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Science



CLiP Belize – Socio-Economic Pilot Survey:

Attitudes Towards Single-Use Plastic and Packaging items

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Executive Summary

Single-use plastic and Styrofoam items and packaging materials contribute significantly to the household solid waste stream and littering of aquatic and marine environments in Belize. At the time of conducting the surveys for this report and in recognition of the harm single-use plastics does, the Belize government was introducing a phasing out of single-use plastics over the period of one year. This included Styrofoam and other plastic single-use items including food containers, utensils, cups, trays, straws and shopping bags. However, just before this report was completed the Pollution from Plastics Regulation, was signed into law in January of 2020. For this report a pilot study was conducted by means of face to face interviews with residents of Belize using a paper survey format to explore consumer attitudes and preferences towards potential phase-out (here-in referred to as ban(s)) of single-use plastic and packaging items. Initial results from this pilot study reveal that overall support for potential bans is high irrespective of the level of use of items and any opposition was very low. In addition, respondents expressed positive preferences towards alternative packaging options including that which is recyclable, biodegradable, made from recycled materials and has minimal packaging. This included positive preferences towards paying more for sustainable single-use items and packaging alternatives. The implications of these pilot study results to policy makers looking at effective ways to mediate the impacts that single-use plastic, Styrofoam and packaging materials have on the marine environment are discussed. Some recommendations for future research to scale up this initial study are also presented at the end of this report.

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1 Introduction

1.1 Single-use Plastic and Packaging Policy in Belize

While the survey was being conducted for this pilot study report, the government of Belize was planning to phase-out (ban) Styrofoam and other single-use plastic items, such as straws, cutlery and food containers, due to the negative impact they have on the environment. In January 2020, the Pollution from Plastics Regulation was passed, signing the ban into law which would phase-out targeted single-use plastic items over a one-year period. The interviews this report conducted examine the attitudes and preferences towards the planned bans and to the use of single-use plastics in Belize. The questionnaire survey was carried out over June to July of 2019, i.e. after the ban had been announced but before it was signed into law. The study results and a discussion of the questionnaire responses to the survey are provided at the end of this report. In this context, this pilot study report can be considered a useful baseline for a future full-scale study aimed to investigate the attitudes and preferences of the public towards the ban before the introduction of the actual single-use plastics ban. Some recommendations for a full-scale survey are presented in the final section of this report.

In 2017 an assessment commissioned by the Belizean Department of the Environment (DOE) found that, over three years, Belize annually imported and produced enough single-use plastic and Styrofoam for each Belizean citizen to use an average of 11 plastic bags and three pieces of Styrofoam per week over a one-year period. Subsequently in March 2018 the Government of Belize announced their intention to ban single-use plastics and Styrofoam beginning in April 2019. On the 14th of January 2020 the Government of Belize approved the regulation that introduced the ban of single-use plastics and Styrofoam and introduced a timetable for a transition to sustainable alternatives and promote recycling (www.doe.gov.bz/). A list of the items that will be phased out is as follows: single-use Styrofoam plates, Styrofoam clamshells, Styrofoam food containers, Styrofoam soup containers, Styrofoam cups and lids, plastic carrier bags, plastic and Styrofoam single-use food containers. It includes single-use plastic cutlery and eating utensils, plastic plates, plastic bowls, plastic cups and single-use disposable drinking straws. More information can be found on the DOE website (www.doe.gov.bz/) or Facebook page (search “*Belize Department of the Environment – DOE*”).

The purpose of this pilot study survey is to gain initial insights about the attitudes and preferences of Belizean citizens regarding to the then proposed bans, including their support and opposition towards single-use plastic and packaging bans and their preferences for sustainable alternatives. Exploring consumer preferences for sustainable packaging and other single-use plastic items promises useful insights to policy makers and the packaging industry. Creating an awareness of consumer preferences regarding sustainable alternatives may allow packaging and container industries to minimise any adverse effects of future bans. While it can help policy makers to reduce the negative consequences of single-use plastic and packaging items through accelerating the transitions to the use of alternatives through creating awareness of consumers views and preferences.

2 Methods

2.1 Survey Design

For this study report, a paper-based survey was designed to be administered face to face in Belize. Several of the survey questions were adapted from existing surveys of marine litter in the UK (YouGov, 2019) including question 1 and question 5 (Appendix 1). While these questions were adapted to suit a Belizean context, this does allow some comparisons to be made with the preferences and attitudes of consumers within the UK. The survey opens with a question concerning participants current purchasing habits in relation to plastic items and packaging. It asks participants if they would support or oppose the planned phase-out and what their current level of use of each item targeted by the ban. Respondents are then asked several questions regarding their preferences for product packaging and the provision of information regarding environmental impacts of product packaging. Finally, participants were asked who they think should be responsible for informing consumers about the impacts of single-use plastic items and packaging. Finally, a series of socio-demographic questions are asked to assess the representativeness of the sample. While it would have been possible to administer an online survey, it is estimated that in 2017 less than half of the population of Belize had access to the internet (<https://data.worldbank.org/indicator/IT.NET.USER.ZS>), therefore a face to face interview was used to facilitate reaching different segments of the population.

2.2 Survey Administration

Due to low computer ownership and lack of free internet access, a face to face survey was administered instead of an online format. Face to face surveys have the advantage of improved response rates and survey comprehension as an interviewer is on hand to answer any questions a respondent may have. At the same time, face to face survey responses can be more easily influenced by the interviewer if they are not mindful of the manner in which clarification and direction is given.

Several student interviewers were recruited from the University of Belize to assist in administering the survey. Students with relevant experience from different regions were selected in order to maximise the spatial distribution of the sample across Belize. Recruiting student interviewers allowed us to expedite data collection while providing opportunities for students to develop skills and experience in conducting interviews for social science data collection. The Commonwealth Litter Programme (CLiP) team worked through the survey administration with colleagues at University of Belize, Faculty of Science and Technology in Belmopan; the University of Belize then informed and coordinated the student interviewers to carry out the surveys.

2.3 Survey Analysis

Completed surveys were sent back to the UK in both paper and electronic formats, where they were entered into a spreadsheet before being cleaned and analysed using Excel. A descriptive statistical analysis was performed using Excel together with visual representation of the results (see Section 3). For questions regarding Willingness to pay (WTP) for sustainable packaging

options, only mean WTP was considered as this question was intended as an initial enquiry on general preferences for sustainable packaging and not as a comprehensive stated preference study. For questions regarding support of bans of single-use plastic and packaging items, crosstabulations were performed with respondents reported use of items in order to compare support for bans relative to the respondents reported usage.

3 Results

3.1 The Sample

In total 310 questionnaires were collected in face to face interviews by 20 separate interviewers (data available on request¹). All but one returned questionnaire survey was deemed suitable for further analysis. The one discarded had more than 80% of question responses missing and was thus omitted from further analysis. The remaining 309 questionnaires had some missing responses to questions and therefore, results for some questions may have fewer than 309 responses (this was particularly true for gender for which there were eight missing responses). The 20 interviewers were recruited from the University of Belize, there was no limit to the number of questionnaires collected by each interviewer. As can be seen in Figure 1, twenty questionnaires were returned with no interviewer name recorded, while interviewer 10 returned the greatest number of questionnaires (62) and interviewers 4, 5, 7, 14, 15, 18 and 20 only returned one questionnaire each. However, it is important to note that the raw data suggests interviewer 10 was likely more than one interviewer, indicated by the geographical spread, timing and number of returned surveys. It is therefore suggested that the questionnaires under interviewer 10 were in fact from several interviewers who mistakenly returned surveys under a single ID. The average number of questionnaires returned by the 20 interviewers was 14.5. Figure 2 shows the frequency of completed questionnaires by date, indicating that an increasing number of questionnaires were completed towards the end of the data collection period.

¹ The dataset for this report is available on request, please direct requests to Cefas at <https://www.cefas.co.uk/contact/> citing 'CLiP Belize Socio-Economic data'.

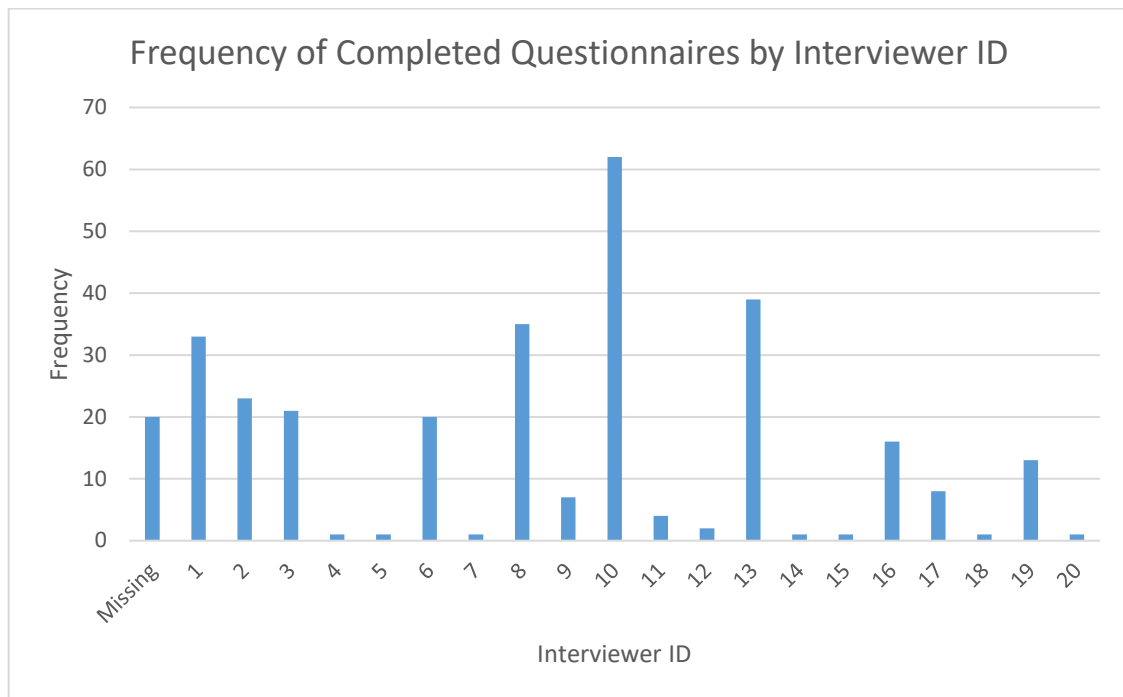


Figure 1: Frequency of completed interviews by interviewer ID.

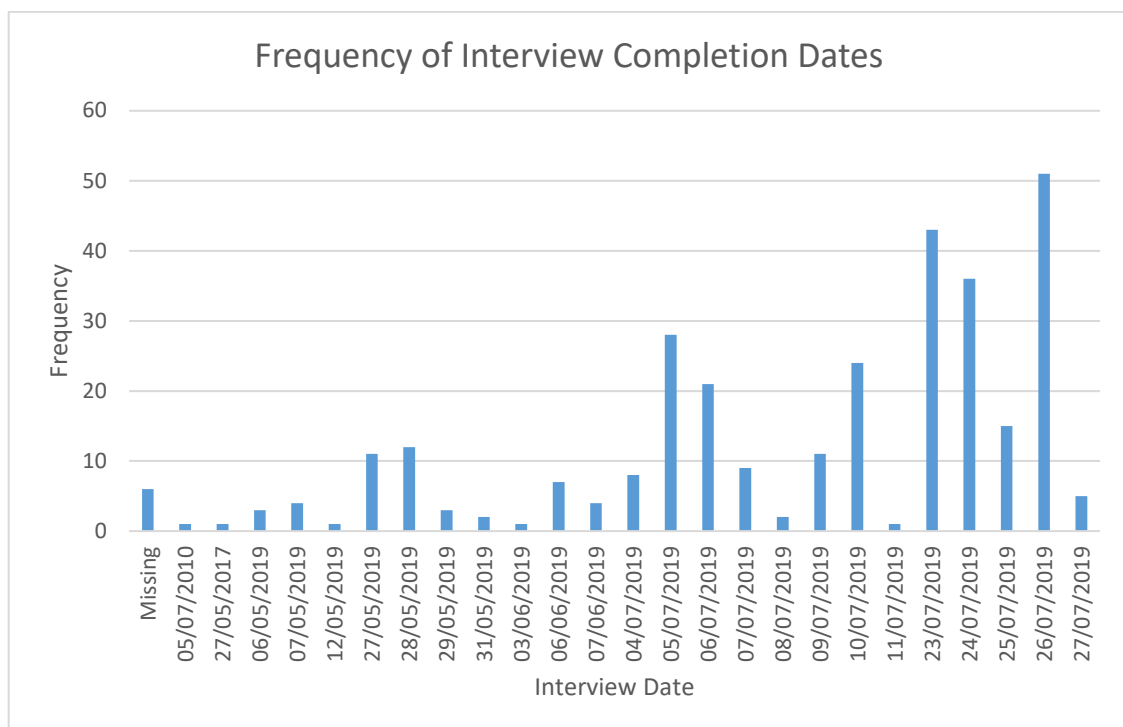


Figure 2: Frequency of questionnaire completion dates.

3.2 Socio-demographic Characteristics

The distribution of surveys across the six regions of Belize (Belize, Corozal, Cayo, Orange Walk, Toledo and Stann Creek) is shown in Figure 3 below. While interviewers were recruited to ensure all districts of Belize were sampled, it was not possible to perfectly stratify the sample

spatially due to the difficulty of recruiting interviewers willing to travel to certain districts. As a result, the most Northern district of Corozal is poorly represented in the sample.

Examining the socio-demographic characteristics of the sample shows that in comparison to the population of Belize our sample is biased towards female respondents (Figure 4). 60% of the 301 participants whose gender was recorded by interviewers (interviewers failed to record the gender of eight respondents) were female in comparison to 50% of the population of Belize as reported in the 2010 census. This could be attributed to the greater number of female interviewers recruited.

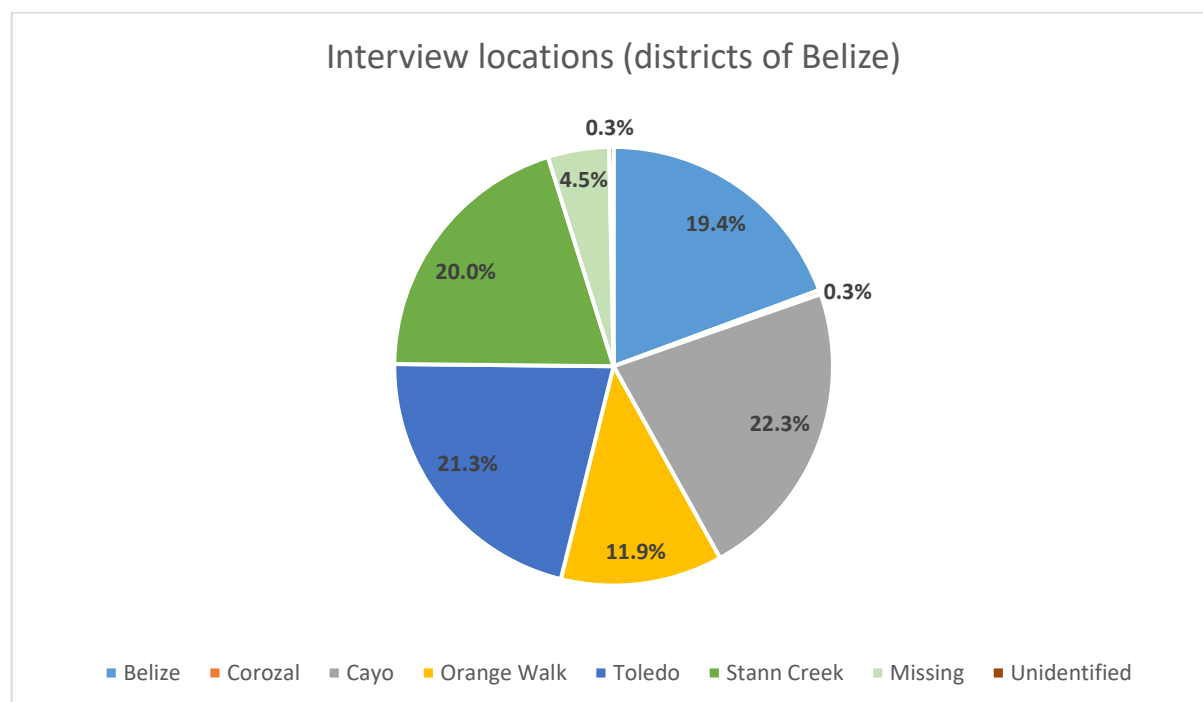


Figure 3: Percentage of interviews completed in different regions of Belize.

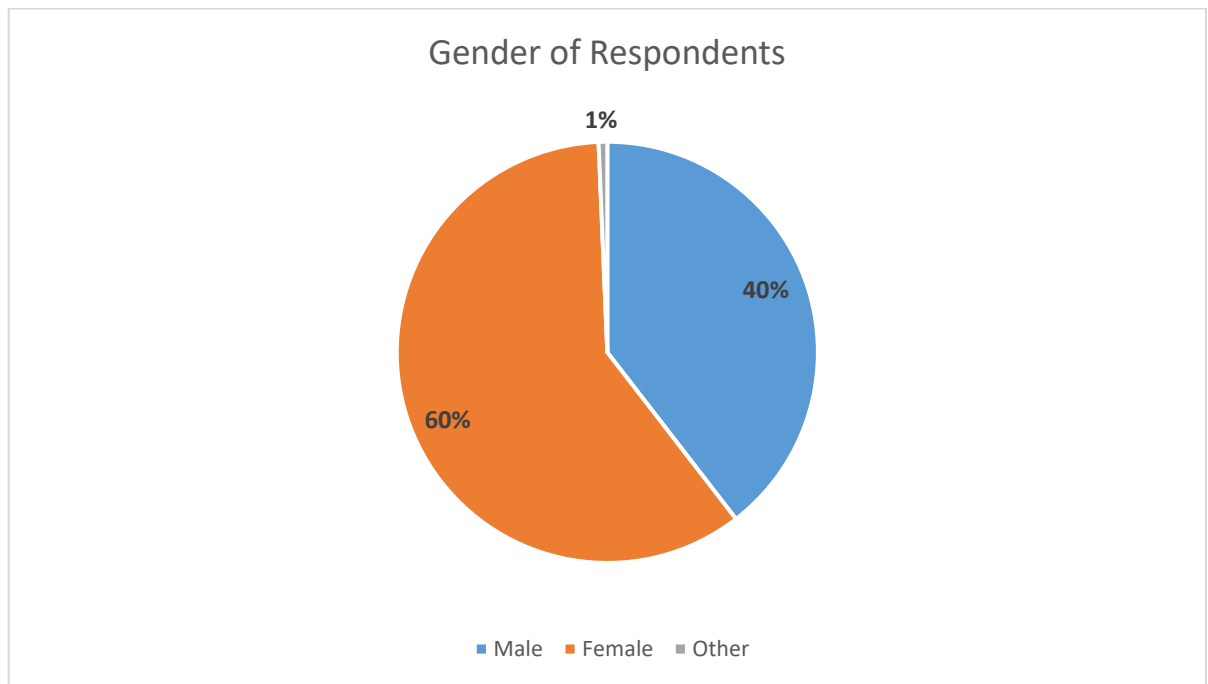


Figure 4: Gender of Respondents (% of n = 301).

Examining the age distribution of respondents reveals that the largest group of respondents was aged between 25 and 34 years. Comparing the age of our sample to that of the population (as reported in the 2010 Census) is complicated by the use of different categories in the census compared to the questionnaire, however the largest age group represented in the sample is 25 to 34 years (31%). The 2010 census reports a total of 15% of the population in the same age category (aged between 25 and 34 years) indicating that in comparison to the population our sample is over representing young adults. This is not surprising and somewhat unavoidable as no participants under the age of 16 were targeted and thus the largest proportion of the population (2010 census) was not included in the sample.

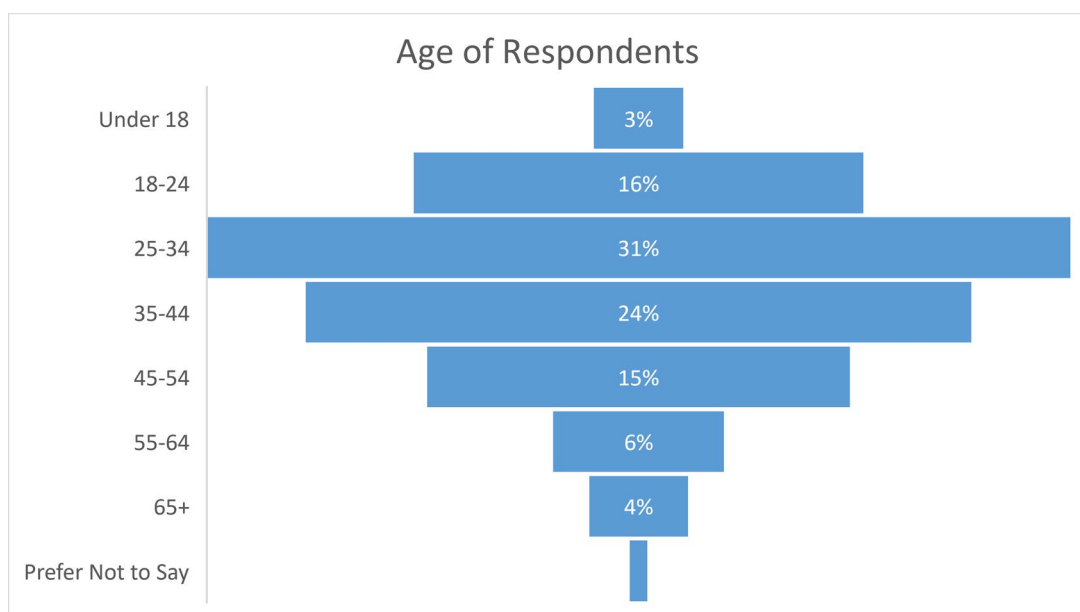


Figure 5: Age of Respondents (% of n = 309).

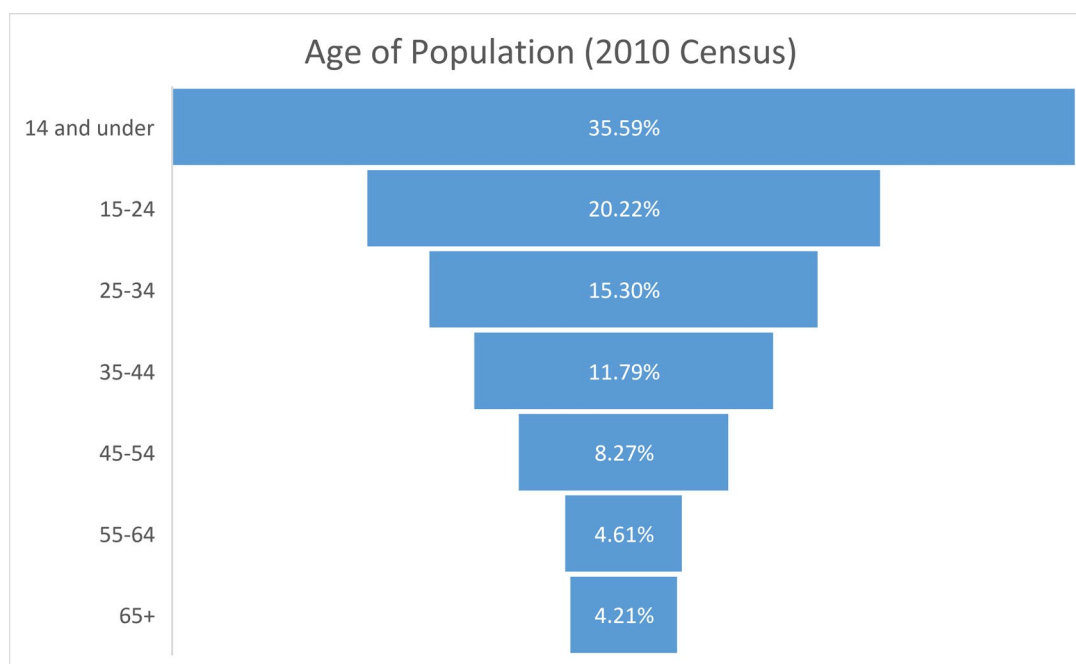


Figure 6: Age of Population, 2010 Census data (n = 322,424).

Respondents to the survey were also asked to select a category that best represents their annual household income. A large number of respondents (48%) selected the 'prefer not to say' option indicating that many respondents were reticent to reveal their income to interviewers. Figure 7 below shows the distribution of income levels in the sample. Only 1.3% of the sample reported a household income over BZ\$ 500,000 a year while 45% of the sample reported a household income of less than BZ\$99,999 a year. The median income category in the sample, only considering those answering the question on income, was BZ\$20,000 to BZ\$29,999 (7.8% of the sample). In comparison the median household income reported for the population of Belize in April 2019 was BZ\$14,928 a year (Statistical Institute of Belize, 2019), indicating a slight difference in terms of the available data on the household income of respondents the sample is reasonably similar to the population.

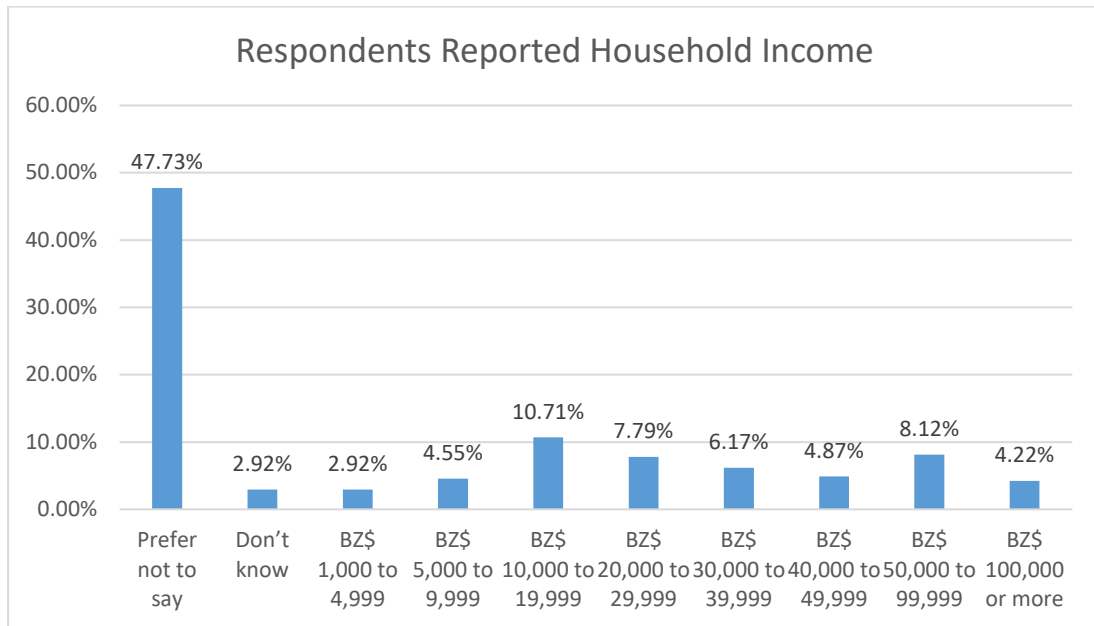


Figure 7: Reported household income categories of respondents (% of n = 308).

3.3 Questionnaire Results - Current Purchasing Habits

Survey participants were asked in question 1 “How would you describe your current purchasing habits in relation to single-use plastic items and packaging?” and were given options to indicate that they are actively reducing the plastics they use, are making small changes to reduce their plastic use or that they are not making any changes to reduce the amount of plastic they use.

In total 308 complete responses to this question were collected (two respondents failed to answer or their answer was not recorded) with the majority of participants (52.6%) stating that they are making small changes where they can try to reduce the amount of plastic they purchase or use. 24.7% of participants stated that they are actively reducing the amount of plastic they purchase or use and only 22.7% stated that they are not making any changes to reduce the amount of plastic they purchase or use.

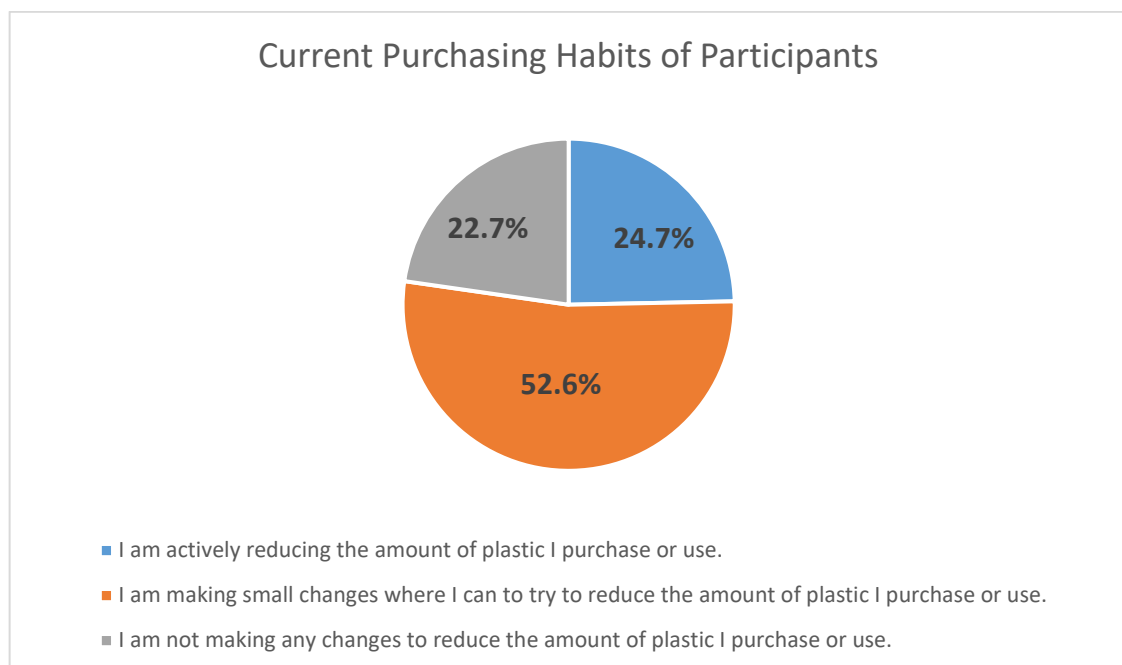


Figure 8: Current purchasing habits of single-use plastic and packaging items (n = 308).

3.4 Questionnaire Results - Support and Opposition to Planned Bans

Overall, respondents to the pilot study survey were supportive of the planned bans. Across all the items presented in question 2, an average of 71% of participants supported the bans, while 20% of participants opposed the bans (leaving 9% giving a ‘don’t know’ response). Plastic carrier bags and cups received the highest number of respondents stating their opposition. This also coincides with the lowest level of support on plastic bags, with only 64% of participants supporting a ban on plastic bags, and 67% stating that they would support a ban of plastic cups. The lowest level of opposition for bans was found for Styrofoam soup containers. This may be explained by the significant number of participants (13%) who stated that they did not know whether they support or oppose a ban of Styrofoam soup containers.

Table 1: Percentage of respondents who support or oppose planned single-use plastic and packaging bans.

	Support / Oppose			Rarely Use / Often Use		
	Support	Don't Know	Oppose	Rarely	Some-times	Often
Styrofoam food containers	72%	7%	20%	33%	43%	24%
Styrofoam soup containers	72%	13%	15%	63%	27%	10%
Styrofoam plates	70%	8%	22%	41%	39%	20%
Styrofoam cups and lids	74%	10%	16%	56%	27%	17%
Plastic carrier bags	64%	11%	25%	26%	25%	49%
Plastic forks, knives, spoons sporks etc.	68%	10%	22%	41%	40%	19%
Plastic plates	69%	7%	24%	49%	32%	19%
Plastic bowls	71%	9%	19%	60%	26%	14%
Plastic cups	67%	6%	26%	37%	33%	30%
Plastic tumblers	71%	9%	20%	67%	20%	13%
Single-use disposable drinking straws	79%	6%	16%	55%	25%	20%
Average across plastic items	71%	9%	20%	48%	31%	21%

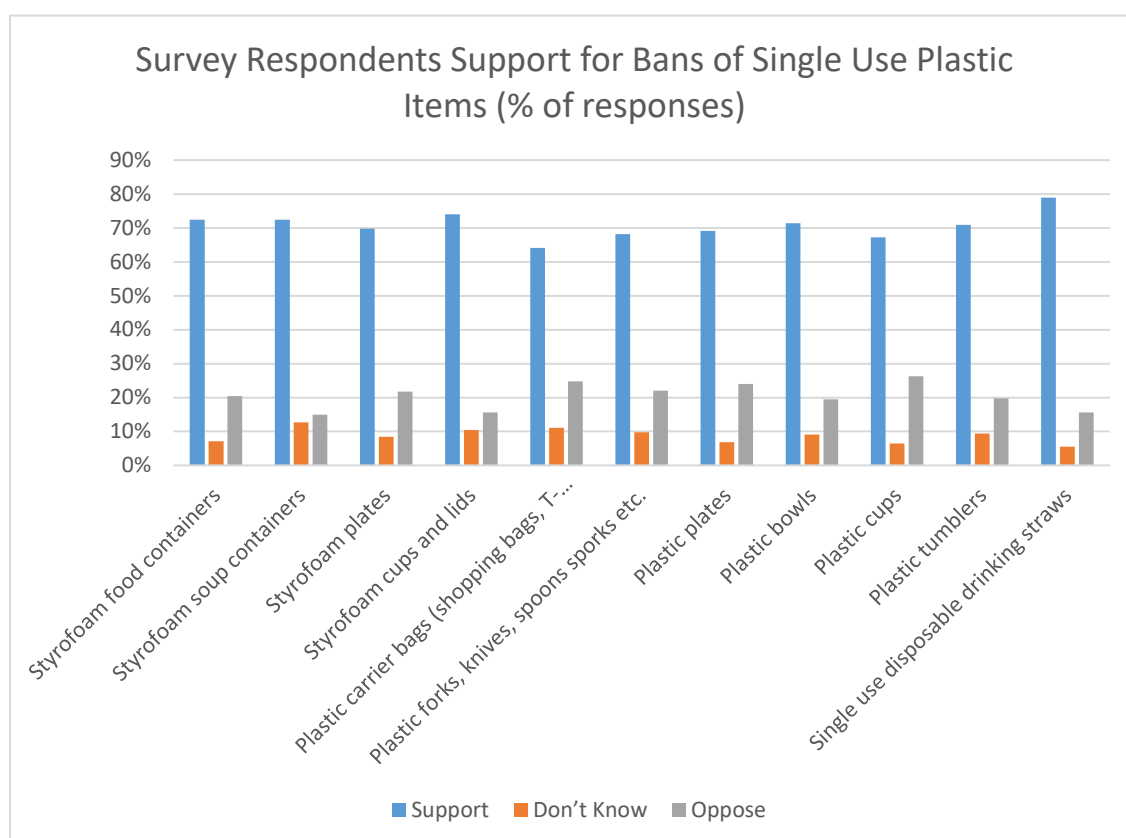
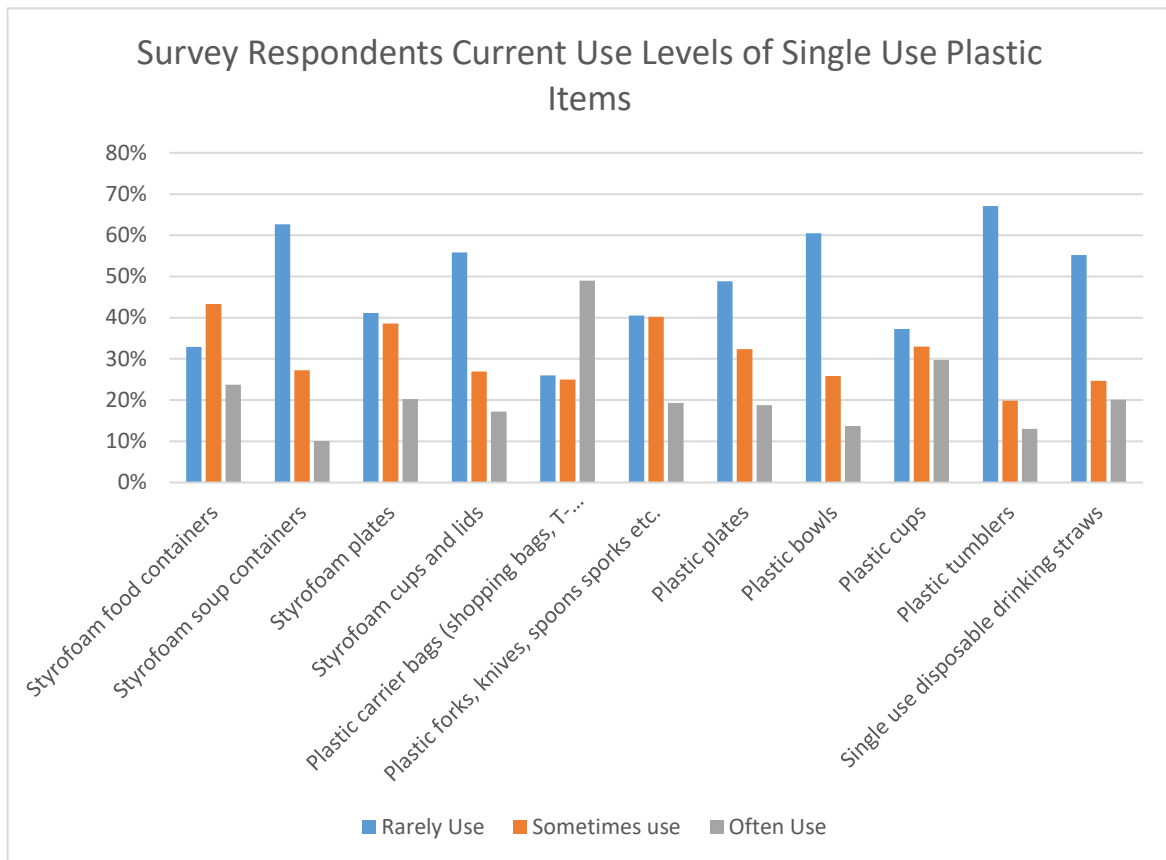


Figure 9: Percentage of survey respondents supporting or opposing planned plastic bans.

In addition to asking respondents about their support or opposition to planned plastic bans, each respondent was asked to classify their current usage of plastic items as either rarely

sometimes or often (question 3). According to responses to this question respondents most often use plastic carrier bags (49% of participants stated they often use) followed by plastic cups (30% of respondents stated that they often use). The least used items by respondents to the survey are plastic tumblers (67% of participants stated they rarely use) and Styrofoam soup



containers (63% of participants stated that they rarely use).

Figure 10: Respondents Current Use Levels of Single-Use Plastic Items (% of n = 308).

Crosstabulations were performed in order to compare if participants who often use an item are more or less likely to support a ban. Looking at the items for which a ban is supported by the most respondents (single-use disposable drinking straws) we find that of the 62 people who stated that they often use single-use disposable drinking straws, 45 (72%) supported the bans. Furthermore, of the 76 respondents who stated that they sometimes use disposable drinking straws 58 (76%) supported the ban. Respondents who stated that they only rarely use drinking straws (170 participants), 139 (82%) mostly supported the bans. Conversely, if we look at the item with the lowest level of support for a ban (plastic carrier bags), we see that of those who often use plastic carrier bags (149 participants), only 82 (55%) stated they support a ban. While of the 77 participants who stated that they sometimes use carrier bags, 52 (68%) stated that they support a ban. For those who stated that they rarely use carrier bags (80 participants), 61 (76%) supported the ban.

3.5 Questionnaire Results - Preferences for Sustainable Packaging Options

In question 4, participants were asked whether they would be willing to pay more for a product if its packaging was recyclable, biodegradable, made from recycled materials or had minimal packaging. Overall participants broadly agreed to pay more for a product with more sustainable packaging with biodegradable packaging being the most preferred feature (69% of participants agreeing to pay more). More participants stated that they would not pay more for an item with packaging made from recycled materials than any other packaging characteristic. While the most uncertainty (participants stating that they ‘don’t know’ if they would pay more) was expressed for paying more for packaging that was minimal.

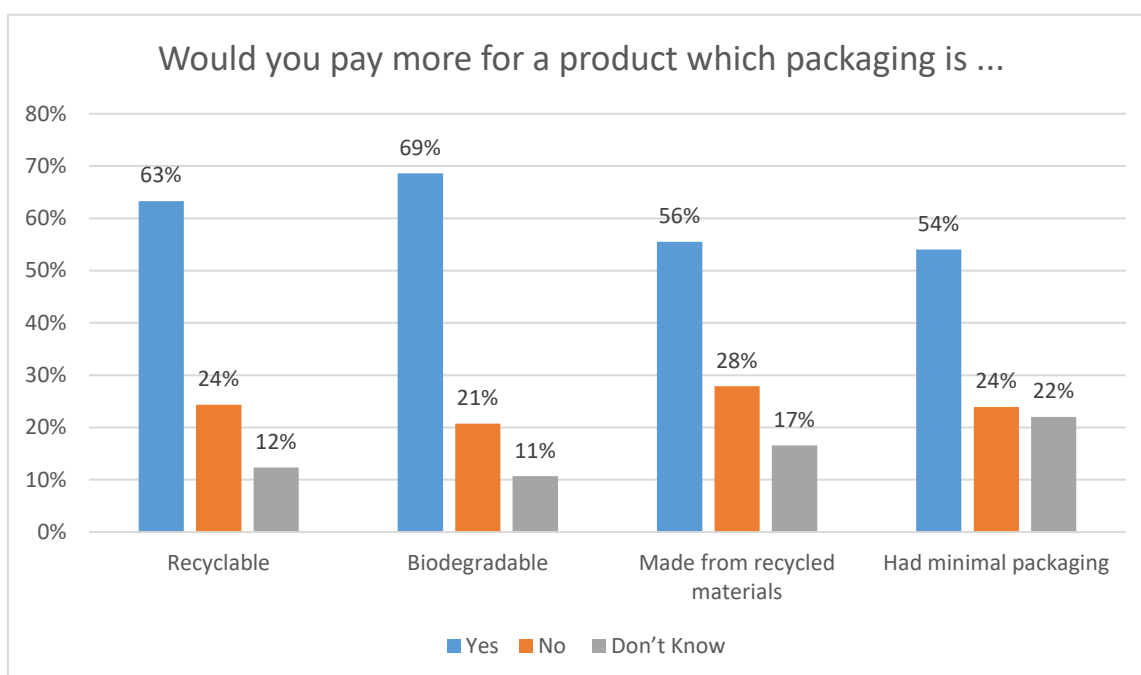


Figure 11: Percentage of survey respondents who would pay more for a product if its packaging was more sustainable (% of n = 309).

To further explore participants preferences for packaging characteristics, participants were asked in question 5 if they had a choice of two packaging types whether they would choose a “cheaper non-eco-friendly packaging” or a “slightly more expensive eco-friendly option” (participants were also given the option to state that they “don’t know”). The majority of respondents (53%) stated that they would choose the slightly more expensive eco-friendly option (Figure 11) leaving 36% who stated they would choose the cheaper non-eco-friendly packaging option and 12% who stated that they ‘don’t know’.

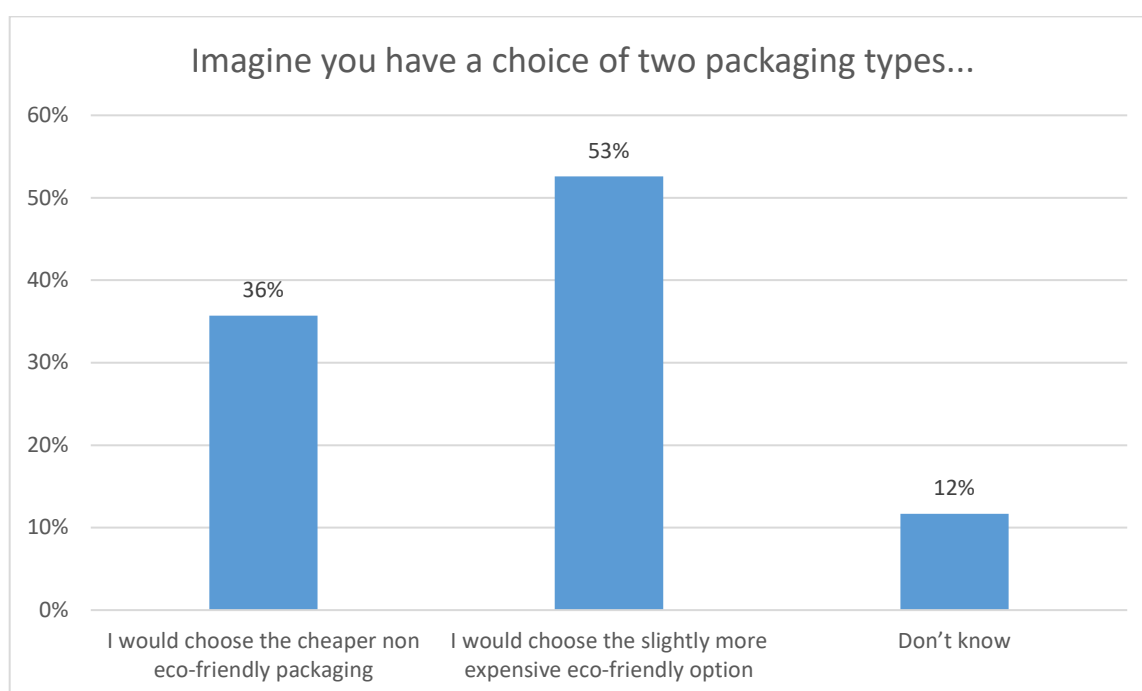


Figure 12: Percentage of participants who stated they would choose cheaper or more expensive packaging options (% of n = 308).

At the end of this set of preference questions, in question 6, participants were also asked whether they would be willing to pay more for a weekly grocery shop of BZ\$50 if all the packaging used was eco-friendly and did not include any single-use plastics. It should be noted that this question was intended to give an initial feel of the strength and direction of respondent's preferences for more expensive eco-friendly packaging. While this question may resemble that used in a contingent valuation² it should not be interpreted as such. Typically stated preference valuation questions employ numerous steps to reduce the presence of hypothetical bias and ensure results are suitable for welfare analysis. The open-ended elicitation format used here means that respondents were simply asked to state how much they would be willing to pay. as such, the results of this question should not be interpreted as literal values, instead responses to this question should be used to potentially scope further stated preference work on this topic.

In total, 218 respondents (71% of 308 completing this question) stated that they would be willing to pay more for a weekly grocery shop without single-use plastics. However, 15 respondents (7% of 218) who stated that they would be willing to pay more did not provide a WTP amount. It is unclear whether this was due to interviewers failing to ask participants to specify an amount or whether respondents simple failed to provide an answer. Recorded WTP amounts ranged from BZ\$0.05 cents to BZ\$55.

² Contingent valuation (CV) is a valuation method. For a definition of CV, please see, for example: <https://stats.oecd.org/glossary/search.asp>

As can be seen from the histogram (Figure 12) and Table 4 the large majority of respondents stated that they would be willing to pay a positive amount between BZ\$0.05 and BZ\$10 (83% of those who provided a WTP amount) more for a BZ\$50 weekly grocery shop, in which all the packaging used is eco-friendly and single-use plastics are absent. Respondents who agreed to pay more and provided a WTP value were willing to pay an average of BZ\$8.55 (std. dev. 8.26) and a median of BZ\$6 more for a BZ\$50 weekly shop with sustainable packaging and no single-use plastics.

Table 2: Percentage of WTP responses (n = 203).

WTP	Percentage of responses
BZ\$0.1 to BZ\$10	83.17%
BZ\$11 to BZ\$20	10.89%
BZ\$21 to BZ\$30	3.96%
BZ\$31 to BZ\$40	0.99%
BZ\$41 +	0.99%

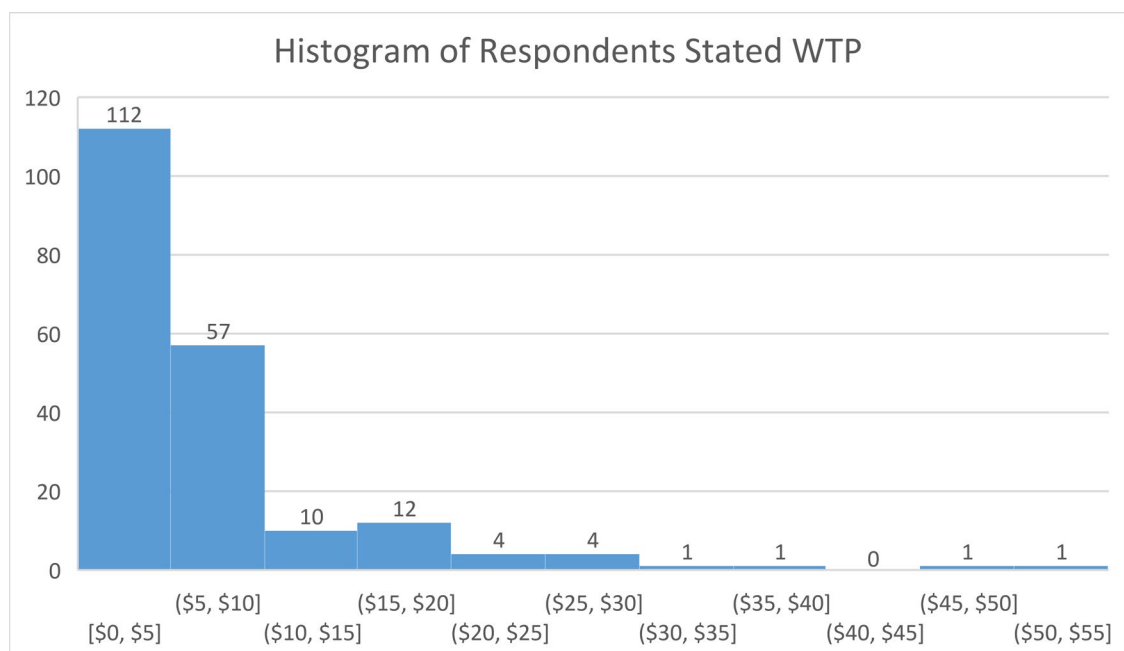


Figure 13: Histogram of respondents stated WTP for a sustainably packaged weekly shop (n = 203).

3.6 Questionnaire Results - Preferences for Information Provision on Product Packaging

In question 7, respondents were asked whether the environmental impact of a product's packaging affects their purchasing decisions. In total 308 responses were collected for this

question with 44% of respondents stating that the environmental impact of a product's packaging affects their purchasing decisions (Table 5). This left a small majority of respondents (56%) who stated that the environmental impact of a product's packaging does not affect their purchasing decisions.

Respondents were also asked in question 8 whether they think enough information is provided to consumers on the environmental impact of different packaging options. Table 5 shows that a large majority of respondents stated that they did not think that enough information is provided regarding the environmental impacts of different packaging options (87%).

Table 3: Respondent responses to questions regarding the provision of information on the impact of packaging on the environment (Questions 7, 8 and 9).

	Yes	No	N
When shopping does the environmental impact of a products packaging affect your purchasing decisions?	44%	56%	308
Do you think there is enough information provided to consumers on the environmental impacts of different packaging options?	13%	87%	308
Would you like more information to be placed on product packaging to explain the environmental impacts of product packaging?	90%	10%	309

In question 9, respondents were also asked whether they would like more information to be placed on product packaging to explain its environmental impacts. 90% of respondents stated that they would like more information about the environmental impacts of a products packaging to be placed on product packaging.

In the final question 10, respondents were asked who they think should be responsible for informing consumers about the impacts of single-use plastic items and packaging. Table 6 shows that the largest number of respondents thought that producers should be responsible for informing consumers about the impacts of single-use plastic items and packaging (156 respondents), followed by government departments (129 respondents), traders (50 respondents) and non-government organisations (33 respondents). 23 respondents also gave open text responses of which 17 stated that everybody (or all) should be responsible.

Table 4: Frequency of responses to question asking respondents who should be responsible for informing consumers about the impacts of single-use plastic items and packaging. Note that respondents could select more than one response.

	Government Departments	Producers	Traders	Non-government Organisations	Other

Frequency	129	156	50	33	23
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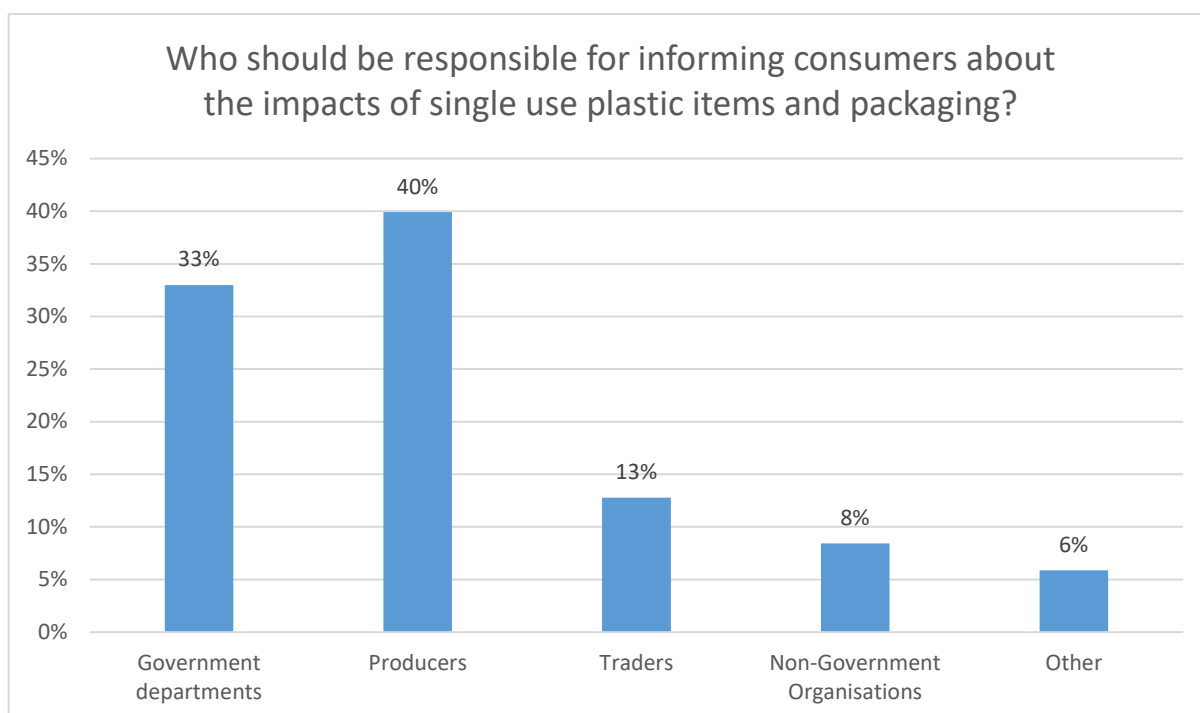


Figure 14: Percentage of responses to who should be responsible for informing consumers about the impacts of single-use plastic items and packaging.

4 Discussion

This pilot study aimed to explore the attitudes and preferences of citizens of Belize towards ban of single-use plastic and packaging items and preferences for sustainable alternatives. While it was not possible to collect a wholly representative sample, the respondents interviewed were similar to the population in terms of income and, considering the small sample size, a reasonable spatial distribution was achieved. Overall it seems that respondents to this survey were supportive of moving away from the use of single-use plastic and packaging items with a small majority (approximately 55%) stating that they were making small changes where they can, and circa 25% stating that they are actively reducing the amount of plastic they use or purchase. This is very similar to the response of 2019 UK citizens survey in which 57% of respondents stated they are making small changes, and 28% of respondents stated that they are actively reducing the amount of plastic being used (<https://yougov.co.uk/topics/consumer/articles-reports/2019/04/19/most-brits-support-ban-harmful-plastic-packaging>). Further support for moving away from unsustainable use of plastics is seen with an average (across all items) of 71% of respondents supporting the planned bans. Indeed, on average (across all 11 items) only 21% of respondents stated that they often use the listed plastic items. While the majority of respondents stated that they support the proposed ban and do not often use the listed items, examining the relative support and opposition amongst those who do often use items revealed some differences between items. The proposed ban of single-use drinking straws received the most support from respondents, this level of support was similar between those who stated that they often use and those who sometimes or rarely use (72%, 76% and 82% respectively). While for the item with the lowest level of support for the proposed ban (plastic carrier bags) we see that only 55% of those who often use them supported the ban compared to 68% who sometimes use them and 76% of those who rarely use them.

In terms of respondent's preferences for characteristics of sustainable packaging, most respondents agreed to pay more for packaging that is recyclable, biodegradable, made from recycled materials and minimal packaging. Respondents were least likely to pay more for minimal packaging, this could be attributed to a belief that less packaging should not cost more. More people stated that they 'don't know' if they would pay more for minimal packaging than any other packaging characteristic, so it may also be that this characteristic caused some confusion amongst respondents. Minimal packaging could be interpreted as both minimal amounts of material used as well as minimal amount of protection afforded by the packaging. The packaging characteristic that received the highest number of participants agreeing to pay more was biodegradable packaging. While it is encouraging to see that individuals state that they would pay more for biodegradable packaging, we have not distinguished between biodegradable and compostable packaging (indeed consumers are often unaware of the difference). Further research is needed to shed light on consumer awareness of the range of compostable and biodegradable packaging available and on the various routes of disposal each requires. Overall, this generally positive preference towards paying more for sustainable packaging is confirmed by 53% of participants stating that they would choose a slightly more expensive eco-friendly packaging type over a cheaper non-eco-friendly type.

Positive preferences for eco-friendly packaging are further evident through the large number of participants (71%) who stated that they would be willing to pay more for a weekly grocery shop which did not contain single-use plastics. While 7% of these respondents failed to state how much more they would be willing to pay, those who did were willing to pay an average of BZ\$8.55 more for a BZ\$50 weekly grocery shop (median of BZ\$6). While due to the format of the WTP question this result should not be treated as an economic value suitable for welfare analysis, it does indicate that there is a generally strong and positive preference for alternative packaging options. There appears to be more participants agreeing to pay more for a weekly grocery shop (71%) that is sustainably packaged than the number of respondents who said they would pay more for a product where the packaging has some sustainable characteristics (average 61% of participants across the four packaging characteristics). It is not clear whether this is due to the difference between preferences to pay more for a single product or a bundle of products (i.e. a BZ\$50 grocery shop compared to a unspecified product) or whether the absence of a 'don't know' option in the WTP question meant that respondents who were not sure were coerced into stating a preference. In total 29% of participants stated that they would not pay any more for a weekly shop; this is a greater percentage of participants than in the UK based surveys for which only 18% stated that they would not be willing to pay more when presented with a similar question (<https://yougov.co.uk/topics/consumer/articles-reports/2019/04/19/most-brits-support-ban-harmful-plastic-packaging>).

To further explore these positive preferences for sustainable packaging options, respondents were asked whether the impact of a products packaging on the environment affects their purchasing decisions. Curiously, less than half of respondents stated that the environmental impact of a products packaging affects their purchasing decision (44%). It seems that despite 71% of participants stating that they would pay more for a weekly shop and 53% of respondents stating that given a choice they would choose a slightly more expensive eco-friendly packaging option these stated preferences do not translate into stated purchasing behaviour. We would expect that respondents who agreed to pay more for a weekly shop with sustainable packaging would do so out of concern for the environmental impacts of packaging on the environment. We would thus expect those who agreed to pay more (and gave a positive WTP value) to also agree that the environmental impact of a products packaging influences their purchasing decision. In contrast, we find that 97 respondents (32%) who stated that they would be willing to pay more, also stated that the environmental impact of a products packaging does not affect their purchasing decisions. This suggests that a significant number of respondents who agreed to pay more for sustainable packaging in a weekly grocery shop do not currently make purchasing decisions based on the environmental impacts of a products packaging. There are several possible explanations for this inconsistency in participants responses including the presence of a value action gap (Kollmuss & Agyeman, 2002), the presence of hypothetical bias in participants stated preference (Ajzen et al., 2004) responses, or simple misunderstanding of the question as well as interviewer's bias when delivering the question. In the presence of a value action gap, respondents may be demonstrating a positive preference for sustainable packaging options but when faced with purchasing decisions they fail to act. Individuals may fail to act on their principles due to a perception that action inflicts undesirable conflicts such as higher cost, reduced choice set or perceived inconvenience.

Although no causal links can be drawn at this stage, it is perhaps never-the-less interesting to note that work carried out on waste composition conducted for CLiP by Asia-Pacific Waste Consulting (APWC) in June 2019 conducted across a representative sample of households in Belize found that 20% consisted of ‘supermarket bags (>300 gsm)’. Which, at the time of writing was anecdotally one of the highest values APWC had found conducting the same survey in Small Island Developing States (of which Belize is one) around the world. A further 23% consisted of ‘polystyrene (including takeaway containers)’ waste (APWC, 2019). In litter surveys carried out by the CLiP team on riverine beaches, city drains (in Belize City) and marine beaches, also in June 2019, data showed that ‘plastic bags (e.g. shopping bags)’ were in the top 10 items by count found. The top 10 items found by count on marine beaches and along city drains (in Belize City) were ‘foam cups, food packs and trays’ (Cefas, 2019). This suggests that plastic bags and polystyrene containers are a significant problem both in waste streams and in leakage and contamination of the environment.

A large number of respondents (87%) disagreed that enough information is currently provided to consumers on the environmental impacts of different packaging options, with a similar number of respondents (90%) agreeing that they would like more information on environmental impacts to be placed on product packaging. These two questions were placed consecutively in the survey with reverse coding in order to capture the presence of acquiescence bias (yes-saying). While we might expect a higher level of agreement between those disagreeing that enough information is provided on environmental impacts and those agreeing that they would like more information provided, the level of agreement (see Table 5) is significantly high to assume that no acquiescence bias is present.

5 Conclusions

The purpose of this pilot study was to collect and assess the attitudes and preferences of Belizean citizens towards the proposed bans of single-use plastic items and packaging. Overall support for banning single-use plastic and packaging items was strong across all the items proposed, with particularly strong support for high profile items such as disposable drinking straws. Support for moving towards more sustainable packaging options was confirmed by more than half of all respondents stating that they would pay more for a product with packaging that exhibits sustainable characteristics (such as being biodegradable).

Results of this study show majority support among Belizeans for top down policies to reduce the impacts of marine plastics on the environment through bans of single-use plastic items and packaging. While a majority of participants stated that they would be willing to pay more for both a weekly grocery shop and for individual sustainably packaged items, some inconsistencies were present with only 44% of participants stating that the environmental impact of a products packaging affects their purchasing decisions. This inconsistency warrants further investigation and it is recommended that a stated preference choice experiment be conducted to further explore the barriers to consumers choice of sustainable packaging options. Further, the potential value action gap between consumers attitudes towards sustainable packaging options and their actual purchasing behaviour warrants further investigation. As with many environmental issues changing attitudes will not necessarily result in a change in the relevant

behaviour as, economic, social and cultural barriers stop individuals from acting in a coherent way. Identifying when such barriers stop consumers from effectively changing their behaviour helps to determine if a policy intended to change consumer behaviour will be effective or not.

While generally support for banning all the items listed on the survey was strong, the least supported item, plastic bags, were also reported as the most frequently used item. Here it is important that both a suitable alternative is available for those who already support a potential ban and that information campaigns are used to inform those who do not support a potential ban. A potential option could be to provide re-usable sustainable bags, for which the DOE had tried. However, it did not embed an information campaign regarding the negative impacts of disposable plastic bags; such bags could be provided at no cost or subsidised to ensure that even those who currently do not support a ban have an alternative available to them.

6 Forward Look and Recommendations

This report has presented the results of a pilot study conducted to investigate the attitudes and preferences of Belizean citizens towards the proposed bans of single-use plastic items and packaging in order to provide a set of recommendations for a full-scale study to be conducted in Belize on this topic.

This new full-scale survey will be informed by the results and lessons learned on the pilot study conducted. It is recommended that the new survey makes best use of the results presented in this report verifying what went well and what went wrong in the administration of the survey. This would then mean:

- revising and adjusting the survey questionnaire questions making use of initial focus groups.
- targeting a wider and more representative sample; and
- having better oversight of the interviewers doing the survey to avoid biases.

If a robust WTP value is of interest, then the use of stated preference techniques, and in the specific of a choice experiment to investigate it, is recommended. A choice experiment may provide a wider set of insights around a policy banning the single-use of plastic than a contingent valuation would do.

A new suit of questions investigating which kind of awareness Belizean would like to receive around the topic of single-use plastic may also be added to the full-scale survey.

7 References

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8 Appendix 1: Belize Single-Use Plastic and Packaging Questionnaire

Interviewer Name:		Date:		Interview Location:	
Gender of Participant:	Male	Female	Other		

Instruction to interviewers:

Please enter your name, the date location of the interview and the gender of the respondent in the boxes above. Please read the survey introduction to participants, if they agree to take part then read the rest of the introduction and then begin reading the questions to the respondent. Please circle or tick the response the participant gives clearly.

Survey Introduction:

Good (morning/afternoon/evening) **my name is** (insert your name here) **I am conducting a survey in collaboration with the Belizean government and the centre for fisheries and aquaculture science (CEFAS) UK as part of the Commonwealth Litter Programme (CLiP). The survey will only take 5 minutes and no information that could be used to identify you as an individual will be collected. Would you like to take part? Yes No**

The government of Belize is planning to ban a number of single-use plastic and packaging items (including plastic and polystyrene food containers, cups and cutlery) due to the negative impact they have on the environment. All information collected in this survey will be stored anonymously and securely and used exclusively for research purposes.

1. How would you describe your current purchasing habits in relation to single-use plastic items and packaging, are you....? (read or show the options below to the participant and circle their response)

I am actively reducing the amount of plastic I purchase or use

I am making small changes where I can try to reduce the amount of plastic I purchase or use

I am not making any changes to reduce the amount of plastic I purchase or use

2. Would you support or oppose a ban on each of the following single-use plastic items? (read or show each of the plastic items to the participant and tick their response)

Plastic Items	Support	Don't Know	Oppose
Styrofoam food containers			
Styrofoam soup containers			
Styrofoam plates			
Styrofoam cups and lids			
Plastic carrier bags (shopping bags, T-shirt bags)			
Plastic forks, knives, spoons, sporks etc.			
Plastic plates			
Plastic bowls			
Plastic cups			
Plastic tumblers			
Single-use disposable drinking straws			

3. How often do you purchase or use each of the following single-use plastic items? (read or show each of the plastic items to the participant and tick their response)			
Plastic Items	Rarely	Sometimes	Often
Styrofoam food containers			
Styrofoam soup containers			
Styrofoam plates			
Styrofoam cups and lids			
Plastic carrier bags (shopping bags, T-shirt bags)			
Plastic forks, knives, spoons, sporks etc.			
Plastic plates			
Plastic bowls			
Plastic cups			
Plastic tumblers			
Single-use disposable drinking straws			
4. Would you be more likely to pay more for a product if its packaging was... (read or show each packaging characteristic below to the participant and circle their response)			
Recyclable?	Yes	No	Don't know
Biodegradable?	Yes	No	Don't know
Made from recycled materials?	Yes	No	Don't know
Had minimal packaging?	Yes	No	Don't know
5. Imagine that when food shopping you have a choice of two types of packaging for a product you regularly buy. One type of packaging is eco-friendly and would be a slightly higher price. The other is the standard non-eco-friendly product packaging priced normally for the product you are buying. Which of the following statements fits closest to you? (read or show each statement below to the participant and circle their response)			
I would choose the cheaper non-eco-friendly packaging			
I would choose the slightly more expensive eco-friendly option			
Don't know			
6. Imagine that your total weekly grocery shop came to (BZ)\$50. Would you be willing to pay more if all of the packaging used was eco-friendly and did not include any single-use plastics?			
Yes		No	
(If yes) 5a. How much more extra would you be willing to pay? (Belize \$s)		(BZ)\$:	
7. When shopping does the environmental impact of a products packaging affect your purchasing decisions? (please circle the response)			
Yes		No	
8. Do you think there is enough information provided to consumers on the environmental impacts of different packaging options? (please circle the response)			
Yes		No	
9. Would you like more information to be placed on product packaging to explain the environmental impacts of product packaging? (please circle the response)			
Yes		No	
10. Who do you think should be responsible for informing consumers about the impacts of single-use plastic items and packaging on the environment? (read or show each option below to the participant and circle their response)			
Government departments (such as the Belize coastal zone management authority and institute)			
Producers (those who produce packaged products)			
Traders (those who sell packaged products)			
Non-government organisations			

Other (Please state: _____)
11. Can you please tell me your age? <i>(read or show the options below to the participant and circle their response)</i>
Under 18
18-24
25-34
35-44
45-54
55-64
65+
Don't wish to say
12. In what district of Belize do you currently live? <i>(read or show the options below to the participant and circle their response)</i>
Corozal
Orange Walk
Belize
Cayo
Stann Creek
Toledo
I don't currently live in Belize
13. What of these is the highest educational level you have attained? <i>(read or show the options below to the participant and circle their response)</i>
Primary School (up to 10 years old)
Secondary school (up to 16 years old)
Upper secondary school (up to 18 years old)
University degree or equivalent
Post graduate qualification
Professional qualification
14. Can you please tell me which of these ranges your annual household income falls into? <i>(read or show the options below to the participant and circle their response)</i>
3,000,000 or more
2,000,000 to 2,999,999
1,500,000 to 1,999,999
1,000,000 to 1,499,999
500,000 to 999,999
400,000 to 499,999
300,000 to 399,999
250,000 to 299,999
200,000 to 249,999
150,000 to 199,999
100,000 to 149,999
50,000 to 99,999
Prefer not to say
Thank you for taking the time to participate in this survey, if you have any questions or would like to provide more information please contact: Barnaby.andrews@cefas.co.uk



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