

Introduction

In an effort to help make Villanova a greener campus, our research group is pursuing a change from Styrofoam to reusable takeout containers. Currently, the University mainly uses Styrofoam containers, which are neither recyclable or reusable, creating a significant amount of waste and a significant annual cost. The University is striving to become a sustainable campus, but dining services has taken a step backwards in recent years. Villanova abandoned using a compostable container program due to high costs and a lack of student involvement. In its place, the University reverted to Styrofoam containers. It is our hypothesis that reusable containers would save the university money, while also reducing its ecological footprint. Prior to this research, we were largely uninformed with regard to the University's take-out food containers. We had no accurate quantification for the amount of Styrofoam containers used, the amount of waste produced, or the annual cost.



Methods

- Obtained records from Dining Services of the University's Styrofoam container purchases
- Used two days of receipt logs from Cafe Nova and the Donahue Market to estimate how many containers are used in an average week
- Sent out an eight-question survey over Facebook and email about students' take-out habits
- One hundred results from the survey were compared against another research project about the previous compostable take-out container program
- Researched a variety of reusable containers to find an alternative
- Compared cost of the alternative containers to current costs

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Results

- 51% of students buy takeout at least 3 times a week (Figure 1)
- Cost per semester \$5,826 for 75,800 9"x9"x3" Styrofoam containers
- 459 orders of late night over 2 days
- 1,964 orders from café nova over two days

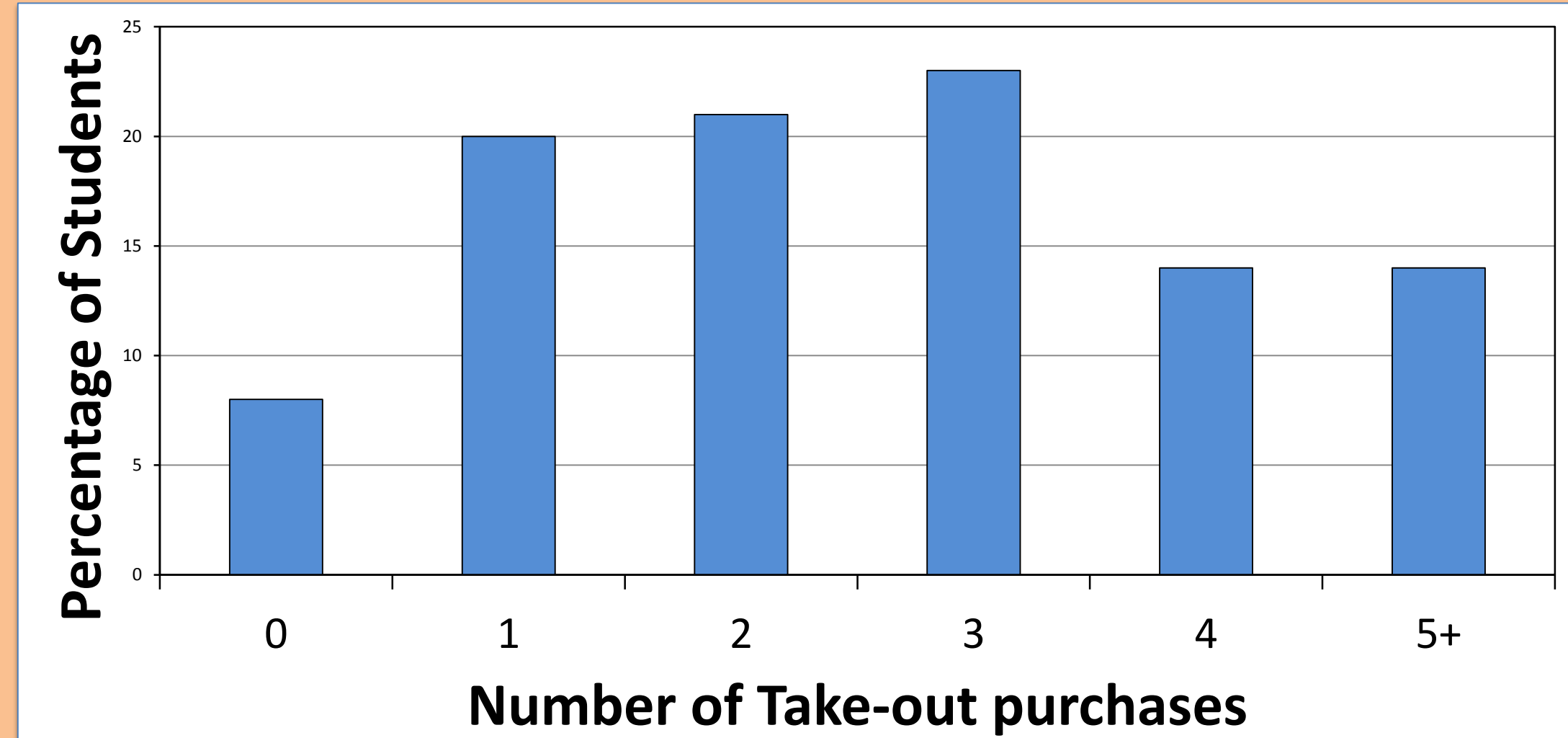


Figure 1: Frequency of the number of times Villanova students report purchasing take-out food on campus over the course of one week.

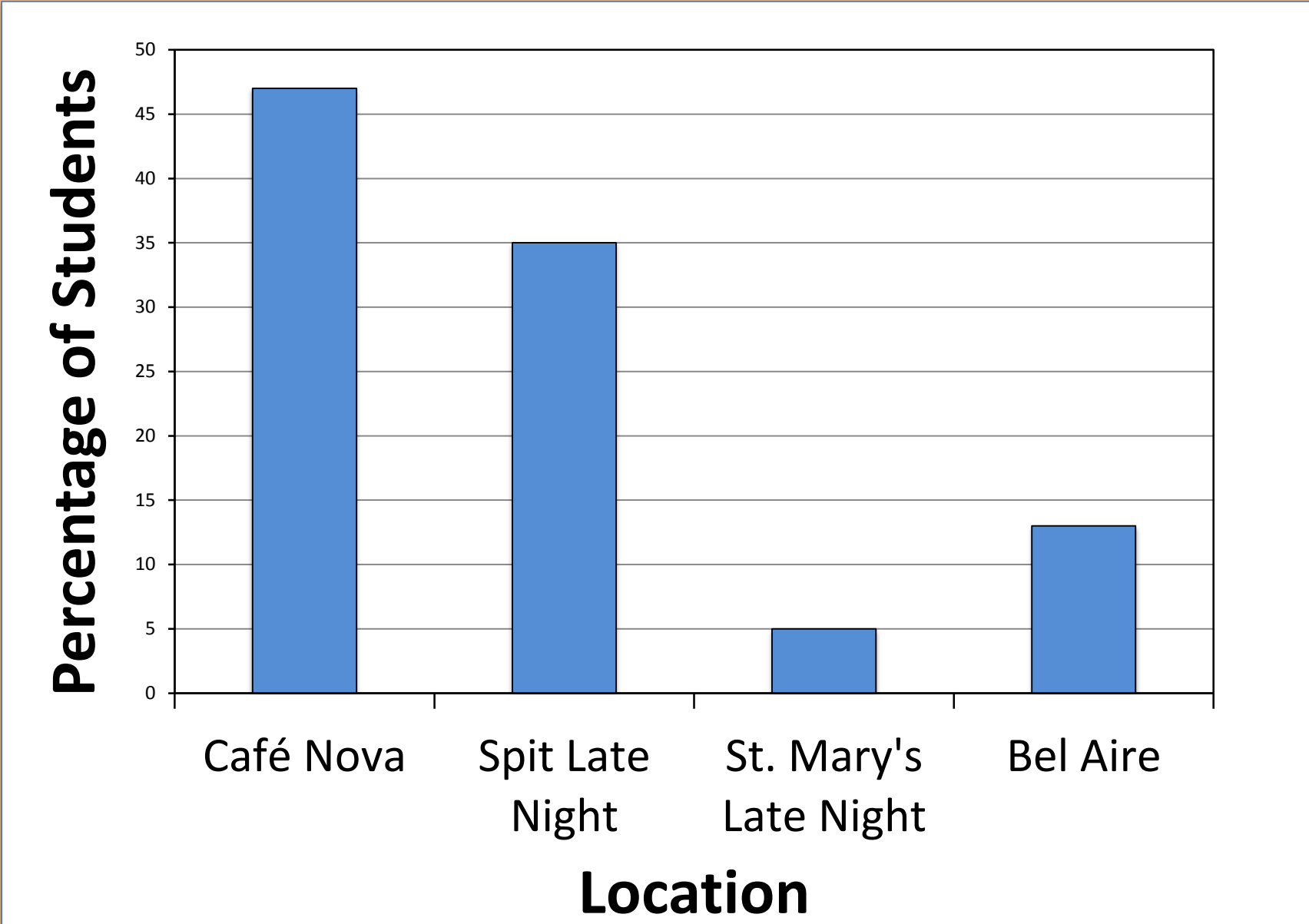


Figure 2: Frequency of the responses given by Villanova students to the question, "where do you purchase the most take-out on campus?"

- Most frequented takeout locations: Café Nova (47%) Donahue Market(35%)(Figure 2)
- 82% believe a reusable container program would be feasible.
- 48% said they would be less likely to order takeout if they had to return the container



Figure 3: Frequency of responses from Villanova students when they where asked how often they eat at the location in which they purchased their take-out food.

- 89% of students eat their takeout where they order it at least some of the time(Figure 3)
- 85% of students were unaware of the previous compostable container program
- Only 5% knew it was discontinued because of high costs.

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Citations:

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcSO9xmKvrmKQov2M_FLj-7Znifa92gKds0bwOmPtKv5gQQQI2vXQ
http://images.performgroup.com/di/library/sporting_news/c8/37/kris-jenkins-villanova-buzzer-beat-shot-4516-getty-ftrjpg_fxtkh1vphf341td70sn7qpiql.jpg?t=425868301

Discussion

- Fall of 2015 Villanova University spent over \$5,800 on 75,800 large Styrofoam containers – totalling \$11,600 per year
- Survey shows that students purchase the most take-out from Café Nova and Donahue Market
- Over two days there are 1,964 take-out purchases at Café Nova and 459 late night purchases from Donahue Market
- Ozzi system is an easy alternative to Styrofoam containers on campus
- Villanova could run a trial of the Ozzi system by renting one for the Donahue Market because the containers would not likely travel off of South Campus
- The reusable containers would likely remain in Donahue because 89% of students reported that they eat where they purchased their take-out at least some of the time (Figure 3)

Scenario 1: The Donahue Market

Estimates of Total cost after 6 years: Buying Styrofoam containers annually VS buying 1 Ozzi system and 1,000 reusable containers

Year	Ozzi	Styrofoam
1	\$18,000	\$4,224
2	\$19,000	\$8,448
3	\$20,000	\$12,672
4	\$21,000	\$16,896
5	\$22,000	\$21,120
6	\$23,000	\$25,344

Estimates used:

Ozzi
First year: \$18,000 for 1 Ozzi system, tokens, 1000 9"x9"x3" reusable containers, and first year of maintenance
following years: \$1,000 annual maintenance
Styrofoam
 \$4,224 spent **annually** on estimated 52,000 9"x9"x3"styrofoam containers (based off of late night receipts extrapolated over a year)

Scenario 2: Entire Campus

Estimates of Total Cost after 5 years: Buying Styrofoam containers annually vs buying 4 Ozzi systems and 5,000 reusable containers

Year	Ozzi	Styrofoam
1	\$80,900	\$20,000
2	\$84,900	\$40,000
3	\$88,900	\$60,000
4	\$92,900	\$80,000
5	\$96,900	\$100,000

Estimates used:

Ozzi
First Year: \$52,000 for 4 Ozzi systems
 \$23,650 for 5,000 9"x9"x3"reusable containers \$1,250 for 5,000 tokens
 \$4,000 for first year of maintenance
following years: \$4,000 annual maintenance (\$1,000 for each machine)
Styrofoam
 \$20,000 spent **annually** on all sizes of styrofoam and biodegradable containers on campus (based off of information acquired from Dining services)