

# Residence Move Out Program

**ERS250**

**Dec. 2003**

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## **Abstract**

The focus of this project is to determine the following: 1) the presence of any past or present initiatives to reduce waste accumulation at move out time in the University of Waterloo Village 1 and Ron Eydt Village, 2) the type of waste that is generated at move out time if any and 3) to create recommendations for implementation of a move out program using models created by other institutions. To answer the proposed questions, qualitative data was collected by interviewing the pertinent members of the administration, and by conducting student and staff surveys. On review of this data, it was discovered that there are no current initiatives at the University of Waterloo despite the availability of resources to do so and that there is a problem with reusable waste being left by students. As a result recommendations for such a program were provided with suggestions including: designating one person to coordinate and implement the program, community and student involvement as well as providing more recycle bins that are emptied more often.

## **2.0) Introduction**

Living in a world with harmful environmental threats, it is becoming increasingly important to examine and integrate creative and ecologically awareness initiatives into all aspects of everyday life. As members of the general community, university students are affected by the same cultural influences that impact the society as a whole. Our economically driven, liberal-democratic society is a threat to the environment as it focuses more on the preservation of the economy than on environmental needs (McKenzie, 2002: 23). The development and use of environmental initiatives should result in the eventual decrease of associated environmental impacts.

One serious issue present in the university environment is the excessive amounts of human-produced waste. Specifically, University residences appear to be a major source of excess waste at student move-out time. At the University of Vermont for example, 5.5 tons of waste per 4000 students were collected in 1999, exclusively at move-out time. This waste included clothing, food, toiletries and household items (UoV, 2002). This material could potentially be diverted from the waste stream and reused, recycled or composted. In theory, an adoption of a move-out program would reduce the environmental effects of consumerism and neoclassical beliefs by the diversion of material from waste to surplus stores and charities. At the University of Waterloo, excess waste at move-out time has been identified as a problem by Patti Cook, the Waste Management Coordinator. This project will examine the potential benefits and costs associated with the implementation of such a program at the University of Waterloo Village residences.

As Waste Management Coordinator, Ms. Cook has also played a key role in the development of the WATgreen program. WATgreen is a UW program that has been established to encourage positive environmental consciousness and action. One of the ways that WATgreen attempts to achieve these goals is by reducing waste and the program also prides itself in presenting "...an opportunity for students, staff and faculty to improve the quality of their environment, while decreasing overall operating costs of the University"(WATgreen, 2003). The pilot project developed in this paper is consistent with the goals of the WATgreen project. The project will provide baseline data for the future implementation and monitoring of a pilot project. The purpose of this project is to outline a potential "move-out" program for residents of University of Waterloo Villages, based on best practices at North American campuses. Such a program may reduce the

amount of waste at end-of-term transitions, by diverting reusable or recyclable items from the waste stream.

### **3.0) Background**

Many universities have implemented move-out programs in order to deal with the excess amounts of waste that are generated during move-out time. Two of the universities in the United States with move-out recycling programs are the University of North Carolina and the University of Michigan (The University of Michigan 2003, The University of North Carolina at Chapel Hill 2003).

Although no existing WATgreen project has addressed the specific issue of waste disposal in residences during move-out time, there have been reviews of recycling programs and opportunities completed at the University of Waterloo. These reviews have examined recycling and composting practices, extensive waste audits (WATgreen 2000). This information contributes to a baseline understanding of waste disposal methods and existing opportunities for improved waste disposal on campus. The reviews may also provide insights into the receptiveness by members of the campus community to these waste removal techniques. Composting pilot projects have also been initiated (Implementation of Large Scale Composting in Village Two Apr, 1993) which may describe opportunities and methods for diversion of compostable waste from the move-out material stream. Recycling is already used widely across the campus (Improving Recycling on Campus 1994). In March 2003, a solid waste audit of Village 1 residences was conducted. This project could provide insight into the type of waste presently being disposed of in the residences, although whether general waste disposal trends during the year mirror those seen at move-out will need to be determined. A survey of local charities will also be undertaken to identify potential opportunities for waste diversion.

The information above will be synthesized to produce a waste reduction program that will be tailored to meet the needs of the Village residences during move-out.

#### **4.0) Actors**

In order to fully understand the complexities and interrelationships of a system, it is useful to evaluate the system's actors. The following actors play key roles in this project:

- i) The Village residents are central in this study because they are generating the potentially needless waste and would largely determine the success of a pilot program. The involvement of students in a move-out program is essential for its success as they would have many responsibilities with regards to the actual disposal of the waste. A suspected significant factor in a program's success would be the ease of implementation of the program for the students; more work, or a complex set of student responsibilities, could contribute to the program's downfall. An understanding of potential factors that may motivate student participation will impact on the design of a move-out program.
- ii) The residence staff, including House Moms and Custodial Staff, is responsible for collection and disposal of waste at move-out time. Because of their previous experience with move-outs, they are in a position to provide information about the types and quantity of waste accumulated at this time. A move-out program may be appealing to residence staff if it leads to a reduction in the increased staff responsibilities that occur at the end of the year. This reduction may occur as a result of students diverting more of their 'waste' to charities

and the collection of recyclable materials in specific locations.

Conversely, the resident staff may not be as receptive to a program that increases the amount of their work or reduces their efficiency.

- iii) Administrative staff critical to the scope of this project include the University Waste Management Coordinator, Patti Cook, and the resident life coordinators of the villages, Shaun Carson and Shawn McCloskey. The Resident Life Coordinators are responsible for the well-being of the students, and there are a variety of reasons why a move-out program would be beneficial to them. These positive benefits would have to be balanced against potential negative aspects of a program. In considering the students' comfort and security, there would be obvious concern about the safety of garbage dumpsters. Excess waste in these receptacles could result in an increase of unsanitary animals and rodents like rats.
- Aesthetics, for the university staff, the students and their parents is also a major concern for the administration. A reduction in waste could reduce the unattractive piles of garbage accumulated at move-out time, resulting in a change that would most likely be desirable to the administrative staff. This type of program could also result in a reduction of waste removal payments as there would be less garbage to remove. Charities like Cerebral Palsy, for example, could take away part of the waste stream for free. These factors would certainly contribute to the support of this type of program by the administrative staff. A move-out program may also benefit the administrative staff by attracting students with a strong environmental ethic. If these students could live in a residence that

supports appropriate waste management, this could increase residence occupancy. Potential concerns for administrative staff may include possible cost increases with the implementation of a move-out program, time, efficiency and physical feasibility.

- iv) The off-site waste collection agency also plays a role in this system although not quite as essential as the rest. The collection agency is predominately concerned with the efficiency of picking up waste from residences and the waste disposal methods used.

## **(5.0) The Proposed Move-out System**

### ***5.1 Boundaries***

Only the Village residences, Village 1 and Ron Eydt Village, were examined. These residences were chosen for several reasons. Firstly, there are approximately 1379 students living in Village 1 and 1000 students living in Ron Eydt Village. Approximately half of the students in each residence were male and half were female. Students also came from diverse ethnic and cultural backgrounds and were engaged in multiple fields of study. Narrowing the residences considered makes it easier to locate the students who lived in either residence in the 2002/2003 academic year. Secondly, these residences are physically arranged similarly to other university residences. The residences are arranged in a dormitory style with communal bathrooms and common areas. The similarity of residence types is important to comparing a feasible move-out program to other programs implemented by other Universities. All financial inputs to the residences from the university were determined from the administrative interviews and are included in the system. Outputs related to waste disposal were examined, but no financial flows existing beyond the administration's budget were reviewed. Specifically, the budget was

examined to determine if there are funds available for a move-out program, as well as the size of investment the university is willing to make to implement the proposed program. The proposed move-out program would begin 2 weeks before the middle of the exam period. After preliminary research, it was noted that most programs researched began one or two weeks before move-out times (The University of Michigan 2003). Since we cannot determine the date of the first person moving out, we will assume that most people will begin to move-out around the middle of the exam period and continue until the end of the last exam each semester.

We have not examined methods of reducing waste by promotion of changes in buying habits. This study only looked at the waste as a by-product; the study did not examine what products are being purchased and their environmental impacts.

## ***5.2 Elements***

The elements of a move-out program system include what gets thrown out, composted, recycled, reused or donated. The human elements of the system include house moms and custodians who get rid of the waste, residents who throw away reusable items, the waste disposal company, the recycling company, charities who accept the donations and the administrative staff who supervise the entire waste disposal process. Physical elements include the design of the residence buildings and surrounding area, which determines the location of the recycling or donation bins, etc.. By reducing the amount of waste from the Village residences that goes to the landfill, the total amount of waste from the campus will decrease. Reducing the amount of waste on campus will make the campus more sustainable, and is consistent with a major WATgreen objective (WATgreen 2003).

### ***5.3 Inputs, Throughputs and Outputs***

The inputs to the system include waste from the students and money from the university to pay for House Moms, custodial staff, and waste disposal. These budgetary items were assessed in administrative interviews. The throughputs are the administration that allocates money from the university budget and designation for waste disposal. Outputs include garbage, recycling, compost, donations, and money from sales of used items.

### ***5.4 Relations***

All waste disposal practices are supervised by the Village administration which reports to Plant Operations of the University administration. The budget for Village waste disposal comes from the University. The money available then goes from the University budget to custodians, house moms and the waste disposal company that has a contract with the University.

As shown in the systems diagram on the preceding page, the waste that is generated by the students goes to the garbage or recycling bins, either directly or indirectly through the custodians or house moms. This waste is then removed from the residences by the custodians or house moms to a location where the waste disposal trucks can collect it for removal to the landfill or recycling centers. Potential interventions proposed by the move-out program include asking charities to pick up used goods directly from individual students or from all the students at once using a central location at the residence.

Recycling, composting, and possibly a free store, or 'take it or leave it' pile may be suggested.

## **(6.0) Methods**

*6.1 Methods Used-* A review of literature concerning existing move-out programs was conducted and the information was summarized. On the basis of this review, procedures

and measures of success were identified. Subsequently, representatives of staff, second year students and administration were surveyed and interviewed.

Questions directed to the students included the following:

- 1) Was the staff in your residence helpful in assisting with your recycling efforts?
- 2) What type of garbage/waste was accumulated at the end of the year?
- 3) Were there goods that you threw-out which could have been recycled?

Questions directed to the residence staff included the following:

- 1) What kinds of waste are generated at move-out time?
- 2) What is done with the waste generated at move-out time?
- 3) What would make your job easier at move-out time?

Questions directed to the administrative staff included the following:

- 1) What are the financial limits of starting a move-out program?
- 2) Has the administration expressed any concern about excess waste at move-out time?
- 3) How much time is the administration willing to invest in a move-out program?

Finally, the data and information collected will be analyzed to formulate a proposed program.

*6.2 Sampling Design-* Realistically, we may have only been able to collect info from 50 people, but a larger sample size would have improved the validity of our results. The use of purposive sampling in this study is designed to target second year students who lived in one of the village residences during their first year and experienced a move-out. Second year students were targeted because their experiences have been relatively recent. The students lived and moved out of residence less than eight months prior to the survey. We assumed that this would provide more accurate data than from a student who

experienced a move-out three years ago. First year students were not targeted because they have yet to experience a move-out and any data that could be collected would be theoretical. The sampling was conducted across a wide variety of programs and genders to minimize the impact of program or gender bias. Therefore, we asked participants their gender and program in order to measure the impact of these variables. Professors of large second-year core courses were approached and asked for permission to conduct a brief survey during class time. No surveys were conducted without the permission of the professor. We also approached administration and staff in person and through email to introduce them to the project and ask permission to administer interviews. For the staff, a snowball sample was utilized to identify who works in the selective residences and who could be interviewed.

*6.3 Measures of Success-* Existing move-out programs were evaluated by criteria such as cost and efficiency that were identified as important in the previously cited literature and surveys. Expected variables were: cost, effectiveness of reducing waste or amount of waste diverted; popularity or awards; qualitative opinions of actors (did they think the programs were successful?); and time and effort requirements (participation requirements of all actors). The actual variables considered were determined from the results of the literature review and the interviews.

The programs reviewed in our summary of other university programs were assessed using a Likert-type scale from 1-5 to rate each program component which was then used to produce a basis of comparison between existing programs and to determine which program would be best to model our pilot project after. For the purpose of scale definition, an excellent program was rated as 5. The reviewed move-out programs had a significant impact on the total amount of waste generated at move out time (at least 80%

reduction) and programs are still currently being run successfully. The number 4 rating on our scale defines a program as achieving between 60 and 79.9% reduction in waste and is being implemented with some success. The third rating on the Likert scale corresponds to a 40 to 59.9% reduction in the amount of waste generated at move out time and some kind of program being implemented. The second level rating describes a program that results in a 20 to 39.9% reduction of waste during move out time and the program implemented with limited success. Finally, level 1 on the scale describes a program with less than 20% waste reduction and sporadic move out programs implemented. The amount of reduction was described as a percentage of the total waste generated before the move-out program was initiated.

*6.4 Analysis and Evaluation-* By sampling staff, students, and administration, we obtained three separate perspectives on the issue of excess waste at move-out time. Use of the triangulation sampling method provided us with further insight into potential complexities of implementing the proposed program. The information gathered allowed for a continuing comparison between programs. Residence staff interviews provided us with insight about the type of material left as waste during move-out and provided information about how a program could be developed to suit their needs. Administration was surveyed because of their awareness of budgetary constraints and their responsibility to operate within them. Any move-out programs must be designed according to financial realities. Students were surveyed to determine what types of waste they left at move-out time and what they would need in the program to make it work for them. We used a purposive sampling method for the gathering of student information because a snowballing method for the students is unlikely to produce enough respondents. Given the small population of resident staff and administration, a snowballing sampling

technique helped to identify the staff that was most helpful to us. A major risk of purposive sampling is that it may not have provided us with a representative sample of the student population as a whole. The selection of second-year students from specific classes and faculties may have, therefore, reduced the generalizability of the results. Use of snowballing sampling techniques may have been unsuccessful if the first person surveyed influences the rest of the design structure because people are usually acquainted with those who have similar interests. It was important to keep these factors in mind while conducting surveys and interviews.

**(7.0) Data Analysis**

*(7.1) Student Analysis:*

The purpose of the student survey was to determine what types of wastes the students threw out, whether or not they may respond to a move-out program and what we could include in a move-out program that would improve the chances of student participation.

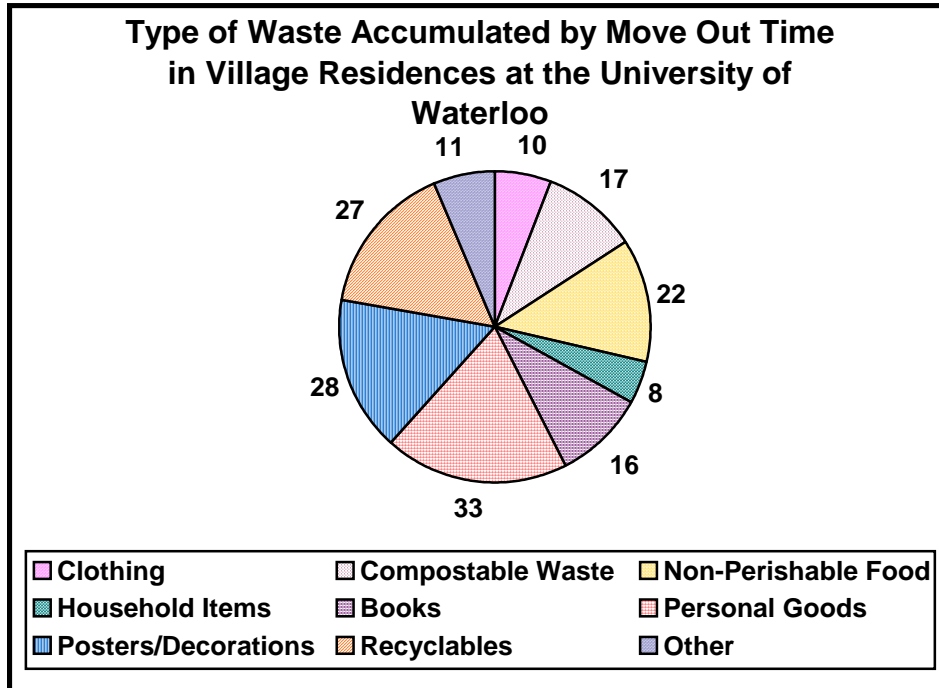


Figure 8.0: Responses to question 5 of the attached survey. Shows types of waste generated by students in residences.

To begin, our preliminary literature review gave us an excellent idea of what type of waste the students threw out last year. Understanding the type of material discarded by the students is important for developing strategies to separate items from the waste stream that may be removed and recycled. Figure 1 illustrates that there are significant amounts of forgotten items accumulated at the end of the year as students leave residences. For example, Figure 8.0 and Figure 8.1 identifies a significant amount of potentially recyclable or reusable items, and supports the potential for a program that involves a book, clothing and food disposal system. No category was without response, indicating that the types of material thrown out are similar to the types of waste generated at other universities. Therefore aspects of the move-out programs implemented at other universities that address these types of waste could be included in a move-out program for the University of Waterloo Village residences.

Secondly, it was shown through the student survey, that approximately one quarter of the students sampled threw out things that could have been recycled (Table 8.0, question 6). Considering there are approximately 2379 people living in the two residences, there is a potentially significant amount of recyclables entering the waste disposal stream.

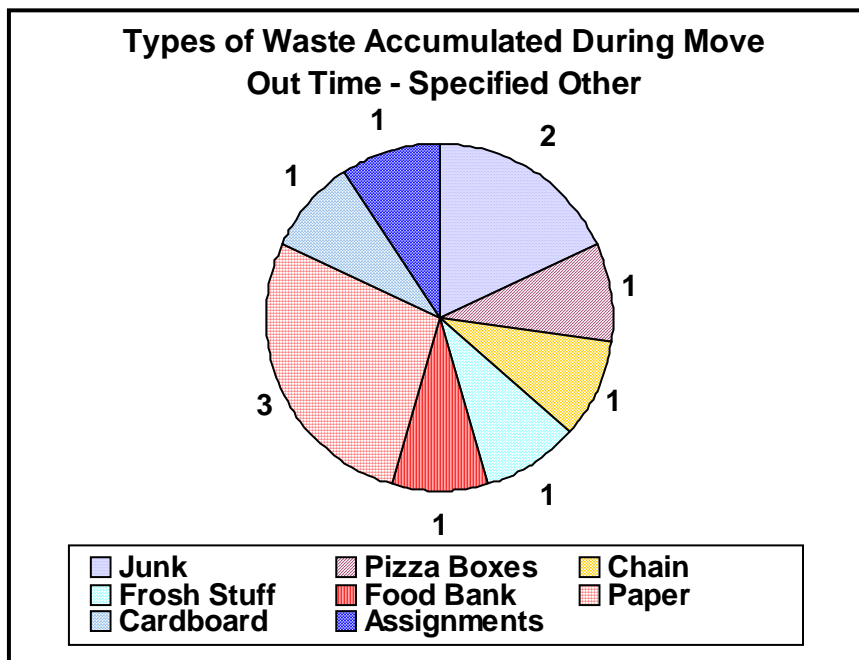


Figure 8.1: Types of waste accumulated during move out time that were not given choices, but were specified by the respondents.

A third significant finding from the student survey was that few people knew about recycling programs (Figure 8.2). Specifically, almost half the respondent, 46%, had no knowledge of recycling programs, and only 4% were extremely knowledgeable. Therefore, the pilot projects present available at the university were not well known to the student population.

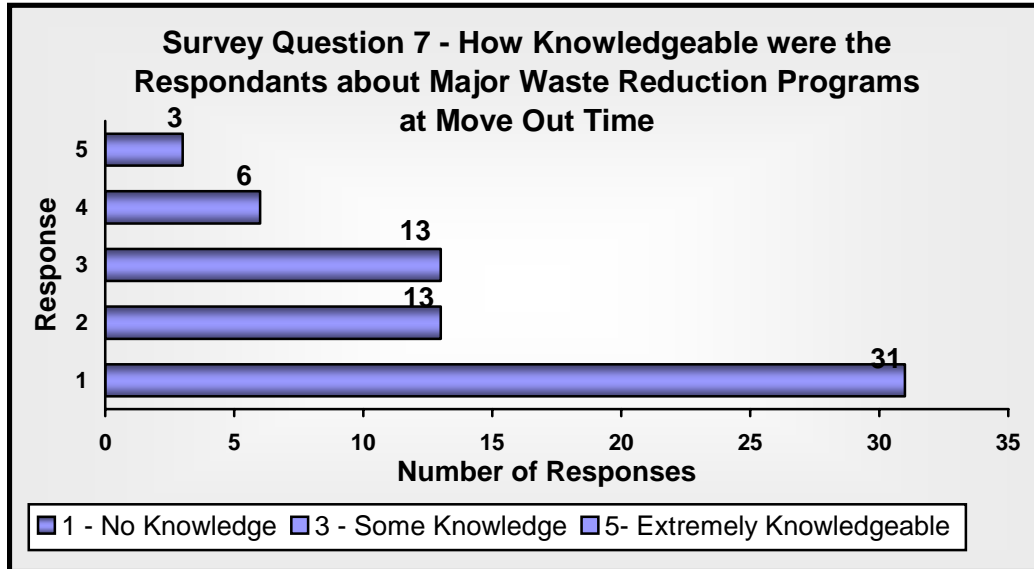


Figure 8.2: Responses to Survey Question 7 regarding student’s knowledge of waste reduction initiatives at move out time.

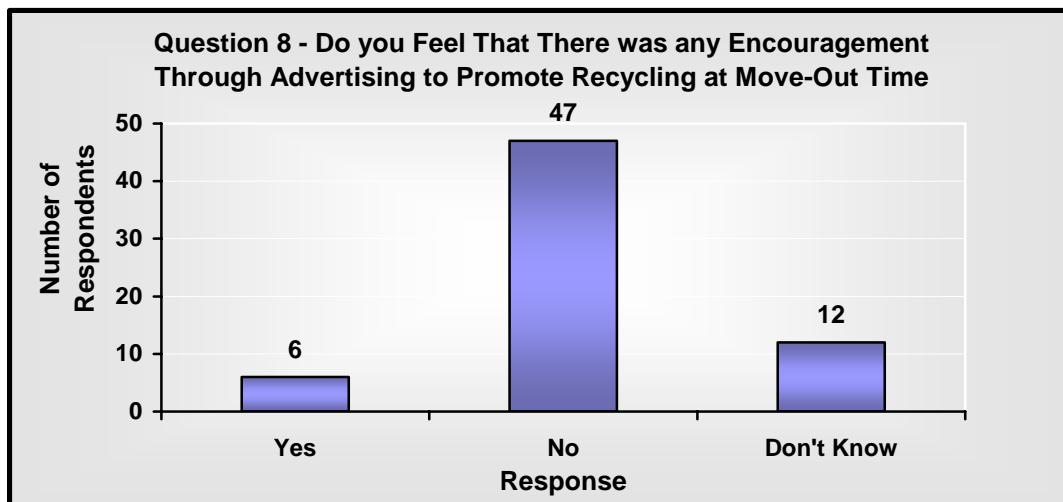


Figure 8.3: Responses to question 8 – Views of any encouragement done through advertising to promote recycling during move out time.

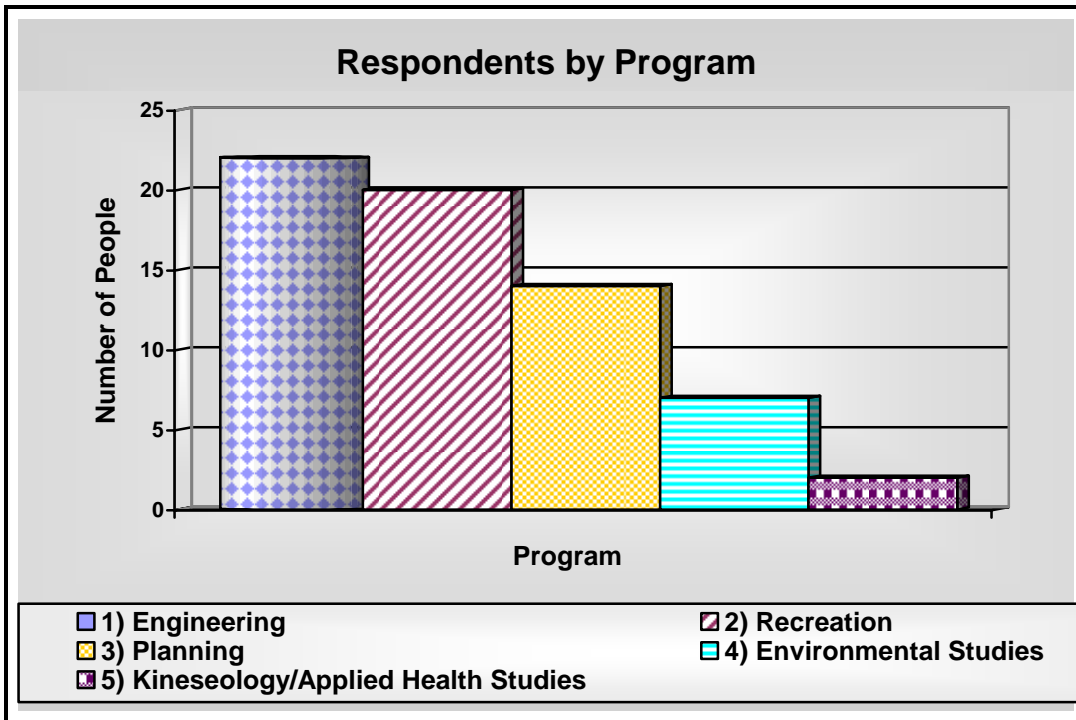


Figure 8.4: Respondents categorized by program. Note: Environmental Students were grouped together because responses showed no variation.

Furthermore, a significant number of the respondents of the student survey felt that there was minimal encouragement for them to recycle their waste during the move-out time (Figure 8.3). The overwhelming numbers suggest that an educational campaign could be successful in reducing the amount of waste generated at move-out time, as well as possibly reducing the amount of waste generated throughout the year. We may be able to

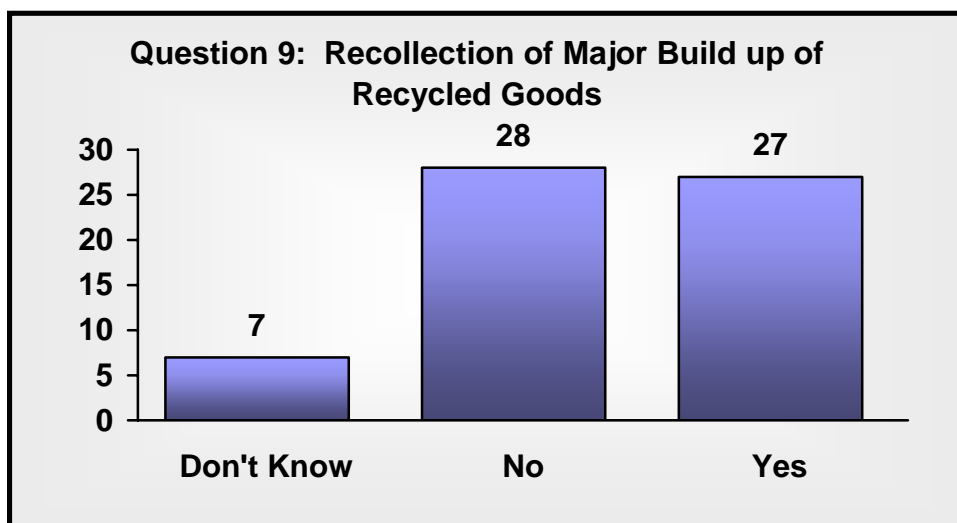


Figure 8.5: Depicts surveyed opinions of whether or not there was any buildup of recyclable goods at move-out time.

increase recycling and therefore decrease waste output by simply increasing awareness of recycling and reuse opportunities. This will be an important factor in the success of our program (Evison et al. 2001).

Our literature review was consistent with the data collected from the student survey in determining that a move-out program should include, food bins, clothing bins, compost

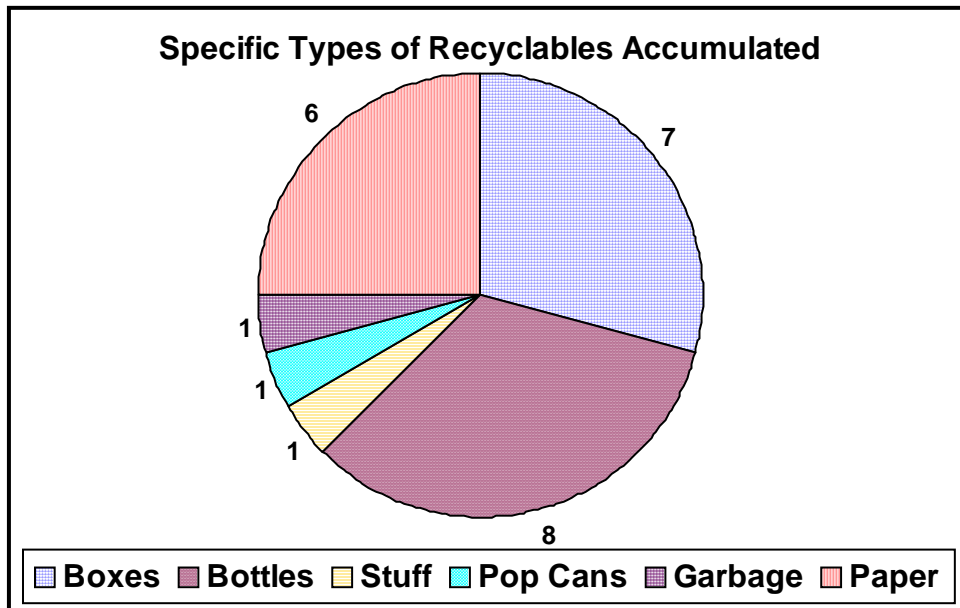


Figure 6: Specific types of waste that were noticed to pile up during move out time.

bins, more recycling bins that are monitored and emptied appropriately, significant advertising, and the involvement of staff, students and dons (Table 8.1). An incentive program may be used to encourage those who otherwise would not recycle.

To reduce the potential for bias in the results, volunteers were selected from a broad range of faculties (Figure 8.4). If respondents were selected primarily from environmental-related fields, the results might reflect a bias toward pro-recycling. In fact, the results obtained did not reflect such a bias. Because of our random sampling technique, the majority of the students were part of the engineering and recreation fields of study. The selection of students from these areas would not be expected to produce a pro or anti-recycling bias. Moreover, in response to the question of whether the students could recall an accumulation of recycled goods at move-out time, almost half of the students responded positively (Figure 8.5). The responses of the students indicate that

there are issues prevalent with the removal of recyclable materials at move-out time. In considering the fact that less than half answered affirmatively, one must take into account that the students, move-out experiences occurred eight months prior to administering the surveys, as well as the possibility of there being different interpretations of the word ‘major’. By examining the types of recyclables accumulated during move-out time, one can determine possible initiatives designed to lessen the problem. For example, there is a build-up of bottles in residences. Therefore, the use of extra bottle recycling bins with more frequent collection may encourage diversion of bottles from the waste stream. More research should be done to identify the types of incentives that would encourage student participation in the program. A waste audit at move-out time would produce more accurate data regarding what was actually thrown out and how much. A quantitative study during move-out time would minimize the limitations of relying on student memory and peer influences on the results obtained using the present data collection methods.

**Table 8.0-Results of Student Survey**

<b>Question 1:</b> What academic year are you in?	Second year: 67
<b>Question 2:</b> What is your gender?	Male: 32 Female: 35
<b>Question 4:</b> Which residence did you live in last academic year?	Village 1: 27 Village 2/Ron Eydt Village: 40
<b>Question 6:</b> Were there goods that you threw out which could have been reused or recycled?	<b>No:</b> 32 <b>Don’t Know:</b> 12 <b>Yes:</b> cardboard (3), paper (6), drinking boxes (1), pop cans (2), food (1), snowboard (1), bottles (3), some (2), decorations (2), everything recyclable (2), plastic (1), boxes (1), Tupperware (1). Total of yes: 26
<b>Question 10:</b> Did you throw waste in the	1: 11

garbage because the garbage cans were more convenient than alternatives (1) or because there were no alternatives (5), undecided (3)?	2: 11 3: 20 4: 12 5: 11
<b>Question 11:</b> How helpful was the staff in your residence in assisting you with your recycling efforts during move out time?	1 (extremely helpful): 4 2 (somewhat helpful): 6 3 (undecided): 20 4 (not very helpful): 12 5 (not helpful at all): 11
<b>Question 12:</b> Whose responsibility do you think it is to deal with recycling at move-out time?	Staff: 8 Students: 27 Both: 29    Everyone: 1

<b>Table 8.1: Student Suggestions</b>
Suggestions from respondents who lived in Village residences for techniques to improve recycling at move-out time:
• More recycling bins: 20
• Awareness through advertising, dons, labelling: 15
• Incentives: 2
• Empty bins more often during move out time: 1
• Containers for clothes, books and food bank donations: 4
• Cafeteria's using recyclable containers: 1
• Fines: 1
• Compost bins: 1
Suggestions from respondents who lived in other University of Waterloo Residences for techniques to improve recycling at move-out time:
• More recycling bins: 7
• More advertisement: 11
• Dons take a greater role in recycling: 3

• Incentives: 1
• Year long incentives to not accumulate waste in the first place: 1
• Empty the bins more often to not allow build-up: 2
• Fines: 1

(7.2) *Staff Survey's*- Upon analysis of the staff surveys, we determined what type of waste was generated, showing the need for an additional diversion of waste using alternative recycling techniques. We found that some of the custodial staff and house moms did not consider non-perishable food items, household items, books and personal goods as waste since they can be and are reused and recycled after move-out time. Additional methods of diversion clearly are needed since there are all of these materials being taken to the landfills instead of being diverted into a recycling waste stream. Current measures include attempts to ensure that the majority of clothes and food items are given to charities and boxes and paper are recycled. The use of composting and additional recycling boxes to collect, for example, different glass types may be useful. Not only will supplementary initiatives help reduce the impact of University waste on landfills, the costs of removing excessive amounts of waste may also be reduced. The staff respondents offered a couple ideas to incorporate into a possible program:

- Each floor should have regulations for students to follow in regarding waste streaming and what they can leave behind at move out time. (N.B. See Discussion: Suggestions for our groups additional recommendations)
- Implement a “Move-out 101” student information session: a floor meeting on how to prepare for students’ departure.

(7.3) *Administration Analysis:*

To gain valuable information from the administration, Patti Cook, Peter Jordan, Patty

Koebel, Connie Reading and Shaun Carson were interviewed. Each had a differing standpoint of how the University of Waterloo dealt with excess waste at move-out time. Described below is a description of the interviews held. These interviews are included in the Appendix section.

*Patti Cook*

Patti Cook was surveyed because she is the University of Waterloo's waste management coordinator. The goal of this interview was to gain information about how the University of Waterloo administration feels about implementing a move-out program. Patti did state that the accumulation of waste during move-out time was a concern to both her department and the University. The major concern Patti expressed was the cost of the excess waste generated and the relations between the community and the University. The community is not satisfied with the \$50,000 it currently spends annually to clean up after students. Patti also showed concern that only the residences are concerned about their waste management because the University administration has other issues to attend to. Due to her annual budget of only \$7,000, Patti cannot implement any move-out plan herself. Patti is capable of assisting in the organization of a plan and education to promote it; however, it is the residences that must pay and maintain a move-out program. Patti believes that a move-out program is physically feasible and the resources are available to start a move-out program. Students on financial aid could also benefit from the program, if it involved the sale or hand-out of furniture and food. Community relations need to be improved and the implementation of a move-out program would help improve these relations. Cost-feasibility would be the principle determining factor of the successfulness of a move-out program. Overall, Patti believes a move-out program

would be successful if the Village residences had the organization to implement a plan which was cost feasible.

*Peter Jordan.*

Peter Jordan, is the supervisor, maintenance and cleaning services facilitator at Ron Eydt Village (REV). Since he is in charge of all waste management programs at REV, Peter was helpful in discussing the accumulation of waste during move-out time. He stated that during the move-out period, the buildup of recycled goods was a small factor in overall operations. The excess of recycled good was simply placed beside the bins. Therefore his only request was that at move-out, extra boxes be provided for the excess waste. Peter went on to explain that Ron Eydt Village did participate in a clothing drive to divert waste and to help out the local community. He believed that there were enough resources available to start a move-out program in fact, during the move-in and move-out time he hires 20% more staff to deal with the excess waste. Lastly, Peter emphasized that his priority is the cleanliness of the buildings because there is only six days to “turn-over” until new residents move in. Therefore he said it is the organization of the program, and the time management of the staff that will determine the successfulness of a move-out program.

*Shaun Carson*

While in Ron Eydt Village the residence life-coordinator, Shaun Carson, was interviewed. He believed that a move-out program was physically feasible in terms of the availability of the staff and he felt volunteers could be recruited to assist in the organization. Shaun was enthusiastic about the possibility of a program, stating that they

have experimented with a clothing drive and book drive. The groundwork was already in place to start a program but Shaun believed that the major difficulty in beginning a program was the participation of the students. Shaun stressed that residents needed more of an education about recycling. His suggestion was to start education as early as frosh week for the best results while also to start students off on the right foot in terms of their recycling habits. Lastly, similar to the other administration interviewed, Shaun stated that a move-out program would not be viewed as a success if it was not cost-feasible for the residences.

*Patty Koebel, Connie Reading*

The last interview held was with Patty Koebel, the Residence Manager for Village One and Connie Reading, the supervisor, maintenance and cleaning services facilitator at Village One. The interview was held together at the request of Patty and Connie. Both Patty and Connie did state that they were told there was extra waste by the residence staff and the staff did request extra dumpsters at move-out time. Connie affirmed that recycling and waste management was on their list of priorities and that it would be in the best interest of all actors to initiate a move-out program but it comes down to whether or not the residents will participate in the program. Patty confirmed that the Village One residences did have the available resources and budget to start a program. She also referenced successful waste management programs being completed at other UW residences, like the composting program at Minolta Hagey. Connie and Patty felt that the residences were willing to try new ideas to deal with the excess of waste during move-out but they believed that the students needed to be more educated before a move-out program began.

### *Analysis*

After completing these interviews, similarities between responses were identified. The major common theme that all administration felt was important for any program is that it be cost-feasible for the University. If the program cost more than the related negative environmental effects would cost, the University would discontinue the program. All the administration believed that the residences had the available resources and the financial capability to start a program but that the organization was absent. The final common feature between the administration interviewed was the importance of student participation. They felt that no program could be successful if the students did not contribute and help organize the move-out program while also participating in the program itself.

### *Implications*

Our suggested program should cost less than the current waste disposal methods, and should include some sort of education and incentive program for the students. A champion will need to be identified to spearhead the move-out program.

### **(8.0) Comparison of other Universities**

In order to create suggestions that the University of Waterloo should implement, other University move-out recycling programs must be analyzed. Research was done by analyzing universities in North America and the universities mentioned below were chosen because they specifically mentioned a move-out program currently in place at their university. To rate how these universities compared to the existing programs in place at the village residences on the University at Waterloo campus, a rating system will be used.

The rating system used is a scale of 1 to 5, one being the worst recycling program and five being the best program. This is a subjective rating system, created for this project by the authors of this paper. There are five criteria for the evaluation: cost spent on program, education of staff and students, information available to public about move-out program, types of waste that could be recycled and how the recycled waste and non-recyclable waste is diverted. The information used to rate the programs was gathered directly from the universities' website.

For these universities to have something to compare to for the scale, the University of Waterloo will have a rating of 2.5 out of a total of 5. Each section below is a synopsis of the universities move-out and recycling program, a description of how they compare to the UW program and its rating.

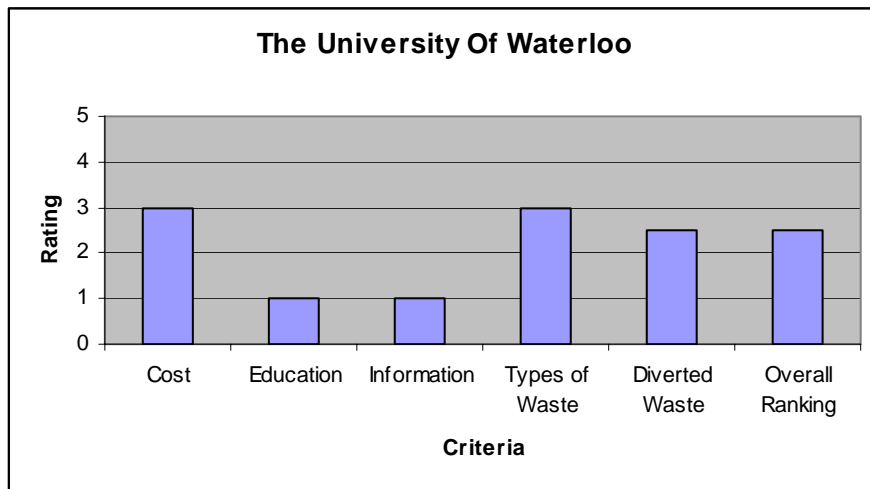


Figure 9.1: The University of Waterloo rank of each specific criterion

*The University of Michigan*

In the residences at the University of Michigan, there are designated waste/recycling closets in 10 of the 15 residences. In these closets, posters are provided to help the

students “sort it right”.<sup>1</sup> The residences that do not have these closets are asked to recycle by bringing their material to blue recycling dumpsters and carts located in the outside parking lot or by the building's loading dock. The Residence Education Staff encourage students to recycle basis and avoid the pile-up that accumulates. Education is undertaken through several 30-minute interactive programs held by waste management services. The residences also promote tours of the facilities that recycling goes through after it is dropped in the bins. During the move-out time, the University of Michigan has alternative methods of disposing of goods that can be recycled. A donation area is established in the hub of every residence. The residents can donate clothing, shoes, unopened food and toiletries, bedding and household items. The residences also have a “take-it or leave-it program”<sup>2</sup> which allows students to donate and receive items such as carpets, furniture and wood. These programs have shown to be successful in reducing the overall waste being thrown away to landfills.

The University of Michigan got a perfect rating of 5 out of a total 5. Out of any university researched, Michigan has the most resources, services and organization for their move-out program. The use of wide-spread recycling education, donations and trade programs has led to the availability of appropriate waste reduction resources and the motivation for students to use them resulting in a perfect score for the University of Michigan in our rating system

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<sup>1</sup> [http://www.recycle.umich.edu/grounds/recycle/student\\_move-out.html](http://www.recycle.umich.edu/grounds/recycle/student_move-out.html)

<sup>2</sup> Ibid

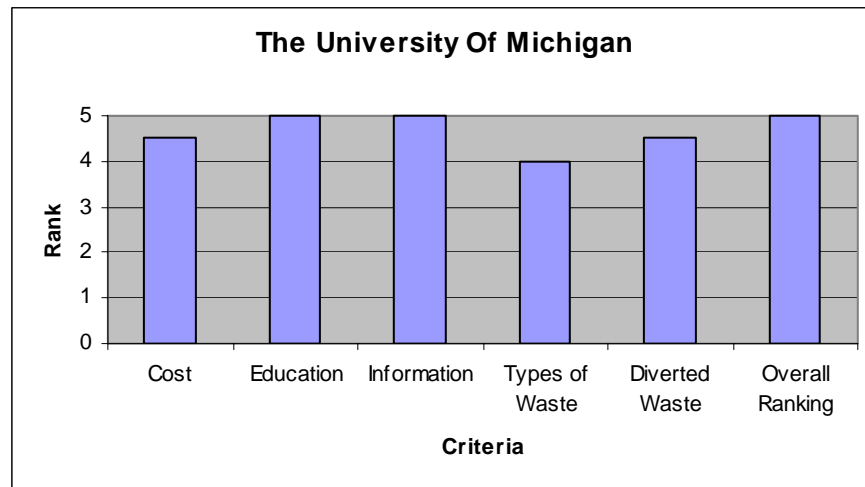


Figure 9.2: The University of Michigan rank of each specific criterion

### *The University of Oregon*

The University of Oregon Campus Recycling Program’s purpose is to have “excellence in waste reduction and recycling service, and education to the entire University community while attaining reduction, reuse, and recycling goals mandated by the State of Oregon.”<sup>3</sup> The program strives to place students in a leadership role along with Facilities Services, ASUO, University Housing and University Administration in order to create a united university community to deal with waste. The University states that move-out is the busiest time of the year for Housing Recycling Program because of the “mass exodus of most residents during the final three days of Move-Out week.”<sup>4</sup> Charities are chosen to accept the donations and they provide the collection bins. The university does provide education through doorknob flyers and posters but they have acknowledged that recyclable goods continue to be thrown out and they have discussed a number of waste recovery ideas to be implemented for future Move-Out weeks.

<sup>3</sup> <http://darkwing.uoregon.edu/%7Erecycle/housing.htm>

<sup>4</sup> Ibid

We gave the University of Oregon a rating of 1.5 out of a total 5. The university does have the resources in place and are on their way to creating a successful move-out program but currently the university is not instituting the possible programs. The university claims to be in the works of starting a program but they are still concentrating their resources on reducing the yearly accumulation of waste. The rating system concentrates on the initiatives that help reduce waste at move-out time and not the overall waste.

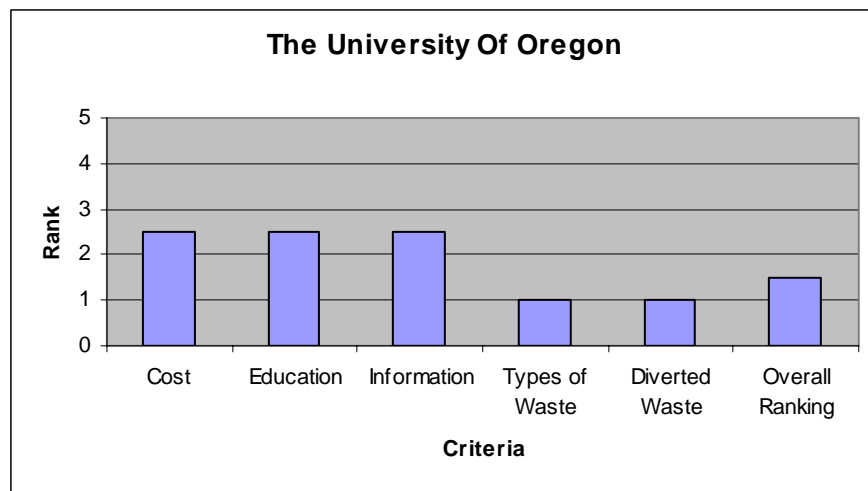


Figure 9.3: The University of Oregon rank of each specific criterion

### *University of Vermont*

To minimize the overall waste sent to landfill, the University of Vermont asks its 4,000 residents to participate in their annual move-out program. Special boxes are designated for clothing, household items, food and toiletries. The University does have a Recycling Staff who organize and redirect the goods to charities. In 1999, over 5.5 tons of goods were collected and given to charities.<sup>5</sup> Goods that are too large, like scrap wood,

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[http://www.uvm.edu/~uvmppd/Services/Recycling\\_and\\_Solid\\_Waste/?Page=Residence\\_Halls/moveout.html](http://www.uvm.edu/~uvmppd/Services/Recycling_and_Solid_Waste/?Page=Residence_Halls/moveout.html)

furniture and carpets are placed in a marked off area where selected organizations are allowed to remove the usable items. Unfortunately, most of these large goods are damaged and cannot be used and are, therefore, shipped to the landfill. Approximated 27 tons of these unusable goods were sent to the landfill in 2001.<sup>6</sup>

The University of Vermont was given a score of 4 out of a total 5. Although the university did state the huge weight of garbage not being recycled, they had exact weights of recycled goods and garbage from move-out time. This shows dedication and commitment to reducing waste at move-out time. Measurement is only useful if it leads to change in a positive direction. The university did provide all the necessary resources for the recycling of all goods and were very receptive to new and innovative ideas on how to reduce the accumulation of waste during move-out time.

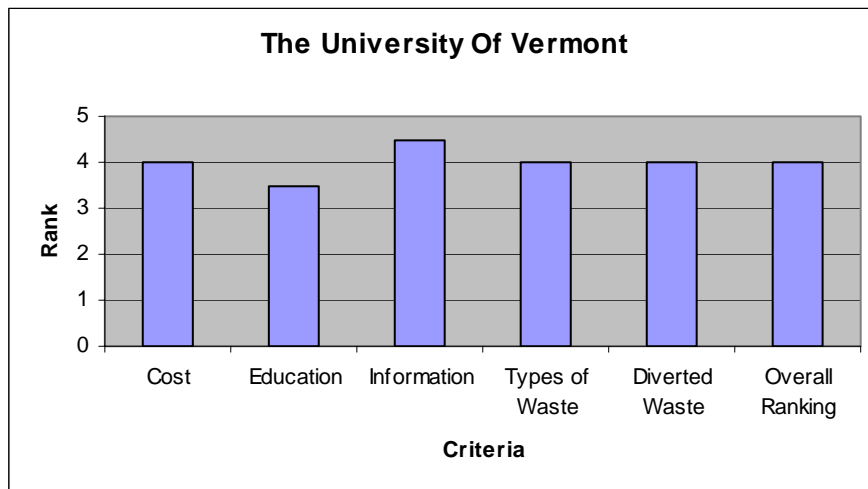


Figure 9.4: The University of Vermont rank of each specific criterion

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[http://www.uvm.edu/~uvmppd/Services/Recycling\\_and\\_Solid\\_Waste/?Page=Residence\\_Halls/moveout.html](http://www.uvm.edu/~uvmppd/Services/Recycling_and_Solid_Waste/?Page=Residence_Halls/moveout.html)

*University of Western Michigan*

The University of Western Michigan has initiated a “Trash-to-Treasure Program”, originally coined the Move-Out program, whose goal is to direct usable goods to the city of Kalamazoo. Since the spring is the time of the year that most excess waste accumulates, the University Recycling and Waste Reduction Services collects clothing, food, toys, linens, furniture, appliances and toiletries to distribute for the surrounding community of Kalamazoo. The residences set aside boxes for donations and then the residence staffs take them to the city center where they are redirected to individuals. Unlike other universities, this program runs throughout the year.

The University of Western Michigan was given a score of 2.5 out of a total 5. The university did provide bins for all types of goods that could be reused. The appropriate steps are being taken to eliminate waste and to recycling as much as possible. The average rating is from the university lacking a major initiative and education program that needs to be in place for a move-out program to be successful.

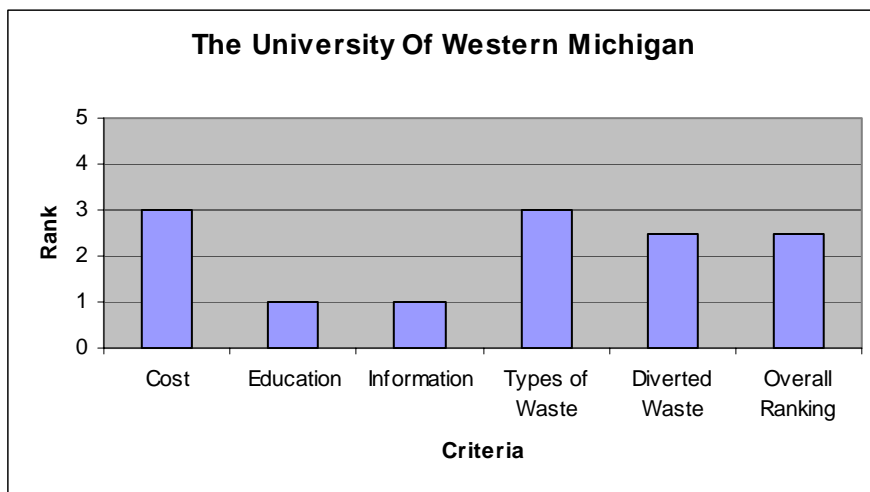


Figure 9.5: The University of Western Michigan rank of each specific criterion

### *University of Berkeley*

To educate and promote recycling, the University of Berkeley has elected a group of student known as the Residential Recycling Education Coordinators (RRECs). Their purpose is to design outreach initiatives, implement ideas, and get the word out to residents that to recycle and reuse is cool and that garbage and excessive consumption is not.<sup>7</sup> The group also assists in the organization of recycling programs and it serves as the main contact between administration and recycling coordinators. These students help by directing waste throughout the year but their main objective is to encourage students to recycle during move-out time.

The University of Berkeley was given a score of 2 out of a total of 5. Although there were steps taken to bridge the gap between the students and the administration, no major initiatives were taken to reduce the accumulation of waste at move-out time. The university is taking step to divert the build-up of waste but these steps are basic, like providing bins for bottles and cans to be recycled. The University of Berkeley is on the right path for implementing a move-out program but major recycling initiatives, like donation bins, need to be implemented for a move-out program to be successful.

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<sup>7</sup> <http://recycle.berkeley.edu/srec/programs/rrec.html>

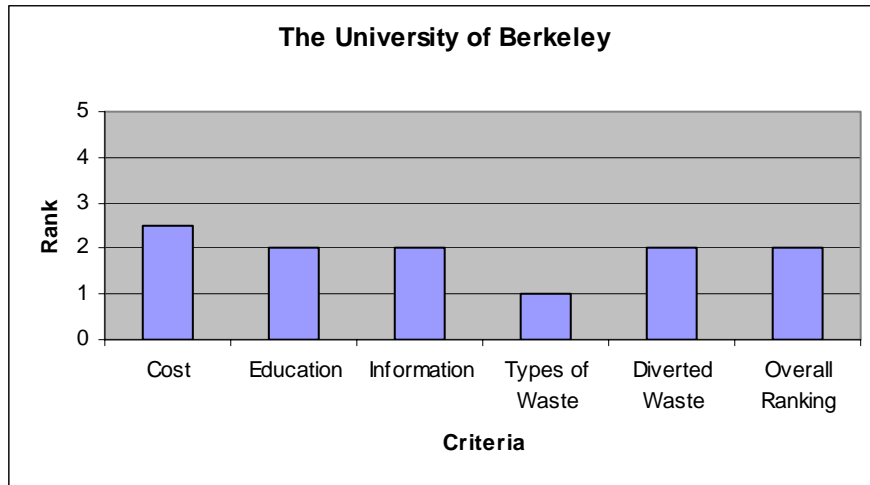


Figure 9.6: The University of Berkeley rank of each specific criterion

### *Implications*

By researching other universities that have move-out programs already in place, our group can make suggestions regarding the most effective and productive program to implement. The rating system was used to get an idea of which university had a program that overall satisfied the needs for a successful move-out program. The University of Waterloo's village residences currently have the resources and enthusiasm in place to start a move-out program and through assessing other universities, our group can discover which programs are best suited to be implemented at the village residences.

**Table 9: Overall Ranking of Universities**

	Rating
University of Michigan	5
University of Oregon	1.5
University of Western Michigan	4
University of Vermont	2.5
University of Berkeley	2
University of Waterloo	2.5

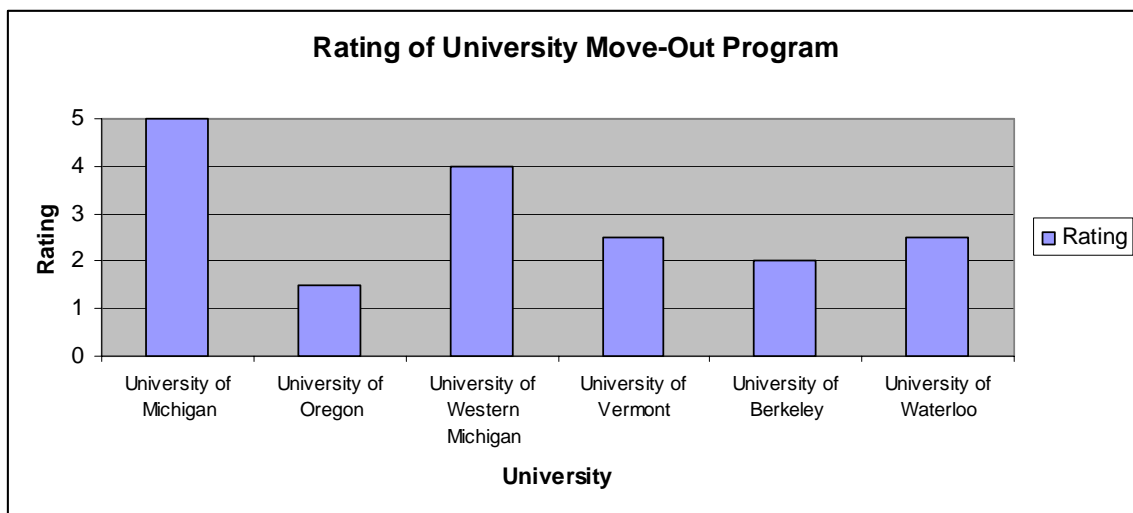


Figure 9.7: The total rating of all Universities

## **(9.0) Discussion**

*9.1 Limitations* - In order to produce a valid study, it is important to identify any potential bias by the participants so that the research methods employed reflect neutrality and objectivity. Although our group found the scope of this project to be worthwhile and informative, our selection of methods, data collection and analysis may have raised the

opportunity for a biased report. The selection of material for review and the questions asked in the survey may reflect an environmental perspective since we are students in Environment and Resource Studies.

Within our methodology, we found that there was potential for fault within the design of the questionnaires and surveys. We were aware that responses may have not been completely genuine/valid because some respondents may have been rushing through the survey or interview or possibly simply misunderstood some of the concepts. For instance, in question 11 on the student survey, students may have been misled because the question was double-barrelled, with two questions in one. Also, if individuals have no vested interest in environmental issues, they may have chosen not to participate in our study, thereby skewing the participants in the survey process and, therefore, the results. Since our questions were limited to the former student residents of the Village residences, our findings may not be fully representative of overall recycling habits across all other University residences, such as Mackenzie King, Columbia Lake Townhouses, UW Place, St. Paul's, Conrad Grebel and Renison College. Moreover, we chose to use a random selection method within core courses across the university faculties for the student surveys. We had intended to have larger sampling sizes in our data collection to improve the validity of our results but found that it was not possible to achieve the number of responses desired. This has affected our ability to draw sufficiently detailed and useful analysis. For instance, we distributed 20 surveys to the staff (house moms and janitors) in Ron Eydtt Village, and only 3 were returned. We discovered that the group of house moms and the group of janitors filled out and provided answers to the survey collectively. Potential bias arising from the group completion method used by staff includes the loss of individual perspectives from individual staff members. The sampling design we chose for

key informants within administration and staff was a snowballing technique. The limitation of this method is the potential for bias introduced by the loss of random selection of the respondents to the survey.

Additionally, staff and administration responses may be influenced by a desire to respond in a manner that describes their present participation in a positive manner, perhaps for self-interest, such as job security. We did not have a control for this group, for example, retired staff, who would have no worries about the repercussions of their answers. This would have allowed us to compare their responses to present staff members and identify any bias in the working staff's responses. A major limitation in our analysis was the fact that we are only second year students with limited expertise in sampling methods. This was our first project involving data collection and analysis, so mistakes were inevitably part of the learning process. Opportunities to modify the existing research methods, on the basis of our experience with the results obtained were not possible because of lack of opportunity to revise surveys in light of what we learned.

*Suggestions for Decreasing Limitations for Future Projects* - In order to reduce limitations, we have several proposals. We would recommend that student investigators do not leave the surveys with the respondents to fill out. This results in a low response rate and less valid and useful information. If clarification is needed so that the respondent can provide an informed response, the investigator should be present for assistance. Even though the recognition of biases is crucial before the construction of the survey or interview, we think that another party outside of the survey group should check through it to ensure no obvious bias or tilt towards a certain outcome is incorporated.

## *9.2 Suggestions*

In order to divert waste build-up that accumulates during the move out period, additional programs and initiatives should be implemented in the residences. Our group has developed a number of suggestions to improve waste management techniques in the residences: a “move-out 101” class to create awareness, volunteer initiatives to assist in bridging the gap between staff and students, additional recycling bins specific to each waste type and finally, incentives or fines for students who do not comply with the residence recycling policy. Each individual program could improve the recycling habits of the students in residences but our overall recommendation is that these programs be implemented simultaneously.

The student surveys that our group conducted allowed us to see if the students are knowledgeable about the current recycling programs. The surveys proved that there needs to be an emphasis on educating the students. This is why we are purposing a “move-out 101” class, similar to Co-op 101, which would educate students on recycling techniques and the repercussions of waste build-up in our residences. This class should be taught during frosh week or the first week of classes to build a strong foundation for recycling habits. This class should also be mandatory. During this time, students are easily influenced and for any recycling program to be successful, education needs to begin immediately so recycling habits are engrained into day-to-day residence life. Another information mandatory information session should be offered closer to move-out time. “Move-out 101” would also allow for the recruitment of volunteers to initiate recycling programs and to build enthusiasm about the benefits of recycling.

For any program to be successful, all actors need to be involved and committed. Students as participants and volunteers, custodial staff, house moms, and administration

at both the residence and university level have to be dedicated to the success of the programs. By having student volunteers, staff can be informed about how the students feel about the programs while also relieving the additional work load on the staff. These volunteers would also create an enthusiasm about recycling that is currently lacking in the residences, according to the student surveys. By having a designated student group dedicated to recycling in the residences, the knowledge learned in the “move-out 101 class” could be put into action.

Currently in the residences, there are specific recycling bins designated for each type of material that could be recycled. There is existing recycling and waste management programs in all UW residences but no organization has been created to spear-head a unification of these programs into one major initiative focusing on move-out time activities. All UW residences have blue bins for paper, cans, and glass but each residence has taken on independent waste management programs. The Minolta Hagey residence has initiated a compost program to deal with organic waste, both Village One and Ron Eydt Village have participated in food bank programs and clothing drives for local charities, and Ron Eydt Village has participated in a book collection for Focus Canada, a national book collection charity. According to our administration surveys, these programs have had successful results. For a move-out program to be successful, the programs detailed above should be merged as one to create a move-out waste management plan. By having bins designated for each type of material in a common, high traffic location in both Village residences, the overall accumulation of waste could be reduced, thus adhering to the objective of this project. Community-based organizations could then pick up the materials from the storage area, and redirect them to those in need. Moreover, students could bring larger items such as furniture and carpets

to collection areas designated outside each residence hall. Selected organizations are could remove usable items from those areas. Furniture that is damaged and that typically ends up being disposed of could be picked up by “recycling staff” to be shipped to the landfill. Last year, 27 tons of unusable furniture and carpet was sent to a landfill (UoV, 2002).

The success of a move-out program lies on the shoulders of the participants: the occupants of the Village residences. The students must participate in the program and our group recommends that there be incentives for students who contribute in the recycling of their waste. Since the Village residences are divided into quads, and each quad is separated into 4 to 8 houses, there could be rewards for which house accumulates the most recyclable material. The rewards could range from a free-pizza party to free movie passes paid for from the residence budget. This reward system would create enthusiasm and interest in recycling. Given that the program is dependent on student participation, our group also suggests there be small fines for students who blatantly disregard the residence recycling policy. An example of a fine could be a small amount money withdrawn from the house fund. Each house collects money for its residents for group outings or special events. By extracting funds from the house fund, there is no individual being identified for breaking the recycling policy due to the fact that it would be very difficult to identify the culprit. House moms and dons would enforce the recycling policy. By having incentives and fines for recycling, students who usually do not partake in the recycling of goods would be encouraged or forced to recycle. This may seem harsh but the appropriate actions must be taken to reduce the overall amount of waste generated in the Village residences.

Our group believes that these recommendations would improve the recycling habits of students while reducing waste in residences. Currently there are recyclable goods that are being thrown away into landfills. According to Peter Jordan, the Supervisor, Maintenance & Cleaning Services for Ron Eydtt Village, who participated in a waste audit, out of 14 pounds of garbage there was 6 pounds of recyclable goods. These goods could have been recycled and the overall weight of garbage would be reduced, thus reducing the cost of garbage removal for the University of Waterloo. By implementing the suggestions identified above, the overall amount of garbage will be reduced.

#### **(10.0) Conclusion**

Our study provides baseline data for a proposed move-out program for use at the University of Waterloo. The effectiveness of such a program, if implemented, may be monitored using the parameters described above in the Likert-type scale. We felt that it is important to note that a move-out program has yet to be implemented at the University of Waterloo because the different levels of administration have not taken responsibility for initiating the program. We feel that the program is within the reach of the resources and capabilities of the University of Waterloo. Now there are no excuses not to pave the way for more Canadian Universities to implement a waste reduction program for the residence move-out time.

The suggested implementation strategies outlined above provide a cost and resource effective way to create a move out program. It has been demonstrated that the students, staff and administration all believe that this project would be beneficial to the university, as well as the community. WATgreen involves making the campus a greener and more

sustainable place for the university and the community as a whole. By reducing the amount of waste entering the landfill this project fulfills WATgreen's goals. Moreover, by establishing partnerships with organizations in the community, the used items left behind after moving out of residence can be re-circulated to the community which also creates a more sustainable community by reducing the amount of new material being utilized in material manufacturing.

Ultimately, recycling used goods is not the ideal solution. Awareness and initiatives must be put into reducing the amount consumed in residences in the first places. Evison et al. suggest that there is a general lack of social marketing for recycling. With marketing, a campaign to reduce consumption must follow because that is the only way to really ensure a sustainable community for present and future generations

### **(11.0) Acknowledgements**

Our group would like to recognize and thank the following people for contributing their time and insight into our study:

Professor Paul Kay

Patti Cook

Leeann Ferries

Stanley Lipshitz

Shaun Carson

Professor Roger Suffling

Connie Reading

Patty Koebel

Peter Jordan

Anonymous participants

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**(13.0) Appendix:**

Included are the administration surveys. All participants agreed to participate in the interview through signing a consent of participation. The interviews included are:

- 1) Patti Cook – Waste Management Coordinator
- 2) Peter Jordan - Maintenance and Cleaning Services Facilitator at Ron Eydtt Village
- 3) Shaun Carson - The Residence Life-Coordinator at Ron Eydtt Village
- 4) Patty Koebel and Connie Reading (interview held together) - The Residence Life-Coordinator at Village One and the Maintenance and Cleaning Services Facilitator at Village One