Jared Entwistle
Graduate Researcher
Ecology and Environmental Sciences
Maine Business School

Rachel Pellis
Undergraduate Assistant
Anthropology

Cynthia Isenhour
Associate Professor
Department of Anthropology

Reusable Packaging Restaurant Industry Survey Report

Executive Summary:

In light of the increasing burden on US municipal waste streams due to foreign borders closing to US exports of waste (Wang et al. 2020), uptrends in the amount of packaging used (Vann 2021; Argawal et al. 2020), and disturbances to normal operation due to the COVID-19 pandemic and related economic shut downs (Zimmerman et al. 2020), a larger focus has been paid to how to reduce the amount of waste our economies produce. According to the US hierarchy of waste management practices, which Maine has adopted, there are seven strategies to handle waste material which are listed in descending order of preference: Reduce, reuse, recycle, compost, process with beneficial use (ie, turn into fuel), waste-to-energy, and landfill (Solid Waste Management Hierarchy, 2007). The current municipal waste system in the US relies on landfilling, but this process is often inefficient and plastics end up in the environment where they can be detrimental to the health of people and wildlife (Ng et al. 2018). Nearly 78% of single use plastic in the US municipal waste stream can be attributed to the restaurant industry and food service applications (EPA 2015) and represent a large portion of the overall municipal waste stream.

As part of a larger project to explore the potential of reusable packaging to address waste creation issues in the restaurant industry, researchers at the George Mitchell Center for Sustainability released a survey to better understand how Maine restaurateurs view reusable packaging systems. The survey was distributed in the spring of 2022 through Hospitality Maine and the Maine Brewers Guild, Maine-based advocacy organizations that support the state's hospitality and brewing industries respectively. Between the two organizations, nearly 1,500 participants were invited to take the survey with respondents being offered the chance to win one of six $50 gift cards. Several email reminders were sent to both list-serves. A total of 37 individuals participated in the survey and represented food service establishments that provided a range of services including Takeout, Dine-in, Catering, Remote events, and Delivery. Despite the small sample size, some trends emerged, such as restaurateurs generally being concerned about their environmental impact, the ways in which respondents viewed the different reuse models varied greatly. This is likely a result of each restaurant containing a unique mix of operational and financial concerns. Below is a summary of the key findings which will be discussed in the rest of the report:

- On average, restaurants used just over 850 disposable take-out containers per week per location.
- The majority of restaurants suffered packaging supply chain shortages over the past year. Restaurants that used plastic take-out packaging suffering the highest rate of supply chain shortages (70.6%)
- Respondents perceived the Purchase and Discount model of reuse to be the most convenient, and the most feasible from an operations and finances standpoint. However, when asked to rank the different reuse models, restaurateurs ranked the Deposit model

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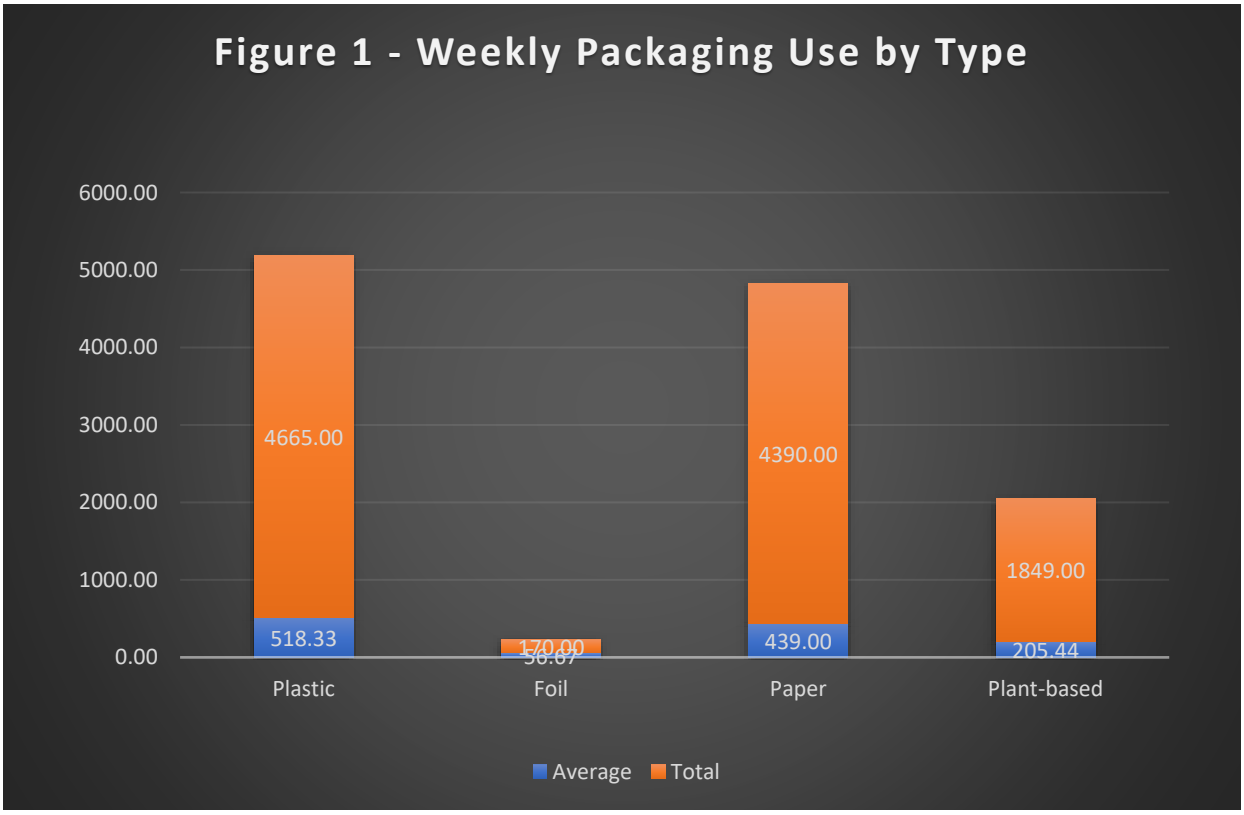
highest indicating that there are factors respondents liked about the deposit model that were not captured by this survey.

- Restaurants are concerned about the availability of staff and this concern is a major barrier to adding a new system to their operations.

Packaging Type and Usage (Figure 1):

Figure 1 details the type of packaging material the respondents use and how many to-go packages they use in a typical week. The packaging material types were based on the following four options: Paper or Paperboard; Foil; Plant-based or Compostable; and Plastic. Among the respondents, plastic and paper packaging products were the most often used, with respondents using a total of 4,665 and 4,390 units per week respectively. In contrast, Plant-based and Compostable products were used about half as frequently (1,849 units per week), while only 170 foil containers were used in an average week. In the aggregate, survey respondents reported using a total of 11,074 to-go packages per week, or an average of just over 850 units per location per week. It is important to note that only 13 respondents provided information on weekly packaging use.



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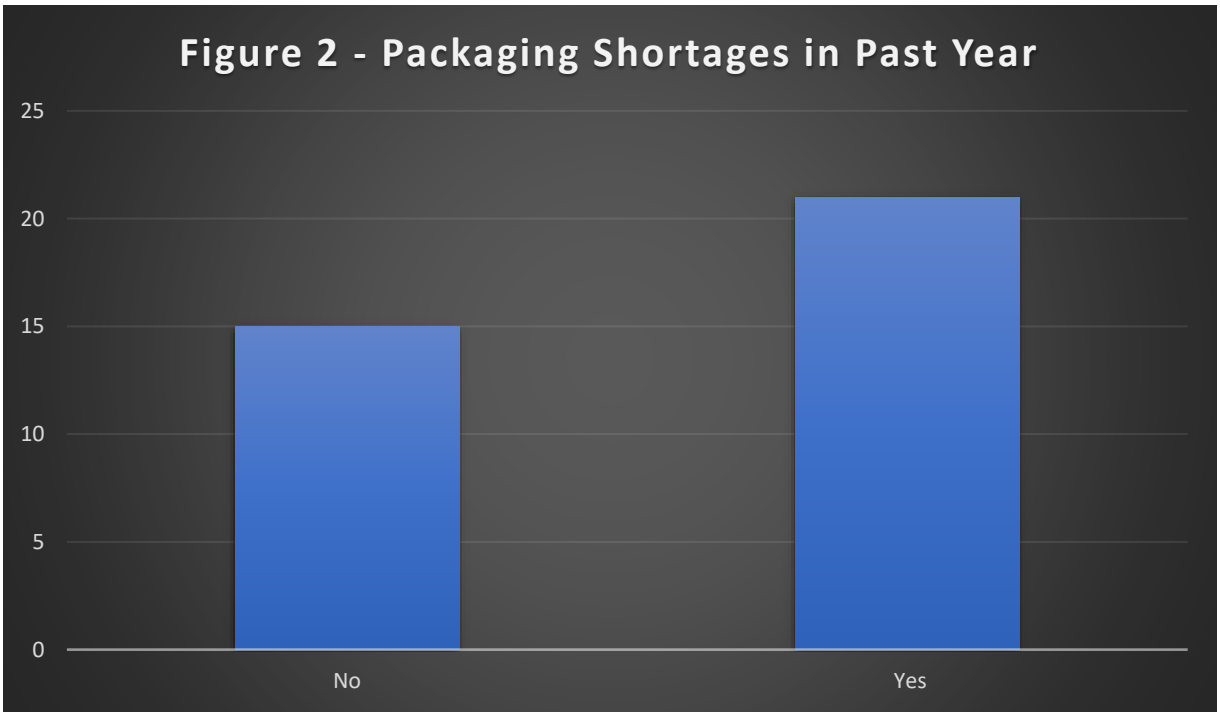
Packaging Shortages

When asked if they had experienced packaging shortages in the past year, over half (21) responded “yes” (Figure 2). While this is a high proportion of participants, this result may be misleading as some respondents did not report using any to-go packaging. When controlling for this fact, 58% of packaging users reported a packaging supply shortage. To understand which packaging materials experienced the highest supply shortage, Figure 3 cross-references the percentage of respondents who experienced a packaging shortage by the packaging material used. From figure 3 we can see that respondents who used plastic packaging were most impacted by supply shortages (70.6%), followed by plant-based or biodegradable packaging (64.3%), paper products (60.7%), and foil containers (60%).



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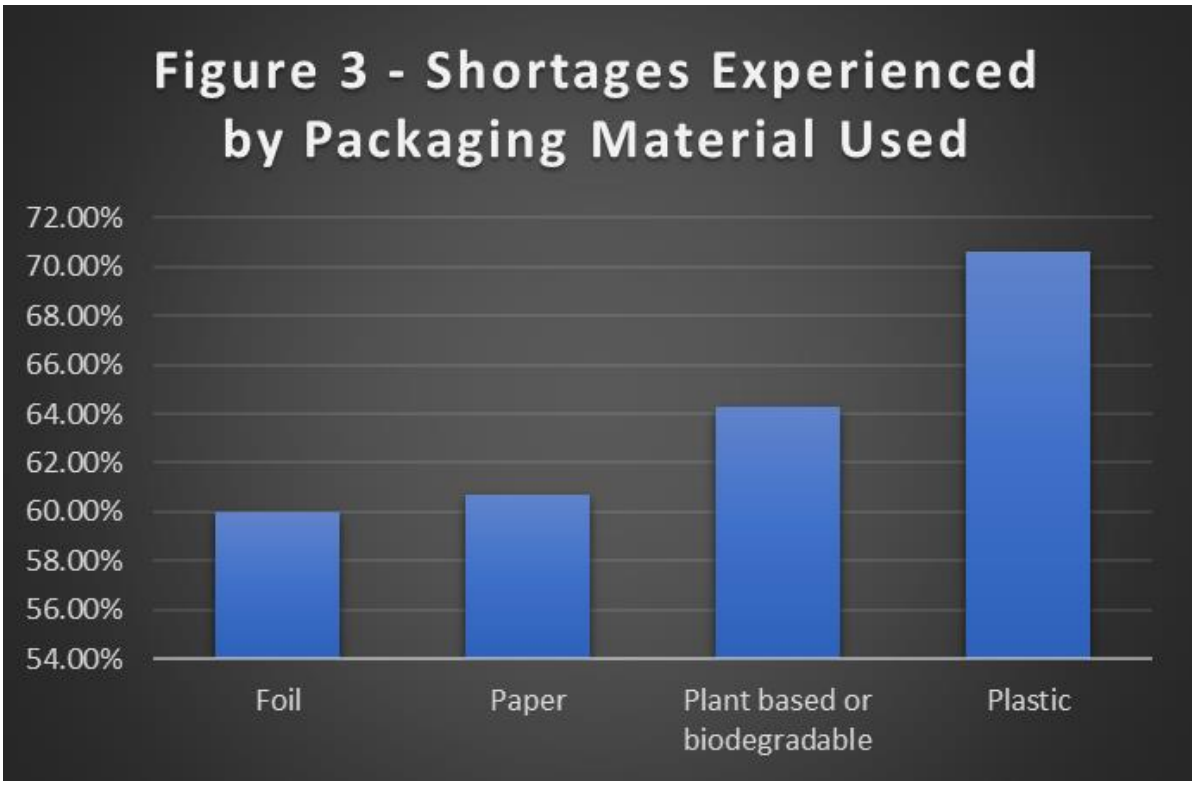

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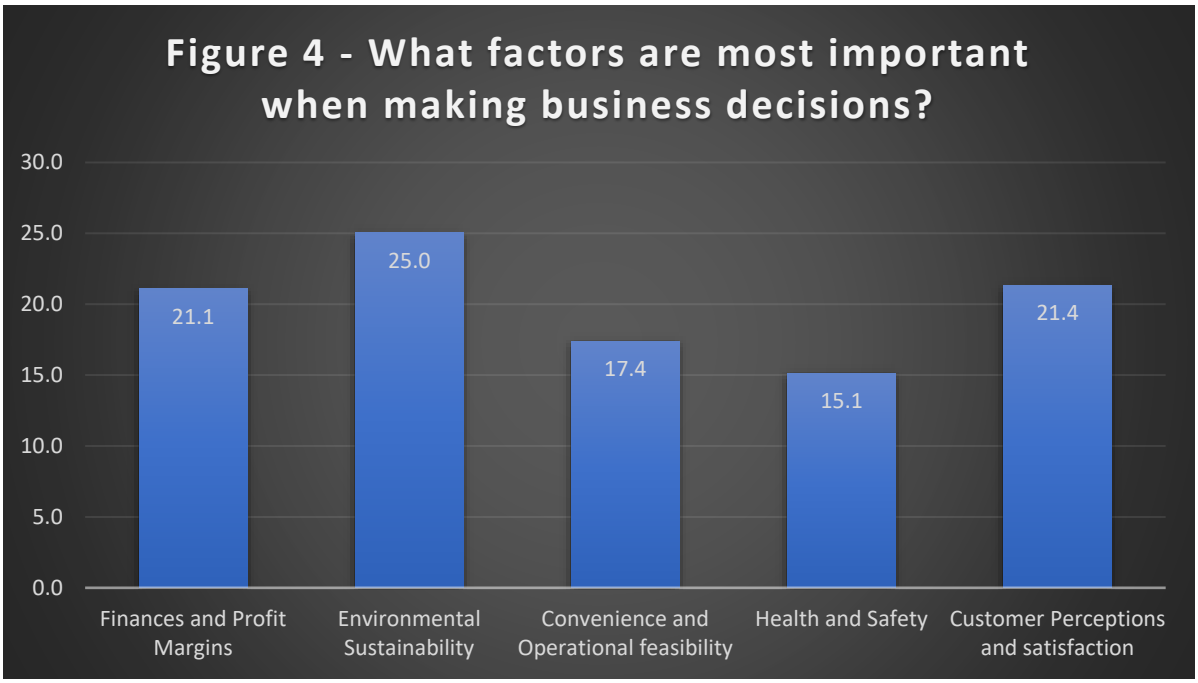
Factors Impacting Business Decisions (Figure 4):

Survey respondents were asked to rate the relative importance of the following five factors when making decisions for their business: Finances and Profit Margins, Environmental Sustainability, Convenience and Operational Feasibility, Health and Safety, and Customer Perceptions and Satisfaction. Participants were given 100 points to distribute among the 5 factors, meaning that scoring 20 for each factor means that they weigh each factor evenly. Environmental sustainability rated the highest of the five factors at 25%, while Customer Perceptions and Finances came in at a close second and third – 21.4% and 21.1% respectively. One possible explanation for these scores is that individuals inclined to respond to this survey were motivated by their natural interest in environmental issues and solutions. Additionally, the closeness at which Finances and Customer Perceptions were rated could be reflective of the industry being customer facing and thus customer perceptions are closely linked to financial success. The lowest ranked factors were operational feasibility and health and safety concerns, rated at 17.4% and 15.1% respectively. While the low rating of health and safety could be taken as an indication of disregard for health and safety protocols, other answers to this survey would seem to suggest this factor is rated low because restaurant owners feel confident in their ability to keep their operations safe.



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Perceptions of the Different Reuse Models:

Several questions focused on respondents' perceptions and preferences for the four most popular reusable packaging models. The four models are Deposit Systems, Purchase and Discount Systems, Lending Systems, and Subscriptions Systems – See table 1 for more information on the differences between the models. While no clear preference emerged from the survey, respondents appear to view the Purchase and Discount model as slightly more convenient, operationally feasible, and financially viable (see Figure 5) compared to the other models. Worrisome for the startup of reusable models is that no model received a combined score of higher than 5 on a 10-point scale, indicating that most respondents did not view these reusable systems as feasible to implement compared to the current disposable systems.

Table 1 – Reusable Packaging Models (follow links to view a case study on that model)

Model	**Deposit**	**Purchase and Discount**	**Lending**	**Subscription**
Description	Customer places a deposit on the container. When they return the container, they may either receive the deposit back or receive a clean container with their next order.	Customers purchase the container. On subsequent visits, they receive a small discount if they swap their dirty container for a clean one at subsequent visits.	Customers create an account and are allowed to check out a reusable container for free with each purchase. The customer must return the packaging within 2-5 days or else they are charged late fees. These fees will build until the container is returned or paid off in full.	Customers create an account and choose a subscription level. Customers are allowed to check out a specified number of containers according to their subscription level. Customers must pay for lost or damaged containers .

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Container is washed by…	Participating businesses	Participating businesses	Third-party vendor	Third party vendor
Container is owned by…	Businesses own the packaging but allow customers to use them	The customer	The business rents the packaging from a third-party vendor	The business rents the packaging from a third-party vendor
Costs involved	Customers pay a deposit to access the containers. The business covers the costs associated with cleaning and servicing returned containers	Customers purchase the packaging. If the business offers a discount, they will absorb that cost as well as the additional cost to wash the containers.	Customers only pay when containers are returned late. Businesses pay a monthly fee to a third-party vendor which is determined by the number of packages processed by the vendor.	Customers pay a monthly fee to participate. Businesses pay a monthly fee to a third-party vendor which is determined by the number of packages processed by the vendor.

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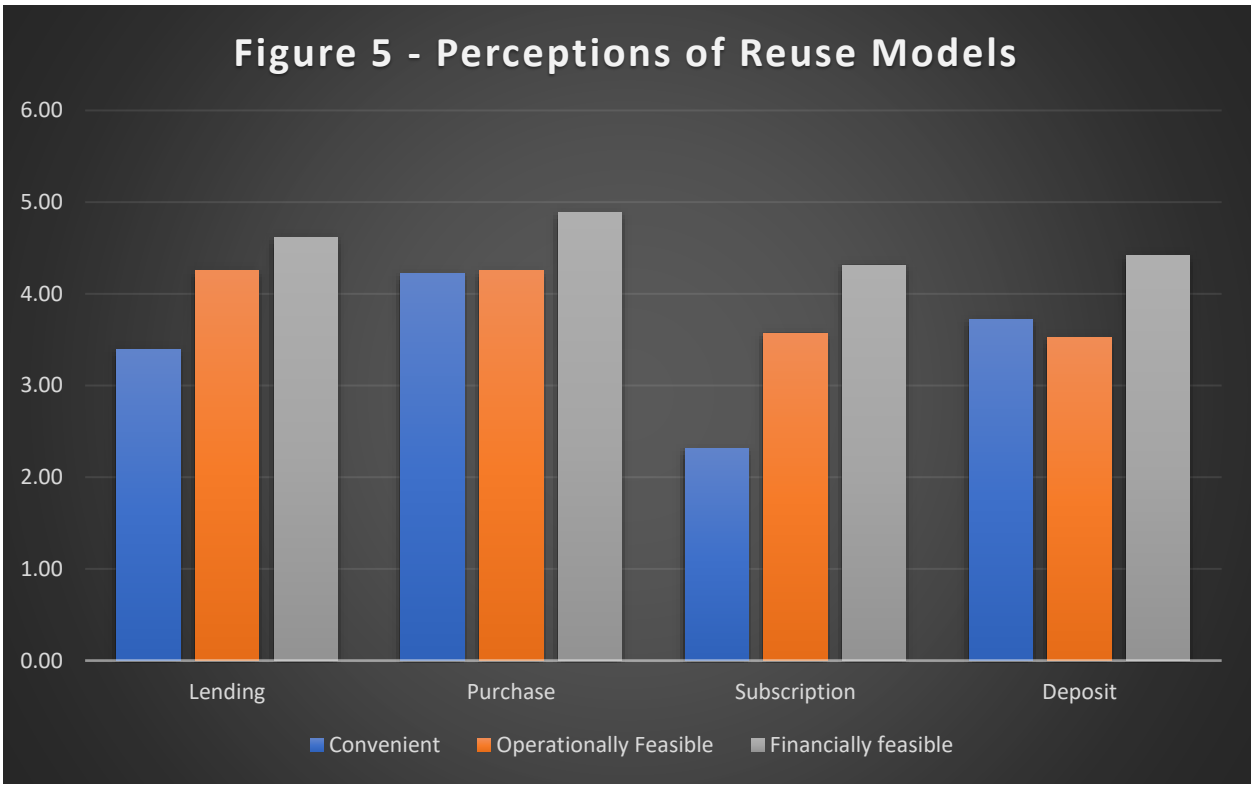

Reuse Model Preferences:

During the survey, participants were asked to rank each model according to which system of reuse they liked the most. The Lending and Purchase models were rated slightly worse (2.81 each) than the Subscription and Deposit Models (2.22 and 2.17 respectively) when ranked on a scale of 1-4 where 1 represented the highest preference (Figure 6). While the subscription model was rated the lowest in terms of perceptions of convenience, operations, and financial viability, it is interesting to note that it ranked second highest in terms of respondents' preferences to specific models. It may be that subscription models appear to be difficult to implement but offer advantages to businesses that were not captured in this survey's results. Another explanation for this effect is that 4 (10.8%) respondents did not provide food service and described their operations as shipping or food distributors.

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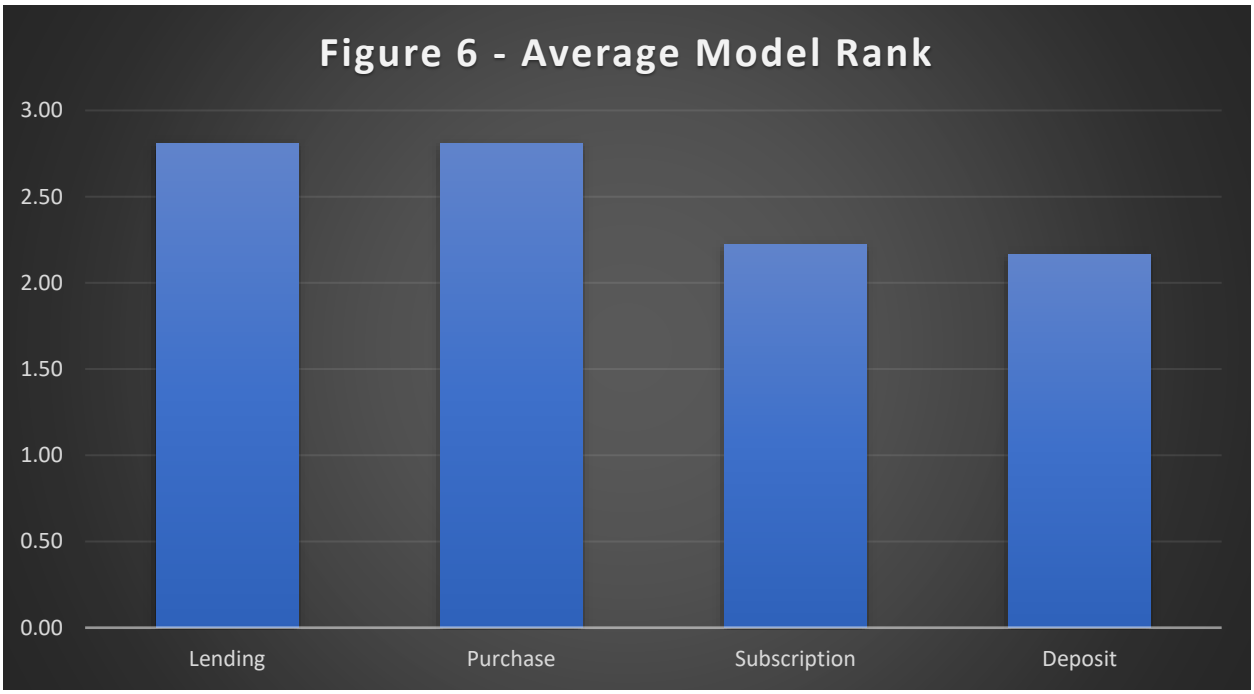

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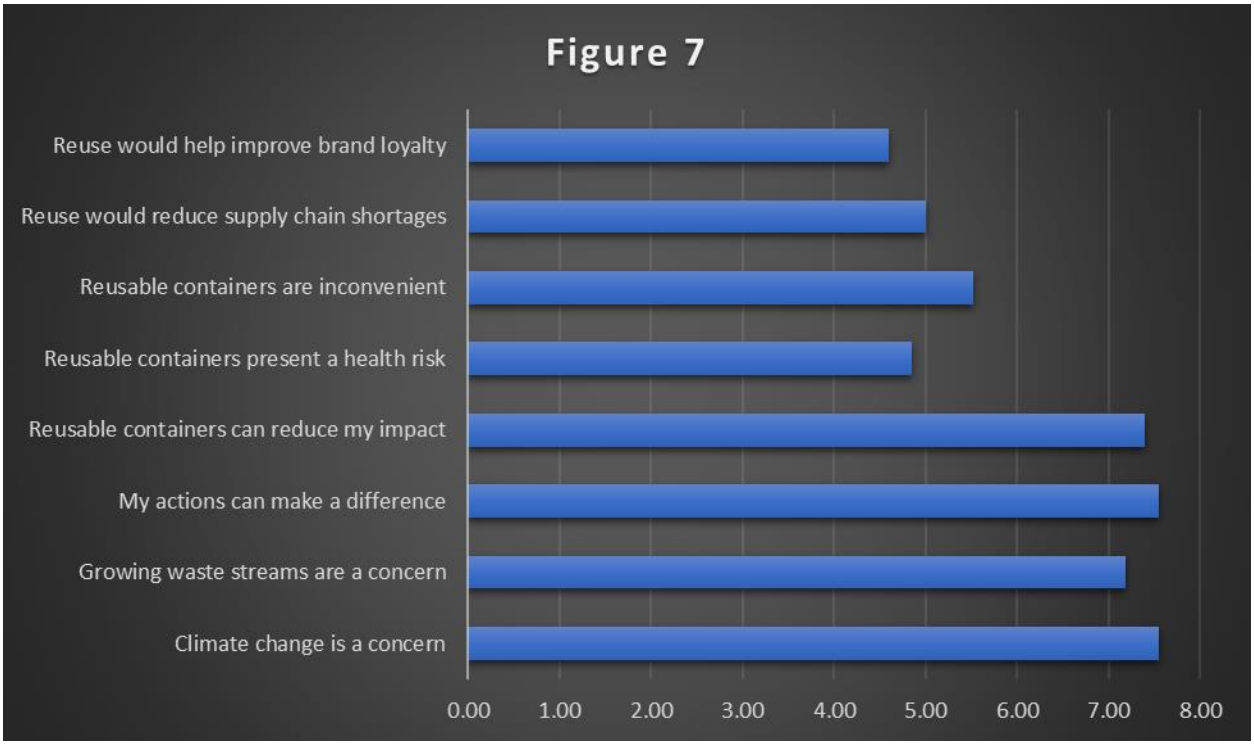
Impact Assessment:

Figure 7 presents a range of statements to which respondents could indicate their level of agreement from 1 (disagree) to 10 (completely agree). Respondents were generally ambivalent to the idea that reusable packaging could improve brand loyalty and reduce supply chain shortages. Interestingly, respondents were also mixed about whether or not reusable container systems were inconvenient or presented a health risk. Taking into consideration the comment section, this is likely due to highly variable answers centered around a mean rather than sample-wide ambivalence. When asked about their concerns about climate change and whether their actions could make a difference, most respondents appeared to agree and to think that reusable containers could help to reduce their environmental impact. This may indicate that the individuals sampled are more inclined than the larger population of restaurateurs to take climate change and waste issues more seriously. It is also important to note here that figure 7 represents generalized statements about reusable containers.



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Comments and Free-form Responses:

At the end of the survey, respondents were given the opportunity to give additional feedback on the reuse models. Some of the pro comments were excited to hear about reusables saying "it is a great idea that we had not thought of before, and this survey gives us something to think about." Others focused on particular traits of reusables and how they might fit into their particular restaurant while still others noted that reusables could be a successful strategy for dealing with rising prices and supply shortages: "With prices rising on every product we use we will be looking at all alternatives to throw-away packaging."

Negative comments focused mainly on reusables not being the right choice. One respondent noted that they "believe the reusable approach is misguided. I believe the future is to make the packaging more environmentally friendly and biodegradable." This line of reasoning may reflect the need for better communication about the pros and cons of biodegradable and compostable materials as several studies suggest that they provide few, if any, benefits over traditional plastic. Concerns about reusables being cost prohibitive were centered on the assumption that customers would not return the packaging and that customers "would end up throwing them away anyways." This is a large concern for reusable packaging systems because packaging return rates need to be high, allowing the production cost of the packages to be spread out over a large number of uses. This comment gets to a key issue of reusable packaging; if reusable packaging is treated like it's disposable, then the system will fail to provide any environmental or social benefits.

One of the most poignant comments from the survey focused on the current staffing and supply shortages, stating that "until there is a 'normal' that doesn't include severe labor shortages and supply chain issue(s) and ridiculous food cost increases, asking anyone in the restaurant industry to do more is not feasible." While this research is timely in the fact that it presents findings on a waste reduction strategy during a time when municipal waste streams are seeing 60% increases in disposable packaging, this comment does point to a bigger issue of researching such systems during a disruption; restaurateurs are stretched thin in terms of staffing, supplies, and free cash flows. With this in mind, it is conceivable, if not likely, that otherwise interested business owners would be hesitant to take on a project that so fundamentally changes the way in which they offer food to go. Another respondent commented on a physical limitation, stating that "space is a huge concern. We just don't really have space to store the unused containers." This limitation is likely to be more impactful for some businesses than others, but it is also worth noting that this is also a criticism that has less relevance the more exclusively a business participates in reuse. The reason behind this is that a well-functioning reuse system only needs enough containers to make it through high volume sales periods whereas single-use packaging systems need to have enough containers to last until their next delivery of dry goods, which likely means stocking several weeks' worth of containers.