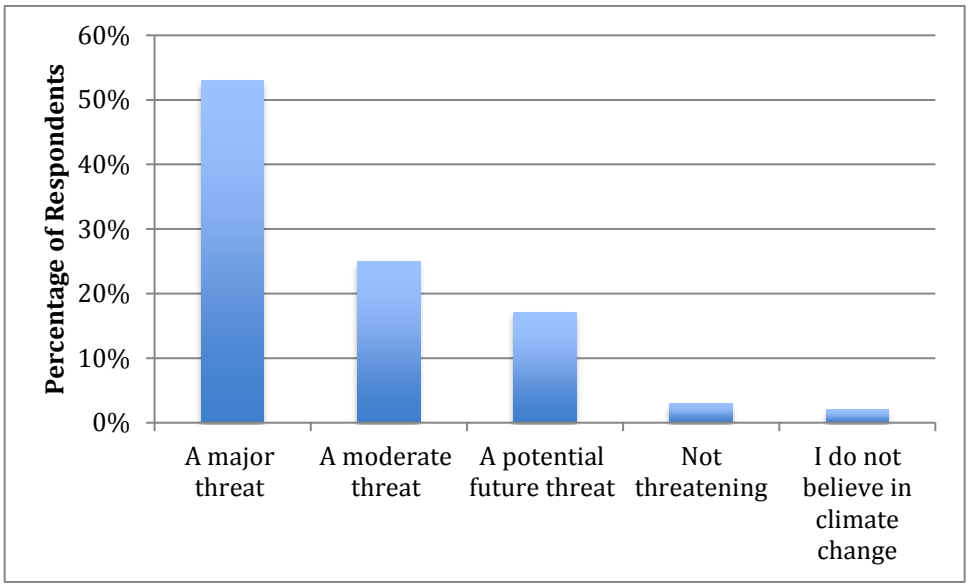


Figure 1.11 Which of the following are consequences of global climate change? (Choose all that apply) Data

Answer	Proportion	Response	Percentage
Sea level rise	0.895522388	240	90%
Intensification of drought	0.71641791	192	72%
Intensification of flooding	0.735074627	197	74%
Intensification of storms	0.72761194	195	73%
Ice caps melting	0.944029851	253	94%
Hole in the ozone layer	0.77238806	207	77%
Changes in the salt content of the ocean	0.567164179	152	57%
Longer more intense summer and shorter winters	0.582089552	156	58%
Regional differences in temperature change	0.73880597	198	74%

Figure 1.12 Which of the following are consequences of global climate change? (Choose all that apply) Chart

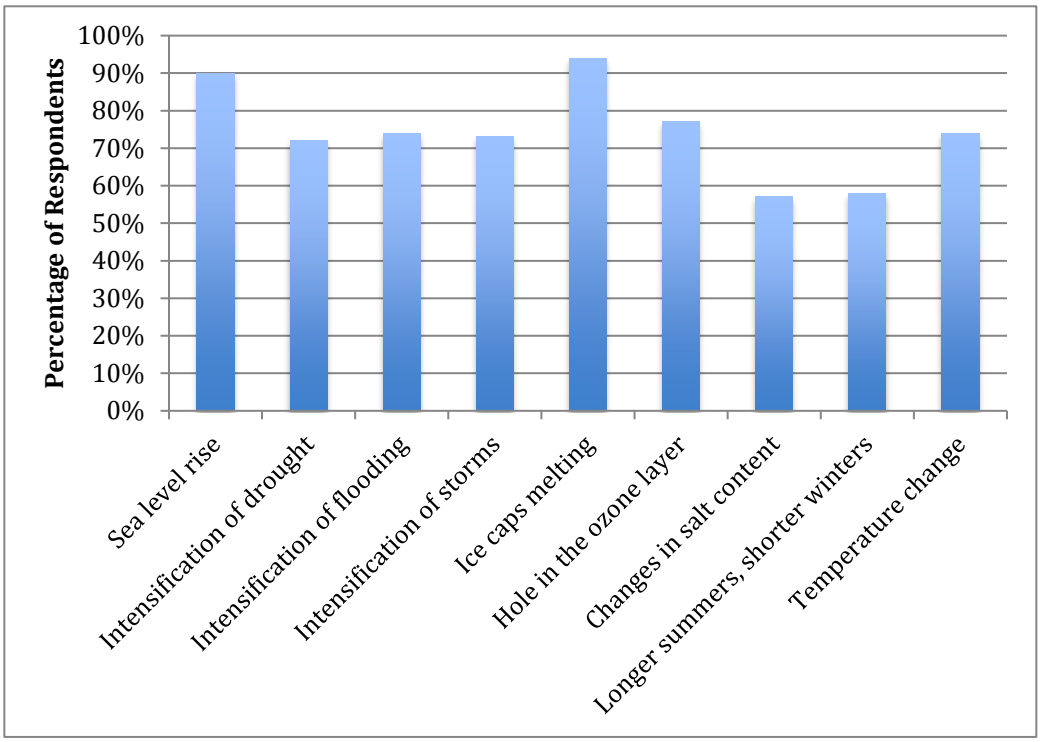


Figure 1.13 Current global climate change is occurring due to human activity… Data

Answer	Proportion	Response	Percentage
Strongly Agree	0.41697417	113	42%
Agree	0.439114391	119	44%
Feel Neutral	0.070110701	19	7%
Disagree	0.04797048	13	5%
Strongly Disagree	0.025830258	7	3%
Total		271	100%

Figure 1.14 Current global climate change is occurring due to human activity… Chart

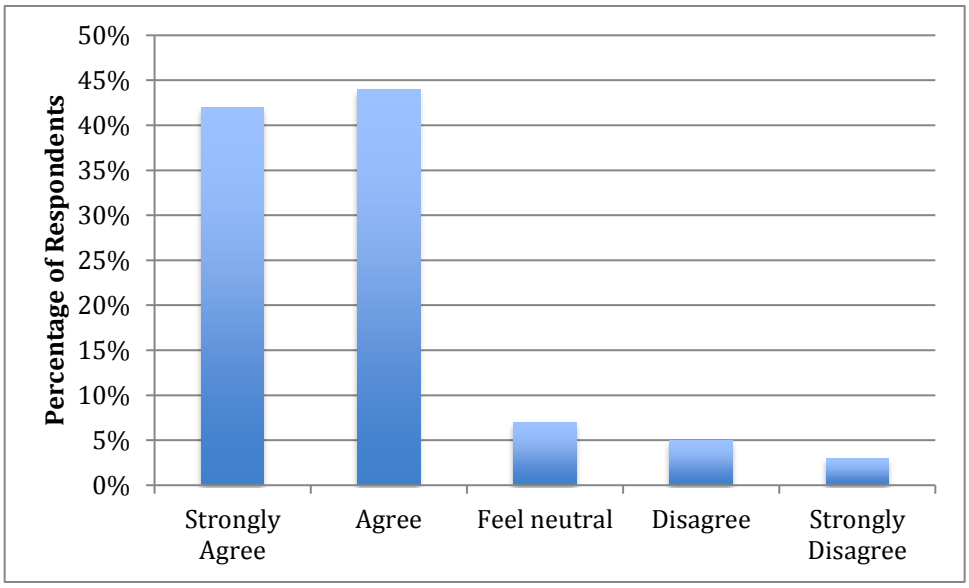


Figure 1.15 Rank these activities in terms of their contribution to climate change: (1 being the most and 6 being the least) Data

#	Answer	1	2	3	4	5	6	Total Responses
1	Automobile Emissions	62	75	65	31	16	13	262
2	Burning Natural Gas	28	47	46	58	63	21	263
3	Coal-Fired Power Plants	79	57	53	41	26	7	263
4	Deforestation	56	54	56	48	31	17	262
5	Modern Agricultural Products	16	18	16	47	82	84	263
6	Nuclear Power Plants	32	15	24	38	37	116	262
	Total	273	266	260	263	255	258	

Figure 1.16 What concerns you the most? Data

Answer	Proportion	Response	Percentage
War	0.202205882	55	20%
Recession	0.231617647	63	23%
Climate Change	0.150735294	41	15%
Health Care	0.132352941	36	13%
Limited Supply of Fossil Fuels	0.036764706	10	4%
Species Extinction	0.095588235	26	10%
Spread of Disease Epidemic	0.150735294	41	15%
Total		272	100%

Figure 1.17 What concerns you the most? Chart

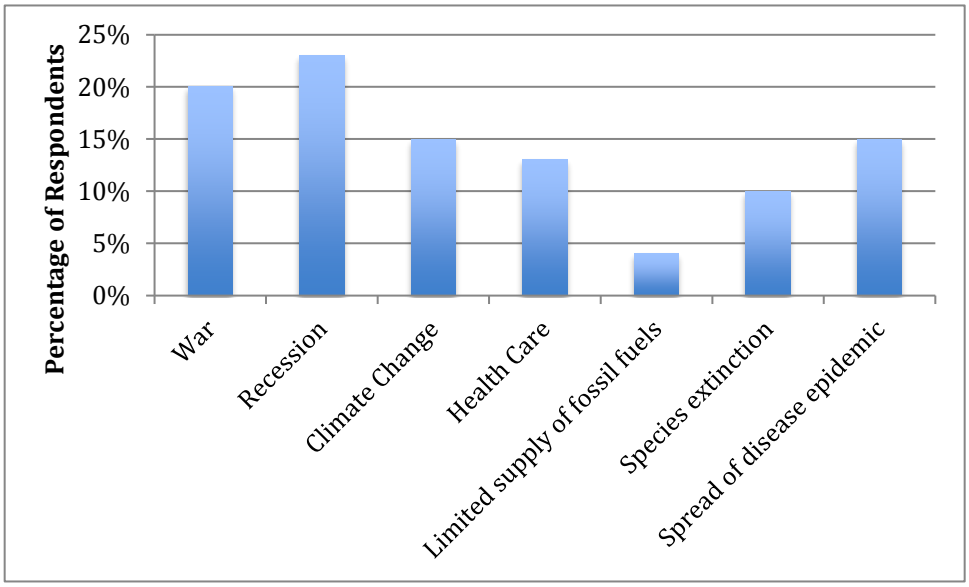


Figure 1.18 Do you think the University should be taking further action to reduce its greenhouse gas emissions? Data

Answer	Proportion	Response	Percentage
Yes	0.677777778	183	68%
No	0.1	27	10%
Undecided	0.222222222	60	22%
Total		270	100%

Figure 1.19 Do you think the University should be taking further action to reduce its greenhouse gas emissions? Chart

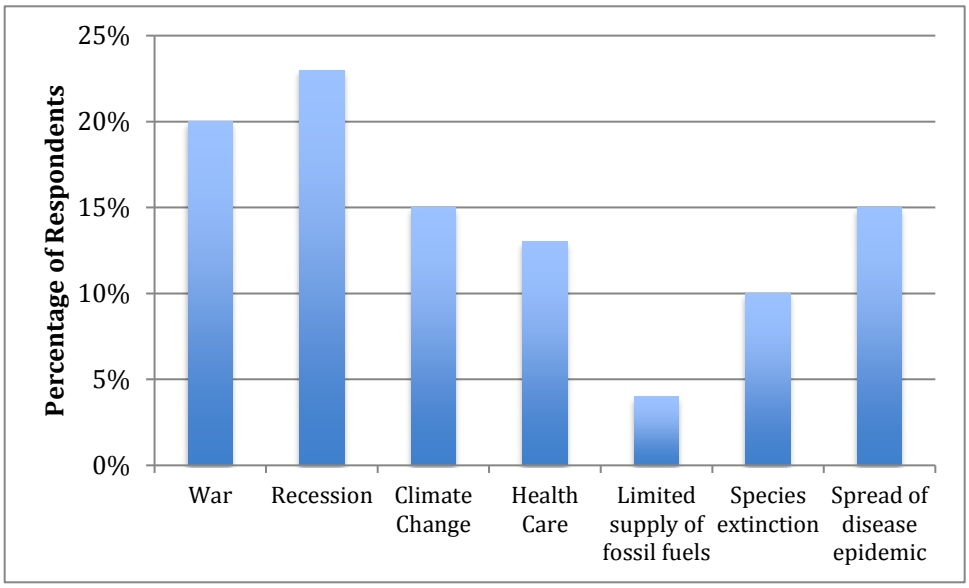


Figure 1.20 How many of the following items do you have at school? (Choose all that apply) Data

Answer	Proportion	Response	Percentage
Desktop Computer	0.033088235	9	3%
Laptop Computer	0.963235294	262	96%
Television	0.503676471	137	50%
Refrigerator not supplied by UR	0.694852941	189	69%
Printer	0.452205882	123	45%
Car	0.547794118	149	55%
Microwave	0.768382353	209	77%
Desk/floor Lamp	0.830882353	226	83%

Figure 1.21 How many of the following items do you have at school? (Choose all that apply) Chart

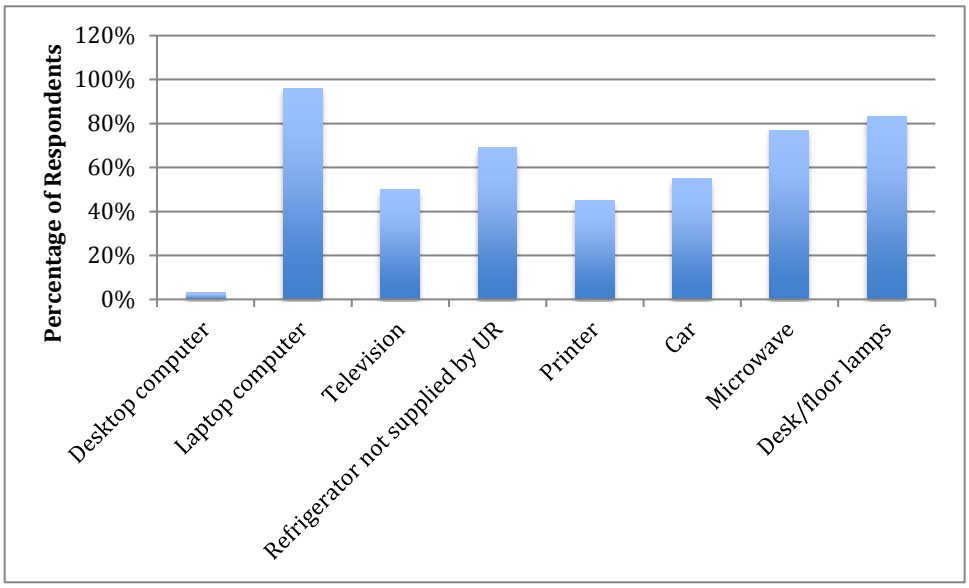


Figure 1.22 If you use a car on campus, how often do you use it? Data

Answer	Proportion	Response	Percentage
I do not have a car on campus	0.457249071	123	46%
0-1 days a week	0.059479554	16	6%
2-3 days a week	0.182156134	49	18%
4-5 days a week	0.12267658	33	12%
6-7 days a week	0.178438662	48	18%
Total		269	100%

Figure 1.23 If you use a car on campus, how often do you use it? Chart

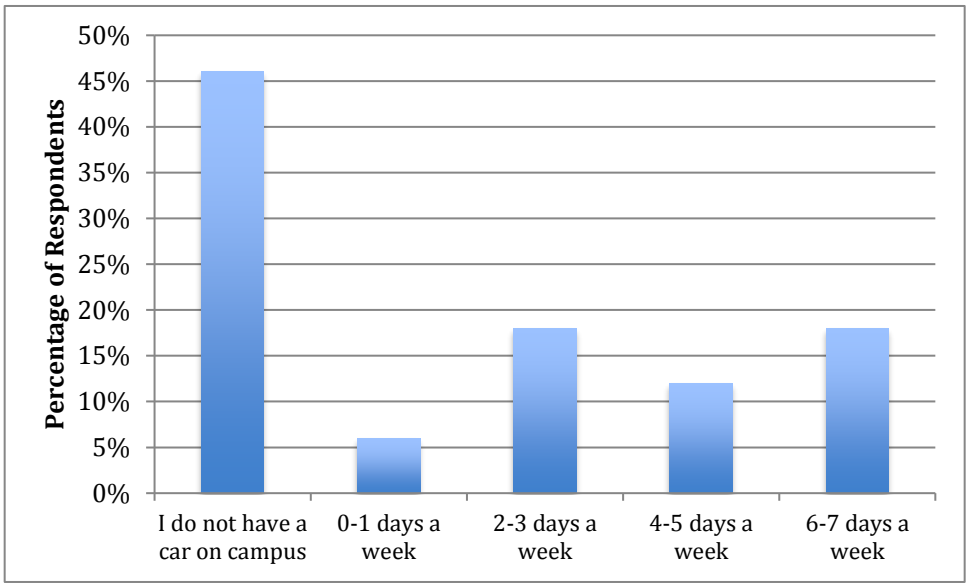


Figure 1.24 If you use a car, where do you drive? (Choose all that apply) Data

Answer	Proportion	Response	Percentage
I do not have a car on campus	0.429118774	112	43%
Downtown Richmond	0.287356322	75	29%
Carytown	0.425287356	111	43%
Shopping Malls	0.302681992	79	30%
Martins/CVS on Three Chopt	0.505747126	132	51%
Class	0.195402299	51	20%

Figure 1.25 If you use a car, where do you drive? (Choose all that apply) Chart

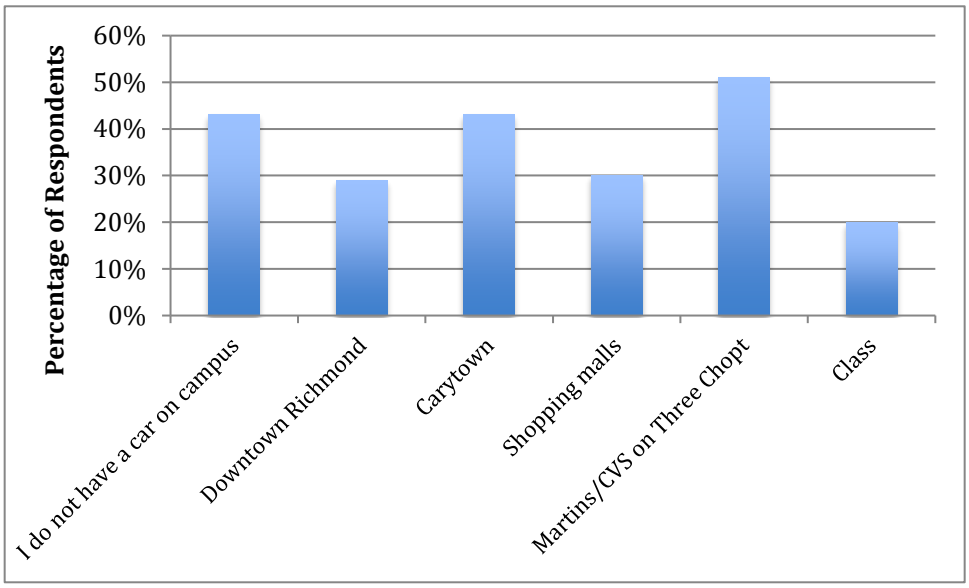


Figure 1.26 What mode of transportation do you usually use to go home? Data

Answer	Proportion	Response	Percentage
Personal vehicle	0.378676471	103	38%
Carpool	0.102941176	28	10%
Bus	0.040441176	11	4%
Train	0.139705882	38	14%
Plane	0.327205882	89	33%
Other	0.011029412	3	1%
Total		272	100%

Figure 1.27 What mode of transportation do you usually use to go home?

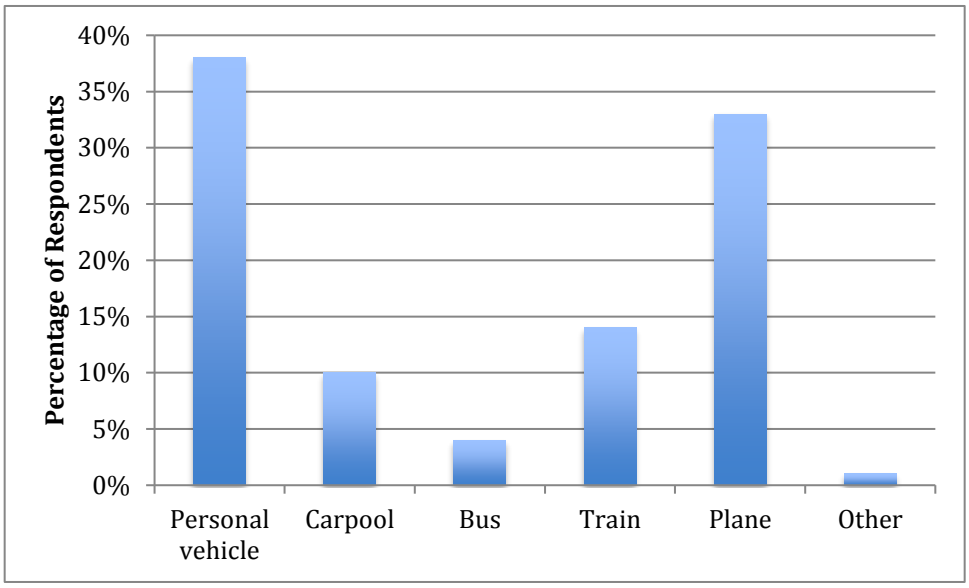


Figure 1.28 How often do you consider the environmental impact of burning gasoline when you drive? Data

Answer	Proportion	Response	Percentage
Always	0.033088235	9	3%
Most of the Time	0.132352941	36	13%
Sometimes	0.275735294	75	28%
Not Usually	0.371323529	101	37%
Never	0.1875	51	19%
Total		272	100%

Figure 1.29 How often do you consider the environmental impact of burning gasoline when you drive? Chart

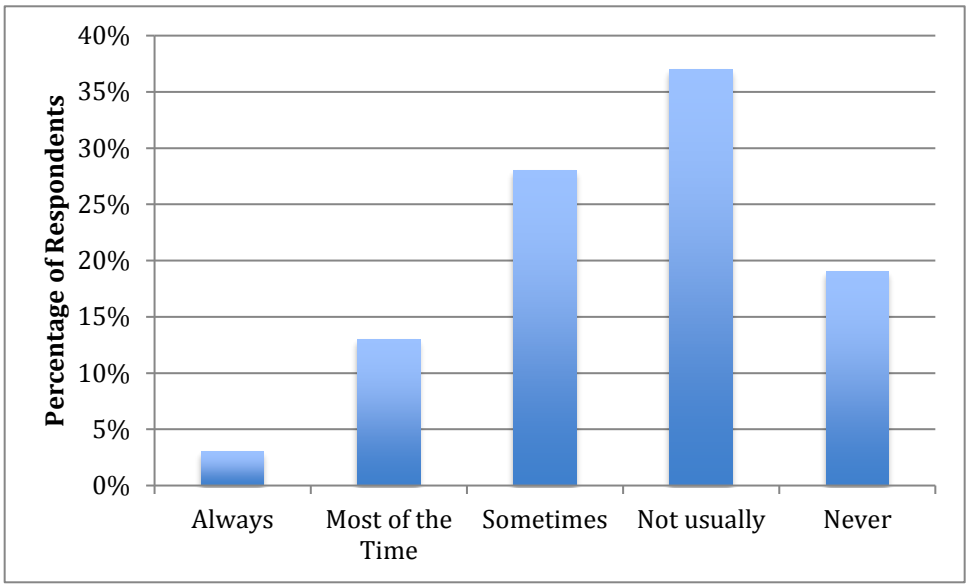


Figure 1.30 Which of the following would motivate you to drive your car less frequently on campus? Data

Answer	Proportion	Response	Percentage
A campus loop shuttle that runs all day long	0.460674157	123	46%
A better or more accessible bike program	0.187265918	50	19%
More expensive parking tickets	0.018726592	5	2%
Nothing	0.333333333	89	33%
Total		267	100%

Figure 1.31 Which of the following would motivate you to drive your car less frequently on campus? Chart

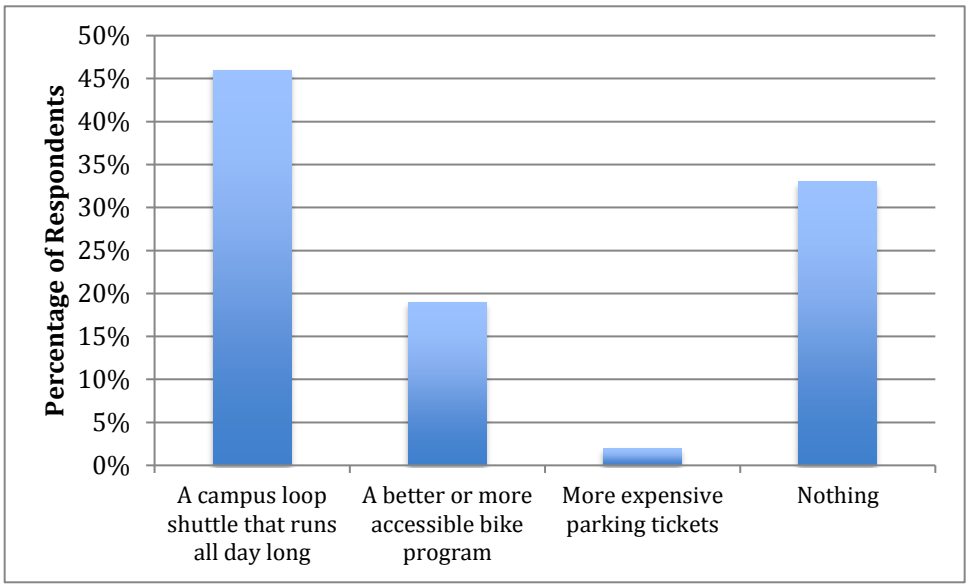


Figure 1.32 When you leave your residence for breaks do you… (Choose all that apply) Data

Answer	Proportion	Response	Percentage
Turn off the lights	0.97761194	262	98%
Turn off your computer or put it to sleep	0.787313433	211	79%
Turn off your TV	0.712686567	191	71%
Turn off power strips	0.388059701	104	39%
Unplug major appliances	0.291044776	78	29%

Figure 1.33 When you leave your residence for breaks do you… (Choose all that apply) Chart

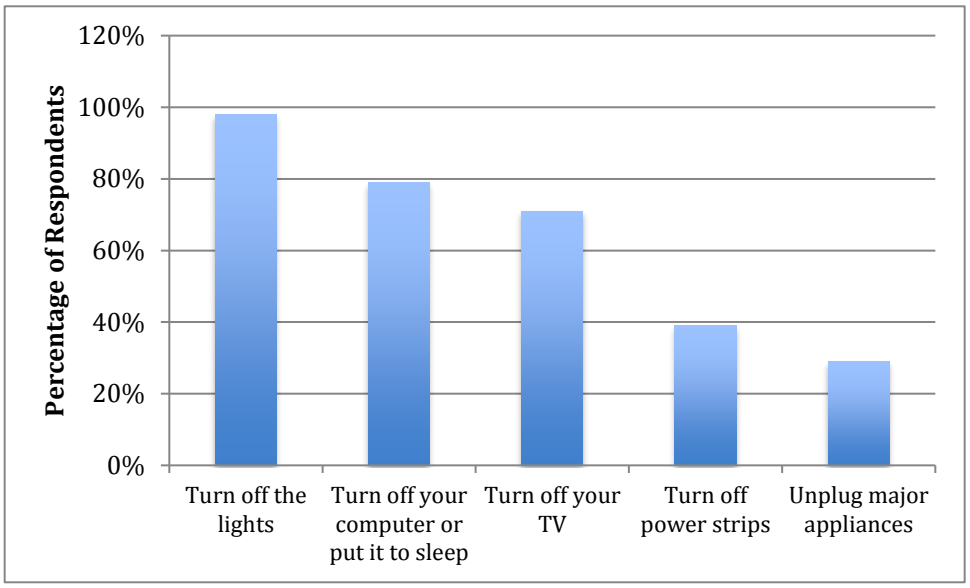


Figure 1.34 How often do you consider the environmental impact of your electricity use? Data

Answer	Proportion	Response	Percentage
Always	0.0625	17	6%
Most of Time	0.227941176	62	23%
Sometimes	0.371323529	101	37%
Not Usually	0.242647059	66	24%
Never	0.095588235	26	10%
Total		272	100%

Figure 1.35 How often do you consider the environmental impact of your electricity use? Chart

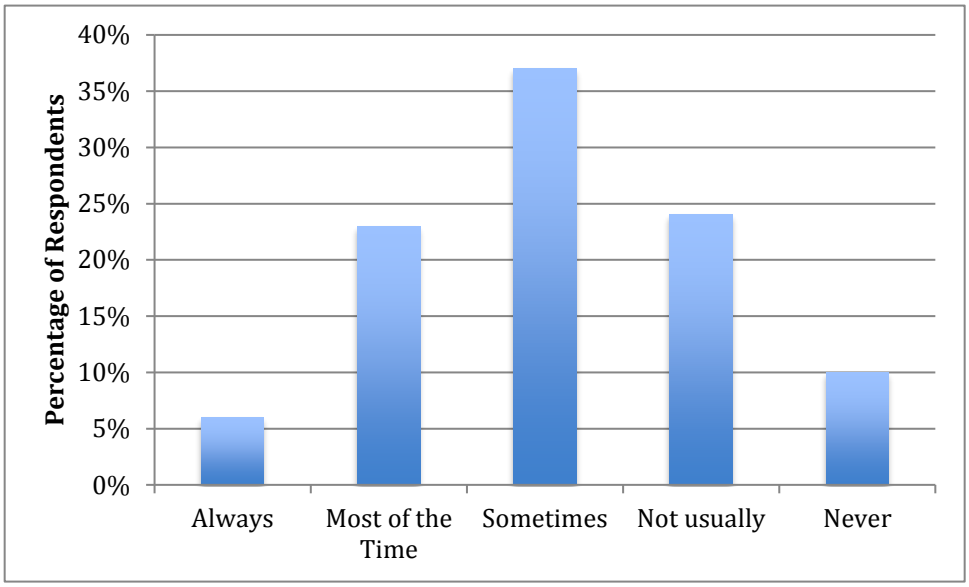


Figure 1.36 How often do you recycle on campus? Data

Answer	Proportion	Response	Percentage
Always	0.264705882	72	26%
Most of the Time	0.496323529	135	50%
Sometimes	0.172794118	47	17%
Not Usually	0.033088235	9	3%
Never	0.033088235	9	3%
Total		272	100%

Figure 1.37 How often do you recycle on campus? Chart

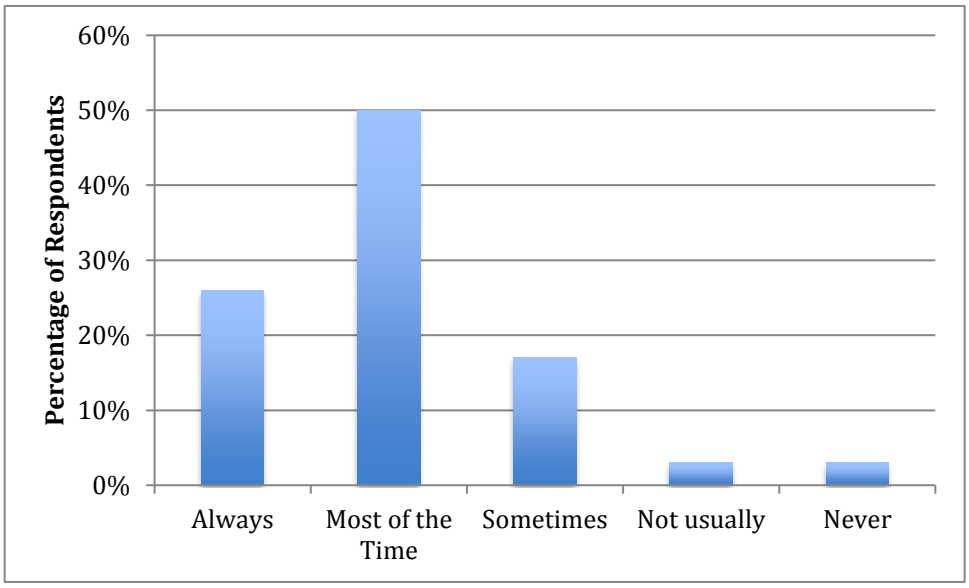
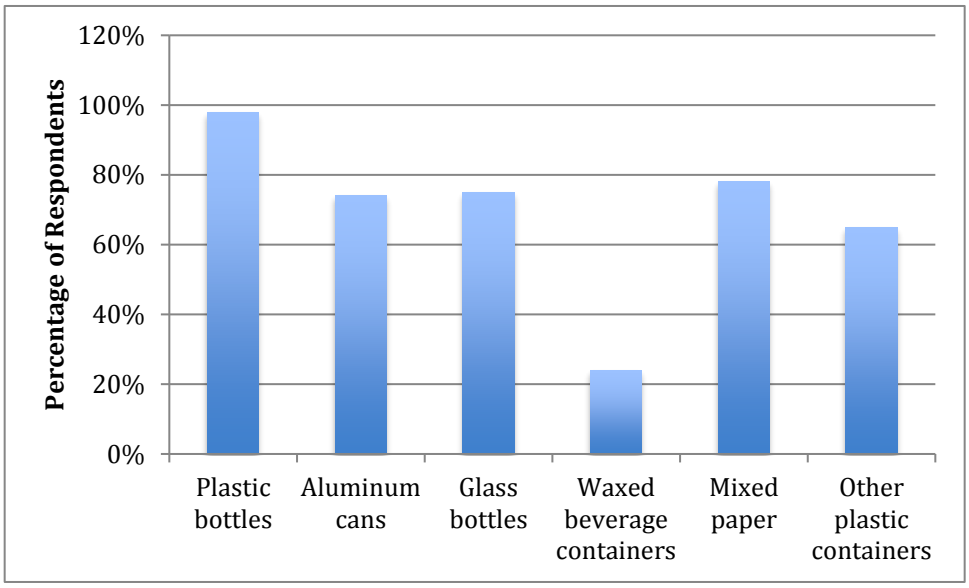


Figure 1.38 What do you recycle on campus? (Choose all that apply) Data

Answer	Proportion	Response	Percentage
Plastic Bottles	0.981132075	260	98%
Aluminum Cans	0.743396226	197	74%
Glass Bottles	0.747169811	198	75%
Waxed Beverage Containers	0.241509434	64	24%
Mixed Paper	0.78490566	208	78%
Other Plastic Containers	0.652830189	173	65%

Figure 1.39 What do you recycle on campus? (Choose all that apply) Chart



Appendix B

Figure 1.40 Climate change is…. Data

Answer	2008	2014
A major threat and needs to be addressed now	61%	53%
A moderate threat to humans and ecosystems	30%	25%
A potential threat to humans and ecosystems	14%	17%
A phenomenon that does not threaten humans or ecosystems	1%	3%
I do not believe in climate change (2014 Survey)	N/A	2%
A theory made up by environmentalists to gain power (2008 Survey)	1%	N/A

Figure 1.41 Climate change is…. Data

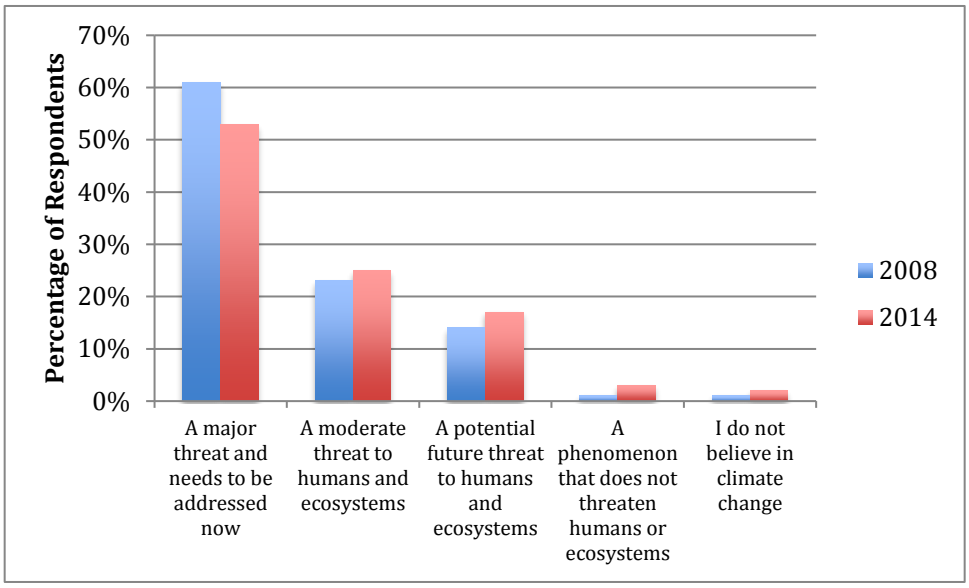


Figure 1.42 Which of the following are consequences of global climate change? Data

Answer	2008	2014
Sea level rise	79%	90%
Intensification of drought	77%	72%
Intensification of flooding	76%	74%
Intensification of storms	72%	73%
Ice caps melting	96%	94%
Hole in the ozone layer	68%	77%
Changes in the salt content of the ocean	59%	57%
Longer, more intense summers and shorter winters (2014 Survey)	N/A	58%
Longer, more intense summers	71%	N/A
Shorter winters	65%	N/A
Regional differences in temperature change	75%	74%

Figure 1.43 Which of the following are consequences of global climate change? Chart

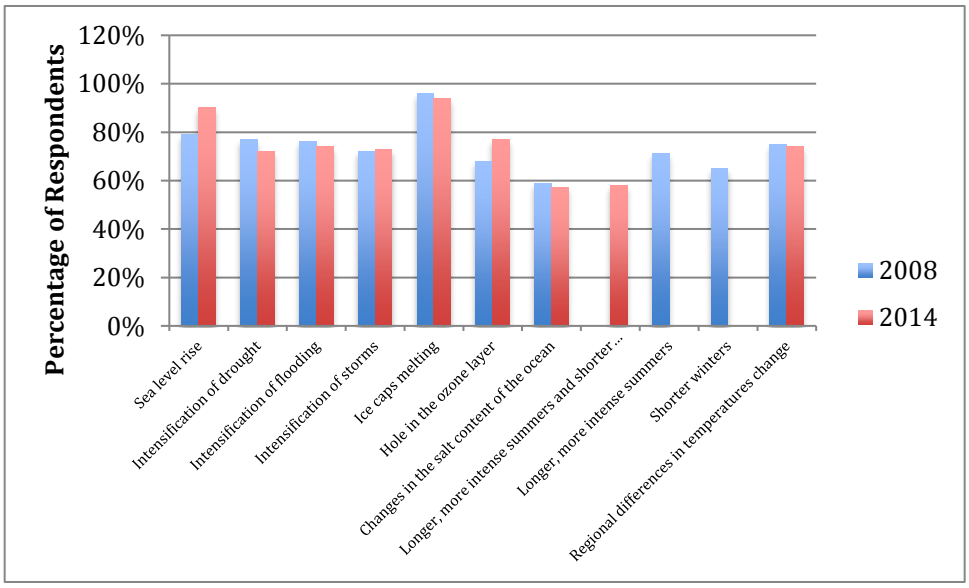


Figure 1.44 Current global climate change is occurring due to human activity? Data

Answer	2008	2014
Strongly Agree	40%	42%
Agree	47%	44%
Feel Neutral	10%	7%
Disagree	5%	5%
Strongly Disagree	2%	3%

Figure 1.45 Current global climate change is occurring due to human activity? Chart

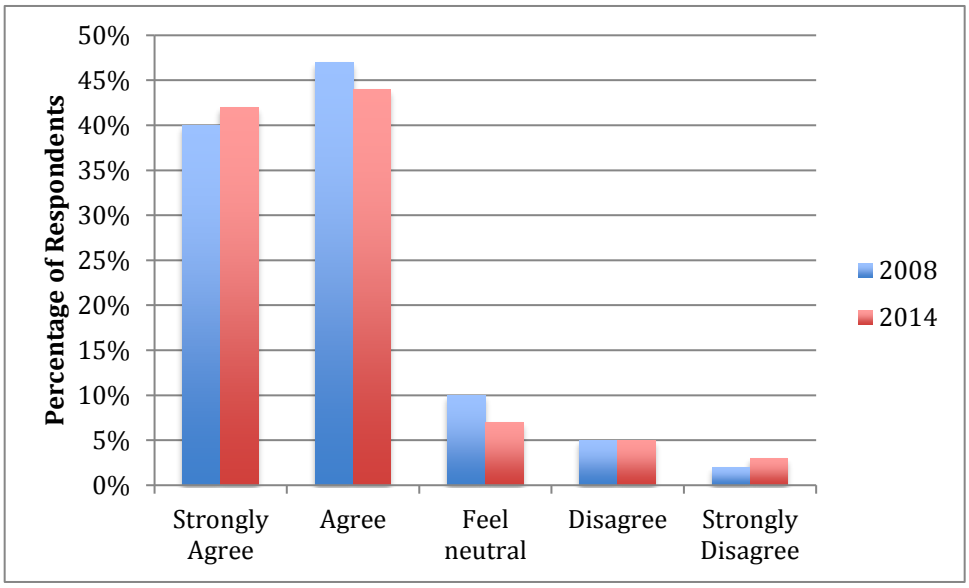


Figure 1.46 If you use your car on campus, how often do you use it? Data

Answer	2008	2014
I do not have a car on campus	40%	46%
0-1 days a week	15%	6%
2-3 days a week	24%	18%
4-5 days a week	11%	12%
6-7 days a week	12%	18%

Figure 1.47 If you use your car on campus, how often do you use it? Chart

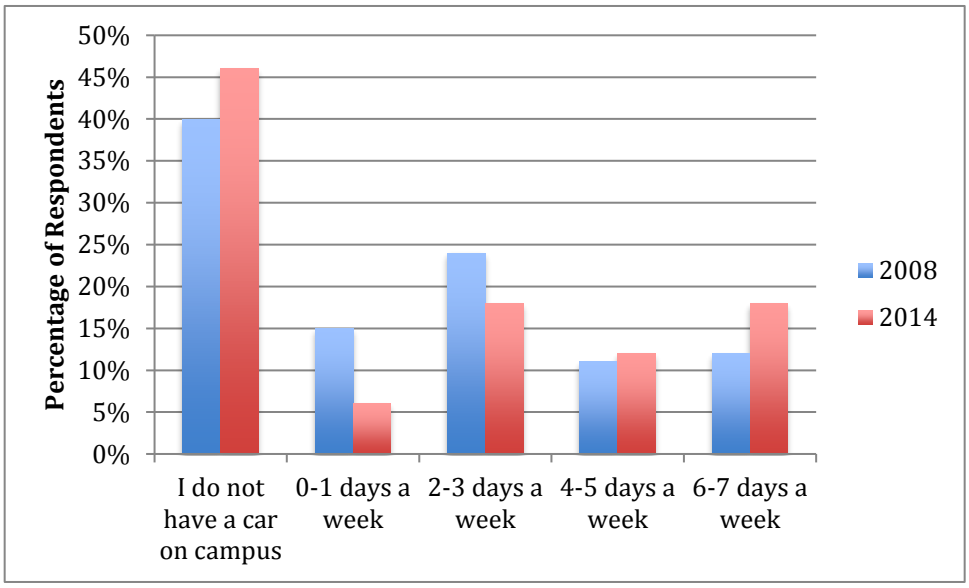


Figure 1.48 If you use a car, where do you drive? Data

Answer	2008	2014
I do not have a car on campus	37%	43%
Downtown Richmond	29%	29%
Carytown	41%	43%
Shopping Malls	43%	30%
Martins/CVS on Three Chopt	56%	51%
Class (2014 Survey)	N/A	20%

Figure 1.49 If you use a car, where do you drive? Chart

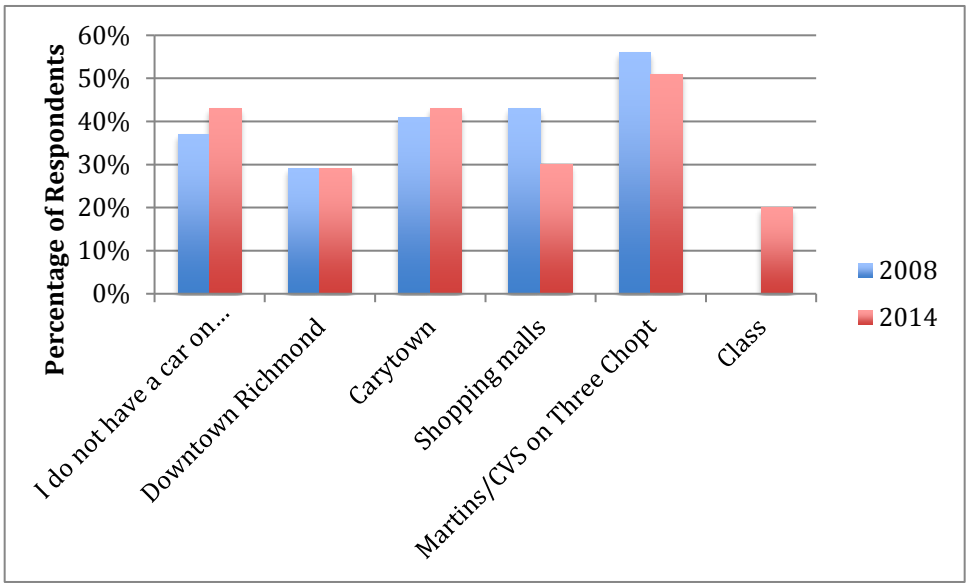


Figure 1.50 What mode of transportation do you usually use to go home? Data

Answer	2008	2014
Personal vehicle	45%	38%
Carpool	14%	10%
Bus	1%	4%
Train	7%	14%
Plane	33%	33%
Other	6%	1%

Figure 1.51 What mode of transportation do you usually use to go home? Chart

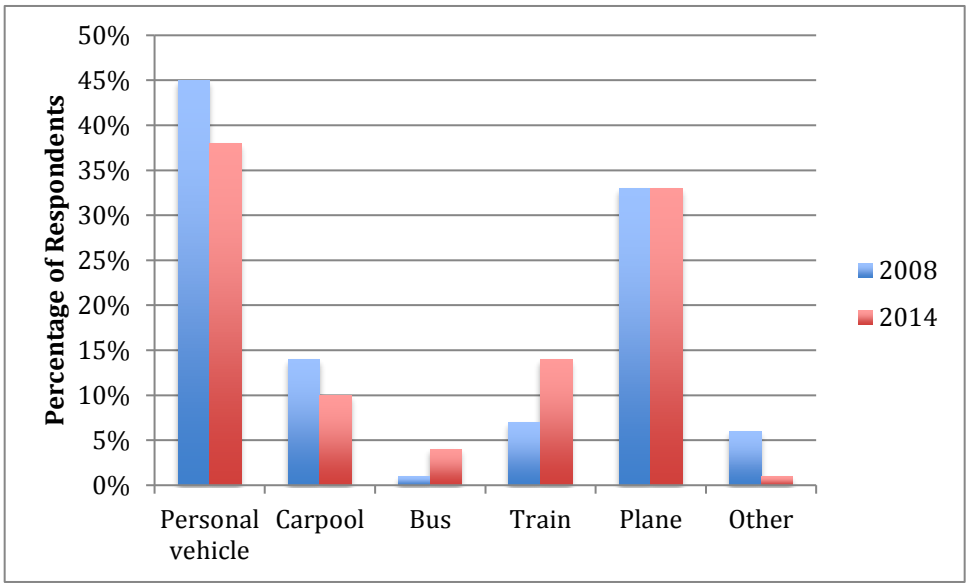


Figure 1.52 How often do you consider the environmental impact of burning gasoline when you drive? Data

Answer	2008	2014
Always	8%	3%
Most of the Time	22%	13%
Sometimes	34%	28%
Not Usually	24%	37%
Never	11%	19%

Figure 1.53 How often do you consider the environmental impact of burning gasoline when you drive? Chart