

DISPOSABLE CUP VERSUS REUSABLE MUG USE BEFORE AND DURING TIM HORTONS' *ROLL UP THE RIM* CONTEST

ENVS 3502 Environmental Problem Solving // Dalhousie University

K. Finlayson-Buck // L. Janega // J. Maxwell // D. Verbeek // B. Weddle

April 13, 2011

Table of Contents

Executive Summary	1
Introduction	2
Research Methods	7
Results	11
Discussion	17
Summary of research question and purpose of the research	17
Overview of significant findings	17
A consideration of the findings in light of existing research studies	18
Implications for theory and practice	19
Conclusion	20
Recommendations for action	20
Recommendations for further research	22
References	24
Acknowledgements	25
Appendices	26
Appendix 1 – Survey and questionnaire schedule	27
Appendix 2 – Tally sheet and survey results	28
Appendix 3 - Questionnaire for reusable mug users	29
Appendix 4 - Questionnaire for disposable cup users	30
Appendix 5 – Project timeline	32
Appendix 6 – Funding proposal	34
Appendix 7 – Ethics proposal	35
Appendix 8 – Research Proposal	42

Executive Summary

Waste diversion is beneficial whether from an economic, social, or environmental perspective. Landfills – the final destination of much waste – are costly and pose environmental and health concerns. By targeting consumption patterns before waste is produced, this externality can be more effectively avoided. At the consumer level, waste can be reduced by promoting behaviours that avoid over-consumption of goods with associated waste.

This study narrows the scope of waste diversion into a specific but very common waste item – the disposable coffee cup. At the Dalhousie University Student Union Building, the site of our study, an estimated 600 disposable cups are used daily (Cindy MacDonald, Personal Communication, April 2 2011). Reusable mugs are a favourable alternative to paper cups given their potential for repeated use. The Tim Hortons location in the Dalhousie Student Union Building was examined for both the frequency and proportion of reusable mug use, before and during *Roll Up The Rim*. In so doing, further insight was gained regarding consumer behaviour while addressing the influence of promotions on consumer behaviour patterns – an area that previous similar studies had failed to take into account. Thus, changes in consumer behaviour became the central goal of the study.

The data collected shows that *Roll Up The Rim* affects consumer behaviour, and is therefore a worthwhile focus for further study. In addition to this justification, the study provides solid baseline data for future studies.

Introduction

In 2008, Nova Scotians disposed of 354,231 tonnes of waste, of which 58% came from non-residential sources. (Statistics Canada, 2010). While this total waste figure, including residential waste, shows a decrease from 2006 levels, waste from non-residential sources increased by over eight percent between 2006 and 2008. The government of Nova Scotia has pledged to reduce and/or divert waste by 50% by the year 2015, while aiming to limit the average annual waste per person to 300 kilograms (661 pounds) (Government of Nova Scotia, 2010). The increase in non-residential waste across the province suggests a definite need for further action.



Figure 1: Landfill in Calgary, AB

The majority of annually generated waste goes into landfills, which is costly and occupies land that could be used more sustainably. Although the economic costs to waste generation are sufficiently disagreeable, landfills pose a plethora of environmental concerns. These include, but are not limited to, groundwater contamination; emissions of the greenhouse gas, methane; spread of disease by scavengers; and long term health concerns for nearby residents (Taylor, 1999).

This study narrows its focus of waste reduction to disposable coffee cups, common in any public waste receptacle. A study in 2008 found that Tim Hortons on the Dalhousie University campus used 176,800 disposable cups a week (Fairbairn, Fear, Jakubchik-Paloheimo, Lyon, 2008). Although the energy used to manufacture a reusable mug is higher than that of a single disposable cup, the reusable mug's ecological footprint decreases with use. Depending on the material, buying a reusable mug is equal to using 15-40 disposable cups in terms of energy and waste throughout production, transportation, use and disposal. Considering that many people purchase coffee on a regular basis, it becomes quite clear that, if widely used, reusable mugs would safeguard many resources.

Numerous studies concerning the use of disposable cups and related environmental effects have been conducted on both large and small scales. Of particular interest were those studies conducted at the University of British Columbia, University of Waterloo and at Dalhousie University. With an ever-growing push for ecologically friendly and sustainable lifestyles, many universities, including Dalhousie, have striven to meet sustainability goals on campus.



Figure 2: Lineup at Tim Hortons (SUB location) during *Roll Up The Rim*

In an effort to promote awareness of the negative environmental impacts of disposable cups, students at the University of Waterloo held an event entitled “No Disposable Cups Day” in which campus coffee shops did not supply disposable cups to customers for one day. Although the event only spanned one day, the event was a successful attempt to raise awareness concerning wasteful consumption by highlighting one particular branch of the problem – in this case, disposable cups. The event at the University of Waterloo consisted of an awareness campaign, a promotional display and a survey, which determined people’s receptiveness to eliminating disposable cups. According to Torreiter (1994), it was determined that students viewed the removal of disposable cups on the University of Waterloo campus as a positive course of action. On the other hand, staff and faculty members were more likely to view this change unfavourably (Torreiter, 1994).

At the University of British Columbia, similar efforts were put forth under “Lug-A-Mug,” which promoted the use of reusable containers and reducing the use of disposable cups – thereby reducing the amount of waste produced on campus (Teh et al., 2008). Similar to the awareness campaign at Waterloo, the University of British Columbia highlighted the importance of educating the public about the negative environmental impacts associated with disposable cups (Teh et al., 2008). The University of British Columbia and the University of Waterloo have striven for environmental sustainability through various efforts and in following such initiatives, Dalhousie University is capable of becoming a more sustainable campus.

Examining related studies that have been conducted throughout Dalhousie University provided baseline data; that is, data collected to establish and understand the existing conditions before any kind of experimental manipulation (Google definitions, February 28, 2011). This was useful for gaining knowledge of past and current approaches to a given issue and analyzing their varying levels of successes or failures. Studies, experiments, and surveys conducted by previous environmental and sustainability groups at Dalhousie University have examined consumption of disposable cups. Primary objectives of these studies included collaborating with suppliers and consumers to increase the use of reusable mugs on campus via public knowledge and accessibility. For example, a recent study by Fairbairn et al. (2010) was conducted by a group of students from the ENVS 3502 course at Dalhousie University, which examined waste generated by disposable cups at Second Cup in the Killam Library. The group’s main objective was to outline the feasibility of decreasing the demand for disposable cups. By performing numerous surveys and observations, the group obtained data, which helped them to better understand the students’ behaviour and the motives behind their behaviour. The study showed that “81%

of those surveyed own a reusable mug but 82% of those observed do not use their reusable mug” (para. 4). Students suggested that remembering to take their travel mugs with them, as well as efforts to keep them clean were the leading obstacles involved with their lack of use (Fairbairn et al., 2010).



Figure 3: *Roll Up The Rim* contest cup

The purpose behind this study was to gain insight on consumer behaviour, by which waste is ultimately produced, by addressing Tim Hortons' *Roll Up The Rim* contest, previously overlooked by academic studies relating to disposable cup use. Tim Hortons' *Roll Up The Rim* campaign is a corporate strategy devised to increase sales by offering customers reasonable chances of winning a prize with the purchase of a hot beverage in a disposable cup. While the contest contributes to environmental problems through incentives to purchase disposable cups needed to win, it also generates a unique opportunity to study consumer behaviour. The research question this study aimed to answer was the following:

How does the frequency and proportion of mug use at Dalhousie's Student Union Building's (SUB) Tim Horton's change during the *Roll Up The Rim* campaign? The chance of winning a prize brought a new psychological variable affecting consumption, one that was certainly worthy of investigation. It was hypothesized that there would be an increase in frequency and proportion of disposable cup use during *Roll Up The Rim* coupled with a decrease in the frequency and proportion of reusable mug use during *Roll Up The Rim*. This report entails a description of our research methods, their results, a discussion of significant findings, and recommendations for further research and action.

Research Methods

In order to accurately measure the impact of the Tim Hortons' *Roll Up The Rim* contest on the frequency and proportion of reusable mug use, both qualitative and quantitative research methods were used. Non-intrusive observation was employed to quantify changes in the number of customers and reusable cups used during *Roll Up The Rim*.

Non-intrusive observations consisted of tallying cups used by Tim Hortons' patrons without interacting with the customer. The use of quantitative methods enabled statistical testing to look for a statistically significant change in behaviour among Tim Hortons' customers.

Qualitative methods in the form of a questionnaire were used to gain insight into how Tim Horton's *Roll Up The Rim* contest factors into customers' decision-making.

Our sample population was limited to the Tim Hortons in the Dalhousie SUB. We used this site to conduct both the questionnaire and the non-intrusive observations. There is a second Tim Hortons location at Dalhousie on the second floor on the Life Sciences Centre as well as one in the Tupper Building, however, the SUB location was chosen since it is not

associated with any specific faculty, increasing the likelihood of there being patrons from multiple disciplines within the university.

The non-intrusive observations consisted of two data collection periods. The first of these was February 14 to February 18, the week before the *Roll Up The Rim* contest began (Monday to Friday only). The second of these periods took place during a week of the *Roll Up The Rim* contest. The same time slots and days of the week were used for each of these data collection periods (Table 1, Appendix 1). Observation periods are of a staggered nature in order to gather data from as many time periods as possible in case Tim Hortons' patrons from different days and times had different behavioural patterns. The same schedule was used for both of the observation weeks, which allowed us to measure differences in behaviour between two sets of specific time periods.

During their assigned time the observer collected data from the furthest north cash register that was open, using a tally sheet (Table 2, Appendix 2). There are two cash registers at this location. The decision to watch only one cashier was made as observing two cash registers at a time could result in inaccurate data because it was not possible for one observer to closely observe two cashiers during hectic time periods. The furthest north cash register was chosen as this was the one that customers tended to go to when both cashiers were open and there was no line.

Observers collected data on how many customers purchased one hot beverage; the number of customers purchasing one hot beverage with a reusable mug; the number of customers using a disposal cup for their single hot beverage; and the number of customers who used a reusable mug for their hot beverage, yet still accepted a *Roll Up The Rim* disposal cup when prompted. Only those customers who bought a single hot drink were

included because they were eligible to use a *Roll Up The Rim* disposable cup. Furthermore, only customers who ordered a single hot beverage were counted, as attempting to observe customers ordering multiple hot beverages may have resulted in inaccurate data should the observer have been unable to count the number of cups. When customers ordered a single hot beverage but received two cups, we only counted one of the two disposable cups, because it was not always possible for an outside observer to discern the number of cups being used for a single purchase.

Data collected may have been influenced by various factors outside of our control. For example, certain green initiatives on campus such as “Muggy Mondays” may have caused fewer patrons to bring reusable mugs to Tim Hortons since they were able to receive a free hot beverage elsewhere. Additionally, the small number of observers and the limited time available for data collection prevented larger sample sizes from being used.

Once we collected the observational data, it was analyzed using the paired t-test. The t-test is appropriate because it measures the likelihood that there is a difference in the means from before and after *Roll Up the Rim*. Also, because we observed at the same time, location and day each week, a paired t-test would generate more accurate results. Two tests were completed: one to test for a change in the number of customers and a second to test for a change in the proportion of reusable mugs used. This allowed us to assess whether or not there was a change in behaviour between pre-*Roll Up The Rim* and during *Roll Up The Rim*.

From March 14 to March 18 questionnaires were conducted. Customers were approached after making a purchase to ensure that questioning did not impact behaviour. The first person to finish their transaction upon observer arrival was asked to participate. Once the

questionnaire was completed, the interviewer asked the next customer ordering a single, hot beverage to participate in the questionnaire. This continued until either 15 questionnaires were filled out or the interviewer had spent a full hour and a half collecting data at Tim Hortons. Due to the small proportion of customers using reusable mugs, each reusable mug user was approached with a questionnaire. Each group member either completed 15 questionnaires or spent an hour and a half collecting data, for a total of 71 samples. A total of 15 questionnaires were completed each day for Monday, March 14; Tuesday, March 15; and Thursday, March 17 while 13 were completed each day for Wednesday, March 16 and Friday, March 18. The sample size of 75 was chosen because it was feasible given time limitations, but also provided a large enough sample to distinguish patterns within the data.

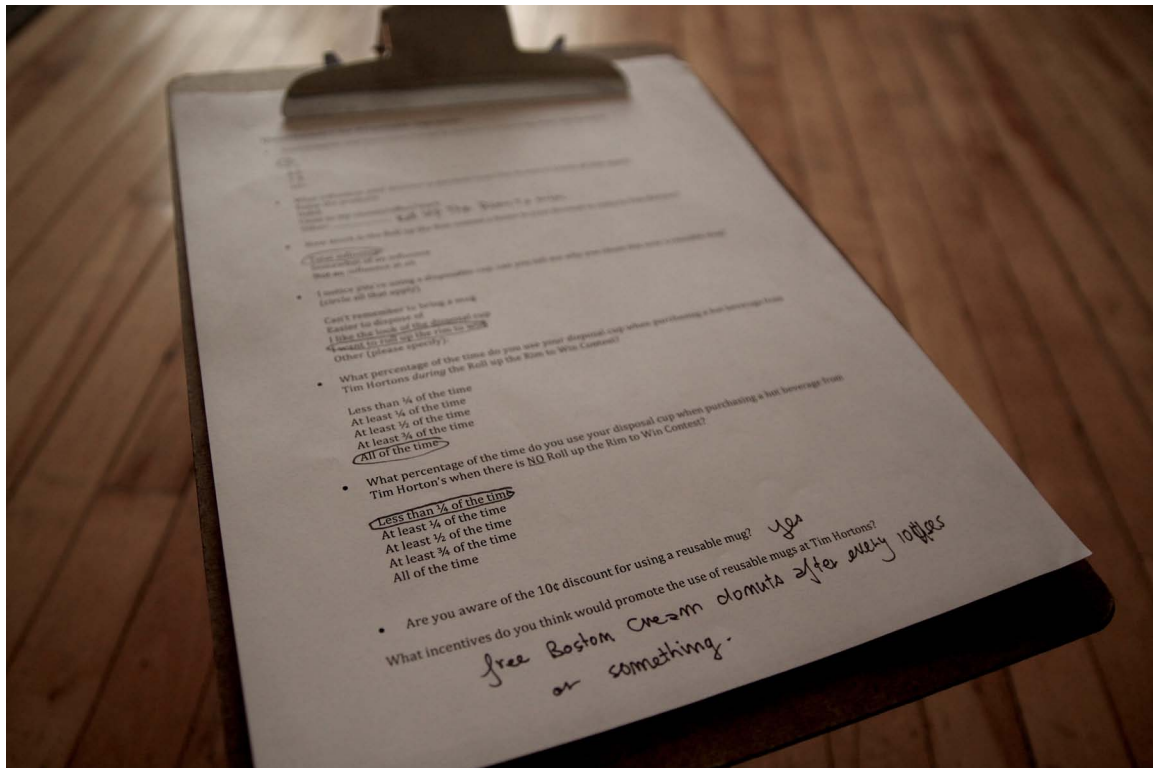


Figure 4: Disposable cup user questionnaire

There were two questionnaires: one for reusable mug users and another for patrons who used a disposable cup (See Appendices 3 & 4). We asked the questions orally and filled out the questionnaire for the participants; this prevented respondents from walking away with our questionnaires and allowed for clarification of any unclear questions on the survey. In order to increase people's willingness to participate we offered them an incentive. When the participant was approached by the observer they were informed that by completing the questionnaire they would be eligible to participate in a draw for a five-dollar gift certificate from Just Us! Café.

Results

A significant increase in the number of customers at Tim Hortons was observed during *Roll Up The Rim*. An average of 52.8 customers ordering a single, hot beverage were served at each cash register during each 1.5-hour observation session prior to *Roll Up the Rim*, while an average of 86.2 were observed during *Roll Up The Rim*. Using a paired t-test to test the null hypothesis that there was no change in the number of customers ordering a single, hot beverage before and during *Roll Up The Rim* the p-value was found to be less than 0.05. Therefore, we rejected our null hypothesis and concluded that there was a significant change in Tim Hortons' customers before and during *Roll Up The Rim*.

There was an observable increase in the number of patrons using disposable cups during *Roll Up The Rim*. A grand total of 417 customers using disposable cups was observed during *Roll Up The Rim* – a statistically significant increase in disposable cups compared to the 251 disposable cup customers observed before *Roll Up The Rim*.

The average number of Tim Hortons' customers who brought a reusable mug before *Roll Up The Rim* was 2.6, while the average number of customers who used their reusable mugs during *Roll Up The Rim* was 2.8. This failed to support our hypothesis that the number of patrons using reusable mugs would decrease during *Roll Up The Rim*. However, this increase in reusable mug customers during *Roll Up The Rim* was not found to be significant.

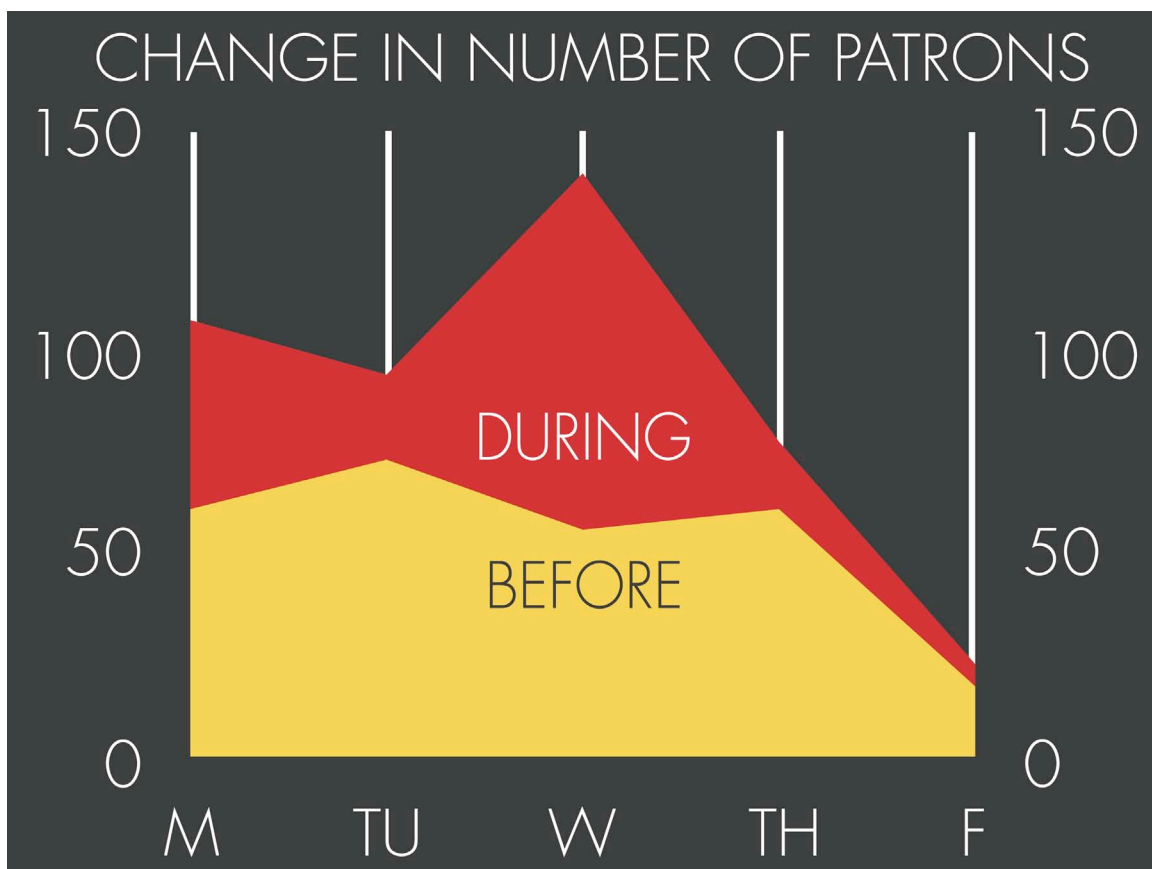


Figure 5: Change in number of patrons before and during *Roll Up The Rim*

The average percentage of Tim Hortons patrons who used reusable mugs for hot beverages was 4.92% before *Roll Up The Rim* but dropped to 3.25% during the contest. Statistically, there was no significant change in the proportion of reusable mug users before and during *Roll Up The Rim*. A paired t-test was used in this statistical analysis. During

three of the observation periods there was a decrease in the proportion of reusable mugs use, however, on Wednesday and Thursday there was a higher proportion of reusable mugs used during *Roll Up The Rim*. This increase may have been due to random variation, therefore, having more samples over a longer period of time may have resulted in statistically significant results. It was observed that 36% of customers who used reusable mugs still accepted disposable *Roll Up The Rim* cups during the contest.

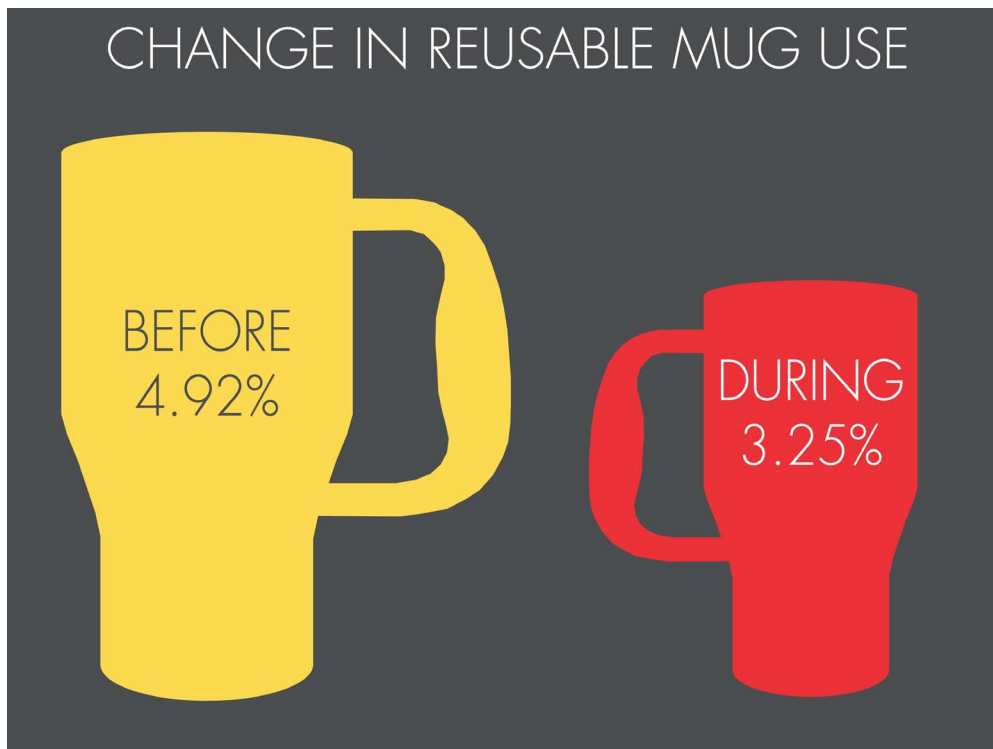


Figure 6: Change in reusable mug use before and during *Roll Up The Rim*

Compiled disposable cup questionnaire results indicate that 38.89% of customers had an average of four to six weekly hot beverage purchases from Tim Hortons while 33.33% had one to three purchases; 11.11% had zero purchases; 9.72% had seven to nine purchases; and 6.94% had ten or more weekly hot beverage purchases from Tim Hortons, on average.

Disposable cup use, as identified by questionnaire participants, changed significantly as a result of *Roll Up The Rim*. Prior to the contest, 33.96% of respondents indicated that they

always use a disposable cup at Tim Hortons. During the contest, this number almost doubled to 62.86% of respondents, who indicated that they always use a disposable cup during *Roll Up The Rim*.

Prior to *Roll Up The Rim*, 33.96% of customers also responded that they use a disposable cup 1 - 24% of the time; 13.2% used a disposable cup 50 - 74% of the time; 9.04% used a disposable cup 25 - 49% of the time; 7.55% used a disposable cup 25 - 49% of the time; and 1.87% claimed to never use a disposable cup.

During *Roll Up The Rim*, 11.43% of customers reported using a disposable cup 1 - 24% of the time; 8.57% used a disposable cup 25 - 49% of the time; 8.57% used a disposable cup 50 - 74% of the time; 8.57% used a disposable cup 75 - 99% of the time; and 0% claimed to never use a disposable cup.

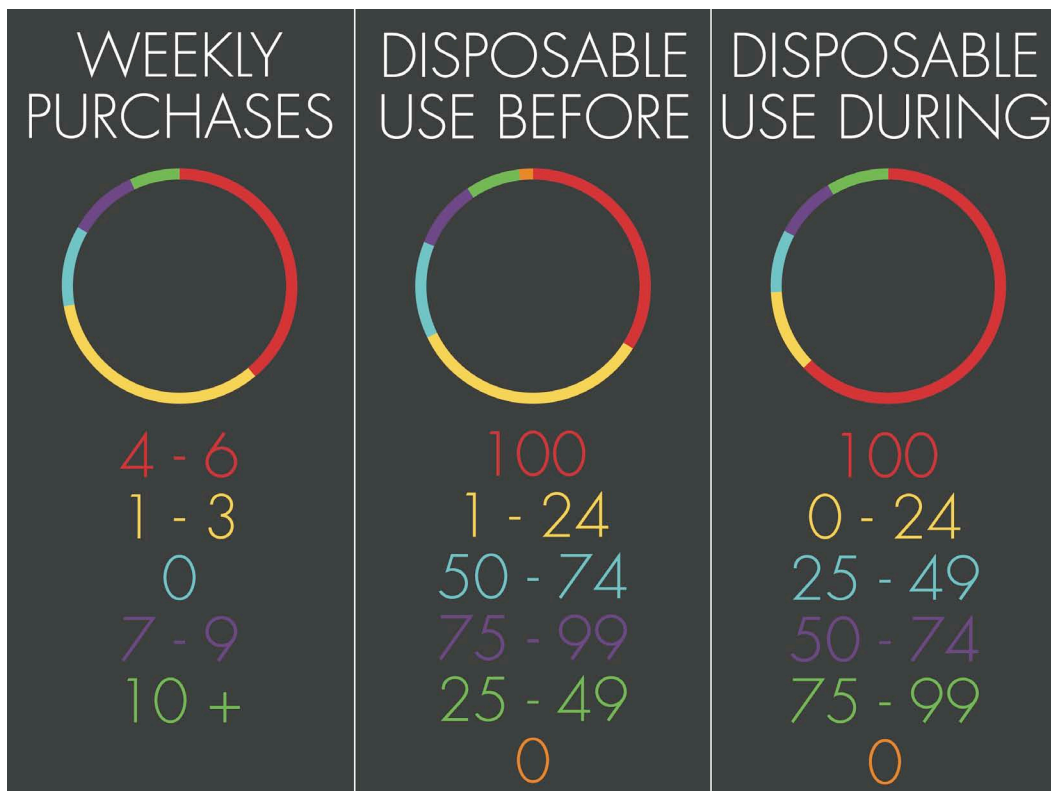


Figure 7: Weekly Tim Hortons purchases; disposable cup use before *Roll Up The Rim*; and disposable cup use during *Roll Up The Rim*

Questionnaires also attempted to uncover why customers preferred to purchase hot beverages at Tim Hortons, regardless of cup choice. Convenience, at 41.25%, was the most cited factor in the decision to purchase from Tim Hortons. Enjoyment of products followed at 26.25% while 17.5% reported habit, 7.5% cost and 7.5% stated Tim Hortons *Roll Up The Rim* contest as their reason.

Questionnaire participants were also asked how much the *Roll Up The Rim* contest factored in their decision to purchase from Tim Hortons. Questionnaire results indicate that 46.48% of participants were somewhat influenced by *Roll Up The Rim* while 40.85% were not influenced. Only 12.68% cited being extremely influenced by the contest.

Tim Hortons' patrons using disposable cups were asked about their choice to use a disposable cup instead of a reusable mug. 33.75% of participants claimed to forget to bring a reusable mug and 22.50% said it was inconvenient in terms of transporting and cleaning. 21.25% of participants used a disposable cup because they wanted to take part in the *Roll Up The Rim* contest; 8.75% didn't own a reusable mug; 6.25% did not think to bring one; 6.25% continually lose reusable mugs; and 1.25% were buying hot beverages for someone else.

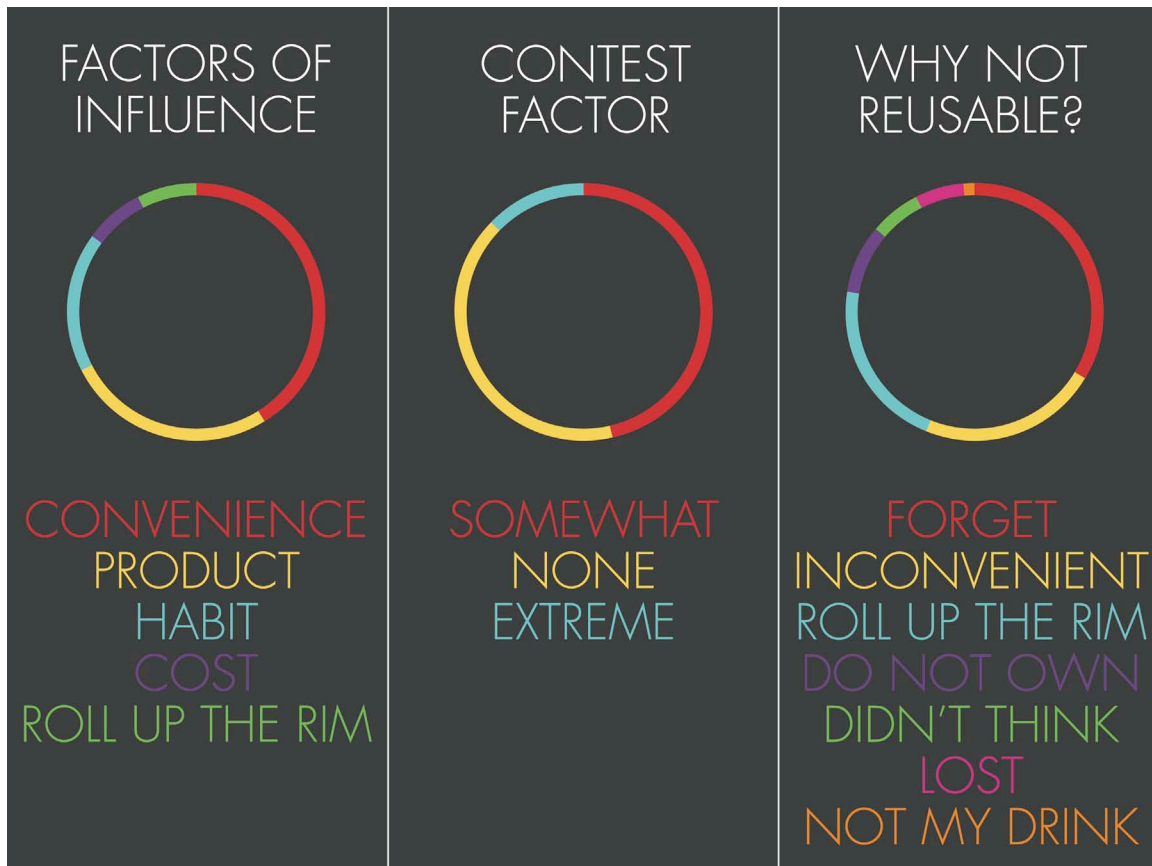


Figure 8: Factors of influence to purchase from Tim Hortons; *Roll Up The Rim* contest factor; and reasons for not using a reusable mug

Most people, 55.71%, were not aware of the 10-cent discount offered by Tim Hortons at Dalhousie University for reusable mug use.

Due to few numbers of observed reusable mug users during the *Roll Up The Rim* contest, zero respondents completed the reusable mug questionnaire. Each person who brought a reusable mug was approached, however, each one of them declined and no reusable mug questionnaire data was collected.

Discussion

Summary of research question and purpose of the research

The research question of the study was: How does the frequency and proportion of mug use at Dalhousie's Student Union Building's (SUB) Tim Hortons change during the *Roll Up The Rim* campaign. The purpose of this study was to examine how incentives, such as *Roll Up The Rim*, change behaviour. There was a statistically significant increase in the frequency of customers and disposable cup users, however, no statistically significant change in proportion of reusable mug users was found. This may have been due to the small sample size.

Overview of significant findings

By using two methods to collect data, non-intrusive observations and questionnaires, accurate data was collected pertaining to number and proportion of disposable cup and reusable mug use, as well as motives and reasoning behind the behaviour of consumers. Additionally, barriers to reusable mug use were an important factor to address. Despite limitations including time and low numbers of reusable mug use, several notable findings emerge.

Though the lack of reusable mug questionnaire participants is disappointing, a 33.33% increase in disposable cup use during *Roll Up The Rim* proved to be significant and greatly affects the amount of waste being produced by consumers. Furthermore, behavioural changes show that the number of customers always choosing disposable cups almost doubled.

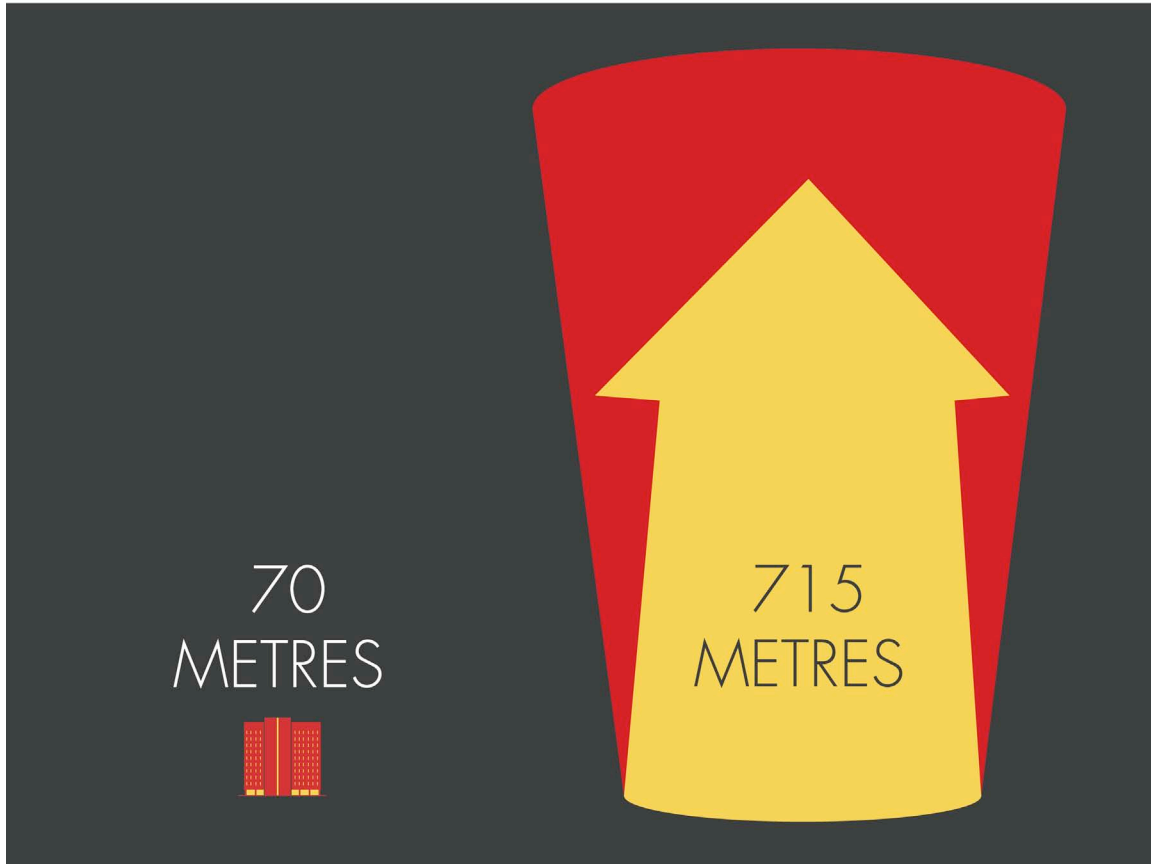


Figure 9: The Tupper Building vs. weekly cup usage at Tim Hortons locations on campus (depicting stacked height, not volume)

Due to the fact that over 50% of questionnaire participants cited inconvenience and forgetfulness as primary motives to using disposable cups, it may be worth investigating how reusable mug use could be better facilitated at Dalhousie University. Almost 60% of questionnaire participants were influenced by the *Roll Up The Rim* contest and, coupled with the 33% increase in disposable cup use, it is evident that the *Roll Up The Rim* contest has an extremely consequential effect on the behaviour of customers.

A consideration of the findings in light of existing research studies

Various existing research studies were examined before performing the study, which proved a helpful guidelines. It was noted that previous researchers failed to take various factors, such as the *Roll Up The Rim* promotion, into account. This may have impacted the

accuracy of their findings. This year's *Roll Up The Rim* campaign marked the 25th anniversary of the contest, which provides an incentive to choose a disposable cup and has evidently resulted in considerable behaviour changes.

Implications for theory and practice

Despite the small sample size obtained for this study, the results are nonetheless important as a foundation for those undertaking future studies concerning disposable and reusable coffee cup use. Our questionnaires indicated that Tim Hortons' *Roll Up The Rim* contest plays a role in 21.25% of customers' decisions to purchase from Tim Hortons. In revealing that promotional events do in fact influence behavioural patterns, future research on instances of reusable versus disposable cup use could be undertaken on a larger scale at Tim Hortons or other coffee shops. Due to the fact that we were limited by time constraints, our sample size was quite small which had the result of forcing us to conclude that changes in the proportion of reusable mugs used was not statistically significant. Therefore, future studies could ensure there is adequate time to collect data, particularly prior to the promotional event. In terms of future practices, our study is likely to have created awareness amongst our peers as well as those who chose to partake in our questionnaire. Perhaps this awareness will translate into behaviour changes in terms of using reusable mugs. Aside from this, it is unlikely at this point in time, that our study will have affected practices beyond the Dalhousie campus. However, the aim of future studies of this sort could try to ensure that more of an impact is made by the study.

It was hypothesized that the proportion of reusable mug use at Tim Hortons during *Roll Up The Rim* would decrease. While the proportion did, in fact, decrease, it was not found to be statistically significant. This may have been because there was not a decrease in

reusable mug use or because our samples size was too small to detect the change.

Observers noted that 36% of customers with reusable mugs also accepted a *Roll Up The Rim* cup, thus the campaign may work as an incentive to attract more reusable mug users.

Conclusion

Valuable information on consumer behaviour was collected through both observational surveys and questionnaires pertaining to change in number and proportion of reusable mug use during *Roll Up The Rim*. Results show that *Roll Up The Rim* played a role in the decision of 59.16% of questionnaire participants to purchase a disposable *Roll Up The Rim* contest cup.

Areas of concern in our study were primarily regarding sample size and observation time. Sample size is an important component in data collection, as it is a large determinant of a result's precision. Our study would have benefited greatly by increasing the number of questionnaires supplied through an overall longer questionnaire period, as this would provide a greater understanding of the results obtained. In commencing the study earlier and engaging customers prior to the beginning of *Roll Up The Rim*, a more extensive analysis of change in consumer behaviour could have been undertaken. Furthermore, increasing the duration of observation likely would have resulted in an increased probability of questionnaires completed by reusable mug users.

Recommendations for action

This study set out not only to investigate changes in consumer behaviour relating to *Roll Up The Rim*, but also to provide recommendations for further action on campus. Aided by the

suggestions of questionnaire participants, several possible recommendations for action have been identified.

Dalhousie University could aid in facilitating a transition to higher reusable mug use through more prominent advertising and awareness. Of those who took the questionnaire, 55.71% were unaware of the current discount of 10 cents offered by Tim Hortons locations at Dalhousie University. Larger monetary incentives, such as the 25-cent discount offered by Just Us!, could be provided to reusable mug users. Additionally, providing facilities on campus to clean mugs is another way Dalhousie University could make reusable mug use more convenient.



Figure 10: Poster advertising discounts for reusable mug use at Just Us! (SUB)

Although many of these actions are perhaps ideal situations unlikely to be invested in by Tim Hortons, further research into many of these options may investigate the feasibility. Furthermore, Dalhousie University can implement numerous suggestions without exorbitant costs.

Recommendations for further research


While the results of this study indicate that there is a statistically significant increase in the number of Tim Hortons patrons before and during *Roll Up The Rim*, a study with a larger sample size could be conducted to determine if there is a change in the proportion of reusable mug users before and during *Roll Up The Rim*. Furthermore, we were unsuccessful in conducting an interview with any patrons using reusable mugs. Future studies should increase the amount of time devoted to conducting questionnaires in order to gather data from reusable mug users both prior to and during the contest.




Figure 11: DSU Sustainability Office awareness poster near Just Us! (SUB)

If Dalhousie University is interested in increasing reusable mug use, then future studies could attempt to determine how to remove obstacles to reusable mug use and investigate incentives that might increase reusable mug use. Future studies with this goal could involve focus groups for reusable mug users and disposable mug users to focus on barriers and incentives to reusable mug use. Further studies might also test incentives for increasing reusable mug use and analyze which incentives show a positive change in behaviour.

FURTHER ACTION // RESEARCH

 ACTION:

- INCREASE AWARENESS
- PROMINENT ADVERTISING
- LARGER MONETARY INCENTIVES (25 CENTS)
- CAMPUS FACILITIES FOR MUG CLEANING

 RESEARCH:

- LARGER SAMPLE SIZE
- INTERVIEWS WITH REUSABLE MUG USERS
- INCREASED AMOUNT OF STUDY TIME
- STEPS TO REMOVE OBSTACLES AND BARRIERS
- TEST INCENTIVES AND ANALYZE BEHAVIOURAL CHANGES

Figure 12: Recommendations for further action and future research

References

- Alsop, J., Field, T., Kalkreuth, J., Kemp, J., Malach, S., & Popper, A. (2004). Reusable Mugs: Reducing Waste on Dalhousie's Studley Campus. Dalhousie University, ENVS 3502. Retrieved from http://environmental.science.dal.ca/Files/Environmental%20Programs/lug_-_amug_projectcompilation1.pdf
- Fairbairn, M., Fear, A., Jakubchik-Paloheimo, M., Lyon A. (2008). Reducing Disposable Cups on Dalhousie Campus: A Second Cup Case Study, Dalhousie University, ENVS 3502. Retrieved from http://office.sustainability.dal.ca/Files/Effects_of_Disposable_Coffee_Cups_-_Report.pdf
- Government of Nova Scotia. (2010). Nova Scotia's [Recycling and Waste]Strategy. Retrieved from <http://www.gov.ns.ca/nse/waste/strategy.asp>
- Lynch, M., Maguire, B., Omina, M. (2008) .The Campus Green Guide: LivingSustainably at Dalhousie. Dalhousie University, 3rd Ed. Retrieved from <http://elss.dalss.com/Green%20Guide%202009.pdf>
- Statistics Canada. 2010. Waste disposal by source, province and territory (Newfoundland and Labrador, Prince Edward Island, Nova Scotia). Retrieved from <http://www40.statcan.ca/l01/cst01/envir25a-eng.htm>
- Taylor, D. 1999. Talking trash: the economic and environmental issues of landfills. Environ Health Perspect. 1999 August; 107(8): A404–A409.
- Teh, J., Pan, R., Dong, S., Gozali, S., Eng, S., Wong, W. & Ong, Y. (2008). Lug a Mug Marketing Campaign – One Less Cup. University of British Columbia. Retrieved from <https://circle.ubc.ca/bitstream/handle/2429/23999/Lug%20A%20Mug%20Marketing%20Campaign.pdf?sequence=1>.
- Torreiter. M. A. (1994). The Elimination of Disposable Cups at the University of Waterloo. University of Waterloo. Retrieved from <http://www.watgreen.uwaterloo.ca/projects/library/w94disposablecups.pdf>.
- Triple Pundit. (2007) Disposable Cups vs. Reusable Mugs. Retrieved from <http://www.triplepundit.com/pages/askpablo-disposable-cups-vs-re-002788.php>

Acknowledgements

Kenzie Finlayson-Buck, Lesley Janega, Jackie Maxwell, David Verbeek, and Brett Weddle would like to thank the following people for: information regarding disposable cup and reusable mug use on campus; inspiration; support; and guidance throughout all stages of this study:

- Cindy MacDonald, General Manager – Dalhousie SUB, Sodexo Canada
- Dr. Rochelle Owen, ENVS 3502 Professor, Dalhousie University
- Robin Tress, Environmental Programs Student Society, Dalhousie University
- Dr. Tarah Wright, Advisor & ENVS 3502 Professor, Dalhousie University

Appendices

Appendix 1 – Survey and questionnaire schedule

Monday	Tuesday	Wednesday	Thursday	Friday
	9:00 am – 10:30 am			
11:30 am – 1:00 pm				
			2:30 pm – 3:30 pm	
				4:30 pm – 6:00 pm
		7:00 pm – 8:30 pm		

Table 1: Times and days of the week that data (observational survey & questionnaires) was collected on.

Appendix 2 – Tally sheet and survey results

# of Customers Ordering a Single, Hot Beverage	# of Disposal Cups	# of Reusable Mugs	# of people who use a reusable mugs but accept an extra Roll-Up Cup
--	--------------------	--------------------	---

Table 1: Tally sheet for non-intrusive observation data collection.

Day of the week	Time	Number of Disposable Cups	Number of Reusable Mugs	Total
Monday	11:30am – 1:00pm	57	3	60
Tuesday	9:00am – 10:30am	66	6	72
Wednesday	7:00am – 8:30am	54	1	55
Thursday	2:00pm – 3:30pm	58	2	60
Friday	4:30pm – 6:00pm	16	1	17
Total	-	251	13	264
Average	-	50.2	2.6	52.8

Table 2. Data collected from non-intrusive observations from February 14 to February 18 2011, before the *Roll Up The Rim* campaign had begun. Recorded is the number of Tim Hortons’ patrons who ordered a single hot beverage from the northern cash register and the number of these patrons who brought a reusable mug, and those who used a disposable cup.

Day of the week	Time	Number of Disposable Cups	Number of Reusable Mugs	Number of Reusable Mugs users who accepted a Disposable Cup	Total
Monday	11:30am – 1:00pm	103	1	0	104
Tuesday	9:00am – 10:30am	85	6	3	91
Wednesday	7:00am – 8:30am	137	2	0	139
Thursday	2:00pm – 3:30pm	72	3	0	75
Friday	4:30pm – 6:00pm	20	2	2	22
Total	-	417	14	5	431
Average	-	83.4	2.8	1	86.2

Table 3. Data collected from non-intrusive observations during *Roll Up The Rim*, from March 7 to March 11, 2011. Recorded is the number of Tim Hortons’ patrons who ordered a single hot beverage from the northern cash register and the number of these patrons who brought a reusable mug, patrons who used a disposable cup, and patrons who used a reusable mugs but then accepted a disposable *Roll Up The Rim* cup.

Appendix 3 - Questionnaire for reusable mug users

1.) I notice you're using a reusable mug, can you tell me why you choose this over a disposal mug? (circle all that apply)

- Environmental concerns
- Saves money
- Other (please specify):

2.) Approximately how many times a week do you buy a hot beverage from Tim Horton's?

- 0
- 1-3
- 4-6
- 7-9
- 10+

3.) What influences your decision to purchase from Tim Horton's?

4.) What percentage of the time do you use your reusable mug when purchasing a hot beverage from Tim Horton's?

- Less than $\frac{1}{4}$ of the time
- At least $\frac{1}{4}$ of the time
- At least $\frac{1}{2}$ of the time
- At least $\frac{3}{4}$ of the time
- All of the time

5.) What is your biggest challenge in using your reusable mug?

6.) How does the *Roll Up The Rim To Win* contest influence your decision to use your reusable mug?

7.) What incentives do you think would promote the use of reusable mugs at Tim Hortons?

Appendix 4 - Questionnaire for disposable cup users

1.) Approximately how many times a week do you buy a hot beverage from Tim Horton's?

- 0
- 1-3
- 4-6
- 7-9
- 10+

2.) What influences your decision to purchase from Tim Horton's? (circle all that apply)

- Enjoy the products
- Habit
- Close to my classes/office/work
- Other: _____

3.) How much is the *Roll Up The Rim* contest a factor in your decision to come to Tim Hortons?

- Total influence
- Somewhat of an influence
- Not an influence at all

4.) I notice you're using a disposable cup, can you tell me why you chose this over a reusable mug? (circle all that apply)

- Can't remember to bring a mug
- Easier to dispose of
- I like the look of the disposal cup
- I want to *Roll Up The Rim*
- Other (please specify):

5.) What percentage of the time do you use your disposal cup when purchasing a hot beverage from Tim Hortons during the *Roll Up The Rim To Win* Contest?

- Less than $\frac{1}{4}$ of the time
- At least $\frac{1}{4}$ of the time
- At least $\frac{1}{2}$ of the time
- At least $\frac{3}{4}$ of the time
- All of the time

6.) What percentage of the time do you use your disposal cup when purchasing a hot beverage from Tim Horton's when there is NO *Roll Up The Rim To Win* Contest?

- Less than $\frac{1}{4}$ of the time
- At least $\frac{1}{4}$ of the time
- At least $\frac{1}{2}$ of the time
- At least $\frac{3}{4}$ of the time
- All of the time

7.) Are you aware of the 10¢ discount for using a reusable mug?

8.) What incentives do you think would promote the use of reusable mugs at Tim Hortons?

Appendix 5 – Project timeline

When?	What? & Who?
February 1 st – 7 th	<ul style="list-style-type: none"> • Create & merge schedules of group members' availability → Kenzie • Begin literature review concerning reusable/disposable cup use → Group • Brainstorm for a researchable question → Group • Contact client to set up initial meeting → Jacquie • Find out when <i>Roll Up The Rim</i> begins → Dave • Meeting Minutes → Kenzie
February 8 th – 14 th	<ul style="list-style-type: none"> • Finalize researchable question → Group/mentor/client consensus • Finalize methods and research plan as best as possible → Group • Complete methods form and e-mail to mentor for feedback → Group • Create standard tally sheet for observation → Jacquie • Assign tasks and breakdown for preliminary proposal → Group • Meeting Minutes → Kenzie • Begin pre-<i>Roll Up The Rim</i> observations on Monday, February 14th, for a total of 7.5 hours combined over 5 days → Group
February 15 th – 21 st <i>Reading week begins on the 21st.</i>	<ul style="list-style-type: none"> • <u><i>Roll Up The Rim</i> contest begins on Monday, February 21st, 2011</u> • Complete ethics form & scan it → Group/Kenzie • Complete the final pre-<i>Roll Up The Rim</i> observation week on Friday, February 18th, 2011 → Group
February 22 nd – 28 th <i>Classes resume on the 28th.</i>	<ul style="list-style-type: none"> • Group members will complete their portion of the preliminary proposal and e-mail it to Kenzie by noon of February 27th for editing → Group • Preliminary proposal due by midnight of February 28th → Group
March 1 st – March 7 th	<ul style="list-style-type: none"> • Begin observation session <u>during the <i>Roll</i></u>

	<p><i>Up The Rim</i> contest on Monday, March 7th, for a total of 7.5 hours combined over 5 days → Group</p> <ul style="list-style-type: none"> • Receive feedback in regards to the preliminary proposal and make any necessary changes. → Group • Meeting Minutes → Kenzie
March 8 th – 14 th	<ul style="list-style-type: none"> • Complete observation for during the <i>Roll Up The Rim</i> contest on Friday, March 18th → Group • Begin <i>Roll Up The Rim</i> questionnaire session on Monday, March 14th → Group
March 15 th – 21 st	<ul style="list-style-type: none"> • <u><i>Roll Up The Rim</i> contest ends on Sunday, March 20th, 2011</u> • Schedule second meeting with client & discuss the proposal and status of the project thus far → Jacquie/Group • Statistically analyze data obtained from observation sessions → Jacquie • Complete <i>Roll Up The Rim</i> questionnaire session on Friday, March 18th
March 22 nd – 28 th	<ul style="list-style-type: none"> • Prepare presentation and slides for <i>Pecha Kucha</i> presentation → Group • Compile research → Group
March 29 th – April 4 th	<ul style="list-style-type: none"> • <i>Pecha Kucha</i> presentation slides to be submitted by April 3rd on OWL → Group • Schedule final meeting with client & discuss results of research project → Jacquie/Group
April 5 th – 12 th	<ul style="list-style-type: none"> • <i>Pecha Kucha</i> presentation at The Company House → Group • Complete research project & e-mail sections to Dave no later than noon on Sunday, April 10th → Group
April 13 th	<ul style="list-style-type: none"> • Submit the final copy of term project → Group

Appendix 6 – Funding proposal

ENVS 3502 Funding Proposal Form

DSU Sustainability Office
www.dsuso.ca

Project Title

- Disposable Versus Reusable Mug Use During Tim Hortons *Roll Up The Rim To Win* Contest

Goal

- We are attempting to determine how the frequency and proportion of mug use at Dalhousie's Student Union Building's (SUB) Tim Hortons change during the *Roll Up The Rim* campaign.

Description

- We intend to offer survey participants the chance to enter a draw to win gift certificates for Just Us! as an incentive to participate in qualitative research methods (survey, questionnaire).

Budget

- \$100 requested
- All participants will be entered into a random draw to win a \$5 gift card for Just Us! Café. 20 participants will receive gift cards.

Contact Info

- David Verbeek
- email: david.n.verbeek@dal.ca

Submit proposal to the DSU Sustainability Office via Emily Rideout (Policy & Communications Officer) at emily.rideout@dal.ca with the subject line "ENVS 3502 Funding Proposal Form"

****Please do not submit paper copies of your proposal****

Appendix 7 - Ethics proposal

Revised October 2010

ENVIRONMENTAL SCIENCE PROGRAM
FACULTY OF SCIENCE
DALHOUSIE UNIVERSITY

APPLICATION FOR ETHICS REVIEW OF RESEARCH INVOLVING HUMAN PARTICIPANTS
UNDERGRADUATE THESES AND IN NON-THESIS COURSE PROJECTS

GENERAL INFORMATION

1. Title of Project:

2. Faculty Supervisor(s) Department Ext: e-mail:
Tara Wright ENVS

3. Student Investigator(s) Department e-mail: Local Telephone Number:
Jacquelyn Maxwell Environmental Science jc433506@dal.ca (902) 495-6365
DAVID VERBEEK ARCH + PLANNING dv560459@dal.ca 902.485.8835
Brett Weddle Environmental Science brett.weddle@gmail.com 902-293-9829
Kerrie Finlayson-Buck FASS kn763061@dal.ca (902) 476.5651

4. Level of Project:
Non-thesis Course Project []
Undergraduate
Graduate []

Specify course and number: ENV 3502

5. a. Indicate the anticipated commencement date for this project: Feb 14, 2011

b. Indicate the anticipated completion date for this project: April 13, 2011

SUMMARY OF PROPOSED RESEARCH

1. Purpose and Rationale for Proposed Research

Briefly describe the purpose (objectives) and rationale of the proposed project and include any hypothesis(es)/research questions to be investigated.

The purpose is to determine how "roll up the rim" affects the behaviour & choices of Tim Horton's customers (on campus).

2. Methodology/Procedures

a. Which of the following procedures will be used? Provide a copy of all materials to be used in this study..

- Survey(s) or questionnaire(s) (mail-back)
- Survey(s) or questionnaire(s) (in person)
- Computer-administered task(s) or survey(s)
- Interview(s) (in person)
- Interview(s) (by telephone)
- Focus group(s)
- Audio taping
- Videotaping
- Analysis of secondary data (no involvement with human participants)
- Unobtrusive observations
- Other, specify _____

b. Provide a brief, sequential description of the procedures to be used in this study. For studies involving multiple procedures or sessions, the use of a flow chart is recommended.

Use a data sheet to tally disposable/renewable mug use among Tim Horton's customers at Dalhousie's Student Union Building.

Interview or survey a random sample of Tim Hortons customers after they have been served.

3. Participants Involved in the Study

a. **Indicate who will be recruited as potential participants in this study.**

Dalhousie Participants: [] Undergraduate students
[] Graduate students
[] Faculty and/or staff

Non-Dal Participants: [] Adolescents
[] Adults
[] Seniors
[] Vulnerable population* (e.g. Nursing Homes, Correctional Facilities)

* Applicant will be required to submit ethics application to appropriate Dalhousie Research Ethics Board

b. **Describe the potential participants in this study including group affiliation, gender, age range and any other special characteristics. If only one gender is to be recruited, provide a justification for this.**

Tim Horton's Customers

c. **How many participants are expected to be involved in this study?** 50-100 / observation session
(10 observation sessions)

4. Recruitment Process and Study Location

a. **From what source(s) will the potential participants be recruited?**

- [] Dalhousie University undergraduate and/or graduate classes
- [] Other Dalhousie sources (specify) _____
- [] Local School Boards*
- [] Halifax Community
- [] Agencies
- [] Businesses, Industries, Professions
- [] Health care settings*
- [] Other, specify (e.g. mailing lists) Anyone who happens to be a Tim Horton's Customer.

* Applicant may also require ethics approval from relevant authority, e.g. school board, hospital administration, etc.

b. **Identify who will recruit potential participants and describe the recruitment process.**

Provide a copy of any materials to be used for recruitment (e.g. posters(s), flyers, advertisement(s), letter(s), telephone and other verbal scripts).

5. Compensation of Participants

Will participants receive compensation (financial or otherwise) for participation? Yes No

If Yes, provide details:

participants will be eligible to enter a draw for a coffee gift certificate should they choose to partake in our questionnaire.
(amended March 1st, 2011)

6. Feedback to Participants

Briefly describe the plans for provision of feedback and attach a copy of the feedback letter to be used. Wherever possible, written feedback should be provided to study participants including a statement of appreciation, details about the purpose and predictions of the study, contact information for the researchers, and the ethics review and clearance statement.

Note: When available, a copy of an executive summary of the study outcomes also should be provided to participants.

No feedback

POTENTIAL BENEFITS FROM THE STUDY

1. Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project.

None.

2. Identify and describe any known or anticipated benefits to society from this study.

Knowledge about our consumption and possible recommendations to reduce consumption.

POTENTIAL RISKS TO PARTICIPANTS FROM THE STUDY

1. For each procedure used in this study, provide a description of any known or anticipated risks/stressors to the participants. Consider physiological, psychological, emotional, social, economic, legal, etc. risks/stressors and burdens

No known or anticipated risks
Explain why no risks are anticipated:

Minimal risk *
Description of risks:

Greater than minimal risk**
Description of risks:

* This is the level of risk associated with everyday life

** This level of risk will require ethics review by appropriate Dalhousie Research Ethics Board

2. Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified in Question 1.

No known risks so this is not applicable.

INFORMED CONSENT PROCESS

Refer to: <http://pre.ethics.gc.ca/english/policystatement/section2.cfm>

1. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?

Information letter with written consent form; provide a copy

Information letter with verbal consent; provide a copy

Information/cover letter; provide a copy

Other (specify) Verbal informed with verbal consent.

2. If written consent cannot be obtained from the potential participants, provide a justification.

Short on time, they are free to leave

ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF DATA

1. Explain the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.

Won't collect names, gender or age.

2. Describe the procedures for securing written records, questionnaires, video/audio tapes and electronic data, etc.

Confidential to student investigators, faculty advisors.

3. Indicate how long the data will be securely stored as well as the storage location over the duration of the study. Also indicate the method to be used for final disposition of the data.

Paper Records

Confidential shredding after April 13

Data will be retained until completion of specific course.

Audio/Video Recordings

Erasing of audio/video tapes after _____

Data will be retained until completion of specific course.

Electronic Data

Erasing of electronic data after _____

Data will be retained until completion of specific course.

Other _____

(Provide details on type, retention period and final disposition, if applicable)

Specify storage location: _____

ATTACHMENTS

Please check below all appendices that are attached as part of your application package:

- Recruitment Materials:** A copy of any poster(s), flyer(s), advertisement(s), letter(s), telephone or other verbal script(s) used to recruit/gain access to participants.
- Information Letter and Consent Form(s).** Used in studies involving interaction with participants (e.g. interviews, testing, etc.)
- Information/Cover Letter(s).** Used in studies involving surveys or questionnaires.
- Materials:** A copy of all survey(s), questionnaire(s), interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests used to collect data.

SIGNATURES OF RESEARCHERS

<u>Jaquelyn Maxwell</u> Signature of Student Investigator(s)	<u>Feb 15</u> Date
<u>David Vukobrat</u> Signature of Student Investigator(s)	<u>Feb. 15, 2011.</u> Date
<u>Brett Weddle</u> Signature of Student Investigator(s)	<u>Feb. 15, 2011.</u> Date
<u>Ed Intayson - Buck</u> Signature of Student Investigator(s)	<u>Feb 15th / 2011</u> Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date

FOR ENVIRONMENTAL SCIENCE PROGRAM USE ONLY:

Ethics proposal been checked for eligibility according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans

Signature Date

Signature Date

Disposable Versus Reusable Mug-Use During Tim Hortons' *Roll Up The Rim To Win* Contest

Preliminary Project Proposal for ENVS 3502

David Verbeek

Lesley Janega

Brett Weddle

Jacquelyn Maxwell

Kenzie Finlayson-Buck

Submitted on February 28th, 2011

Table of Contents

	Page
Project Definition.....	3-5
Background and Rationale.....	5-8
Methods.....	8-12
Project Deliverables.....	12
Project Communication Plan.....	12-13
Budget.....	13
Schedule.....	13-14
References.....	15
Appendices.....	16-19
Appendix 1: Times & Days for Data Collection.....	16
Appendix 2: Standard Tally Sheet.....	17
Appendix 3: Questionnaire for Reusable-Mug Users.....	18
Appendix 4: Questionnaire for Disposable-Cup Users.....	19-20
Appendix 5: Detailed Group Schedule.....	21
Appendix 6: Ethics Form.....	22-29

Project Definition

The research question this study aims to answer is the following: How does the frequency and proportion of mug use at Dalhousie's Student Union Building's (SUB) Tim Hortons change during the *Roll Up The Rim* campaign?

In order to answer the question above, non-intrusive observation will take place at the SUB Tim Horton's location for two weeks – one week before the campaign and one week during. Observation will occur daily from Monday to Friday with 1.5 hours each day at the timeslots specified in Appendix 1. The staggered observation schedule will be identical for both weeks of observation. This will total 15 hours of non-intrusive observational time. In addition to the non-intrusive observational portion of the study, customers will also be surveyed during the campaign week of observation in order to gain insight into the choices of Tim Hortons customers in regards to reusable versus disposable cup-use.

It is hypothesized that the *Roll Up The Rim* campaign creates an incentive for customers to use disposable cups, resulting in a proportionate decrease in the rate of reusable-mug use. As a first contributing factor to this result, we believe we will see an increase in the total number of Tim Hortons customers due to the campaign, with many more irregular customers. This could contribute to a lower proportion of reusable mug-use, as those who do not purchase hot beverages on a regular basis are less likely to invest in a reusable mug. The second contributing factor is the possibility that those who normally use reusable mugs may choose instead to use a disposable cup, due to the prospect of winning a prize from the *Roll Up The Rim* campaign.

It is uncertain to what extent each of these scenarios will contribute to the hypothesized decrease in reusable mug use (if in fact this is observed). However, in measuring the frequency of disposable/reusable mug use both before and during *Roll Up The Rim*, we aim to discern the degree to which each scenario comes about. In addition, our methods include a survey that will give qualitative insight into the reasoning of those choosing to use either a disposable cup or reusable mug.

The purpose behind the study is to gain information on consumer behaviour, which ultimately produces waste. This study will contribute to the 'greening' of Dalhousie campus by documenting disposable cup use before and during the *Roll up the Rim* campaign, and by gathering information regarding customer's motivations for cup choice. This information can be used to create firm policy and management decisions on campus in the future.

A study in 2008 found that Tim Hortons on the Dalhousie campus used 176,800 disposable cups a week (Fairbairn, Fear, Jakubchik-Paloheimo, Lyon, 2008). Although reusable mugs initially require more resources to produce than disposable cups, through ample usage and less disposable cups being left in landfills, their environmental footprint becomes less than that of disposable mugs (AskPablo, 2007). A 2007 study determined that reusable mugs become a more sustainable option than disposable cups once they have been used twenty-four times (AskPablo, 2007).

Changing behaviour is no simple task and gathering information is vital to any strategy that aims to do so. Although previous studies on reusable mug-use have been conducted at Dalhousie (Alsop et al., 2004, Fairbairn et. al., 2008), none have focused on a corporate campaign such as *Roll Up The Rim*. We believe this study will

give greater insight into the subject of consumer behaviour and environmental responsibility. Dalhousie has a reputation for being a leader in all things sustainable (Lynch, Maguire & Omina, 2010), and as such, has a responsibility to reduce waste production. In order to uphold its reputation as a leader in sustainable campuses, it would be in the interest of those affiliated with Dalhousie to support this study.

Background & Rationale

Numerous studies concerning the use of disposable cups and related environmental effects have been conducted on both large and small scales. In particular at Canadian Universities such as University of British Columbia, University of Waterloo and here at Dalhousie University. There is an ever-growing push for ecologically friendly and sustainable lifestyles, and many university campuses, such as that of Dalhousie University, have therefore been striving to meet sustainability goals. In order to foster sustainable mindsets and lifestyles in university students, we must first highlight the reasons why these changes are necessary. Analyzing related studies such as those conducted by University of British Columbia, University of Waterloo and Dalhousie University has assisted in contextualizing our proposed study on the impacts of disposable cups at Dalhousie University.

Exploring relevant studies that have been carried out by various universities throughout Canada provided inspiration and a guideline for the steps that have been taken in order to achieve success. In an effort to promote awareness of the negative environmental impacts of disposable cups, students at the University of Waterloo

held an event entitled *No Disposable Cups Day* in which campus coffee shops did not supply disposable cups to customers for one day. Although the event only spanned one day, the event was a successful attempt to raise awareness concerning wasteful consumption by highlighting one particular branch of the problem – in this case, disposable cups. The Waterloo event consisted of an awareness campaign, a promotional display and a survey, which determined people's receptiveness to eliminating disposable cups. According to Torreiter (1994), it was determined that students viewed the removal of disposable cups on the University of Waterloo campus as a positive course of action. On the other hand, staff and faculty members were more likely to view this change unfavourably (Torreiter, 1994).

At the University of British Columbia, similar efforts were put forth under the name of *Lug-A-Mug*, which promoted the use of reusable containers and reducing the use of disposable cups – thereby reducing the amount of waste produced on campus (Teh et al., 2008). Similar to the awareness campaign at Waterloo, the University of British Columbia highlighted the importance of educating the public about the negative environmental impacts associated with disposable cups (Teh et al., 2008). The University of British Columbia and the University of Waterloo have striven for environmental sustainability through various efforts and in continuing such initiatives, Dalhousie too, is capable of becoming a far more sustainable campus.

Examining related studies that have been conducted throughout Dalhousie University provides baseline data; that is, data collected to establish and understand the existing conditions before any kind of experimental manipulation (Retrieved

from Google definitions, February 28, 2011). This is useful for gaining knowledge of past and current approaches to a given issue and analyzing their varying levels of successes or failures. At Dalhousie University, many past environmental and sustainability groups have put forth studies, experiments and surveys geared towards studying the availability and consumption of disposable cups. The main objective is to work with suppliers and consumers to increase the use of reusable mugs on campus by providing public knowledge and accessibility. For example, a recent study by Fairbairn et al. (2010) was conducted by a group of students from the ENVS 3502 course at Dalhousie University, which examined the waste generated by disposable cups at Second Cup in the Killam Library. The group's main objective was to outline the feasibility of decreasing the demand for disposable cups. By performing numerous surveys and observations, the group obtained data, which helped them to better understand the students' behaviour and the motives behind their behaviour. The study showed that "81% of those surveyed own a reusable mug but 82% of those observed do not use their reusable mug" (para. 4). Students suggested that remembering to take their travel mugs with them, as well as efforts to keep them clean were the leading obstacles involved with their lack of use. These results were used to support their efforts to Greening Dalhousie Campus (Fairbairn et al., 2010).

By assessing previous studies, particularly at Dalhousie, we were able to identify two important components that were not included in said studies. Firstly, past studies have focused primarily on waste reduction through reducing the use of disposable cups. A central aspect of the study was to tally the number of disposable

cups being used; in doing so however, the studies failed to take into account promotions such as *Roll Up The Rim* at Tim Hortons and observe how they may impact the demand for disposable cups. These are important considerations to take into account as these factors likely affect the number of disposable cups being used. Secondly, it is clear that sampling and observing the amount of disposable cups used was an important aspect of each of the studies, yet these studies could have made a greater impact had the information obtained been more widely distributed following the study. It is important to educate the students and administration of the data collected, as it will allow them to better understand both the negative and positive impacts they can, or do, have on the environment and sustainability.

Research Methods

In order to accurately measure the impact of the Tim Hortons' *Roll Up The Rim* contest on the frequency and proportion of reusable mug use, both qualitative and quantitative methods will be used. Non-intrusive observation will be used to quantify any changes in the number of customers and reusable cups used during *Roll Up The Rim*. Non-intrusive observations will consist of tallying cups used without interacting with the customer. The use of quantitative methods will enable statistical testing to see if there is a statistically significant change in behaviour among Tim Hortons' customers. Qualitative methods in the form of a questionnaire will be incorporated in order to gain insight into how Tim Horton's *Roll Up The Rim* contest factors into decision-making.

Our sample population will be limited to the Tim Hortons in the Dalhousie Student Union Building. We will use this site for both the questionnaire and the observations. There is a second Tim Hortons location at Dalhousie on the second floor on the Life Sciences Centre. The Student Union Building location was chosen since it is not associated with any specific faculty, increasing the likelihood of patrons from multiple disciplines within the university.

The non-intrusive observations are composed of two data collection periods. The first of these is the week before the *Roll Up The Rim* contest begins (Monday to Friday only). The second of these periods will take place during a week of the *Roll Up The Rim* contest. The same time slots and days of the week will be used for each of these data collection periods (Table 1, Appendix 1). Observation periods are of a staggered nature in order to gather data from as many time periods as possible in case Tim Hortons' patrons from different days and times had different behavioural patterns. The same schedule will be used for both of the observation weeks, as it will allow us to measure differences in behaviour between two sets of specific time periods; again, in the case that Tim Hortons customers from different times have different frequencies and proportion of reusable mug use in the pre-*Roll Up The Rim* phase.

During their assigned time the observer will collect data from the furthest north cash register that is open in the Tim Hortons in the Dalhousie Student Union Building using a tally sheet (Table 2, Appendix 2). There are two cash registers at this location. The decision to watch only one cashier was made as observing two cash registers at a time could result in inaccurate data as it may not be possible for

one observer to closely observe two cashiers during hectic time periods. The furthest north cash register was chosen as this was the one that customers tended to go to when both cashiers were open and there was no line.

The observer will collect data on how many customers purchase *one* hot beverage; the number of customers purchasing one hot beverage with a reusable mug; the number of customers using a disposal cup for their single hot beverage; and the number of customers who use a reusable mug for their hot beverage, yet still accept a *Roll Up The Rim* disposal cup when prompted. We chose to include only those customers who bought a single hot drink, because these are the ones eligible to use a Roll up the Rim disposable cup. Furthermore, only customers who order a *single* hot beverage will be counted, as attempting to observe customers ordering multiple hot beverages may result in inaccurate data should the observer be unable to count the number of cups. When customers, who order a single hot beverage but receive two cups, in order to better insulate their purchase, we will only count one of the two disposable cups, since it is not always possible for an outside observer to discern the number of cups being used for a single purchase.

Data collected may be influenced by various factors outside of our control. For example, certain green initiatives on campus such as 'Muggy Mondays' may cause fewer patrons to bring reusable mugs to Tim Hortons since they are able to get a free hot beverage elsewhere. Additionally, the small number of observers and the limited time available for data collection prevents larger sample sizes from being used.

Once we have collected the data, it will be analysed using the t-test. The t-test is appropriate because it measures the likelihood that there is a difference in the means of the two samples. This will allow us to assess whether or not there has been a change in behaviour between pre-*Roll Up The Rim* and during the campaign.

On a third week data will be collected in the form of questionnaires. We will approach the customers after they have made their purchase to ensure that our questioning will not impact their behaviour. The first person to finish their transaction when our group member arrives will be asked to participate. Once the questionnaire is completed the interviewer will ask the first person waiting to be served to participate in the questionnaire after the customer has completed their transaction. If the customer refuses, the interviewer will try to engage the next person. The pattern of sampling the first person waiting to be served once they have completed a questionnaire will continue until either 15 questionnaires have been filled out or the group member has spent a full hour and a half at Tim Hortons collecting data. Due to the small proportion of Tim Horton's customers who use reusable mugs we will attempt to engage every single reusable mug user no matter where they are in line. Each group member shall complete 15 questionnaires, or spend an hour and a half collecting data for a maximum of 75 samples. This sample size was chosen because it is a feasible number for our group to collect given our time limitations, but which will also provide us with a large enough sample to distinguish patterns within the data.

There shall be two questionnaires: one for reusable mug users and another for patrons who use a disposable cup (See Appendices 3 & 4). We will ask the

questions verbally and fill out the questionnaire for the participants. In order to enhance people's willingness to participate we will be offering them an incentive. When the participant is approached by the observer they will be informed that by completing the questionnaire they are eligible to participate in a draw for a gift certificate.

Project Deliverables

A final report will be produced and delivered to instructors and the client by April 13, 2011. The report will be a culmination of all group work throughout the Winter 2011 semester. The report will include an introduction, background and hypothesis, detailed methodology, presentation of results, interpretation of observations and research, and concluding recommendations. A hard copy of the report and an electronic PDF version are to be presented to instructors and to the client. The report will continue to be available on the SUST/ENVS 3502 – Environmental Problem Solving 2 Online Web Learning (OWL) site through Dalhousie University.

Project Communication Plan

The ongoing processes and final outcomes of the project will be communicated with the client in a variety of ways. In addition to the final report, meetings with advisors and the client will take place regularly to clarify expectations; receive feedback on goals, objectives, and methods; provide updates on progress; and present findings. A minimum of four client meetings will take place

in order to receive feedback on findings in advance of the final report submission and final presentation.

The final presentation will take place on April 5, 2011 at the Company House, 2202 Gottingen Street, Halifax, NS. The presentation will follow a *Pecha Kucha* format: 20 slides at 20 seconds each for a brief, concise, and informative presentation of relevant information. Though time will be permitted for informal discussion and questions, the presentation will be a professional, stand-alone summary of project goals, methods, and results.

Budget

We are requesting funding from the Dalhousie Student Union Sustainability Office in the amount of \$100.00 (CAD). This money will be used to purchase gift cards from *Just Us! Café* and used as an incentive for people to participate in the questionnaire portion of our study. Upon completion of the questionnaire, the participant will be eligible to enter a draw to win one of the gift cards.

In terms of in-kind support, the time and dedication of each group member to attend weekly meetings, as well as two sessions of observation at 1.5 hours each, for a total of 3 hours, is required.

Schedule

This term project is to begin February 1st, 2011 and will be submitted in complete no later than April 13th, 2011. In order to successfully meet this deadline, the timely completion of various steps will be taken and we will meet with our

group mentor, Tarah Wright, each Tuesday for the duration of the semester. Meeting Minutes will be taken at meetings with mentors, our client and the research group. Following the meetings, these Meeting Minutes will be distributed to all group members to ensure that each person has access to the information discussed on a given day. The information included may pertain to suggestions, comments, decisions, assignment of tasks, questions for future consideration, et cetera. Further, as Tim Hortons' *Roll Up The Rim* contest is set to begin on the 21st of February this year, it is critical to our success that we meet with the client as early as possible to begin developing a researchable question as well as a research plan. The research plan that we develop must therefore be complete at a minimum of one week prior to the commencement of the *Roll Up The Rim* contest. Failing to do so would indicate nonfulfillment of our goal, as we are required to spend a week performing pre-*Roll Up The Rim* observations. Therefore, given the tight timeline, it is key that our group be particularly organized and able to communicate with one another on a regular day-to-day basis. For this reason, it is recommended that each group member check their e-mail each day for updates concerning the project, as well as respond promptly to e-mails upon receiving them. To do so will aid in the ease with which the project may be completed. In addition, all group members will be responsible for performing two sessions of observation, for a total of three hours each. These times will be scheduled beforehand based on each group member's availability and must therefore be adhered to. See Appendix 5 for a further breakdown of the major steps, which we have been, or will be taking, in order to ensure the requisite completion of the project by April 13th.

References

- Alsop, J., Field, T., Kalkreuth, J., Kemp, J., Malach, S., & Popper, A. (2004). *Reusable Mugs: Reducing Waste on Dalhousie's Studley Campus*. Dalhousie University, ENVS 3502. Retrieved from http://environmental.science.dal.ca/Files/Environmental%20Programs/lug-amug_projectcompilation1.pdf
- Ask Pablo. (2007) Disposable Cups vs. Reusable Mugs. Retrieved from <http://www.triplepundit.com/pages/askpablo-disposable-cups-vs-re-002788.php>
- Fairbairn, M., Fear, A., Jakubchik-Paloheimo, M., Lyon A. (2008). *Reducing Disposable Cups on Dalhousie Campus: A Second Cup Case Study*, Dalhousie University, ENVS 3502. Retrieved from http://office.sustainability.dal.ca/Files/Effects_of_Disposable_Coffee_Cups_-_Report.pdf
- Lynch, M., Maguire, B., Omina, M. (2008) .*The Campus Green Guide: Living Sustainably at Dalhousie*. Dalhousie University, 3rd Ed. Retrieved from <http://elss.dalss.com/Green%20Guide%202009.pdf>
- Teh, J., Pan, R., Dong, S., Gozali, S., Eng, S., Wong, W. & Ong, Y. (2008). *Lug a Mug Marketing Campaign – One Less Cup*. University of British Columbia. Retrieved from <https://circle.ubc.ca/bitstream/handle/2429/23999/Lug%20A%20Mug%20Marketing%20Campaign.pdf?sequence=1>.
- Torreiter. M. A. (1994). *The Elimination of Disposable Cups at the University of Waterloo*. University of Waterloo. Retrieved from <http://www.watgreen.uwaterloo.ca/projects/library/w94disposablecups.pdf>.

Appendix 1

Monday	Tuesday	Wednesday	Thursday	Friday
	9:00 am – 10:30 am			
11:30 am – 1:00 pm				
			2:30 pm – 3:30 pm	
				4:30 pm – 6:00 pm
		7:00 pm – 8:30 pm		

Table 1: Times and days of the week that data was collected on.

Appendix 2

# of Customers Ordering a Single, Hot Beverage	# of Disposal Cups	# of Reusable Mugs	# of people who use a reusable mugs but accept an extra Roll-Up Cup

Table 2: Tally sheet for non-intrusive observation data collection.

Appendix 3

Questionnaire for Reusable Mug Users

- I notice you're using a reusable mug, can you tell me why you choose this over a disposal mug? (circle all that apply)

Environmental concerns

Saves money

Other (please specify):

- Approximately how many times a week do you buy a hot beverage from Tim Horton's?

0

1-3

4-6

7-9

10+

- What influences your decision to purchase from Tim Horton's?
- What percentage of the time do you use your reusable mug when purchasing a hot beverage from Tim Horton's?

Less than $\frac{1}{4}$ of the time

At least $\frac{1}{4}$ of the time

At least $\frac{1}{2}$ of the time

At least $\frac{3}{4}$ of the time

All of the time

- What is your biggest challenge in using your reusable mug?
- How does the Roll Up the Rim to Win contest influence your decision to use your reusable mug?
- What incentives do you think would promote the use of reusable mugs at Tim Hortons?

Appendix 4

Questionnaire for Disposable-cup users

- Approximately how many times a week do you buy a hot beverage from Tim Horton's?

0
1-3
4-6
7-9
10+

- What influences your decision to purchase from Tim Horton's? (circle all that apply)

Enjoy the products
Habit
Close to my classes/office/work
Other: _____

- How much is the Roll up the Rim contest a factor in your decision to come to Tim Hortons?

Total influence
Somewhat of an influence
Not an influence at all

- I notice you're using a disposable cup, can you tell me why you chose this over a reusable mug? (circle all that apply)

Can't remember to bring a mug
Easier to dispose of
I like the look of the disposal cup
I want to roll up the rim to win
Other (please specify):

- What percentage of the time do you use your disposal cup when purchasing a hot beverage from Tim Hortons *during* the Roll up the Rim to Win Contest?

Less than $\frac{1}{4}$ of the time
At least $\frac{1}{4}$ of the time
At least $\frac{1}{2}$ of the time
At least $\frac{3}{4}$ of the time
All of the time

- What percentage of the time do you use your disposal cup when purchasing a hot beverage from Tim Horton's when there is NO Roll up the Rim to Win Contest?

Less than $\frac{1}{4}$ of the time

At least $\frac{1}{4}$ of the time

At least $\frac{1}{2}$ of the time

At least $\frac{3}{4}$ of the time

All of the time

- Are you aware of the 10¢ discount for using a reusable mug?
- What incentives do you think would promote the use of reusable mugs at Tim Hortons?

Appendix 5

February 1 st – 7 th	<ul style="list-style-type: none"> • Create & merge schedules of group members' availability → Kenzie • Begin literature review concerning reusable/disposable cup use → Group
April 5 th – 12 th	<ul style="list-style-type: none"> • <i>Pecha Kucha</i> presentation at The Company House → Group • Complete research project & e-mail sections to Dave no later than noon on Sunday, April 10th → Group
April 13 th	<ul style="list-style-type: none"> • Submit the final copy of term project → Group
	<ul style="list-style-type: none"> • Finalize methods and research plan as best as possible → Group • Complete methods form and e-mail to mentor for feedback → Group • Create standard tally sheet for observation → Jacquie • Assign tasks and breakdown for preliminary proposal → Group • Meeting Minutes → Kenzie • Begin pre-<i>Roll Up The Rim</i> observations on Monday, February 14th, for a total of 7.5 hours combined over 5 days → Group
February 15 th – 21 st <i>Reading week begins on the 21st.</i>	<ul style="list-style-type: none"> • <u><i>Roll Up The Rim</i> contest begins on Monday, February 21st, 2011</u> • Complete ethics form & scan it → Group/Kenzie • Complete the final pre-<i>Roll Up The Rim</i> observation week on Friday, February 18th, 2011 → Group
February 22 nd – 28 th <i>Classes resume on the 28th.</i>	<ul style="list-style-type: none"> • Group members will complete their portion of the preliminary proposal and e-mail it to Kenzie by noon of February 27th for editing → Group • Preliminary proposal due by midnight of February 28th → Group
March 1 st – March 7 th	<ul style="list-style-type: none"> • Begin observation session <u>during</u> the <i>Roll Up The Rim</i> contest on Monday, March 7th, for a total of 7.5 hours combined over 5 days → Group • Receive feedback in regards to the preliminary proposal and make any necessary changes. → Group • Meeting Minutes → Kenzie
March 8 th – 14 th	<ul style="list-style-type: none"> • Complete observation for during the <i>Roll Up The Rim</i> contest on Friday, March 18th → Group • Begin <i>Roll Up The Rim</i> questionnaire session on Monday, March 14th → Group
March 15 th – 21 st	<ul style="list-style-type: none"> • <u><i>Roll Up The Rim</i> contest ends on Sunday, March 20th, 2011</u> • Schedule second meeting with client & discuss the proposal and status of the project thus far → Jacquie/Group • Statistically analyze data obtained from observation sessions → Jacquie • Complete <i>Roll Up The Rim</i> questionnaire session on Friday, March 18th
March 22 nd – 28 th	<ul style="list-style-type: none"> • Prepare presentation and slides for <i>Pecha Kucha</i> presentation → Group • Compile research → Group
March 29 th – April 4 th	<ul style="list-style-type: none"> • <i>Pecha Kucha</i> presentation slides to be submitted by April 3rd on OWL → Group • Schedule final meeting with client & discuss results of research project → Jacquie/Group
April 5 th – 12 th	<ul style="list-style-type: none"> • <i>Pecha Kucha</i> presentation at The Company House → Group • Complete research project & e-mail sections to Dave no later than noon on Sunday,

ENVIRONMENTAL SCIENCE PROGRAM
FACULTY OF SCIENCE
DALHOUSIE UNIVERSITY

APPLICATION FOR ETHICS REVIEW OF RESEARCH INVOLVING HUMAN PARTICIPANTS
UNDERGRADUATE THESES AND IN NON-THESIS COURSE PROJECTS

GENERAL INFORMATION

1. Title of Project:

2. Faculty Supervisor(s) Department Ext: e-mail:
Tara Wright ENVS

3. Student Investigator(s) Department e-mail: Local Telephone Number:
Jacquelyn Maxwell Environmental Science jc433506@dal.ca (902) 495-6365
DAVID VERBEEK ARCH + PLANNING dv560459@dal.ca 902.485.8835
Brett Weddle Environmental Science brett.weddle@gmail.com 902-293-9829
Kenzie Finlayson-Buck FASS kn763061@dal.ca (902) 476.5651

4. Level of Project:
Non-thesis Course Project []
Undergraduate
Graduate []

Specify course and number: ENV 3502

5. a. Indicate the anticipated commencement date for this project: Feb 14, 2011
b. Indicate the anticipated completion date for this project: April 13, 2011

SUMMARY OF PROPOSED RESEARCH

1. Purpose and Rationale for Proposed Research

Briefly describe the purpose (objectives) and rationale of the proposed project and include any hypothesis(es)/research questions to be investigated.

The purpose is to determine how "roll up the rim" affects the behaviour & choices of Tim Horton's customers (on campus).

2. Methodology/Procedures

a. Which of the following procedures will be used? Provide a copy of all materials to be used in this study..

- Survey(s) or questionnaire(s) (mail-back)
- Survey(s) or questionnaire(s) (in person)
- Computer-administered task(s) or survey(s)
- Interview(s) (in person)
- Interview(s) (by telephone)
- Focus group(s)
- Audio taping
- Videotaping
- Analysis of secondary data (no involvement with human participants)
- Unobtrusive observations
- Other, specify _____

b. Provide a brief, sequential description of the procedures to be used in this study. For studies involving multiple procedures or sessions, the use of a flow chart is recommended.

Use a data sheet to tally disposable/renewable mug use among Tim Horton's customers at Dalhousie's Student Union Building.

Interview or survey a random sample of Tim Hortons customers after they have been served.

3. Participants Involved in the Study

a. **Indicate who will be recruited as potential participants in this study.**

Dalhousie Participants: [] Undergraduate students
[] Graduate students
[] Faculty and/or staff

Non-Dal Participants: [] Adolescents
[] Adults
[] Seniors
[] Vulnerable population* (e.g. Nursing Homes, Correctional Facilities)

* Applicant will be required to submit ethics application to appropriate Dalhousie Research Ethics Board

b. **Describe the potential participants in this study including group affiliation, gender, age range and any other special characteristics. If only one gender is to be recruited, provide a justification for this.**

Tim Horton's Customers

c. **How many participants are expected to be involved in this study?** 50-100 / observation session
(10 observation sessions)

4. Recruitment Process and Study Location

a. **From what source(s) will the potential participants be recruited?**

- [] Dalhousie University undergraduate and/or graduate classes
- [] Other Dalhousie sources (specify) _____
- [] Local School Boards*
- [] Halifax Community
- [] Agencies
- [] Businesses, Industries, Professions
- [] Health care settings*
- [] Other, specify (e.g. mailing lists) Anyone who happens to be a Tim Horton's Customer.

* Applicant may also require ethics approval from relevant authority, e.g. school board, hospital administration, etc.

b. **Identify who will recruit potential participants and describe the recruitment process.**

Provide a copy of any materials to be used for recruitment (e.g. posters(s), flyers, advertisement(s), letter(s), telephone and other verbal scripts).

5. Compensation of Participants

Will participants receive compensation (financial or otherwise) for participation? Yes No

If Yes, provide details:

participants will be eligible to enter a draw for a coffee gift certificate should they choose to partake in our questionnaire.
(amended March 1st, 2011)

6. Feedback to Participants

Briefly describe the plans for provision of feedback and attach a copy of the feedback letter to be used. Wherever possible, written feedback should be provided to study participants including a statement of appreciation, details about the purpose and predictions of the study, contact information for the researchers, and the ethics review and clearance statement.

Note: When available, a copy of an executive summary of the study outcomes also should be provided to participants.

No feedback

POTENTIAL BENEFITS FROM THE STUDY

1. Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project.

None.

2. Identify and describe any known or anticipated benefits to society from this study.

Knowledge about our consumption and possible recommendations to reduce consumption.

POTENTIAL RISKS TO PARTICIPANTS FROM THE STUDY

1. For each procedure used in this study, provide a description of any known or anticipated risks/stressors to the participants. Consider physiological, psychological, emotional, social, economic, legal, etc. risks/stressors and burdens

No known or anticipated risks
Explain why no risks are anticipated:

Minimal risk *
Description of risks:

Greater than minimal risk**
Description of risks:

* This is the level of risk associated with everyday life

** This level of risk will require ethics review by appropriate Dalhousie Research Ethics Board

2. Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified in Question 1.

No known risks so this is not applicable.

INFORMED CONSENT PROCESS

Refer to: <http://pre.ethics.gc.ca/english/policystatement/section2.cfm>

1. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?

Information letter with written consent form; provide a copy

Information letter with verbal consent; provide a copy

Information/cover letter; provide a copy

Other (specify) Verbal informed with verbal consent.

2. If written consent cannot be obtained from the potential participants, provide a justification.

Short on time, they are free to leave

ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF DATA

1. Explain the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.

Won't collect names, gender or age.

2. Describe the procedures for securing written records, questionnaires, video/audio tapes and electronic data, etc.

Confidential to student investigators, faculty advisors.

3. Indicate how long the data will be securely stored as well as the storage location over the duration of the study. Also indicate the method to be used for final disposition of the data.

Paper Records

Confidential shredding after April 13

Data will be retained until completion of specific course.

Audio/Video Recordings

Erasing of audio/video tapes after _____

Data will be retained until completion of specific course.

Electronic Data

Erasing of electronic data after _____

Data will be retained until completion of specific course.

Other _____

(Provide details on type, retention period and final disposition, if applicable)

Specify storage location: _____

ATTACHMENTS

Please check below all appendices that are attached as part of your application package:

- Recruitment Materials:** A copy of any poster(s), flyer(s), advertisement(s), letter(s), telephone or other verbal script(s) used to recruit/gain access to participants.
- Information Letter and Consent Form(s).** Used in studies involving interaction with participants (e.g. interviews, testing, etc.)
- Information/Cover Letter(s).** Used in studies involving surveys or questionnaires.
- Materials:** A copy of all survey(s), questionnaire(s), interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests used to collect data.

SIGNATURES OF RESEARCHERS

<u>Jaquelyn Maxwell</u> Signature of Student Investigator(s)	<u>Feb 15</u> Date
<u>David Vukobrat</u> Signature of Student Investigator(s)	<u>Feb. 15, 2011.</u> Date
<u>Brett Weddle</u> Signature of Student Investigator(s)	<u>Feb. 15, 2011.</u> Date
<u>Ed Intayson - Buck</u> Signature of Student Investigator(s)	<u>Feb 15th / 2011</u> Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date
_____ Signature of Student Investigator(s)	_____ Date

FOR ENVIRONMENTAL SCIENCE PROGRAM USE ONLY:

Ethics proposal been checked for eligibility according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans

Signature Date

Signature Date