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An Investigation Of The Awareness Of Recycling Services At Student Family Housing Units

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AN INVESTIGATION OF THE AWARENESS OF RECYCLING SERVICES AT STUDENT FAMILY HOUSING UNITS

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by

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ABSTRACT

This research investigated the awareness of recycling programs at student family housing units at Indiana State University. The purpose of this research was to find out the awareness of recycling in these areas. It allowed the researcher to examine the recycling awareness among other variables such as willingness to take part in pickup and willingness to take part in drop-off, among students at these areas.

The researcher employed IRB (Institutional Review Board) approved survey to survey students who resided in four units, and who were willing to participate in the study. An introduction of the researcher, his background and objectives of the study, along with contact information of the researcher, the committee chair, and the IRB was given to each participant The researcher used systematic sampling to sample the population to get the 240 sample size. Based on a coin toss, every odd apartment number from the apartment numbers of the family housing units was selected for the one-month survey.

The data was coded into value labels and recorded in SPSS for a statistical analysis. Bar charts, chi-square, and cross-tabulations were used for the analysis of the data at 0.05 significance levels.

Descriptively, 59 % family housing residents were not aware of recycling program. However, 88 % of them believed that recycling would help them dispose of their trash. 78 % of them were willing to take part in pickup, while 70 % would also do so in drop-off. About 45 % were confident that the recycling center would recycle the materials they sorted for recycling,

while 22 % recorded inconvenience as the reason for not taking part in both pickup and drop-off programs. About 34 % wanted ISU authorities to promote pickup recycling in order to make recycling appealing or convenient to them.

All the null hypotheses were retained except there were statistically significant differences between the awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts and the two categories of nationality of students, and the awareness of recycling center and gender counts.

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INTRODUCTION

Introductory Statement

People everywhere use material goods and discard solid waste on a daily basis. In a city, the material flows in both directions, coming in and going out, greatly exceeding the natural capacity of the local ecosystem. Food, fuel, and consumer goods must flow into the city to meet the needs of the urban population. Discarded wastes must flow out to disposal or processing sites, in most cases outside or on the fringes of metropolitan areas (Ackerman, 2005).

In 2006, Americans created about 251 million tons of waste, and turned 82 million tons of it, which is 32.5 % into recycled products. Recycling amounted to only 1.5 pounds out of the 4.6 pounds of solid waste per American per day (EPA, 2007). Solid waste, often known as trash or garbage consists of everyday items such as newspapers, product packages, bottles, grass clippings, furniture, batteries, food scraps, paint, appliances, and clothing (http://www.epa.gov/epawaste/basic-solid.htm#Municipal). According to the EPA, in 2006, the estimate of residential waste was between 55 % and 65 % of the gross municipal solid waste (MSW) created and 35 % to 45 % comes from other locations such as schools and businesses (EPA, 2007). Organic materials constitute the largest part of MSW. Paper and paperboard component constitutes 34 %, with yard trimmings and food scraps amounting to 25 %, plastics constitute 12 %, metals comprise 8 %, and leather, textiles, and rubber make up 7 % (http: //

www.epa.gov/epawaste/basic-solid.htm#Municipal). Wood and glass constitute 6 % and 5 % respectively. Other miscellaneous waste products amounted to about 3 % of the MSW generated in 2006 (EPA, 2007).

According to the EPA (2007), the most preferred and best method for dealing with MSW is source reduction, followed by recycling and composting. Disposal in combustors and/or landfills is the least recommended method of disposal. Statistics show that 32.5 % of MSW created in U.S. is recycled and recovered or composted. Landfills absorb 55 %, and the remaining 12.5 % is disposed of at combustion facilities (http: //www.epa.gov/epawaste /basic_solid.htm#Municipal). Source reduction consists of changing the design, manufacture, or use of products and materials to decrease the amount and toxicity of what gets trashed. Recycling involves changing waste materials, such as glass, paper, metals, and plastic, from the disposal stream into new products. These materials are collected, sorted and processed, as new products such as glass bottles, aluminum cans and pens. Composting consists of decaying the organic components of MSW with the help of microorganisms, producing a humus-like substance as an end product which is used by farmers as a fertilizer. Landfills are areas where waste products are placed into the land, covered and buried (http: //www.epa.gov/epawaste/basic_solid.htm #Municipal).

Reducing emissions of many greenhouse gases and pollutants, saving energy, conserving resources, and preventing the use of new landfills and combustion facilities are all advantages of source reduction. In 2006, recycling, including composting, increased the diversion of waste materials from disposal to 82 million tons from 15 million tons in 1980, when 10 % of MSW was recycled, and 90 % of it was being burned in combustors or disposed of in landfills (EPA, 2007). Typical waste products recycled include batteries recycled at a rate of 99 %, yard

trimmings at 62 %, and paper and paperboard at 52 %. These waste products are recycled through curbside programs, drop-off centers, buy-back programs, and deposit systems (http: //www.epa.gov/epawaste/basic-solid.htm#Municipal). At the national level, about 8,660 curbside programs are operational. This is down from 8,875 in 2002 while about 3,470 operational community composting programs increased from 3,227 in 2002 (Biocycle magazine, 2006).

According to the EPA, in 2006- recycling of solid waste in the U.S. prevented about 49.7 million metric tons of carbon from being released into the atmosphere- the amount prevented by recycling is approximately the same amount emitted by 39 million cars annually (http: // www.epa.gov/epawaste/basic_solid.htm#Municipal). From 1988 to 2006, the number of U.S. landfills decreased from 8,000 to 1,754 (EPA, 2007). The capacity, however, appears to be sufficient, even though it is limited in some areas. New landfills are of larger dimensions than the ones used in the past (http: //www.epa.gov/epawaste/basic_solid.htm#Municipal). According to the EPA (2007), from 1990 to 2006, the amount of waste products being placed into landfills had decreased from 142.3 million to 138.2 million tons. Various problems associated with using landfills as the way of disposing waste has been acknowledged. Awareness of the benefits of recycling, not only to the Earth but to the health of its citizens has been recognized. A decrease in landfills has been accomplished over the past several years; however, more needs to be achieved. Promotion of recycling is a must if we are to continue to increase in our waste in order to decrease in our landfilling (EPA, 2007).

In 1990, the ISU recycling center began with little knowledge of recycling techniques and no budget. It continues to sponsor a healthy program that diverts a lot of wastes from the landfill (www.indstate.edu/facilities/recycle). The recycling center covers departmental offices, Hulman Memorial Student Union (HMSU), athletic track, and almost all on-campus residential halls. It

does not cover student family housing units which have 4 units. Recyclables at the recycling center include newsprint, magazines, telephone books, books, corrugated cardboard, paper, glass containers, cans, plastic containers.

Statement of the Problem

Recycling services are not employed in the student family housing units of this university. Students in these units generate trash. This trash is tied in a trash bag unsorted, thrown into a dumpster, and finally buried in landfill areas. Although this university has a recycling center, it does not service these units. The awareness of recycling services among these student family housing units is not known. This investigation looked into the awareness of recycling services at these student family housing units.

Question of the Study

The awareness of recycling programs at student family housing units was the focus of the study. Sanitary landfills, the most popular method for disposal of MSW in the U.S. today, has its capacity rapidly disappearing. Because of the increase of trash generated by students in these units and the decrease in landfill space, the specific questions centered on the awareness of recycling services in these units.

Specific Question. Are students in the family housing units aware of recycling?

Objectives of the Study

Objective 1. To descriptively analyze the dependent variables asked in the survey. The dependent variables were:

- Awareness of recycling center
- Awareness of recycling program
- Would recycling help?

- Willingness to take part in pickup
- Willingness to take part in drop-off
- Confidence in recycling
- Reasons for not taking part in recycling
- Making recycling appealing or convenient
- Landfill space concern
- Better recycling program

Objective 2. To do hypothesis analyses among the variables.

Statement of the Hypotheses

Null Hypothesis 1. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off and level of study are independent.

Null Hypothesis 2. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts are the same among the two gender categories.

Null Hypothesis 3. There are no significant differences between the awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts and the two categories of nationality of students.

Null Hypothesis 4. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off and the years spent on campus are independent.

Null Hypothesis 5. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts are the same among the four unit categories.

Alternative Hypothesis 1. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off and level of study are not independent.

Alternative Hypothesis 2. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts are not the same among the two gender categories.

Alternative Hypothesis 3. There are significant differences between the awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts and the two categories of nationality of students.

Alternative Hypothesis 4. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off and the years spent on campus are not independent.

Alternative Hypothesis 5. Awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts are not the same among the four unit categories.

Statement of the Delimitations

The following delimitations existed due to resources available to the researcher.

Student awareness level. Family housing units' students were not aware of on-campus recycling services.

Knowledge of recycling programs. General students did not have knowledge about specific recycling program.

Student willingness. The researcher was initially worried about student willingness to participate in this study.

Statement of the Limitations

The following limitations existed due to resources available to the researcher.

Geographic location. Student family housing units of the university were included in the study.

Recycling programs under consideration. The research focused on two programs: curbside and drop-off.

Waste materials under consideration. The investigation focused on paper and paperboard, cans, glass and plastic containers. Other waste materials like rubber, wood, textiles were not included.

Statement of the Purpose

Data from the Indiana State University Recycling Center show that recycling is occurring but is limited to certain on-campus areas. Student family housing units are not covered by the center. Meantime, plenty of trash is generated in these units. This study investigated the awareness and demonstrated the need for recycling in these units.

Statement of the Assumptions

The following assumptions were made in order to complete this study in an effective manner.

1. The resultant survey obtained from the participant was an accurate representation of the participant.

2. The participant had knowledge of the research once the recycling programs were explained to the participant.
3. The resulting data gave a good representation of the awareness of recycling services at student family housing units.
4. The time or day/year the survey was conducted is representative of the actual results at any time or day/year.
5. There is a need for recycling programs at student family housing units.

Operational Definitions of Terms

Recycling. "Recycling involves using materials which are at the end of their useful lives as the feedstocks for the manufacture of new products" (Selke, 1990, p. 85).

Landfills. Landfills are areas where waste materials are placed into the land without sorting, cleaning, and are never used again.

Combustion facilities. Combustors burn waste products at a high temperature, decreasing their volume and weight.

Curbside pickup program. A program that offers collection of recyclables from the curb like a regular garbage service. Collection is generally done either once a month or more frequently, and may be at the same time as normal garbage service or at a special time.

Drop-off program. A program that relies on the participants to deliver materials for recycling to a centralized location or locations. These locations may be as convenient as a bin in an apartment laundry room, or as inconvenient as a location a number of miles away which is open for only a few hours one day a month.

Waste products. Materials which are at the end of their useful lives.

Significance of the Study

The investigation of awareness among students in the family housing units provides information that could be valuable to help decide whether there would be a need for the deployment of recycling services in these areas. Protecting U.S. manufacturing jobs, expanding them, increasing U.S. competitiveness, reducing the need for landfilling and incineration, preventing pollution caused by the manufacturing of products from virgin materials, saving energy, decreasing emissions of greenhouse gases that contribute to global climate change, conserving natural resources such as timber, water, and minerals and helping sustain the environment for future generations are some of the advantages of recycling.

CHAPTER 2

LITERATURE REVIEW

Recycling

Recycling "involves using materials which are at the end of their useful lives as the feedstocks for the manufacture of new products" (Selke, 1990, p.85). Reprocessing and remanufacture operations distinguish it from reuse. Recycling has become very important in society due to the increased generation of wastes and their impact on the environment, and on human health and safety (Tucci *et al*, 2006). Recycling wastes, not only into the processes through which they originate, but also in other industrial activities like the use of scrap glass as raw material for porcelain stoneware tiles. This allows the achievement of important goals associated both with storage of wastes and safeguarding the environment.

A hierarchy can be defined within recycling (Leidner, 1981). Primary recycling involves the use of recycled materials to make the same or similar products. Examples include the use of polyethylene terephthalate (PET) bottles to make new PET bottles, and aluminum cans to make new aluminum cans. It is regarded as having a higher value than secondary recycling. Secondary recycling on the other hand is the use of recycled products to make new products which have less stringent values than the original. It is of lower value than primary recycling because it allows for down-grading of materials to suit their likely diminished properties. Examples include the use of scrap glass as a raw material for porcelain stoneware tiles (Tucci *et al*, 2006), and the use of

PET bottles to make all kinds of stuffing, plates, piping, fibers. The recovery of materials or energy from waste materials often comes under tertiary or quaternary recycling, respectively.

History of Recycling Programs

In the early 1960s, environmental resistance was started by the environmentalists in opposition to the aluminum can when it was introduced in the U.S. In response, the aluminum industry initiated a recycling program in the 1970 to collect cans from consumers for recycling (Paine, 1987). Also, on a limited scale, recycling of PET soft drink bottles and high density polyethylene (HDPE) milk bottles began.

In the mid 1980s, problems related to municipal solid waste (MSW) disposal became serious issues for the U.S. packaging industry. These problems were largely related to a legislation based on these problems (Hernandez et al, 2000). The fundamental problem was that in some areas of the U.S., there was a significant decrease in the availability of landfill space. At this time when about 90 % of MSW was disposed of by burying garbage and waste into landfill sites. One way of dealing with the problem was to look for a means to reduce MSW generation that would include alternatives to landfill disposal, including recycling (Hernandez *et al*, 2000). By the mid 1980s, many of the problems associated with MSW had dissipated in the U.S. owing largely to a reduced reliance on landfill disposal (Hernandez *et al*, 2000). Recycling increased dramatically, and proved to be quite popular with the American public.

Drop-Off Programs

Drop-off programs depend on consumers to deliver waste products for recycling to a centralized location or locations. These locations may include a bin in an apartment laundry room or a location far away which is open for only a few hours once a month. Monetary compensation may or may not be given to the individuals that bring the waste materials to the

collection point, and the drop-off locations may be manned or unmanned. Volunteers run and staff many locations, and their revenue is derived from the sale of the recycled products (Selke, 1990).

Multi-material recycling centers are the most successful drop-off recycling programs in the U.S. These are part of the Beverage Industry Recycling Program (BIRP) that receives assistance from beverage industries to recycle primarily beverage containers as an alternative to bottle deposit legislation. In order to make recycling fun, many recycling centers are set up as theme parks. This helps in creating clean, efficient, and family oriented recycling centers.

Curbside Pickup Programs

Curbside pickup programs offer the collection of recyclables from the curb like regular garbage service. Generally, collection is carried out either once a month or more frequently, and may happen at the same time as the normal garbage service or at a special time. A special vehicle or the same truck used for garbage service may be used for collection (Selke, 1990).

Wages and Recycling

At low income levels, market forces lead to recycling with no need for planning. The relationship between urban wages and material prices promotes recovery of many waste products. As wages rise, people become less willing to participate in labor-intensive recycling. As incomes rise, the waste stream expands and changes in composition. In urban areas, among higher income levels, paper forms a greater component of waste (Ackerman, 2005). People in high-income levels are willing to pay for municipal recycling programs. Hence, there is a need to plan for recycling in a high-income context, especially for recovery and recycling of paper products.

Recycling involves collection and processing, manufacturing and purchasing recycled products. Recycling has enormous advantages. The awareness for a recycling program at the family housing units created by this study will help recommend for their inclusion in the recycling center's curbside recycling program.

CHAPTER 3

RESEARCH PROCEDURES

Statement of Methodology

Recycling awareness among students in family housing units was unknown in terms of ongoing recycling programs at certain areas of campus. This research focused on the numbers of trash-generating students at student family housing units.

This study investigated the awareness of recycling services at student family housing units, and showed that no recycling programs are in operation in these units now. Permission was granted by the Director of Residential Life (See Appendix B for permission forms) for use of the family housing units for the survey (See Appendix C for the survey).

An IRB (Institutional Review Board) approved survey (See Appendix A for IRB approval sheet and informed consent) was used to survey students who resided in these units, and who were willing to participate in the project. An introduction of the researcher, his background and objectives of the study, along with contact information of the researcher, the committee chair, and the IRB was given to each participant (See Appendix A). The survey was in English.

The participants were asked to voluntarily participate in the study. The researcher conducted this survey using resident student population from each unit (The university units are: 1, 2, 3, and 4). Systematic sampling was used to sample the population to get the 240 sample size obtained. Based on a coin toss, every odd apartment number from the apartment numbers of the

family housing units was selected for the survey. The researcher used one month to collect the data.

In the data gathering, the researcher spent one week on each unit. In the one-month period, the researcher went round the odd-numbered apartments in each unit, knocked on each door, introduced himself and the study. The researcher employed two criteria for the selection of each participant: a resident of ISU Family Housing Units (at least 21 years old) and a student of ISU.

The researcher then gave the informed consent to each resident to read and append their signature to it. Each resident then proceeded to fill out the survey the researcher had given them. Also given to each resident was operational-definitions-of-terms page which enable some of the residents to look up terms they did not understand in the survey questionnaire. The residents did not write their names on the survey forms and the researcher did not look at their responses either. Few residents were not met in their apartments and the researcher did not come back to get them to complete the survey.

The researcher did not discard any data due to participants not fitting the requirements of the study perfectly, some pieces of information like knowledge of recycling programs, identification of recycling programs, ideas to make recycling more aware/convenient were beneficial data to the study. In order to make the survey appealing to the participants, it contained valuable information, and was brief (not exceeding 2 minutes).

Demographic variables were assessed prior to the survey (See Appendix C). Participants were asked questions in the survey, and they recorded their answers on the survey pages. The data was coded into value labels and recorded in SPSS for a statistical analysis.

The data of the research was collected by the researcher. Bar charts, chi-square, and cross-tabulations were used for the analysis of the data (Ozel, *et al*, 2009). This analysis was used in testing the difference of the ideas (responses). Analyzing and interpreting the data was carried out at 0.05 significance levels. This survey enabled the researcher document the awareness of recycling services in these units.

CHAPTER 4

RESULTS

Statistical Analysis

The data generated was used to investigate the awareness of recycling services at student family housing units. The statistical analysis was carried out by SPSS software on the data gathered from the survey. Several variables were analyzed.

Descriptive Analysis

Table 1 shows student awareness of ISU recycling center in frequency and percentage. This table displays that 54 % of students surveyed were aware of the center and almost 46 % were not.

Table 1

Frequency Table of Awareness of Recycling Center

Category of response	Frequency	Percent
No	110	45.8
Yes	130	54.2
Total	240	100.0

Note: $n = 240$.

Table 2 displays the descriptive statistics of student awareness of ISU recycling program. This table displays that 59 % of students surveyed were not aware of recycling programs offered by ISU and almost 41 % were.

Table 2

Frequency Table of Awareness of Recycling Program

Category of response	Frequency	Percent
No	142	59.2
Yes	98	40.8
Total	240	100.0

Note: $n = 240$.

Table 3 represents the descriptive statistics of whether recycling will help with the disposal of trash generated in family housing units. This table shows that 83 % of students surveyed believed it would help, but about 12 % believed it would not help.

Table 3

Frequency Table of Whether Recycling Will Help

Category of response	Frequency	Percent
No	28	11.7
Yes	212	88.3
Total	240	100.0

Note: $n = 240$.

Table 4 shows the frequency and percentage of the willingness of family housing resident to partake in pickup. This frequency table shows that 78 % of students surveyed were willing to part in pickup, but almost 22 % were unwilling to take part.

Table 4

Frequency Table of Willingness to Take Part in Pickup

Category of response	Frequency	Percent
No	52	21.7
Yes	188	78.3
Total	240	100.0

Note: $n = 240$.

Table 5 shows the frequency and percentage of the willingness of family housing resident to partake in drop-off. This frequency table shows that 70 % of students surveyed were willing to part in drop-off, but 29 % were unwilling to take part. The missing was because one participant resident did not answer this question.

Table 5

Frequency Table of Willingness to Take Part in Drop-off

Category of response	Frequency	Percent
No	70	29.2
Yes	169	70.4
Missing	1	0.4
Total	240	100.0

Note: $n = 240$.

Table 6 displays the frequency and percentage of the confidence of students who were willing to take part in both pickup and drop-off programs in recycling – confidence that the materials presumed for recycling would really be recycled. This frequency table shows that almost 45 % of students surveyed had highly confident of recycling while about 1 % were not at all. The 14 % missing students were not willing to partake in both pickup and drop-off, hence did not answer the survey question about their confidence in recycling.

Table 6

Frequency Table of Confidence in Recycling

Category of response	Frequency	Percent
Extremely	41	17.1
Highly	107	44.6
Not very	56	23.3
Not at all	2	0.8
Missing	34	14.2
Total	240	100.0

Note: $n = 240$.

Table 7 displays the descriptive statistics of the reasons why 37.1 % of students surveyed were not willing to take part in both pickup and drop-off programs. This frequency table shows 22 % of the residents recording inconvenience as their reason. The about 63 % missing students did not answer the survey question about their reasons for not taking part in both pickup and drop-off. They were willing to take part.

Table 7

Frequency Table of Reasons for Not Taking Part in Recycling

Category of response	Frequency	Percent
Inconvenience	53	22.1
No money	16	6.7
Don’t care	14	5.8
Not benefit to me	5	2.1
Not benefit to the environment	1	0.4
Missing	151	62.9
Total	240	100.0

Note: $n = 240$.

Table 8 displays the descriptive statistics of what ISU authorities could do to make recycling more appealing or convenient to family housing residents. This frequency table shows

about 34 % of the residents were in favor of the promotion of pickup services at the family housing units. About 1 % recorded other and they wrote promote drop-off program, promote pickup recycling, and host seminars on how or where to recycle.

Table 8

Frequency Table of Making Recycling Appealing or Convenient

Category of response	Frequency	Percent
Compulsory	42	17.5
Promote pickup	81	33.8
Promote drop-off	49	20.4
Seminars	35	14.6
Other	2	0.8
Promote pickup and drop-off	31	12.9
Total	240	100.0

Note: $n = 240$.

Table 9 displays the descriptive statistics of whether landfill space concerned resident. This frequency table shows 74 % of the residents surveyed were concerned about landfill space while about 26 % were unconcerned about it.

Table 9

Frequency Table of Landfill Space Concern

Category of response	Frequency	Percent
No	62	25.8
Yes	178	74.2
Total	240	100.0

Note: $n = 240$.

Table 10 displays the descriptive statistics of students who thought recycling programs would help them recycle their unit-generated trash, and went on to pick the better recycling program between curbside pickup program and drop-off program. This frequency table shows about 57 % of the residents surveyed chose pickup as the better program. The about 11 % missing students thought recycling programs would not help them recycle their unit-generated trash.

Table 10

Frequency Table of Better Recycling Program

Category of response	Frequency	Percent
Curbside pickup	136	56.7
Drop-off	78	32.5
Missing	26	10.8
Total	240	100.0

Note: $n = 240$.

Hypothesis Testing *Analysis*

Figure 1 graphically shows the count of the awareness of ISU recycling center among undergraduate and graduate participants.

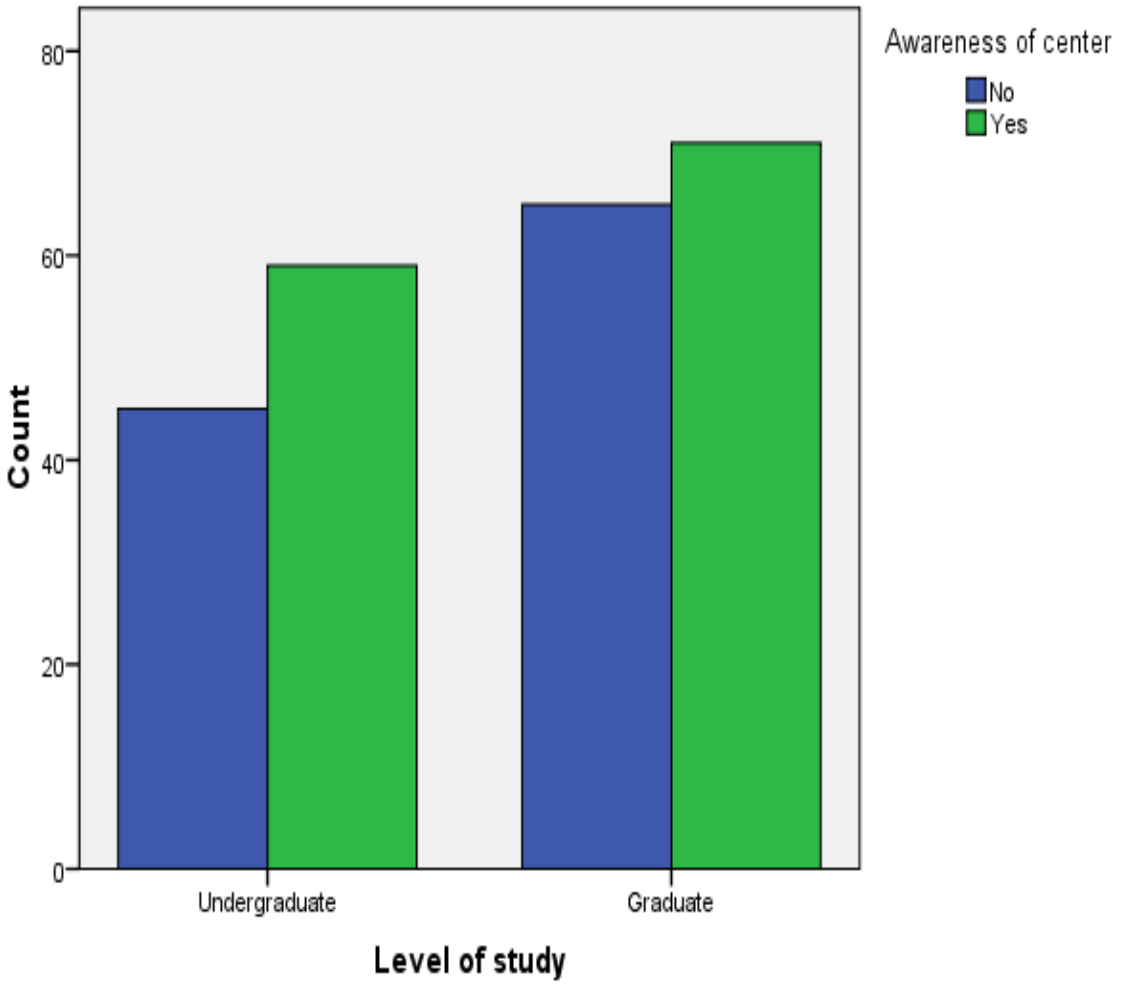

Figure 1. Graphical representation of awareness of recycling center among levels of study.

Table 11 shows no significant differences in the awareness of recycling center counts among the undergraduate and graduate students at an alpha value of 0.05.

Table 11

Chi-Square Statistics for Level of Study vs. Awareness of Recycling Center

Variable	Level of study vs. recycling center
Test statistics	
Chi-square	0.486
df	1
Asymp. sig.	0.486

Note: $n = 240$.

Figure 2 graphically represents the count of the awareness of ISU recycling program among undergraduate and graduate participants.

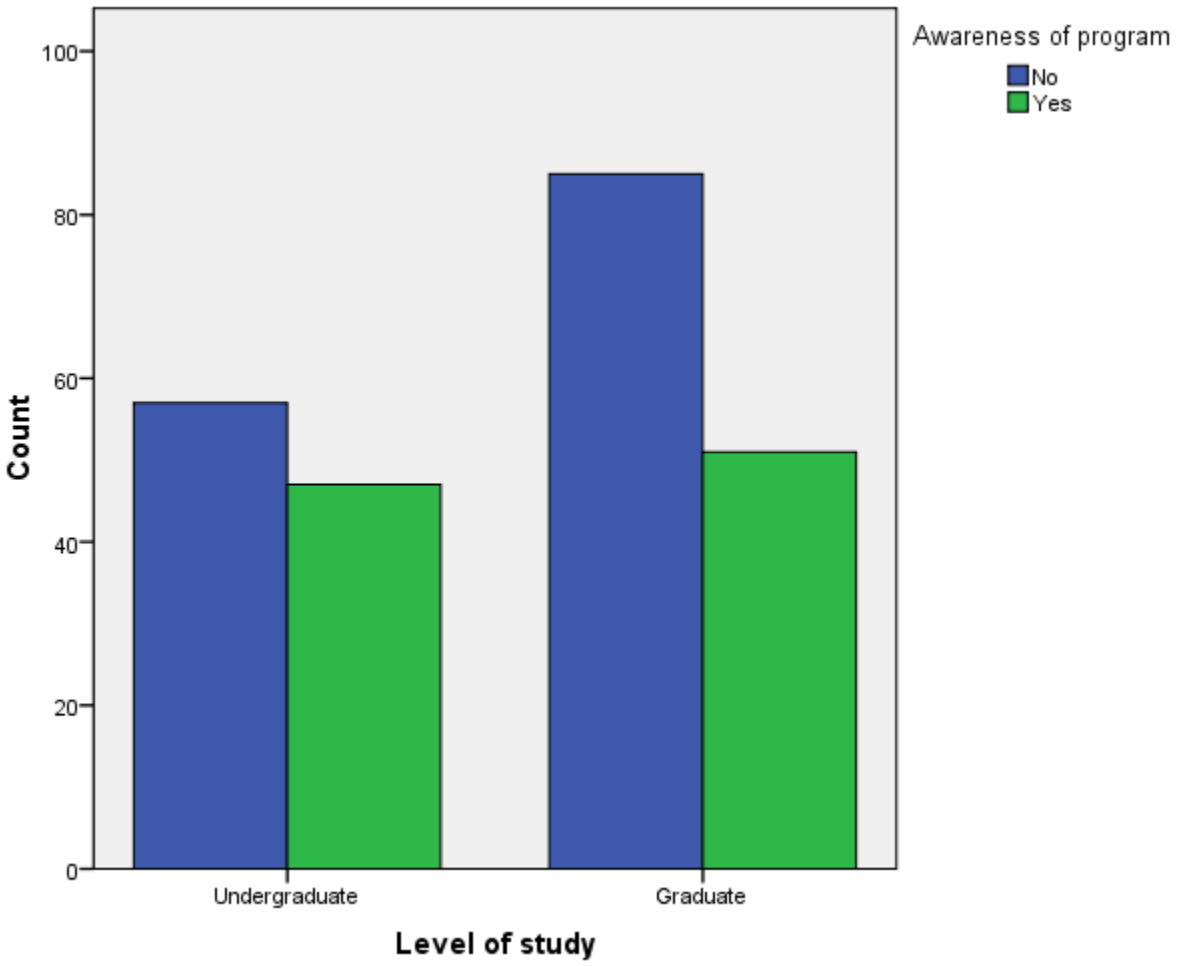

Figure 2. Graphical representation of awareness of recycling program among levels of study.

Table 12 shows no significant differences in the awareness of recycling program counts among the undergraduate and graduate students at an alpha value of 0.05.

Table 12

Chi-Square Statistics for Level of Study vs. Awareness of Recycling Program

Variable	Level of study vs. awareness of program
Test statistics	
Chi-square	1.443
df	1
Asymp. sig.	0.230

Note: $n = 240$.

Figure 3 graphically shows the count of the family housing student's willingness to partake in pickup among undergraduate and graduate participants.

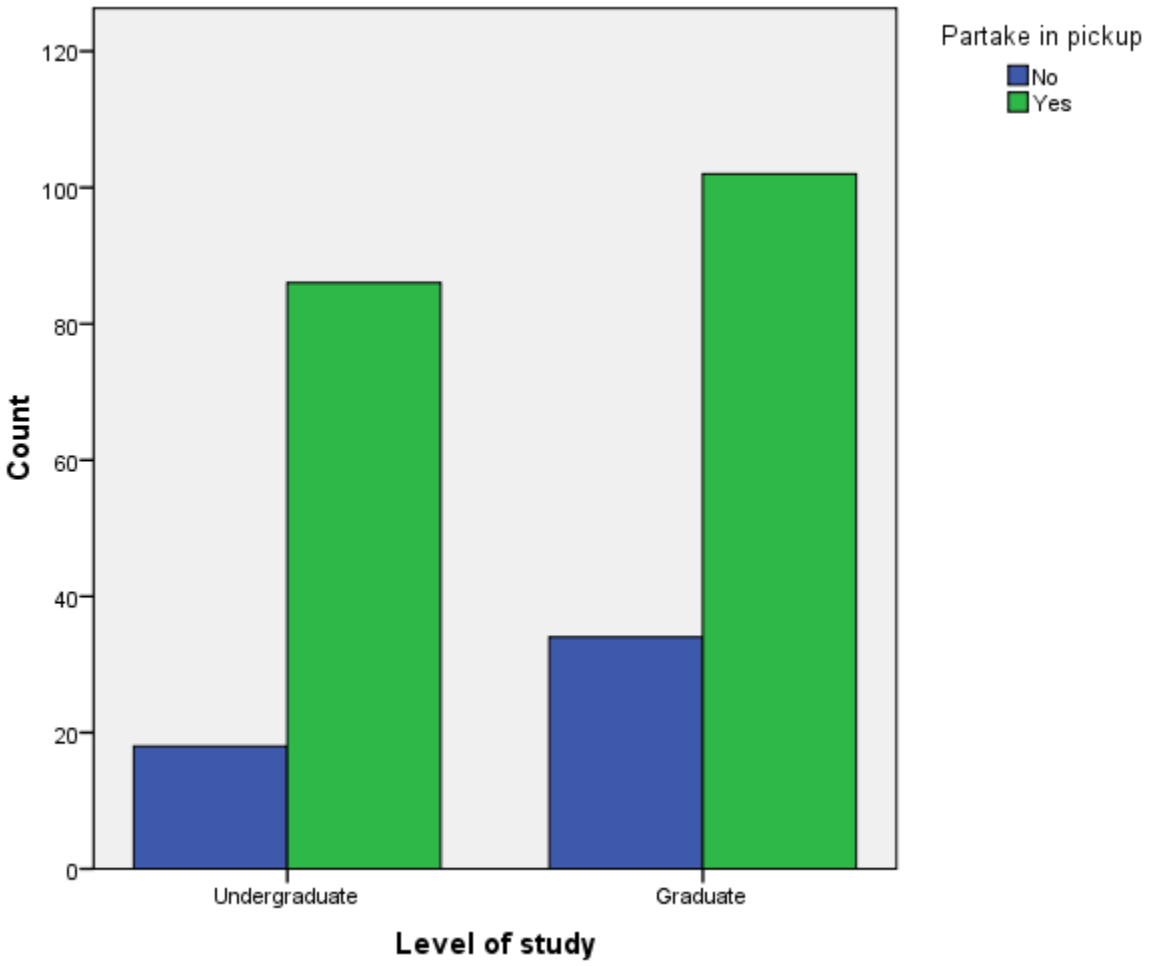

Figure 3. Bar graph of willingness to take part in pickup among levels of study.

Table 13 indicates no significant differences in the willingness to take part in pickup counts among the undergraduate and graduate students at an alpha value of 0.05.

Table 13

Chi-Square Statistics for Level of Study vs. Willingness to Take Part in Pickup

Variable	Level of study vs. take part in pickup
Test statistics	
Chi-square	2.055
df	1
Asymp. sig.	0.152

Note: $n = 240$.

Figure 4 graphically shows the count of the family housing student's willingness to partake in drop-off among undergraduate and graduate participants.

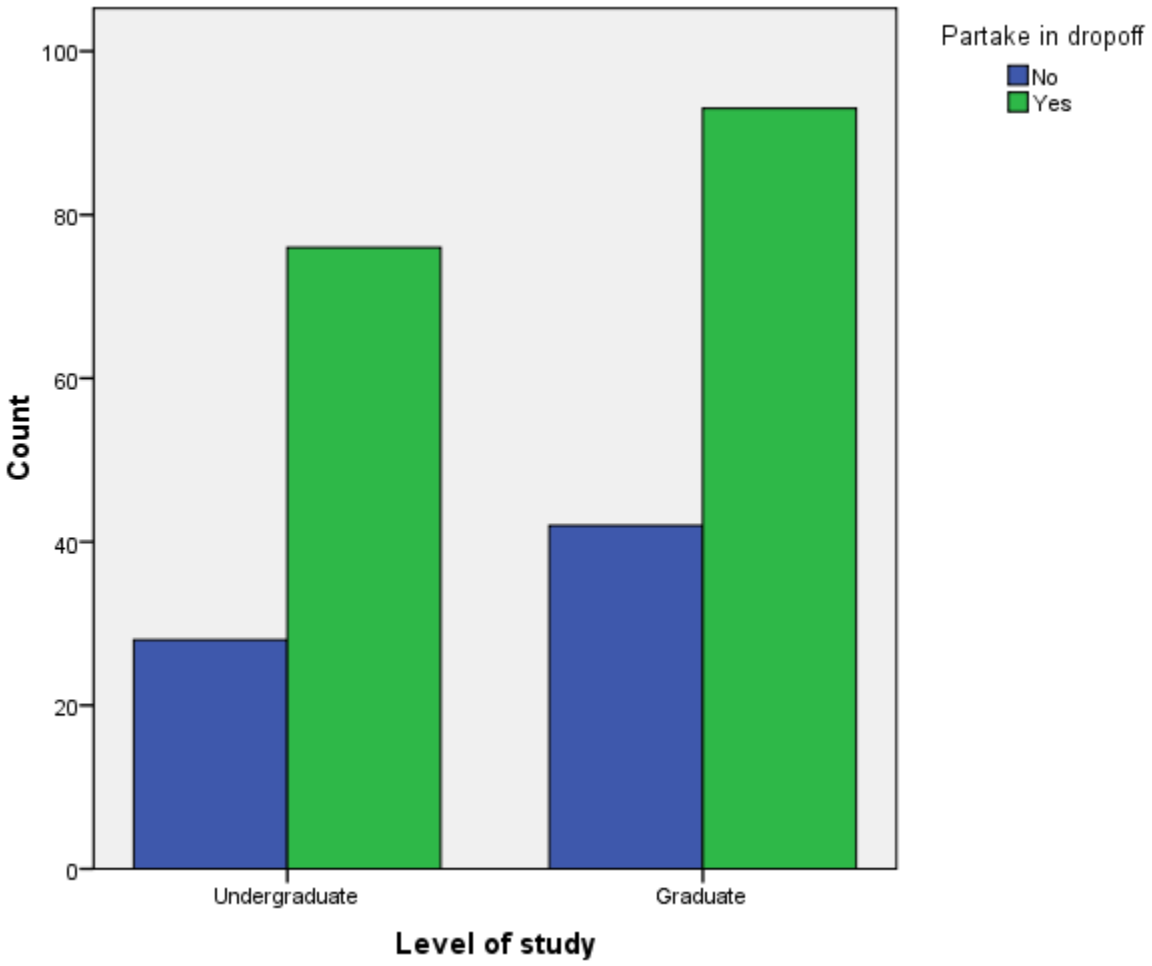

Figure 4. Bar graph of willingness to take part in drop-off among levels of study.

Table 14 indicates no significant differences in the willingness to take part in drop-off counts among the undergraduate and graduate students at an alpha value of 0.05.

Table 14

Chi-Square Statistics for Level of Study vs. Willingness to Take Part in Drop-off

Variable	Level of study vs. take part in drop-off
Test statistics	
Chi-square	0.498
df	1
Asymp. sig.	0.481

Note: $n = 240$.

Figure 5 graphically shows the count of the family housing student's awareness of ISU recycling center among male and female residents.

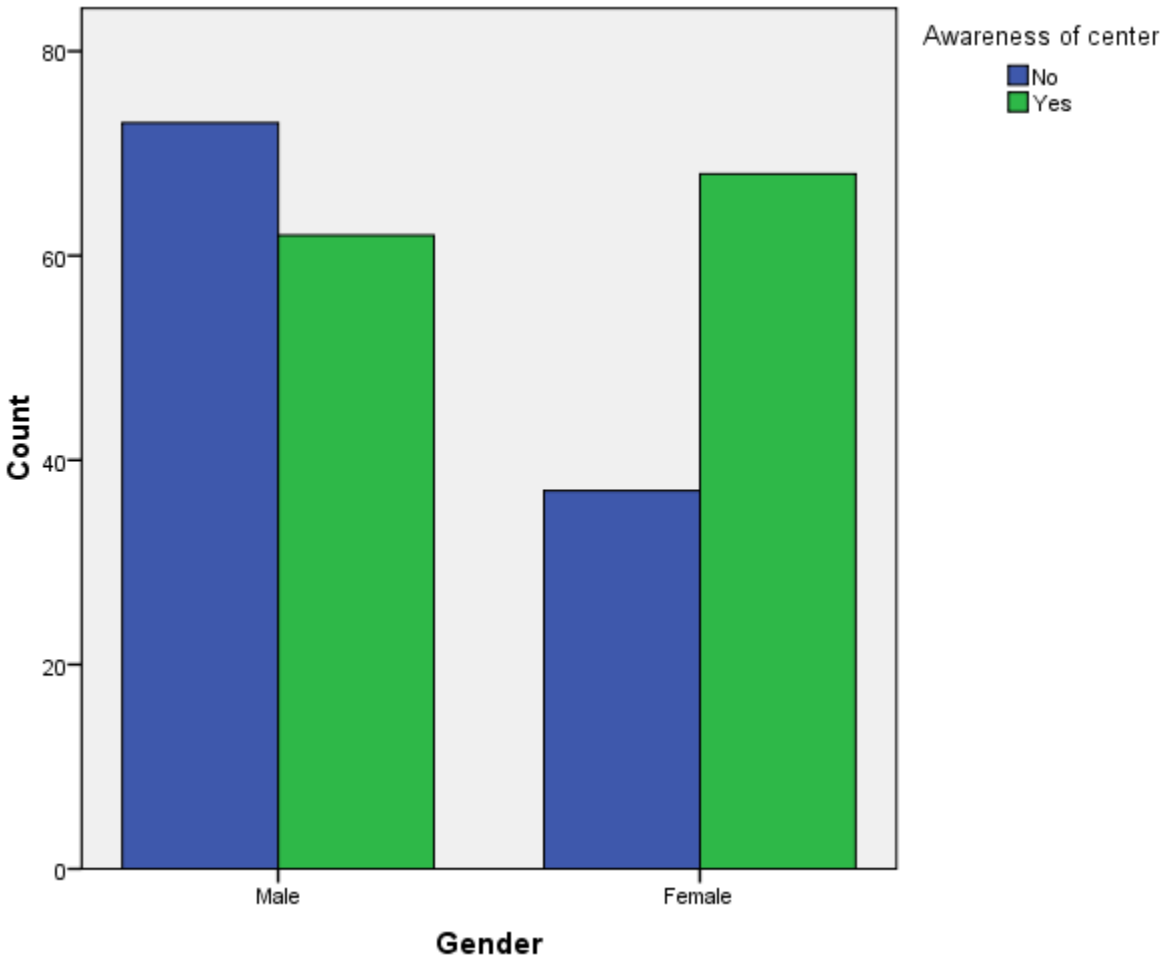

Figure 5. Bar graph of awareness of recycling center among categories of gender.

Table 15 shows significant differences in the awareness of ISU recycling center among male and female residents at an alpha value of 0.05.

Table 15

Chi-Square Statistics for Gender vs. Awareness of Recycling Center

Variable	Gender vs. recycling center
Test statistics	
Chi-square	8.441
df	1
Asymp. sig.	0.004*

Note: $n = 240$. *$p < .05$, two-tailed.

Figure 6 graphically shows the count of the family housing student's awareness of ISU recycling program among male and female residents.

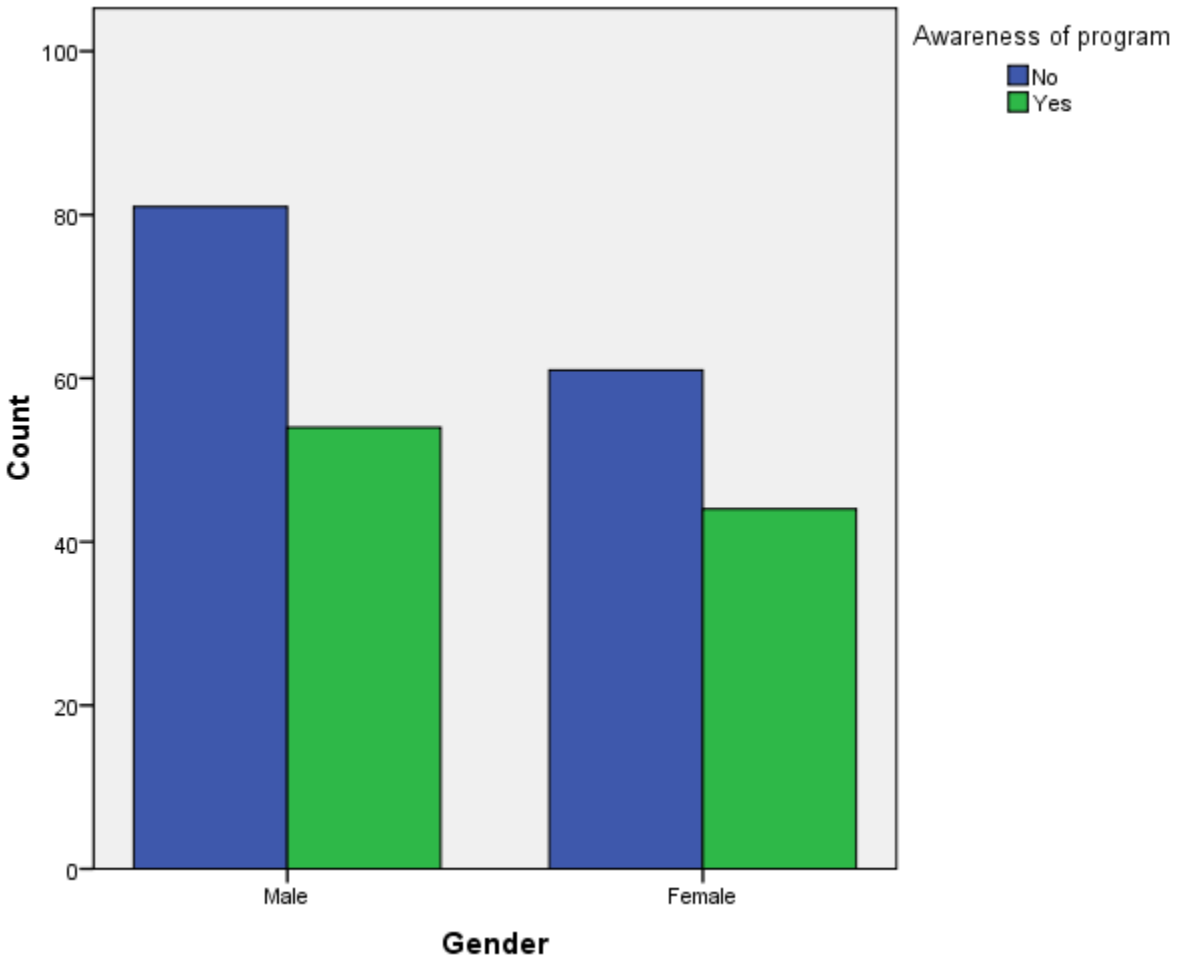

Figure 6. Bar graph of awareness of recycling program among categories of gender.

Table 16 shows no significant differences in the awareness of ISU recycling program among male and female residents at an alpha value of 0.05.

Table 16

Chi-Square Statistics for Gender vs. Awareness of Recycling Program

Variable	Gender vs. recycling program
Test statistics	
Chi-square	0.089
df	1
Asymp. sig.	0.766

Note: $n = 240$.

Figure 7 graphically shows the count of the family housing student's willingness to partake in pickup among male and female residents.

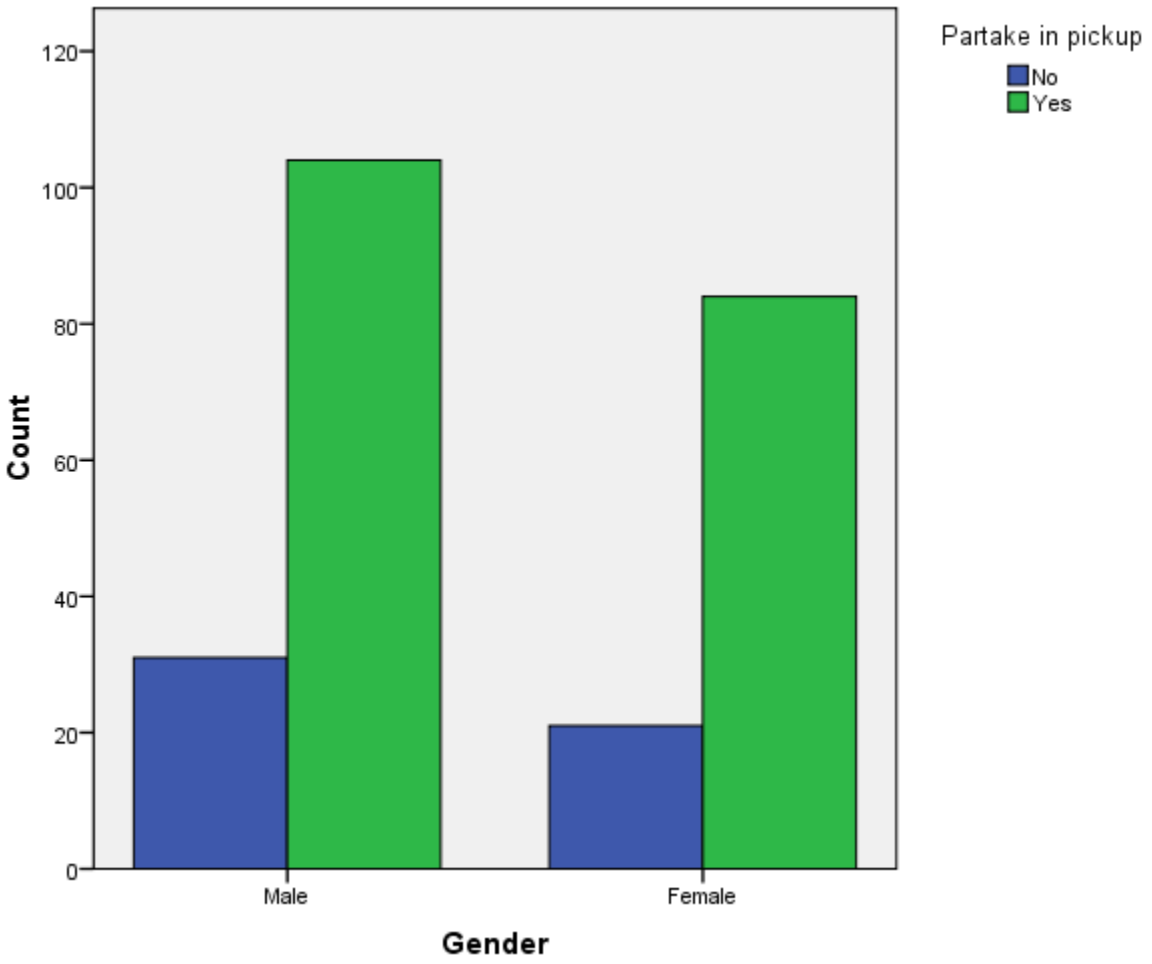

Figure 7. Graphical representation of willingness to take part in pickup among categories of gender.

Table 17 shows no significant differences in the family housing student's willingness to partake in pickup among male and female residents at an alpha value of 0.05.

Table 17

Chi-Square Statistics for Gender vs. Willingness to Take Part in Pickup

Variable	Gender vs. take part in pickup
Test statistics	
Chi-square	0.306
df	1
Asymp. sig.	0.580

Note: $n = 240$.

Figure 8 graphically shows the count of the family housing student's willingness to partake in drop-off among male and female residents.

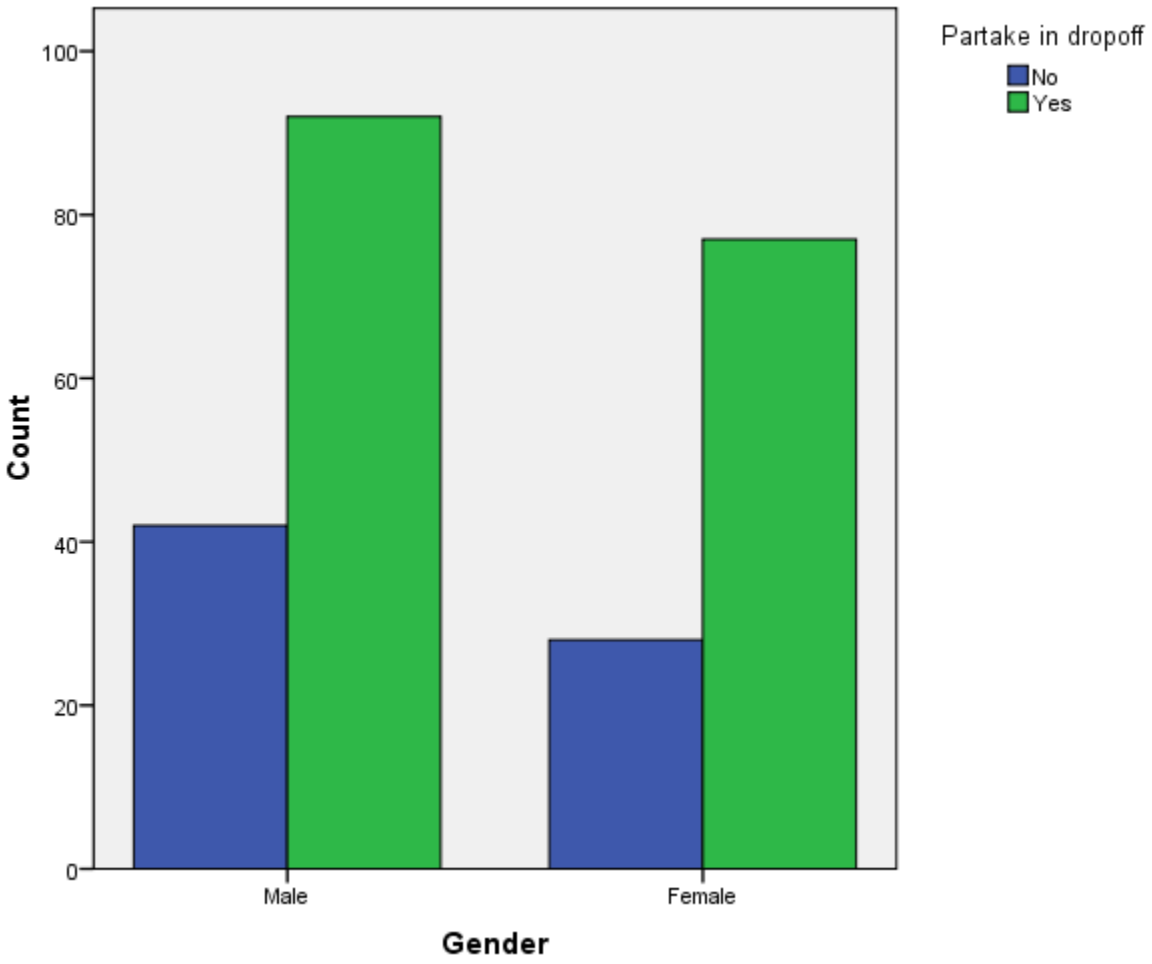

Figure 8. Graphical representation of willingness to take part in drop-off among categories of gender.

Table 18 indicates no significant differences in the family housing student's willingness to partake in drop-off among male and female residents at an alpha value of 0.05.

Table 18

Chi-Square Statistics for Gender vs. Willingness to Take Part in Drop-off

Variable	Gender vs. take part in drop-off
Test statistics	
Chi-square	0.622
df	1
Asymp. sig.	0.430

Note: $n = 240$.

Figure 9 graphically shows the count of the family housing student's awareness of ISU recycling center among domestic and international residents.

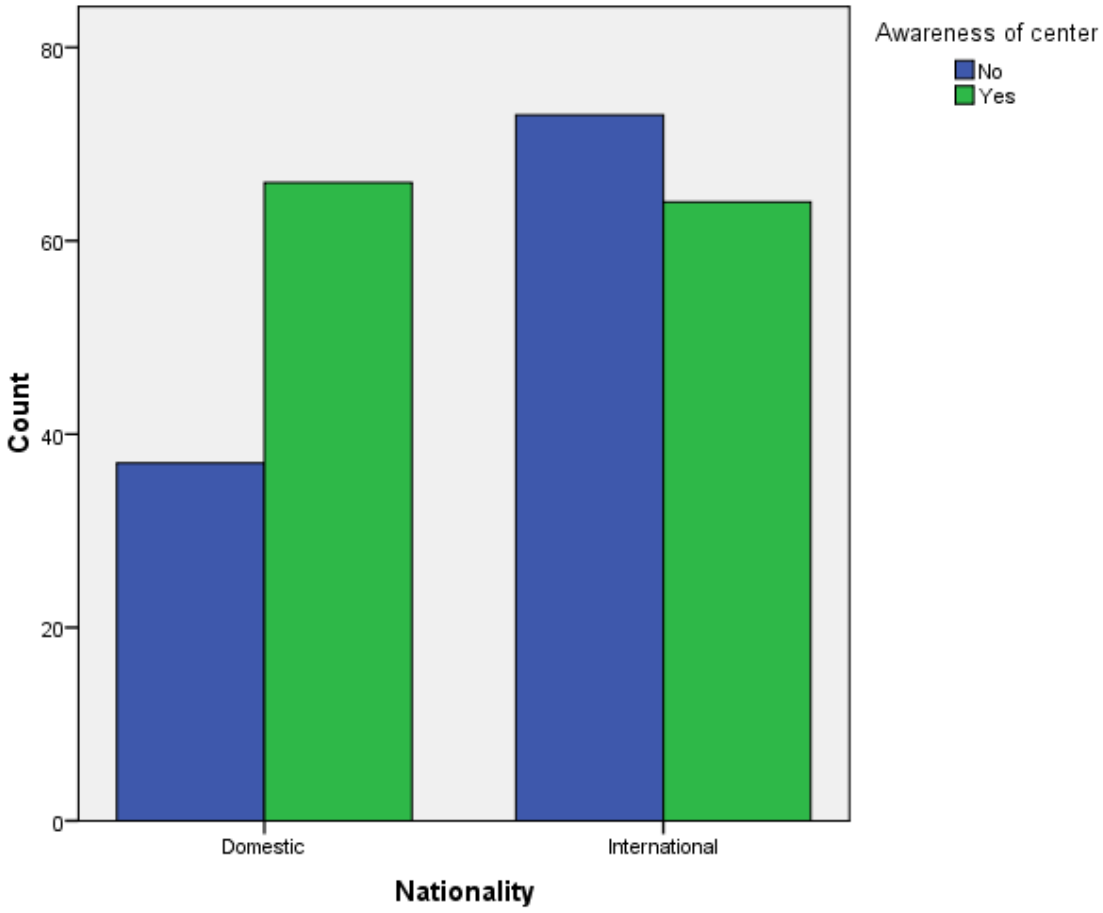

Figure 9. Bar graph of awareness of recycling center among categories of nationality.

Table 19 shows statistically significant differences in the family housing student's awareness of recycling center among domestic and international residents at an alpha value of 0.05.

Table 19

Chi-Square Statistics for Nationality vs. Awareness of Recycling Center

Variable	Nationality vs. recycling center
Test statistics	
Chi-square	7.139
df	1
Asymp. sig.	0.008*

Note: $n = 240$. *$p < .05$, two-tailed.

Figure 10 graphically shows the count of the family housing student's awareness of ISU recycling program among domestic and international residents.

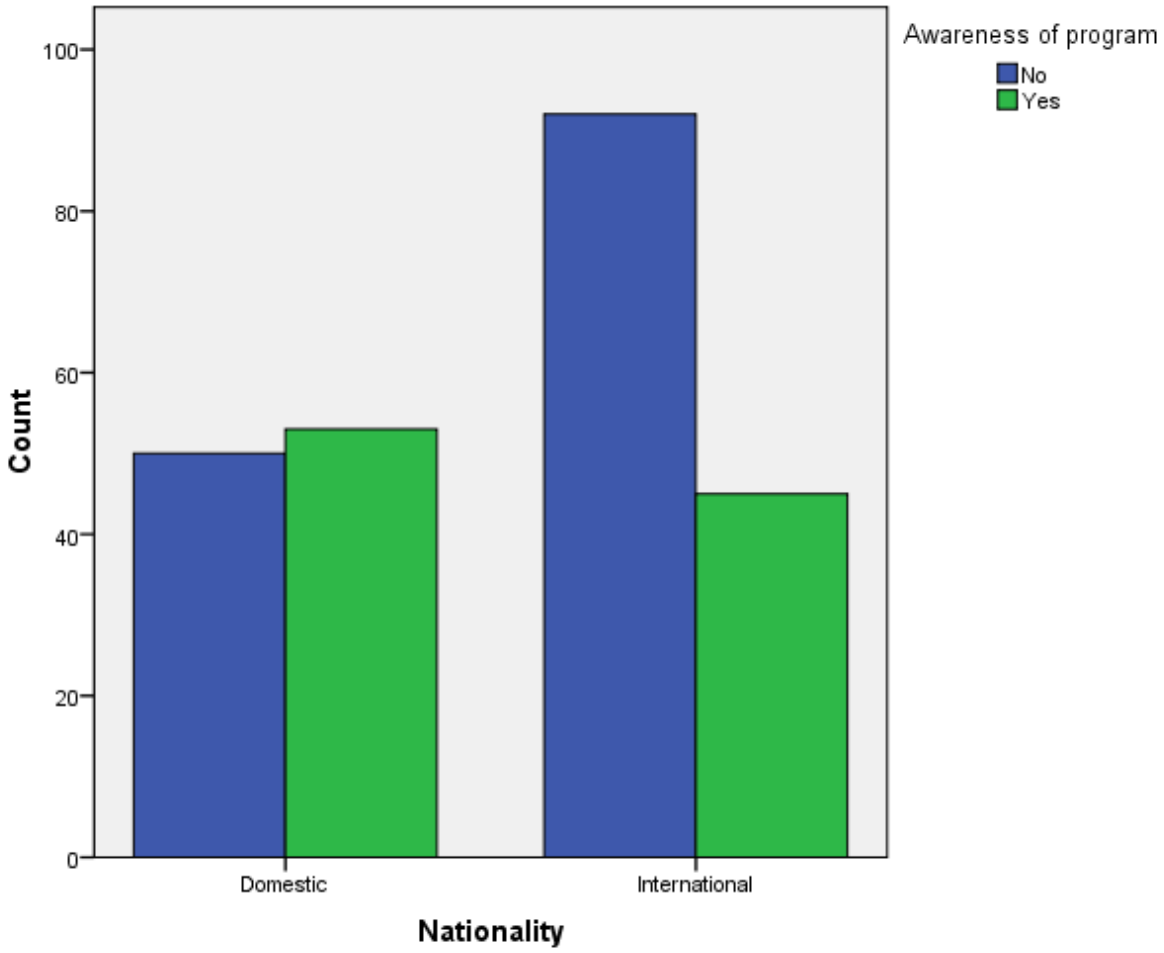

Figure 10. Graphical representation of awareness of recycling program among categories of nationality of students.

Table 20 indicates statistically significant differences in the family housing student's awareness of recycling program among domestic and international residents at an alpha value of 0.05.

Table 20

Chi-Square Statistics for Nationality vs. Awareness of Recycling Program

Variable	Nationality vs. recycling program
Test statistics	
Chi-square	8.428
df	1
Asymp. sig.	0.004*

Note: $n = 240$. *$p < .05$, two-tailed.

Figure 11 graphically shows the count of the family housing student's willingness to take part in pickup among domestic and international residents.

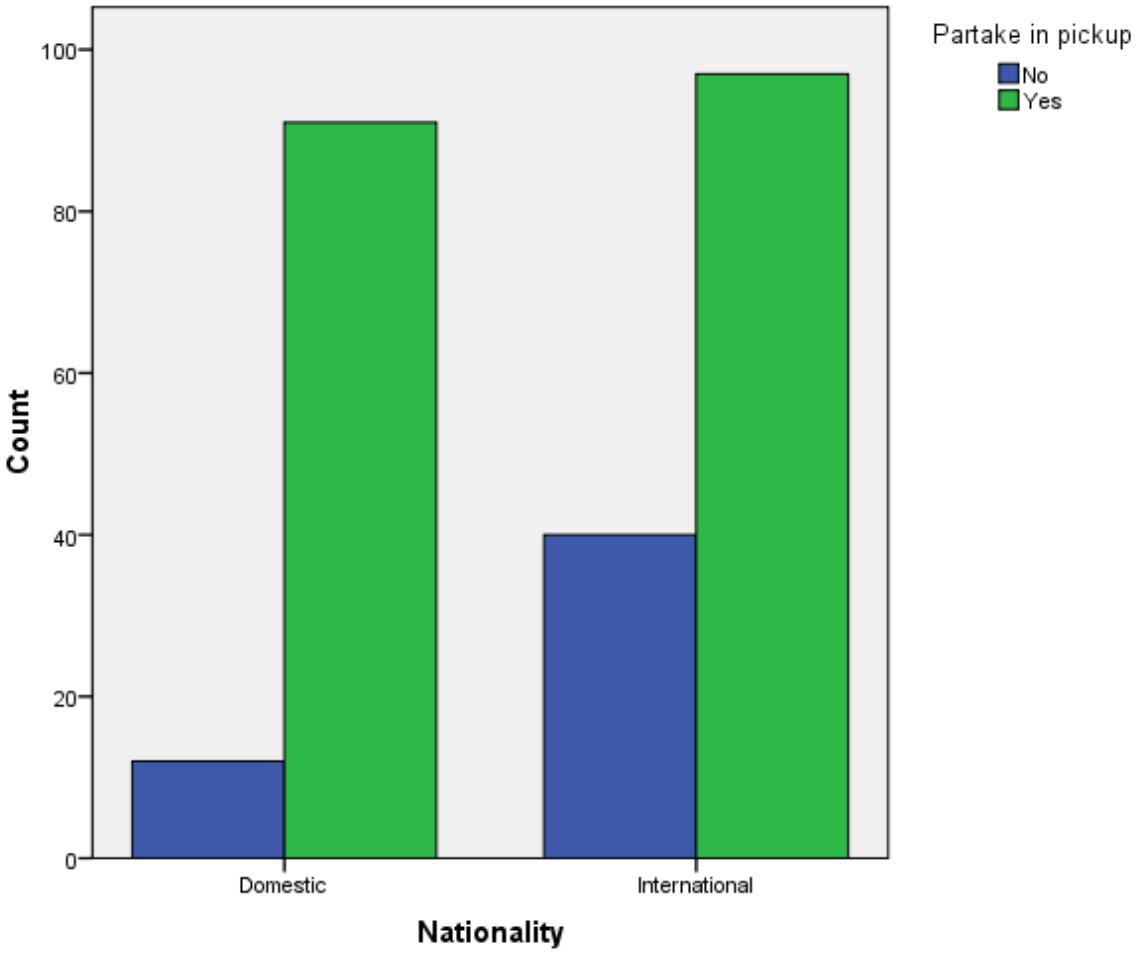

Figure 11. Graphical representation of willingness to take part in pickup among categories of nationality of students.

Table 21 indicates statistically significant differences in the family housing student's willingness to take part in pickup among domestic and international residents at an alpha value of 0.05.

Table 21

Chi-Square Statistics for Nationality vs. Willingness to Take Part in Pickup

Variable	Nationality vs. take part in pickup
Test statistics	
Chi-square	10.666
df	1
Asymp. sig.	0.001*

Note: $n = 240$. *$p < .05$, two-tailed.

Figure 12 graphically shows the count of the family housing student's willingness to take part in drop-off among domestic and international residents.

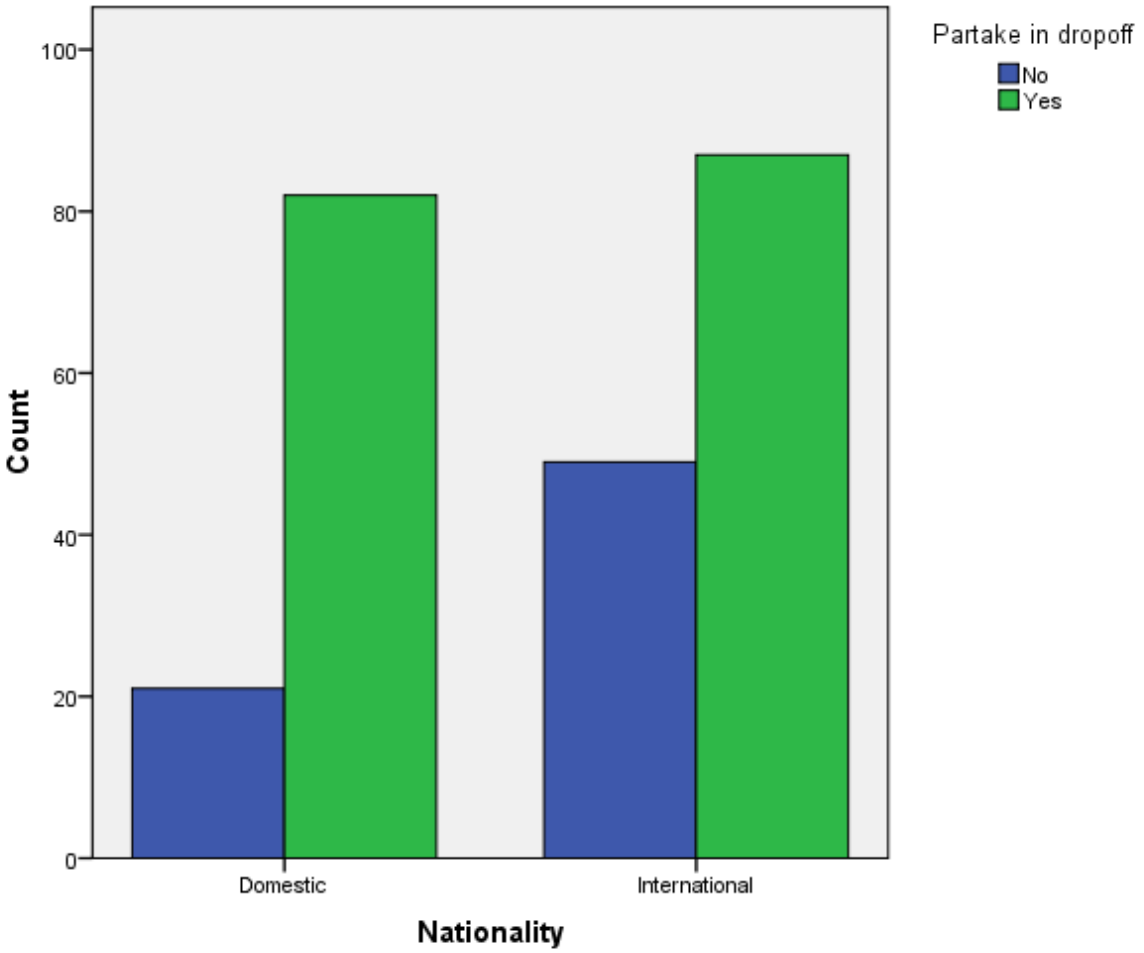

Figure 12. Bar graph of willingness to take part in drop-off among categories of nationality of students.

Table 22 shows statistically significant differences in the family housing student's willingness to take part in drop-off among domestic and international residents at an alpha value of 0.05.

Table 22

Chi-Square Statistics for Nationality vs. Willingness to take part in drop-off

Variable	Nationality vs. take part in pickup
Test statistics	
Chi-square	6.923
df	1
Asymp. sig.	0.009*

Note: $n = 240$. *$p < .05$, two-tailed.

Figure 13 graphically shows the count of the family housing student's awareness of ISU recycling center between the numbers of years they spent on campus.

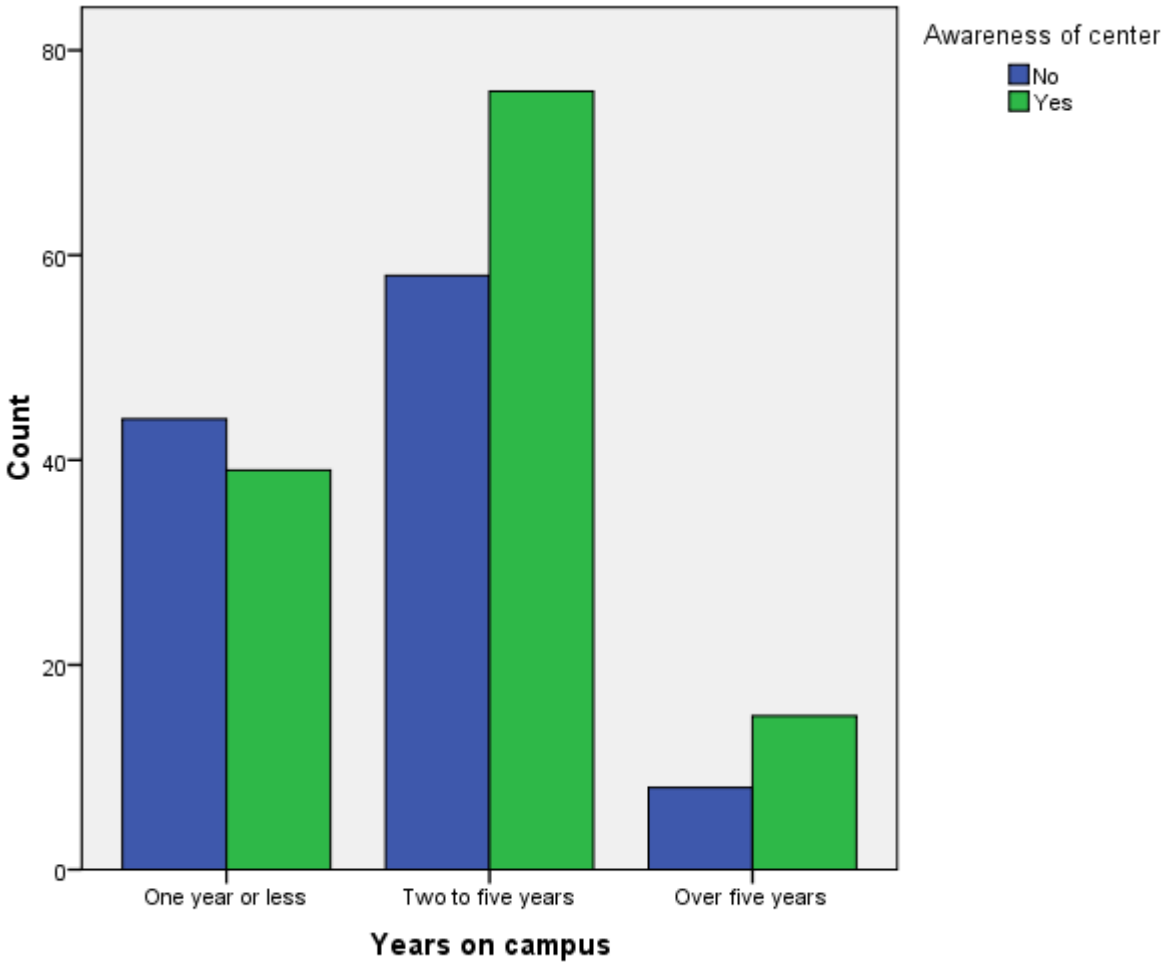

Figure 13. Bar graph of awareness of recycling center vs. years spent on campus.

Table 23 shows no significant differences in the family housing student's awareness of recycling center between the years spent on campus at an alpha value of 0.05.

Table 23

Chi-Square Statistics for Years vs. Awareness of Recycling Center

Variable	Years on campus vs. recycling center
Test statistics	
Chi-square	3.205
df	2
Asymp. sig.	0.201

Note: $n = 240$.

Figure 14 graphically shows the count of the family housing student's awareness of ISU recycling program between the numbers of years they spent on campus.

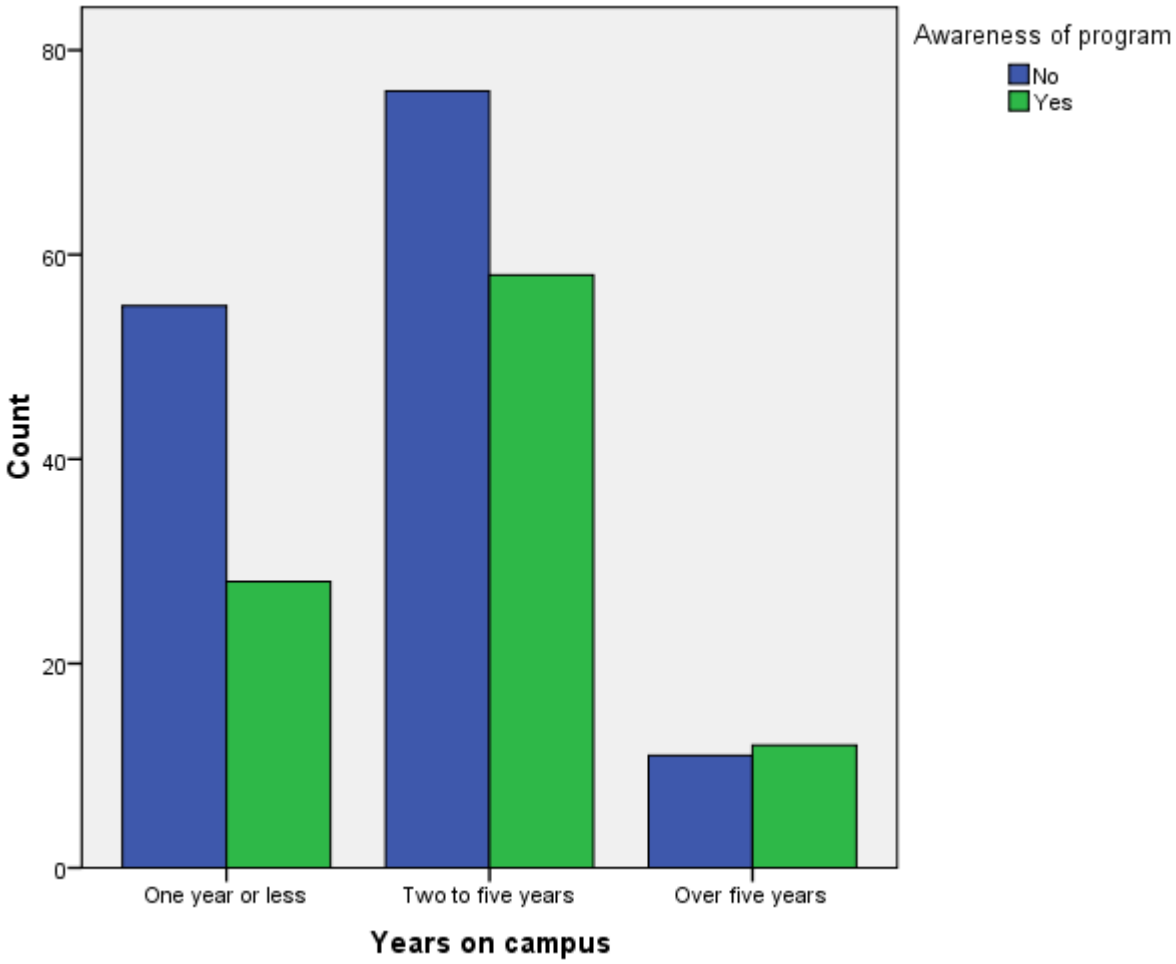

Figure 14. Graphical representation of awareness of recycling program vs. years spent on campus.

Table 24 shows no significant differences in the family housing student's awareness of recycling program between the years spent on campus at an alpha value of 0.05.

Table 24

Chi-Square Statistics for Years vs. Awareness of Recycling Program

Variable	Years on campus vs. recycling program
Test statistics	
Chi-square	3.288
df	2
Asymp. sig.	0.193

Note: $n = 240$.

Figure 15 graphically shows the count of the family housing student's willingness to take part in pickup between the numbers of years they spent on campus.

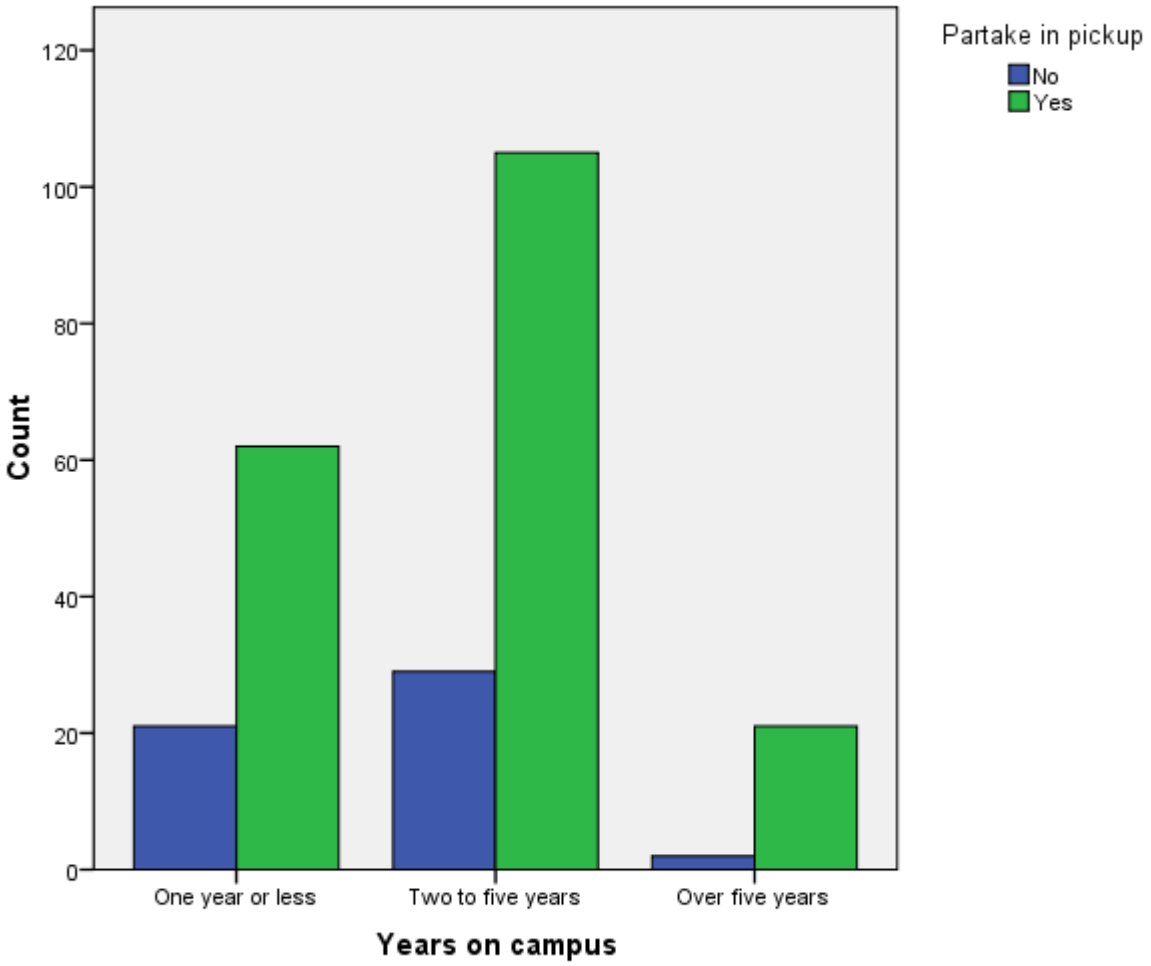

Figure 15. Graphical representation of willingness to take part in pickup vs. years spent on campus.

Table 25 shows no significant differences in the family housing student's willingness to take part in pickup between the years spent on campus at an alpha value of 0.05.

Table 25

Chi-Square Statistics for Years Spent on Campus vs. Willingness to Take Part in Pickup

Variable	Years on campus vs. take part in pickup
Test statistics	
Chi-square	2.926
df	2
Asymp. sig.	0.232

Note: $n = 240$.

Figure 16 graphically shows the count of the family housing student's willingness to take part in drop-off between the numbers of years they spent on campus.

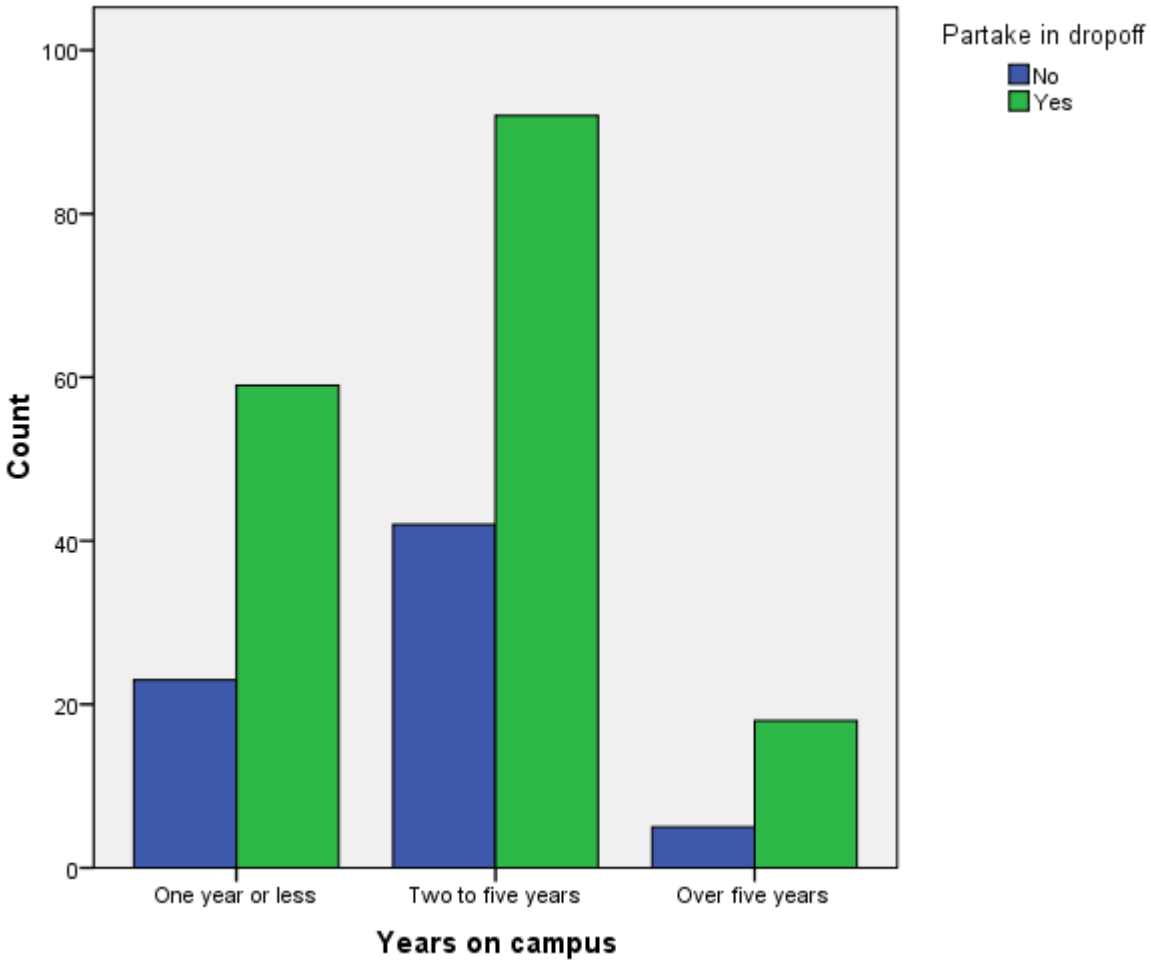

Figure 16. Graphical representation of willingness to take part in drop-off vs. years spent on campus.

Table 26 shows no significant differences in the family housing student's willingness to take part in drop-off between the years spent on campus at an alpha value of 0.05.

Table 26

Chi-Square Statistics for Years Spent on Campus vs. Willingness to Take Part in Drop-off

Variable	Years on campus vs. take part in drop-off
Test statistics	
Chi-square	0.967
df	2
Asymp. sig.	0.617

Note: $n = 240$.

Figure 17 graphically shows the count of the family housing student's awareness of recycling center among the four units.

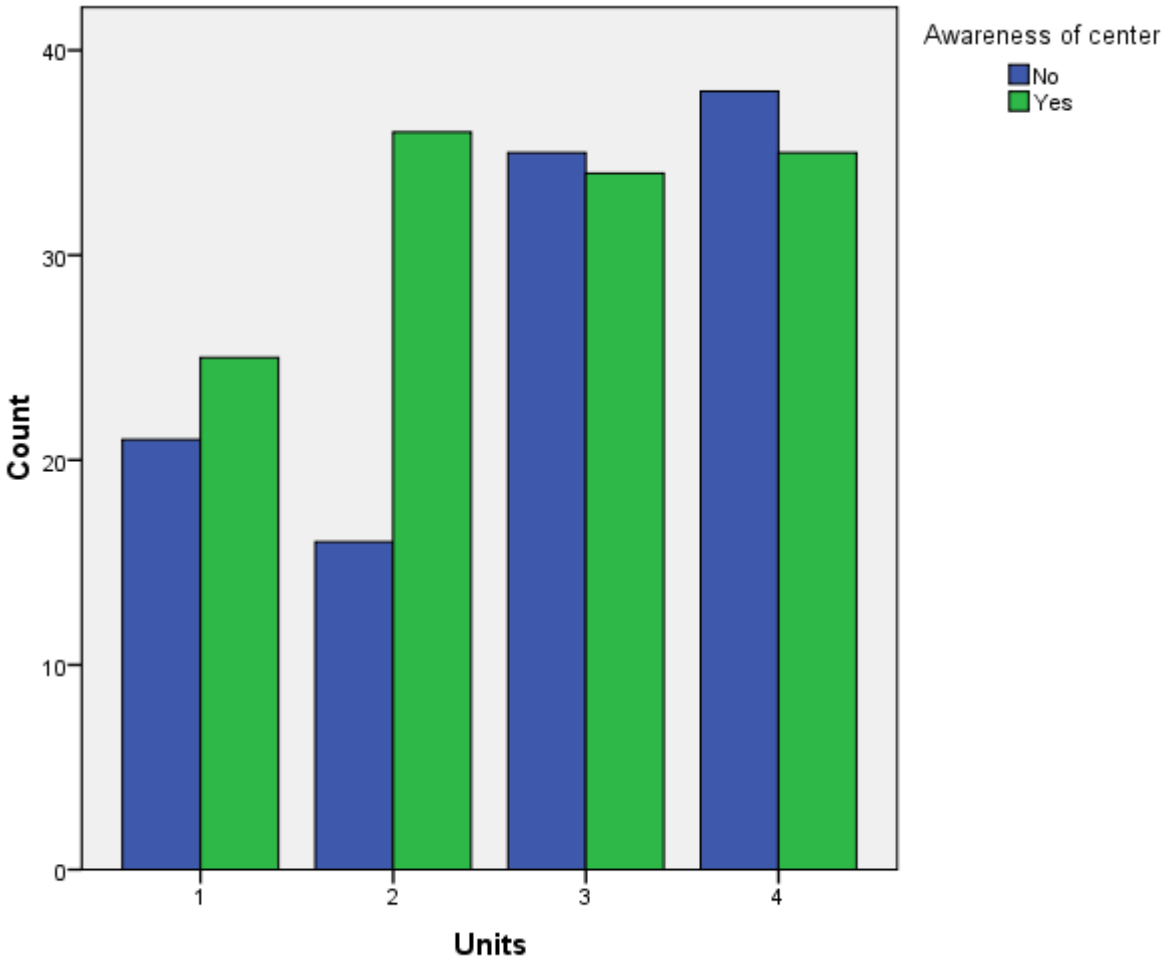

Figure 17. Bar graph of awareness of recycling center among units.

Table 27 shows no significant differences in the family housing student's awareness of recycling center among the four units at an alpha value of 0.05.

Table 27

Chi-Square Statistics for Units vs. Awareness of Recycling Center

Variable	Units vs. recycling center
Test statistics	
Chi-square	6.557
df	3
Asymp. sig.	0.087

Note: $n = 240$.

Figure 18 graphically shows the count of the family housing student's awareness of recycling program among the four units.

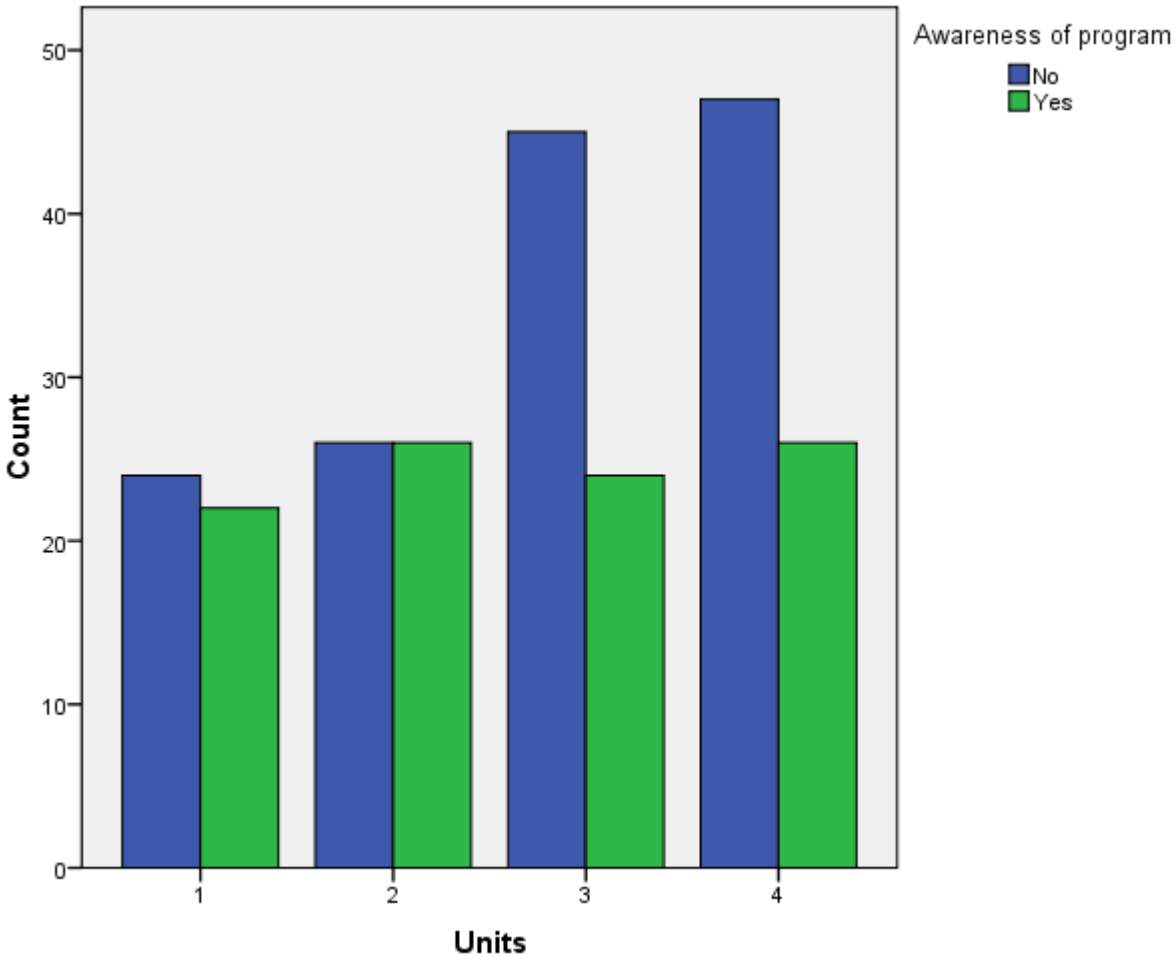

Figure 18. Graphical representation of awareness of recycling program among units.

Table 28 shows no significant differences in the family housing student's awareness of recycling program among the four units at an alpha value of 0.05.

Table 28

Chi-Square Statistics for Units vs. Awareness of Recycling Program

Variable	Units vs. recycling program
Test statistics	
Chi-square	4.608
df	3
Asymp. sig.	0.203

Note: $n = 240$.

Figure 19 graphically shows the count of the family housing student's willingness to partake in pickup among the four units.

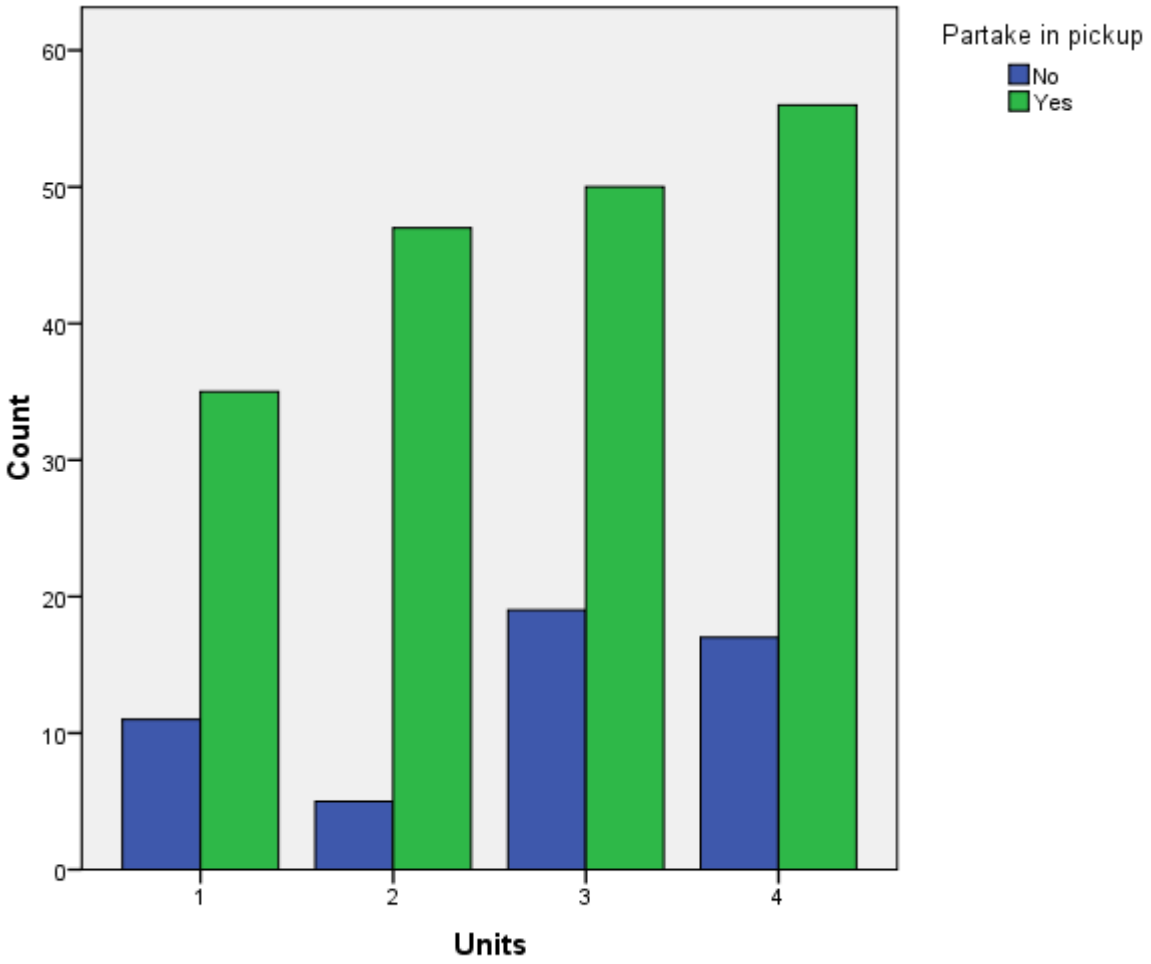

Figure 19. Bar graph of willingness to take part in pickup among units.

Table 29 shows no significant differences in the family housing student's willingness to partake in pickup among the four units at an alpha value of 0.05.

Table 29

Chi-Square Statistics for Units vs. Willingness to Take Part in Pickup

Variable	Units vs. take part in pickup
Test statistics	
Chi-square	6.100
df	3
Asymp. sig.	0.107

Note: $n = 240$.

Figure 20 graphically shows the count of the family housing student's willingness to partake in drop-off among the four units.

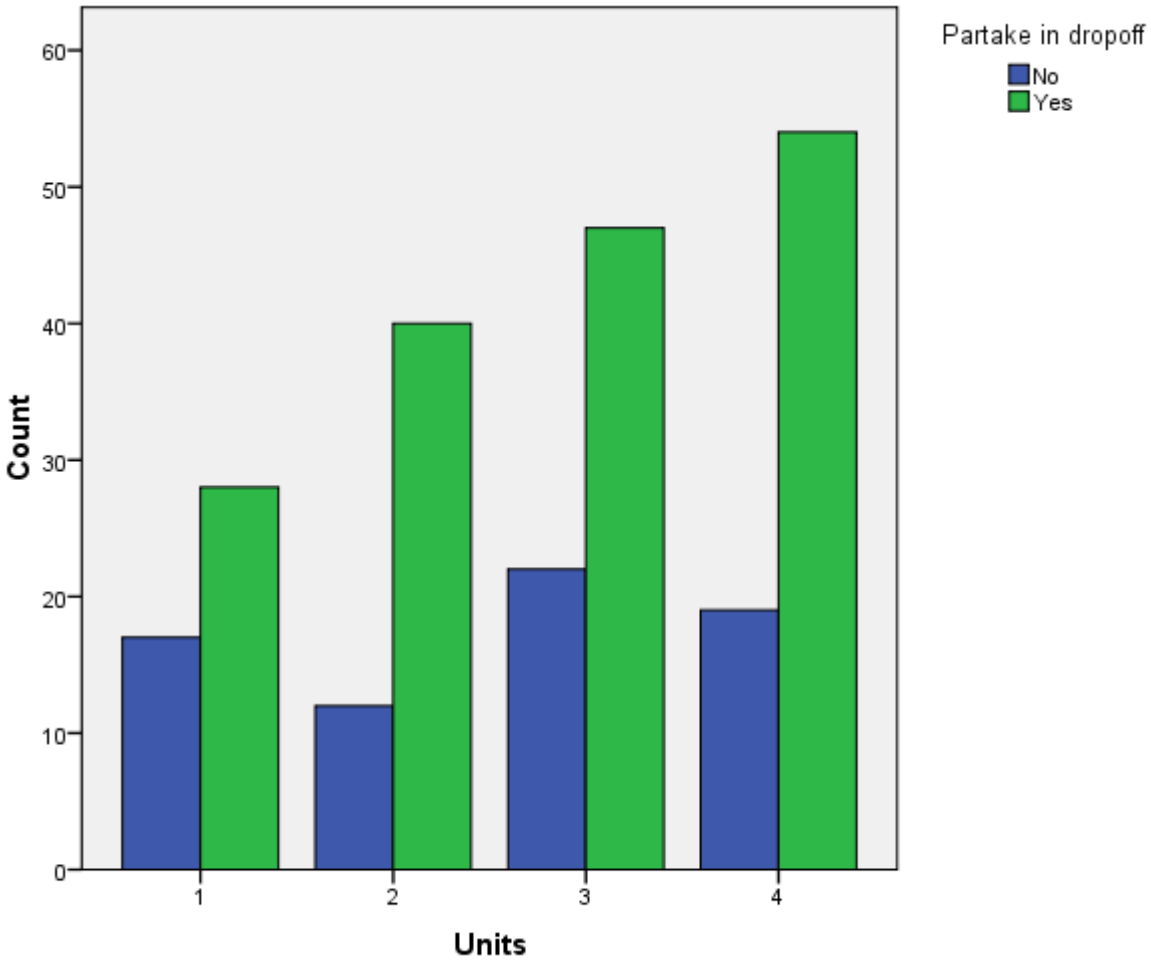

Figure 20. Graphical representation of willingness to take part in drop-off among units.

Table 30 shows no significant differences in the family housing student's willingness to partake in drop-off among the four units at an alpha value of 0.05.

Table 30

Chi-Square Statistics for Units vs. Willingness to Take Part in Drop-off

Variable	Units vs. take part in drop-off
Test statistics	
Chi-square	3.134
df	3
Asymp. sig.	0.371

Note: $n = 240$.

CHAPTER 5

CONCLUSIONS

The researcher designed this study to investigate the awareness of recycling services at student family housing units. The data gathered from the survey allowed for interesting results of how family housing residents' awareness could help with the employment of ISU recycling services at their units. All the four units were ISU family units for students of at least 21 years old and do not provide ISU recycling services.

Below is a summary of the question and along with the answer gleaned after the completion of the research.

Specific Question: Are students in the family housing units aware of recycling?

Answer: From the frequency tables, about 41 % of residents surveyed were aware of ISU recycling program while 54 % of them were aware of the recycling center.

Descriptively, 59 % family housing residents were not aware of recycling program. However, 88 % of them believed that recycling would help them recycle their trash. 78 % of them were willing to take part in pickup while 70 % would also do so in drop-off. About 45 % had confidence that recycling would recycle the materials they presumed for recycling while 22 % recorded inconvenience as the reason for not taking part in both pickup and drop-off programs. About 34 % wanted ISU authorities to promote pickup recycling in order to make recycling appealing or convenient to them. Eventually, about 57 % of those who thought

recycling programs would help them recycle their trash chose pickup recycling between pickup and drop-off as a better program for them. This supports their inconvenience reason for not taking part in recycling.

All the null hypotheses were retained except there were statistically significant differences between the awareness of recycling center, awareness of recycling program, willingness to take part in pickup, willingness to take part in drop-off counts and the two categories of nationality of students, and the awareness of recycling center and gender counts.

From the bar graph of awareness of recycling center among categories of gender, 62 male residents were aware of ISU recycling center while 68 female residents were also aware of the center. This statistical difference could be due to these two reasons: first, female residents do more cooking and shopping than their male counterparts who mostly eat out. They generate more trash. This enables them think more of recycling, hence their more awareness of ISU recycling center. Second, about half the females in the family housing units are mothers, hence they mostly stay home over the weekends and watch television, do assignments, and take care of their kids as opposed to the male residents who spend much more time outside of their apartments. They, in the watching of the television, watch more ISU recycling advertisements which make them more aware of the center.

From the bar graphs of awareness of recycling center, recycling program, willingness to take part in pickup, and willingness to take part in drop-off among the two categories of nationality of students, 66 domestic residents were aware of recycling center as opposed to 64 international residents, 53 domestic residents were aware of recycling program against 45 international students, 91 domestic residents were willing to take part in pickup recycling while

97 international residents expressed willingness in partaking in pickup, and 82 domestic residents were willing to take part in drop-off against 87 international residents.

The statistical difference between the counts of domestic and international residents vs. awareness of recycling center could be due to the fact that most domestic students have cars, and park on campus sometimes in parking lots close to ISU Recycle Center. Some of them may even be partaking in drop-off recycling. However, most international students do not have cars, they go school by bus and alight at areas close to their destinations – classrooms, library, computing complex, and work offices, which are far from the ISU Recycle Center. The researcher also assumes that some domestic students might have stayed on campus for their undergraduate education and got to know about the recycling center through notices on bulletin boards and recycling receptacles all over their halls of residence. Some may also be native of Terre Haute and might have been taking part in drop-off recycling or seen their parents or friends partake. However, all international students in the family housing units are at least 21 years old and graduate students. Most of them came from their home countries for post graduate studies without much knowledge of ISU Recycle Center.

The statistical difference between the counts of domestic and international residents vs. awareness of recycling program could be due to the point that most international students may not care about ISU recycling programs since most of them will graduate in two years and leave. Only few international students especially those from Malaysia, South Korea, Taiwan, and China appear to be aware of ISU recycling program since they recycle in their home countries.

The statistical difference between the counts of domestic and international residents vs. willingness to take part in pickup and willingness to take part in drop-off could be due to the more numbers of international students in the family housing units as opposed to domestic

students. Some domestic students might have traveled while the researcher was doing the surveying. The researcher also thinks that questions 6 and 7 (See Appendix C for the survey) could have some effect on the participants by responding "yes" to both questions.

Results of Survey

The short survey helped residents to fill it out in time. The students in the filling out of the survey were cheerful about the educative nature of the survey and expressed interest in recycling their trash. The researcher added the operational definitions of terms page to the survey so that participants would look up terms they did not understand. The researcher also explained the whole study to some of them. The researcher expected more international students' participation because there are more international students in the family housing units that domestic students.

Implications of Findings

The questionnaire was brief in order to crave participant's indulgence. The study showed the awareness of students in the family housing units but the data collected should be used for further research. In order to make the study exempt to comply with IRB requirements, the researcher maintained anonymity of the participants.

Recommendations for Further Research

Based on the findings, the researcher was able to investigate the awareness of students in the family housing units. Looking at the about 41 % awareness of the program, the researcher thinks that there should be further study into how to make residents more aware of recycling.

Descriptively, 57 % of residents surveyed chose pickup recycling as the better form of recycling. Hence, there should also be a study on where to place the pickup trash cans in order for the residents to partake in the recycling exercise conveniently. There are faculty members,

other ISU staff, children, visitors and non-student spouses of students in the family housing units who also generate trash. These people should be considered in future research.

There were (are) residents in the family housing units who were aware of recycling before the study. This pre-study awareness and post-study awareness, the researcher thinks should be investigated in future study. This interaction would expand this study.

REFERENCES

Ackerman, F. (2005). Material Flows for a Sustainable. *International Review for Environmental Strategies*, *5*(2), 499-510.

American Psychological Association. (2007). Publication Manual of the American Psychological Association (5th ed.). Washington, DC: Author.

Biocycle Magazine. (2006). *Number of Landfills.* Retrieved October 8, 2008, from http://www.epa.gov/garbage/factbook/48.pdf#search='number%20of%20landfill.

EPA. (2008). *Municipal Solid Waste.* Retrieved October 8, 2008, from http://www.epa.gov/epawaste/basic-solid.htm#Municipal.

EPA. (2007). *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2006.* Retrieved October 8, 2008, from http://www.epa.gov/osw.

Hernandez, R. J., Selke, S. E. M., and Culter, J. D. (2000). Plastics Packaging: Properties, Processing, Applications, and Regulations. Munich: Hanser Publishers.

ISU Recycling Center. Retrieved October 8, 2008, from http://www1.indstate.edu/facilities/recycle.

Leidner, J. (1981). Plastics Waste: Recovery of Economic Value. New York: Marcel Dekker, Inc.

Ozel, A., Terzi, I., and Ozel, E. (2009). Awareness of Biotechnological Application: A Study among University Geography Students. *Education*, *129*(4), 714-723. http://search.ebscohost.com

Paine, F. A. (1987). Modern Processing Packaging and Distribution Systems for Food. New York: AVI.

Selke, S. E. M. (1990). Packaging and the Environment: Alternatives, Trends and Solutions. Lancaster: Technomic Publishing AG.

Tucci, A., Rambaldi, E., and Esposito L. (2006). Use of Scrap Glass as Raw Material for Porcelain Stoneware Tiles. *Advances in Applied Ceramics*, *105*(1), 40-46.

APPENDIX A: IRB APPROVAL SHEET AND INFORMED CONSENT

Below is the IRB approval sheet:

Indiana State University
More. From day one.
Institutional Review Board
Terre Haute, Indiana 47809
812-237-3088
Fax 812-237-3092

February 4, 2010

Eli Kofi Aba
Marion Schafer, Ph.D.
Department of Technology Management
College of Technology
Indiana State University

RE: An Investigation of the Awareness of Recycling Services at Student Family Housing Units (IRB# 10-097)

Dear Mr. Aba:

The IRB has determined that your proposed study listed above, pursuant to Indiana State University's *Policies and Procedures for the Review of Research Involving Human Subjects* and 45 CFR 46, falls within an exempt category and is therefore considered exempt from Institutional Review Board Review. You do not need to submit continuation requests or a completion report. Should you need to make modifications to your protocol or informed consent forms that do not fall within the exempt categories, you will have to reapply to the IRB for review of your modified study.

Your study falls within the following exempt categories:

☒ 45 CFR 46.101 (b) 1 Educational Research	☐ 45 CFR 46.101 (b) 4 Existing Data
☒ 45 CFR 46.101 (b) 2 Survey Research	☒ 45 CFR 46.101 (b) 5 Evaluation Research
☐ 45 CFR 46.101 (b) 3 Survey of Public Officials	☐ 45 CFR 46.101 (b) 6 Consumer Research

Internet Research: You are using an internet platform to collect data on human subjects. Although your study is exempt from IRB review, ISU has specific policies about internet research that you should follow to the best of your ability and capability. We are including the section on internet research from ISU IRB policy.

Informed Consent: All ISU faculty, staff, and students conducting human subjects research within the "exempt" category are still ethically bound to follow the basic ethical principles of the Belmont Report: a) respect for persons; 2) beneficence; and 3) justice. These three principles are best reflected in the practice of obtaining informed consent.

If you have any questions, please contact the Office of Sponsored Programs at 812-237-3088, or irb@indstate.edu, and your question will be directed to the appropriate person. I wish you well in completing your study.

Sincerely,

Thomas L. Steiger, Ph.D.
Chair, Institutional Review Board

Below is the informed consent:

January 12, 2010

AN INVESTIGATION OF THE AWARENESS OF RECYCLING SERVICES AT STUDENT FAMILY HOUSING UNITS

You are being invited to participate in a research study about an investigation of the awareness of recycling services at family housing units. It focuses on recycling services of students in these areas. This study will create awareness and demonstrate the need for recycling in these units. This study is being conducted by Eli Kofi Aba and Professor Marion Schafer, from the Department of Technology Management at Indiana State University (ISU). I am a master's student studying Industrial Technology with a specialization in packaging. I am conducting this study as part of my graduate student thesis.

You were selected as a possible participant in this study because you are ISU student resident in family housing units.

There are no known risks if you decide to participate in this research study. There are no costs to you for participating in the study. The information you provide will influence future recycling services in these units. The survey will take about two minutes of time to complete. The information collected may not benefit you directly, but the information learned in this study should provide more general benefits.

You will not be asked to identify yourself in this survey. IP addresses will not be collected either. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. The IRB has determined this study to be exempt from IRB oversight. Individuals from the Institutional Review Board may inspect these records. Should the data be published, no individual information will be disclosed.

Your participation in this study is voluntary. Would you like to participate in this study? (If yes, thank you, if no, thank you for your time), you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer for any reason.

If you have any questions about the study, please contact:

Eli Kofi Aba
Indiana State University
John T. Myers Technology Building
Rm. TC 213
650 Cherry Street
Terre Haute, IN 47809
Phone (812) 237-7333
eaba@indstate.edu

You can also contact my academic advisor/faculty sponsor

Marion Schafer, Ph.D.
Indiana State University
John T. Myers Technology Building
Rm. TC 201A
650 Cherry Street
Terre Haute, IN 47809
Phone (812) 237-3352
marion.schafer@indstate.edu

If you have any questions about your rights as a research subject or if you feel you've been placed at risk, you may contact the Indiana State University Institutional Review Board (IRB) by mail at Indiana State University, Office of Sponsored Programs, Terre Haute, IN, 47809, by phone at (812) 237-8217, or by e-mail at irb@indstate.edu.

Eli Kofi Aba
200 Farrington Street, Apt 403
Terre Haute, IN47807
Phone (812) 237-7333
eaba@indstate.edu

APPENDIX B: PERMISSION FORMS

Below are the permission forms:

Location of study to take place: Student family housing units

Director of location: Rex Kendall, director of Residential Life

Title of study: An investigation of the awareness of recycling services at student family housing units

Reason for study: A partial fulfillment of a master's thesis

Name of person administering survey: Eli Kofi Aba

Title: M.S. student in Industrial Technology

University units were chosen for this study because these areas do not have recycling programs in place. Permission to survey student participants about the need for recycling services will be given to Eli Kofi Aba under the following circumstances. He is interested in data that will pertain to his study, he has adequate facilities to perform the research as approved by the IRB (Institutional Review Board) at Indiana State University, and will follow IRB procedures, as well as those rules and procedures defined by Residential Life.

Printed name of director Brenda Monaghan
Signature of director Brenda K Monaghan Date 12-22-09
Asst. Dir. Unit Operations
Residential Life

Printed name of researcher Eli Kofi Aba
Signature of researcher [signature] Date 12/22/09

Location of study to take place: Student family housing units

Director of location: Johnwana Carson, hall director of University Units

Title of study: An investigation of the awareness of recycling services at student family hou units

Reason for study: A partial fulfillment of a master's thesis

Name of person administering survey: Eli Kofi Aba

Title: M.S. student in Industrial Technology

University units were chosen for this study because these areas do not have recycling programs in place. Permission to survey student participants about the need for recycling services will be given to Eli Kofi Aba under the following circumstances. He is interested in that will pertain to his study, he has adequate facilities to perform the research as approved b the IRB (Institutional Review Board) at Indiana State University, and will follow IRB procedures, as well as those rules and procedures defined by University Units.

Printed name of hall director Johnwana Carson
Signature of director _____ Date 1/14/10

Printed name of researcher Eli Kofi Aba
Signature of researcher _____ Date 1/14/10

APPENDIX C: SURVEY CONDUCTED

Question 1: What is your level of study?

Question 2: What is your gender?

M/F

Question 3: What is your nationality?

Domestic/International

Question 4: How many months/ years have you spent on campus so far?

Question 5: Are you resident in the student family housing units?

Y/N

Question 6: If you answered yes to #1, which unit do you live?

1, 2, 3, 4,

Question 7: Are you aware of any recycling center on campus?

Y/N

Question 8: Are you aware of any recycling program on campus?

Y/N

Question 9: If you answered yes to #4, which recycling program is employed at campus recycling center?

A. Curbside pickup program
B. Drop-off program
C. Both programs
D. None of the programs

Question 10: Do you think recycling programs will help in recycling the trash you generate in your unit?

Y/N

Question 11: If you answered yes to #6, which recycling program will be better for you?

Curbside pickup program or Drop-off program

Question 12: Would you partake in pickup program in your unit?

Y/N

Question 13: Would you partake in drop-off program in your unit?

Y/N

Question 14: If you answered yes to #8 or 9, how confident are you that materials presumed for recycling are really recycled?

A. Extremely
B. Highly
C. Not very
D. Not at all

Question 15: If you answered no to #8, or 9 what are your reasons?

A. Inconvenience of recycling program
B. No monetary motivation
C. Don't care to be affiliated with recycling
D. Don't think recycling will be beneficial to me
E. Don't think recycling will be beneficial to the environment

Question 16: What could the university authorities do to make recycling more appealing or convenient to you?

A. Make it compulsory
C. Promote drop-off program

B. Promote pickup recycling D. Host seminars on how or where to recycle

Other_____

Question 17: Does landfill space concern you?

Y/N

APPENDIX D: CODING / RAW DATA

Each variable was coded as value label. Below is a description of the coding:

Level of study

"1"	"2"
Undergraduate	Graduate

Gender

"1"	"2"
Male	Female

Nationality

"1"	"2"
Domestic	International

Years spent on campus

"1"	"2"	"3"
One year or less	Two to five years	Over five years

Residence

“0”	“1”
No	Yes

Units

“1”	“2”	“3”	“4”
1	2	3	4

Awareness of ISU recycling center

“0”	“1”
No	Yes

Awareness of ISU recycling program

“0”	“1”
No	Yes

Recycling program employed on campus

“1”	“2”	“3”	“4”
Curbside pickup	Drop-off	Both	None

Would recycling help?

“0”	“1”
No	Yes

Better recycling program

“1”	“2”
Curbside pickup	Drop-off

Would you partake in pickup?

“0”	“1”
No	Yes

Would you partake in drop-off?

“0”	“1”
No	Yes

Confidence in recycling

“1”	“2”	“3”	“4”
Extremely	Highly	Not very	Not at all

Reasons for not taking part in recycling

"1"	"2"	"3"	"4"	"5"
Inconvenience	No money	Don't care	No benefit to me	No benefit to the environment

How to make recycling more appealing or convenient

"1"	"2"	"3"	"4"	"5"	"6"
Compulsory	Promote pickup	Promote drop-off	Seminars	Other	Promote pickup and drop-off

Landfill space concerns

"0"	"1"
No	Yes

Below is a table of the raw data:

The abbreviations of the variables are shown below:

Level of study: LS

Gender: G

Nationality: N

Years spent on campus: YC

Residence: R

Units: U

Awareness of ISU recycling center: AC

Awareness of ISU recycling program: AP

Recycling program employed on campus: RPEC

Would recycling help?: WYH

Better recycling program: BRP

Would you partake in pickup?: PP

Would you partake in drop-off?: PD

Confidence in recycling: CR

Reasons for not taking part in recycling: R

Landfill space concerns: A

How to make recycling more appealing or convenient: LS

LS	G	N	YC	R	U	AC	AP	RPEC	WYH	BRP	PP	PD	CR	R	A	LS
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2	2	2	1	1	1	1	1	1	1	1	1	1	2		4	0
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1	2	1	1	1	3	1	1	2	1	1	1	1	2		6	1
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1	1	1	2	1	3	1	0		1	2	1	1	2		6	1
2	1	2	1	1	3	1	1	3	1	1	1	1	3		1	1
1	1	2	2	1	3	1	1	2	0		0	0		3	6	0
1	2	2	3	1	2	1	1	2	0		1	1	3		3	0
1	1	2	3	1	4	0	0		1	1	1	0	3	1	2	1
2	1	2	3	1	3	0	0		1	1	1	0	3	2	2	1
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1	1	1	2	1	2	1	0		1	2	1	1	2		1	1
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2	1	2	2	1	1	1	1	3	1	1	1	1	2		6	0
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1	1	1	2	1	2	0	0		1	1	1	1	1		1	0
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1	1	2	2	1	4	1	1	2	0		0	0		1	2	0
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2	1	2	1	1	1	1	1	4	1	1	1	1	3		4	1