Towards a Sustainable Coffee Cup Culture: A Comprehensive Framework for Preventing Paper Cup Waste in Toronto, Ontario

by
Daniela Palma

supervised by
Calvin Lakhan

A Major Paper
submitted to the Faculty of Environmental and Urban Change
in partial fulfillment of the requirements for the degree of Master in Environmental Studies
York University, Toronto, Ontario, Canada

July 31, 2024

ABSTRACT

The environmental threats posed by plastic waste are a significant challenge closely connected to unsustainable consumption. The COVID-19 pandemic exacerbated the problem by increasing the demand for and consumption of disposable plastic products. In Toronto, there is an urgent need to prevent pollution stemming from disposable coffee cups. Concerning coffee consumption, this research delves into the nexus of consumer behaviour, business practices, and government policy. This study collected data from a survey of 258 coffee consumers and in-depth interviews with coffee retailers and an official from the Toronto municipal government. The combination of quantitative and qualitative data derived from participant responses represents a novel methodological contribution to examining sustainability within coffee culture. The results highlight convenience as the paramount factor influencing widespread and enduring sustainable behaviour. The findings underscore a significant preference for social responsibility and stakeholder collaboration as crucial elements to prevent paper cup waste. This study identifies that fostering sustainability among all stakeholders in Toronto necessitates a multifaceted approach that encourages the use of reusable cups. The implications of this study support a holistic strategy integrating consumer, business, and governmental dimensions. This strategy emphasizes collaborative efforts and stakeholder empowerment to ensure commitment to sustainability before, during, and after pandemics. The practical relevance of this research offers a roadmap for developing best practices, policies, resources, and tools to encourage a sustainable coffee cup culture.

FOREWORD

This research is not only a fulfilment of the requirements of the Master in Environmental Studies (MES) degree but also a testament to my profound respect for the natural world and fervent desire to protect it from environmental degradation. I am passionate about addressing the detrimental impacts of natural resource exploitation and pollution on non-human animals, marginalized communities, and the environment as a whole. This study sheds light on the urgent issue of pollution caused by disposable coffee cups, a significant source of plastic waste that contaminates land and water and disrupts the diverse ecological landscape. The MES program at York University provided me with a platform to delve into this critical and under-researched topic. This paper is a practical application of the knowledge and skills I acquired in the MES program.

The research design and methodology are based on an integrated, holistic approach that differs from many other studies. It focuses on three components to address my Plan of Study's area of concentration: sustainability, environmental justice, and public participation. One of my goals was to develop a comprehensive understanding of sustainability, spanning social, environmental, and economic pillars. The texts that influenced my research, including *Cradle to Cradle: Remaking the Way We Make Things* (McDonough & Braungart, 2002), *Waste to Wealth: The Circular Economy Advantage* (Lacy & Rutqvist, 2015), and *Thinking in Systems: A Primer* (Meadows, 2008), provided valuable insights into the importance of looking at my research problem from multiple perspectives, which ultimately guided me during the interview and survey analysis stage. This study also integrates an environmental justice viewpoint into policy strategies for waste prevention of disposable cups. It draws on works such as *Global Waste Management: Models for Tackling the International Waste Crisis* (Pope, 2020) and *Climate*

Change from the Streets: How Conflict and Collaboration Strengthen the Environmental Justice Movement (Méndez, 2020), which discuss environmental issues from a socio-ecological perspective. *Public Participation for the 21st Century Democracy* (Nabatchi & Leighninger, 2015) was helpful in understanding the theory and practice of public participation in decision-making. To help explain human behaviour, I drew on such works as *Thinking, Fast and Slow* (Kahneman, 2013) and *Changeology: How to Enable Groups, Communities and Societies to Do Things They've Never Done Before* (Robinson, 2012).

This research project has allowed me to accomplish all the learning objectives I set for myself in the MES program. After years of research, the knowledge I am eager to share with my readers represents a significant contribution to the field of environmental studies. This study is particularly relevant for academic professionals, city officials, industry leaders, and individuals interested in understanding the determinants of sustainable development.

DEDICATION

Dedicated to my loving parents, who instilled in me the value of perseverance. Thank you for your unwavering love and support.

ACKNOWLEDGEMENTS

First and foremost, I want to express my deepest gratitude to my supervisor, Dr. Calvin Lakhan. Your guidance, encouragement, and insights were invaluable to my completion of this research paper. Thank you to my advisor, Dr. Justin Podur, for being so helpful and responsive and to Dr. Mark S. Winfield, for chairing my final exam. I am also incredibly grateful to the Faculty of Environmental and Urban Change, specifically Dr. Liette Gilbert, Dr. Laura Taylor, Ouma Jaipaul-Gill, and Kristal Ramsay. Thanks to all of you for your assistance, reassurance, and guidance on any logistical questions about the MES program and my research.

My sincere thanks go to the participants who willingly offered their time and effort to partake in the interviews and survey, without whom this study would not have been possible. I also extend my deep appreciation to Ray Bennett for his meticulous review and extensive comments on my draft copy. From the time I started the MES program to the completion of this final research paper, your editing and feedback were pivotal in helping me improve my writing—Thank you for your guidance. Many thanks to Dana Craig, Kris Joseph, Rosanna N. Chowdhury, and Wayne Humphries. Thank you to my mentors, Eric Hellman, Dr. Martin Katzman, and Bob Laidlaw. I would not be here today without your counsel and support in pursuing my MES degree.

My eternal gratitude goes to my family and friends for their endless love and patience. To my parents – Mom (Rita), your comforting words have been a constant source of strength, reassuring me in times of need. Dad (Antonio), your invaluable wisdom has shaped me into the person I am today. To my brother (Marco), your guidance has helped me overcome challenges and embrace opportunities. To my beagle, Marley – Our tranquil and enriching walks amidst the beauty of nature have been instrumental in helping me connect with my passion for the

environment. Your gentle and loving nature never fails to fill my days with warmth and joy, while your playful antics continuously keep me on my toes, adding a delightful spark to my life. To my late grandparents, Luigi and Maria Fiorentino, thank you for reminding me to be happy and enjoy life. To Mark Arevalo – Whenever I said, “I’ll try,” you replied, “Don’t try. Do.” Thank you for showing me the way. Thank you to my friend, Ben Mielke, for reassuring me that my ‘crazy’ ideas to make the world a better place are not so crazy after all.

And you know who I wanna thank?

I wanna thank me,

For believing in me,

And doing what they said I could not do.

- Niecy Nash

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

A&W	A&W Restaurants
BYOM	Bring Your Own Mug
CH_4	Methane
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalent
COVID-19	Coronavirus disease 2019
CSV	Creating shared value
EPS	Expanded polystyrene
EPR	Extended producer responsibility
ESG	Environmental, Social, and Governance
GHG	Greenhouse gas
LCA	Life cycle assessment
PCR	Pilot Coffee Roasters
PE	Polyethylene
PLA	Polylactic acid
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
TPB	Theory of Planned Behaviour

PART I. Introduction

The colossal amount of plastic packaging consumed and disposed of daily significantly contributes to pollution by way of landfill waste, greenhouse gas (GHG) emissions, and litter contaminating natural environments. Global studies on marine litter sources have found that plastic comprises the largest share across all aquatic ecosystems (de Sá et al., 2018; Morales-Caselles et al., 2021; Tekman et al., 2021). A litter audit conducted in 2023 by Great Canadian Shoreline Cleanup found that 26% of litter found on all Canadian shorelines comes from disposable food and beverage packaging, totalling approximately 121,448 pieces (Impact Report, 2023). In the United Kingdom (UK), the annual carbon footprint of disposable cups, with 2.5 billion cups consumed annually, amounts to around 74.6 kilotons of carbon dioxide equivalent (CO_2eq) (Foteinis, 2020). Addressing this global polluting system, strongly influenced by overconsumption and excessive production of disposable items, is crucial to helping solve environmental problems such as climate change and biodiversity loss.

Society has become accustomed to a disposable culture that prioritizes convenience, and Toronto, Ontario's capital city, is no different. A litter audit conducted by the City of Toronto in 2022 found that disposable plastics constitute approximately 43.28% of all small and large litter (Blair, 2022). Paper cups[1] are one category of disposable plastics. The 2022 litter audit found that hot beverage paper cups were among the top 12 large litter items on the city's streets, with a 38.46% increase in paper cup litter compared to the 2020 litter audit (Blair, 2022). Disposable coffee cups contribute to a linear economy in which finite resources are continuously extracted to

[1] For the purpose of this study, the terms 'paper cups,' 'coffee cups,' and 'disposable cups' are used interchangeably. Coffee is the hot beverage referenced in this paper, given that it is the most common hot beverage often served in disposable cups. The conclusions of this study can also be applied to other hot beverages, such as tea.

manufacture products that are used briefly and then discarded (Lacy & Rutqvist, 2015). The widespread use of paper cups has made them an indispensable and ubiquitous product in consumer culture due to their low production costs and durability. However, the rapid proliferation of paper cup waste is a critical sustainability issue.

Due to coronavirus disease 2019 (COVID-19), preventative measures have been implemented since the year 2020 to control and mitigate the high transmissibility of the virus (Fantozzi, 2020; Patrício Silva et al., 2020; Vanapalli et al., 2021; Irfan et al., 2021). These measures resulted in a sudden surge in demand for and consumption of disposable cups in Toronto and other regions. As a severe acute respiratory syndrome caused by a novel coronavirus (SARS-CoV-2), COVID-19 first emerged in late 2019 and quickly spread worldwide, resulting in a global pandemic (Kampf et al., 2020; Neeltje et al., 2020; Piret & Boivin, 2021). During COVID-19, encouraging reuse and preventing paper cup waste was weighed against the safety concerns surrounding the pandemic. It was decided by governments and businesses that human health would be prioritized over environmental health, resulting in waste reduction policies and practices being temporarily paused or postponed (Patrício Silva et al., 2020; Vanapalli et al., 2021). Many coffee retailers would not permit consumers to use their reusable cups during this time to ease anxieties and uncertainties about cross-contamination (Fantozzi, 2020; Harris, 2021). Meanwhile, the City of Toronto put its waste reduction strategy on hold to focus its efforts on the emergency response to the pandemic, thus delaying the implementation of mandatory regulations (Keliher, 2021).

The emergence and spread of infectious diseases with pandemic potential have occurred regularly throughout history, dating back to the Justinian plague in 541 CE (Piret & Boivin, 2021). Before the introduction of the disposable cup in 1907, people used communal beverage

cups made of metal, wood, or ceramic (Park, 2014). As scientific knowledge advanced, concerns arose regarding the potential for human-to-human transmission of pathogens from shared cups. Consequently, communal beverage cups were perceived as a disease threat, whereas the paper cup, aptly named the Health Kup, did not have to be shared and could be thrown away after use (Voss-Hubbard, 1995). The frequency of disease transmission is a stark reminder that pandemics can come and go, then recur in a cyclical fashion, significantly impacting the demand for disposable items such as paper cups.

Despite scientific and medical advances, future pandemics will become more frequent as climate changes could potentially increase the spread of infectious diseases (Irfan et al., 2021; Piret & Boivin, 2021). Therefore, a question arises about how to overcome the challenges of preventing paper cup waste without compromising our health and the environment. The challenges encompass increased waste production stemming from germ-related fears and waste reduction policies being reversed. Addressing these issues requires specific and targeted strategies to build resilience against future pandemics. The search for sustainable solutions must now be prioritized more than ever.

Paper cups have become a contentious topic due to the challenges in recycling them, leading to most cups ending up in landfills or being incinerated. Previous studies show that this is an evolving topic that needs to be better understood. A significant body of research explores the life cycle assessment (LCA) of disposable cups and reusable alternatives (van der Harst et al., 2014; Potting & van der Harst, 2015; Foteinis, 2020; Fetner & Miller, 2021) and the efficacy of processing paper cups in the recycling and organics streams (Bogaert & Coszach, 2000; Lakhan, 2015; Comăniță et al., 2016; Lakhan, 2016; Triantafillopoulos & Koukoulas, 2020; Bilek et al., 2021; Lee et al., 2023). However, there remains a paucity of relevant research examining the

responsibilities of consumers, businesses, and government in contributing to truly sustainable practices—before, during, and after pandemics—towards the way hot beverages are consumed.

Stakeholders have considered reusable cups as an alternative to prevent the unnecessary waste of paper cups. Previous studies have focussed on strategies to encourage reusable cup usage, such as incentivization (Lee, 2016; Poortinga & Whitaker, 2018; Berger, 2019; Nicolau et al., 2022), education (Poortinga & Whitaker, 2018; Wang et al., 2022), and policy (Filimonau et al., 2019; Foteinis, 2020; Liu et al., 2021). These studies provide valuable insights, yet unsustainable consumption remains a challenge. Limited research has focussed on cultivating a socially, environmentally, and economically sustainable coffee cup culture. The existing knowledge gaps regarding the fundamental attitudes that drive human behaviour and business practices in this regard underscore the necessity for further exploration.

Using Toronto, Ontario, Canada as the case study, this research paper takes a comprehensive approach to the topic of hot beverage consumption, expanding beyond just the perspective of consumers. This study delves into the factors that facilitate or impede the shift towards sustainable hot beverage consumption and compares consumer determinants to those affecting businesses and government. The central research question and four supplementary questions I explore in this study are as follows:

- **How can Toronto create a sustainable coffee cup culture?**
    1. How can waste management of paper cups benefit the city and coffee retailers?
    2. What policies could effectively reduce or prevent paper cup waste?
    3. How can Toronto address the challenges in reducing or preventing paper cup waste during COVID-19 and future pandemics?
    4. How can Toronto sustainably reduce or prevent paper cup waste?

This study investigates motivations, behaviours, influencing factors, and practices that resonate with coffee consumers and retailers. Its goal is to establish sustainable strategies that Toronto can adopt and maintain in the long-term. This research has significant practical implications, offering consumers, businesses, government, and Toronto as a whole a roadmap toward a more sustainable future.

This paper presents an impartial and well-informed perspective and does not assume that recycling paper cups or transitioning to reusable cups is the panacea for this problem. Instead, it seeks to find the most sustainable option for hot beverage consumption. This research used a robust mixed-methods research design. Data was collected from interview and survey participant responses to present a descriptive and thematic analysis. A phenomenological qualitative approach was particularly apt for capturing people's lived experiences and gaining a deeper understanding of the features of this phenomenon (Creswell, 2007).

In this paper, I begin by providing the historical context of Toronto and define the key constructs of sustainability and culture that are central to this research. Next, in my literature review, I discuss several streams of research on waste management, waste reduction and prevention, and human behaviour. I will then discuss my methodology and the various research methods I adopted. Then, I will present the data results that I retrieved from the survey and interview responses that connect with the goal of this study, highlighting the common themes and establishing the key findings, including any negative findings, in connection with my research questions. Next, I present a discussion in which I explain the findings and contextualize them with the overall research to explain why they are important and where they fit in with the current literature. Finally, in the conclusion, I will provide a brief overview of the main points and present my recommendations for action.

A. Historical Background of Toronto

Before moving forward, it is useful to consider the background context for this paper. I begin with a detailed description of Toronto. I then discuss the impact of hot beverage paper cups and the City of Toronto's efforts to reduce disposable takeaway items, followed by my rationale for selecting Toronto as the case study site.

1. Description of Study Area

Toronto, the capital city of the province of Ontario (**Figure 1**), is a sprawling metropolis on the northwest shore of Lake Ontario at 43° 44' 30" N (Latitude) and 79° 22' 24" W (Longitude), with a total land mass of 630 km^2 (*Toronto at a Glance*, 2024). In addition to its recorded population of 2,794,356 people in 2021 (*Census Profile, Toronto, City (C) [Census subdivision], Ontario*, 2021), Toronto is Canada's most populous city and North America's fourth most populous city. As of 2023, the City of Toronto provided solid waste collection services to approximately 870,000 residential homes and units, businesses, institutions, charities, religious organizations, schools, City divisions, agencies, and corporations in 25 wards and maintained and serviced approximately $814 million of waste management infrastructure assets (*Rate-Supported Budget for Solid Waste Management Services*, 2023).

Figure 1. Location of Toronto relative to the province of Ontario

The City of Toronto aims to achieve 70% waste diversion by 2026 through reduction, reuse, recycling, recovery, and residual disposal policies and programs (*Final Long Term Waste Management Strategy*, 2016). Currently, the municipality manages approximately 900,000 tonnes of waste annually across all waste streams (*Rate-Supported Budget for Solid Waste Management Services*, 2023). The Green Lane Landfill, owned and operated by the City of Toronto, is located in Southwold, Ontario, approximately 180 kilometres outside the city's boundaries. The landfill spans 129.7 hectares, with 71.2 hectares approved for landfilling (*Annual Landfill Report*, 2021) and is projected to reach its capacity by around 2034 (Keliher, 2023a).

2. Impact of Disposable Cups

Disposable cups are classified as waste by the City of Toronto because dedicated recycling facilities for such cups are unavailable (Krmek et al., 2023; Keliher, 2023b). As a result, any paper cups in the recycling (Blue Bin) and organics (Green Bin) streams are screened out and landfilled. In order to quantify the magnitude of the waste problem stemming from disposable cups, I calculated the approximate total weight of such cups consumed annually by Toronto households. Based on waste audit data provided by the City of Toronto in **Table 1**, the estimated total weight of hot beverage paper cups generated in Toronto's single-family and multi-family[2] households is approximately 2,288.26 tonnes per year.

Table 1. Amount of Hot Beverage Paper Cups in All Waste Streams

All Waste Streams	Single-Family 2018 (kgs/hhd/yr)	Multi-Family 2020-2022 (kgs/hhd/yr)	Total kilograms (kgs)
Total	1.20	2.47	3.67

Note. All waste streams = Garbage, recycling, and organics. Kgs/hhd/yr = Kilograms per household per year. Adapted from *Single-Family and Multi-Family Waste Audit Data—Paper Cups*, by Solid Waste Management Services, 2023, City of Toronto. Copyright 2023 by City of Toronto.

This calculation involved multiplying Toronto's total number of single-family and multi-family households based on structure type (*Census Profile, Toronto, City (C) [Census subdivision], Ontario*, 2021)[3] by the total kilograms of hot beverage paper cup waste generated by single-family and multi-family households respectively (Single-Family & Multi-Family Waste Audit Data—Paper Cups, 2023), then converting the number from kilograms to tonnes (**Equation 1**).

[2] The City of Toronto defines multi-family households as apartment buildings with less than five storeys and apartment buildings with five or more storeys (*City of Toronto Housing Data Book*, 2023).
[3] According to Statistics Canada's census profile of Toronto, the total number of single-family households is 456,025, and the total number of multi-family households is 704,870 (*Census Profile, Toronto, City (C) [Census subdivision], Ontario*, 2021).

Equation 1.

$$Weight_{hot\ beverage\ paper\ cups\ generated} = [(SFH_{total} \times 1.20) + (MFH_{total} \times 2.47)] \div 1000$$

Note. SFH = Single-family household; MFH = Multi-family household. The rate of hot beverage paper cup waste per SFH is 1.20 kgs, and the rate of hot beverage paper cup waste per MFH is 2.47 kgs.

It is important to note that the data used in the above calculation includes a single-family waste audit conducted in 2018 (pre-COVID) and a multi-family waste audit conducted between 2020 and 2022 (during COVID). Over the course of four years, consumption patterns may have fluctuated. Therefore, the tonnage calculation should be interpreted as an approximation. Moreover, the tonnage does not account for paper cup waste generated by non-residential customers such as businesses, schools, charities, and religious institutions, as most of them have private waste haulers. This factor suggests that the actual amount of paper cup waste generated is likely higher.

3. Efforts to Reduce Disposable Takeaway Items

In 2021, the City of Toronto approved and adopted the Single-Use and Takeaway Items Reduction Strategy. This Strategy, designed to reduce waste in all of the City's waste streams, resulted from consultations with the public and stakeholders (Keliher, 2021). It initially involved a Voluntary Measures Program encouraging businesses to voluntarily adopt measures such as the 'ask-first or by-request' approach and acceptance of reusable takeaway items (Single-Use and Takeaway Items Reduction Strategy - Stage 1, 2021). The City of Toronto provided formal recognition of businesses that adopted the program. According to Toronto Public Health, coffee retailers are permitted to accept customers' reusable cups as long as they adhere to the usual food premises regulations (Health Protection and Promotion Act, R.S.O., 1990). Even so, many coffee

retailer chains during the COVID-19 pandemic refused to accept reusable cups (Elliott, 2021; Harris, 2021).

As of March 1, 2024, a mandatory bylaw is in effect (Single-Use and Takeaway Items, 2024). Under this bylaw, business establishments cannot provide disposable cups to customers unless they first 1) ask customers if they want their beverages in disposable cups or 2) receive requests for such cups from customers. Business establishments are also required to accept customers' clean, reusable cups. Most stakeholders from the retail and fast-food restaurant sectors expressed concerns about the mandatory acceptance of reusable cups, citing issues such as safety, sanitation, and their impact on delivery, online, and drive-thru orders (Zabaneh, 2023; Elenis & Macgregor, 2023; Prins, 2023). The bylaw does not mandate that businesses charge a fee to customers who use a paper cup. The City of Toronto chose to refrain from implementing a disposable cup fee bylaw after considering the City of Vancouver's experience with a fee bylaw (Keliher, 2023b). The City of Vancouver repealed the bylaw because it did not reduce paper cup waste and caused equity concerns for marginalized communities (Ball, 2022; Britten, 2023).

4. Why Toronto?

Toronto is an important case study for this research as it is an essential urban centre in North America and the most populous city in Canada. The city's population is expected to increase from 3.03 million in 2022 to 4.20 million in 2046 (*Ontario Population Projections*, 2021), representing a growth rate of 38.7%. Considering Toronto's already high levels of consumption and waste production, this rapid growth will significantly contribute to natural resource depletion, biodiversity loss, and climate change. This current trajectory is unsustainable. We are approaching a critical juncture where this unsustainable system and lifestyle—if left unaddressed—will soon collapse (Meadows, 2008). Given Toronto's leadership in sustainable

and innovative ideas, its influence can extend to help other cities in the Western Hemisphere on a broader scale.

B. A Note on Terminology

Clearly defining the key constructs and variables guiding this study is vital to understanding and answering my research questions. By this, I mean laying down my theoretical foundation to explain what I mean by "sustainable coffee cup culture" based on existing literature and the specific context and focus of this research. The constructs encapsulating my central research question are 'sustainability' and 'culture.'

Sustainability is a concept that centres on giving equal importance to three pillars—society, environment, and economy—as entities that, when in conflict, need to be balanced (McDonough & Braungart, 2002; Pope, 2020). A common misconception is to associate sustainability solely with environmental consciousness, ignoring the social and economic aspects that are equally integral to the concept.

It is crucial to note that while sustainability is closely linked to the visions, models, and theories of the circular economy, the two concepts are not interchangeable. The circular economy pertains to decoupling economic growth from the consumption of finite natural resources, employing 'circular' approaches (e.g., recycling, sharing platforms) to maintain resources in productive use in the economy for as long as possible (Lacy & Rutqvist, 2015). While many people equate the circular economy with sustainability, just being circular is not inevitably a strategy to achieve sustainability. Indeed, strategies can be circular, but they may not be sustainable. In practical terms, an approach can only be deemed sustainable if the social,

environmental, and economic pillars are integrated, as these are the fundamental variables that define the concept.

Culture is a concept that researchers have attributed to a group when looking for patterns in their social world (Creswell, 2007). It is inferred from the words and actions of group members and may be assigned to the group by the researcher. It consists of what people say (language), what they do (behaviours), the potential tension between their attitudes and behaviour, and what they use (i.e., physical objects). Culture is assumed to be associated with social behaviour, institutions, and norms in human societies. This assumption is acceptable given that this study aimed to analyze social norms, attitudes, and behaviours toward coffee cup culture.

PART II. Literature Review

This paper is grounded in theoretical insights from various related literature studies, creating a compelling interdisciplinary intersection. The selection of literature is organized and evaluated under three main sections: A) Waste Management of Paper Cups, B) Waste Reduction Policy of Coffee Retailers and Government, and C) Determinants of Sustainable Behaviour. This literature review provides the foundation and support for the new insights derived from the contributions of this research. It engages with the theories driving this field, thereby situating this study's research questions in their academic context.

A. Waste Management of Paper Cups

The polluting nature of paper cups stems from the fact that most are landfilled or incinerated. Landfills are often located far away from where the waste originated, which disconnects people and businesses from the actual consequences of producing so much waste (Pope, 2020). This lack of awareness perpetuates consumerism and the linear economy. Moreover, there are social equity concerns, as marginalized communities are often forced to bear the brunt of the environmental burdens from waste, as seen in the case of the City of Toronto's Green Lane Landfill (Keil et al., 2009). The disposal of paper cups in landfills contributes to the generation of GHG emissions such as methane (CH_4) and carbon dioxide (CO_2) during decomposition (Sector-Based Emissions Inventory, 2021).

As in Toronto, most waste infrastructures do not support recycling paper cups, primarily due to its numerous challenges and associated barriers. Recycling paper cups is hindered by the strong, laminated adhesion between the thin internal polyethylene (PE) layer and the single-walled or double-walled virgin cellulose paperboard (Triantafillopoulos & Koukoulas, 2020).

The plastic PE barrier coating, which must be removed for the paper body to be recycled, cannot be separated during the regular recycling process. Foteinis's (2020) LCA study quantified that recycling paper cups could reduce carbon emissions by 36% per functional unit. This reduction is attributed to avoiding GHG emissions from natural resource extraction, energy usage during production, and the disposal of paper cups in landfills.

Recent studies have claimed that paper cups can be effectively recycled using new and emerging technologies (Triantafillopoulos & Koukoulas, 2020; Bilek et al., 2021; Lee et al., 2023). Innovations have resulted in various new techniques to process PE paper cups, such as applying heat and pressure to the cups (Triantafillopoulos & Koukoulas, 2020). Bilek et al. (2021) found that mechanically refining PE cups can yield an average of 74.83% recovered fibre. However, there are significant issues with the shredded plastic flakes clogging the fine screens that separate the recyclable fibres, resulting in frequent equipment maintenance and production delays. Recent research on chemical recycling produced pyrolysis oil derived from PE paper cup waste (Lee et al., 2023). The study defines pyrolysis as a process in which feedstock (i.e., cup waste) is decomposed by high heat in an oxygen-free environment to produce valuable end products. Although this method could contribute to developing sustainable energy and waste management solutions, Lee et al.'s (2023) experimental study produced limited results. The energy-intensive nature of these recycling processes proposed by Triantafillopoulos and Koukoulas (2020), Bilek et al. (2021), and Lee et al. (2023) pose environmental concerns, which may outweigh the benefits of recycling. Research on recycling paper cups should avoid oversimplification and thoroughly consider the overall carbon footprint of any recycling process.

Effectively recycling paper cups has proven difficult due to the limitations on materials accepted for recycling. Lakhan (2016) explains that disposable cups, classified as 'paper

laminates' due to the thin layer of plastic on the inside of the cup, consist of low-grade materials and have high material management costs, low resale value, and poorly developed end markets willing to accept them. This issue is compounded by many paper cups still containing liquids being placed into recycling bins, contaminating entire batches of recycling (Triantafillopoulos & Koukoulas, 2020). Significant shifts in the recycling industry have resulted from China banning imports of most low-quality paper and plastic (Jarvis & Robinson, 2019). The imported materials that China accepts must now be of the highest quality and contain little to no contamination.

A study by Liu et al. (2021) revealed that the average household uses about nine paper cups every week, and most cups are disposed of in the garbage without separating them from the lids. To address this challenge, Tim Hortons conducted a pilot program in Vancouver that set up in-store drop-off stations to encourage the recycling of paper cups (Lazaruk, 2023). The results revealed that the paper cups and plastic lids were improperly separated and sorted, and the drop-off stations were contaminated with garbage and liquids. A new pilot program in Toronto accepts paper cups for recycling in the Blue Bin program, but it still relies on consumers emptying and rinsing the cups and separating them from the lids (Chung, 2024). Additionally, the industry-funded organization overseeing the pilot cannot yet ascertain the quantity of paper cups that will be collected and recycled and whether there is a viable market for the high volume of paper cups generated in Toronto. If attempting to recycle a material has more negative impacts than positive ones, pursuing this option may not be advantageous.

The cost of recycling paper cups is significant compared to the cup's low-quality material, posing a challenge to economic sustainability. Critics have noted the increased costs and infrastructure limitations as issues (Lakhan, 2015; Lakhan, 2016; Triantafillopoulos & Koukoulas, 2020). The findings in Lakhan's (2016) study indicated that the emission offsets and

recycling rate still increased even with reduced system costs from removing paper laminates (i.e., coffee cups) from the recycling program. Data retrieved from Stewardship Ontario's Fee Model indicates that excluding paper laminates from the recycling program contributes to a $7.5 million decrease in system costs, with only a 0.46% decrease in the recycling rate (*Four-Step Fee Model*, 2021). In addition, the weighted average net cost for paper laminates is $258 per tonne compared to the cost of recycling materials with high recycling rates of $150 per tonne. Many argue that increasing costs in exchange for more recycled materials or carbon savings is not economically sustainable. With this in mind, keeping paper cups out of the recycling stream has an apparent cost-saving benefit for the municipality.

The drive to combat pollution and environmental degradation has generated considerable interest within the retail coffee industry. One expression of this interest centres on exploiting the properties of bioplastics to produce compostable cups (Comăniță et al., 2016). Compostable cups are made with a corn-based polylactic acid (PLA) lining instead of the conventional PE lining. Polylactide, a biodegradable thermoplastic polyester, is the critical component of these cups. It is produced from renewable resources, specifically lactic acid, a naturally occurring organic acid obtained through chemical synthesis or fermentation (Bogaert & Coszach, 2000). While Comăniță et al. (2016) and Bogaert and Coszach (2000) suggest that the properties of PLA could position it as a potential replacement for conventional PE cups in the packaging industry, the logistical and economic barriers make PLA less promising.

PLA is unlikely to be a viable alternative material for coffee cups because it requires an oxygen-rich, aerobic environment to biodegrade and can only do so in industrial composting facilities (Triantafillopoulos & Koukoulas, 2020; Bandini et al., 2020; Lamberti et al., 2020). However, the City of Toronto uses a preprocessing technology for organic waste known as

anaerobic digestion, which breaks down organic matter *without* oxygen (Angelonidi & Smith, 2015; Bandini et al., 2020). Anaerobic digestion facilities favour organics high in volatile solids for optimal biogas production (Bandini et al., 2020; García-Depraect et al., 2021). The infrastructure of anaerobic digestion facilities does not allow compostable PLA cups to be processed due to the limited biogas potential and a lengthy decomposition process. When PLA paper cups are identified as contaminants, they are removed from processing and landfilled with other waste, leading to unanticipated costs for the municipality and contributing to GHG emissions (Odegard et al., 2017; García-Depraect et al., 2021). This disconnect between the ideal conditions for PLA biodegradation and the reality of municipal processing capabilities underscores the practical challenges in waste management.

B. Waste Reduction Policy of Coffee Retailers and Government

While there have been many demonstrable efforts to integrate a sustainable coffee cup culture, there are challenges, particularly in the policy context. Foteinis (2020) quantified the benefits of taking action to reduce disposable cups. The study found that using reusable cups would reduce GHG emissions from landfilling and recycling disposable cups by 76% and 60% respectively. Nevertheless, the hypocrisy of coffee retailer chains claiming to be in favour of waste reduction is glaringly apparent (Fearnley-Whittingstall, 2016; Griffith-Greene, 2016; Fantozzi, 2020; Chung, 2024). Although coffee retailers often convince conscientious consumers that paper cups will be recycled or composted, the ultimate fate of paper cups depends on the policies and infrastructure of a particular jurisdiction, not the retailers themselves. Coffee retailers advocating for paper cup recycling as an ostensibly sustainable waste reduction strategy effectively deflects attention from the need to pursue more comprehensive solutions. During the

COVID-19 pandemic, many coffee retailers cited concerns about virus transmission to justify exclusively serving hot beverages in disposable cups. Paradoxically, they continued offering a discount for customers who brought their reusable cups (Fantozzi, 2020). For coffee retailers, this approach appeared to be more about maintaining positive public relations than actually addressing their environmental impact.

Coffee retailers can leverage their unique resources and expertise to enhance their competitiveness while simultaneously advancing the economic and social conditions in the community. The principle of creating shared value (CSV) involves creating economic value in a manner that also serves to address the needs and challenges of society, thus creating societal value as well (Porter & Kramer, 2011). The CSV framework guides companies to put societal issues at the core of their business, not the periphery. One method for measuring a business's sustainability performance is environmental, social, and governance (ESG) reporting (Valente, 2021). However, the lack of standardized metrics in ESG reporting has led many companies to greenwash or mislead stakeholders about their sustainability performance. Porter and Kramer (2011) and Valente (2021) emphasize that businesses can be held accountable by tracking clear metrics and performance levels, establishing future targets within a specified timeframe, and monitoring their progress.

Studies have shown that reducing waste is good for business. Lacy and Rutqvist (2015) state that a company's resource dependence could erode brand value because more consumers are shunning companies with socially irresponsible business practices. The study surveyed 30,000 people across five continents and found that 72% believe businesses fail to meet expectations to deliver social good. Chou et al. (2012) contend that businesses are more concerned with cost than with being pioneers in sustainable practices, and there is limited

consumer demand for food service establishments to engage in the niche green market. However, other researchers have shown that sustainability is not just a passing trend, but instead increasingly becoming a prominent part of consumers' daily lives, shown most notably by their support of businesses that reflect their values (Lacy & Rutqvist, 2015; Jang et al., 2015; Berger, 2019). According to Berger's (2019) research, green consumption is a powerful signal of social status and prosociality that makes consumers appear more socially responsible. In particular, Jang et al. (2015) used descriptive statistics and structural equation modelling to examine the moderating effects of green consciousness. The results showed that green policies and practices positively influence consumers' emotional responses, enhancing their attachment to a store and creating positive behavioural outcomes (i.e., loyalty to green stores and products), especially among highly green-conscious consumers.

It is crucial to implement policies that prevent wasteful and polluting practices. However, policymakers typically intervene to reduce wasteful and polluting practices only *after* environmental issues have worsened and public pressure has been exerted (Winfield, 2012). The Government of Canada recently enacted regulations to restrict six categories of disposable plastic packaging, including plastic food service ware such as paper cups (Single-Use Plastics Prohibition Regulations, 2022). However, the plastics industry has been challenging the government's restrictions (*Responsible Plastic Use Coalition v. Canada (Environment and Climate Change)*, 2023; *Canada (Attorney General) v. Responsible Plastic Use Coalition*, 2024).

The management of paper cup waste on an international scale is facing challenges too. In the United States (US), there are currently no federal bans on disposable cups (Nowell, 2024). California has passed a law requiring paper cups to be recyclable or compostable by 2032 (Solid Waste: Reporting, Packaging, and Plastic Food Service Ware, 2022). In the UK, regulations were

implemented to improve the recycling infrastructure and increase paper cup recycling by 2023 (Slater et al., 2018). Although the UK has implemented large-scale paper cup recycling (*How to Recycle Your Paper Cups*, 2023), data on their actual recycling rate of such cups is not publicly available. In a similar vein, the European Union (EU) proposed a ban on disposable cups made of expanded polystyrene (EPS) (The Reduction of the Impact of Certain Plastic Products…, 2019). However, industry lobbying efforts significantly weakened the legislation, requiring only specific plastic packaging to be recyclable (Cater, 2024). The discrepancies in waste infrastructure offer ample opportunities for industries to exploit loopholes and limit the scope of reforms.

Despite these local and international initiatives, governance is fragmented and inconsistent across jurisdictions and sectors, resulting in inconsistent standards and widespread illegalities. The governance landscape reflects industry resistance to government regulation, efforts to evade accountability, and opposition to critics, while giving lip service to principles such as corporate self-regulation and consumer responsibility. The problem is that many policymakers lack the necessary motivation to enact greener legislation because business power reinforces the traditional paradigm (Carter, 2007). As a result, several government policymakers primarily focus on recycling paper cups and have established laws accordingly, despite significant issues related to collection, waste infrastructure, and end markets (Slater et al., 2018; Cater, 2024). However, the principles of shared value apply equally to governments and businesses. Porter and Kramer (2011) highlight the necessity for governments to adapt regulatory frameworks that enable shared value rather than hinder it.

The COVID-19 pandemic severely disrupted policies to prevent paper cup waste. Many major coffee retailer chains claim that disposable cups prevent cross-contamination and are the

only safe, accessible, and affordable option (Paper Cups Market Report…, 2023). This assumption caused jurisdictions to delay restrictions on disposable packaging during the pandemic due to health and safety concerns (Patrício Silva et al., 2020; Vanapalli et al., 2021; Irfan et al., 2021). However, the claim by coffee retailers is not supported by scientific evidence (Kampf et al., 2020; Neeltje et al., 2020). These studies explain that SARS-CoV-2 spreads primarily from inhaling aerosolized respiratory droplets from talking, sneezing, or coughing. In particular, Kampf et al.'s (2020) analysis shows that the external paper body of disposable cups is not inherently safer than materials like stainless steel, glass, ceramic, and plastic commonly used to make reusable cups. The study adds that although the virus can persist on inanimate surfaces for up to 9 days, it poses a low risk of transmission when surface disinfection is employed. Legitimate concerns about virus transmission put sustainability and waste reduction programs on hold for many coffee retailers, but the safety measures with reusable cups are well-established.

For some small, independent coffee shops, procedures for accepting reusable cups have changed instead of being paused or halted completely (Fantozzi, 2020). For instance, a coffee retailer will provide hot beverages in a sanitized, reusable container for customers to transfer to their reusable cups. Alternatively, staff can pour drip coffee directly into reusable cups, taking care to avoid contaminating any surfaces or spouts. While many coffee retailers have implemented some pro-environmental initiatives, consumers' current reusable cup usage remains low.

Researchers have suggested that some businesses may prioritize paper cup waste disposal over prevention due to irresponsible consumer behaviour, restricted resources, and a lack of government support (Chou et al., 2012; Filimonau et al., 2019). In a deposit-return cup program,

customers pay a deposit for each reusable cup they use and receive a refund when they return the cup to designated collection points. However, Tim Hortons' pilot program promoted deposit-return of reusable cups *and* paper cup recycling, which sends consumers a conflicting message (Lazaruk, 2023). The low usage of reusable cups emphasizes the responsibility of major coffee retailers, who have the discretion and resources to prioritize reusable cups while ensuring the safety of their staff and customers.

It is beneficial to draw on past successful policy approaches in the environmental sphere when framing solutions to the problem of disposable cups. The Montreal Protocol serves as a prime example of an effective international agreement. This treaty was designed to protect the stratospheric ozone layer by phasing out the production and consumption of ozone-depleting substances (Andersen et al., 2013). Informed by scientific evidence, legislators were reassured that the public policy they endorsed was sound and crucial for the future. The treaty demonstrates the impact of scientific research, public policy, and citizen action coming together for an important environmental cause. Policymakers set ambitious yet adaptable standards, enabling industries to innovate, and the industries responded by making the necessary changes (Andersen et al., 2013). Carter (2007) and Winfield (2012) would likely agree that proactive environmental policies are essential for advancing sustainability. The importance of knowledge-sharing and collaboration are crucial lessons that can be applied to the challenge of preventing disposable cup waste. As natural resources become scarce, policymakers will likely favour businesses with sustainable practices that positively contribute to society.

C. Determinants of Sustainable Behaviour

Many studies have noted that generating positive behaviours from the public requires making the pro-environmental behaviours easy to perform. In the context of the Theory of Planned Behaviour (TPB), Ajzen (1991) posits that attitude, subjective norms, and perceived behavioural control together shape an individual's behavioural intentions, which is the proximal determinant of actual human behaviour (**Figure 2**). The TPB uses the term 'perceived behavioural control' to refer to the individual's perception of the ease or difficulty of performing the behaviour. The three determinants of intention make independent contributions that can predict behaviour with a high degree of accuracy. Researchers have analyzed the use of reusable cups through the lens of the TPB (Lee, 2016; Wang et al., 2022). For example, Lee's (2016) study found that although consumers expressed willingness to use reusable cups, 75% of reusable cup users and 90% of non-users identified inconvenience, such as washing and maintenance, as a significant barrier. Wang et al. (2022) extended the TPB and found that green initiatives, social norms, and perceived behavioural control significantly affect intentions to use reusable cups. Understanding human behaviour through the TPB can offer insights into empowering consumers to adopt sustainable hot beverage consumption.

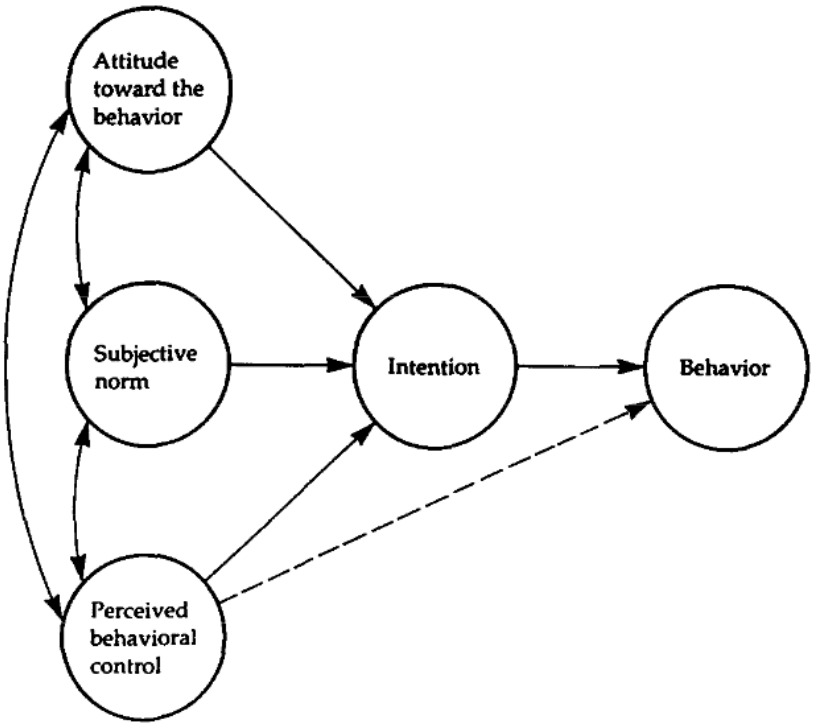

Figure 2. Theory of Planned Behaviour

Note. From "The Theory of Planned Behavior," by I. Ajzen, 1991, Organizational Behavior and Human Decision Processes, 50(2), 182 (https://doi.org/10.1016/0749-5978(91)90020-T). Copyright 1991 by Elsevier Inc.

A shift in the paradigm is possible despite the undeniable impact of greenwashing on consumer perception. Sun and Trudel (2017) demonstrated through the utilitarian model that the presence of a recycling option led people to consume more of a resource because positive emotions about recycling alleviated their guilt about potential waste. This finding suggests that individuals are more likely to recycle when it is convenient, and they believe doing so contributes positively to the environment, leading them to internalize the norm required to sustain the behaviour. The implications of Sun and Trudel's (2017) research are significant, indicating that pro-environmental policies that generate happiness are more effective than those that induce guilt. More specifically, policies that encourage reusable cups need to generate positive emotions in consumers.

Despite strong evidence suggesting that consumer concern and awareness regarding environmental issues is growing, few people take steps to alter their daily consumption behaviour due to reluctance to change habitual behaviours (Robinson, 2012). This discrepancy between intention and action with respect to environmental behaviour is referred to as the value-action gap (Blake, 1999). For instance, an individual may express willingness to forgo a disposable cup for a reusable one if offered a $1 discount on their hot beverage. In practice, their willingness to forgo the disposable cup may necessitate a higher incentive. Therefore, what people say they are willing to pay or receive in order to undertake a behaviour deemed to be sustainable may not be revealed in practice.

Efforts to educate and raise awareness about the impact of paper cup waste and the benefits of sustainable consumption can play an important role in fostering positive behaviours. As Porter and Kramer (2011) explain, shared value recognizes that markets are defined by both societal needs and conventional economic needs. It is important to note that meaningful progress in addressing this issue requires a cohesive and concerted effort from both government and business. Without the active involvement of both parties, progress is often slow, ad hoc, and limited to small and niche markets (Lacy & Rutqvist, 2015; Patrício Silva et al., 2020; Liu et al., 2021). Tackling this problem will require targeted and robust policies to curb the superfluous consumption of paper cups (Filimonau et al., 2019; Foteinis, 2020). Combining policy interventions with consumer education can catalyze a shift in individual behaviours, particularly when business practices are not readily changed.

The ease of adopting sustainable behaviour is largely influenced by external factors, such as the availability of information on reducing plastic waste (Borg et al., 2020; So et al., 2021). Borg et al. (2020) used social norm messaging to predict disposable cup avoidance behaviours.

According to the study's findings, the notion that reducing the use of disposable cups is a socially acceptable behaviour amongst consumers is a strong predictor of people's avoidance of such use. Similarly, other researchers have found that consumer awareness of the benefits of green initiatives may influence positive attitudes and intentions to perform pro-environmental behaviours (Corsini, 2018; Wang et al., 2022). For instance, successful initiatives in Italy demonstrated a strong link between environmental awareness and positive attitudes toward waste prevention (Corsini et al., 2018). Behavioural scientists researching human behaviour patterns and drivers argue that research and information campaigns can help shift pro-environmental consumer behaviours to become the norm (Kinzig et al., 2013; Lacy & Rutqvist, 2015). Messaging that conveys truly sustainable practices for hot beverage consumption can instill confidence in consumers and potentially drive real change in the coffee industry.

On the other hand, awareness of the environmental issues associated with disposable cups may not necessarily motivate consumers to reduce waste. Studies showed that positive attitudes and intentions were also influenced by factors other than awareness (Corsini, 2018; Borg et al., 2020; Wang et al., 2022). For instance, Borg et al.'s (2020) research found that other variables, such as self-efficacy, behavioural identity, gender, and anticipated costs, affect disposable cup avoidance, showing that social norm messaging was not the only determinant. Furthermore, Lee's (2016) study found that almost 84% of respondents were already aware of the harmful effects of disposable cups, yet only 33.3% used a reusable cup when ordering a hot beverage.

Education campaigns may be more successful in conveying information and changing attitudes than altering behaviour. Poortinga and Whitaker's (2018) study used showcards, posters, social media ads, and intranet platforms or tools to share environmental messages about the impacts of disposable cups and asked customers to bring their reusable cups. However, the

results showed that environmental messaging led to only an average 2.3% increase in hot beverage sales with reusable cups. These findings are consistent with Lakhan (2014), who found that investments in recycling promotion and education did not increase recycling rates in any meaningful way. Messaging and marketing techniques appear to produce negligible or short-term behavioural changes and, therefore, cannot be solely relied on for sustained change (Robinson, 2012; Lakhan, 2014; Poortinga & Whitaker, 2018). The empirical evidence from Poortinga and Whitaker (2018) and Lakhan (2014) demonstrate that merely providing information and education about sustainable hot beverage consumption is insufficient to induce behavioural change. Limited research on successful environmental education campaigns in practice highlight the challenges associated with using this strategy to encourage behaviour change.

In the context of coffee cup waste prevention, there is evidence that extrinsic motivation (i.e., motivation that comes from earning a reward or avoiding punishment) such as financial incentives may reduce the prevalence of unwanted behaviours (Poortinga & Whitaker, 2018; Nicolau et al., 2022). Nicolau et al.'s (2022) study found that 92.61% of consumers were willing to bring a reusable cup if a discount of $0.27 USD ($0.37 CAD) was offered. Moreover, for environmentally conscious consumers, a discount gesture mattered more than the amount offered, while those less interested in waste prevention may have still required a higher discount for encouragement. Despite the findings of Nicolau et al. (2022), the discount approach has still been ineffective in curbing the trend of disposable coffee cup culture. Research by Poortinga and Whitaker (2018) found that a discount was ineffective at encouraging consumers to use reusable cups. However, a £0.25 ($0.43 CAD) fee increased such use by up to 33.7% across three coffee shops. In other jurisdictions, such as England and Ireland, introducing a fee on disposable plastic

bags led to an 85-94% reduction in such use (Schnurr et al., 2018). These conflicting results regarding the efficacy of such financial incentives indicate that further analysis is necessary.

The effectiveness of financial incentives aimed at encouraging reusable cups and reducing waste has been a subject of debate. Extrinsic motivation attempts to elicit compliance by assuming individuals lack an inherent drive to act responsibly. Countries like Malta, Denmark, and certain cities in the US saw only a 33-50% reduction in disposable plastic bags when a ban or fee was implemented (Schnurr et al., 2018). Lee (2016) found that most consumers who knew about a discount incentive for using a reusable cup showed indifference. Comparatively, Bains et al.'s (1998) review of smoking cessation interventions showed that only 1-2% of target populations participated in incentive-based programs, and those participants may have been already motivated to quit. This finding suggests, similar to Nicolau et al.'s (2022) findings, that incentives to use reusable cups in practice may attract consumers who are already motivated to prevent waste. Therefore, practical applications of extrinsic motivation are unlikely to be successful in every jurisdiction and among all consumers.

Others have found that financial incentives can negatively impact individual behaviour as they may damage intrinsic motivation (i.e., motivation that comes from inherent satisfaction). A study by Deci (1971) found that financial rewards for performing an activity were perceived as a control mechanism, reducing intrinsic motivation because subjects became motivated solely by the expectation of a financial reward. This finding is consistent with the study by Frey and Oberholzer-Gee (1997), which found that intrinsic motivation decreases when financial incentives are introduced. Attempts to dictate how people should behave can lead to resistance or denial (Robinson, 2012). These defensive reactions may explain why attitudes toward financial incentives do not invariably translate into behavioural change.

The literature indicates the importance of exploring methods to leverage individuals' intrinsic motivations, expand their comfort zones, and facilitate an enabling environment. Intrinsic motivation increases when positive verbal reinforcement and social approval are used as external rewards (Deci, 1971; Berger, 2019). Positive reinforcement affects an individual's phenomenology differently than financial rewards employed as external incentives. ThØgersen (1994) explains the paradoxical effects of incentive programs, contending that what matters is how the target population understands the incentive—if it is seen as controlling, it will reduce motivation. However, if the incentive is seen as enabling, it will likely increase motivation. These findings suggest that intrinsic motivation may play a crucial role in effectively motivating consumers to use reusable cups and sustain this behaviour over time.

Proposed solutions must naturally allow all consumers to access and use reusable cups, thereby facilitating inclusive sustainability. There may be potential inequities or unintended consequences of financial incentives on people who are low-income, marginalized, or experiencing homelessness. Environmental justice ensures that communities receive equitable access to opportunity (Keil et al., 2009). Ensuring the appropriateness of incentivization strategies is crucial for cities with residents of different socioeconomic backgrounds. Therefore, it could help protect against environmental injustices if marginalized communities play an active role in shaping pro-environmental strategies to ensure their effectiveness in practice (Keil et al., 2009; Méndez, 2020). By addressing these concerns, coffee retailers and policymakers can ensure that their efforts to encourage a sustainable and equitable coffee cup culture align with the needs and values of their communities.

The literature summarized in this section lays the theoretical and conceptual foundation necessary to understand and identify issues related to coffee cup culture. For instance, addressing

the problem of paper cup waste requires extensive collaboration among all stakeholders. It is crucial to comprehend the factors that facilitate or hinder efforts to reduce paper cup waste to develop effective solutions and achieve desired outcomes, such as behaviour change. However, finding practical solutions or defining the desired goal is a complex undertaking due to conflicting interests and objectives among consumers, government, and coffee retailers. This literature review offers an opportunity to learn from past experiences and identify the resources and tools necessary to tackle sustainable coffee cup culture challenges. The extensive literature on the factors influencing paper cup waste management, waste prevention, and human behaviour inform the strategies for overcoming barriers to sustainability. For example, in cases where coffee retailers lack waste prevention practices, implementing strategies to ensure their accountability could be effective. This review also helps identify gaps in the existing discourse. There is a scarcity of research about the determinants that could shape truly sustainable behaviours within the sphere of coffee consumption, emphasizing the need for additional scholarly inquiry.

PART III. Methodology

This section presents a comprehensive overview of the methodological approaches and methods used in this study. It begins with a discussion of the research design, including the data sources, collection techniques, and interpretive methods. A thorough overview of the survey and interview data collection is then provided, followed by an explanation of the approach to data analysis.

A. Study Design

This study employed a rigorous and robust design using triangulation as a validation strategy to provide corroborating evidence from multiple data sources (Creswell, 2007). The survey and interview questions were rooted in my research topic, research questions, and literature review. The questions were carefully developed to ensure clear wording and avoid biases. The semi-structured format of the interviews and survey encompassed a mix of open-ended and closed-ended questions, providing flexibility for participants to express their thoughts freely while still being easier to administer than completely unstructured questions. This research included a phenomenological component aiming to understand and describe the essence of participants' lived experiences, their conceptual understanding of their world, and their attitudes toward sustainability. Prior to engaging participants, ethics approval was obtained. This study conforms to the standards of the Canadian Tri-Council Research Ethics guidelines (**Appendix A**).

The survey questionnaire, targeting coffee consumers, was created using the online SurveyMonkey software, featuring 19 questions consisting of Likert scales, closed-ended questions, and open-ended questions (**Appendix B**). Prior to distribution, these questions were

pre-tested and refined to ensure optimal flow, clarity, and focus. To further enhance understanding, significant terms were defined at the beginning of the survey to clarify their usage to participants. The survey research was advantageous because it could be distributed among the diverse population of Toronto, enabling the collection of a substantial amount of information and ensuring the production of a reliable and accurate sample.

The survey was designed to gather data and insights from the targeted individuals. Quantitatively, it provided data that could be analyzed statistically to identify patterns or correlations among variables. Qualitatively, the open-ended survey questions allowed for detailed responses, offering in-depth insights into the reasons behind participants' attitudes and behaviours. No other research method could have provided this broad capability to gather targeted results and draw conclusions to inform this research study.

The interview questions included 18 questions for the municipality and 17 questions for coffee retailers, encompassing both open-ended and closed-ended questions (**Appendix C**). Follow-up questions were posed for clarification purposes when necessary. Interviews were a powerful method for qualitative data collection that allowed me to gather detailed and in-depth information about the participants' knowledge and experiences in their own words, providing a rich understanding of my research topic. The gathered data was utilized to comprehensively address the research questions.

1. Participant Recruitment

The survey link was widely shared across social media platforms (i.e., Facebook, Instagram, and LinkedIn), targeting Toronto residents who patronize coffee retailers. Additionally, the survey was distributed to staff, undergraduate students, and graduate students within the Faculty of Environmental and Urban Change (EUC) at York University

through the Faculty's email listserv. Random sampling of respondents facilitated the generation of a survey sample representative of the entire population of Toronto, thereby ensuring that every individual had an equal probability of being selected for the study.

For the interviews, I reached out to potential interviewees via email to arrange interviews and conducted them using Zoom video software. Despite receiving approval from York University's Research Ethics Board for in-person interviews, participants chose virtual interviews due to travel constraints and the impact of the COVID-19 pandemic. The drawback of virtual interviews was that understanding participants was more challenging as the opportunity to interpret their body language was limited. In-person interviews, which typically provide a more natural interaction, may have resulted in a higher level of engagement and made it easier for the interviewer to capture non-verbal cues and for interviewees to express their interest in the research topic.

The selection of coffee retailers was almost entirely dependent on their amenability to participate in interviews. While five coffee retailers represented in the study area were initially identified as suitable for interviews, three of the largest major chains declined to participate (or did not respond to the interview request). Among the five coffee retailers, the leading coffee chains represent over 87.1% of coffee shop locations in Toronto in 2024, while A&W Restaurants (A&W) and Pilot Coffee Roasters (PCR), who did choose to participate, represent 12.9% (**Figure 3**) (*10 Largest Food Chains in Canada*, 2024). Coffee retailer chains have a substantial influence on the market. In 2020, Tim Hortons, the largest quick-service restaurant chain in Canada, commanded a significant 54% share of the entire Canadian domestic coffee market, with Starbucks coming in second at 21% (*Canada's Coffee Shops Begin the Long Road to Recovery*, 2020).

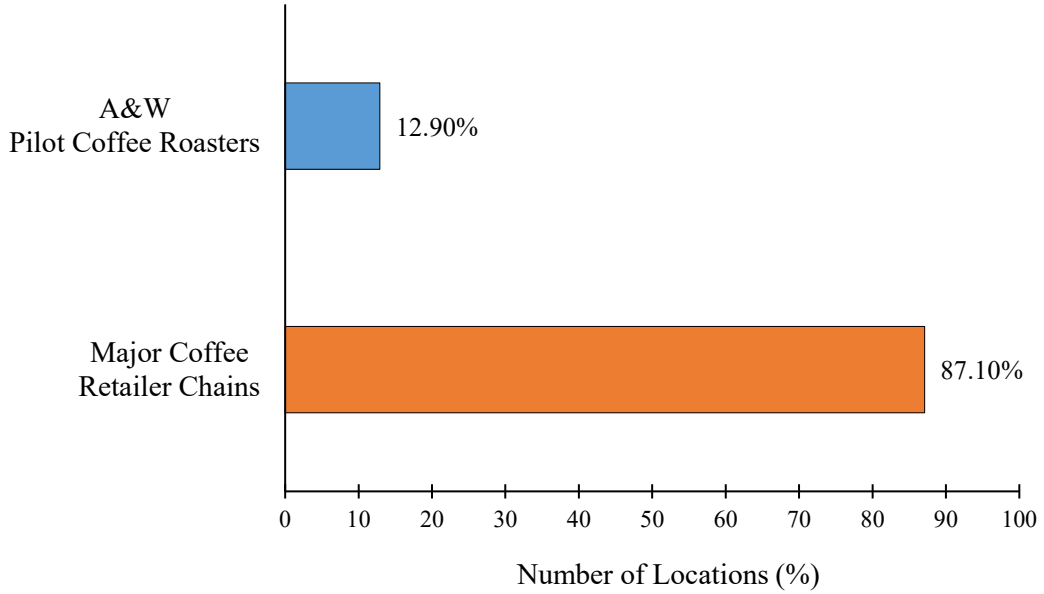

Figure 3. Comparing the Number of Coffee Retailer Locations

Note. Comparative analysis of the total number of locations across the five coffee retailers.

Adapted from *10 Largest food chains in Canada*, by ScrapeHero, 2024 (https://www.scrapehero.com/ location-reports/10-largest-food-chains-in-canada/). Copyright 2024 by ScrapeHero.

a) Limitations of the Study

While every reasonable effort was made to ensure the accuracy and credibility of the data used in this study, important methodological concerns are worth highlighting. The survey results, while valuable, do not include demographic information about the survey respondents. Collecting personal information about participants would have raised ethical and practical concerns, leading to a prolonged ethics review process, decreased response rate, and possibly insufficient data. Despite this limitation in the scope of my survey data collection, the generalizability and applicability of the results were not compromised, as random sampling enabled me to obtain a substantial and fair sample of survey participant responses.

As noted above, the non-engagement from three of the largest coffee retailers in Canada posed a second limitation to this research. However, nonresponse bias was diligently mitigated.

Each coffee retailer was given an equal opportunity and considerable time to respond to interview requests. Notwithstanding the challenges in finding amenable interview participants, the interviews with A&W and PCR provided invaluable insights. A trade-off was made between the increased potential for generalizability flowing from studying a large number of coffee retailers and the increased depth and breadth of understanding generated from a focus on a small number of coffee retailers. The pursuit of generalizability through the study of multiple coffee retailers may have compromised the in-depth comprehension of individual coffee retailers, a characteristic feature of qualitative research methodology (Schofield, 2009). The small sample size was addressed by reconceptualizing the research to focus on comprehensive data collection and analysis of the two coffee retailers. The study's comprehensive and extensive scope of knowledge led to an increased specificity and diversity of the data points gathered, thereby ensuring the validity and credibility of the results.

The considerations of extended producer responsibility (EPR) as a policy approach were beyond the scope of this study. Ontario's new producer responsibility regulations will make producers fully responsible for post-consumer end-of-life waste management, thereby reducing the involvement of municipalities. However, this research examines the collective contributions of consumers, businesses, and government toward fostering a sustainable coffee cup culture in Toronto. While this research discusses paper cup waste management in the context of recycling, it does not specifically explore EPR policy due to its administrative and logistical complexity.

2. Consent Process

Participation was entirely voluntary, and all participants were given a consent form containing information about the research's purpose and my contact details for any queries or concerns (**Appendix D**). Participants were assured that declining to participate or withdrawing

from the study would not result in any penalties or loss of benefits. Anonymous participants were assured that their responses would not be linked back to them in any publication. These measures ensured complete transparency for participants and allowed them the opportunity to review the research's overall structure. Indirect identifiers collected by the survey platform (i.e., IP addresses) were removed and replaced with non-identifying codes (e.g., RESP1, RESP2…RESP258), ensuring the risk of identifying participants was very low. For interview participants who requested anonymity, their direct identifiers (i.e., names, job titles, and contact information) were replaced with codes (i.e., Participant A, Participant B), with the code key retained solely for potential follow-up contact needs. In the specific case of the City of Toronto, the interview participant explicitly consented to be identified.

B. Data Collection

I conducted a descriptive qualitative and quantitative study using a semi-structured survey of 258 Toronto residents and semi-structured interviews with the City of Toronto, A&W, and PCR.

1. Survey

The survey questions explored the factors driving consumers to use disposable cups and their attitudes toward sustainable solutions. The aim was to better understand the challenges of adopting sustainable behaviour and identify potential needs to facilitate such behaviour. The data collection phase spanned the period from May to August 2022 until reaching saturation, the point in sampling where there was sufficient information to replicate the study and collecting new data did not add further insights within and across Toronto residents (Fusch & Ness, 2015). Saturation was evaluated with my supervisor during meetings through the review and discussion of themes.

The data presented in **Figure 4** compares the proportion of participant engagement with the consumer survey. A total of 327 individuals responded to the survey request. Among these responses, 258 participants completed the survey in full, resulting in a response rate of 78.9%. On average, participants spent six minutes and twelve seconds completing the survey. Of the respondents who completed the survey, 23.3% (60 out of 258) indicated that they do not consume hot beverages from coffee retailers, while 76.7% (198 out of 258) reported that they do. The analysis excluded results from 41 respondents who started but did not finish the survey (12.5%). It is also important to note that 28 respondents who did not meet the requirement of being residents of Toronto were disqualified (8.6%) as this was a fundamental parameter for survey participation.

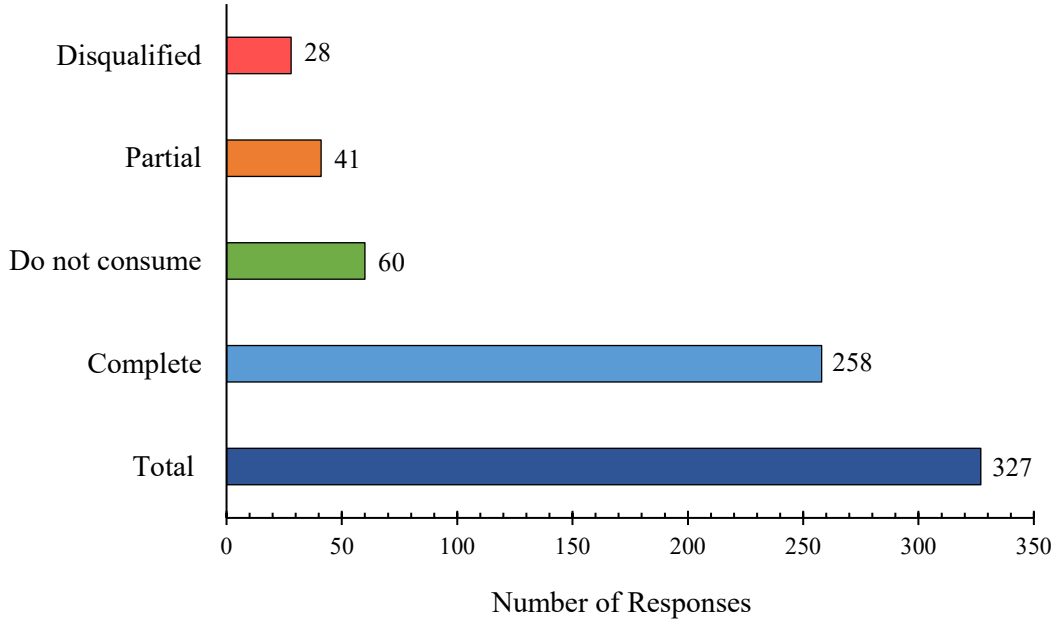

Figure 4. Comparison of Participant Engagement with Consumer Survey

2. Interviews

I conducted three semi-structured interviews with representatives from government and business. The interviews took place with the following individuals: 1) Daniel Boulos, Project Lead of the Solid Waste Policy and Planning unit, Solid Waste Management Services at the City of Toronto on June 2, 2022; 2) a representative of A&W (referred to as 'Participant A') on July 21, 2022; and 3) a representative of PCR (referred to as 'Participant B') on August 4, 2022. The questions primarily focused on waste management of paper cups, waste reduction and prevention strategies, incentives, and participants' sentiments regarding sustainable initiatives. Each interview lasted approximately one hour and was audio-recorded with the participant's consent. The recordings were later transcribed verbatim using Otter, an online transcription software. Following the interviews, I maintained open communication with each participant by allowing them to review their transcript and provide any clarifications to ensure accuracy.

C. Data Analysis

The collected data was thoroughly analyzed to identify patterns, significant themes, and insights. I utilized the MAXQDA coding software to import and manage the survey responses and interview transcripts, facilitating data organization and analysis. The software recorded Likert scale values, frequency counts, percentage distribution of responses, and assisted in efficiently coding the qualitative data into quantitative metrics. The analysis involved a flexible combination of structured coding and emergent coding. I reviewed each response independently, identifying and clearly defining codes to capture the complexity of the data and any unexpected findings. Subsequently, I conducted a secondary qualitative data analysis to gain a comprehensive understanding of participants' experiences from various perspectives. Building upon the existing codebook, I then performed a type-building text analysis to identify distinct

categories. This text analysis process facilitated the exploration of themes and the identification of analytically meaningful descriptions and distinct groups.

Direct quotes representing key themes and insights were selected from participant responses to inform the research questions. These quotations were crucial in enhancing the understanding of the phenomenon under study, adding depth and credibility to the findings. To ensure the validity and reproducibility of my inferences, I conducted multiple rounds of data analysis, sought my supervisor's input on my procedures, triangulated data from the survey and interview results, created an audit trail of data analysis procedures, and searched for negative responses that provided alternative perspectives or did not align with the identified themes.

PART IV. Results

The survey and interview results revealed interesting findings about the sustainability and cultural variables of hot beverage consumption in Toronto. The results consist of two main categories: A) Attitudes and Behaviours Regarding Consumption, and B) Approaches to Promote Sustainability. As indicated previously, 258 Toronto residents responded to the survey, and three interviewees took part, including representatives from the City of Toronto, A&W, and PCR. The tables present quantitative data from the survey results[4] and direct quotes from the qualitative responses obtained from the survey and interviews.[5] **Table 2** summarizes the main themes and codes identified in the survey results. It shows that social responsibility was the most common suggestion for preventing paper cup waste, environmental consciousness was the most prevalent consumer type, and inconvenience was the overall primary barrier.

Table 2. Hierarchical Code Frequency of Major Themes and Codes from the Survey

Theme	Code	Code Frequency
Approaches for change		90
	Social responsibility	26
	Government policy	19
	Recycling/Composting	11
	Individual consumption	9
Consumer type		40
	Environmentally conscious	24
	Resistant to change	8
	Health-conscious	5
Barriers		26
	Inconvenience	14
	Ignorance	5

Note. Data is derived from the frequency of coded responses. The numbers in the first row of each theme represent the combined totals of the codes within that theme, including those in the appendix.

[4] See **Appendix E** for the original output of quantitative data for the survey analysis.
[5] See **Appendix F** for a complete list of all codes and code frequencies from the qualitative data. Codes with low frequencies are shown in the appendix.

A. Attitudes and Behaviours Regarding Consumption

Four categories were analyzed within this section: 1) Attitudes Toward Sustainability, 2) Consumption Behaviours, 3) Disposal Behaviours, and 4) Behavioural Barriers.

1. Attitudes Toward Sustainability

The survey responses were utilized to evaluate attitudes and behaviours concerning sustainability, reduction, and reuse. **Figure 5** depicts the percentage breakdown of respondents' views on the importance of sustainability. Approximately 59% strongly agreed with the statement, "Sustainability is an important topic for me." Additionally, respondents were asked about the importance of reducing and reusing. **Figure 6** presents the breakdown of priority levels by percentage. The results indicate that 67.8% of respondents prioritized reduction and reuse as top priorities, although not the most important. **Table 3** presents the most significant qualitative responses on the effects of environmental consciousness.

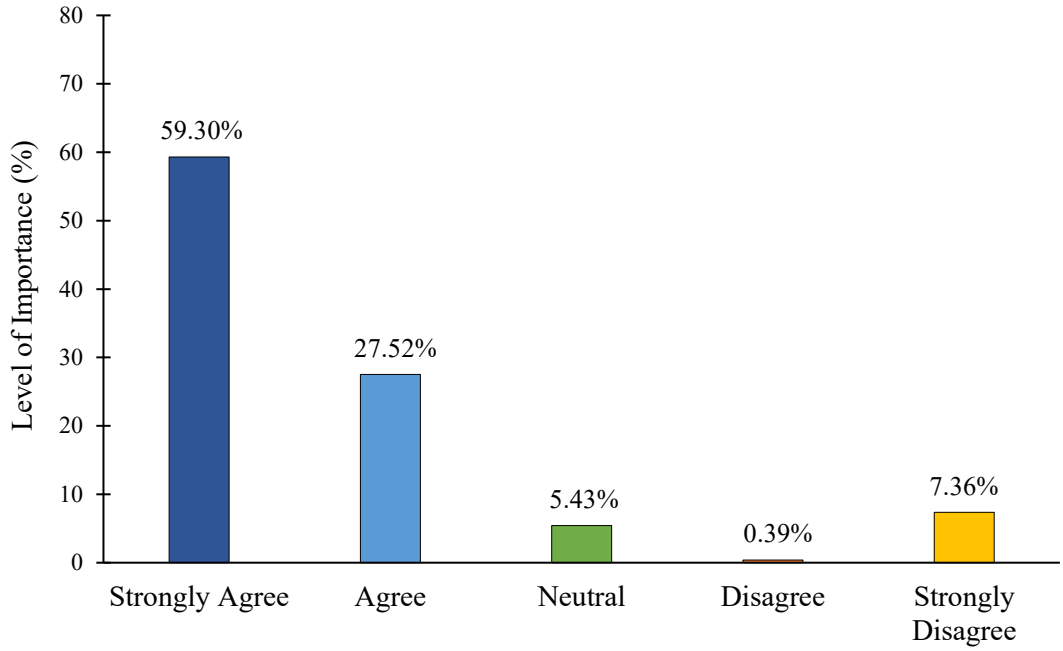

Figure 5. Importance of Sustainability for Respondents

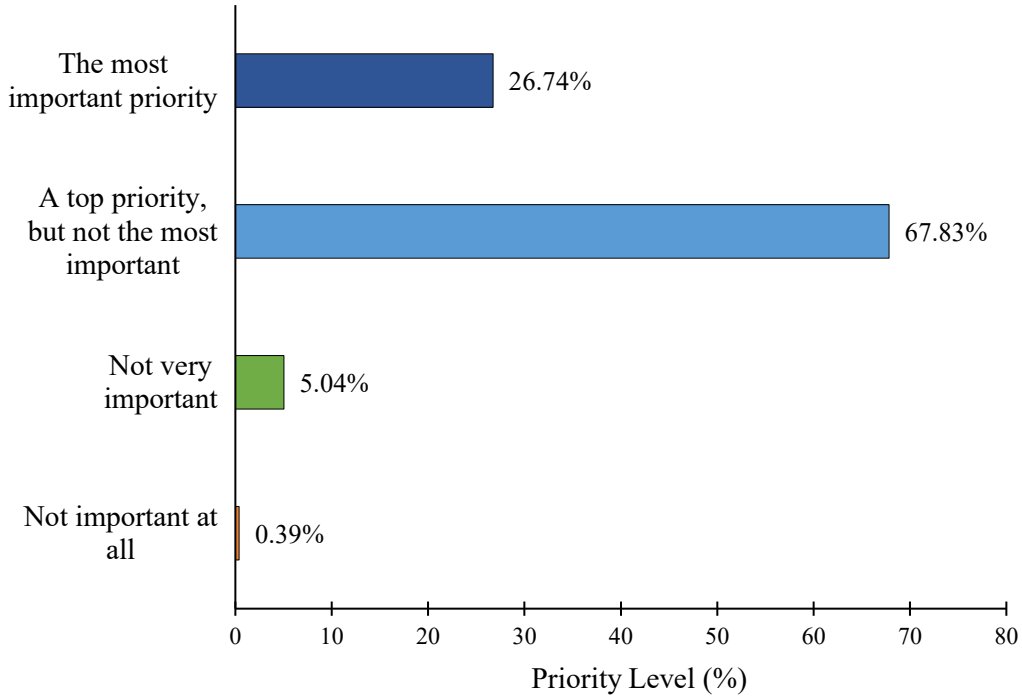

Figure 6. Importance of Reduction and Reuse for Respondents

Table 3. Effects of Environmental Consciousness on Consumer Perception

Document Name	Response
Consumer Survey	We were gradually changing the culture before the pandemic. We need to get back to it and make a greater effort to make up for the increase in waste that has taken place (RESP100, Pos. 6).
Consumer Survey	I despise seeing how much garbage comes from the Tim Hortons across the street from me. It is mostly from their store (RESP148, Pos. 5).
Consumer Survey	I think the amount of waste involved in coffee drinking has risen hugely during the pandemic, and some drastic measures are required to get people back to reusing travel mugs (RESP178, Pos. 6).

The results in **Table 4** depict the qualitative interview responses obtained from participants when asked about their sustainability goals. The focus for the City of Toronto and A&W seemed to centre around the circular economy and zero waste. It is unclear how the municipality and A&W planned to uphold the three pillars of sustainability while striving

towards their circular economy and zero-waste objectives. On the other hand, PCR's response, while addressing the three pillars of sustainability, lacked specificity.

Table 4. Comparison of Sustainability Goals

Document Name	Transcript
City of Toronto Interview	[W]e have a goal to become a circular economy city and a zero waste city. They're both goals that we're driven by, and when it comes to the circular economy and zero waste, it's really about waste reduction (D. Boulos, personal communication, Pos. 115, June 2, 2022).
A&W Interview	We want to get to zero waste to landfill. We've got various projects that fall under that, but the overarching one is to get to zero waste (Participant A, personal communication, Pos. 38, July 21, 2022).
PCR Interview	Our mission is to drive sustainability throughout the coffee supply chain—from farm to cup—by integrating sustainable processes in all elements of the business. We do that in three pillars: people, planet, and economy (Participant B, personal communication, Pos. 22, August 4, 2022).

2. Consumption Behaviours

According to the findings in **Figure 7**, 79.3% of survey respondents purchase hot beverages from coffee retailers one to two times a month or less than four times a week. In contrast, **Figure 8** reveals that more than 43.4% of respondents never bring a reusable cup when purchasing hot beverages from coffee retailers. One respondent mentioned, "There is a kind of social appeal to carrying a hot [beverage] cup from a certain coffee shop. It almost feels like a status symbol sometimes. It can be hard to overcome that sometimes" (Consumer Survey, RESP179, Pos. 4).

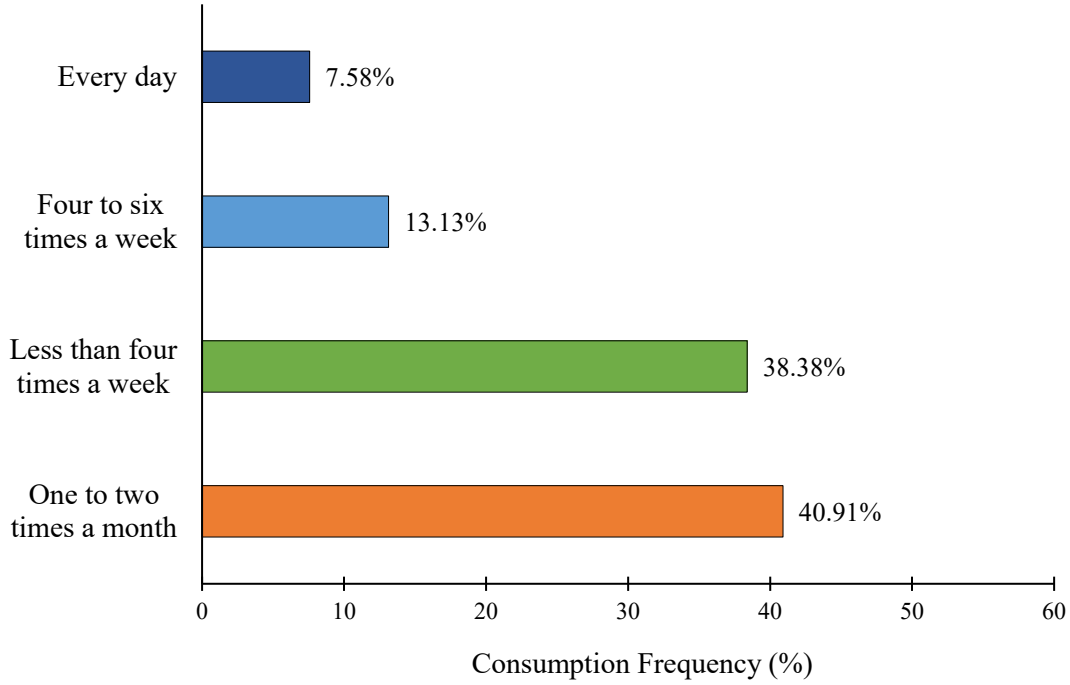

Figure 7. Frequency of Respondents' Hot Beverage Consumption

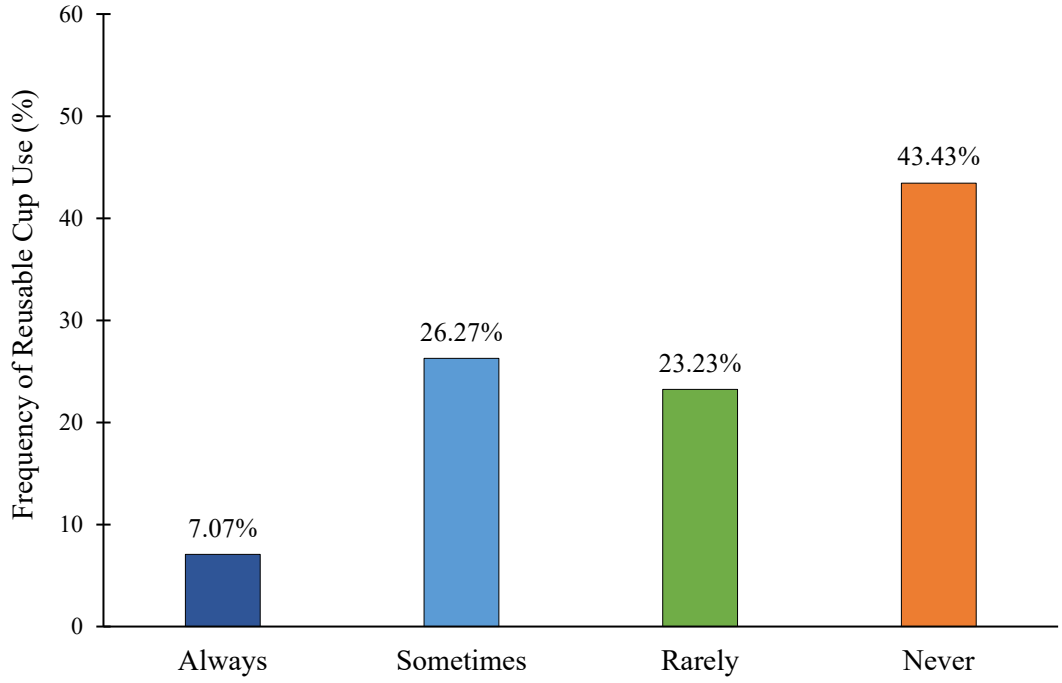

Figure 8. Frequency of Using a Reusable Cup When Purchasing Hot Beverages

The survey also asked respondents about coffee retailer practices before the COVID-19 pandemic. **Table 5** indicates that, before the pandemic, 52% of respondents acknowledged that coffee retailer practices encouraged reusable cups with financial incentives. In comparison, 63.6% of respondents said they used reusable cups when purchasing hot beverages. Conversely, **Figure 9** demonstrates that since coffee retailers stopped accepting reusable cups due to the pandemic, 55.6% of survey respondents claimed that their purchasing frequency had remained unchanged.

Table 5. Coffee Retailer Practices and Consumer Behaviours Before COVID-19

Variable	**Percentage valid[6] (%)**
Were coffee retailers incentivizing reusable cups prior to COVID-19?	
Yes	52.02
No	26.26
I don't know	21.72
TOTAL (valid)	198
Did you use a reusable cup when purchasing hot beverages prior to COVID-19?	
Yes	63.64
No	36.36
TOTAL (valid)	198

[6] Percentages are based on valid values, meaning that missing values are excluded.

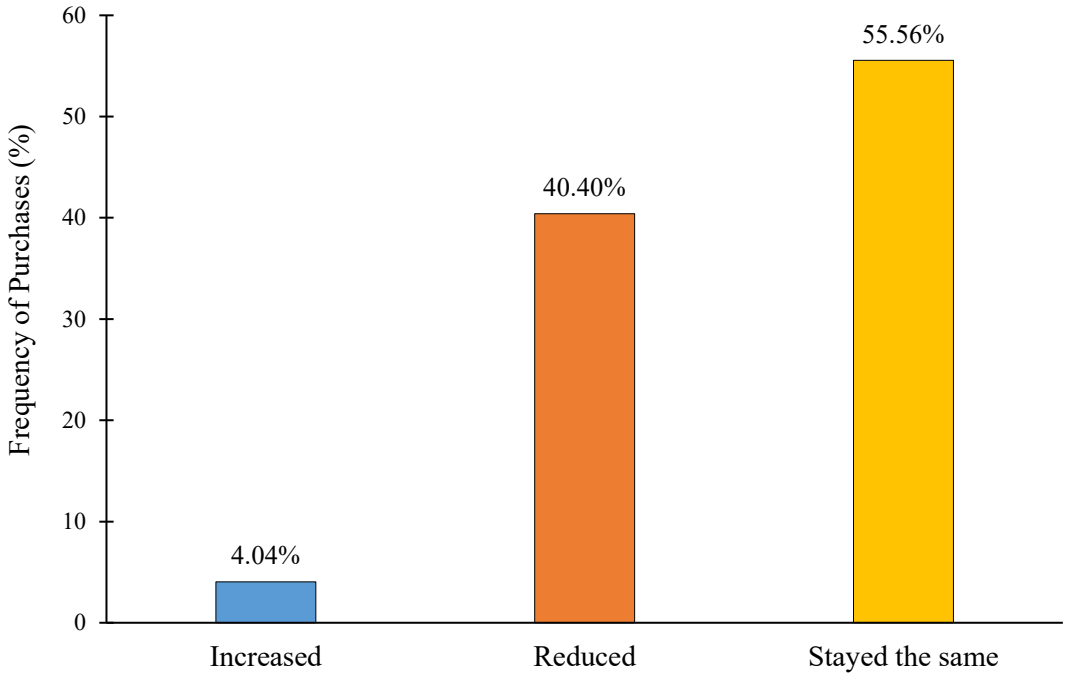

Figure 9. Changes in the Level of Hot Beverage Consumption During COVID-19

Most survey participants expressed that financial incentives would motivate them to use a reusable cup. **Table 6** shows that the anticipated discount amount varied among the survey respondents. While some respondents indicated that they would use reusable cups for a $0.10 discount on their hot beverages, others said they expected a higher discount. Conversely, a small number of respondents said they did not need an incentive to use reusable cups, with one respondent saying, “No incentive needed; discounts are nice but not expected for decision-making” (Consumer Survey, RESP224, Pos. 6). The interview results in **Table 7** show that A&W and PCR had been offering customers discounts on hot beverages, ranging from $0.10 to $0.50, to encourage the use of reusable cups.

Table 6. Comparing the Value of Discounts Preferred by Respondents

Document Name	Response
Consumer Survey	They should offer a large rebate to use a reusable cup. 50 cents would be a good start (RESP83, Pos. 1).
Consumer Survey	Take 25 cents off the price (RESP144, Pos. 1).
Consumer Survey	Giving a more substantial discount for bringing in a reusable cup (i.e., more than ten cents, which can feel negligible on a $5+ coffee purchase) (RESP179, Pos. 1).
Consumer Survey	10 cents less per reusable cup (RESP245, Pos. 1).

Table 7. Emphasis on Financial Incentives to Encourage Reusable Cup Usage

Document Name	Transcript
A&W Interview	If you bring your own clean reusable mug…we'll take that and refill it for you and give you a 10-cent discount on the beverage…If you bring back the A&W [exchangeable cup], that discount doubles [to 20 cents] (Participant A, personal communication, Pos. 118, July 21, 2022).
PCR Interview	What we [do] is encourage customers to continue to bring their own mugs. Our amount is greater than the average. I believe a lot of [businesses] give 10 to 15 cents. Ours [is] 25 cents. In 2019, to encourage this program, there were days when the discount was 50 cents. We also offered free brewed coffee on Earth Day if customers brought their own mug. (Participant B, personal communication, Pos. 68, August 4, 2022)

Interview participants were asked to evaluate the waste reduction impact of offering financial incentives. The City of Toronto noted in **Table 8** the difficulty in accurately assessing the impact due to inconsistencies in coffee retailers implementing a discount. A&W said the impact was insignificant but did not disclose information on reusable cup usage rates. PCR did note a 3% increase in the use of reusable cups in 2019, the same year when they offered a $0.50 promotional discount during specified periods.

Table 8. Comparing the Waste Reduction Impact of Discounts

Document Name	Transcript
Did you see any reduction in paper cup waste when customers were offered a discount for using reusable cups?	
City of Toronto Interview	We did not see anything significant…It's hard to make a judgment call now on the discount offered for reusable coffee cups because there wasn't really a baseline where nobody had a discount, and we had really good data on it, and then let's say one year every coffee retailer started implementing a discount and yes or no, can we see any difference? It was staggered. Some retailers did it. Some retailers didn't. Some retailers still don't. Some retailers never stop. Without a baseline year that measured the amount of coffee cups in the waste stream prior to retailers offering a discount, then it is virtually impossible to calculate the success of the discount. (D. Boulos, personal communication, Pos. 94-98, June 2, 2022)
A&W Interview	Right now, defining success is difficult. Obviously, if we're accepting reusable cups in Toronto, we have reduced the number of disposable cups. That number is not significant, and it's certainly not what we need if we're going to make an impact. (Participant A, personal communication, Pos. 162, July 21, 2022)
PCR Interview	For 2019, we saw that the bring your own mug (BYOM) program had doubled in that year from 3% in January 2019 to 6% in December 2019…[S]o it made an impact for sure (Participant B, personal communication, Pos. 84, August 4, 2022).

3. Disposal Behaviours

Survey respondents were asked about their disposal habits for paper cups after consuming hot beverages. The results presented in **Figure 10** show participants' self-reported paper cup disposal behaviour. Approximately 68.4% of respondents separated the paper cup from the plastic lid prior to disposal of the cup in the garbage. Out of the respondents who did *not* separate the cup and lid, 65.7% of respondents disposed of the waste in the garbage. The results also show that 5.1-34.3% of consumers incorrectly disposed of their paper cup waste in the organics and recycling bins.

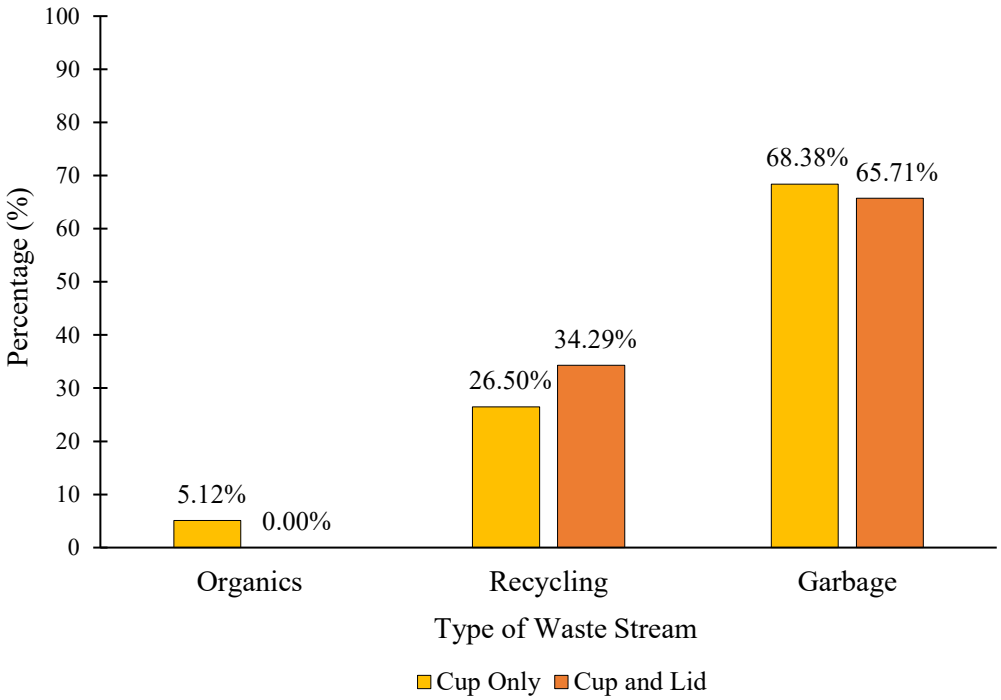

Figure 10. Comparison of Paper Cup Waste Disposal Behaviours

Note. Respondents are categorized as 'Cup Only' if they separate the cup from the lid before disposal and 'Cup and Lid' if they dispose of the cup and lid waste together.

The selection of qualitative responses in **Table 9** reflects consumers' positive associations between recycling, composting, and sustainable behaviours. Although most respondents disposed of their paper cups in the garbage, they expected coffee cups to be recycled or composted. The results in **Table 10** indicate misunderstandings regarding recycling paper cups in the City of Toronto.

Table 9. Effects of Recycling and Composting on Perception of Sustainability

Document Name	Response
Consumer Survey	[Look] at the biodegradable nature of cups and their plastics [*sic*] and [work] with companies to use more environmentally friendly components (RESP92, Pos. 4).

Table 9 (continued).

Consumer Survey	The question remains: How do we separate coffee cups from other recycling waste? They can be recycled, but they need to be separated. Way more needs to be done on what can be recycled and what can't (RESP96, Pos. 5).
Consumer Survey	[W]e should be thinking about more sustainable cups rather than [reusable] cups at this time (RESP159, Pos. 5).

Table 10. Effects of Consumer Knowledge on City of Toronto Waste Management

Document Name	Transcript
City of Toronto Interview	A lot of times, even for our consultations, it still comes up as 'just make it recyclable' or 'make it compostable,' and all our problems are solved if we can just make these products compostable or recyclable (D. Boulos, personal communication, Pos. 120, June 2, 2022).
City of Toronto Interview	[Y]ou can imagine in [Toronto] how many coffee cups are being thrown into the Blue Bin with half a cup or a full cup of coffee in them, which is contaminating other materials. These are behaviour changes that we need to work with the public, work with our stakeholders, and work with our businesses to show that, at the end of the day, it's not in our benefit just to make things more recyclable or compostable. (D. Boulos, personal communication, Pos. 121, June 2, 2022)
City of Toronto Interview	Just because a manufacturer says that one thing is or isn't recyclable or compostable does not mean it will pass the test in the City of Toronto. By this, I mean that labelling something as compostable or recyclable doesn't mean it is accepted in every collection system and municipality, including Toronto. (D. Boulos, personal communication, Pos. 186, June 2, 2022)

The interview results indicate substantial infrastructure challenges for the municipality in managing paper cup waste. **Table 11** details the regulations established by the City of Toronto for materials entering the recycling and organic streams. The results presented in **Table 12** indicate contrasting viewpoints between the municipality and coffee retailers regarding waste management accountability. The City of Toronto highlighted the difficulty of holding businesses responsible for their paper cup waste. A&W and PCR noted that the waste management infrastructure and cup packaging significantly hindered their efforts to reduce waste.

Table 11. Challenges for Recycling and Composting Coffee Cup Waste

Document Name	Transcript
City of Toronto Interview	Anything that can be recycled is dependent on three things and one is, can it be collected easily? For argument's sake, coffee cups can be collected just as easily as everything else if somebody actually puts it in the Blue Bin. The second thing is if it can be sorted at our recycling processors, and many times that's not the case…There will be a cost, and sometimes a very significant cost, to that technological upgrade. Then the third requirement to make something recyclable is that there needs to be a market at the end of that…[T]here needs to be a company that is willing to, in a City of Toronto context, receive the volume of material that the City can deliver on a long-term basis…[D]isposable coffee cups, at one or all three of those kinds of situations, do not pass the test. (D. Boulos, personal communication, Pos. 52, June 2, 2022)
City of Toronto Interview	If people are putting what they think are compostable coffee cups into our Green Bin, and they're not breaking down during [the anaerobic digester's] pre-processing stage, we're paying one price to send it to our organic processors, which is the most expensive processing option for us between Green Bin, Blue Bin, and landfill, only to have it flushed out and sent to landfill for another cost. So, we're paying twice…A second reason why we don't want them in our Green Bin stream is because they're not nutrient rich…Accepting paper cups into our Green Bin program, if they can be composted in our program, could significantly alter the balance of food versus paper that the facilities were designed for, given the volume of paper cups that can potentially be collected. (D. Boulos, personal communication, Pos. 59-60, June 2, 2022)

Table 12. Comparison of Coffee Retailers' Waste Accountability

Document Name	Transcript
City of Toronto Interview	They're not really held accountable...[W]hether you're on the City of Toronto collection services or on private, you have to pay for the amount of waste that is in your store…[T]hat only goes so far as is somebody drinking the hot beverage in your store and disposing of the paper cup in your store? If so, then you have to pay for the management of that. If they take it away and dispose of it in the city litter bin right outside, then you're no longer responsible for it. (D. Boulos, personal communication, Pos. 74, June 2, 2022)
City of Toronto Interview	[T]he biggest challenge is that some retailers don't identify [paper cup waste] as their responsibility (D. Boulos, personal communication, Pos. 120, June 2, 2022).

Table 12 (continued).

A&W Interview	[O]ne of the barriers in Toronto is that if it's a coffee cup, it doesn't matter what material it's made of; Toronto will put it into the landfill. We did try a compostable cup a while ago, and we ran into that barrier…Even if it is a recyclable one, if it looks like a coffee cup, chances are the municipality will send it to landfill. (Participant A, personal communication, Pos. 58, July 21, 2022)
PCR Interview	[W]e're limited in terms of what we can actually do. From a packaging perspective, we need manufacturing companies to innovate [paper cups] that can be decomposed in the current waste disposal infrastructure, or we need the waste systems to innovate their infrastructure so that they can decompose the current packaging. (Participant B, personal communication, Pos. 186, August 4, 2022)

The interviews also highlighted that a significant challenge in waste management was inconsistent regulations across jurisdictions and businesses, which inhibited behaviour change. **Table 13** presents the qualitative responses from interviewees, indicating that this lack of consistency caused confusion. Coffee retailers particularly noted the importance of creating an enabling environment for consumers to change their behaviours.

Table 13. Effects of Waste Management Inconsistencies on Stakeholders

Document Name	**Transcript**
City of Toronto Interview	[W]e have a lot of challenges with sending out direct key messages and consistent messaging, and then you put on a layer of different municipalities. Somebody wakes up in Markham under one set of rules but goes to work in Toronto with another set of rules and then goes out to Pickering to their in-law's house and has another set of rules…You can imagine if we layered on that if you buy your product from this company, you can do this with it (e.g., recycle it), if you buy it from this company, you can do that with it (e.g., compost it), but if you buy it from all these companies, you still have to do this with it. (e.g., throw it in the garbage). (D. Boulos, personal communication, Pos. 187, June 2, 2022)

Table 13 (continued).

A&W Interview	When we're looking at a national chain, we've got many competitors that are far bigger than us trying to make systemic changes, and it's hard to make a systemic change if there isn't alignment between the different regions…If we want wholesale behavioural changes, we need to create the environment for that. At the minute, it's a bit fragmented, and everybody is trying to do the right thing, but a lot of us are doing the wrong thing, which means that we're working on different things. Sometimes that means going in different directions, which makes systemic change a lot harder. (Participant A, personal communication, Pos. 214, July 21, 2022)
PCR Interview	Our Oakville location [composts] the cups. Some of our Toronto locations use the City's waste management systems, but our Toronto locations do not recycle the cups. Back in 2019, we communicated what types of items can be sorted in various [waste] streams. It's communicated to the customers with signage, and then it's up to the customers to do that. (Participant B, personal communication, Pos. 38, August 4, 2022)

4. Behavioural Barriers

The data presented in **Table 14** shows the distribution of survey participants' responses regarding the barriers hindering their use of reusable cups. Approximately 73.7% of respondents reported that their purchases of hot beverages were unplanned, meaning that they did not have a reusable cup with them.

Table 14. Variable Statistics on Common Barriers to Using a Reusable Cup

Variable	**Percentage valid (%)**
Unplanned purchase	73.74
I forget to bring it with me	56.57
Inconvenient to carry it with me	56.06
Lack of consistency between stores	41.92
No efficient process for using it at drive-thru	31.31
Washing it for reuse	30.81
Lack of space	9.60
No barriers	3.54
TOTAL (valid)	198

Note. Data is derived from the selection frequency of the variables.

Additionally, **Table 15** presents salient survey responses, with respondents further expressing that carrying reusable cups is inconvenient. **Table 16** outlines the issue that reusable cups cannot be used with delivery and online orders, which gained popularity during the COVID-19 pandemic when many people worked from home.

Table 15. Effects of Inconvenience on the Use of Reusable Cups

Document Name	Response
Consumer Survey	As an occasional coffee drinker when out and about, I have no intention of carrying around a reusable container "just in case," especially since I am on foot or on my bike most of the time (RESP40, Pos. 5).
Consumer Survey	The idea that I need to carry around a mug in case I want a drink is ridiculous (RESP165, Pos. 5).
Consumer Survey	Reusable cups need to be done in a way that is as convenient to people as possible—or you'll get pushback (RESP194, Pos. 5).

Table 16. Effects of Delivery and Online Orders

Document Name	Response
Consumer Survey	It's difficult now that I tend to order more delivery or pickup to reduce exposure (RESP219, Pos. 1).
Consumer Survey	[T]he pandemic encouraged increased ordering ahead, which precludes the use of reusables currently in use (RESP253, Pos. 2).

In **Table 17**, the results indicate a notable similarity in the responses from the City of Toronto and A&W regarding barriers stemming from inconvenience. Conversely, PCR did not express any concerns regarding consumer convenience.

Table 17. Importance of Consumer Convenience in Encouraging Behaviour Change

Document Name	Transcript
City of Toronto Interview	We do understand that not everybody can walk around with a reusable cup. Some people will never do it because it's too much of a hassle…but [for] some people, there's just no option because they don't have a reusable cup, or they can't sanitize the reusable cup every time they use it. (D. Boulos, personal communication, Pos. 122, June 2, 2022)
A&W Interview	It has to be easy for folks to bring an exchangeable cup back. It has to be easy to be sustainable. Otherwise, the people that really care about it will do it. The rest of them, if it's more difficult, even if they want to do the right thing, if it's not convenient to do, it won't get done. (Participant A, personal communication, Pos. 98, July 21, 2022)
A&W Interview	If you're not physically going to the restaurant, how do you exchange a cup? If you're ordering online or ordering delivery, that adds a layer of complexity in terms of cup exchanges and reusable [cup] programs (Participant A, personal communication, Pos. 226, July 21, 2022).
A&W Interview	[W]e can't make it more complicated for consumers to choose sustainable or to choose reusable than they can today with disposable, and that's a real challenge (Participant A, personal communication, Pos. 238, July 21, 2022).

Some respondents specifically raised concerns about the challenges faced by marginalized communities. **Table 18** presents the barriers contributing to inequitable opportunities for diverse populations. Additionally, **Table 19** indicates that the City of Toronto was taking into consideration the affordability aspect for marginalized communities. A&W also emphasized the importance of making reusable cup programs affordable for both consumers and businesses. PCR only addressed affordability concerns for their business.

Table 18. Effects of Inequitable Access on the Use of Reusable Cups

Document Name	Response
Consumer Survey	I have small hands and a disability—many are too easy to drop (RESP17, Pos. 3).

Table 18 (continued).

Consumer Survey	Education for the public…This info should be in all languages in community [newspapers]…Preaching to the same crowd is part of the problem. Find ways of reaching all [people] regardless of income [and] language barriers (RESP187, Pos. 4).
Consumer Survey	I can't go out in public—immuno-compromised—so someone is bringing me hot beverages. They don't have my cups necessarily (RESP195, Pos. 2).
Consumer Survey	I think that if you have lunatics [*sic*] measures, it penalizes homeless and under-housed folks who it wouldn't always make sense to add a person [*sic*] cup to their belongings if they're transient, and it's just one more thing to remember and can't afford an additional cost. (RESP237, Pos. 4)

Table 19. Importance of Affordability in Encouraging Behaviour Change

Document Name	**Transcript**
City of Toronto Interview	[For] people living on low income and people experiencing homelessness, a very huge consideration for us as we're developing this policy is how can we mitigate the challenges that those demographics and those residents of [Toronto] will face. We do understand that a cup of coffee is generally one of the most affordable things that people can buy. It gets them out of the cold and gets them something hot to drink, and we don't want to make that any more challenging than it is for some people. (D. Boulos, personal communication, Pos. 122, June 2, 2022)
A&W Interview	[I]t can't be a lot more expensive to choose reusable than it is disposable today…Participating in an exchangeable program, an external exchangeable program, at the minute is expensive for consumers and us…[I]f it's too expensive, and you're adding costs, pretty significant costs onto a product, hot beverage, or meal, that's [a] barrier. (Participant A, personal communication, Pos. 98, July 21, 2022)
PCR Interview	[I]n order to have an impact on sustainability, businesses also need to be sustainable, and that does include the costs and expenses of buying this packaging. That is definitely a challenge across the business because more sustainable solutions are a little bit more expensive. (Participant B, personal communication, Pos. 158, August 4, 2022)

The survey participants highlighted various obstacles to using reusable cups during the COVID-19 pandemic. **Table 20** indicates that the most predominant issue, accounting for 126 coded responses, was the non-acceptance of reusable cups by coffee retailers due to the fear of

germs and virus transmission. This non-acceptance caused some consumers to change their purchasing habits. **Table 21** features the noteworthy qualitative responses.

Table 20. Barriers to Using a Reusable Cup Caused by COVID-19

Code	Code Frequency
Non-acceptance due to fear of germs and virus transmission	126
Changed consumer habits	26
No COVID challenges	24
Sanitation	16
COVID misinformation	12

Note. Data is derived from the frequency of coded responses.

Table 21. Impact of Reusable Cup Non-acceptance During COVID-19

Document Name	Response
Consumer Survey	Starbucks would not accept reusable cups during the pandemic, so I stopped going there and also stopped using the company's loyalty program, which gave me free coffee quite regularly (RESP05, Pos. 2).
Consumer Survey	I'd say 90% of retailers in my downtown area refused to take my refillable cup, so I stopped purchasing coffee from retailers over a year ago (RESP196, Pos. 2).
Consumer Survey	[M]ost of the major chains wouldn't accept personal travel mugs. This made me buy less often and also pushed me to explore indie cafés in my area (who were still open to/encouraging reusable cups and mugs) (RESP249, Pos. 2).

During the COVID-19 pandemic, coffee retailers faced challenges in accepting reusable cups. **Table 22** highlights differences in perspectives between the municipality and coffee retailers. The City of Toronto, showing understanding of the situation, expressed that reusable cups can still be used safely. Conversely, coffee retailers, prioritizing the health and safety of their staff and customers, temporarily halted the acceptance of reusable cups during the height of the pandemic.

Table 22. Importance of Health and Safety on Business Practices

Document Name	Transcript
City of Toronto Interview	[D]efinitely businesses should always ensure that their staff feel safe. Staff who do not feel safe in a working environment should have a voice and should be able to state that they're not feeling safe…[A]ccording to all three levels of government, as long as the proper sanitary measures that are always supposed to be in place—washing hands, ensuring that cups are not contaminated and that they're sanitized properly—are followed then the risk of spreading [COVID-19] from one person to another is extremely low. (D. Boulos, personal communication, Pos. 136-137, June 2, 2022)
A&W Interview	[I]f you are using reusables or accepting a personal reusable cup, a staff member has to take that cup and has to refill the cup. We don't know where the cup has been…From a hygiene perspective, COVID-19 really brought that to light and also made a lot of people uncomfortable. People were uncomfortable bringing in the reusable cups, or franchisee staff were uncomfortable taking those cups. (Participant A, personal communication, Pos. 226, July 21, 2022)
PCR Interview	[W]e would incentivize our customers to bring their own cups…That obviously stopped because of the pandemic, and just the health and safety concerns of our staff…[A]nd everything was done using takeout cups. We had other focuses as a company during the pandemic, so the sustainability aspect of our programs stopped. (Participant B, personal communication, Pos. 55, August 4, 2022)

Lack of training and education on the safety of reusable cups has contributed to much of the stigma associated with such cups. In **Table 23**, survey participants expressed their dissatisfaction with the attitudes and practices of coffee retailer staff. This conduct was not solely attributed to COVID-19, as some respondents indicated that they experienced these issues even before the pandemic.

Table 23. Effects of Inadequate Staff Training by Coffee Retailers

Document Name	Response
Consumer Survey	At Tim's, I had a server measure out my coffee for my reusable mug with a disposable cup and then toss the disposable cup. Also, when presented with a reusable cup, coffee chain staff often seem confused or a little put out. (RESP117, Pos. 1)
Consumer Survey	More than once (even before COVID), I've brought my cup and then had the individual employee I'm dealing with either refuse it or use a paper cup first, then dump the coffee into my reusable. It's de-motivating to carry the mug around and have already spent the money only to see a paper cup used anyway. (RESP177, Pos. 1)
Consumer Survey	Stop arguing about sizing so much—i.e., pouring coffee into a paper cup and then into a reusable cup to ensure the size. It just needs to not be an argument (RESP255, Pos. 1).

Interestingly, some coffee retailer chains rejected reusable cups even after the pandemic: "For most of the pandemic, I simply didn't get takeout coffee since the cups weren't being accepted. However, now I've tried a few times at chains where reusables were supposed to be allowed again, but been refused" (Consumer Survey, RESP177, Pos. 2).

B. Approaches to Promote Sustainability

Three categories were analyzed within this section: 1) Pollution and Waste Prevention, 2) Stakeholder Collaboration, and 3) Encouraging Sustainable Solutions.

1. Pollution and Waste Prevention

Survey respondents were asked who should be responsible for paper cup waste. The results, as depicted in **Table 24,** reveal that 89.3% of participants want coffee retailers to assume this responsibility. **Table 25** presents the most salient qualitative responses related to social responsibility in coffee retailer practices. Moreover, in **Table 26**, the City of Toronto emphasized that reducing disposable cups would result in cost savings for businesses.

Table 24. Variable Statistics on Paper Cup Waste Accountability

Variable	Percentage valid (%)
Coffee retailers	89.30
Consumers	52.41
Municipality	48.66
TOTAL (valid)	187

Note. Data is derived from the selection frequency of the variables.

Table 25. Importance of Social Responsibility in Coffee Retailer Practices

Document Name	Response
Consumer Survey	The issue should lay with the companies creating the waste. Foisting praise or blame on consumers is regressive. If we want less waste, we must pass legislation that prohibits or punishes corporations for creating it (RESP173, Pos. 5).
Consumer Survey	People won't switch to reusables until it's easy, and businesses have an obligation to figure that out because they aren't paying the true cost of serving beverages in reusables to the City (RESP243, Pos. 5).
Consumer Survey	The larger, wasteful companies [Restaurant Brands International] need to pay for some of the damage they are creating (RESP253, Pos. 4).

Table 26. Benefits of Waste Reduction for Coffee Retailers

Document Name	Transcript
City of Toronto Interview	[T]here is a cost saving to businesses that's directly related to reducing the amount of [disposable cups] they distribute in their store…If they were to eliminate a certain percentage of [disposable cups] from what they distribute to their customers, theoretically, they would be saving that money, which could be additional revenue for them…It's cost avoidance for businesses to switch from disposable to reusable cups. (D. Boulos, personal communication, Pos. 75, June 2, 2022).

In the interviews, participants were asked about strategies to address the challenges in preventing paper cup waste. In **Table 27**, the City and A&W emphasized the importance of behaviour change through consistency and harmonization. PCR's approach focused on harmonizing business practices for dine-in services.

Table 27. Importance of Consistency and Harmonization in Preventing Paper Cup Waste

Document Name	Transcript
City of Toronto Interview	Right now, not everybody has a reusable cup…Let's work from this, and let's work towards once we can see a reduction, how do we get to the next stage? How do we get to that stage where the majority of people are drinking their hot beverages out of reusable cups? That we're keeping it out of the landfill, we're keeping it out of processing and recycling, we're keeping it out of organics, and we're keeping it out of the litter as well. (D. Boulos, personal communication, Pos. 193, June 2, 2022)
A&W Interview	[A] larger approach rather than the City of Toronto going at it alone, or different cities coming up with their own policies and bylaws…Everything has to be done at scale if we want to get where we want to go. If different municipalities or regions are making different changes, up the chain they can't make those large-scale changes that bring down the cost and make it convenient because they're having to change something here, something different here, something different here, and it doesn't make it. Economies of scale, we just won't get there…[A]lignment and a common vision would be incredibly helpful not just for us, but for everyone. (Participant A, personal communication, Pos. 222, July 21, 2022)
PCR Interview	[W]e try to serve all of our espressos in-house, and I think that is something other cafés can implement. It also creates a better experience, for me personally I think, when you're drinking coffee from a ceramic mug compared to a paper cup. (Participant B, personal communication, Pos. 198, August 4, 2022).

The interviews highlighted the challenges of preventing paper cup waste in dine-in scenarios. **Table 28** presents participant responses on the obstacles to integrating reusable mugs in coffee shops, such as space constraints and mug thefts.

Table 28. Challenges with Providing Mugs for Customers Dining-In

Document Name	Transcript
City of Toronto Interview	[S]ome establishments definitely have an extremely small footprint, or they have very little space to add cleaning services or dishwashers and drying racks on counter space…So, it's not a one-size-fits-all kind of approach…There are additional considerations and challenges for the variety of businesses we see in Toronto. (D. Boulos, personal communication, Pos. 228, June 2, 2022)

Table 28 (continued).

A&W Interview	The only places we don't have [dine-in mugs] are places like shopping malls or certain urban restaurants that can't do that or don't have a dishwasher (Participant A, personal communication, Pos. 102, July 21, 2022).
PCR Interview	**Participant B:** [At] certain locations, ceramic cups are available for customers dining-in. **Daniela Palma:** Why is it not available at all of your Toronto locations? **Participant B:** In one location, in particular, we have theft of ceramic cups…It's because of the way the café is situated. It's part of a communal area where customers are able to sit, so it's easier to do that. (Participant B, personal communication, Pos. 217-222, August 4, 2022)

The survey participants were asked to provide suggestions for preventing paper cup waste. The results in **Table 29** indicate 121 coded responses expressed a commitment to social responsibility, with specific codes detailing various actions that could be taken. The most frequently mentioned code is encouraging reusable cups. As outlined in **Table 30**, the City of Toronto preferred policy strategies that did not involve strict regulatory measures.

Table 29. Hierarchical Code Frequency on Paper Cup Waste Prevention

Theme	Code	Code Frequency
Social Responsibility		121
	Encourage reusable cups	60
	Public awareness campaign	20
	Remove barriers for customers	14
	Standardization	9
	Dine-in mugs	8
	Train staff	5
Recycle paper cups		81
	Recyclable/Compostable cups	58
	Labelled bins	10

Table 29 (continued).

Policy intervention		55
	Charge a fee for disposable cups	22
	Ban disposable cups	18
	Improve retailer practices	12
Consumer behaviour		15
	Change habits	13

Note. Data is derived from the frequency of coded responses. The numbers in the first row of each theme represent the combined totals of the codes within that theme, including those in the appendix.

Table 30. Policy Strategies for Paper Cup Waste Prevention

Document Name	Transcript
City of Toronto Interview	The goal is to eliminate, but realistically right now we're not expecting these items to be eliminated because of the policies we're implementing. If we wanted them to be eliminated, of course we can implement a ban policy, but we just did not feel that it is appropriate right now…We want to have that option; we just want to make that option the less attractive option. (D. Boulos, personal communication, Pos. 195, June 2, 2022)
City of Toronto Interview	[W]e don't want to penalize people for non-adherence of our bylaws when they're implemented. That is the last thing we want to do. We want to reduce the amount of [disposable cups] without negatively affecting residents and businesses (D. Boulos, personal communication, Pos. 216, June 2, 2022).

2. Stakeholder Collaboration

The survey results in **Table 31** indicate that respondents were in favour of particular actions being implemented or reinforced. Collaboration garnered the most support from survey participants, with over 80.6% in favour. **Table 32** provides examples of qualitative survey responses that discuss collaboration among consumers, coffee retailers, and the municipality. In addition, respondents highly supported other essential actions, indicating 68.6% for incentives and 68% for each one of awareness and policies.

Table 31. Preferred Strategies to Prevent Disposable Cup Waste

Variable	Percentage valid (%)
Collaboration	80.63
Incentives	68.59
Awareness	68.06
Policies	68.06
Marketing/Advertising	55.50
TOTAL (valid)	191

Note. Data is derived from the selection frequency of the variables.

Table 32. The Importance of Stakeholder Collaboration

Document Name	Response
Consumer Survey	It won't help to try and shame people into carrying cups…[W]e have to develop something that is sustainable for the society we live in (RESP32, Pos. 6).
Consumer Survey	[A]n effective solution would require cross-collaboration between businesses and the municipality. Perhaps [Business Improvement Areas] (with financial support from the municipality) could be in an interesting position to spearhead local neighbourhood-level initiatives [and] campaigns (RESP208, Pos. 5).
Consumer Survey	There should be more action - a lot of what is happening is greenwashing through marketing and advertising. Avoid the marketing aspect, [and] focus on awareness, collaboration [and] impact (RESP248, Pos. 5).

Support and collaboration are crucial for businesses and the City of Toronto. **Table 33** outlines insightful recommendations from interview participants on how they could support each other through collaboration. This strategy may encompass sharing best practices, fostering entrepreneurial partnerships, developing infrastructure, maintaining open communication, and offering business incentives.

Table 33. Comparison of Collaborative Approaches for Government and Business

Document Name	Transcript
City of Toronto Interview	There are businesses that are doing things very impressively right now that we would like to showcase, build on, and teach others. We have supports that we can give businesses right now, but we also want to hear from the successful businesses—use their teachings, use their learnings, use their experiences, and encourage others on how to reduce [disposable cups] in their businesses. (D. Boulos, personal communication, Pos. 84, June 2, 2022)
A&W Interview	[I]nfrastructure and communication, and then a common approach. To collaborate with businesses in terms of what it would look like, how it's going to be implemented, [and] how we can work together on it rather than decide on it, set a date, without infrastructure, without communicating with consumers, and without collaborating with business. (Participant A, personal communication, Pos. 242, July 21, 2022)
PCR Interview	[W]hat I am thinking or what they could provide would be an incentive program, a tax-back program, or the likes if we do offer it (i.e., BYOM program or dine-in services) on our menu (Participant B, personal communication, Pos. 226, August 4, 2022).

3. Encouraging Sustainable Solutions

Survey respondents were asked about strategies that could potentially encourage them to use reusable cups at coffee establishments. According to the results presented in **Table 34**, financial incentives received 159 coded responses. Furthermore, the most prevalent form of incentive identified was the provision of a discount. As revealed earlier, consumers requested discounts, and A&W and PCR already offered them (see **Table 6**, **Table 7**).

Table 34. Hierarchical Code Frequency on Encouraging Reusable Cup Use

Theme	Code	Code Frequency
Financial incentives		159
	Discount	92
	Deposit-return cup program	25
	Reward points	22

Table 34 (continued).

Accept reusable cups		65
	Promotion and education	31
	Allow use	16
	Train staff	15
Health and safety measures		18
	Sanitation	10
	Cup wash station	8

Note. Data is derived from the frequency of coded responses. The numbers in the first row of each theme represent the combined totals of the codes within that theme, including those in the appendix.

The deposit-return cup program ranked as the second most frequently mentioned initiative in the survey responses and the most frequently mentioned in the interview responses. **Table 35** presents the survey respondents' perspectives on deposit-return cup programs and reward points. Moreover, **Table 36** indicates strong support from the City of Toronto for businesses that adopted deposit-return cup programs. The interviews revealed code relations between deposit-return cup program and entrepreneurial partnerships, collaboration, and sanitary measures. A&W had implemented its own program, allowing cups to be exchanged at their locations. PCR was aware of deposit-return cup programs but had yet to incorporate one into its operations due to logistical challenges.

Table 35. Consumer Preference for Deposit-Return Cup Program and Reward Points

Document Name	Response
Deposit-Return Cup Program	
Consumer Survey	I would be likely to use this service. While I've heard of some select places doing this in Toronto, the scale isn't large enough for it to be convenient for me (I don't have a go-to coffee shop that does this, and it's not convenient for unplanned purchases)…This kind of service outweighs the small rewards individual brands might offer for using a [reusable] cup. (RESP129, Pos. 1)

Table 35 (continued).

Consumer Survey	A program where, for a deposit fee, you could essentially borrow and return a branded reusable cup to any chain location would help with unplanned purchases. For chains, the biggest thing would be a company-wide guarantee that the cup will be accepted. (RESP177, Pos. 1)
Reward points	
Consumer Survey	Additional Stars or Tim Points for using a reusable cup (RESP02, Pos. 1).
Consumer Survey	Give bigger rewards, like more points or even a combo offer (coffee and donut for $2.50 when you bring a reusable cup) (RESP54, Pos. 1).
Consumer Survey	[A] coffee loyalty card where you can get a free coffee after bringing a reusable cup a number of times (RESP188, Pos. 1).

Table 36. Incentivizing Reusable Cup Usage with a Deposit-Return Cup Program

Document Name	Transcript
City of Toronto Interview	There's already at least a handful of reusable cup-share programs within [Toronto]. These aren't funded by the City. We didn't put a call out for cup share programs to get started. There are people having success with it because they're great entrepreneurs, people taking risks, especially during COVID, but there's also businesses that have signed up for it. (D. Boulos, personal communication, Pos. 222, June 2, 2022)
A&W Interview	[Y]ou bring it back to an A&W, and we swap it out…[T]here's nothing stopping a guest from using this reusable [cup] somewhere else. Difference is with us that we'll swap it out, so you don't have to hold onto that same reusable piece. We'll take it, and we'll give you a fresh, clean, and sanitized one, and we'll take the one that you brought back, and we'll clean and sanitize that, then we'll use it for a different guest. (Participant A, personal communication, Pos. 74, July 21, 2022)
PCR Interview	We [are] aware of these possible solutions. We just wanted to know whether or not it would work for us because we're not a bigger company, but there's just a little bit more logistics involved in terms of the operations…[W]e try to keep the pulse in terms of what is out there, and we always have an open mind towards it, but we want to make sure that the solution is sustainable and sound in the long run. (Participant B, personal communication, Pos. 56, August 4, 2022)

The two other categories for promoting the use of reusable cups (see **Table 34**) encompass coded responses on promotion and education, acceptance of reusable cups, staff training, sanitation measures, and cup washing stations. **Table 37** displays noteworthy survey responses on some of

these strategies. Some respondents indicated they would be more inclined to use reusable cups if coffee establishments simply permitted it.

Table 37. Strategies for Promoting Consumer Adoption of Reusable Cups

Document Name	Response
Promotion and Education	
Consumer Survey	I would like to see more marketing encouraging the use of reusable beverage cups (bring your own cup) because I worry that bringing in my own cup is stigmatized, and I'll be looked down upon (RESP72, Pos. 1).
Consumer Survey	I would like them to always ask if I have [a reusable cup] before they start pouring (RESP120, Pos. 1).
Consumer Survey	[M]ore obvious signage…If I'm reminded about it enough, I'll surely start to bring my mug again (RESP126, Pos. 1).
Consumer Survey	[R]eminding customers [that] if they were to stay in, [they should] use reusable cups if retailers have that option as an offer (RESP211, Pos. 1).
Consumer Survey	They need to highlight the deforestation, waste, [and] difficulties in recycling [their coffee cups] (RESP253, Pos. 1).
Train staff	
Consumer Survey	[E]nsuring staff know it's acceptable –[this] would make it feel more like encouraged policy than a strange favour some customers request (RESP26, Pos. 1).
Consumer Survey	[A] bit of training and education about why reusable cups are a good thing would probably help (RESP117, Pos. 1).
Consumer Survey	Tell employees that if the containers are clean, they must agree to handle them without giving customers attitude. Give them the opportunity to wash their hands afterwards if they wish (RESP192, Pos. 4).
Sanitation	
Consumer Survey	If I could go through the drive-thru, tap to pay, and fill my own reusable cup at a touch-free fountain, I would definitely switch to reusable (RESP91, Pos. 1).
Consumer Survey	There may be some hesitancy on cleanliness…[I]t's important to consider how standardized and transparent the process is (RESP129, Pos. 1).
Consumer Survey	Reusable mug manufacturers should clearly mark [the] volume on the mugs so coffee retailers don't need to make/measure beverages in disposable [cups] first; [or] coffee retailers have a standard size reusable that they make/measure beverages in before pouring in customers' reusable mugs. (RESP152, Pos. 1)

Table 37 (continued).

Consumer Survey	[S]anitary measures visible to clients to ease COVID/influenza type anxieties: for instance, a designated filling station where you place your reusable cup, and they pour (using a no-touch procedure)…[A]dditionally a self serve one-cup sink with dish-soap dispenser for clients to clean their own cups, as needed for those mid-day refills. (RESP191, Pos. 1)

The interview participants discussed business strategies for encouraging the use of reusable cups. In **Table 38**, the municipality and coffee retailers agreed on the significance of promotion and education in driving behavioural change. A&W asserted that promotion should be the municipality's responsibility, while PCR indicated that promotion in their establishment helped to draw awareness. The results also reveal that coffee retailers considered standardization and sanitary protocols as crucial elements. Participants provided insights into the best practices for accepting reusable cups to minimize the risk of cross-contamination.

Table 38. Business Strategies Aimed at Promoting the Adoption of Reusable Cups

Document Name	Transcript
Promotion and Education	
City of Toronto Interview	[T]he most challenging thing when it comes to City policy is to make people do something differently. People will [have] posters in their businesses, and we're going to [have] bus ads and other public space education…There are a variety of methods that we'll be trying when reaching out to businesses and the general public in order to communicate our message and influence behaviour change. (D. Boulos, personal communication, Pos. 212, June 2, 2022)
A&W Interview	[D]irect communication from municipality to consumer, whether it's TV ads, social media ads…[A]wareness is a big thing and making sure that they get that out there as early as possible…Explaining the 'why' behind a lot of what's happening is very important. (Participant A, personal communication, Pos. 262, July 21, 2022)
PCR Interview	I think that what really worked was us promoting [discounts for using reusable cups] and also it being a topic of discussion for a lot of industries. It helped to really elevate that (Participant B, personal communication, Pos. 96, August 4, 2022).

Table 38 (continued).

Standardization	
A&W Interview	[W]e made [acceptance of reusable cups] a standard across all restaurants just before COVID (Participant A, personal communication, Pos. 126, July 21, 2022).
PCR Interview	[W]e've always just had it, and I think it was just part of an industry standard or an expectation where customers would be able to get a certain dollar or cent off if they bring their own mug (Participant B, personal communication, Pos. 68, August 4, 2022).
Sanitation	
City of Toronto Interview	We know that at some places you no longer hand them your cup, but you could put your cup in a larger size mug on a tray, and then they fill that up, so there's no contact between staff and your cup. (D. Boulos, personal communication, Pos. 132, June 2, 2022)
A&W Interview	[W]e have a procedure in place now where we can start to do that again…[T]he condition that the cup comes in is important, and the procedure has to be in place because we can't contaminate the equipment so that we're filling beverages after that. (Participant A, personal communication, Pos. 126, July 21, 2022)

The above results provide compelling insights into how sustainability and cultural factors impact hot beverage consumption. Stakeholders expressed positive attitudes toward their perceptions of sustainability. However, there was low consumer awareness, policy intervention, and business accountability regarding paper cup waste. Both consumers and the municipality expected businesses to take responsibility for paper cup waste and encourage the use of reusable cups. All participants agreed that stakeholder collaboration is essential. Consumers preferred financial incentives as a strategy to encourage their adoption of reusable cups, while businesses explained that the impact of such incentives was insignificant. The main determinants to promote a sustainable coffee cup culture included convenience, affordability, acceptance, and safety. The findings lay the groundwork for the subsequent section, wherein they will be analyzed, elucidated, and contextualized with existing literature.

PART V. Discussion

This study's central research question asks how Toronto can create a sustainable coffee cup culture. This question is supplemented by four questions: 1) How can waste management of paper cups benefit the city and coffee retailers? 2) What policies could effectively reduce or prevent paper cup waste? 3) How can Toronto address the challenges in reducing or preventing paper cup waste during COVID-19 and future pandemics? 4) How can Toronto sustainably reduce or prevent paper cup waste? This research involved studying consumer experiences, the practices of two coffee retailers on integrating sustainable considerations, and the waste management and reduction policies of the City of Toronto. The key findings are presented in four sections: A) Managing Paper Cup Waste, B) Implementing Policies for Paper Cup Waste Prevention, C) Preventing Paper Cup Waste During COVID-19 and Future Pandemics, and D) Supporting Sustainability in Toronto.

A. Managing Paper Cup Waste

This analysis uncovered a contradiction in attitudes and behaviours toward sustainable coffee cup culture. The findings of this study indicate that consumers were aware of the significant contribution of paper cups to pollution (see **Table 3**). However, an unexpected discovery from this study was that consumers equated sustainability with recycling and composting. Despite most consumers placing high importance on sustainability (see **Figure 5**), their behaviours did not prioritize reuse (see **Figure 6**, **Figure 8**, **Figure 9**, **Figure 10**). On the contrary, consumers viewed recyclable and compostable cups—often paradoxically referred to as 'sustainable cups'—as part of the solution to the waste problem (see **Table 9**, **Table 10**). This seemingly paradoxical result indicates that environmental attitudes, when among other possibly

conflicting attitudes, are insufficient predictors of actual consumer behaviour (Blake, 1999). Moreover, it seemed that businesses may be influencing consumer attitudes and behaviours by perpetuating the idea that recycling and composting are sustainable solutions for coffee cup waste reduction (see **Table 12**).

This study assessed whether improved diversion efforts could benefit the city and coffee retailers. It revealed that most paper cups are being sent to landfills, and a smaller percentage contaminates the recycling and organics bins due to improper disposal (see **Figure 10**). In addition to the challenges posed by inadequate infrastructure and a lack of end markets, effective paper cup recycling would first rely on consumers correctly disposing of them in the Blue Bin for easy collection (see **Table 11**). These results indicate that collecting a sufficient quantity of paper cups for recycling is currently not feasible due to the inconsistency in consumer disposal behaviour. The findings are consistent with previous studies that paper cups are often improperly sorted during disposal (Liu et al., 2021; Lazaruk, 2023). Therefore, disposable cups are unlikely to be ever recycled in Toronto because the prerequisites for effectively recycling this product have not been met.

The financial consequences of improper disposal are substantial. Prior research indicated that recycling processes incur prohibitive costs (Lakhan, 2015; Lakhan, 2016). The present study revealed that contamination in the recycling and organics streams leads to higher processing costs because paper cups have to be filtered out from other materials (see **Table 11**). Consumer awareness is crucial to avoid exorbitant waste management costs if it ever becomes feasible to recycle paper cups on a large scale.

The inconsistent waste management approaches across jurisdictions and businesses are a significant factor influencing improper disposal by consumers. While certain cities may accept

paper cups in the recycling and organics bins, this practice cannot be applied universally (see **Table 10**). The analysis indicated that waste diversion methods are disjointed across different municipalities and businesses due to varying infrastructures (see **Table 13**). This fragmentation causes confusion, which is a significant factor in why stakeholders have not successfully diverted paper cup waste. Harmonizing waste diversion practices could benefit the city and coffee retailers by reducing confusion and minimizing contamination.

B. Implementing Policies for Paper Cup Waste Prevention

The findings indicate that the City of Toronto and coffee retailers were not fully aligning their actions with their sustainability goals. Despite both the municipality and businesses aiming to decrease paper cup waste (see **Table 4**), the City of Toronto rarely enforced accountability on coffee retailers, and the retailers did not take responsibility for their waste (see **Table 12**). Moreover, each side believed that the other was an obstacle to pursuing its goals. Appropriate government regulation can serve as an impetus for coffee retailers to pursue shared value (Porter & Kramer, 2011). The findings of the present study highlight the absence of a strong perceived relationship between planned targets and tangible outcomes, which hinders Toronto from achieving a sustainable coffee cup culture within this research context.

The findings emphasize the need for businesses to take the lead in demonstrating accountability and dedication to their shared goals. Literature has noted that ESG reporting can be a mechanism for change (Valente, 2021). The data in this study clearly indicates that consumers strongly preferred coffee retailers to take accountability for the waste caused by their disposable cups (see **Table 24**, **Table 25**) and implement sustainable initiatives to prevent such waste (see **Table 29**). These preferences are crucial to understanding consumers' emotional

reactions to the business practices of coffee retailers. This study revealed that Toronto consumers were especially attentive to sustainability efforts, as they wanted to ensure that the brands they support adopt responsible practices.

The research findings highlight the crucial role of government in achieving sustainable behaviour change. Environmental regulation and stakeholder collaboration are needed to induce changes in consumer behaviour (Liu et al., 2021). The results in the present study unequivocally show that the pace of behaviour change is significantly slower and less sustainable without collaborative processes between the government and coffee retailers (see **Table 27**). Moreover, the City of Toronto seemed apprehensive about enforcing regulatory measures (see **Table 30**). However, without a strong policy to prevent paper cup waste and clear consequences for non-adherence, there may not be enough incentive for businesses to adopt the practice.

The government has a vital role in the early stages of shaping entrepreneurial partnerships until businesses can autonomously do so (Lacy & Rutqvist, 2015). This present study showed that collaboration between consumers, government, and coffee industry leaders could foster a sense of community involvement in sustainability and facilitate large-scale behaviour change by leveraging collective efforts and resources (see **Table 31**, **Table 32**, **Table 33**). In particular, the effectiveness of deposit-return cup programs could be significantly enhanced with stakeholder collaboration (see **Table 35**). This study underlines the importance of consultation with the business community and general public before implementing government policies. This consultation is crucial as it values the insights and experiences of all stakeholders, making them integral to the process.

C. Preventing Paper Cup Waste During COVID-19 and Future Pandemics

This study goes beyond previous studies by providing a more comprehensive analysis of the impact of health and safety factors on coffee retailers. During the COVID-19 pandemic, the fear of cross-contamination was a significant determinant of many coffee retailers refusing to accept reusable cups (see **Table 20**), which impeded consumers who wanted to use them (see **Table 21**). This non-acceptance revealed the employees' apprehension and discomfort in handling customers' personal cups during the pandemic (see **Table 22**). Despite the City of Toronto confirming the safety of reusable cups, coffee retailers still expressed concerns about risks and uncertainties. Thus, the acceptance of such cups was temporarily suspended during the COVID-19 pandemic due to its assumed impact on staff's ability to perform their duties efficiently.

It is important for businesses to properly train their staff to accommodate customers who bring their own reusable cups. The findings revealed that some coffee shop employees have displayed resistant attitudes and wasteful behaviours toward customers who bring their own cups (see **Table 23**). This conduct unfairly stigmatizes conscientious consumers as if they are going against societal norms. However, coffee retailers could make the use of reusable cups a normal social behaviour by training their staff to accommodate them, measuring beverages correctly, and adjusting sizes as needed (see **Table 37**). Improving sanitation practices would help shift societal attitudes and behaviours toward sustainability while ensuring the safety of employees and customers.

Improving health and safety in the workplace could advance the social conditions of the community, thereby enabling shared value (Porter & Kramer, 2011). With support from the municipality, businesses should communicate safety measures for accepting reusable cups and

provide information about cleaning protocols and safety assurances. The present study found that adopting comprehensive and consistent business practices could streamline the transition to reusable cups (see **Table 36**, **Table 38**). The success of these initiatives hinges on establishing uniform practices among coffee retailers (see **Table 27**), thereby making it a pleasant experience for businesses to prevent paper cup waste and accept customers' reusable cups. Therefore, the challenges could be effectively addressed by implementing sustainable business regulations and procedures that can be applied during pandemics.

D. Supporting Sustainability in Toronto

This study showed that promotion and education strategies that raise awareness about the environmental impacts of paper cups and the benefits of waste prevention could help drive behavioural change in Toronto (see **Table 38**). Emphasizing the advantages of using reusable cups, alongside other intervention methods, may increase participation and facilitate the transition to a sustainable coffee cup culture. However, it is essential to note that promotion and education done in isolation from other strategies are unlikely to have a significant impact, as previous studies have demonstrated (Lakhan, 2014; Poortinga & Whitaker, 2018).

Making desired behaviours more convenient can reinforce personal and social norms. Research has revealed that inconvenience often poses a significant obstacle to behaviour change (Lee, 2016). The present study underscores that providing convenience would have the greatest impact on influencing consumers to adopt reusable cups (see **Table 14**). Internal and external factors influencing how easily consumers could use reusable cups directly affected their intention to use them and their reuse behaviour (see **Table 15**, **Table 16**). The City of Toronto and A&W also acknowledged convenience as an essential factor (see **Table 17**). This study identified

strategies that could help mitigate convenience-related barriers (see **Table 37**). These findings suggest that removing barriers for consumers to make sustainable choices could significantly boost reusable cup adoption rates.

This research study adds to the existing body of knowledge by examining the effectiveness of financial incentives in promoting sustainable hot beverage consumption among consumers. The study's findings indicate that most consumers showed a preference for receiving a discount as an incentive to use reusable cups (see **Table 6**, **Table 34**), while a small number of consumers did not need any incentive at all. Even though discounts of certain dollar amounts have been offered to encourage consumers to use reusable cups (see **Table 7**), the impact of this incentive appeared to be generally small and insignificant (see **Table 8**). This discrepancy between consumers' attitudes and behaviours exemplifies the value-action gap (Blake, 1999). Therefore, an externally mediated financial incentive may not be an effective motivational mechanism (Deci, 1971; Frey & Oberholzer-Gee, 1997). The current study revealed a significant insight: consumers place less emphasis on discounts, regardless of their value, compared to the perceived barriers that hinder their participation in reusable cup programs. Thus, even with financial incentives, achieving long-term behaviour change is highly improbable if participation remains challenging.

Financial incentives as a method for encouraging reusable cup usage may also have socioeconomic consequences. People from marginalized communities, such as those without housing, individuals with disabilities, and English language learners, may face greater challenges in accessing reusable cups. These communities might struggle to afford or carry a reusable cup, leading to their exclusion from incentive programs and the associated benefits (see **Table 18**). The findings indicate that affordability is a critical factor for consumers, mainly because

sustainable options such as deposit-return cup programs are often more costly (see **Table 19**). While some studies found that offering discounts did not significantly increase the use of reusable cups (Lee, 2016; Poortinga & Whitaker, 2018), the current study additionally emphasizes the importance of inclusivity, which is crucial for creating a socially sustainable coffee cup culture. These findings underscore that coffee retailers can create shared value by ensuring that marginalized groups have equitable access to the advantages of reusable cups.

From this standpoint, financial incentives alone are unlikely to successfully establish consumers' habitual and consistent use of reusable cups. It is thus improper to assume that financial incentives represent the definitive solution to the problem. On the contrary, intrinsic motivation is enhanced through verbal reinforcement, social approval, and human autonomy (Deci, 1971; ThØgersen,1994). The present study found that initiatives could instead focus on enhancing acceptance and sanitation protocols (see **Table 37**, **Table 38**). A multifaceted approach is needed to foster loyalty and encourage consumers to opt for reusable cups over disposable cups.

This study provides compelling evidence that strengthening the waste prevention infrastructure would be advantageous for coffee retailers. The decision not to accept reusable cups during COVID-19 moderately impacted consumer habits, causing some individuals to reduce their hot beverage purchases and prompting others to support smaller, independent coffee shops (see **Figure 9**, **Table 21**). Consumers also desired to feel a sense of accomplishment knowing that their purchasing choices could contribute to waste prevention in a small yet palpable way (see **Table 23**). These findings are consistent with prior research highlighting the influence of business practices on consumer perceptions and loyalty (Jang et al., 2015). A prudent business model would leverage these positive sentiments. While consumers expressed

support for waste prevention initiatives (see **Table 34**), they needed practical ways to participate (**Table 35**, **Table 37**). By prioritizing sustainability, coffee retailers can distinguish themselves from their competitors, bolster their reputation as leaders in sustainable practices, and empower consumers to change their behaviour (Porter & Kramer, 2011). The present study found that coffee retailers can appeal to conscientious consumers who value businesses that positively contribute to society and the environment.

Implementing sustainable solutions that prevent paper cup waste will lead to long-term cost savings for coffee retailers and the City of Toronto. Previous research has indicated that businesses prioritize cost over sustainability (Chou et al., 2012). This current study reaffirms that cost is crucial in business decisions on whether to adopt green initiatives (see **Table 19**). However, many coffee retailers invest in sustainability because they understand it gives them a competitive edge (see **Table 36**, **Table 38**). The findings demonstrate strong overall cost-saving opportunities—reducing waste management costs, avoiding landfill disposal fees, and optimizing resource utilization—if coffee retailers and the municipality prioritize waste reduction and prevention (see **Table 11**, **Table 26**, **Table 28**). The municipality could invest in waste prevention infrastructure that supports reusable cup usage and offer incentives to coffee retailers that prioritize reusable cups (see **Table 33**). Furthermore, the City of Toronto could publicly recognize and share success stories of businesses that have successfully transitioned to reusable cups. In this regard, municipal support through positive public relations is a cost-effective method for coffee retailers to show leadership in sustainability and boost revenue.

PART VI. Conclusion

A. Summary

This study identified and examined a complicated relationship between coffee cup culture and sustainability. The growing emphasis on sustainability within hot beverage consumption has captured the attention of consumers, government entities, and coffee retailers. This study's central research question asked how Toronto can create a sustainable coffee cup culture and was supplemented by four questions: 1) How can waste management of paper cups benefit the city and coffee retailers? 2) What policies could effectively reduce or prevent paper cup waste? 3) How can Toronto address the challenges in reducing or preventing paper cup waste during COVID-19 and future pandemics? 4) How can Toronto sustainably reduce or prevent paper cup waste? Establishing a sustainable coffee cup culture in Toronto would necessitate a multifaceted approach encompassing various initiatives working in tandem.

The research findings underscore the significant value placed on stakeholder collaboration. All actors can be brought together and use the energy formerly expended on resistance to work harmoniously toward mutually satisfactory outcomes. Municipal policies would play a pivotal role in the initial stages of development. The City of Toronto, with its unique position and influence, could provide proactive leadership to coffee retailers and prioritize measures to hold them accountable. On the other hand, businesses have the power to positively influence the policy environment and the progression of sustainability on a broader scale. Factors such as convenience and affordability were identified as pivotal in driving widespread and enduring changes in consumer behaviour and business practices. It is particularly crucial to balance health and safety concerns with sustainability goals to mitigate potential declines in the use of reusable cups during future pandemics.

This study makes significant contributions to the broader literature on reducing and preventing paper cup waste, particularly in a Toronto context, and provides valuable insights for further scholarly exploration. I have demonstrated that Toronto's current policies and practices are unsuccessful in cultivating a sustainable culture around coffee cup usage. By addressing the research questions regarding how Toronto *can* establish a sustainable coffee cup culture, this study critically highlighted the areas that necessitate attention. Areas of research that remained outside the purview of this study were the impacts of demographic variables on survey participants, business practices within a larger interview sample size, and EPR as a policy approach. A potential avenue for future research could be an in-depth exploration into the specific experiences of marginalized communities. It is recommended that future research within the academic community builds upon this study and delves into these areas.

The transition to reusable cups represents more than a simple substitution for disposable cups. It embodies a cultural shift towards a sustainable consumption model. Prioritizing the adoption of reusable cups as the norm rather than an alternative offers numerous advantages to urban areas, including environmental preservation, cost savings, and community well-being. The key to fostering a culture of sustainability is a consistent and dedicated approach that leverages strategic policymaking and public participation. With collective effort, strategic foresight, and a commitment to sustainability, the potential for positive transformation is immense.

B. Recommendations

Action Item	Recommendations
Infrastructure	• Strengthen the waste prevention infrastructure to make sustainable coffee consumption easy for coffee retailers to implement and convenient for consumers to participate (i.e., deposit-return cup programs, cup wash stations, mobile and drive-thru orders).
Policies	• Government: Set ambitious yet adaptable waste prevention regulations and hold businesses responsible for policy adherence. Accelerate the shift to reusable cups with financial assistance for coffee retailers who integrate waste prevention infrastructure into their establishments. • Coffee retailers: Adopt responsible business practices that support the municipality in preventing waste.
Collaboration	• Coordinate efforts to collect data, gather customer feedback, regularly evaluate the impact of policies and practices, identify areas for improvement or expansion, and adjust strategies as needed.
Accountability	• Apply uniform and consistent practices for reusable cup acceptance. • Implement transparent accountability measures to prevent paper cup waste by using ESG metrics and performance indicators, meeting deadlines, and achieving milestones.
Incentives	• Incentivize customers through convenience, affordability, acceptance, and safety. • Foster consumer loyalty and positive attitudes toward reusable cups.
Equity	• Ensure marginalized communities can access the benefits of reusable cups. • Provide free or heavily subsidized reusable cups or include the cost of such cups in the price of a hot beverage.
Safety	• Implement safe handling practices to maintain public health standards and reduce the perceived or actual risk of virus transmission. • Utilize signage to convey information about safety assurances and the cleaning protocols implemented for reusable cups. • Consistently monitor public health updates, customer feedback, and trends in reusable cup usage during pandemics. • Adapt practices based on evolving circumstances and guidelines to ensure compliance and safety.
Education	• Utilize promotion and education materials, alongside other intervention methods, to emphasize the advantages of using reusable cups and increase participation. • Ensure coffee retailer staff are trained on best practices to promote and accept reusable cups.

Bibliography

10 Largest food chains in Canada. (2024). [Dataset]. ScrapeHero. https://www.scrapehero.com/location-reports/10-largest-food-chains-in-canada/

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Andersen, S. O., Halberstadt, M. L., & Borgford-Parnell, N. (2013). Stratospheric ozone, global warming, and the principle of unintended consequences—An ongoing science and policy success story. *Journal of the Air & Waste Management Association*, *63*(6), 607–647. https://doi.org/10.1080/10962247.2013.791349

Angelonidi, E., & Smith, S. R. (2015). A comparison of wet and dry anaerobic digestion processes for the treatment of municipal solid waste and food waste. *Water and Environment Journal*, *29*(4), 549–557. https://doi.org/10.1111/wej.12130

Annual Landfill Report. (2021). Ontario Waste Management Association. https://www.owma.org:443/cpages/landfills

Bains, N., Pickett, W., & Hoey, J. (1998). The Use and Impact of Incentives in Population-Based Smoking Cessation Programs: A Review. *American Journal of Health Promotion*, *12*(5), 307–320. https://doi.org/10.4278/0890-1171-12.5.307

Ball, D. P. (2022, January 11). *Vancouver's new takeout packaging fees have an outsized impact on homeless people, charity says*. CBC News. https://www.cbc.ca/news/canada/british-columbia/oddfellows-vancouver-fast-food-bag-fee-1.6309043

Bandini, F., Frache, A., Ferrarini, A., Taskin, E., Cocconcelli, P. S., & Puglisi, E. (2020). Fate of Biodegradable Polymers Under Industrial Conditions for Anaerobic Digestion and Aerobic

Composting of Food Waste. *Journal of Polymers and the Environment*, *28*(9), 2539–2550. https://doi.org/10.1007/s10924-020-01791-y

Berger, J. (2019). Signaling can increase consumers' willingness to pay for green products. Theoretical model and experimental evidence. *Journal of Consumer Behaviour*, *18*(3), 233–246. https://doi.org/10.1002/cb.1760

Bilek, M. A., Salem, H. J., Korehei, R., & Olson, J. A. (2021). Recycling Paper-Plastic laminate coffee cups using a Single-Disk Refiner: Energy requirements and recovered fiber quality. *Waste Management*, *136*, 104–112. https://doi.org/10.1016/j.wasman.2021.10.008

Blair, K. (2022). *2022 Litter Audit* (TOR_WA2223_001). AET Group Inc. https://www.toronto.ca/wp-content/uploads/2021/02/8de3-Toronto-Litter-2020Final-Report.pdf

Blake, J. (1999). Overcoming the 'Value-Action Gap' in Environmental Policy: Tensions between national policy and local experience. *Local Environment*, *4*(3), 257–278. https://doi.org/10.1080/13549839908725599

Bogaert, J.-C., & Coszach, P. (2000). Poly(lactic acids): A potential solution to plastic waste dilemma. *Macromolecular Symposia*, *153*(1), 287–303. https://doi.org/10.1002/1521-3900(200003)153:1<287::AID-MASY287>3.0.CO;2-E

Borg, K., Curtis, J., & Lindsay, J. (2020). Social norms and plastic avoidance: Testing the theory of normative social behaviour on an environmental behaviour. *Journal of Consumer Behaviour*, *19*(6), 594–607. https://doi.org/10.1002/cb.1842

Boulos, D. (2022, June 2). *Personal Communication* (D. Palma, Interviewer) [Personal communication].

Britten, L. (2023, February 15). *Vancouver votes to scrap 25-cent fee for disposable cups*. CBC News. https://www.cbc.ca/news/canada/british-columbia/vancouver-scraps-disposable-cup-fee-1.6750170

Canada (Attorney General) v. Responsible Plastic Use Coalition, A-337-23 (Federal Court of Appeal January 25, 2024). https://canlii.ca/t/k2h3m

Canada's coffee shops begin the long road to recovery. (2020, October 6). Allegra World Coffee Portal. https://www.worldcoffeeportal.com/Latest/News/2020/October/Canada-s-coffee-shops-begin-long-road-to-recovery

Carter, N. (2007). *The Politics of the Environment: Ideas, Activism, Policy*. University Press.

Cater, L. (2024, March 4). *EU to ban single-use plastic in deal on new green packaging rules*. POLITICO. https://www.politico.eu/article/eu-ban-single-use-plastic-packaging-deal-green-rules/

Census Profile, Toronto, City (C) [Census subdivision], Ontario. (2021). [Dataset]. Statistics Canada Catalogue No. 98-316-X2021001. Ottawa. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Toronto&DGUIDlist=2021A00053520005&GENDERlist=1,2,3&STATISTIClist=1,4&HEADERlist=0

Chou, C.-J., Chen, K.-S., & Wang, Y.-Y. (2012). Green practices in the restaurant industry from an innovation adoption perspective: Evidence from Taiwan. *International Journal of Hospitality Management*, *31*(3), 703–711. https://doi.org/10.1016/j.ijhm.2011.09.006

Chung, E. (2024, July 4). Coffee cups are now accepted for recycling in Toronto. *CBC News*. https://www.cbc.ca/news/science/coffee-cup-recycling-1.7254058

City of Toronto 2023 rate-supported budget for Solid Waste Management Services. (2023, January 10). City of Toronto. https://www.toronto.ca/news/city-of-toronto-2023-rate-supported-budget-

for-solid-waste-management-services/#:~:text=The%20tabled%202023%20Solid%20Waste,funding%20carried%20forward%20from%202022)

City of Toronto Housing Data Book. (2023). City of Toronto. https://www.toronto.ca/wp-content/uploads/2023/03/94f2-CityPlanningHousingSecretariatDataBookMarch2023.pdf

Comăniță, E.-D., Hlihor, R. M., Ghinea, C., & Gavrilescu, M. (2016). Occurrence of plastic waste in the environment: Ecological and health risks. *Environmental Engineering & Management Journal (EEMJ)*, *15*(3), 675–685. https://doi.org/10.30638/eemj.2016.073

Corsini, F., Gusmerotti, N. M., Testa, F., & Iraldo, F. (2018). Exploring waste prevention behaviour through empirical research. *Waste Management*, *79*, 132–141. https://doi.org/10.1016/j.wasman.2018.07.037

Creswell, J. W. (2007). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (2nd Edition). Sage Publications.

de Sá, L. C., Oliveira, M., Ribeiro, F., Rocha, T. L., & Futter, M. N. (2018). Studies of the effects of microplastics on aquatic organisms: What do we know and where should we focus our efforts in the future? *Science of The Total Environment*, *645*(Complete), 1029–1039. https://doi.org/10.1016/j.scitotenv.2018.07.207

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*(1), 105–115. https://doi.org/10.1037/h0030644

Elenis, T., & Macgregor, T. (2023, December 8). *RC ORHMA Feedback on City of Toronto SU and Takeaway Items Strategy.pdf*. https://www.toronto.ca/legdocs/mmis/2023/cc/comm/communicationfile-174200.pdf

Elliott, M. (2021, June 8). New blue bin system will finally recycle Tim Hortons, Starbucks cups. But Toronto also needs to cut demand. *The Toronto Star*. https://www.thestar.com/opinion/contributors/2021/06/08/new-blue-bin-system-will-finally-recycle-tim-hortons-starbucks-cups-but-toronto-also-needs-to-cut-demand.html

Fantozzi, J. (2020). Reusables movement hits speed bump during coronavirus pandemic. *Restaurant Hospitality*. http://www.proquest.com/docview/2376914289/abstract/426FD040B7E44EFCPQ/1

Fearnley-Whittingstall, H. (2016, July 27). Viewpoint: The waste mountain of coffee cups. *BBC*. https://www.bbc.com/news/magazine-36882799

Fetner, H., & Miller, S. A. (2021). Environmental payback periods of reusable alternatives to single-use plastic kitchenware products. *International Journal of Life Cycle Assessment*, *26*(8), 1521–1537. https://doi.org/10.1007/s11367-021-01946-6

Filimonau, V., Krivcova, M., & Pettit, F. (2019). An exploratory study of managerial approaches to food waste mitigation in coffee shops. *International Journal of Hospitality Management*, *76*, 48–57. https://doi.org/10.1016/j.ijhm.2018.04.010

Final Long Term Waste Management Strategy. (2016, July 15). City of Toronto. https://www.toronto.ca/wp-content/uploads/2017/10/9803-Final-Long-Term-Waste-Management-Strategy.pdf

Foteinis, S. (2020). How small daily choices play a huge role in climate change: The disposable paper cup environmental bane. *Journal of Cleaner Production*, *255*(120294). https://doi.org/10.1016/j.jclepro.2020.120294

Four-Step Fee Model. (2021). [Dataset]. Stewardship Ontario. https://stewardshipontario.ca/wp-content/uploads/2020/12/2021-SO-Four-Step-Fee-Model-ABC.xlsx

Frey, B. S., & Oberholzer-Gee, F. (1997). The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding- Out. *The American Economic Review*, *87*(4), 746–755.

Fusch, P., & Ness, L. (2015). Are We There Yet? Data Saturation in Qualitative Research. *Qualitative Report*, *20*(9), 1408-. https://doi.org/10.46743/2160-3715/2015.2281

García-Depraect, O., Bordel, S., Lebrero, R., Santos-Beneit, F., Börner, R. A., Börner, T., & Muñoz, R. (2021). Inspired by nature: Microbial production, degradation and valorization of biodegradable bioplastics for life-cycle-engineered products. *Biotechnology Advances*, *53*. https://doi.org/10.1016/j.biotechadv.2021.107772

Griffith-Greene, M. (2016). *Coffee cups: 3 months later, are they being recycled at Tim Hortons and Starbucks?* CBC Marketplace. https://www.cbc.ca/news/business/coffee-cups-3-months-later-are-they-being-recycled-at-tim-hortons-and-starbucks-1.3424361

Harris, S. (2021, August 25). *Is it time to end the COVID-19 ban on reusable coffee cups?* CBC News. https://www.cbc.ca/news/business/reusable-mugs-startucks-1.6150399

Health Protection and Promotion Act, R.S.O., 943/17, Ontario Ministry of Health, c. H.7 (1990). https://www.ontario.ca/laws/view

How to Recycle Your Paper Cups. (2023). National Cup Recycling Scheme. https://www.cuprecyclingscheme.co.uk/how-to-recycle-paper-cups

Ontario population projections. (2021, June 23). Government of Ontario. http://www.ontario.ca/page/ontario-population-projections

Impact Report. (2023). Ocean Wise Shoreline Cleanup. https://oceanorg.blob.core.windows.net/oceanorg/2024/05/e-SC_ImpactReport2023.pdf

Irfan, M., Ahmad, M., Fareed, Z., Iqbal, N., Sharif, A., & Wu, H. (2021). On the indirect environmental outcomes of COVID-19: Short-term revival with futuristic long-term

implications. *International Journal of Environmental Health Research*, 1–11. https://doi.org/10.1080/09603123.2021.1874888

Jang, Y. J., Kim, W. G., & Lee, H. Y. (2015). Coffee shop consumers' emotional attachment and loyalty to green stores: The moderating role of green consciousness. *International Journal of Hospitality Management*, *44*, 146–156. https://doi.org/10.1016/j.ijhm.2014.10.001

Jarvis, C., & Robinson, M. (2019, April 29). *Is Canada's recycling industry broken?* Global News. https://globalnews.ca/news/5199883/canada-recycling-programs/

Kahneman, D. (2013). *Thinking, Fast and Slow*. Random House Canada.

Kampf, G., Todt, D., Pfaender, S., & Steinmann, E. (2020). Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *Journal of Hospital Infection*, *104*(3), 246–251. https://doi.org/10.1016/j.jhin.2020.01.022

Keil, R., Ollevier, M., & Tsang, E. (2009). Why is There No Environmental Justice in Toronto? Or Is There? In J. Agyeman, P. Cole, R. Haluza-DeLay, & P. O'Riley (Eds.), *Speaking for Ourselves: Environmental Justice in Canada*. UBC Press.

Keliher, M. (2021). *Single-Use and Takeaway Items Reduction Strategy—Stage 1*. Infrastructure and Environment Committee. www.toronto.ca/legdocs/mmis/2021/ie/bgrd/backgroundfile-166832.pdf

Keliher, M. (2023a). *Long-Term Residual Waste Management Options for the City of Toronto*. City of Toronto. https://www.toronto.ca/legdocs/mmis/2023/ie/bgrd/backgroundfile-236733.pdf

Keliher, M. (2023b). *Update and Action Plan on the Single-Use and Takeaway Items Reduction Strategy, including the Circular Food Innovators Fund*. https://www.toronto.ca/legdocs/mmis/2023/ie/bgrd/backgroundfile-240760.pdf

Kinzig, A. P., Ehrlich, P. R., Alston, L. J., Arrow, K., Barrett, S., Buchman, T. G., Daily, G. C., Levin, B., Levin, S., Oppenheimer, M., Ostrom, E., & Saari, D. (2013). Social Norms and Global Environmental Challenges: The Complex Interaction of Behaviors, Values, and Policy. *BioScience*, *63*(3), 164–175. https://doi.org/10.1525/bio.2013.63.3.5

Krmek, A., Brillinger, M.-H., Garrick, C., & Sawyer, D. (2023, June 7). *Guidance on Foodservice Ware and Accessory Items Product Alternatives for Businesses*. https://www.toronto.ca/wp-content/uploads/2023/06/9912-20230607-RSUP-Webinar-3Web-Version-FINALAODA.pdf

Lacy, P., & Rutqvist, J. (2015). *Waste to Wealth: The Circular Economy Advantage* (First edition). Palgrave Macmillan.

Lakhan, C. (2014). Exploring the relationship between municipal promotion and education investments and recycling rate performance in Ontario, Canada. *Resources, Conservation & Recycling*, *92*, 222–229. https://doi.org/10.1016/j.resconrec.2014.07.006

Lakhan, C. (2015). Diversion, but at what cost? The economic challenges of recycling in Ontario. *Resources, Conservation & Recycling*, *95*, 133–142. https://doi.org/10.1016/j.resconrec.2014.12.007

Lakhan, C. (2016). Optimizing emissions targets for residential recycling programmes: Why 'more' is not necessarily better with respect to diversion. *Waste Management & Research*, *34*(11), 1148–1156. https://doi.org/10.1177/0734242X16659923

Lamberti, F. M., Román-Ramírez, L. A., & Wood, J. (2020). Recycling of Bioplastics: Routes and Benefits. *Journal of Polymers and the Environment*, *28*(10), 2551–2571.

Lazaruk, S. (2023, March 16). *Tim Hortons is experimenting with returnable cups. I tried it out and here's how it went*. Vancouver Sun. https://vancouversun.com/news/local-news/tim-hortons-returnable-cups-experiment

Lee, H., Papari, S., Bernardini, G., Gallorini, R., Rosi, L., & Berruti, F. (2023). Value-added products from waste: Slow pyrolysis of used polyethylene-lined paper coffee cup waste. *The Canadian Journal of Chemical Engineering*, *101*(3), 1271–1285. https://doi.org/10.1002/cjce.24472

Lee, J. (2016). A study for increasing reusable and personal cup consumption in the coffee industry: Focused on behavior change with motivation. *Journal of Korea Design Forum*, *53*, 327–340. https://doi.org/10.21326/ksdt.2016..53.028

Liu, C., Thang Nguyen, T., & Ishimura, Y. (2021). Current situation and key challenges on the use of single-use plastic in Hanoi. *Waste Management*, *121*, 422–431. https://doi.org/10.1016/j.wasman.2020.12.033

McDonough, W., & Braungart, M. (2002). *Cradle to Cradle: Remaking the Way We Make Things* (1st ed.). North Point Press.

Meadows, D. H. (2008). *Thinking in Systems: A Primer* (D. Wright, Ed.). Chelsea Green Publishing.

Méndez, M. (2020). *Climate Change from the Streets: How Conflict and Collaboration Strengthen the Environmental Justice Movement*. Yale University Press.

Morales-Caselles, C., Viejo, J., Marti, E., González Fernández, D., Pragnell-Raasch, H., González-Gordillo, J., Montero, E., Munoz Arroyo, G., Hanke, G., Salvo, V.-S., Basurko, O., Mallos, N., Lebreton, L., Echevarría, F., van Emmerik, T., Duarte, C., Gálvez, J., Galgani, F., García, C., & Cózar, A. (2021). An inshore-offshore sorting system revealed from global classification of ocean litter. *Nature Sustainability*, *4*. https://doi.org/10.1038/s41893-021-00720-8

Nabatchi, T., & Leighninger, M. (2015). *Public Participation for the 21st Century Democracy*. Wiley.

Neeltje, van D., Trenton, B., Morris, D. H., Holbrook, M. G., Amandine, G., Williamson, B. N., Azaibi, T., Harcourt, J. L., Thornburg, N. J., Gerber, S. I., Lloyd-Smith, J. O., & Emmie, de W.

(2020). Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *The New England Journal of Medicine*, *382*(16), 1564–1567. https://doi.org/10.1056/NEJMc2004973

Nicolau, J. L., Stadlthanner, K. A., Andreu, L., & Font, X. (2022). Explaining the willingness of consumers to bring their own reusable coffee cups under the condition of monetary incentives. *Journal of Retailing and Consumer Services*, *66*. https://doi.org/10.1016/j.jretconser.2022.102908

Nowell, C. (2024, January 22). The disposable cup crisis: What's the environmental impact of a to-go coffee? *The Guardian*. https://www.theguardian.com/environment/2024/jan/22/disposable-coffee-cups-environmental-impact

Odegard, I., Nusselder, S., Roos Lindgreen, E., Bergsma, G., & de Graaff, L. (2017). *Biobased plastics in a circular economy. Policy suggestions for biobased and biobased biodegradable plastics* (17.2J66.74). Ministry of Infrastructure and Environment. https://cedelft.eu/publications/biobased-plastics-in-a-circular-economy/

Palma, D. (2022). *Consumer Survey on Hot Beverage Cup Waste* [Survey; Online]. SurveyMonkey. https://www.surveymonkey.com/r/Consumer-Survey-on-Hot-Beverage-Cup-Waste

Paper Cups Market Report by Cup Type, Wall Type, Application, End User, Distribution Channel, and Region 2024-2032 (SR112024A632). (2023). IMARC Group. https://www.imarcgroup.com/paper-cups-manufacturing-plant

Park, M. Y. (2014, May 30). A Brief History of the Disposable Coffee Cup. *Bon Appétit*. https://www.bonappetit.com/entertaining-style/trends-news/article/disposable-coffee-cup-history

Participant A. (2022, July 21). *Personal Communication* (D. Palma, Interviewer) [Personal communication].

Participant B. (2022, August 4). *Personal Communication* (D. Palma, Interviewer) [Personal communication].

Patrício Silva, A. L., Prata, J. C., Walker, T. R., Campos, D., Duarte, A. C., Soares, A. M. V. M., Barcelò, D., & Rocha-Santos, T. (2020). Rethinking and optimising plastic waste management under COVID-19 pandemic: Policy solutions based on redesign and reduction of single-use plastics and personal protective equipment. *Science of The Total Environment*, *742*, 140565. https://doi.org/10.1016/j.scitotenv.2020.140565

Piret, J., & Boivin, G. (2021). Pandemics Throughout History. *Frontiers in Microbiology*, *11*. https://doi.org/10.3389/fmicb.2020.631736

Poortinga, W., & Whitaker, L. (2018). Promoting the Use of Reusable Coffee Cups through Environmental Messaging, the Provision of Alternatives and Financial Incentives. *Sustainability*, *10*(3), 873. https://doi.org/10.3390/su10030873

Pope, K. (2020). *Global Waste Management: Models for Tackling the International Waste Crisis*. Kogan Page.

Porter, M. E., & Kramer, M. R. (2011). Creating Shared Value. *Harvard Business Review*, *89*(1/2), 62–77.

Potting, J., & van der Harst, E. (2015). Facility arrangements and the environmental performance of disposable and reusable cups. *The International Journal of Life Cycle Assessment*, *20*(8), 1143–1154. https://doi.org/10.1007/s11367-015-0914-7

Prins, S. (2023, December 12). *A letter in response to IE9.3, the Single-Use and Takeaway Items Reduction Strategy*. https://www.toronto.ca/legdocs/mmis/2023/cc/comm/communicationfile-174267.pdf

Responsible Plastic Use Coalition v. Canada (Environment and Climate Change), T-824-21 (Federal Court November 16, 2023). https://canlii.ca/t/k165h

Robinson, L. (2012). *Changeology: How to Enable Groups, Communities and Societies to Do Things They've Never Done Before*. Green Books.

Schnurr, R. E. J., Alboiu, V., Chaudhary, M., Corbett, R. A., Quanz, M. E., Sankar, K., Srain, H. S., Thavarajah, V., Xanthos, D., & Walker, T. R. (2018). Reducing marine pollution from single-use plastics (SUPs): A review. *Marine Pollution Bulletin*, *137*, 157–171. https://doi.org/10.1016/j.marpolbul.2018.10.001

Schofield, J. W. (2009). Increasing the Generalizability of Qualitative Research. In *Case Study Method* (pp. 69–97). SAGE Publications Ltd. https://doi.org/10.4135/9780857024367.d8

Sector-Based Emissions Inventory. (2021). City of Toronto. https://www.toronto.ca/wp-content/uploads/2024/01/94a4-CoT-2021-Sector-based-Emissions-InventoryFINAL-AODA.pdf

Single-Family and Multi-Family Waste Audit Data—Paper Cups. (2023). City of Toronto.

Single-Use and Takeaway Items, 68–2024, Toronto City Council (2024). https://www.toronto.ca/legdocs/bylaws/2024/law0068.pdf

Single-Use and Takeaway Items Reduction Strategy - Stage 1, Toronto City Council, 2021.IE22.6 (2021). http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2021.IE22.6

Single-Use Plastics Bans and Restrictions, Department for Environment, Food & Rural Affairs (2024). https://www.gov.uk/guidance/single-use-plastics-bans-and-restrictions

Single-Use Plastics Prohibition Regulations, SOR/2022-138, Governor in Council (2022). https://www.canlii.org/en/ca/laws/regu/sor-2022-138/latest/sor-2022-138.html

Slater, D., Foster, N., Davies, N., Cruse, I., Vanhuyse, F., Chudasama, A., Tufeki, B., Marsh, H., & Kinsey, S. (2018). *Disposable Packaging: Coffee Cups: Government's Response to the*

Committee's Second Report (HC 867; Session 2017–19). House of Commons Environmental Audit Committee. https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/867/867.pdf

So, W. W. M., Cheng, I. N. Y., Cheung, L. T. O., Chen, Y., Chow, S. C. F., Fok, L., & Lo, S. K. (2021). Extending the theory of planned behaviour to explore the plastic waste minimisation intention of Hong Kong citizens. *Australian Journal of Environmental Education*, *37*(3), 266–284. https://doi.org/10.1017/aee.2021.1

Solid Waste: Reporting, Packaging, and Plastic Food Service Ware, 54, United States Senate (2022). https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB54

Sun, M., & Trudel, R. (2017). The Effect of Recycling versus Trashing on Consumption: Theory and Experimental Evidence. *Journal of Marketing Research*, *54*(2), 293–305. https://doi.org/10.1509/jmr.15.0574

Tekman, M. B., Gutow, L., Bergmann, M., & Peter, C. (2021). *Distribution of litter types in different realms*. Litterbase. https://litterbase.awi.de/litter_graph

The Reduction of the Impact of Certain Plastic Products on the Environment, 2019/904, The European Parliament and of The Council, 1 192 (2019). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904&from=EN

ThØgersen, J. (1994). Monetary incentives and environmental concern. Effects of a differentiated garbage fee. *Journal of Consumer Policy*, *17*(4), 407–442. https://doi.org/10.1007/BF01022912

Toronto at a Glance. (2024). City of Toronto. https://www.toronto.ca/city-government/data-research-maps/toronto-at-a-glance/

Triantafillopoulos, N., & Koukoulas, A. A. (2020). The future of single-use paper coffee cups: Current progress and outlook. *BioResources*, *15*(3), 7260–7287.

Valente, M. (2021). *Evaluating Company Sustainability Performance*. Organizing for Sustainability. https://www.organizingforsustainability.com/sustainability-reporting

van der Harst, E., Potting, J., & Kroeze, C. (2014). Multiple data sets and modelling choices in a comparative LCA of disposable beverage cups. *Science of The Total Environment*, *494–495*, 129–143. https://doi.org/10.1016/j.scitotenv.2014.06.084

Vanapalli, K. R., Sharma, H. B., Ranjan, V. P., Samal, B., Bhattacharya, J., Dubey, B. K., & Goel, S. (2021). Challenges and strategies for effective plastic waste management during and post COVID-19 pandemic. *Science of The Total Environment*, *750*. https://doi.org/10.1016/j.scitotenv.2020.141514

Voss-Hubbard, A. (1995, August). *Dixie Cup Company History*. Lafayette College Libraries. https://web.archive.org/web/20111112065042/http://academicmuseum.lafayette.edu/special/dixie/company.html

Wang, X., Waris, I., Muhammad Yaseen Bhutto, Sun, H., & Hameed, I. (2022). Green Initiatives and Environmental Concern Foster Environmental Sustainability: A Study Based on the Use of Reusable Drink Cups. *International Journal of Environmental Research and Public Health*, *19*(15), 9259-. https://doi.org/10.3390/ijerph19159259

Winfield, M. (2012). *Blue-Green Province: The Environment and the Political Economy of Ontario*. UBC Press.

Zabaneh, M. (2023, November 27). *Re: IE9.3—Update and Action Plan on the Single-Use and Takeaway Items Reduction Strategy*. https://www.toronto.ca/legdocs/mmis/2023/ie/comm/communicationfile-173938.pdf

Appendix A. Ethics Approval and Renewals

YORK
UNIVERSITÉ
UNIVERSITY

OFFICE OF RESEARCH ETHICS (ORE)
3rd Floor,
309 York Lanes

4700 Keele St.
Toronto ON
Canada M3J 1P3
Tel 416 736-5914
Fax 416 736-5512
www.research.yorku.ca

Certificate #:	**2022-026**
Approval Period:	**02/03/22-02/03/23**

ETHICS APPROVAL

To: **Daniela Palma – Graduate Student**
Faculty of Environmental Studies
dpalma@yorku.ca

From: Alison M. Collins-Mrakas, Director, Research Ethics
(on behalf of You-ta Chuang, Chair, Human Participants Review Committee)

Date: **Thursday, February 03, 2022**

Title: **Incentivizing Sustainable Coffee Cup Culture in Toronto**

Risk Level: ☐ Minimal Risk ☒ More than Minimal Risk

Level of Review: ☒ Delegated Review ☐ Full Committee Review

I am writing to inform you that this research project, **"Incentivizing Sustainable Coffee Cup Culture in Toronto"** has received ethics review and approval by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines.

Note that approval is granted for one year. Ongoing research – research that extends beyond one year – must be renewed prior to the expiry date.

Any changes to the approved protocol must be reviewed and approved through the amendment process by submission of an amendment application to the HPRC prior to its implementation.

Any adverse or unanticipated events in the research should be reported to the Office of Research ethics (ore@yorku.ca) as soon as possible.

For further information on researcher responsibilities as it pertains to this approved research ethics protocol, please refer to the attached document, **"RESEARCH ETHICS: PROCEDURES to ENSURE ONGOING COMPLIANCE".**

Please note that in response to the ongoing changes due to the pandemic, researchers are required to check the *YuBetter website* (Section: Coming to Campus) for updates as there may be changes to protocol requirements.

Should you have any questions, please feel free to contact me at: 416-736-5914 or via email at: acollins@yorku.ca.

Yours sincerely,

Alison M. Collins-Mrakas M.Sc., LLM
Director,
Office of Research Ethics

YORK
UNIVERSITÉ
UNIVERSITY

Certificate #:	**2022-026**
Initial Approval:	**02/03/22-02/03/23**
Amendments:	**02/28/22, 03/21/22**
Renewals:	**02/02/23-02/02/24**
Current Approval Period:	**02/02/23-02/02/24**

OFFICE OF RESEARCH ETHICS (ORE)

4700 Keele St.
Toronto ON
Canada M3J 1P3
ore@yorku.ca
www.research.yorku.ca

ETHICS RENEWAL

To: **Graduate Student – Daniela Palma**
Faculty of Environmental and Urban Change
dpalma@yorku.ca

From: Alison M. Collins-Mrakas, Director, Research Ethics
(on behalf of Janessa Drake, Chair, Human Participants Review Committee)

Date: Thursday, February 2, 2023

Title: **Incentivizing Sustainable Coffee Cup Culture in Toronto**

Risk Level: ☒ Minimal Risk ☐ More than Minimal Risk

Level of Review: ☒ Delegated Review ☐ Full Committee Review

I am writing to inform you that this research project, **"Incentivizing Sustainable Coffee Cup Culture in Toronto"** has received ethics review and renewal by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines.

Note that renewal is granted for one year. Ongoing research – research that extends beyond one year – must be renewed prior to the expiry date.

Any changes to the approved protocol must be reviewed and approved through the amendment process by submission of an amendment application to the HPRC prior to its implementation.

Any adverse or unanticipated events in the research should be reported to the Office of Research ethics (ore@yorku.ca) as soon as possible.

For further information on researcher responsibilities as it pertains to this approved research ethics protocol, please refer to the attached document, **"RESEARCH ETHICS: PROCEDURES to ENSURE ONGOING COMPLIANCE".**

Should you have any questions, please feel free to contact me at: ore@yorku.ca.

Yours sincerely,

Alison M. Collins-Mrakas M.Sc., LLM
Director, Office of Research Ethics

YORK
UNIVERSITÉ
UNIVERSITY

Certificate #:	**2022-026**
Initial Approval:	**02/03/22-02/03/23**
Amendments:	**Amendment approved: 02/28/22** **2nd Amendment approved: 03/21/22**
Renewals:	**02/02/23-02/02/24** **02/07/24-02/07/25**
Current Approval Period:	**02/07/24-02/07/25**

OFFICE OF RESEARCH ETHICS (ORE)

4700 Keele St
Toronto ON
Canada M3J 1P3
ore@yorku.ca
www.research.yorku.ca

ETHICS RENEWAL

To: **Graduate Student – Daniela Palma**
Faculty of Environmental and Urban Change
dpalma@yorku.ca

From: Alison M. Collins-Mrakas, Director, Research Ethics
(on behalf of You-ta Chuang, Chair, Human Participants Review Committee)

Date: Wednesday, February 7, 2024

Title: **Incentivizing Sustainable Coffee Cup Culture in Toronto**

Risk Level: ☒ Minimal Risk ☐ More than Minimal Risk

Level of Review: ☒ Delegated Review ☐ Full Committee Review

I am writing to inform you that this research project, **"Incentivizing Sustainable Coffee Cup Culture in Toronto"** has received ethics review and renewal by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines.

Note that renewal is granted for one year. Ongoing research – research that extends beyond one year – must be renewed prior to the expiry date.

Any changes to the approved protocol must be reviewed and approved through the amendment process by submission of an amendment application to the HPRC prior to its implementation.

Any adverse or unanticipated events in the research should be reported to the Office of Research ethics (ore@yorku.ca) as soon as possible.

For further information on researcher responsibilities as it pertains to this approved research ethics protocol, please refer to the attached document, **"RESEARCH ETHICS: PROCEDURES to ENSURE ONGOING COMPLIANCE".**

Should you have any questions, please feel free to contact me at: ore@yorku.ca.

Yours sincerely,

Alison M. Collins-Mrakas M.Sc., LLM
Director, Office of Research Ethics

Appendix B. Survey Questions Used in This Study

Consumer Survey

Definition of Terms
Coffee Retailer refers to Tim Hortons, Starbucks, McDonald's, Pilot Coffee Roasters, and other similar companies that sell hot beverages.

Hot Beverage refers to beverages such as coffee, tea, or hot chocolate.

Incentive refers to financial incentives (e.g., discount on hot beverages, reward points, coupons), non-financial incentives (e.g., public recognition and praise, letter of appreciation), or disincentives (punitive measures, e.g., extra fee for hot beverages in disposable cups).

Reduction refers to reducing the amount of material we consume and the amount of waste we generate.

Sustainability is defined as the use of products and energy to be economically and socially feasible and environmentally friendly. The term involves three pillars: economy, society, and environment.

1. Indicate to what extent you agree or disagree with the following statement: Sustainability is an important topic to me.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree

2. What priority level is reduction and reuse for you?
   - ☐ The most important priority
   - ☐ A top priority, but not the most important
   - ☐ Not very important
   - ☐ Not important at all

3. Do you drink hot beverages from coffee retailers?
   - ☐ Yes
   - ☐ No

4. How often do you purchase hot beverages from coffee retailers?
   - ☐ Everyday
   - ☐ Four to six times a week
   - ☐ Less than four times a week
   - ☐ One to two times a month
   - ☐ Never

5. How often do you bring a reusable cup when you purchase hot beverages from coffee retailers?
   - ☐ Always
   - ☐ Sometimes
   - ☐ Rarely
   - ☐ Never

6. Were coffee retailers incentivizing/encouraging reusable cups prior to the COVID-19 pandemic?
   - ☐ Yes
   - ☐ No
   - ☐ I don't know

7. Did you ever use a reusable cup when purchasing hot beverages from coffee retailers prior to the COVID-19 pandemic?
   - ☐ Yes
   - ☐ No

8. Is there anything you would ideally like to see coffee retailers doing to incentivize/encourage reusable cups? Please explain.

9. Has the COVID-19 pandemic posed any challenges/obstacles to the use of reusable cups? Please explain.

10. Are there any other barriers to your use of a reusable cup? Select all that apply.
    - ☐ Washing it for reuse
    - ☐ Inconvenient to carry it with me
    - ☐ Unplanned purchase
    - ☐ Lack of consistency between stores
    - ☐ I forget to bring it with me
    - ☐ No efficient process for using it at drive-thru
    - ☐ Lack of space
    - ☐ No barriers
    - ☐ Other (please specify) _____

11. Since coffee retailers stopped accepting reusable cups, have your hot beverage purchases increased, reduced, or stayed the same?
    - ☐ Increased
    - ☐ Reduced
    - ☐ Stayed the same

12. What do you do with the waste after consuming your hot beverage? Do you dispose of the cup and lid separately?
    - ☐ Yes, I separate the cup and the lid (go to question 13)
    - ☐ No, I don't separate the cup and the lid (go to question 14)
    - ☐ Not applicable (go to question 15)

13. Where do you dispose of the cup and lid?
    a) Cup:
    - ☐ Garbage
    - ☐ Organics
    - ☐ Recycling

    b) Lid:
    - ☐ Garbage
    - ☐ Organics
    - ☐ Recycling

    Other (please specify) _____

14. Where do you dispose of the waste?
    - ☐ Garbage
    - ☐ Organics
    - ☐ Recycling
    - ☐ Other (please specify) _____

15. Who should be held accountable for hot beverage paper cup waste? Select all that apply.
    - ☐ Consumers
    - ☐ Municipality
    - ☐ Coffee retailers
    - ☐ Other (please specify) _____

16. Do you have any suggestions on how to reduce or prevent paper cup waste? Please explain.

17. What type of incentive would encourage you to use a reusable cup? Select all that apply.
    - ☐ Financial incentives (e.g., discount, reward points, coupons)
    - ☐ Non-financial incentives (e.g., public recognition and praise, letter of appreciation)
    - ☐ Disincentives (punitive measures, e.g., fee for hot beverages in disposable cups)
    - ☐ Other (please specify) _____

18. What would you like to see more of? Select all that apply.
    - ☐ Awareness (e.g., informing and educating the public about the waste issue)
    - ☐ Marketing/Advertising (e.g., promotion of sustainable practices)
    - ☐ Collaboration (e.g., between coffee retailers, the municipality, and consumers)
    - ☐ Incentives (e.g., financial, non-financial, or disincentives)
    - ☐ Policies (e.g., store policies, municipal policies)
    - ☐ Other (please specify) _____

19. Do you have any other comments, concerns, or feedback?

Appendix C. Interview Questions Used in This Study

Interview Questions for City of Toronto Municipal Staff

Name of Municipal Staff Member:
Title and Responsibilities:

1. What is the City's priority level for encouraging reduction and reuse (i.e., top priority, medium priority, or last priority)?

2. Does your municipality currently recycle paper cups?

3. What is your involvement with managing hot beverage paper cup waste in Toronto (i.e., your role, duties, and responsibilities)?

4. How are coffee retailers currently held accountable for their hot beverage paper cup waste?

5. How were coffee retailers incentivizing/encouraging reusable cups prior to the COVID-19 pandemic? What worked and what did not work? Did you see any reduction in paper cup waste when customers were offered a discount for using reusable cups?

6. What are the City of Toronto's current sustainability goals?

7. What are the challenges/obstacles you experience in fulfilling your responsibilities related to waste management of hot beverage paper cups?

8. What are the challenges/obstacles that prevent your role from minimizing hot beverage paper cup waste or increasing diversion rates?

9. Did you have to contact coffee retailers at any point in your municipality's waste diversion process regarding hot beverage paper cups? What was it like? Were you satisfied with the answers?

10. What challenges/obstacles has the COVID-19 pandemic posed for reusable cups?

11. What role do you see the City playing in managing hot beverage paper cups?

12. Who should be held accountable for hot beverage paper cup waste?

13. What do you think would help the City overcome the challenges of reducing or preventing hot beverage paper cups? Either from you, your team, or other people?

14. What policies may be successful at encouraging consumers to use reusable cups?

15. What type of incentive would encourage consumers to use reusable cups?

16. What would you ideally like to see businesses doing to encourage reusable cups (e.g., promotion, educational materials, posters, marketing, incentivization, store policies)?

17. What would you like to see more of (e.g., infrastructure, education, awareness, promotion, marketing, collaboration, incentivization, policy)?

18. Do you have other comments, concerns, or feedback?

Interview Questions for Coffee Retailers

Name of Coffee Retailer:
Interviewee's Job Title:
Interviewee's Duties and Responsibilities:

1. What are your business's current sustainability goals?

2. What is your involvement with managing hot beverage paper cup waste in Toronto (i.e., your role, duties, and responsibilities)?

3. How many cups of coffee did your business sell in Toronto within the last year?

4. Does your business currently recycle paper cups in Toronto?

5. Is encouraging reduction and reuse a top priority, medium priority, or last priority for your business?

6. During the last five years, has your business offered incentives to customers who use their own reusable cups? What did you do? Did you see any reduction in paper cup waste when customers were offered a discount for using reusable cups?

7. What initiatives have you implemented that you found successful in encouraging consumers to use reusable cups?

8. Have you ever worked on a waste diversion plan before? What process did you take to do it? How did you find the information needed to fill it out? Did you have to seek out additional support and resources?

9. Did you have to contact the City of Toronto at any point in your waste diversion process regarding hot beverage paper cups? What was it like? Were you satisfied with the answers?

10. How would you like coffee retailers in general to be held accountable for their hot beverage paper cup waste?

11. What are the challenges/obstacles that prevent your role from minimizing waste or increasing diversion rates?

12. What do you think would help you overcome the challenges of reducing or preventing hot beverage paper cup waste? Either from you or your team or other people?

13. What challenges/obstacles has the COVID-19 pandemic posed for reusable cups?

14. What types of policies or incentives may be successful at encouraging consumers to use reusable cups?

15. What can the City of Toronto provide you to promote reusable cup usage, in its implementation and follow-through?

16. Do you think more training, education, or awareness is needed? In what format would you like the information to be communicated (e.g., website, videos, interactive training)?

17. Do you have other comments, concerns, or feedback?

Appendix D. Consent Forms

Online Survey Informed Consent Form

Study Name: Incentivizing Sustainable Coffee Cup Culture in Toronto

Researcher Name:
Daniela Palma
Principal Investigator
Master in Environmental Studies (MES) Candidate
York University
dpalma@yorku.ca

Purpose of the Research: This research aims to collect relevant information for reducing and preventing hot beverage paper cup waste in Toronto and explore policies that may incentivize reusable alternatives. The goal is to contribute to existing knowledge on sustainability, the circular economy, zero waste, and resiliency initiatives centred around the culture and citizens of Toronto. This research will be conducted by surveying Toronto residents and interviewing coffee retailers and the City of Toronto. Data will be presented and reported in the form of a major research paper as the fulfillment of Daniela Palma's MES degree. Like all MES Major Research, this research will be published in YorkSpace.

What You Will Be Asked to Do in the Research: You will be asked open-ended and closed-ended questions related to the waste management of hot beverage paper cups, the policies and practices of the City of Toronto and coffee retailers, and incentives to encourage reusable cups. Questions will be asked in a survey format with a time commitment of approximately 15 minutes.

Risks and Discomforts: We do not foresee any risks or discomfort from your participation in the research.

Benefits of the Research: Your participation will aid in developing best practices, policies, resources, and tools to encourage a sustainable hot beverage cup culture in Toronto. Furthermore, this research could influence and inspire other cities to adopt similar sustainability strategies for encouraging reuse.

Voluntary Participation and Withdrawal: Your participation in the study is completely voluntary, and you may choose to stop participating at any time. Your decision not to participate, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researcher, study staff, or York University either now or in the future.

In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality: All information you supply during the research will be held in confidence and your name will not appear in any report or publication of the research. The data will be collected on an online server from the survey software and safely stored on the researcher's computer, and only the researcher will have access to this information. All survey data obtained during the research will be stored for at least five years (until August 2029) after the submission of the researcher's major paper. After that time, the electronic and hard copies will be destroyed. Confidentiality will be provided to the fullest extent possible by law.

The researcher acknowledges that the host of the online survey (i.e., SurveyMonkey) may automatically collect participant data without their knowledge (i.e., IP addresses). Although this information may be provided or made accessible to the researcher, it will not be used or saved on the researcher's system without the participant's consent. Furthermore, because this project employs e-based collection techniques, data may be subject to access by third parties as a result of various security legislation now in place in many countries. Thus, the confidentiality and privacy of data cannot be guaranteed during web-based transmission.

Questions About the Research? If you have questions about the research in general or your role in the study, please feel free to contact me at dpalma@yorku.ca or my Supervisor, Calvin Lakhan at lakhanc@yorku.ca. You may also contact the Graduate Program in the Faculty of Environmental and Urban Change at esgpd@yorku.ca.

This research has received ethics review and approval by the Delegated Ethics Review Committee, which is delegated authority to review research ethics protocols by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process or your rights as a participant in the study, please contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, Kaneff Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

Legal Rights and Consent
By clicking Yes below, you consent to participate in Incentivizing Sustainable Coffee Cup Culture in Toronto conducted by Daniela Palma. You have understood the nature of this project and wish to participate. You are not waiving any of your legal rights by consenting to this form.

☐ Yes ☐ No

Date: _____

Interview Informed Consent Form

Date:
Study Name: Incentivizing Sustainable Coffee Cup Culture in Toronto

Researcher Name:
Daniela Palma
Principal Investigator
Master in Environmental Studies (MES) Candidate
York University
dpalma@yorku.ca

Purpose of the Research: This research aims to collect relevant information for reducing and preventing hot beverage paper cup waste in Toronto and explore policies that may incentivize reusable alternatives. The goal is to contribute to existing knowledge on sustainability, the circular economy, zero waste, and resiliency initiatives centred around the culture and citizens of Toronto. This research will be conducted by surveying Toronto residents and interviewing coffee retailers and the City of Toronto. Data will be presented and reported in the form of a major research paper as the fulfillment of Daniela Palma's MES degree. Like all MES Major Research, this research will be published in YorkSpace.

What You Will Be Asked to Do in the Research: You will be asked open-ended and closed-ended questions related to the waste management of hot beverage paper cups, the policies and practices of the City of Toronto and coffee retailers, and incentives to encourage reusable cups. Questions will be asked in an interview format with a time commitment of approximately 45 minutes.

Risks and Discomforts: We do not foresee any risks or discomfort from your participation in the research.

Benefits of the Research: Your participation will aid in developing best practices, policies, resources, and tools to encourage a sustainable hot beverage cup culture in Toronto. Furthermore, this research could influence and inspire other cities to adopt similar sustainability strategies for encouraging reuse.

Voluntary Participation and Withdrawal: Your participation in the study is completely voluntary, and you may choose to stop participating at any time. Your decision not to participate, to stop participating, or to refuse to answer particular questions will not influence the nature of the ongoing relationship you may have with the researcher, study staff, or York University either now or in the future.

In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

Confidentiality: The documentation methods will include handwritten and typed notes and/or audio recordings. If you are comfortable disclosing your name and position, please indicate your

consent to waive anonymity. If you prefer your information to be kept confidential, all the information you supply during the research will be held in confidence, and your name will not appear in any report or publication of the research. Your data will be safely stored on the researcher's computer, and only the researcher will have access to this information. All interview data obtained during the research will be stored for at least five years (until August 2029) after the submission of the researcher's major paper. After that time, the electronic and hard copies will be destroyed. Confidentiality will be provided to the fullest extent possible by law.

Questions About the Research? If you have questions about the research in general or your role in the study, please feel free to contact me at dpalma@yorku.ca or my Supervisor, Calvin Lakhan at lakhanc@yorku.ca. You may also contact the Graduate Program in the Faculty of Environmental and Urban Change at esgpd@yorku.ca.

This research has received ethics review and approval by the Delegated Ethics Review Committee, which is delegated authority to review research ethics protocols by the Human Participants Review Sub-Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process or your rights as a participant in the study, please contact the Senior Manager and Policy Advisor for the Office of Research Ethics, 5th Floor, Kaneff Tower, York University (telephone 416-736-5914 or e-mail ore@yorku.ca).

Legal Rights and Signatures

I _____, consent to participate in Incentivizing Sustainable Coffee Cup Culture in Toronto conducted by Daniela Palma. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

Signature _____ **Date** _____
Participant

Signature _____ **Date** _____
Principal Investigator

Additional Consent

1. **Audio recording**

   ☐ I consent to the audio recording of my interview.

Signature _____ **Date** _____
Participant

2. Consent to Waive Anonymity

I, _____, consent to the use of my name in the publications arising from this research.

Signature_____ **Date**_____
Participant

Appendix E. Survey Variable Statistics

Importance of Sustainability

Variables	Frequency	Percentage (%)	Percentage valid (%)
Strongly agree	153	59.30	59.30
Agree	71	27.52	27.52
Neutral	14	5.43	5.43
Disagree	1	0.39	0.39
Strongly disagree	19	7.36	7.36
TOTAL (valid)	258	100.00	100.00
Missing	0	0.00	-
TOTAL	258	100.00	-

Importance of Reduction and Reuse

Variables	Frequency	Percentage (%)	Percentage valid (%)
The most important priority	69	26.74	26.74
A top priority, but not the most important	175	67.83	67.83
Not very important	13	5.04	5.04
Not important at all	1	0.39	0.39
TOTAL (valid)	258	100.00	100.00
Missing	0	0.00	-
TOTAL	258	100.00	-

Hot Beverage Consumption

Variables	Frequency	Percentage (%)	Percentage valid (%)
Yes	198	76.74	76.74
No	60	23.26	23.26
TOTAL (valid)	258	100.00	100.00
Missing	0	0.00	-
TOTAL	258	100.00	-

Hot Beverage Purchases

Variables	Frequency	Percentage (%)	Percentage valid (%)
Every day	15	5.81	7.58
Four to six times a week	26	10.08	13.13
Less than four times a week	76	29.46	38.38
One to two times a month	81	31.40	40.91
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-

Brings a Reusable Cup

Variables	Frequency	Percentage (%)	Percentage valid (%)
Always	14	5.43	7.07
Sometimes	52	20.16	26.26
Rarely	46	17.83	23.23
Never	86	33.33	43.43
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-

Coffee Retailer Incentivization Pre-COVID-19

Variables	Frequency	Percentage (%)	Percentage valid (%)
Yes	103	39.92	52.02
No	52	20.16	26.26
I don’t know	43	16.67	21.72
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-

Reusable Cup Use Pre-COVID-19

Variables	Frequency	Percentage (%)	Percentage valid (%)
Yes	126	48.84	63.64
No	72	27.91	36.36
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-

Hot Beverage Purchases During COVID-19

Variables	Frequency	Percentage (%)	Percentage valid (%)
Increased	8	3.10	4.04
Reduced	80	31.01	40.40
Stayed the same	110	42.64	55.56
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-

Disposal Behaviours

Variables	Frequency	Percentage (%)	Percentage valid (%)
Do you dispose of the cup and lid waste separately?			
Yes, I separate the cup and the lid	117	45.35	59.09
No, I don't separate the cup and the lid	74	28.68	37.38
Not applicable	7	2.71	3.53
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-
If you separate: *Where do you dispose of the cup?*			
Recycling	31	12.02	26.50
Organics	6	2.33	5.12
Garbage	80	31.00	68.38
TOTAL (valid)	117	45.35	100.00
Missing	141	54.65	-
TOTAL	258	100.00	-
Where do you dispose of the lid?			
Recycling	84	32.56	71.79
Organics	0	0.00	0.00
Garbage	33	12.79	28.21
TOTAL (valid)	117	45.35	100.00
Missing	141	54.65	-
TOTAL	258	100.00	-

Disposal Behaviours (continued).

If you do not separate the cup and lid, where do you dispose of the waste?			
Recycling	24	9.30	34.29
Organics	0	0.00	0.00
Garbage	46	17.83	65.71
TOTAL (valid)	70	27.13	100.00
Missing	188	72.87	-
TOTAL	258	100.00	-

Common Barriers

Variables	Frequency	Percentage (%)	Percentage valid (%)
Unplanned purchase	146	56.59	73.74
I forget to bring it with me	112	43.41	56.57
Inconvenient to carry it with me	111	43.02	56.06
Lack of consistency between stores	83	32.17	41.92
No efficient process for using it at drive-thru	62	24.03	31.31
Washing it for reuse	61	23.64	30.81
Lack of space	19	7.36	9.60
No barriers	7	2.71	3.54
TOTAL (valid)	198	76.74	100.00
Missing	60	23.26	-
TOTAL	258	100.00	-

Paper Cup Waste Accountability

Variables	Frequency	Percentage (%)	Percentage valid (%)
Coffee retailers	167	64.73	89.30
Consumers	98	37.98	52.41
Municipality	91	35.27	48.66
TOTAL (valid)	187	72.48	100.00
Missing	71	27.52	-
TOTAL	258	100.00	-

Preferred Strategies

Variables	Frequency	Percentage (%)	Percentage valid (%)
Collaboration	154	59.69	80.63
Incentives	131	50.78	68.59
Awareness	130	50.39	68.06
Policies	130	50.39	68.06
Marketing/Advertising	106	41.09	55.50
TOTAL (valid)	191	74.03	100.00
Missing	67	25.97	-
TOTAL	258	100.00	-

Incentive

Variables	Frequency	Percentage (%)	Percentage valid (%)
Financial incentives	157	60.85	89.71
Disincentives	83	32.17	47.43
Non-financial incentives	19	7.36	10.86
TOTAL (valid)	175	67.83	100.00
Missing	83	32.17	-
TOTAL	258	100.00	-

Appendix F. Code Frequencies from the Qualitative Data

Survey

General Comments

Theme	Code	Code Frequency
Approaches for change		90
	Social responsibility	26
	Government policy	19
	Recycling/Composting	11
	Individual consumption	9
	Availability of reusables	6
	Public awareness	6
	Incentives	5
	Encourage reuse	3
	Other country initiatives	3
	Ban disposable cups	2
Consumer type		40
	Environmentally conscious	24
	Resistant to change	8
	Health-conscious	5
	Regular user	3
Barriers		26
	Inconvenience	14
	Ignorance	5
	COVID restrictions	3
	Perceived luxury	2
	Expensive to use	2

Disposal of Cup and Lid [Other]

Code	Code Frequency
Material type	11
Colour	6
Available bins	5
Municipality	3
Separates sometimes	3
Recycling programs	1

Waste Disposal [Other]

Code	Code Frequency
Available bins	2

Barriers [Other]

Code	Code Frequency
Online order/Delivery	4
Germs	3
Messy	2
Disability	2
Staff unfriendly	2
Slows service	2
Unplanned	2
Loses cup	1
Liability	1
Carrying cup	1
Apathetic	1
No filling station	1
No incentives	1

COVID-19 Barriers

Code	Code Frequency
Non-acceptance due to fear of germs and virus transmission	126
Changed consumer habits	26
No COVID challenges	24
Sanitation	16
COVID misinformation	12
Uncomfortable	8
More waste	6
Increased ordering ahead	4
Personal protective equipment	4

Coffee Cup Waste Accountability [Other]

Code	Code Frequency
Manufacturers	10
Government	6

Paper Cup Waste Prevention

Theme	Code	Code Frequency
Social responsibility		121
	Encourage reusable cups	60
	Public awareness campaign	20
	Remove barriers for customers	14
	Standardization	9
	Dine-in mugs	8
	Train staff	5
	Manufacture sustainable cup	5
Recycle paper cups		81
	Recyclable/Compostable cups	58
	Labelled bins	10
	Incentivize recycling cups	7
	Extended producer responsibility	6
Policy intervention		55
	Charge a fee for disposable cups	22
	Ban disposable cups	18
	Improve retailer practices	12
	Shared responsibility	3
Consumer behaviour		15
	Change habits	13
	Stop buying	2

Preferred Strategies [Other]

Code	Code Frequency
Social responsibility	5
Innovation	4
Strong regulations	3
Education	2
Showcase successful programs	2
Variety of incentives	2
Mayor denouncement	1
Digital marketing to prevent waste	1
Encourage biodegradable materials/incinerators	1
Health information	1

Encouraging Reusable Cup Usage

Theme	Code	Code Frequency
Financial incentives		159
	Discount	92
	Deposit-return cup program	25
	Reward points	22
	Fee	7
	Sell cups	7
	Free cups	4
	Donation	2
Accept reusable cups		65
	Promotion and education	31
	Allow use	16
	Train staff	15
	Consistency	3
Health and safety measures		18
	Sanitation	10
	Cup wash station	8

Incentives [Other]

Code	Code Frequency
No incentives needed	11
Promotion and education	6
Convenience	4
Social change	4
Provide reusable cups	3
Ban	2

Interviews

Theme	Codes	Code Frequency
Policy measures		107
	Strategies to reduce disposable cups	45
	Business support	17
	Fee bylaw	14
	Voluntary measures	8
	Ask-first/By-request	4
	Discount bylaw	1
	Ban disposable cups	1
	Waste reduction	24
	Stakeholder consultations	8
	Extended Producer Responsibility	7
	Waste management	6
	Renewable energy	6
	Impact on restaurant industry	5
	Greenhouse gas emissions	3
Coffee retailers		103
	Incentivizing reusable cups	39
	Deposit-return cup program	13
	Vancouver reusable cup program	6
	Reusable cup discount	12
	Waste reduction impact	8
	Barriers	14
	Shopping malls	4
	Costs	4
	Space	2
	Communication with customers	2
	Theft of ceramics	1
	Internal wastage	1
	Reusable options for dining-in	11
	Limited accountability	8
	Safe ways to accept reusable cups	7
	Entrepreneurial partnerships	6
	Industry standard	4
	Cost savings	2
	Investments	1

Interview Code Frequencies (continued).

Disposable paper cup waste management		82
	Recycling and composting challenges	25
	Infrastructure limitations	22
	Sorting	11
	Technical investments	4
	Management costs	3
	Collection	2
	End markets	2
	Biodegradable/Compostable packaging	11
	Fragmented approaches	10
Approaches for creating change		60
	Collaboration	14
	Promotion	13
	Education	11
	Convenience	8
	Affordability	7
	Policy recommendations	5
	Shared responsibility	2
COVID-19		34
	Risk prevention	16
	Sanitary measures	12
	Governments on reusable cups	4
	Health and safety	10
	Staff fears	5
	Mitigating fear	3
Coffee consumers		30
	Behaviour change	14
	Online and delivery orders	2
	Disposal of paper cups	12
	Importance of educating consumers	9
	Lack of knowledge	2
	Litter	1
	Mitigating challenges for marginalized communities	2