STAT 141 FINAL PROJECT: A STUDY OF SPRING BREAK PLANS FOR UVM STUDENTS*

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- Spring-Break
- In-State
- Out-of-State
- Overseas
- Burlington
- Home
- Vacation
- Travel
- College

* Every report needs a short, informative title
† These four lines of info were specific to this STAT 141 class requirements
‡ Word Count is of all pages, including Title Page, Abstract, References, Figures and Tables

ABSTRACT

College students partake in a variety of spring break travel plans during their time as a student. These students make up a major segment of the tourism market, and their age plays a role in how travel agencies can promote their travel packages to the students in an appealing way[§]. The purpose of this study is to determine if where students travel is associated with their year in college and what type of student they are (in-state, out-of-state, international)[**]. To conduct this study, 183 randomly selected University of Vermont (UVM) students completed a survey and data was collected on gender, age, college, type of student (in-state, out of state, international), spring break plans (go home, go on vacation, stay in Burlington), miles travelled, number of people travelled with, and days away from campus total. The main research question was "Is there was a relationship between age and travel type for UVM students?". A One-Way ANOVA Test was conducted and yielded significant evidence to support that the average age of students who travel home is not the same as that of those who travel on vacation over spring break. It was found that age was a significant factor to predict destination for spring break, where older students showed a preference for traveling on vacation and younger students went home (p-value = 0.0033). Other hypotheses were tested to determine if there was a relationship between the type of student and vacation type using a Chi-Squared Test[††]. It was found that there is a significant difference between type of student and vacation type (p-value = <0.0001). [More results omitted for this sample paper][‡‡]. This study adds important information to the discussion of trends in student travel.

§ Include the broad significance of doing the study
** Include the purpose of the study
†† Include a brief summary of the methods
‡‡ Include a brief summary of the results and conclusions
Should be no more than half a page

INTRODUCTION[§§]

In recent decades, the number of people who prefer to enrich their cultural life by travelling all around the world is increasing. They are eager to travel, which pushes the tourism industry into rapid and accelerating development. World Travel & Tourism Council (2011) illustrated that the tourism sector has become one of the fastest growing industries in the world's economy, occupying approximately 9.1% of the world's GDP. There is no doubt that the tourism industry is increasing at a high rate and that it affects both domestic and international visitors. According to the research conducted by Borgerding (2001), university students are a major segment in the tourism industry and those university students have contributed to about $14.8 billion per year. Spring break, being a typical and main break for universities, is an optimal and perfect chance to travel to domestic states or even all around the world. Consequently, many university students are highly motivated and there are more than two million students travelling per season (Reynolds, 2004).

Spring break for United States universities is one week typically in March. It is so long that so many university students desire to relax by travelling without any work, study, or presentations. In addition, different students hold different travel attitudes and choose various travel destinations. Some students choose to escape their home country and explore a new culture, new behaviors and new cuisines in foreign continents, such as Asia and Europe. Others choose to travel to different states in the United States.[***]

By clearly realizing and understanding this potential and huge market for those university students who plans to travel during the spring break, an increasing number of travel agents and companies have begun to formulate a series of promotional packages and activities for appealing to those young university students. As is known, the tourism industry rapidly blossomed recently and has occupied almost one-tenth of the entire the United States' GDP. This indicates that travelling during the spring break is considerably important and vital for the whole economy. The United States government also supports this industry and wants to push this industry. Accordingly, it is extremely important for travel agents or companies to correctly and clearly understand the travelling patterns, planning, motivations and tourism destinations of university students (Mattila et al., 2001). [†††]

Studies have not been done to indicate if these travel preferences differ whether a student is a domestic student or international student. This report will lay down a series of specific and core questions for conducting a real and reliable questionnaire for gathering data on student travel plans. Using this data, a test can be done to gather information on age and student type of college students who choose certain travel plans.[‡‡‡]

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§§ It is important to note that this intro section was written by a student who is multilingual. The content accurately depicts what is expected in an introduction, so minor grammar issues should be overlooked.

*** Describe the background of the study. Includes available data.

††† Describe the purpose of the study.

‡‡‡The introduction ends with the aims of the study, the whole section should be no more than two pages.

METHODS[§§§]

STUDY DESIGN

The type of statistical study that was conducted to collect data was a sample survey. In order to employ randomness, 1 in every 10 students was selected to take the survey. The nature and scope of this study design was to determine if there was an association between whether a student is in-state, out-of-state, or international, and whether or not they went home, went on vacation, or stayed in Burlington for spring break.

SAMPLING

The sampling frame for the study was the University of Vermont (UVM), and the target population was the undergraduate students at UVM. The target sample size for this study was 200 students and the realized sample size was 183 students. The response rate for the survey was that for every 40 surveys that were handed out, three people declined participation. The demographic for the participants were male or female, undergraduate students between the ages of 17 and 23, students who are either in-state students, out-of-state students or international students and what college each student is currently in. The units that were used for the variables of analysis were years, days, miles and number of people.

DATA COLLECTION

To collect the data, a survey was used. A survey was created and was handed out to 1 in every 10 students in the Davis center and in the Bailey Howe Library. The surveys were handed out and the data was collected between Tuesday, March 22nd and Friday, March 25th between the hours of 11:00 am and 4:00 pm. The survey questionnaire can be found in Appendix C.

MEASURES

The categorical variables in this study were gender, age, in-state, out-of-state or international student, and where a person went over spring break. The quantitative variables were the number of miles a person travelled, how many people a person travelled with, and the number of days that a person was away from campus. The units for the quantitative variables were miles, number of people and days. The response variable was whether a student went home, went on vacation or stayed in Burlington for break. The explanatory variables were gender, age, miles a person travelled, how many people a person travelled with and how many days a person was away from campus.

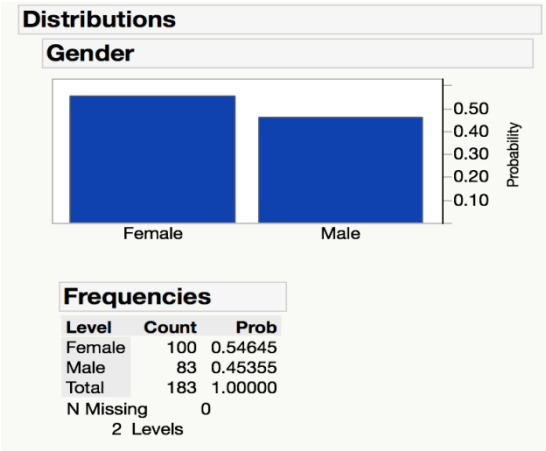
DATA ANALYSIS[****]

The statistical software, JMP pro version 12, was used to analyze the data.

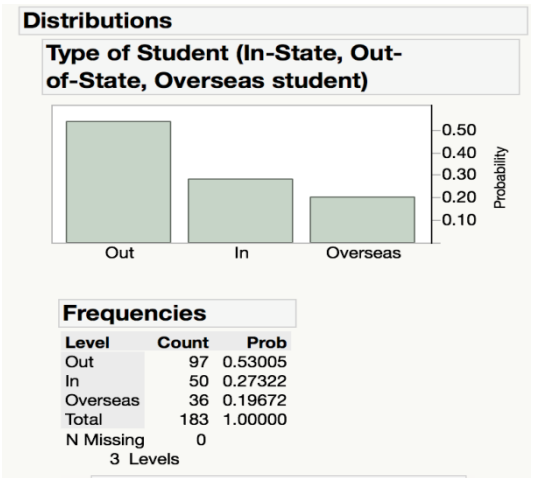
[§§§] Break up the methods section into clear categories so that the study could be repeated
[****] This section should include what software was used to analyze the data.

RESULTS[††††]

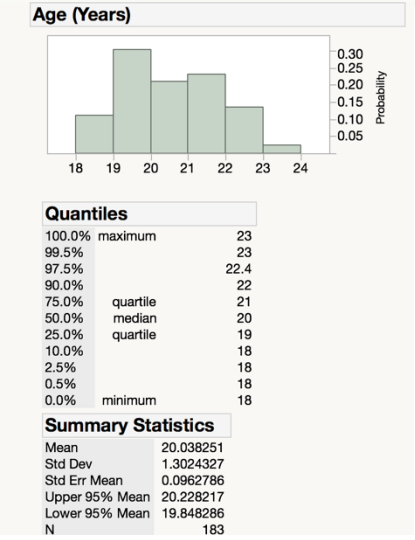
Differential Statistics:
(Some data was removed for this sample essay)



- The sample of 183 students consisted of 55% males and 45% females.



- The sample of 183 students consisted of 53% out-of-state students, 27% in-state students, and 20% international students.



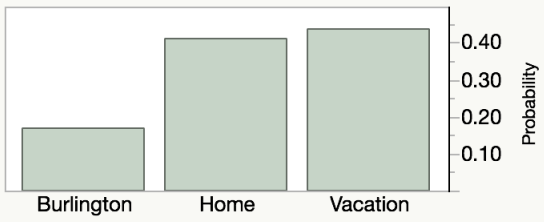
- The sample was well representative of the UVM student age population, with a relatively uniform distribution of ages 18-24 with a mean age of 20.

[††††] This professor requested that all results be included in the paper (both main and subsidiary results). For most other papers, all summary statistics are included in one table, and the table is referred to by its figure title. The interpretations are also printed in paragraph format, not bulleted. Only main results are usually included. This is not the section where the results are interpreted (that's the discussion).

- The purpose of the study was to find trends on the spring break habits of students. The sample shows that 16.4% of students surveyed stayed in Burlington, 40.4% went home, and 43.2% took a vacation.

Distributions

Spring Break (Burlington, Home, Vacation)



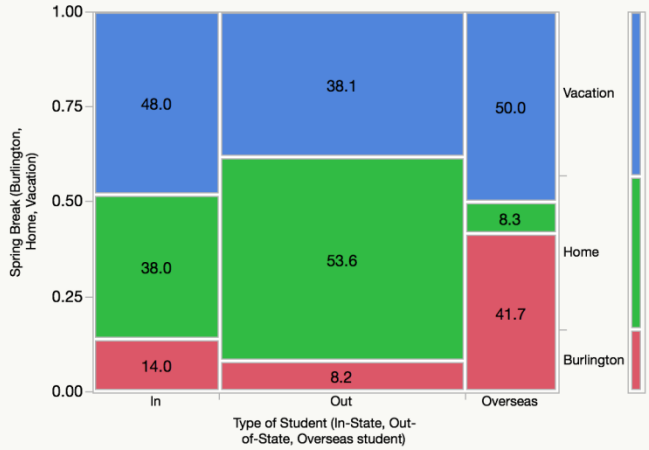
Frequencies

Level	Count	Prob
Burlington	30	0.16393
Home	74	0.40437
Vacation	79	0.43169
Total	183	1.00000
N Missing	0	
3 Levels		

- Of the 183 students in our sample, we found that the largest portion of students who went home for break were out-of-state students. The largest portion of students who went on vacation for break were in-state students. The largest portion of students who stayed in Burlington for break were overseas students.

Contingency Analysis of Spring Break (Burlington, Home, Vacation) By Type of Student (In-State, Out-of-State, Overseas student)

Mosaic Plot



Contingency Table

Spring Break (Burlington, Home, Vacation)

Type of Student (In-State, Out-of-State, Overseas student)	Count Total % Col % Row %	Burlington	Home	Vacation	Total
In		7 3.83 23.33 14.00	19 10.38 25.68 38.00	24 13.11 30.38 48.00	50 27.32
Out		8 4.37 26.67 8.25	52 28.42 70.27 53.61	37 20.22 46.84 38.14	97 53.01
Overseas		15 8.20 50.00 41.67	3 1.64 4.05 8.33	18 9.84 22.78 50.00	36 19.67
Total		30 16.39	74 40.44	79 43.17	183

Inferential Statistics:

First Hypothesis: There is a difference in age between students who go on vacation, students who go home, and students who stay in Burlington.

Assumptions/conditions: ‡‡‡‡Groups Independent? Yes

Samples Independent? Yes

Randomization? Yes

Equal Variance? Yes, roughly the same spread on boxplots

Nearly Normal? Yes, refer to histograms

$H_0 : \mu_{Burlington}=\mu_{Home}=\mu_{Vacation}$

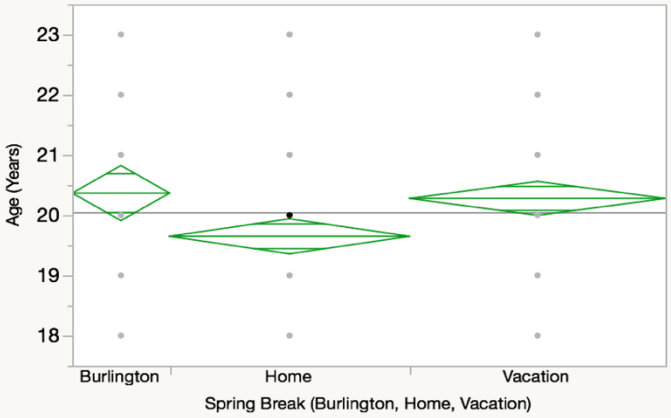
H_A : At least one is significantly different

P-Value = 0.0033

F-Ratio = 5.9110

F-Crit = 3.56

Oneway Analysis of Age (Years) By Spring Break (Burlington, Home, Vacation)



Oneway Anova

Summary of Fit

Rsquare	0.06163
Adj Rsquare	0.051204
Root Mean Square Error	1.26865
Mean of Response	20.03825
Observations (or Sum Wgts)	183

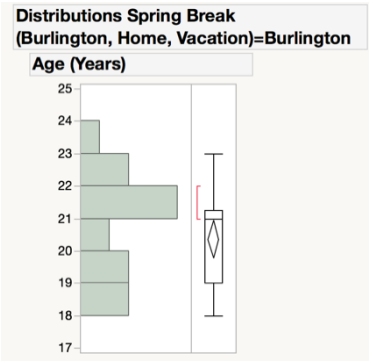
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Spring Break (Burlington, Home, Vacation)	2	19.02729	9.51365	5.9110	0.0033*
Error	180	289.70495	1.60947		
C. Total	182	308.73224			

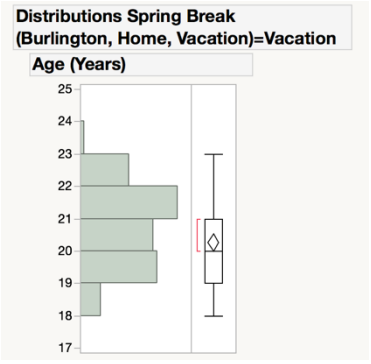
Means for Oneway Anova

Level	Number	Mean	Std Error	Lower 95%	Upper 95%
Burlington	30	20.3667	0.23162	19.910	20.824
Home	74	19.6486	0.14748	19.358	19.940
Vacation	79	20.2785	0.14273	19.997	20.560

Std Error uses a pooled estimate of error variance



Normal Enough



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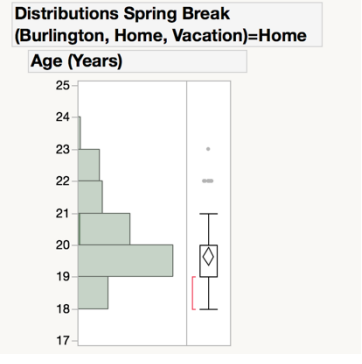


Normal Enough

‡‡‡‡ Usually assumptions and conditions are mentioned in the results paragraphs, not clearly written like this.

Second Hypothesis: Out-of-state students are more likely to go home for spring break

Assumptions/Conditions:

Counted data? Yes

Counts are Independent of each other? Yes

Random? Yes

n < 10% of population? Yes

Expected Values ≥5? Yes

H_0 : $\mu_{Burlington} = \mu_{Home} = \mu_{Vacation}$

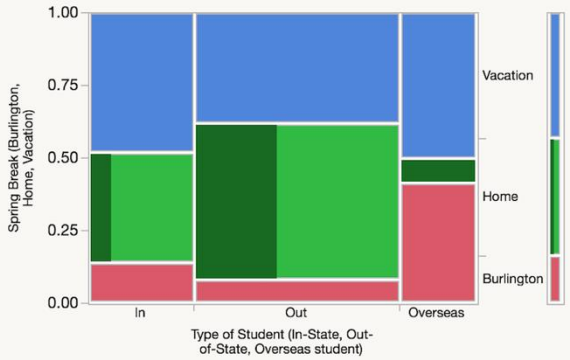
H_A : Student's spring break plans are not distributed uniformly for all residency types

P-Value <.0001

95% CI interval of (0.591,0.795)

Contingency Analysis of Spring Break (Burlington, Home, Vacation) By Type of Student (In-State, Out-of-State, Overseas student)

Mosaic Plot



Contingency Table

Spring Break (Burlington, Home, Vacation)

Type of Student (In-State, Out-of-State, Overseas student)	Count / Total % / Col % / Row % / Expected / Cell Chi^2	Burlington	Home	Vacation	Total
In		7	19	24	50
		3.83	10.38	13.11	27.32
		23.33	25.68	30.38	
		14.00	38.00	48.00	
		8.19672	20.2186	21.5847	
		0.1747	0.0734	0.2703	
Out		8	52	37	97
		4.37	28.42	20.22	53.01
		26.67	70.27	46.84	
		8.25	53.61	38.14	
		15.9016	39.224	41.8743	
		3.9264	4.1614	0.5674	
Overseas		15	3	18	36
		8.20	1.64	9.84	19.67
		50.00	4.05	22.78	
		41.67	8.33	50.00	
		5.90164	14.5574	15.541	
		14.0266	9.1756	0.3891	
Total		30	74	79	183
		16.39	40.44	43.17	

All expected Values are greater than or equal to 5. Refer to Legend.

Tests

N	DF	-LogLike	RSquare (U)
183	4	16.744504	0.0893

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	33.489	<.0001*
Pearson	32.765	<.0001*

P-Value

Students who travel home

Confidence Intervals

Level	Count	Prob	Lower CI	Upper CI	1-Alpha
In	19	0.25676	0.170977	0.366544	0.950
Out	52	0.70270	0.590671	0.794728	0.950
Overseas	3	0.04054	0.013882	0.112547	0.950
Total	74				

DISCUSSION§§§§

The findings of this study analyzed if where college students travel for spring break correlates with their age and type of student that they are. By conducting this research, important information on the demographics of which students are more likely to travel farther distances for spring break was gathered and can be used for marketing in the tourist industry.

The main hypothesis of this study was to investigate if the age of UVM students correlates with where they travel for spring break. Our null hypothesis was that upperclassmen are more likely to go on vacation than to go home for break. All assumptions/conditions were met to conduct a One-Way ANOVA Test. The results are statistically significant ($p=0.0033$) so we reject the null hypothesis. UVM upperclassmen are more likely to go on vacation than to go home for spring break. This could be because upperclassmen have more money to travel if they have worked for a longer period of time, or that they spent more time planning their vacations over the years, or that they are not as homesick as underclassmen and do not desire to travel home because they have been living away from home for longer. Of the students who travelled on vacation over spring break, their 95% confidence interval to estimate the true mean age of travellers is (19.997, 20.560), which is around the age of most juniors and about a year on average older than those who plan to go home.

Another investigation conducted for this study was to see if types of UVM students participate in certain types of travel over spring break. We tested three hypotheses. The first one being out-of-state students are more likely to go home for spring break. The second one being in-state students are more likely to go on vacation for spring break. And the third being overseas students are more likely to stay in Burlington during spring break. Our null hypothesis was that each type of student travelled home, travelled on vacation, and stayed in Burlington equally as often as the others. All assumptions/conditions were met to conduct a Chi-Squared Test. The results are statistically significant ($p<0.0001$*). UVM student type can be used to predict their spring break location.

A greater proportion of out-of-state students travel home for spring break than in-state and overseas students. Of the students who travelled home for spring break, their 95% confidence interval to measure the true proportion of out-of-state travellers is (0.591, 0.725), which is quite high compared to those of in-state (0.171, 0.367) and overseas (0.014, 0.113) students. The reason for this result could be because out-of-state students do not see their families as often as in-state students due to far distances. The long vacation makes it easier to take time to travel home.

Additionally, a greater proportion of in-state students and out-of-state students travel on vacation than overseas students. Of the students who travelled on vacation for spring break, their

§§§§ Include deductions from results. Start with the most interesting findings. Report conclusions in the context of the experiment and where the data came from. Compare and contrast expected findings with actual findings. Explain the unexpected results. Avoid excessive or irrelevant information. Use language that a non-statistician would understand. *Key Note*: Results never "prove" anything; they only ever "support" the hypothesis, so be careful about using the word "prove" in this section.

95% confidence interval to measure the true proportion of in-state vacation travellers is (0.213, 0.412) and out-of-state travellers is (0.362, 0.577). This is larger than the 95% confidence interval of (0.149, 0.332) measuring the true proportion of overseas student vacation travellers. This correlates with the research that domestic students are more likely to explore different destinations away from home during vacations. These students may see their families more often than out-of-state students and do not have the desire to spend time with them if they already do during the school year.

And lastly, a greater proportion of overseas students stay in Burlington for spring break than out-of-state or in-state students. Of the students who stayed in Burlington for spring break, their 95% confidence interval to measure the true proportion of overseas students is (0.332, 0.668), which is much larger than that of out-of-state students, (0.142, 0.444) and in-state students, (0.118, 0.409). This could be because Burlington is a drastically different culture than that of their home countries and so it is more unfamiliar and more interesting to stay at for vacation than domestic students.

LIMITATIONS AND RECOMMENDATIONS*****

There were some limitations throughout the study that had to do with flaws in the data collection process. One of the limitations was in the way the group members specified the question "Approximately how many miles did you travel if you traveled?" on the sample survey. Some of the members described this being round trip mileage, while others described it as one-way. This was an issue because some of the responses were half the distance that they could have been so there was an inconsistency in the total miles traveled. This could have caused outliers if we treated the question as one way and included large round-trip data points.

Another limitation was in the ability to survey a representative group of our target population of UVM students. Our group members were first and second year students, so it was more likely that we interacted with students of similar ages when surveying the UVM student population. This is why the greatest number of students surveyed were 19 and 20 years old. This could have been cause for a skewed representation of the UVM population as a whole if there are more students who are 19 and 20 years old compared to other ages surveyed.

One of the group members is an international student so it is possible that they had more interactions with international students. This could have also caused a skewed representation of the UVM population if a greater proportion of international students were surveyed in the study compared to the proportion of international students that attend UVM. This could have affected our data when looking at how many students went home, went on vacation, or stayed in Burlington. Due to the long distance needed to travel to go home, international students tended to

***** Provide any reservations about the study. Discuss how far the original aim was successfully achieved. If it was not achieved, how might things have been done differently? Some papers include this in the results section, so check with your professor for their standards.

stay in Burlington which caused a disproportionately high number of students staying in Burlington based on our collected data.

It was easiest to survey students in popular areas on campus. Most of the group members chose to survey in either the Davis Center or the Bailey Howe Library. By doing this, we could have missed certain portions of the student body who do not visit either of these locations. Additionally, one of the group members collected most of their surveys in the Harris-Millis dorm complex, which houses many international students. This also can cause misrepresentation within the population of students collected compared to the UVM student body as a whole.

Aha moments included when we realized our skewed proportion of overseas students compared to the UVM student body as a whole. This may have skewed our One-Way ANOVA test analyzing age and spring break destinations

For future studies, to address the limitations we would clarify the survey to say "round trip" or "one way" mileage to gather more consistent data. Also, be more careful about surveying a random population to address the issue of disproportionate age ranges and international students represented. This can also be addressed by surveying in a more diverse range of locations and surveying a greater population of students.

To expand on the study, more college campuses could be included as well as collecting a larger sample size. This would allow us to test the hypothesis for not only UVM students but college students in general as well as obtain more precise data with a larger collection of data.

APPENDIX A - REFERENCES†††††

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††††† Cite any books or journal articles that were referred to for research. The style of citations varies based on discipline.

APPENDIX B – DATA LISTING[‡‡‡‡‡]

Gender	Age (Years)	Type of Student (In-State, Out-of-State, Overseas student)	Spring Break (Burlington, Home, Vacation)	Miles Travelled (Miles)	Number of People Travelled With	Days Away From Campus	Travel Group	UVM College
Female	19	Out	Vacation	1560	4 or more	11	4	CALS
Female	19	Out	Home	270	N/A	7	0	CNHS
Female	20	Out	Vacation	450	4 or more	7	4	Rubenstein
Male	19	Out	Vacation	450	4 or more	7	4	Rubenstein
Male	19	In	Vacation	626	3	8	3	Business
Male	19	Out	Vacation	1200	3	6	3	CAS
Female	18	In	Home	6	1	7	1	
Female	21	Out	Home	200	N/A	7	0	CAS
Female	19	Out	Home	1000	N/A	8	0	CNHS
Female	19	Out	Home	1949	N/A	7	0	CEMS
Male	22	Out	Burlington	6000	2	3	2	Post Bac
Male	21	Out	Home	150	N/A	5	0	CAS
Male	22	Out	Home	250	N/A	4	0	CAS
Female	18	In	Burlington	0	N/A	0	0	CNHS
Male	20	Out	Home	200	N/A	9	0	CALS
Female	21	In	Vacation	1500	2	5	2	CAS
Female	19	Out	Home	6000	N/A	8	0	CAS
Female	18	In	Home	15	N/A	10	0	
Female	19	In	Home	0	N/A	0	0	CNHS
Female	20	Out	Vacation	2900	N/A	7	0	CAS
Male	21	Out	Home	2500	N/A	9	0	CAS
Female	20	Out	Vacation	5000	4 or more	10	4	Rubenstein
Male	21	Out	Vacation	6886	2	10	2	Rubenstein
Male	20	Out	Vacation	3700	1	0	1	CAS
Male	21	Out	Vacation	1636	4 or more	7	4	CAS
Female	19	Out	Home	100	N/A	5	0	CALS
Female	20	In	Home	0	N/A	7	0	CALS
Female	21	Out	Burlington	0	N/A	4	0	CALS
Female	23	Out	Vacation	300	4 or more	9	4	Post Bac
Female	21	Out	Vacation	1000	4 or more	8	4	

….

(Most of the data was omitted for this sample essay)

APPENDIX C – SURVEY TOOL

This is where the survey that was distributed to students would be found.

APPENDIX D – IRB CERTIFICATES

This is where student's IRB certificates would be found.

‡‡‡‡‡ Use appendices to include anything that doesn't fit naturally into the main body of the report and cannot be reasonably omitted (for example, this professor required the data from the surveys).