College Trash: Should Virginia Tech spend more funds on educating students about their trash disposal program?

Sofia Remondino

Virginia Polytechnic Institute and State University

ENGL 1106: First Year Writing

Doc Hall

Oct 31, 2023

Introduction:

The World Bank has estimated that waste generation will increase to 3.40 billion tons in 2050 (Kaza et al., 2018). Waste can be a huge environmental issue, specifically incorrectly handling waste. That is why recycling is so important. It can prevent waste from ending up in landfills. That is if things are recycled correctly. Unfortunately, recycling differs depending on location, which can get incredibly confusing. Therefore, learning the recycling and waste programs after moving is essential since some facilities can process certain items that others cannot. This idea is fundamental when it comes to moving to college. According to Erin Largo-White, a Director of Environmental Research at the University of North Florida, and other environmental scientists, colleges represent a more significant intervention for recycling because they can have such a big impact on their local communities (Largo-White et al., 2013). On top of that, Moonhee Cho, an associate professor of advertising at the University of Tennessee, found that universities have financial incentives to promote recycling because it removes landfill space, which comes with a fee (Cho, 2019). Virginia Tech has three disposal methods: regular or municipal trash, recycling, and hazardous trash. Regular containers and recycling containers are outside dorms next to each other and in smaller containers around campus. Recycling includes plastics 1 and 2, cardboard, glass, paper, and cans ("Learning how to Recycle Correctly on Campus with the Division of Campus Planning, Infrastructure, and Facilities," 2023). Meanwhile, the Environmental Student Organization handles batteries, and students must call for a pickup of other e-waste. Unsurprisingly, many do not know all this information. Faculty sent out a trash disposal email at the beginning of the school year, but according to word of mouth, many did not read it. From observations at Virginia Tech, no one living in dorms fully knows how trash disposal works. There is confusion around which trash container is for recyclables,

what classifies as having food on it, and what plastics can be recycled. The concern is specifically for younger students since the observational study will be on dorm trash, and most residents are freshmen or sophomores. Solving this issue raises the question, 'Should Virginia Tech spend more funds on educating students about their trash disposal program?'. Even though there may be an upfront cost, Virginia Tech should spend more funds educating students about the trash disposal programs because students in dorms incorrectly recycle, they do not know about battery disposal, trash signage is confusing, wish-cycling is a problem, and education will help students be more environmentally conscious.

Background:

Why is waste such a problem? Many years ago, when humans were few and far between, waste was small, so no one needed to worry about it. As the population increased exponentially, so did the waste. Now, time, space, and resources are necessary to properly manage the large amounts of waste, all of which cost money. Additionally, the rise of consumerism in the modern era has promoted a constant waste of materials through quick trends like fast fashion.

With an increasing need for waste management, people are paying more attention to the idea of a circular economy. According to the Environmental Protection Agency, a circular economy refers to keeping items in use for as long as possible (United States Environmental Protection Agency [EPA], 2023). To clarify, this means trying to not permanently throw away goods. The three R's are the most known ways to do this: reduce, reuse, and recycle. Recycling is the last R because it is supposed to follow after one first reduces and reuses goods as much as possible. Unfortunately, it is not easy when grocery stores have single-use plastic around goods. Recycling is still important because of the risk of trash being burned or ending up in watersheds, and it saves resources. Again, Erin Largo-White and others said, "Recycling solid waste is an

important primary prevention focus to protect environmental resources and human health. Recycling reduces energy consumption and emissions and the need to harvest raw material, which protects air, water, and land." (Largo-White et al., 2013).

Another issue when it comes to waste management is hazardous waste. Hazardous waste is maintained separately from municipal waste because of the toxic chemicals it produces. Electronic waste, in particular, contains heavy metals such as lead. According to the World Health Organization, "In 2019, an estimated 53.6 million tonnes of e-waste were produced globally, but only 17.4% was documented as formally collected and recycled." (World Health Organization [WHO], 2023). The reports also found that exposure to these metals is terrible for ecosystems and lower-wage workers in the trash management industry, especially children and pregnant women (WHO, 2023). This evidence shows that waste and recycling management is highly precarious and requires attention.

Discussion:

Many students who live on campus at Virginia Tech do not know how to recycle correctly. An observational study determined how accurately Virginia Tech students on campus recycle by examining a random sample size of 30 pieces of seeable trash from 7 dorm recycling containers. The results indicated that approximately 36% of each recycling container was filled with non-recyclable items. Most of these non-recyclable items were plastic bags, presumably around a student's recycling goods. Another significant issue was objects with leftover food on them, like pizza boxes. Unfortunately, this means that many things currently recycled could mess up the entire container, causing even the correctly recycled goods to end up in the trash. Because the observational study focused on dorm trash, the content is mostly from underclassmen. This information shows that underclassmen do not know enough about the recycling processes here.

This argument concludes that Virginia Tech needs to put more effort into educating students, specifically underclassmen, about proper disposal processes.

Similarly, students don't know how to dispose of e-waste, specifically batteries, on campus. As previously mentioned, e-waste contains heavy metals that can harm human health and the environment if incorrectly disposed of, so teaching students about this is essential. According to records from the Environmental Sustainability Organization, battery collecting is not as sufficient as it should be for a school of this size. Overall, the total battery collection weighed roughly 42.5 lbs on average. A single AA battery weighs roughly 30 grams, so the average battery collection is 622. There are roughly 9300 students currently living on campus at Virginia Tech ("Housing," n.d.). Even if we assumed that each person only recycled one battery, there would still be 8678 students who recycled no batteries. With all the things that require batteries: calculators, clocks, certain lights, remotes, game controllers, mouses and many other things, it seems unlikely that this many people did not use batteries. Additionally, as a member of the Environmental Sustainability Organization, many have admitted that they are unaware batteries must be recycled, especially new students. Students are either unaware of the process for disposing of e-waste or find it too inconvenient. This issue can quickly be resolved by educating students about what they can and cannot throw away on campus. The first step in change is bringing awareness to the problem.

Dorm trash on campus needs better disposal direction signs that clarify recycling bins' rules. It needs to be more understandable for students to recycle more accurately. For example, a few dorm trash containers are painted the same color as the recycling bins, and the labels are small. Additionally, the battery containers do not have noticeable signs, so it is hard to spot them. The study by Erin Largo-White also found that more accessible access to recycling bins resulted

in more recycling of cans and bottles (Largo-White et al., 2013). This concept of convenience is critical to get students to recycle. Not only does there need to be more apparent education on trash disposal, but that education needs to be easy to access and understand. Some options for Virginia Tech are to make the labeling on the recycling bins larger, give the recycling bins a different color, and put bigger signs for the battery disposal locations. By putting these in place, students will throw away trash more effectively because it would be easier and more convenient to do so.

At Virginia Tech, incorrectly recycling can lead to having no choice but to trash the whole container. However, it is not careless people who put the wrong things in the recycling bin; it is people who do not know how to recycle but want to. According to Kathrine Price, a sustainable researcher, "Wish-cycling, also known as aspirational recycling, is the portmanteau of the words wish and recycling. It relates to the desire to throw any questionable items in the recycling bin, either because someone else will figure it out or because it is better to try." To solve the issue of wish-cycling, the article referenced different ways to educate people, the most prominent examples being using moral messages or mascots (Price, 2020). Wish-cycling is common among young adults who want to do the right thing but do not know how. It is a frustrating issue because the intention behind it is good. More widespread education on recycling at Virginia Tech would prove to be effective in combating this issue because it would become more important in social norms to recycle correctly.

Educating students about the disposal process will create more action in correctly disposing at Virginia Tech. According to environmental scientists such as Tetiana Shevchenko, an associate professor in science at the Sumy National Agrarian University, a higher knowledge of recycling correlated with higher recycling behavior (Qu et al., 2023). This proves that

educating students is the first step to seeing better results in recycling here at Virginia Tech. Students who are aware of correct recycling are much more likely to recycle. The thought also applies to disposing of batteries and other hazardous materials correctly. If students do not know the importance of correctly disposing of materials, why would they try to do it correctly? Therefore, educating students about the correct disposal method and its significance will result in better disposal practices.

The one downside to this argument is that the education module and larger signage of trash and recycling will have an upfront cost that has to be paid for by either the school or the students. It brings about the question, is it worth the cost? Any changes in signage on campus would be relatively inexpensive. However, the module to educate students about the disposal process would be a higher cost. The budget for 2023-2024 is unclear in the exact costs of the modules already in existence through the program Vector Solutions (achohal.edu, sexual assault prevention, etc.), so the finances may not be coming from the school (*Authorized Budget Document FY 24*, 2023). The fees for these modules are likely taken from the students directly since there is a section of fees that lists online 'academic programs.' Students may be unhappy about having to spend more money. Even so, the money saved when students recycle correctly can counteract the upfront cost of implementing the module. Virginia Tech works with the Montgomery Regional Solid Waste Authority (MRSWA) to process and sell recyclables and trash. Unfortunately, there is a limitation in finding the specific cost Virginia Tech pays to have the MRSWA manage waste since the two signed a particular contract that is not overtly displayed online. Although, an estimation can be made based on the fees listed on the MRSWA's website. One noticeable thing about the recycling fee is an extra 5$ processing fee per ton if the recycling is contaminated. (Montgomery Regional Solid Waste Authority [MRSWA], 2023).

This fee would add up quickly, considering the size of Virginia Tech. Therefore, as long as the module is effective, the students will pay less for trash disposal. Additionally, the school would benefit by getting closer to the goal of 55% recycling rate by 2025 ("Recycling Totals," n.d.). Reaching the goal would also increase the reputation and publicity of the school. Overall, the benefits of implementing the module and clearer disposal directions signs should outweigh the upfront cost. Implementation of both would be advantageous for both the students and the school.

Conclusion:

Virginia has a responsibility to uphold as a school with 9800 on-campus students. The larger number of people, the more impact it can have on the environment and that impact can very quickly become a negative thing. The idea is similar to how bigger communities have to allocate more funding towards environmental concerns. More people means more cars, structures, space, and trash. And, of course, less green space. This is why green initiatives are incredibly vital towards Virginia Tech's reputation because it upholds the responsibility of carrying so many students in one place. In general, Virginia Tech puts a lot of effort into implementing environmentally friendly programs, but there is always room for improvement.

At Virginia Tech, students incorrectly recycle in on-campus dorms, many do not know how to dispose of batteries correctly, trash disposal needs to be more transparent, education would prevent wish-cycling, and education will help students care more about recycling. The lack of correct recycling may not seem like a huge deal, but when thousands of people are involved in the problem its negative implications are amplified. Educating students on how to recycle correctly is necessary. Overall, the initial cost of implementing education methods for disposal at Virginia Tech will likely pay itself off by getting Virginia Tech closer to its 2025 goal,

helping it avoid processing fees, and preventing issues where the whole batch of recycling needs to be thrown away.

Bibliography

Authorized Budget Document FY24. (2023). Virginia Tech. test (vt.edu)

Chao, C.-M., Yu, T.-K., & Yu, T.-Y. (2023). Understanding the factors influencing recycling behavior in college students: the role of interpersonal altruism and environmental concern. *International Journal of Sustainability in Higher Education*, *24*(5), 969–985. https://doi-org.ezproxy.lib.vt.edu/10.1108/IJSHE-07-2020-0232

Cho, M. (2019). Campus sustainability: An integrated model of college students' recycling behavior on campus. *International Journal of Sustainability in Higher Education*, *20*(6), 1042–1060. https://doi-org.ezproxy.lib.vt.edu/10.1108/IJSHE-06-2018-0107

Housing (n.d.). Virginia Tech. Retrieved Nov 16, 2023, from Housing | Virginia Tech (vt.edu)

Kaza, S., Yao, L., Bhada-Tata, P., & Woerden, F. (2018). What a waste 2.0: a global snapshot of solid waste management to 2050. *World Bank.* https://doi.org/10.1596/978-1-4648-1329-0

Price, K. (2020). The Millennial Wish-cycler: Best Practices for Reducing Recycling Contamination. *University of Florida, Department of Journalism and Communications*. The-Millennial-Wish-cycler-Kaitlin-Robb-Price.pdf (ufl.edu)

Largo-Wight, E., DeLongpre Johnston, D., & Wight, J. (2013). The Efficacy of a Theory-Based, Participatory Recycling Intervention on a College Campus. *Journal of Environmental Health*, *76*(4), 26–31.

Learning how to Recycle Correctly on Campus with the Division of Campus Planning, Infrastructure, and Facilities. (2023, Aug 25). *Virginia Tech News*. Learn how to recycle correctly on campus with the Division of Campus Planning, Infrastructure, and Facilities | Virginia Tech News | Virginia Tech (vt.edu).

Montgomery Regional Solid Waste Authority. (2023). *Solid Waste*. Montgomery Regional Solid Waste Authority Solid Waste (mrswa.com)

Qu, D., Shevchenko, T., Shams, Z., & Ranjbari, M. (2023). College Students' Attitude towards Waste Separation and Recovery on Campus. Sustainability. 15. 1620. https://doi.org/10.3390/su15021620

Recycling Totals (n.d.). Virginia Tech. Retrieved Nov 16, 2023, from Recycling Totals | Virginia Tech (vt.edu)

Singh, Jagbeer & Saxena, & Bharti, Vandana & Singh, Jaspal. (2018). The Importance of Waste Management to Environmental Sanitation: A Review. 202-207.

United States Environmental Protection Agency. (2023, Nov 6). *What is a Circular Economy?* What is a Circular Economy? | US EPA

World Health Organization. (2023, Oct 18). *Electronic waste: e-waste*. Electronic waste (e-waste) (who.int)

Yan, Z., & Cortese, J. (2023). I Can Feel Your Pain: Investigating the Role of Empathy and Guilt on Sustainable Behavioral Intentions to Reduce, Reuse, and Recycle Plastic Bags among College Students. *Sustainability*, *15*(8), NA. https://link-gale-com.ezproxy.lib.vt.edu/apps/doc/A747540172/SCIC?u=viva_vpi&sid=bookmark-SCIC&xid=8e51d796

Appendix A:

Trash Sample

Key:

Recyclable

Non-Recyclable

Graduate Life Center Recycling Bins

1)

a) 4 plastic bagged recyclables

b) 9 cardboard boxes

c) 6 paper wrappers

d) 10 plastic bottles

e) 1 glass jar (w/h food in it)

2)

a) 6 plastic bagged recyclables

b) 3 empty plastic bags

c) 7 cardboard boxes

d) 1 container (w/h food)

e) 2 empty plastic containers

f) 7 plastic bottles

g) 1 can

h) 3 chip bags

Owens Recycling Bin

1)

a) 7 cardboard boxes

b) 1 cardboard roll

c) 2 plastic bottles

d) 4 pieces of paper

e) 2 containers (w/h food in it)

f) 4 paper wrappers

g) 1 milk cartoon

New Residence Recycling Bin

1)

a) 4 cardboard boxes

b) 2 pizza boxes

c) 4 plastic containers (w/h food in it)

d) 12 plastic bottles

e) 3 empty plastic containers

f) 4 pieces of paper

g) 1 napkin

Hoge Recycling Bins

1)

a) 7 plastic bagged recyclables

b) 8 cardboard boxes

c) 3 paper wrappers

d) 9 plastic containers (w/h food in it)

e) 3 empty plastic containers

2)

a) 5 plastic bagged recyclables

b) 9 cardboard boxes

c) 7 plastic balloons

d) 2 plastic containers (w/h food in it)

e) 1 ice cream tub

f) 3 plastic bottles

g) 1 milk carton

3)

a) 7 empty plastic bags

b) 7 cardboard boxes

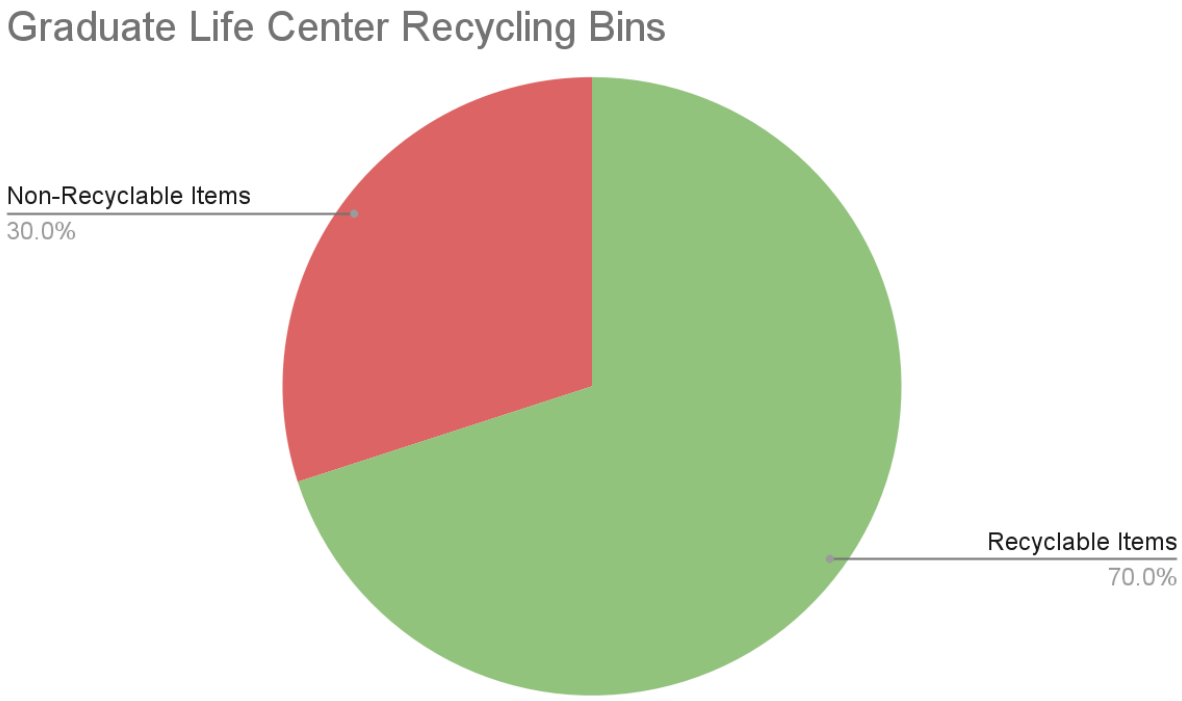
c) 10 plastic bottles

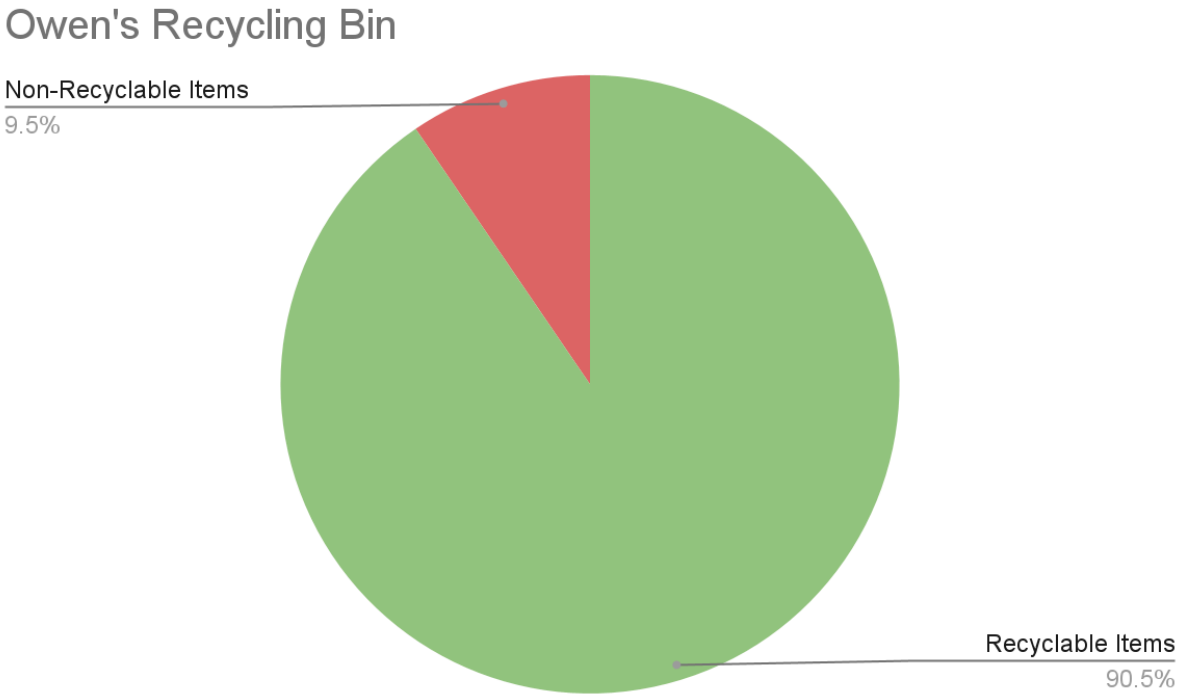
d) 5 containers (w/h food in it)

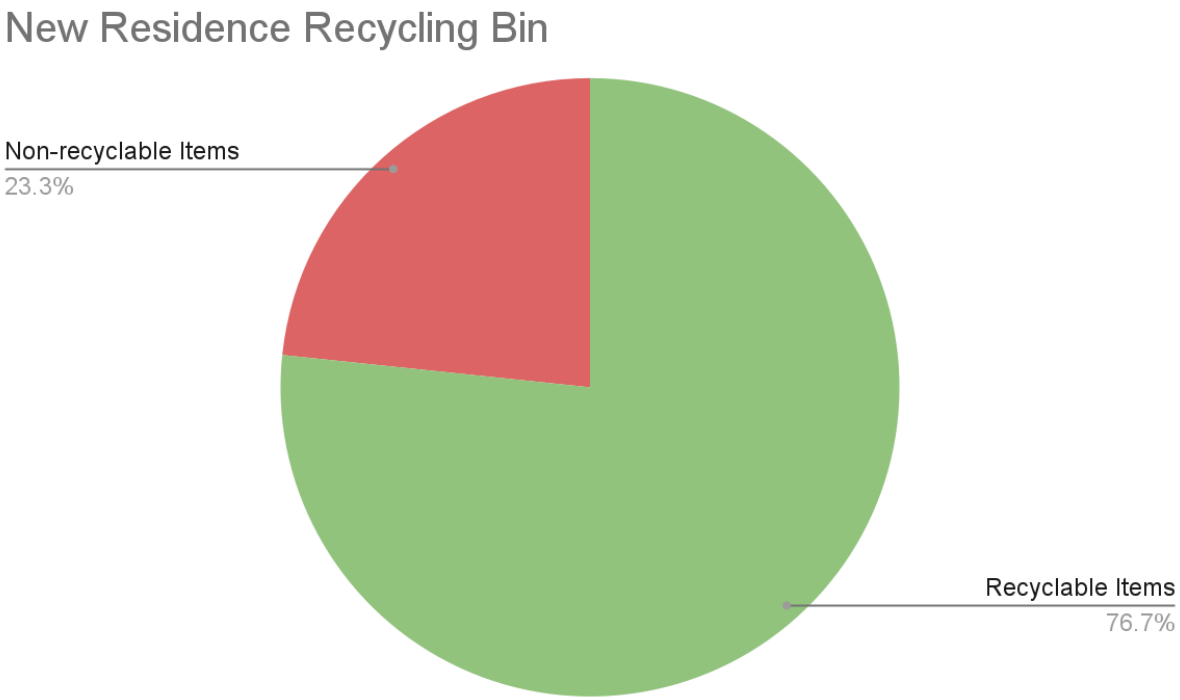
e) 1 paper bag

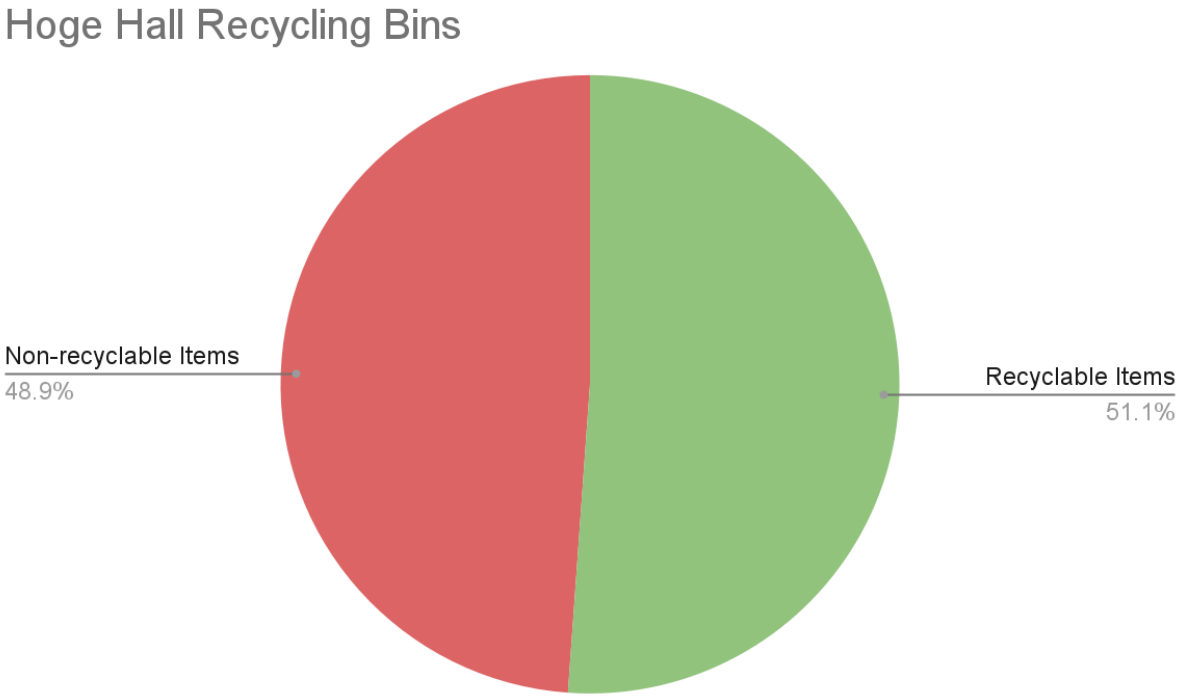
Appendix B:

Data Analysis




Owen's Recycling Bin
Non-Recyclable Items
9.5%
Recyclable Items
90.5%


New Residence Recycling Bin
Non-recyclable Items
23.3%
Recyclable Items
76.7%


Hoge Hall Recycling Bins
Non-recyclable Items
48.9%
Recyclable Items
51.1%

Appendix C:

Combined Analysis