

# **FOOD PACKAGING'S CONTRIBUTION TO A POLLUTED ENVIRONMENT**

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GRAPHIC COMMUNICATIONS MANAGEMENT**

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**HOW DO FOOD PACKAGING PRACTICES IN NORTH  
AMERICA CONTRIBUTE TO A POLLUTED  
ENVIRONMENT?**

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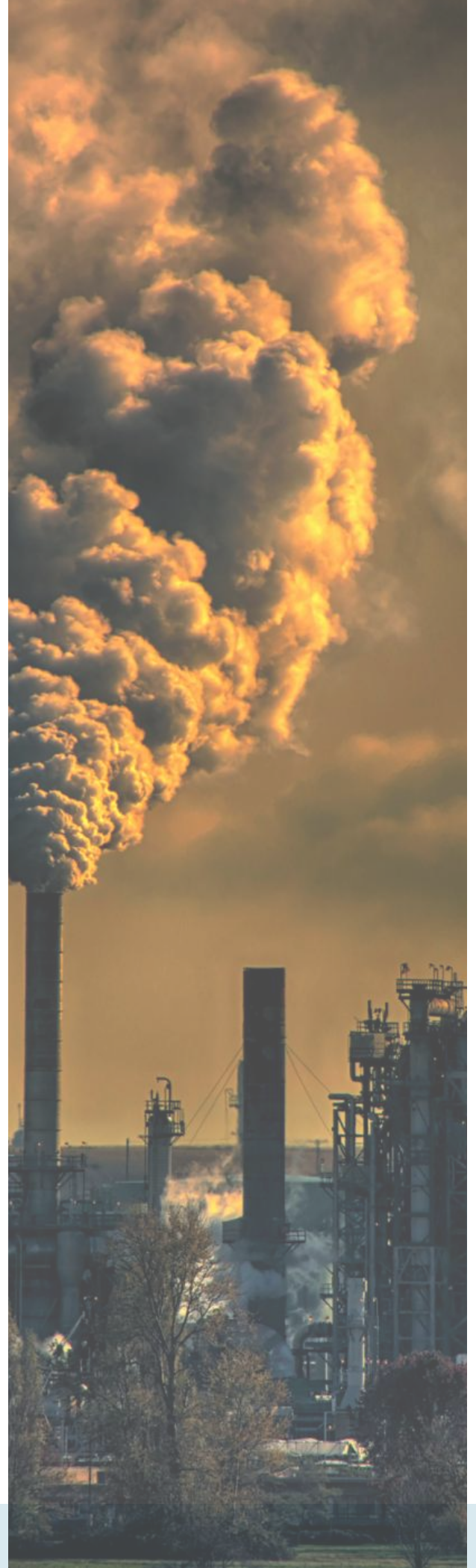
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# Abstract

This thesis studies the effects of food packaging on climate change and how the incorrect disposal of packaging pollutes the environment. Through this paper, the reader will be able to understand the different factors which result in consumers' decision making to disregard packaging labels. It will also discuss the concept of greenwashing and why many businesses take advantage of the term "biodegradable", in order to present their products as eco-friendly. Through the use of primary and secondary research, and by connecting with consumers, this paper will help understand how their daily lifestyles alter their decisions on food packaging disposal. After analyzing the non-existing consequences towards incorrect food packaging disposal, the use of unrecyclable and misleading substrates and the lack of involvement from businesses in regards to the education of consumers on their products, this paper will discuss how the packaging industry is contributing to the pollution affecting our environment and what steps should be taken to prevent this from occurring.



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# Introduction



Climate change and global warming are two very prominent issues that require immediate attention. A great contributor to climate change and pollution of the environment is plastic. In fact, Canadians produce an estimated 3.3 million tonnes of plastic per year. Where approximately 86% of this plastic ends up in landfills, and only 9% is actually recycled (Young, 2019). The graphic communications industry is also a major contributor to this cause. From packaging design to packaging production, there are many decisions along the way which can alter a package's future and guarantee whether or not a product's packaging is biodegradable and compostable, or if it will remain as a pollutant in the environment for several years. As someone who will eventually join this industry, it is important to approach it with the mindset to do better and make new and improved decisions that will benefit the environment. In order to make these decisions, it is necessary to understand why businesses are still supporting the design and production of packaging for products such as food items that will harm the environment once disposed of. This paper will present research on how food packaging practices in North America contribute to pollution and climate change. This information will be presented by discussing the limited consequences of incorrect disposal of used packaging materials, the use of unrecyclable materials in mass production, and the lack of education about recyclable substrates.



# Literature Review



The topic being discussed focuses on how food packaging in North America contributes to climate change and the many factors that contribute to this devastating issue. The key factors this study analyzes are the incorrect disposal of used packaging, the use of non-recyclable materials in mass production, and lastly the lack of education on the matter of climate change. Many scholarly and well-credited sources have been chosen to help support this topic and all that it encompasses. To ensure that the resources collected are reliable and well credited, many of them have been collected from the Ryerson University Library and Archives, while other sources are from accredited professionals in various industries. These sources each contribute to this study in their way, and some more specifically than others. When comparing and contrasting the various articles, journals, and web posts the authors are all connecting to the concept of climate change by narrowing their focuses on one specific area of concern. While some authors have chosen to focus on everything that North America has failed to address in regards to this topic, other authors discuss the growth and progress made in North America over the years. Both these perspectives are crucial to formulating a well-researched study because shed light on past, present, and future climate. By understanding which laws and acts have already been placed to address the concerns of climate change, we can analyze whether or not we are progressing at a fast enough rate to prevent any drastic damage from occurring.

The first source being reviewed is a scholarly article titled Food Packaging—Roles, Materials, and Environmental Issues (Marsh et al, 2007). This article discusses the importance of packaging for food items as well as how it contributes to climate change. It also does a great job of making the reader understand that without food packaging, products would deteriorate much faster and would also decline their safety and quality, thus being impacted by chemical, biological and physical external influences. Concurrently, it mentions that packaging technology needs to create a balance between food safety and issues such as energy, materials, environmental consciousness, and the disposal of municipal solid waste. The author has done a terrific job of not only addressing the issue at hand but also being completely conscious and honest about the benefits of packaging. They have very clearly and strongly delivered their message through their writing, without only focusing on the cons.

Similarly, the article: Environmental effects of packaging (CCME, 2014) also sheds light on two different perspectives. This source stressed that the environmental effects of packaging are due to more than incorrect disposal and that the actual transportation and production of the packaging also play a major role in how our environment is impacted. How the first article, Food Packaging—Roles, Materials, and Environmental Issues (Marsh et al, 2007) considered both the pros and cons when discussing this issue, this article also mentions both pros and cons but focuses on a geographical location rather than the product production itself. It focuses on practices in Canada and states that the country has been increasingly concerned about packaging waste, in which consumer demand for eco-friendly products and reduced packaging has also increased. Since climate change is a global issue that every country has been contributing to, although the previous statement is reassuring, it doesn't allow the reader to understand the actual impact of these consumer demands. Without seeing any supporting evidence or data, we are unable to understand whether these demands are enough to prevent any further damage from occurring to the global climate. So although this article does a great job of mentioning the steps being taken to tackle these concerns such as pushing for sustainable packaging, reducing supply chain costs, and meeting consumer demand for green products, until we can understand exactly how many companies are supporting these consumer demands we cannot make the presumption that it will have a lasting effect on tackling climate change.

Similar to Marsh et al (Marsh et al, 2007), Wikström et al (Wikström et al, 2016) also does a comparison of consumer needs, in their study: The influence of packaging attributes on recycling and food waste behaviour. This paper analyses how user behaviour, which can also be compared to consumer needs which result in their behaviour, influences the environment. This paper uses a specific product to explain to readers that a small change in packaging can prevent great amounts of future waste. It also analyzes direct and indirect effects, where packaging alternatives are only superiors under certain conditions. For example, a tube package is a better alternative when direct effects are considered, and a tray option is the better alternative when we consider which package will have a higher recycling rate, and which will produce less food waste. Overall, this study explains how indirect environmental effects and user behaviour can drastically change packaging comparisons

The next resource: Canada's Position on Packaging: The Upcoming Requirements for Federal Procurement (Cocker et al, 2020), is different from previous sources because it is very focused on the present which is why it mentions current laws as well as the impact that COVID is having on the environment. Unlike other sources that were reviewed, this article very specifically mentions what will be impacted by the growing problem of plastic pollution which is wildlife, marine ecosystems, and human health. It then discusses a present-day solution where it is mentioned that the government of Canada is pledging to increase plastic waste diversion, reduce single-use plastic in official operations/meetings and events, and also how to obtain sustainable products. It further reassures the reader that Canada's Government will continue with plastic bans despite the COVID-19 pandemic and designate plastics as toxic substances under the Canadian Environmental Protection Act.

The final resource being reviewed is the article: The environmental impact of food packaging (Foodprint, 2020). A great reason why this source was chosen to support this study is that it relates directly to the research question being discussed. This article can be compared to the other sources that were previously mentioned in several ways. Firstly, this article explains the harm being caused by food packaging while also maintaining the understanding of why it may be necessary. This article mentions how food packaging is usually designed as a single-use item which is a very important point that supports this argument. Unlike other sources, it also mentions substrates besides plastics that are still comparably harming the environment and contributing to the climate crisis. Materials such as glass, aluminum, and even paperboard are analyzed and proven to still be wasteful. Although these materials may prove more beneficial than plastic food packaging, energy consumption during production is also negatively impacting the environment. Not only does this resource mention different types of food packaging and their harmful characteristics, but it also touches on the different aspects of the environment such as the air, marine life as well as land pollution.



Lastly, the most important factor mentioned in this article is “foodprint”. A foodprint is the result of all the steps it takes to get your food from the farm to your plate. Many of these processes are invisible to the consumer, but that does not mean that it shouldn’t be acknowledged and understood. By understanding the concept of a foodprint, consumers are becoming more conscious of their surroundings and their daily consumption of different meals. To help understand this concept, this article has also provided many resources that can further educate consumers on this matter.



# Methodology



This paper focuses on food packaging practices in North America and how they contribute to climate change. To understand the practices, it was crucial to collect research which relates to a certain demographic, and would also work towards unfolding the truth behind improper disposal of food packaging waste.

Quantitative data was collected through primary research to help gain insight into society's contribution to climate change. Similarly, quantitative secondary data will also be used to express the exact numbers which represent the direct effects on the environment. The data collected is descriptive and based on observations, where several factors had to be considered when reaching out to a particular population.

When discussing the methods of data collection, the targeted concepts were studied by focussing on the three main areas of research for this paper; incorrect disposal, unethical mass production, and lack of education on the matter at hand. The method of sampling was also probability sampling where the selection of participants in this research study was random which allowed more statistical inferences about the entire research pool. The chosen method of research was a survey that provided great information by understanding the general characteristics and opinions of this group of people. When designing the questions for this survey the goal was to create detailed questions with very specific options that would carefully help analyze the results. The survey was conducted through email with a quick response rate since the sample size was 20 participants, ranging between millennials and generation Z, and they would not have to independently research to answer the questions asked.

After collecting the data, it was processed and analyzed based on how informative the results were. For some questions where the responses were too scattered, adjustments and changes had to be made to the survey and it was presented to the entire pool of participants to maintain accuracy. A pattern that was noticed was that for questions that reflected on an individual's moral decisions, the “sometimes” or “depends on the situation” options were being selected more often in comparison to other questions which demanded more generic results. Questions that did not equally represent the research pool and were impacted by external factors that are not being discussed in this report such as geographical location were also removed from the survey.

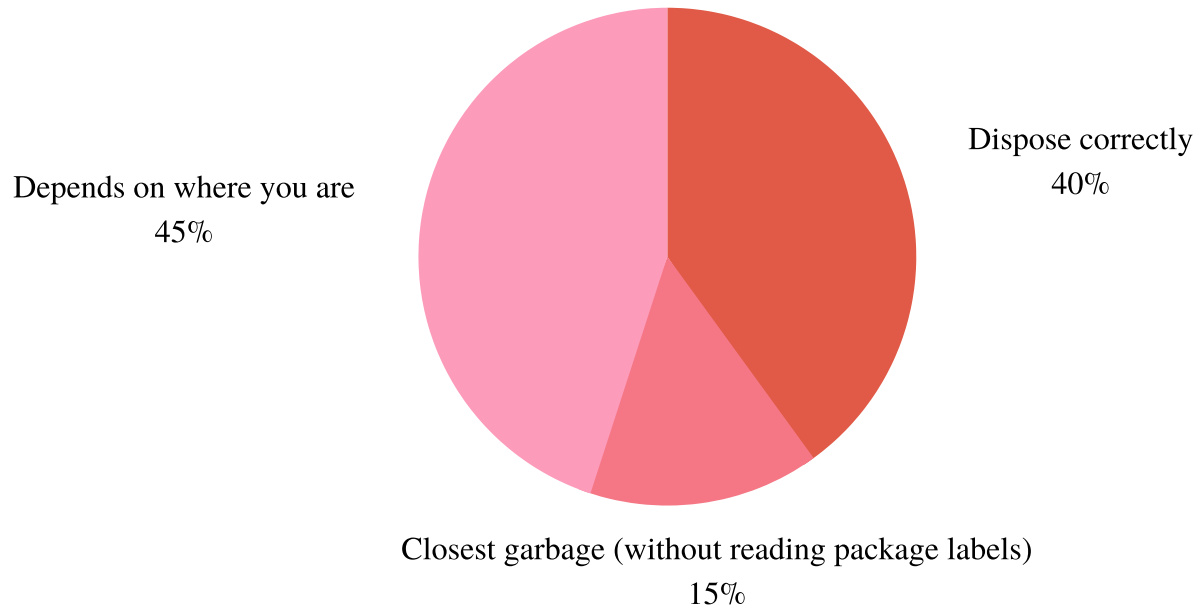
This particular method was chosen to collect research because it allowed more freedom towards the questions being asked. By conducting primary research alongside secondary research, the questions being asked were presented to collect more specific information relating to this study, which would otherwise not be discussed. Although there are many challenges in delivering a survey, such as deciding on how many questions are enough to support your work and how many participants are needed, being able to craft and cater to very specific questions tremendously supports this study. It was the most efficient and effective way to understand the opinions and viewpoints of the participants. The topic of climate change is also one which directly affects our morals and ethics so retrieving data that reflects personal choices and decisions were very important.

Existing data was also collected to help support this paper. It was important to analyze current and past articles to examine if any progress was made amongst certain geographical regions or specific businesses. The materials were sourced from different web sources including the Ryerson library, and articles and journals were chosen based on the author's credibility as well as their own sources. This study also discusses two very different and equally important concepts of climate change and packaging production so it was important to gather enough information and resources to equally support and provide research for both. Information was also gathered from official government websites if statistics on specific geographical locations were required.

# Results

Additional research was crucial to this paper and in order to collect this information a survey was created to help gather primary research. Each question was specifically drafted to help support this paper and its main points of research in the most effective way possible. While some results are quite shocking, others are proven assumptions. It is also interesting to note that some results are contradicting. Some results show that a majority of participants do not pay attention to how they dispose of their used packaging or the disposal label. However, they also believe that fines and consequences should be present and effective for those who do not do so correctly. This is a great example of how humans often act in their best interest or out of convenience and ignore the moral and ethically correct option. The following charts display the survey questions as well as the results.

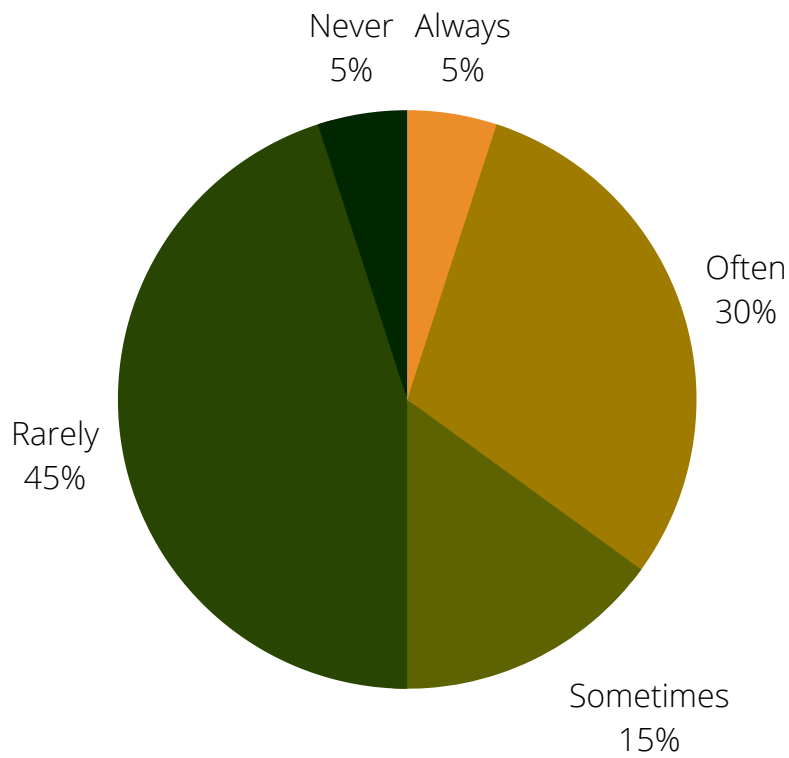
**Do you hold onto your food packaging after using it to dispose of it in the correct way (recycling, compost, plastic only bins), or get rid of it in the closest garbage can?**



**Figure 1**

This figure displays the participant's disposal choices and also uncovers their subconscious decisions made out of convenience.

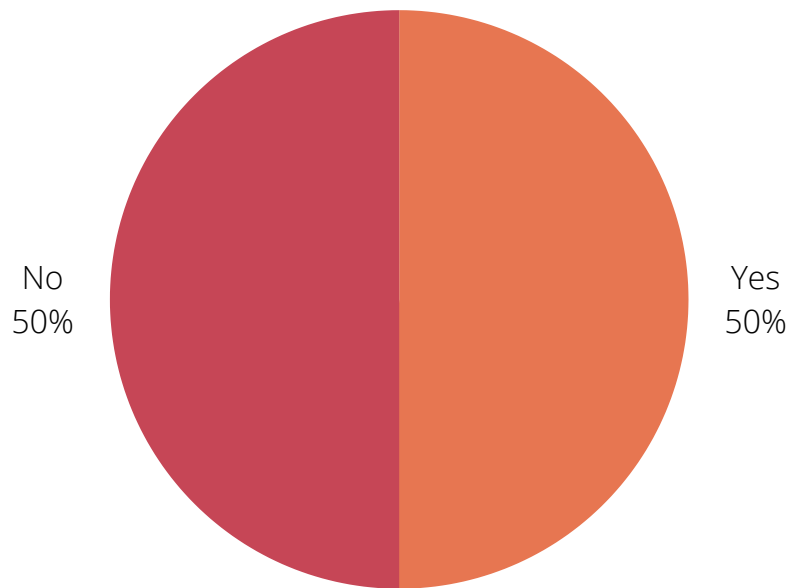
**How often do you read the disposal labels/instructions on food packaging before disposing of it?**



**Figure 2**

This figure reflects on the participant's choices and also how much attention they pay to packaging labels. It also reflects on the businesses producing this packaging and whether or not their packaging designs are effective in directly conveying disposal instructions to their consumers.

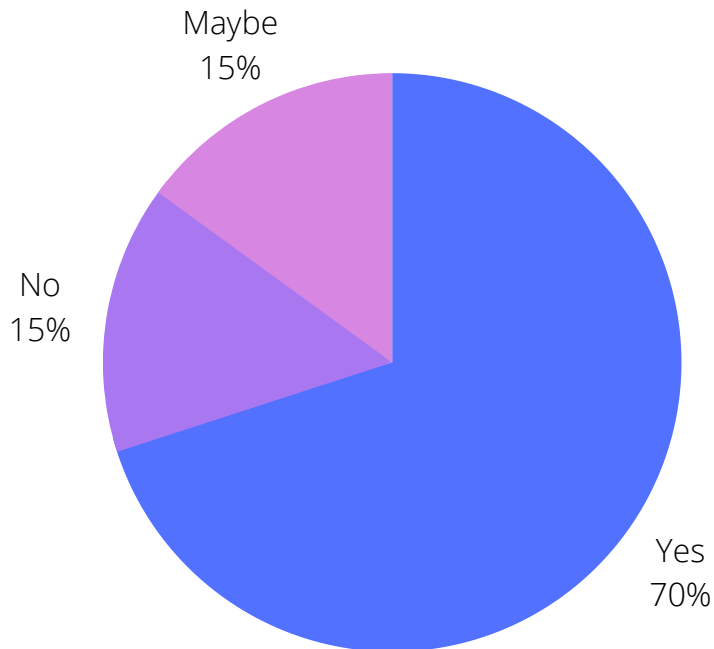
**Do you feel that there are any consequences to incorrectly disposing of food packaging waste in Canada? (ex. throwing recyclable products in the garbage, throwing garbage( un-recyclable materials) in a recycling bin, and getting fined)?**



**Figure 3**

This graph shows that an equal number of participants felt that there are consequences to incorrectly disposing of food packaging and that there are not any.

**Do you think households should be fined for producing more than a certain amount of waste?  
(would differ per home based on the number of residents)**

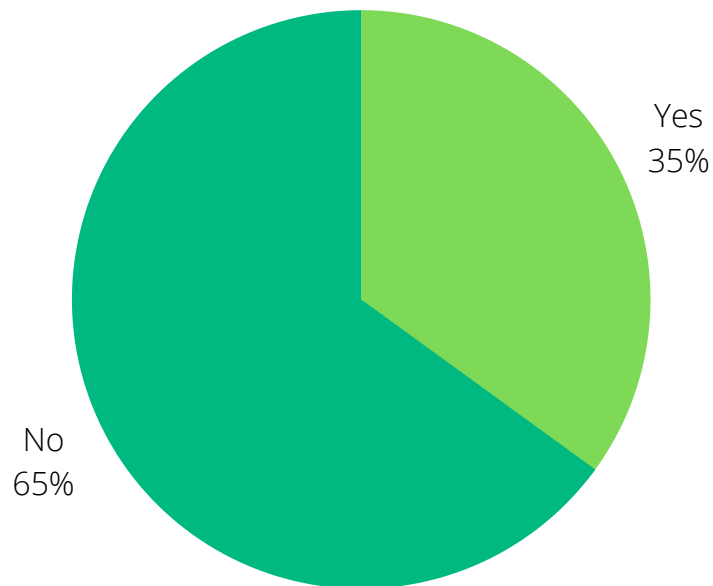


**Figure 4**

This graph shows that a majority of participants felt that households should be fined for producing more than a certain amount of waste. This is contradicting the graph which displays that a majority of participants already don't dispose of their food packaging waste correctly, but are still in favour of fines.



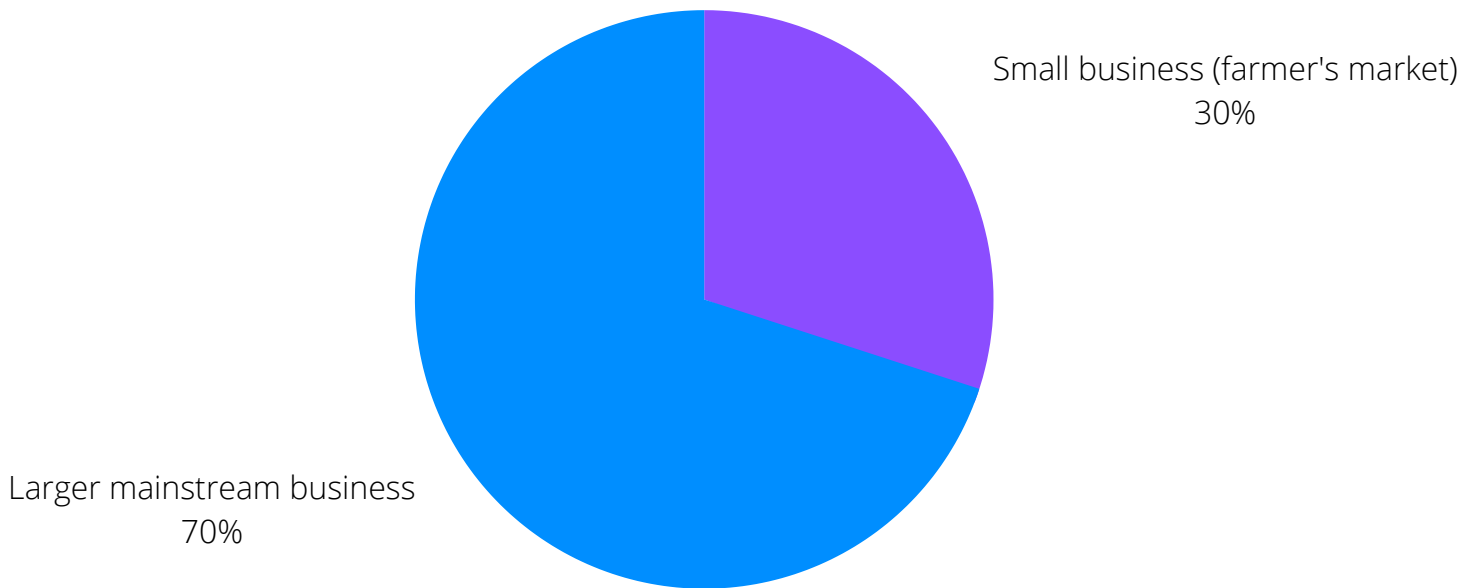
**Would you buy a more expensive food product if it meant the packaging of that item was recyclable/eco-friendly/ reusable?**



**Figure 5**

This graph shows quite well how reasonable or unreasonable, and effective it would be for businesses to raise their prices in order to promote sustainability.

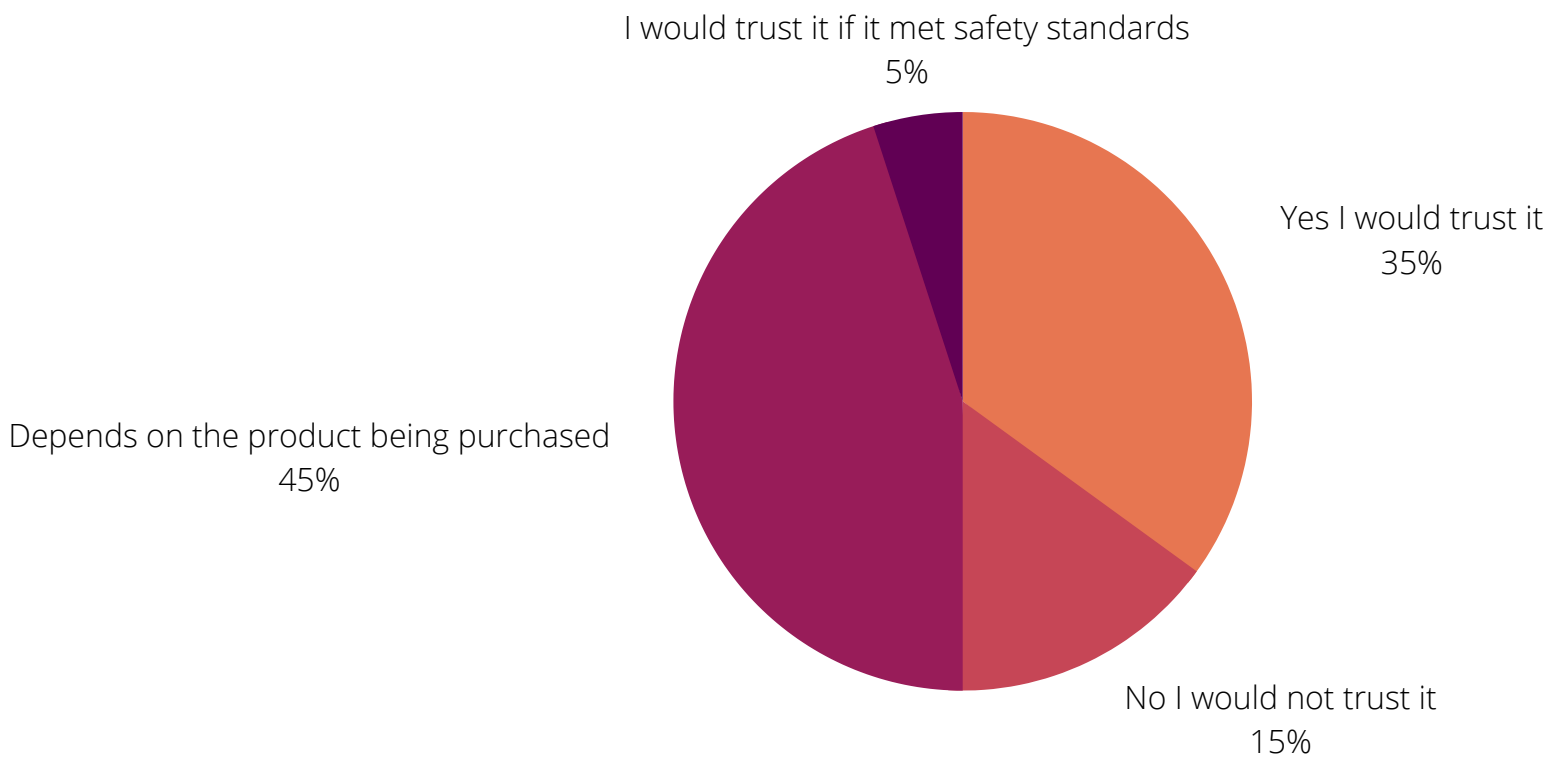
**Do you prefer to/ are you more likely to shop from larger mainstream businesses or small businesses?**



**Figure 6**

The purpose of this graph was to analyze and understand whether or not their experience and dedication to sustainability is based on their lifestyle and shopping preferences.

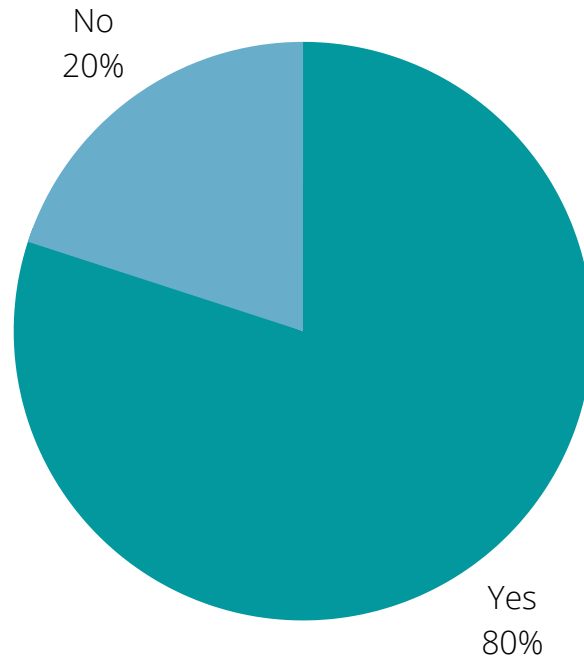
**Do you trust food packaging which is not mass-produced or branded? ex. would you feel safe purchasing food wrapped in beeswax wrap at a farmer's market vs. factory produced plastic packaging?**



**Figure 7**

The goal of this survey question was to get an honest response from participants and potential consumers to understand whether or not the reason for their choices in packaging is related to whether or not they feel safe using alternatives to plastic packaging.

**Do you feel the education system has provided you with sufficient knowledge to correctly and responsibly dispose of used materials?**



**Figure 8**

The results of this question very strongly supported this paper as it directly supports a key research point, of whether or not there is a lack of education towards climate change and sustainability in packaging.



# Discussion



## **Consequences for incorrect disposal**

### Consequences for incorrect disposal

When analyzing our daily lifestyle, we can often identify what kind of habits we have. These specific habits also impact how we approach sustainability and how much we care about the environment. As human beings, we are also more drawn towards the most convenient options rather than the morally correct one. North America contributes 14% of the world's waste while only consisting of 5% of the world's population (Gonzales, 2020). When participants were asked how likely they are to dispose of their food packaging waste correctly, 45% of participants said that it would depend on where they are and their surroundings, 40% said they would dispose of it correctly, and 15% said they would throw it in the closest garbage can without reading disposal instructions (Figure 1). When asked if they read specific disposal instructions, 45% of participants stated that they rarely do (Figure 2). Although we may think that one wrong product in the recycling bin would not make a difference and would likely be filtered out, even a single pound of waste can ruin perfectly good recyclable and reusable materials if allowed to contaminate (Chung, 2018).

Now, the question at hand is whether or not the cause of incorrect disposal, is the conception that there are no resulting consequences to those who wish not to dispose of it correctly. When participants were asked if they felt that there are any consequences if they incorrectly dispose of food packaging, 50% agreed that there are, while the other half disagreed that there are not any (Figure 3). Many factors weigh into deciding how food packaging should be correctly disposed of. However, different cities and demographics may need to be approached with a different lens. For example, individuals living in highly concentrated cities are more likely to purchase fast food, order takeout, and also shop for convenient on the go food products to match their busy lifestyles. Although these options are most convenient, they also come packaged in easy to dispose of containers and packaging. Whereas someone living in a rural area may not require as much attention to their disposal habits because they are not surrounded by many purchasing options that would contain non-recyclable and non-reusable food packaging. Although some consequences have been implemented in the city such as inspections and fines in multi-residential buildings for heavily contaminated bins, there is still enough contamination occurring which is resulting in global partners such as China to back out of agreements committing them to buy our recyclable materials (Yazer, 2020).

### **Non-recyclable materials**

The prevalence of non-recyclable materials in the mass production of food packaging is a major contributor to environmental pollution. Although many businesses are moving towards sustainable options for food packaging, the mass production of packaging which contributes to the waste in landfills is not allowing for these sustainable options to make a dent in the ecological footprint of these businesses. A critical argument when discussing the production of food packaging is how packaging for products such as produce is essential to preserve its shelf life. However, we often don't pay attention to tackling the real issue at hand which is providing produce with longer shelf life and focussing on its biological origin (Gonzales, 2020). Consumers have also begun moving towards bulk retailers with zero waste policies where customers are incentivized to shop with their own reusable bags (Gonzales, 2020).

Numerous packages being produced in factories can also be misleading. The materials used to produce the packaging may be recyclable and sustainable, however, the production criteria and circumstances may not be the most beneficial to the environment. Not only does the packaging itself contribute to polluting the environment by becoming waste in landfills, but the energy consumed and pollution created from the production of the food packaging is also harmful to the environment. It is important to ensure sustainable packaging is also sustainably and ethically produced. Some materials also require more effort and additional substrates to turn them into a final packaged product, and these add-ons might also make a perfectly recyclable and reusable product into a non-reusable one. For example, there are a lot of misconceptions about what is considered bio-packaging. The “bio” label is often misunderstood by consumers, however, businesses take advantage of what consumers believe to be “bio” to imply to push their products into the market as eco-friendly and sustainable. However, the truth is that biodegradable labelling does not mean that the package can be composted at home. A majority of the biodegradable plastics being produced can only biodegrade under certain temperature and humidity conditions, only possible in industrial composting sites (Guillard, 2018). Another example of greenwashing is oxo-degradable plastics. To someone who is unfamiliar with this term, their initial understanding might be that this means that the plastic package is degradable in some form. However, unlike biodegradable plastic which eventually breaks down at a molecular or polymer level, oxo-degradable plastic decomposes in small plastic fragments called microplastics which are left in the environment for a very long time and may never decompose (Greendot bioplastics, 2020).

When participants were asked if they would purchase a more expensive food product if the packaging of that item was recyclable and eco friendly, 65% said yes, and 35% said no they would not (Figure 5). Now the question is what is stopping businesses from choosing the more sustainable route if consumers are willing to pay for the cost of a cleaner environment? In Figure 6, we can see that when participants were asked if they are more likely to shop from a larger mainstream business or a smaller business such as a farmer’s market, 70% said they would prefer the farmer’s market (Figure 6). However, sustainable production is not always cost-efficient. For a business to produce their food packaging most sustainably, they would have to procure raw materials that require more labour, thus they would have to pay their employees higher wages. For companies carrying thousands of employees, the profits they would make from these sustainable products may not be enough to also support their employees and other costs (Kathy, 2019). Also, when participants were asked whether or not they trust food packaging that is not mass-produced and branded, 35% said they would trust the product, and 45% said that it would depend on the situation, and safety measures would be necessary (Figure 7).

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## Education

When we trace the root cause of why individuals choose not to dispose of their food packaging correctly, oftentimes the issue is that they don't know how to, or where to. When participants were asked if they believe that the education system has provided them with sufficient knowledge to correctly and responsibly dispose of used materials, 80% felt that they were not, and 20% felt that they were (Figure 8). However, the responsibility of educating individuals on a topic that is greatly affecting our environment does not only fall on the education system but also the businesses and manufacturers producing these products. These businesses must create products for consumers living in geographical areas that have the correct facilities to dispose of and decompose these packaging materials.

A recent study discovered that 86.4% of students surveyed had heard of sustainability but only 35% felt that they knew what it really meant and implied. It also stated how the media is creating a lot of awareness and constantly bringing up the topic of a cleaner and more sustainable environment, but they are not telling us what to do next with that information (Gough, 2017). As a result, good quality educational materials will contribute to the combined success of municipal recycling programs since by educating people on the products they purchase and the type of packaging being used, these programs can help reduce the contamination and increasing diversion of usable materials (Toto, 2015). Additional recycling education programs should cater to the capabilities and technology available from the local recycling facilities. Food containers made from black plastic are not recyclable in Toronto, Canada.. Some food packaging may also have a Mobius loop symbol on them, which one would assume means that the package can be recycled or is environmentally friendly. However, black plastic packaging, even with a Mobius loop symbol cannot be recyclable in Toronto in any format or circumstance (City of Toronto, 2020).

# Conclusion



By analyzing the lack of policies and consequences towards incorrect disposal, mass production using misleading substrates and the lack of education on the matter of recyclability, this thesis has explained how food packaging practices in North America cause pollution and contribute to climate change. Food packaging is one of the greatest components of the packaging industry and also one of the greatest contributors to plastic waste. By understanding why Canada's plastic waste contribution has increased significantly, it was necessary to understand the reasons as to why food packaging is being incorrectly disposed of. By creating packaging more consciously per specific demographic it is ensured that the necessary disposal facilities are available for consumers to access. Also, by holding businesses accountable for the educating of consumers on product packaging specifics such as materials used, biodegradability or composability and potential life span, several food packaging companies can prevent their product from ending up in landfills and contributing to the climate change crisis.

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## Appendices

[https://docs.google.com/forms/d/e/1FAIpQLScKGYVPQcM50qYvrB2sG7LENcvUQCLapLGFXd6\\_g994GhSeXQ/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLScKGYVPQcM50qYvrB2sG7LENcvUQCLapLGFXd6_g994GhSeXQ/viewform?usp=sf_link)