

Analyzing Approaches to Reduce Single-Use Plastic Bottles at McMaster: Bring Your Own Bottle

SUSTAIN 3S03: Implementing Sustainable Change



Nicholas Shin assessing water refill station at Peter George Centre for Living and Learning.
Photo Credit: Nabil Rajput

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Overview

Plastic bottles have been a significant contributor to the pollution crisis faced around the world. Approximately one million plastic water bottles are being purchased every minute globally, with less than half being disposed of properly.[1] Ontarians discard more than 50% of single-use beverage containers into the landfill or environment.[2] This issue severely threatens air, soil, water, and food quality.[3] This issue is especially prevalent among McMaster students, with plastic water bottles accounting for 61% of beverages purchased on campus.[4] McMaster implemented the Bring Your Own Bottle (BYOB) initiative in 2022 to reduce the use of single-use plastic water bottles by encouraging the McMaster community to use the water bottle filling stations located throughout campus.[5] Working with Housing & Conference Services, our project's goal was to assess the initiative's progress to date.

Objectives

1. Track refill station usage to analyze trends between previous years.
2. Evaluate the quality of refill stations through observations.
3. Compare sales data of single-use plastic water bottles.

Reporting

To achieve the first objective, our group collected refill station data bi-weekly from September 25th to November 20th, 2023. We recorded the number of "bottles saved" across select McMaster buildings: Bates, Keyes, PGCLL, and Commons. We compared data collected in 2022 with 2023 during a two-month period. The results indicate an increase in refill station use in Bates, Keyes, and PGCLL, with 337, 5355, and 1347 more bottles saved, respectively. However, Commons decreased, with 1234 fewer bottles saved. This aligns with the Residence Life Survey data, portraying a decrease in plastic-use frequency from 2020 to 2023. Given improvements to infrastructure, promotion, and communication, combined with this evidence, suggests the BYOB initiative had a positive influence.

To achieve the second objective, we assessed the quality of each refill station in our analysis for appearance, cleanliness, signage, filter status, water flow, and temperature. Findings revealed the quality varied between stations but remained consistent at each respective location. Anecdotally, these characteristics may impact usage, which future studies can include.

To achieve our third objective, we analyzed plastic water bottle sales from 2019 to 2023, excluding 2021-2022 due to pandemic-related reductions. The results indicated an increase in plastic bottle sales by 48,000. This increase may be due to more students returning to campus after COVID-19, correlating with the growing campus population rather than refill station ineffectiveness.

Collaborators

We appreciate the dedication of our Community Project Champions for their constant support throughout this project, along with the SUSTAIN 3S03 staff and instructional team, Academic Sustainability Programs Office and SUSTAIN 4S06 students for their continuous guidance and revisions.

References

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