

Analyzing Consumer Perceptions Towards the Honolulu Disposable Food Ware Ordinance

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I certify that I have read this thesis and that, in my opinion, it is satisfactory in scope and quality as a thesis for the degree of Bachelor of Science in Global Environmental Science.

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For my family.

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ABSTRACT

As the destructive effects of plastic pollution gain ever-increasing presence in the public awareness, many regions in the world introduced plastic regulation laws to combat the production, distribution, and disposal of single-use plastic, met with varying levels of success. This thesis investigates consumers' perception of the Disposable Food Ware Ordinance (DFWO), that was introduced by the city and county of Honolulu in 2019, and designed to take effect in September 2022. The methodology of this study consists of developing and distributing online surveys to Honolulu residents, which include questions related to the frequency of plastic usage, awareness of plastic pollution, and willingness to contribute financially to sustainable food ware options. Survey results were plotted and analyzed to formulate an understanding of the capacity at which consumers are willing to support the plastic ban. Findings show a negative correlation between age and willingness to pay for sustainable food ware. A negative correlation was also discovered between income and willingness to pay. Using multiple regression, significance was found between WTP and education (-) and those who would report businesses if they don't comply (+) at the 5% significance level. Bioplastic was the preferred choice of sustainable food ware, according to survey responders, which may lead to the growth of bioplastic as the most prevalent food ware post-DFWO.

Plastic Regulation # Single-use Plastic # Environmental Policy

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1.0 INTRODUCTION

Plastic is a synthetic material manufactured with chemicals extracted from fossil fuels. Plastic encompasses many different forms, such as polypropylene, used for bottles and fiber, polystyrene, used for Styrofoam containers, and polyvinyl fluoride, used for food wraps and drain pipes (Science History Institute, 2019). Plastic is ubiquitous in our lives due to its versatility and overwhelming utilitarian benefits. However, fossil fuel, the source material from which plastic is derived, is a non-renewable resource that takes billions of years to form (Güney, 2022). When single-use plastic is discarded, it becomes waste that infiltrates terrestrial and aquatic ecosystems. It is, therefore, necessary to elucidate the adverse effects plastic pollution has on the environment and human health (Huff et al., 2011).

1.1 THE IMPACT OF PLASTIC POLLUTION ON THE ENVIRONMENT AND HEALTH

Plastic pollution in land, ocean, and atmosphere is presently one of the biggest environmental challenges of this generation and has significant consequences for ecosystems and human health. Plastic waste is frequently ingested by wildlife, which causes serious injuries and deaths to animals. When larger pieces of plastic break down, they become smaller pieces of plastic, called microplastics, which are often invisible to the naked eye. Particles of plastic that measure less than 5 mm in diameter are called microplastic, and make up about 94% of plastic in the ocean (Chatterjee et al., 2019). The abundance of microplastic in the oceans adversely affects marine ecosystems and the

valuable services they provide to Earth's climate system, such as atmospheric carbon uptake. When marine organisms ingest microplastics, the toxins bioaccumulate through the marine food web and appear in human food sources. Apart from the plastic present in the food themselves, humans regularly consume traces of different forms of plastic through the use of water bottles and food containers, and while the quantity of plastic consumed each time is small, these plastic products can pose long-term health risks when ingested regularly (Amelia et al., 2021). Polystyrene is a human carcinogen that poses risks for lung cancer, and tumors, and induces DNA damage (Huff et al., 2011). Microplastic, regardless of which kind, are harmful and dangerous to human health as they have multiple pathways of exposure, such as through food and water, personal care products, and the abrasion of synthetic textiles in clothing (Belzagui et al., 2019). A study has shown that exposure to microplastics is associated with mammalian reproductive dysfunction, and can be detrimental to male fertility (D'Angelo et al., 2021). The durability of plastic, unrestricted usage, and mismanagement of waste has led to the accumulation of plastic in ecosystems worldwide. The proliferation of plastic waste in our natural systems is well-documented and indisputable, making mitigating plastic pollution a top priority.

1.2 PLASTIC REGULATION LAWS AROUND THE WORLD

As the plastic pollution problem grows exponentially in magnitude, plastic regulation policies are beginning to emerge in countries and regions around the world, with variations in details from place to place. Nation-wide plastic bag bans are widely introduced in countries in Asia and Africa, and Europe. They have adopted levies as one of

their main regulation methods to combat plastic usage (UNEP, 2018). In the US, the introduction of plastic bans is limited in number and scope, with only eight States introducing laws to limit plastic use, including California, Connecticut, Delaware, Hawai‘i, Maine, New York, Oregon, and Vermont (NCSL, 2021). It is estimated that 5 trillion plastic bags are consumed around the world annually, and so far, more than 60 countries have introduced laws to regulate single-use plastic (UNEP, 2018). However, estimating the impact of these plastic regulation policies can be complicated, as difficulties reside in the education, monitoring and enforcement of the laws. According to the UN 10-step road map for governments, raising public awareness about plastic pollution and promoting alternatives are crucial steps in ensuring the success of plastic regulation (UNEP, 2018). Therefore, investigating the attitude of the public towards single-use plastic, and their willingness to participate in reducing plastic usage is key to understanding the potential impact of the Honolulu Disposable Food Ware Ordinance.

1.3 OVERVIEW OF DISPOSABLE FOOD WARE REGULATION POLICIES

The regulation of plastic food ware is relatively new in the realm of plastic regulation laws, as previous efforts of plastic bans worldwide heavily leaned towards the restriction of plastic bags. In the EU, the Single-Use Plastic Directive restricted the use of 10 disposable plastic products, including expanded polystyrene (EPS), which is commonly used in Styrofoam cups and to-go containers. In the US, the earliest enactment of the food ware policy was introduced when Maine banned the service of food and beverages in EPS containers in state facilities in 1987. In 2014, Washington DC enacted a comprehensive

disposable food ware ban, and Maine and Vermont both enacted subnational level bans as of 2019 (Wagner 2020). Large urban centers on the west coast, namely Portland, OR, San Francisco, CA, and Seattle, WA have passed ordinances to ban EPS. In California, over 53 jurisdictions have voted to ban polystyrene food ware (Nguyen 2012). While the number of food ware bans remains low nationwide, the areas that have passed bans are usually high in population density, and therefore benefit the most from food ware regulations. As a dense and populated urban center, Honolulu would benefit greatly from the disposable food ware ordinance as it may significantly reduce plastic waste generated through takeout consumption.

1.4 THE HONOLULU DISPOSABLE FOOD WARE ORDINANCE

In Hawai‘i, Bill 40 which bans single-use plastic in O‘ahu was passed in 2019 (Surfrider, 2019). First and foremost, this bill is instrumental in preventing the advancement of locally sourced plastics from entering the ocean. Plastic pollution has caused habitat destruction in Hawai‘i. The natural habitats of Hawai‘i are known to have been continually degrading for decades. The accumulation of plastics in the beaches and waters of Hawai‘i contributes to the local plastic pollution problem. At Kamilo Beach, a hotspot where plastic pollution aggregates, a portion of the debris is found to be locally sourced plastic (Carson et al., 2013). Researchers installed debris booms at the drainage sites in Hilo, and have captured polyethylene bottles and plastic bags, constituting 17% and 7.5% respectively, as the two largest categories out of the total debris, proving that disposable plastics are a major source of debris that Hawai‘i puts into the ocean (Carson et al., 2013). The passing of Bill

40 could potentially eliminate a large source of local plastic pollution.

The Honolulu Disposable Food Ware Ordinance (DFWO) was introduced in 2019 as an effort to further regulate single-use plastic in the city, following the state-wide ban on plastic bags. Bill 40 ordinance 19-30 (see Appendix I) prohibits the production, distribution, and sale of polystyrene food containers, cups, plastic lids, and disposable plastic utensils. The ban was delayed multiple times due to complications during the Covid-19 pandemic. Businesses, especially the food industry, suffered financially during the pandemic and could not afford to switch to sustainable food ware while sacrificing financial stability. In light of the dire situation presented by the pandemic, the DFWO, originally planned to take effect on Jan. 1st, 2022, was deferred to March 1st. When a request for exemption on behalf of the Hawai‘i Restaurant Association was submitted to the Honolulu Department of Environmental Services (ENV), the ordinance was once again delayed to Sept. 5th, 2022. The ordinance formally took effect on Sept. 6th, 2022.

1.5 OVERVIEW OF SUSTAINABLE FOOD WARE

Food ware is a broad category that encompasses utensils, food containers, caps, straws, wraps, and bags used during the process of serving, transporting, or retailing food. Plastic is ubiquitous in this chain of the process due to the overwhelming utilitarian and sanitary benefits they provide. However, as more and more plastics find their presence in the world’s oceans and enter our food sources, it is necessary to address plastic usage in the food industry. As climate change and environmental pollution become ever more urgent,

sustainable food ware emerges as an alternative to plastic.

Sustainable food ware is a broad category that encompasses products that are made of natural and compostable materials, such as wood, bamboo, paper, and bioplastic. The lightness and durability of bioplastic rival that of ordinary plastic, however, since bioplastics are not made of fossil fuel like plastic, they do not share the same level of environmental impact. Bioplastic is derived partly or all from biomass resources, such as wheat straw, sugar cane, and corn, and breaks down easily by microorganisms in nature into water, carbon, and compost (Springle et al., 2022).

Apart from sustainable single-use products, reusable food ware is also a viable option and encouraged by the Department of Environmental Services in Honolulu. According to the Center for Environmental Health, reusables are the most sustainable option and should be prioritized when switching to sustainable food ware. The upsides of reusables are that they eliminate exposure to chemicals in plastic, and do not generate waste as single-use products do. In addition, Life-cycle studies indicated that food ware made of different materials, and reusables have the lowest environmental impact (CEH, 2020).

2.0 METHODS

The goal of my research is to develop an understanding of how receptive consumers in Honolulu are to the introduction of the city-wide plastic ban on local restaurants and food businesses. The investigation will be conducted via a confidential online survey and the collected data will be analyzed in excel.

2.1 DESIGNING THE SURVEY

A 16-question survey was designed to be distributed randomly to Honolulu residents, whom the DFWO would impact. The survey was specifically designed from the perspective of consumers because businesses are likely to make decisions according to consumers' spending patterns. The survey is a combination of multiple-choice questions, a Likert scale, numerical short answers, and questions designed to gauge public perception of the plastic ban. The survey was distributed partly via online survey sites using random device engagement, and partly in Google Survey Form and distributed through email listservs within the University of Hawai'i at Mānoa. The number of responses needed to represent the population of Honolulu, 1,000,890 (Census.gov, n.d.), is calculated with Raosoft, a sample size calculator, to the 95% confidence level using the formulas:

$$x = Z\left(\frac{c}{100}\right)^2 r(100 - r)$$
$$n = \frac{Nx}{((N-1)E^2 + x)}$$
$$E = \sqrt{\left(\frac{(N-n)x}{n(N-1)}\right)}$$

Where n is the sample size, N is the population, c is the confidence level, E is the margin of error, Z is the critical value, r is the fraction of responses we're interested in. The formula yields a desired sample size of 384. The survey questions residents on an array of questions related to their plastic food ware usage and their opinion on plastic pollution. The key question presented in the survey is how much are consumers willing to pay out of pocket for the food price increase that may come with businesses switching to sustainable food ware products. The survey also collects demographic information such as age group, income level, and years of residence in Hawai'i to further understand potential correlations.

A complete Google Survey is attached in Appendix II.

2.2 ANALYZING THE RESULTS

After collecting the responses, results are inputted into Microsoft Excel and analyzed. With the data collected, key relationships between consumers' willingness to pay extra to support the switch to sustainable food ware products, and socio-demographics information were conducted. Specifically, the analyses are the relationships between the variables, i.e. age group, income level, education level, years lived in Hawai'i, and willingness to pay (WTP) extra for sustainable food ware. A multiple regression was performed to determine if these variables are significant in influencing the WTP. The final WTP is estimated by the empirical model,

$$\text{WTP} = f(\text{age group, income level, education level, number of years living in Hawaii, willingness to report the non-compliant businesses, awareness of the plastic ban}).$$

The hypothesis is that there is a positive correlation between willingness to pay more and the variables, income level, education level, years lived in Hawai'i, and awareness of the ban. Another hypothesis is that age is negatively correlated with willingness to spend more on eco-friendly food ware (Van Liere et al., 1981).

3.0 RESULTS

The survey was distributed randomly via two survey sites, Pollfish and SurveyMonkey, as well as through the University of Hawai'i GES students' listserv. A total of 219 responses were collected. For categorical data, such as age groups and income level,

a box plot is used to compare the mean and range of answers, in addition to regression analysis. For continuous data, such as years lived in Hawai‘i and extent respondents believed in plastic pollution, a scatter plot is used and a coefficient R is generated from the line of best fit to discern a correlation between the variables and WTP. Multiple regression was used to find the relationship between WTP and the specified variables stated in the empirical model above.

3.1 SUMMARY OF AGE

As hypothesized, there is an apparent negative relationship between age and willingness to pay. The box plot (Fig.2) demonstrates that consumers in the 18-29 age group are willing to spend more on sustainable food ware. As the age group gets older, the mean value becomes smaller, as does the interquartile range, barring the existence of a few outliers. Whereas among younger people there is a larger difference between willingness to pay, older people are relatively consistent in the amount they are willing to spend.

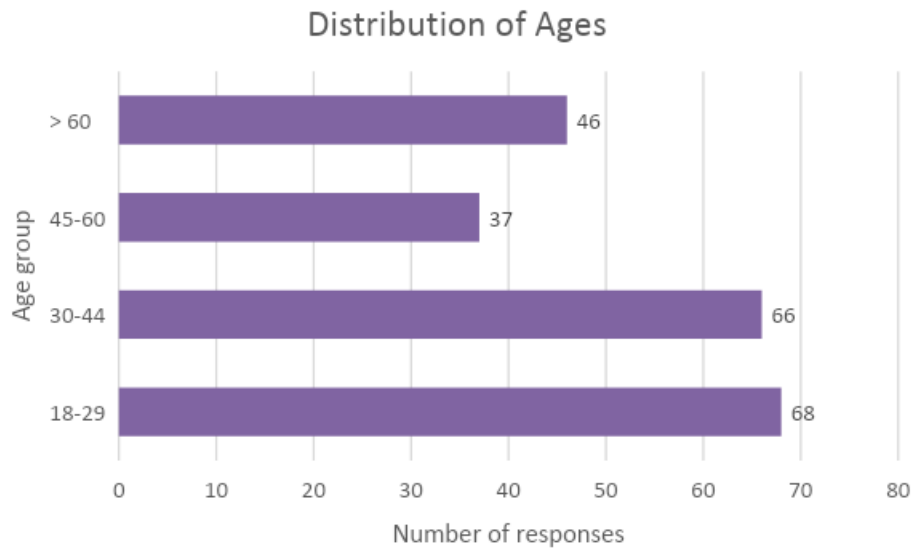


Fig.1 Distribution of Ages

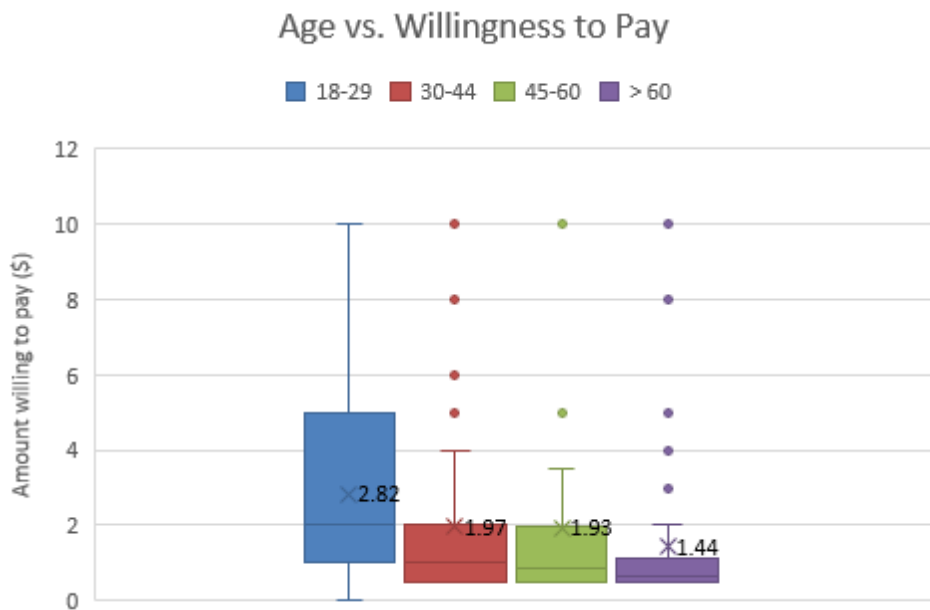


Fig.2 Age of respondents vs. Willingness to Pay

3.2 SUMMARY OF INCOME LEVEL

Contrary to the hypothesis, there is no clear indication that higher earners are willing to pay more for sustainable food ware. Those with income that are "less than \$20,000", "\$20,000 to \$34,000", and "\$35,000 to \$49,000" are more willing to spend higher amounts than those in the higher income categories, according to Fig.4.

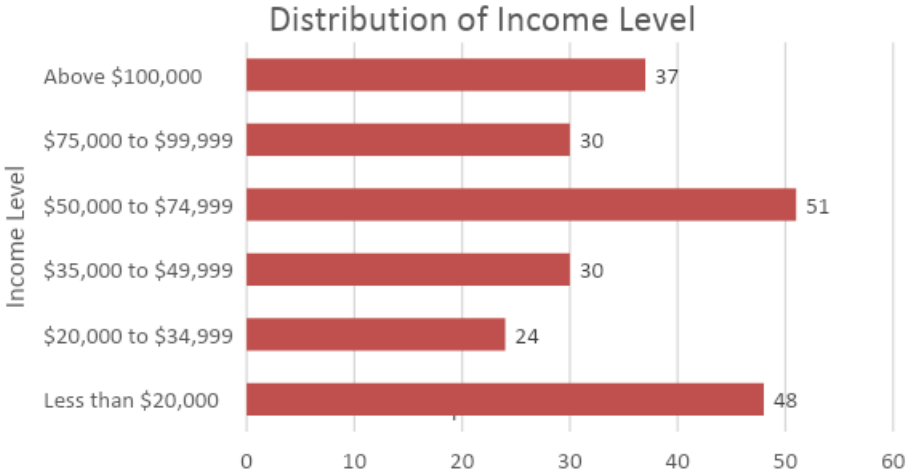


Fig.3 Distribution of Income Level

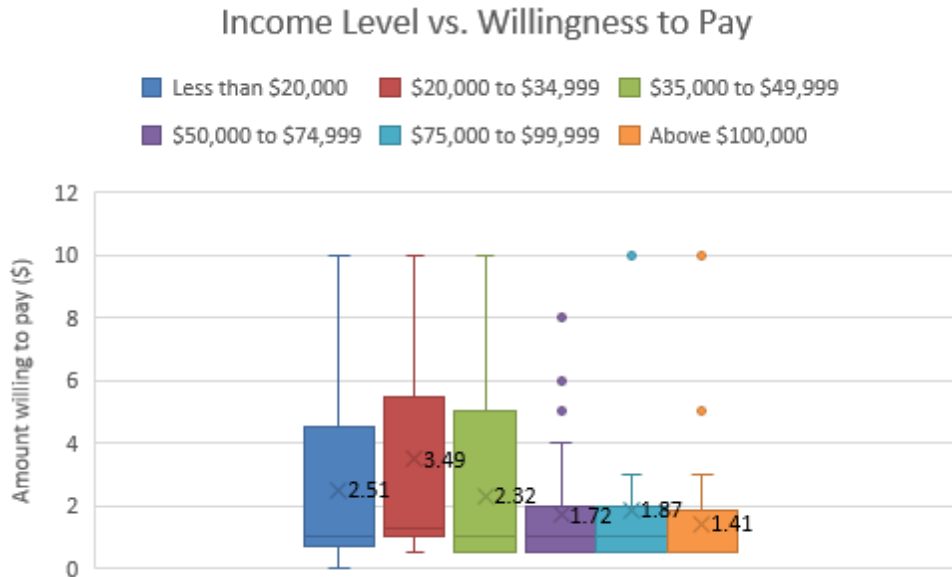


Fig.4 Income Level vs. Willingness to Pay

3.3 SUMMARY OF BELIEF IN PLASTIC POLLUTION ON THE ENVIRONMENT AND WTP

There is no relationship between the extent to which people believed in the negative effects of plastic and their willingness to pay, as the R value derived from the scatterplot (Fig.6) gives 0.0005. In a strong positive correlation, the R value approaches 1. The lack of connection between their belief of the extent of the negative impact on the environment and the willingness to pay shows that an understanding of environmental issues does not always translate to readiness to action when it involves personal change.

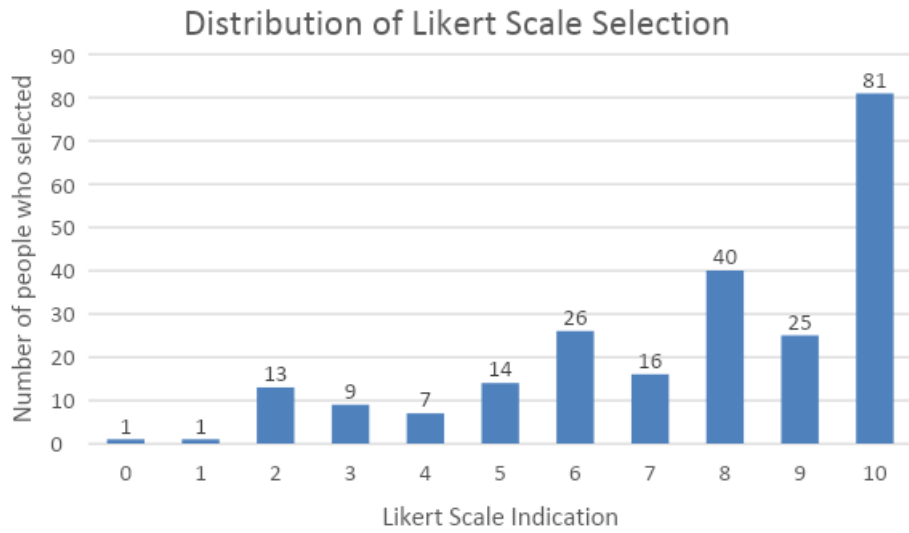


Fig.5 Distribution of the degree of belief of plastic pollution

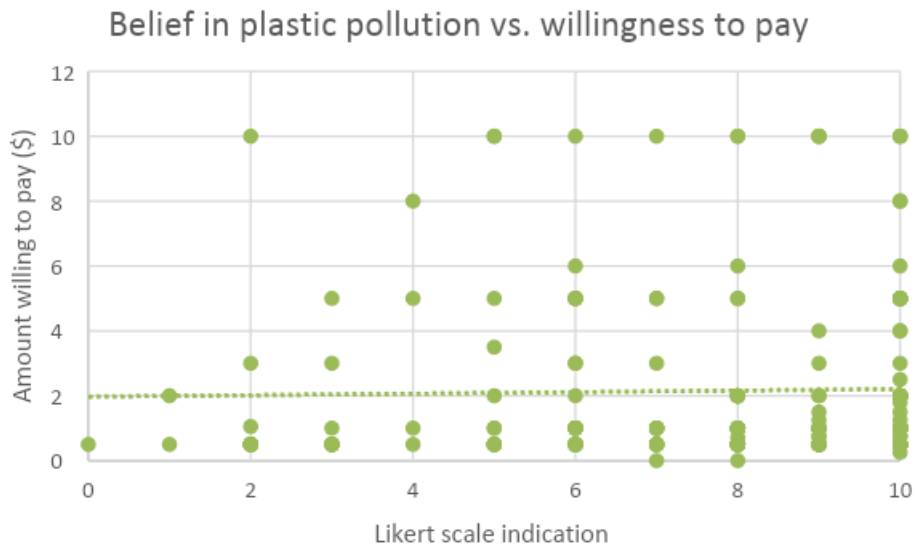


Fig.6 Belief in Plastic Pollution vs. Willingness to pay

3.4 MULTIPLE REGRESSION OF WTP

The table below describes the linear regression of selected variables that were run against WTP. The negative coefficients describe negative correlation, and the positive coefficients describe positive correlation. The t value, with degrees of freedom 210 is 1.635, describes the number at which the coefficient of each of the variables represents a significant influence on the WTP at the 5% significance level. Based on the values of the table, education level and willingness to report the restaurant to ENV are significant. Education level has a negative correlation with WTP, whereas willingness to report has a positive correlation with WTP. Even though the coefficient tells us that the number of years lived in HI, awareness of the ban, income, and age have a negative correlation with WTP, they are not significant based on their t-values being less than 1.65. The intercept coefficient, when taking into account the effect of all variables being 0 is 5.14 and significant. The results of the regression are;

$$\text{WTP} = 5.14 - 0.08 (\text{age}) - 0.11 (\text{income}) - 0.68 (\text{education})^* + 0.81 (\text{willingness to report the issue})^* - 0.34 (\text{awareness of the ban}) - .006 (\text{years lived in HI}) = 4.74.$$

	Yrs lived in Hawaii	Awareness of ban	Willingness to report	Education	Income	Age	Intercept
coefficient	-0.006	-0.342	0.814*	-0.683*	-0.119	-0.089	5.144*
standard error	0.010	0.404	0.367	0.218	0.108	0.183	0.735
t value = 1.653 (5%)	0.573	0.846	2.217*	3.133*	1.104	0.484	6.99*

* significant at the 5% level

Table.1 Regression of multiple selected variables vs. WTP

3.5 PREFERENCE FOR ALTERNATIVE FOOD WARE

Bioplastics or biodegradable plastic are the most preferred sustainable food ware according to this survey, faring the most votes in both utensil and container categories compared to other single-use products and reusable products (Fig.8 & 9).

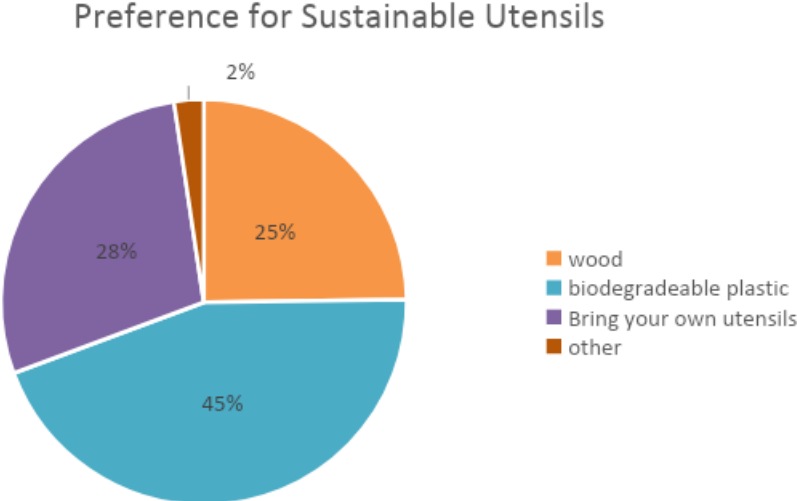


Fig.7 Preference for Sustainable Utensils

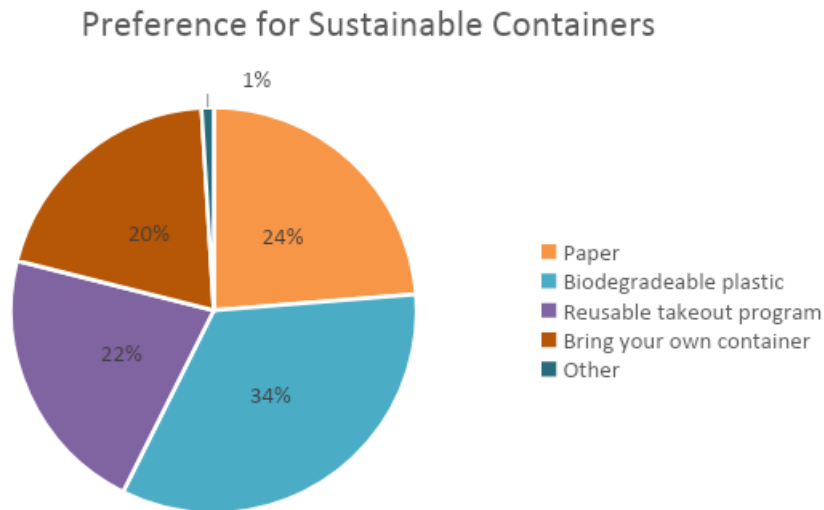


Fig.8 Preference for Sustainable Containers

Bioplastics share many of the physical properties and benefits of petroleum-derived plastic, especially in terms of durability and convenience. Due to many similarities with plastic, the most ubiquitous type of single-use food ware product available in take-out programs, the popularity of bioplastic is understandable as it is easier for consumers to adapt to. However, due to the complexities involved in recycling and composting bioplastic, it is not the most ideal option from the perspective of sustainability. It is worthwhile to note that multiple selections were allowed for preference questions, thus people who selected bioplastic as their preferred option were often open to other types of sustainable food ware.

4.0 DISCUSSION

In general, the statistics of this study yield some significant results. The two variables that are significant in influencing the willingness to pay are education level, and willingness to report on non complying restaurants. The results do not support the hypothesis that income, education level, years lived in Hawai'i, and awareness of the ban are significantly correlated with WTP. In fact, gathered statistics show that the more educated the respondent is, the less likely they will pay more for sustainable food ware. On the other hand, respondents who are willing to report restaurants that do not comply with the plastic ban are more likely to pay more for sustainable food ware.

4.1 Discussion of Results

The fact that the results from this study reveal that education is negatively correlated with WTP is unexpected, since education is believed to have a causal effect on environmentally-friendly behaviors (Meyer, 2015). Possible explanations can be offered for the lack of positive relationship between these two factors. Reasons for education-attainment can be varied, and there is no evidence that suggests that the education of the respondents emphasize environmental awareness that may translate into willingness to pay for sustainable products. Even if higher education levels do correlate to environmentally-friendly stances, the economic barrier involved in paying for sustainable products is a hurdle for consumers to overcome, both mentally and financially.. Socioeconomic status, family upbringing, and the quality of education factor jointly into environmental awareness (Edsand et al., 2018). Schools should promote environmental awareness and sustainability issues in their curricula across disciplines of study to encourage environmentally and socially responsible behaviors (Edsand et al., 2018).

4.2 Limitations of the study

Several factors may have led to the limitations of this study. First, the accuracy of the study may benefit from the collection of continuous data instead of categorical data, such as using age instead of age levels. Likewise, income level may be replaced with individual numbers of income. Data analysis based on continuous data may yield better results. Another limitation lies in the uncertainty of the validity of responses. Unfortunately,

there are no ways to verify the truthfulness of the responses. For further studies, a larger sample size is suggested to improve data accuracy and better represent the population.

5.0 CONCLUSION

The DWFO is a promising legislation that would reduce local plastic consumption in Honolulu. The WTP results showed that more active and passionate consumers are more willing to pay extra for eco-friendly food ware. Raising awareness of the ban will enhance more compliance by restaurants/businesses. There should be no expectations of higher income consumers to be willing to pay more in light of the existence of the ban.. It is more of a compliance issue for consumers and businesses. WTP analysis also showed that it does not depend on any single factor but a couple of factors in the probability of higher WTP. Understanding the factors that drive pro-environmental behavior that drive consumer patronage and having a healthy profit margin for businesses is crucial for sustainability. Further investigation in a year or so after the ban is in force may provide more insight to the advancement of improved environmental legislations in Hawai‘i.

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Consumer Perception Towards Disposable Food Ware Ordinance Questionnaire

You are invited to participate in a survey related to plastic food ware usage in Honolulu. This is a research project being conducted by Chelsea Jiang, a student researcher at the University of Hawaii at Manoa. It should take approximately 5-10 minutes to complete.

The data collected from this survey will be used towards a University of Hawaii undergraduate study that analyzes consumer perception of the Disposable Food Ware Ordinance in Honolulu. The Disposable Food Ware Ordinance was signed into law in 2019 as Ordinance 19-30, an effort to reduce plastic waste on the Hawaiian Islands. Currently, the ordinance is formally scheduled to take effect on Sept 5th, 2022. More details relating to the ordinance can be found at <https://www.honolulu.gov/opala/recycling/dfwo.html>.

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty.

You will receive no direct benefits from participating in this research study. However, your responses may help us learn more about consumer's perceptions towards the Disposable Food Ware Ordinance, and the capacity at which consumers are willing to embrace alternative products that are less detrimental to the environment.

There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

Your survey answers will be sent to Google Forms where data will be stored in a password protected electronic format. This survey does not collect identifying information such as your name, email address, or IP address. Therefore, your responses will remain anonymous. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study.

Please be aware that only individuals above 18 years of age are targeted for this study. If you are under 18, please forfeit the survey and exit this page.

If you have questions at any time about the study or the procedures, you may contact me at jiangche@hawaii.edu, or my research supervisor, Professor Catherine Chan, via email at chanhalb@hawaii.edu.

* Required

1. Please select your choice below. Clicking on the “Agree” button indicates that *
1) You have read the above information; 2) You voluntarily agree to participate;
3) You are 18 years of age or older.

Mark only one oval.

- Agree
 Disagree

2. 1. On average, how many times do you eat out at restaurants per month, including *
take-out?

3. 2. Are you aware of Honolulu's Disposable Food Ware Ordinance, which prohibits *
food vendors from selling and providing disposable plastic utensils and containers?

Mark only one oval.

- Yes
 No

4. 3. If you answered yes to the previous question, how were you informed of the ban?

Mark only one oval.

- Heard it from acquaintances, friends, or family
 Saw it from the news
 Informed by a food vendor
 Read about it on honolulu.gov
 Other: _____

5. 4. To what extent do you believe that plastic will negatively impact the environment? *

Mark only one oval.

	1	2	3	4	5	6	7	8	9	10	
Strongly disbelieve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strong believe

6. 5. How would you react to restaurants and food vendors that do not comply with the ban? *

Check all that apply.

	Yes	No
Continue to patronize the business	<input type="checkbox"/>	<input type="checkbox"/>
Confront the business about the issue	<input type="checkbox"/>	<input type="checkbox"/>
Report the issue to ENV	<input type="checkbox"/>	<input type="checkbox"/>

7. 6. Please explain your reasonings to the choices that you made in question #5.

8. 7. What kinds of eco-friendly containers would you prefer? *

Check all that apply.

- Paper
- Biodegradable plastic
- Re-usable take-out container program (such as Full Cycle Takeout)
- Bring your own container
- Other: _____

9. 8. What kinds of eco-friendly utensils would you prefer? *

Check all that apply.

- Wood
- Biodegradable plastic
- Bring your own utensils
- Other: _____

10. 9. How much more are you willing to pay for eco-friendly take-out food ware per order of food item? (please input the amount in dollars and cents from \$0.5 to \$10) *

11. 10. What is your age? *

12. 11. What is your gender? *

Mark only one oval.

- Female
- Male
- Non-binary or gender neutral
- Prefer not to say

13. 12. Which of the following best describes your education level? *

Mark only one oval.

- Less than high school diploma
- High school diploma
- Enrolled in college, no degree
- Bachelor's degree or above

14. 13. What is your employment status? *

Mark only one oval.

- Full-time
- Part-time
- Not working
- Retired

15. 14. What is your annual income? *

Mark only one oval.

- Less than \$20,000
- \$20,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- Above \$100,000

16. 15. Are you a resident of Hawaii? *

Mark only one oval.

- Yes
- No

17. 16. How many years have you lived in Hawaii? *

Thank you for participating in this survey!

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Google Forms



A BILL FOR AN ORDINANCE

RELATING TO PLASTIC.

BE IT ORDAINED by the People of the City and County of Honolulu:

SECTION 1. Purpose and Findings. The purpose of this ordinance is to address the provision of certain single-use plastic goods and plastic bags.

The impact of the world's increasing waste stream is unsustainable and detrimental to the future of Hawaii's economy and the health and safety of its people. Plastics entering the environment have a demonstrable adverse effect on the health of the people of Honolulu, as well as the environmental integrity of our islands. Single-use plastic service ware and packaging are major contributors to street and beach litter, ocean pollution, harm to marine and other wildlife, and greenhouse gas emissions, which directly contribute to the global climate crisis.

A significant portion of marine debris -- estimated to be 80 percent -- originates on land, primarily as escaped refuse and litter, much of it plastic, in urban runoff. These land-based plastics degrade into pieces and particles of all sizes, including microplastics, and are present in the world's oceans at all trophic levels. Among other hazards, plastic debris attract and concentrate ambient pollutants like heavy metals and persistent organic pollutants in seawater and freshwater, which can transfer to fish, and other seafood, that is eventually caught and sold for human consumption.

The City and County of Honolulu ("City") is a recognized leader in developing responsible waste management policies and programs. In order to protect health, life, and property and preserve the order and security of the City and its inhabitants, ordinances have been enacted to regulate the use of plastic and non-recyclable paper bags provided by businesses to customers. In continuing to strive for responsible waste management policies and programs, the City must address the provision of single-use plastic goods.

Reduction of the amount of non-degradable and non-recyclable waste that enters the waste stream is consistent with the City's proposed Integrated Solid Waste Management Plan, which aims to reduce per capita waste generation by 25 percent by 2030 and to reduce carbon emissions from the waste stream by substantially reducing or eliminating carbon-based single-use plastics and polystyrene by 2030. These measures are also consistent with the 2030 solid waste reduction goals set forth by the State-level *Aloha+ Challenge*, to which Honolulu is a signatory, which include to "support changes in design, material use, and manufacturing that reduce waste and toxicity" and to "significantly reduce the annual generation of solid waste."



A BILL FOR AN ORDINANCE

Through this measure, it is the Council's intent to protect human safety and welfare, and to improve environmental quality on the island, in the neighboring marine environment, and globally.

SECTION 2. Section 9-9.1, Revised Ordinances of Honolulu 1990 ("Definitions"), is amended as follows:

1. By adding a new definition of "Plastic" to read as follows:

"Plastic" means any material made of fossil fuel-derived or petrochemical polymeric compounds and additives that can be shaped by flow."

2. By amending the definitions of "Plastic checkout bag" and "Plastic film bag" to read as follows:

"Plastic checkout bag":

- (1) Means a carryout bag that is provided by a business to a customer for the purpose of transporting groceries, prepared food, or other retail goods, and is made from plastic and not specifically designed and manufactured for ~~multiple~~ long-term re-use;
- (2) This term does not include:
 - (A) ~~[Bags]~~ Handle-less plastic bags used by customers inside a business to package loose items, such as bakery goods, fruits, vegetables, nuts, ground coffee, grains, candies, or small hardware items;
 - (B) ~~[Bags]~~ Handle-less plastic bags used to contain or wrap frozen foods, meat or fish, flowers or potted plants, or other items to contain dampness;
 - (C) ~~[Bags used to protect or transport prepared foods, beverages, or bakery goods];~~
 - ~~(D) Bags provided by pharmacists to contain prescription medications;~~
 - (E) Newspaper bags for home newspaper delivery;



A BILL FOR AN ORDINANCE

~~[(F)]~~ Door-hanger bags;

~~[(G)]~~[(D)] Laundry, dry cleaning, or garment bags [~~including bags provided by hotels to guests to contain wet or dirty clothing~~];

~~[(H)]~~[(E)] Bags sold in packages containing multiple bags intended for use as garbage, pet waste, or yard waste bags;

~~[(I)]~~[(F)] Bags used to contain live animals, such as fish or insects sold in pet stores; or

~~[(J)]~~[(G)] Bags used to transport chemical pesticides, drain-cleaning chemicals, or other caustic chemicals sold at the retail level; provided that this exemption shall be limited to one bag per customer."

"Plastic film bag":

- (1) Means a plastic bag made out of thin flexible sheets of plastic with a thickness of 10 mils or less;
- (2) This term does not include:
 - (A) ~~[Bags]~~ Handle-less plastic bags used by customers inside a business to package loose items, such as bakery goods, fruits, vegetables, nuts, ground coffee, grains, candies, or small hardware items;
 - (B) ~~[Bags]~~ Handle-less plastic bags used to contain or wrap frozen foods, meat or fish, flowers or potted plants, or other items to contain dampness;
 - (C) ~~[Bags used to protect or transport prepared foods, beverages, or bakery goods]~~;
 - ~~[(D)]~~ Bags provided by pharmacists to contain prescription medications;
 - ~~[(E)]~~ Newspaper bags for home newspaper delivery;



A BILL FOR AN ORDINANCE

~~[(F)]~~ Door-hanger bags;

~~[(G)]~~(D) Laundry, dry cleaning, or garment bags [~~including bags provided by hotels to guests to contain wet or dirty clothing~~];

~~[(H)]~~(E) Bags sold in packages containing multiple bags intended for use as garbage, pet waste, or yard waste bags;

~~[(I)]~~(F) Bags used to contain live animals, such as fish or insects sold in pet stores; or

~~[(J)]~~(G) Bags used to transport chemical pesticides, drain-cleaning chemicals, or other caustic chemicals sold at the retail level; provided that this exemption shall be limited to one bag per customer."

SECTION 3. Article 27 of Chapter 41, Revised Ordinances of Honolulu 1990 ("Polystyrene Foam Containers"), is repealed.

SECTION 4. Chapter 41, Revised Ordinances of Honolulu 1990 ("Regulated Activities"), is amended by adding a new Article 27, to read as follows:

"Article 27. Polystyrene Foam and Disposable Food Service Ware

Sec. 41-27.1 Definitions.

"Business" means any commercial enterprise or establishment operating in the City and County of Honolulu, including an individual proprietorship, joint venture, partnership, corporation, limited liability company, or other legal entity, whether for profit or not for profit, and includes all employees of the business or any independent contractors associated with the business.

"Catered food" means the provision of prepared food in bulk quantity amounts or multiple servings with the intent for later consumption, or the service of prepared food at a site or event venue.

"Customer" means any person purchasing prepared food from a food vendor.

"Department" means the department of environmental services.

"Disposable" means designed to be discarded after a single or limited number of uses and not designed or manufactured for long-term multiple re-use.



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"Food vendor" means any entity or person selling or providing prepared food for consumption within the City and County of Honolulu, including any store, shop, sales outlet, pharmacy, restaurant, bar, pub, coffee shop, cafeteria, caterer, convenience store, liquor store, grocery store, supermarket, delicatessen, food truck, catering vehicle or cart, roadside stand, or other establishment that sells or provides prepared food for consumption within the city.

"Plastic" means any material made of fossil fuel-derived or petrochemical polymeric compounds and additives that can be shaped by flow.

"Plastic food ware" means hot and cold beverage cups, cup lids, plates, bowls, bowl lids, "clamshells," trays, or other hinged or lidded containers that contain plastic. The term does not include disposable plastic condiment packets; food-related bags or wrappers, including, but not limited to, musubi wraps, plastic film, poi bags, chip bags, cracker and cookie wrappers, bread bags, meal kits, or ice bags; beverage-related bottles or cartons; non-plastic cups that contain a polyethylene or plastic coating; packaging for unprepared food; and packaging for wholesale distribution of prepared food, baked goods or dairy products.

"Polystyrene foam" means blown polystyrene and expanded and extruded foams which are thermoplastic petrochemical materials utilizing a styrene monomer and processed by any number of techniques including, but not limited to, fusion of polymer spheres (expanded bead polystyrene) injection molding, foam molding, and extrusion-blow molding (extruded foam polystyrene). Polystyrene foam does not include clear, solid or oriented polystyrene.

"Polystyrene foam food ware" means hot and cold beverage cups, cup lids, plates, bowls, bowl lids, "clamshells," trays, or other hinged or lidded containers, that are made of polystyrene foam; but the term does not include polystyrene foam coolers and ice chests specifically designed and manufactured for multiple re-use; and soup or noodles packaged with polystyrene foam that has been filled and sealed prior to receipt by the food vendor.

"Prepackaged food" means prepared food that is sealed, contained, or wrapped in a manner to protect and prevent the prepared food from having any direct human contact, prior to being provided for sale by a food vendor to a customer, including, but not limited to, bentos, kimchi, seaweed salad, takuan, tofu, pre-made sandwiches, desserts, pies, noodles, salads, parfaits, and drinks.



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"Prepared food" means food or beverages that are prepared for consumption on or off the premises of a food vendor, by cooking, chopping, peeling, slicing, mixing, brewing, freezing, squeezing, or otherwise processed at premises owned, leased, or otherwise controlled by the food vendor; but the term does not include raw meat, raw poultry, raw seafood, unprepared produce and uncooked eggs. Prepared food includes restaurant style food and beverages that are packaged after being ordered and ready to be consumed without further preparation.

"Produce" means any fruit or vegetable including mixes of intact fruits and vegetables and includes mushrooms, sprouts irrespective of seed source, peanuts, tree nuts, beans, honey, and herbs.

"Service ware" means any stirrers, straws, baran, and utensils including forks, spoons, sporks, and knives; but the term does not include items contained within or attached to packaging of food or beverages, including, but not limited to, disposable plastic straws pre-packaged and sold with beverage boxes, or disposable plastic utensils pre-packaged and sold with ice cream or salads.

"Shelf stable food" means prepared food that can be safely stored at room temperature and does not require refrigeration, freezing, or heating for food safety purposes, prior to purchase by a customer.

"Utensils" are implements intended to assist in the consumption of food or drink.

Sec. 41-27.2 Restriction on polystyrene foam food ware, disposable plastic service ware and disposable plastic food ware.

- (a) Unless exempted under Section 41-27.3, no food vendor shall sell, serve, or provide prepared food in any polystyrene foam food ware to customers.
- (b) Unless exempted under Section 41-27.3, no food vendor shall sell, serve, or provide disposable plastic service ware to customers.
- (c) Unless exempted under Section 41-27.3, no food vendor shall sell, serve, or provide prepared food in disposable plastic food ware to customers.
- (d) Unless exempted under Section 41-27.3, polystyrene foam food ware shall not be sold or provided, or offered for sale or use at any city facility, city-authorized concession, city-sponsored or city-permitted event, or city program.



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Sec. 41-27.3 Exemptions.

- (a) The department may grant an exemption from compliance with the restrictions of Section 41-27.2 upon application and the provision of sufficient evidence that there are no reasonable alternatives available to the food vendor to comply, or compliance with the restriction would cause significant hardship for the food vendor.

For purposes of this subsection, exemptions may be granted for a specified term of up to two years, and may be subsequently renewed for specified terms of up to two years thereafter, provided that during the term of the exemption, diligent efforts are made by the food vendor to become compliant.

- (1) In situations where there are no reasonable alternatives available, a food vendor may submit an application, preferably on a form provided by the director, and shall set forth with specificity:
- (i) The food vendor's name and address, and a copy of the food vendor's most current business registration certificate;
 - (ii) A description of the polystyrene foam food ware, disposable plastic service ware, or disposable plastic food ware at issue;
 - (iii) The factual basis to support the requested determination that there is no reasonable alternative to the use of the non-compliant product at issue, which for example, may include packaging necessary for safely containing food that is of significantly high or low temperature, impact to Hazard Analysis and Critical Control Points plan applicable to the food vendor, or specific transportation requirements or safeguards; and
 - (iv) Copies of all exemptions issued to the applicant under this article.
- (2) In situations where compliance would cause significant hardship, a food vendor may submit an application, preferably on a form provided by the director, and shall set forth with specificity:



A BILL FOR AN ORDINANCE

- (i) The food vendor's name and address, and a copy of the food vendor's most current business registration certificate;
 - (ii) A description of the polystyrene foam food ware, disposable plastic service ware, or disposable plastic food ware at issue;
 - (iii) The factual basis to support the requested determination that the use of a compliant product at issue would cause the applicant significant hardship and that there is no affordable compliant alternative; and
 - (iv) Copies of all exemptions issued to the applicant under this article.
- (b) The department may grant an "industry exemption" from compliance with the restrictions of Section 41-27.2 upon application and the provision of sufficient evidence that compliance with Section 41-27.2 would cause hardship to the food service industry. "Hardship" under this subsection will be construed to include, but not be limited to: situations where there are no acceptable alternatives to providing polystyrene foam food ware, disposable plastic service ware, or disposable plastic food ware to customers; or situations where acceptable alternatives are not readily available due to market supply constraints.

For purposes of this subsection, an "industry exemption" may be granted for a specified term of up to two years, and may be subsequently renewed for specified terms of up to two years thereafter, provided that during the term of the exemption, diligent efforts are made by the industry applicant to become compliant.

- (c) Disposable plastic straws may be provided, upon request, to customers for whom non-fossil-fuel-based straws are unsuitable due to medical or physical conditions. Otherwise, straws must be fossil-fuel free or designed to be reusable. The following entities are exempt from compliance with the restriction of Section 41-27.2(b), specific to disposable plastic straws:
- (1) A "hospital" as defined under Hawaii Administrative Rules section 11-93-2;
 - (2) A "nursing facility" as defined under Hawaii Administrative Rules section 11-94.1-2;



A BILL FOR AN ORDINANCE

- (3) An "assisted living facility" as defined under Hawaii Administrative Rules section 11-90-2;
 - (4) An "adult residential care home" ("ARCH") and "expanded ARCH" as defined under Hawaii Administrative Rules section 11-100.1-2;
 - (5) A "hospice service agency" as defined under Hawaii Revised Statutes section 321-15.63(b);
 - (6) A "hospice home" as defined under Hawaii Revised Statutes section 321-15.1;
 - (7) A "home health agency" as defined under Hawaii Administrative Rules section 11-97-1; and
 - (8) A "home care agency" as defined under Hawaii Administrative Rules section 11-700-2.
- (d) The following shall be exempt from compliance with the restrictions of Section 41-27.2:
- (1) Packaging for raw meat, raw poultry, raw seafood, unprepared produce, and uncooked eggs;
 - (2) Packaging for prepackaged food, shelf stable food, and catered food; and
 - (3) Packaging in any situation deemed by the city to be an emergency requiring immediate action for the preservation of life, health, property, safety, or essential public services. This exemption shall be in place until the emergency has ceased or the mayor has determined that the exemption is no longer applicable to the situation.

Sec. 41-27.4 Ban on sale of polystyrene foam food ware, disposable plastic service ware, and disposable plastic food ware.

- (a) No business within the City and County of Honolulu shall sell polystyrene foam food ware, disposable plastic service ware, or disposable plastic food ware, except for:
 - (1) Packaging for raw meat, raw poultry, raw seafood, unprepared produce and uncooked eggs;
 - (2) Packaging for prepackaged food and shelf stable food; and



A BILL FOR AN ORDINANCE

- (3) Non-compliant products sold to a food vendor who has been granted an exemption for said products under Section 41-27.3.
- (b) The department may grant an exemption from compliance with the prohibitions of this section upon application and the provision of sufficient evidence that there are no reasonable alternatives available to the business to comply, or compliance with the prohibition would cause significant hardship for the business.

For purposes of this subsection, exemptions may be granted for a specified term of up to two years, and may be subsequently renewed for specified terms of up to two years thereafter, provided that during the term of the exemption, diligent efforts are made by the business to become compliant.

Sec. 41-27.5 Disposable service ware upon request.

- (a) A food vendor may only provide or distribute disposable service ware for prepared food or for a beverage upon the request or affirmative response of a customer or person being provided the prepared food or beverage, or in a self-service area or dispenser.
- (b) The department shall engage in an education and outreach campaign in coordination with community and business partners to facilitate implementation of this section.

Sec. 41-27.6 Enforcement, civil penalties, and injunctive relief.

- (a) Enforcement and administration of this article is under the jurisdiction of the department of environmental services.
- (b) Any food vendor or business violating any provision of this article or any rule adopted pursuant to this article shall:
 - (1) Be ordered to discontinue the distribution or sale of items prohibited by this article; and
 - (2) If continuing the distribution despite the order, be subject to a civil fine of not less than \$100 nor more than \$1,000 for each day of violation.
- (c) The director of environmental services may institute a civil action in any court of competent jurisdiction for injunctive or other relief to correct or abate violations of



A BILL FOR AN ORDINANCE

this article or any rule adopted pursuant to this article, to collect administrative penalties, or to obtain other relief.

Sec. 41-27.7 Rules.

The director of environmental services shall adopt rules pursuant to HRS Chapter 91 regarding the implementation, administration, and enforcement of this article.

Sec. 41-27.8 Severability.

The provisions of this article, are hereby declared to be severable. In accordance therewith, if any portion of this article is held invalid for any reason, the validity of any other portion of this article shall not be affected and if the application of any portion of this article to any person, property, or circumstance is held invalid, the application hereof to any other person, property or circumstances shall not be affected."

SECTION 5. In SECTION 2 of this ordinance, material to be repealed is bracketed and stricken and new material is underscored. When revising, compiling, or printing this ordinance for inclusion in the Revised Ordinances of Honolulu, the Revisor of Ordinances need not include the brackets, the material that has been bracketed and stricken, or the underscoring.



CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE 19-30

BILL 40 (2019), CD1, FD1

A BILL FOR AN ORDINANCE

SECTION 6. This ordinance generally takes effect on January 1, 2021, provided that: Sections 41-27.2 (a), 41-27.2(c), and 41-27.4, Revised Ordinances of Honolulu, as enacted in SECTION 4, shall take effect on January 1, 2022.

INTRODUCED BY:

Joey Manahan

DATE OF INTRODUCTION:

July 9, 2019
Honolulu, Hawaii

Councilmembers

APPROVED AS TO FORM AND LEGALITY:

Matthew A. Kelly
Deputy Corporation Counsel

APPROVED this 15th day of Dec., 20 19.

[Signature]
KIRK CALDWELL, Mayor
City and County of Honolulu

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII
CERTIFICATE

ORDINANCE **19-30**

BILL 40 (2019), CD1, FD1

Introduced: 07/09/19 By: JOEY MANAHAN

Committee: PUBLIC SAFETY AND WELFARE

Title: A BILL FOR AN ORDINANCE RELATING TO PLASTIC.

Voting Legend: * = Aye w/Reservations

		CC-253 WATERS – RE-REFERRAL FROM COMMITTEE ON BUDGET TO COMMITTEE ON PUBLIC SAFETY AND WELFARE.
08/07/19	COUNCIL	BILL PASSED FIRST READING AND REFERRED TO COMMITTEE ON PUBLIC SAFETY AND WELFARE. 9 AYES: ANDERSON, ELEFANTE, FUKUNAGA, KOBAYASHI, MANAHAN, MENOR, PINE, TSUNEYOSHI, WATERS.
08/24/19	PUBLISH	PUBLIC HEARING NOTICE PUBLISHED IN THE HONOLULU STAR-ADVERTISER.
08/29/19	SPECIAL PUBLIC SAFETY AND WELFARE	CR-273 – BILL REPORTED OUT OF COMMITTEE FOR PASSAGE ON SECOND READING AND SCHEDULING OF A PUBLIC HEARING. 3 AYES: MANAHAN, MENOR, WATERS. 2 EXCUSED: FUKUNAGA, TSUNEYOSHI.
09/04/19	COUNCIL/PUBLIC HEARING	CR-273 ADOPTED. BILL PASSED SECOND READING, PUBLIC HEARING CLOSED AND REFERRED TO COMMITTEE ON PUBLIC SAFETY AND WELFARE. 9 AYES: ANDERSON, ELEFANTE, FUKUNAGA*, KOBAYASHI*, MANAHAN, MENOR, PINE, TSUNEYOSHI, WATERS.
09/12/19	PUBLISH	SECOND READING NOTICE PUBLISHED IN THE HONOLULU STAR-ADVERTISER.
10/24/19	PUBLIC SAFETY AND WELFARE	CR-341 – BILL REPORTED OUT OF COMMITTEE FOR PASSAGE ON THIRD READING AS AMENDED IN CD1 FORM. 3 AYES: MANAHAN, MENOR, WATERS. 2 EXCUSED: FUKUNAGA, TSUNEYOSHI.
		CC-353 WATERS – REREFERRAL FROM COUNCIL BACK TO COMMITTEE ON PUBLIC SAFETY AND WELFARE.
11/14/19	PUBLIC SAFETY AND WELFARE	CR-389 – BILL REPORTED OUT OF COMMITTEE FOR PASSAGE ON THIRD READING AS AMENDED IN CD1 FORM. 3 AYES: MANAHAN, MENOR, WATERS. 2 NOES: FUKUNAGA, TSUNEYOSHI.
12/04/19	COUNCIL	NOTE: PROPOSED FD1s POSTED ON THE AGENDA WERE NOT CONSIDERED. BILL AMENDED TO HAND-CARRIED FD1 (OCS2019-1320/12/3/2019 4:20 PM). 9 AYES: ANDERSON, ELEFANTE, FUKUNAGA, KOBAYASHI, MANAHAN, MENOR, PINE, TSUNEYOSHI, WATERS. CR-389 ADOPTED AND BILL 40 (2019), CD1, FD1 PASSED THIRD READING. 7 AYES: ANDERSON, ELEFANTE, MANAHAN, MENOR, PINE, TSUNEYOSHI*, WATERS. 2 NOES: FUKUNAGA, KOBAYASHI.

I hereby certify that the above is a true record of action by the Council of the City and County of Honolulu on this BILL.


GLEN I. TAKAHASHI, CITY CLERK


IKAIKA ANDERSON, CHAIR AND PRESIDING OFFICER