ASSESSING THE CLEAR BAG INITIATIVE AS A WASTE MANAGEMENT STRATEGY IN THE HRM

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This work is dedicated to the people who helped me through the most difficult year of my life

ABSTRACT

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This thesis outlines how social psychology can act as a tool for understanding environmental attitudes and behaviours. When an onset of changes were approved to By-Law-600 on February 3, 2014, curbside collection regulations would include a clear bag program(CBP) as of August 1,2015. At the time of the announcements, local news reports alluded to some residential pushback. To assess whether the program has been an effective waste management strategy as a structural fix, this research collected online and door-to-door surveys, as well as conducted an interview with HRM Solid Waste Manager Matthew Keliher. The results reveal that by and large, residents have adjusted to the changes a year and a half after implementation. Suggesting the structural and educational approach in combination has proved to be an effective waste management strategy in the HRM.

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CHAPTER ONE

Introduction

Otter Lake landfill is the destination for the majority of Halifax, Nova Scotia's, unwanted items. The landfill receives 140,000 tonnes, or 300 million pounds of garbage every year (CTV Atlantic, 2015). According to Regional Councillor Reg Rankin, who represents Timberlea-Beechville-Clayton Park West, where Otter Lake Processing and Disposal Facility is located, "the most expensive place [to put our garbage] is in the landfill (Berman, 2015)". Therefore, municipalities are often looking for new ways to decrease the amount of waste materials, to extend the life of a landfill, and to save taxpayer dollars (Berman, 2015). Using clear garbage bags for residential curbside collection is a management strategy aimed at reducing waste and increasing alternative streams such as recyclables, paper and compost. The transparency of the clear bag allows collectors to see the contents and can identify if the bag has too many improperly-sorted items to be collected, in which case it will be given a sticker indicating why it was 'rejected' and left to be re-sorted for the next pick-up date. Such a clear bag program (CBP) was proposed to the Halifax Regional Council several times but unsuccessful until amendments were approved to By-Law 600 on February 3, 2014. Although using clear bags is nothing new for over 45 communities in Nova Scotia, this would be the first time they were required for the region's largest city, the Halifax Regional Municipality (HRM). The new regulations took effect on August 1, 2015, six months after the amendments were approved.

According to the new regulations, a single-unit dwelling can leave up to six clear bags curbside with the option of including one of the six as dark bag, known as the 'privacy bag' (Halifax Regional Municipality, 2018). Apartment buildings up to 6 units can leave 4 bags per unit, with the option of including 1 dark bag, while the remaining must be clear (Halifax Regional Municipality, (2018). Some of the other changes implemented were due to the elimination of grass from the composting stream to encourage 'grass-cycling'- the act of leaving grass clippings on a lawn to recycle nutrients (Halifax Regional Municipality, 2018). Additionally, boxboard was moved from the compost stream to the blue bags to preserve material quality (CBC, 2015).

 The new regulations were accompanied by a broad communication campaign called "Let's be Clear, Halifax," which included several strategies to bring awareness to as many residents as possible. Educational tools were used, such as flyers, stickers and a web page outlining the changes. If you live in the area, you may recall seeing or hearing the "Let's be Clear" YouTube, television, or radio announcements which aired July 2014. Or, the large "Let's be Clear, Halifax" posters on the municipal collection haulers and buses. Facebook groups, and advertisements were used as well, to promote a contest giveaway 6 iPod Minis. Additionally, the municipality created an app called *What Goes Where*, which allows residents to type in any item they are unsure how to dispose of, and it will provide directions. The app also allows users to enter their address and a specific curbside collection schedule for your residence will send reminders.

There were a handful of media responses to the onset of changes; some informed residents about what they needed to know to prepare for the changes while others focused on residents' reactions. Solid Waste Resource Manager Matthew Keliher explained, that the change to clear bags made environmental sense by diverting solid waste from the Otter Lake landfill. The change also made economic sense since it only costs the municipality $50 a ton to process recyclables while it costs roughly $150 to process the same amount of garbage materials (CTV, 2015). Lastly, the change increased worker safety by allowing collectors to see if the bag contains dangerous, hazardous or banned materials, before collecting them (CTV, 2015). Moreover, the communities in Nova Scotia which have switched to clear bags for waste management have seen an average of 15% garbage reduction (Berman, 2016).

To gauge public reaction to the clear bag initiative, CTV News Atlantic interviewed three resident's door-to-door for their thoughts on the change, approximately eight weeks before they came into effect. When asked about onset of changes, Kay MacDonald welcomed the change to clear by saying "[opaque bags] lead to garbage all over the streets." "[The] dogs and cats are digging into it. it's just too much" she added (CTV, 2015). Another resident, Weldon Cant, admitted "[I] wasn't keen on the idea at first but I'm coming around to the idea now" (CTV, 2015.)

Bruce Frisko reported that not everyone feels that way, however, by stating, "some residents still aren't happy about the changes and are saying it will lead to more illegal dumping in the municipality" (CTV, 2015). Indeed, when Ken Fougere was asked what he thought about the curbside changes, he responded, "I wish they'd leave us alone." Fougere was convinced the changes would lead to an increase in illegal dumping: "it's what's going to happen. What else will it lead to?" Similar concerns had been raised in Lunenburg County in 2013, after the municipality adopted its clear bag program two years before the HRM (CTV Atlantic, 2013).

These media reports left many questions unaddressed, but ultimately, I wanted to determine whether the CBP is proving to be an effective strategy for achieving waste reduction in the HRM. To answer this, three research questions were devised to answer this overarching question; what is working according to HRM residents and what needs adjusting, what is working according to city officials and what needs adjusting, and what lessons can we learn about the CBP in the HRM, about environmental attitudes in general and more specifically waste management strategies. To answer this question, I have analyzed survey responses from 234 HRM residents, as well as interview responses from Solid Waste Resource Manager Matthew Keliher. Based on this data, I conclude that the CBP, along with the accompanying "Let's be Clear" educational campaign has been an overall success according to both the HRM residents and the city official who participated in this research. This supports Thomas Heberlein's (2012) argument of favouring structural fixes for solving environmental issues, which occurs via municipal by-law change.

This thesis will first discuss relevant social psychological literature concerning environmental attitudes, norms and behaviours. Followed by a brief discussion on some of the existing international, national and local strategies for waste management, culminating with the clear bag program (CBP) implemented in the HRM. The methods of how this research was conducted will be reviewed before moving to the results of the data analysis. This thesis will be followed by a discussion of significance of the results in Chapter 5.

CHAPTER TWO

Literature Review

 In reviewing how the curbside changes have been received by HRM residents based on media portrayal, the focus for the literature review is social-psychology, while focusing on attitudes and behaviours. The goal is understanding how to bring about environmental attitudes and behaviours. This will then be linked to waste management strategies such as the Clear Bag Program (CBP) which was designed to reduce waste. This section begins with Psychology literature, which can be thought of as the study of the individual and sociology literature, which is more concerned with the collective.

Attitudes are complex concepts. Myers & Smith (2012) define an attitude as "a general and enduring evaluation of some person, object or issue along a positive to negative scale continuum" (p.79). Norms can be thought of as collective attitudes. Behaviour on the other hand is an action and easier to measure than elusive attitudes. Myers and Smith (2012) explain that social psychologist during the 1940's and 1950's believed that attitudes were the key to behaviour prediction (2012, p.79). Myers and Smith (2012) write however, "numerous studies showed that attitudes did not always predict behaviour" (p.79). Stephen Corey (1937) for example asked his students to report their attitudes on cheating, before providing an opportunity to do so secretly. The attitudes which were negative, did not stop the students from participating in cheating. General attitudes are poor predictors of specific behaviours. Parfitt (2005) for example writes, "[t]he link between attitudes and behaviour is often unclear and, in some areas, totally unreliable" (p.92).

Attitudes are generally thought of as individual concepts, norms however, is a collective

representation of attitudes. Myers and Smith (2008) explain there are two types of norms,

descriptive and injunctive norms. Descriptive norms are norms that relate to what

behaviours other people in your social group are engaging in (2008, p.325). While

injunctive norms are norms that relate to what behaviours you should engage in from a

moral perspective (2008, p.325). The expression "don't be a litterbug," for example, is an

example of the anti-littering norm, implying littering is the wrong behaviour. Robert

Cialdini and his team for example conducted several studies encouraging people to engage

in more environmentally friendly behaviour (Bator & Cialdini et al., 2008), by focusing on

the activation of social norms. One of their studies used the way hotels often leave notes in

the clean rooms in hopes to communicate a message. This study communicated to guests

that reusing sheets and towels is eco-friendly behaviour and the control group included the

standard room set-up. Bator & Cialdini et al., (2008), found that the hotel guests who were

exposed to this message were 28% more likely to reuse towels compared to the group that

received the standard room messages. Arguing that social norms to be the best predictor of

behaviour (Myers & Smith, 2008, p.325). Interestingly, the same study found social norms

were rated the least important element in decision making (Myers and Smith, 2008, p.325),

supporting Heberleins (2012), point that unless you study the topic, most of us know very

little about attitudes, behaviours and norms.

Thomas Heberlein has spent his career trying to understand attitudes, norms and behaviours, and what they have to do with solving environmental issues. The author introduces his book *Navigating Environmental Attitudes,* by referencing the common idea of an "attitude adjustment," and the lack of psychological evidence which supports this idea. He provides a running metaphor for solving environmental problems, which he says is like journeying down a river... "when you launch your raft or canoe, the river looks clear and easy. However, a couple of bends downriver and you hear the distant roar of rapids. What had seemed like an easy trip is now threatened" (p.10). He reminds the reader that rocks, like attitudes, don't weather overnight. Therefore, he says "...trying to solve environmental problems by changing attitudes is a little like packing dynamite on a canoe trip and trying to blow up every rock in your way" (p.10). Instead, he advises, it's better to learn to read the water to avoid collisions with rocks. Implying, a basic understanding of attitudes could result in an easier time navigating the water. He suggests going with the flow because according to him, swimming upstream doesn't work well (2012, p.10). To attain this, he suggests working around the rocks, by using the information the navigator can collect about attitudes for example, wait for a high tide to graciously bypass the rocks with ease.

Heberlein breaks down what the reader needs to know for a basic understanding of attitudes. He says one of the first things you need to know about his river journeying metaphor is that jagged rocks and intense rapids represent the psychological concept of "attitudes".   The expert on the topic, correlates attitudes to be as stationary as rocks, given the psychological research that labels them as stable unless under certain circumstances to change. Heberlein (2012) continues, "…many rocks—indeed the most dangerous ones—are like attitudes, under water. You cannot see them but must infer them from what you can see on the water's surface" (p.10). He makes the correlation between attitudes and rocks in the rapids, because psychological research shows strong attitudes are likely to persist over time, especially those linked to identities, which may only change under certain circumstances (2012, p.32-33).

Heberlein offers three existing options for solving environmental issues, the Cognitive, the Technological, and the Structural Fix. The first option is trying to change the environment through technological solutions, such as Waste-to-Energy plants for example. The downfalls with this solution are often resources; technological fixes depend on financial support as well as the engineer capabilities. The second fix which is the Cognitive fix relies on people to change themselves in response to information, known as the educational approach. Heberlein is skeptical of the cognitive fix considering his and other studies which indicate the gap between attitudes and behaviours. The third option, which he champions is called the Structural fix, which changes the context and people adjust. An example of the structural fix is any types of by-law or policy change. He explains that these fixes were created to help us understand options for confronting environmental problems; however, "real solutions are more complex and often require all three fixes simultaneously."

Heberlein warns against relying on the cognitive fix, since it assumes that education will lead to behavioural change, a big assumption to take if you are dealing with global issues. He isn't saying that there isn't any value in the cognitive or technological fix but warning not to put all your faith in just one. Let's see these fixes in action in the context of current solutions to waste management.

Miller and Hackett (2014) report there has traditionally been two methods for dealing with solid waste. The first is called a high-waste approach which sees waste as an inevitable by-product of economic growth and focuses on waste management. The second is a low-waste approach which focuses on waste reduction and views most solid waste as potential resources that we should be reusing, recycling or composting. Although municipal solid waste (MSW) only makes up 1.5% of the total waste contributors, "between 1960 and 2005, the total amount of MSW in North America each year increased threefold and is still rising" (Miller and Hackett, 2014, p.586). How are countries responding?

 We can look to different countries and municipalities for guidance to learn about waste management strategies for guidance. The United States, the Netherlands, Denmark and Japan are trail blazers in technological solutions for management by building Waste-To-Energy (WTE) plants, which incinerates waste for energy recovery. According to Miranda and Hale, the latter of the three countries listed incinerate an estimated 40-70% of waste and the buildings are among the cleanest technology that exist. To put things in perspective, Miller and Hackett (2014) report that, "most developed countries in Europe produce about half as much [Municipal Solid Waste] MSW per person as North American Countries (p.586). Areas with less space to work with, may opt for a waste-to-energy plant or waste incinerator to manage waste instead of areas with large spaces to work with because the power of convenience and large spaces can be turned to landfills easily.

Waste-to-Energy plants are a brilliant option but may not be the best option for every region since they are one of the more expensive solutions. A different approach to waste management is implementing new collection strategies for municipalities. One North Carolina county recently implemented a volume-based system where residents are given stickers for the average amount of waste produced in the area. If a resident exceeds the average amount waste produced, they will have to purchase additional stickers at local retailers. According to Bracken (2017) this strategy includes a financial incentive to save money by cutting down on waste. A volume-based collection system would be classified as structural fix, like the CBP since it involves policy change and residents adapt.

It seems Nova Scotia is not the only Canadian province to implement the CBP. Airdrie, Alberta has introduced collection changes to meet regulations to ban all paper and cardboard from Calgary landfills. "According to the City of Airdrie Website, Clear Bags are a way the city can ensure banned items will not be heading to the dump" writes CBC reporter Adach (2017). Similar to the Halifax news reports there seems to be some reluctance, "while many are cheering for the arrival of curbside recycling, some residents like Maria Keilbel say the clear bag approach feels a bit 'Big Brother.'" The difference however is Airedrie is only permitting one clear bag while HRM allows six with the option of one privacy bag.

The news report indicates the new rules feel a little forced upon residents without them getting much of a say. The unique feature of the CBP in the HRM, Nova Scotia was their entire approach to the program. Firstly, there was a six-month lag between when the By-Law change was announced, before the new rules came into effect. The HRM accompanied the new regulations with a broad communication campaign to bring awareness to residents that the new rules would be taking place in August 2015. The education campaign called; "Let's be Clear," included YouTube, TV and Radio announcements, Large collection truck and bus posters, direct mail flyers outlining the new changes and more (HRM,2015).

CHAPTER THREE

Methods

This case study set out to answer the overarching question whether the CBP as a structural fix was proving to be an effective waste reduction strategy. Three research questions were devised to answer this. Beginning with what is working about the CBP in accordance to HRM residents and what needs adjusting. Followed by what is working about the CBP in accordance to HRM city official Solid Waste Manager, Matthew Keliher. Lastly, what lessons can we learn from the HRM CBP, about environmental initiatives in general, or more specifically, waste management strategies.

To answer these research questions, three data collection strategies occurred: online surveys, door-to-door surveys and an interview format. This section deals with how each approach was articulated. The online and door-to-door surveys were identical, the only difference being the door-to-door surveys were printed and attached to clipboards. The online survey was designed on a statistical website called Qualtrics, a software for collecting qualitative research, and distributed through a reusable link. At first the survey was posted to my personal social media accounts but quickly reaching well beyond that by encouraging the "snowball technique" (Pafatti, 2008), which asked participants to pass the survey on to someone else (p.92, p.117) after completion. Facebook, Instagram, Twitter, and LinkedIn were the social media platforms used to share the survey.

The survey questions were designed to provide information on their specific attitudes and behaviours towards the CBP. Only HRM residents occupying a single-unit residence such as a house or multi-unit building of six units or less, were invited to take part since large apartment buildings fall outside of the residential collection guidelines. The survey was made up of eleven questions with a mixed format including multiple choice and open-ended questions. The survey began with asking for consent in question 1 and ensuring they met the parameters of the study in question 2. Questions 3 and 4 were demographic in nature, by asking for their age bracket and gender, in multiple-choice format. Question 5 asked "are you aware of the changes which took place on August 1st, 2015 in the HRM regarding curbside waste collection?" with yes or no style options.

Questions 6, 7 and 8 were open-ended in nature, meaning participants could answer as little or as much as they wanted. Question 6 asked participants to recall their initial reaction to when the CBP was first announced which could have been as early as February 3, 2014, or as late as August 1st, 2015, but ultimately would depend on the individual. Question 7 asked participants for their adjustment experience, while question 8 asked for their reaction to the CBP a year and half post implementation. The data collection process took place between December 1, 2016 and January 31st, 2017.   Question 9 asked participants to select how often their unit adheres to the curbside collection regulations, out of five multiple choice options between 'always' and 'never'. Question 10 asked participants to select if they were aware of any drawbacks or benefits pertaining to the CBP, in a yes or no style format. If they selected, yes, they were brought to question 11, which asked participants to identify the benefit or drawback of the CBP which they were aware of.

Open-ended questions were analyzed by being read over by question until thematic

categories appeared. The categories or themes, which emerged for the open-ended

questions 6 and 8, were *positive,* neutral, and *negative* categories, made up of both

supportive responses to the CBP and neutral responses. Positive responses welcomed the

change to clear bags or provided an overall positive reaction to the CBP upon first learning

about the curbside changes. Whereas the neutral category included participants who

reacted with ambivalence towards the CBP, meaning they expressed no real reaction to the

changes. An example of a neutral response was one 25-39-year-old male who responded,

"it doesn't matter to me," when asked for initial reactions to the CBP in question 6. Recall

that assessing the effectiveness of the CBP also means keeping good public relations with

HRM residents. Because of this, the positive and neutral categories can be thought of as one

side of the themes which arose from the open-ended questions, while, the negative category

can be thought of as the opposing side. The themes which arose question 7 which asked

participants what their adjustment experience was like, was no difference, no challenges to

minor challenges and minor to major challenges.   The last open-ended question in the

survey asked participants to list a benefit or drawback of the CBP, which resulted in the

benefits category, the drawbacks category, and both.

Once the themes for the open-ended questions were established, survey responses were printed by survey question. Each response was given a colour coded dot, depending on which theme it correlated with. Due to the nature of qualitative research, occasionally responses didn't fit in just one category. When two categories were expressed in one response, one category was more central in which case, the central theme was counted. For example, if the participant provided one neutral reaction and two positives within the same response, it would be considered a positive response. Whereas if a participant expressed two category responses evenly, both were counted. This was rarely the case and occurred less than five times among the total analysis process. With the printed and now colour coded survey responses in hand, they were placed on the wall for each category to be tallied. Following this, the total amount of each category made into tables for Chapter 4.

The online survey collection took place December 1st, 2016 - January 31st, 2017 and resulted in a total of 218 online responses and 16 door-to-door responses, equaling a total of 234 completed survey responses. However, an online feature allowed participants to skip questions which resulted in different totals for each question. Because of this, the totals for each question fluctuate, all calculations are specific of the total amount of responses per question, which vary among the responses from 199-218. Recall the survey began with asking for participation consent in question 1 and confirming they met the parameters in question 2. This section addresses the questions concerned with demographic questions in nature.

Table 3.1. Age Demographics

Age Bracket	Totals (%)
18-24	13.36%
25-39	25.86%
40-59	47.41%
60-79	13.36%

Note. Totals of online and Door-to-Door Surveys

 As shown in Table 3.1 and Table 3.2, a full range of demographics were represented in this study. The age bracket with the highest amount was the 40-59 age bracket with 47% of total HRM residents who participated in this study. While 26% of participants identified as 25-39 years of age and 13% for both 18-24 age bracket, and 60-79 age bracket (Table 3.1). The Door-to-Door survey collection revealed only 40-59 and 50-79-year -old participants, which is displayed in Table A.2.1 for a detailed table or Table 3 for a summarized version.

Table 3.2. Gender Demographics

Gender	Total (%)
Male	36.32%
Female	62.82%
Other (Non-binary)	0.47%
Prefer not to disclose	0.47%

Note. Totals of online and Door-to-Door Surveys

Asking participants to include their gender is another way to ensure a diversified sample set. Of the survey sample, females made up 63%, while males only made up 36%. Of the 218 who responded, one participant identified as other, such as non-binary, and one respondent chose they preferred not to disclose, each making up (0.46%) in the total gender results. Since this demographic based question reveals the sampling set is 63% female and 36% male, it means there is a possibility of a bias within the survey results, we can go forward keeping this in mind as we discuss the results (Table A.2.2).

 Printed questionnaires were also distributed in addition to the online survey to increase

participation numbers and decrease the chance of bias. A total of sixteen surveys were

collected through the "door-to-door" approach. The neighbourhoods for the in-person

survey were chosen by my assistant at random and included Tower Road, Kaye Street, Tulip

Street and Nova Terrace. An assistant and I would start at the top or the bottom of the

street, depending on what was closer in proximity to Saint Mary's University, and split up.

Originally, I intended to go to every third house, but often tried every house in a row due to

the absence of participants. This resulted in three collected from each of the streets

mentioned by people I hadn't met before. Although this is not a representative sampling set

of the HRM population, asking participants for their gender and age bracket revealed a

robust data set with a cross-section of demographics.

 The eleven-question survey started by asking participants to confirm that they understood

the purpose was to collect research for a Geography Honours Thesis at Saint Mary's

University and that their participation was voluntary. The second question allowed me to

confirm they met the study parameters for participants. Next were two demographic-based

questions to identify a sense of diversity among the participants. This was to ensure a

diversity among participants and additionally reveal bias if it exists. The door-to-door

results differ by having no participants identify as under 40 years of age. Additionally, the

online survey collection, had more female participants, while the door-to-door survey was

56% male and 44% female.

Gaining a public perspective involved attempting to get as many participants as possible, whereas gaining a city's perspective, the importance is placed on quality over quantity. The most important person to talk to on the subject was HRM Waste Resource Manager, Matthew Keliher. A 45-minute, semi-structured interview was conducted and recorded on Monday, Jan 9th, 2017 in his office in Alderney Landing. Keliher's participation was an essential component in providing a well-rounded assessment of the effectiveness of the program. The interview started with him being asked to comment on the city's overall perspective of the CBP. He was prompted about motives behind the CBP, which factors influenced the change; challenges associated with the program and if there are any next steps to the plan. Keliher was asked if he has received any feedback from residents about the CBP; specifically, initially, throughout the adjustment and currently. He was asked if the resistance suggested by some HRM residents when changes were initially announced, still seems to persist.

Limitations

Ideally, data collection would have started much earlier than December, this resulted in time constraints throughout the process. The in-person portion of data collection was impacted by this the most since it also involved the challenges of external conditions such as empty houses; therefore, the door-to-door strategy could have been improved with more time. With the intended data collection period cut in half, I luckily still had good success with online surveys and marginal success with the In-person surveys. When collecting in-person surveys, my associate and I insisted that we return for the surveys after some time, however, most HRM residents insisted still that we come inside to wait instead. Of course, grateful for their participation in the first place, this usually resulted in waiting inside as requested. Safety precautions aside, this resulted in slightly briefer responses compared to the online responses. Despite these limitations, I was pleased with the informative interview with local city official and total of HRM residents who participated.

CHAPTER FOUR

RESULTS

In reviewing the approaches taken for data collection, let's look at what the research found.
Recall that the first four questions of the survey were demographic in nature and discussed
in Chapter 3, this brings us to the core of the questionnaire, three open- ended questions
which asked participants to share their attitudes and perceived behaviours in accordance to
the CBP. Changes which impacted the partaker directly as HRM residents who participates
in the curbside collection services of the municipality. The following section involves
analysis of the online and door-to door survey, as well as the results of the interview with
city official Keliher.

Questions 6, 7, and 8, were open-ended questions meaning a blank space was provided,
giving them the freedom to write as little or as much as they wanted. The first of these
questions asked participants to recall their attitudes towards the onset of curbside changes.
The approved amendments occurred February 3, 2014, with the start date of August 1,
2015. Question 6 asked participants for their adjustment experience, question 7 asked for
their attitudes a year and half post implementation. During the data analysis, positive,
negative and neutral trends emerged. Of course, some responses didn't fit in this
classification system and may have included more than one response type; in this case, the
response was considered whatever their most dominant reaction was.

Table 4.1. Initial Reactions

Collection Methods	Themes		
	Positive	Neutral	Negative
Online	63	54	81
Door-to-Door	4	7	5
Totals	67	61	86
		214	

When asked to recall learning about the onset of curbside changes taking place August 1, 2015, a year and half post implementation. Of the total online and door-to-door survey results, 60% described a positive to ambivalent reaction, while 40% described negative initial reactions (Table 4.1). This means the majority of HRM residents who participated in my study described a positive to neutral reaction when asked to recall on learning about the onset of changes.

Table 4.2. Adjustment Experience

Collection Methods	Themes		
	No Difference	Minor Adjustment	Major Challenges
Online	91	63	40
Door-to-Door	5	5	4
Total	96	68	44
		215	

Of the 215 HRM residents which participated in the online and door-to-door survey; 45% of participants described a negligible adjustment experience required or no challenges adjusting (Table 4.2). The second thematical category was a minor adjustment experience, or an adjustment experience with minor challenges, made up of 32%. While 20% of participants described an adjustment experience with major challenges, as illustrated in Table 4.2.

Table 4.3. Question 7 Survey Results

Collection Methods	Themes		
	Positive	Neutral	Negative
Online	127	35	37
Door-to-Door	8	3	5
	135	38	42
Totals		215	

Table 4.3 illustrates the results of the open-ended question, which asked participants for their reaction of the program which had been implemented a year and half prior to the data collection process.   63% of participants described a positive reaction to the CBP, while 18% described ambivalence. Together, 80.46% of online and door-to-door participants expressed a positive to neutral reaction to the CBP. Only 19.53% of survey participants still expressed reluctance (Table 4.3.).

Questions 6, 7 and 8 are concerned with reactions, adjustment experiences and perspectives. The next question focuses on behaviour, by asking participants how often their residence unit complies with the curbside collection regulations. Question 9 included five multiple choice options between always and never. All sixteen of the door-to-door participants report they always comply (Table 4.4)

Table 4.4 Compliance Results

	Door-to-Door	Online	Totals	Percentages
Always	16	117	133	60.45%
Most of the time		70	70	31.81%
Half of the time		10	10	4.5%
Sometimes		6	6	2.7%
Never		1	1	0.45%
Total			220	

Table 4.4 demonstrates how often the participant adheres to the curbside collection regulations. Of the 220 total survey responses, 60.45% reported they *always* complied while 31.81% reported they adhere *most of the time*. 4.5% of participants selected they comply half of the time, 2.7% selected they sometimes comply and 0.45% reported they never complied (Table 4.4). It is worth noting that 100% of door-to-door participants selected they always complied with the regulations from question 8.

Question 9 asked participants if they were aware of any benefit or drawbacks to the CBP in a "yes" or "no" format question. This question was the last of the survey, for the participants who selected "no." For those who selected "yes," implying they were aware of a benefit or drawback of the CBP, were directed to question 10 which asked to identify the benefit or drawback they were aware of. Only 31% of door-to-door participants selected "yes," they were aware of a benefit or drawback, yet none were provided in question 10.

Table 4.5. Awareness of Benefits or Drawbacks

	Reported they were aware of a benefit or drawback of the CBP	Reported they were not aware of a benefit or drawback of the CBP	Total
Online	102	97	199
Door-to-Door	4	8	16
Total	106	105	211

Of the total of 211 participants who answered are you aware of a benefit or drawback to the CBP in question 9: 50.23% of survey participants report being aware of a benefit or drawback of the CBP while 49.76% reported they were not aware of a benefit or drawback to the program (Table 4.5). No Door-to-Door participants answered question 10 which asked to identify the benefit or drawback they were aware of. Out of the 98 online survey participants who provided a benefit or drawback, 74% provided a benefit of the CBP, 24% were drawbacks and 0.56% provided both. Some of the benefits mentioned were environmental initiatives to reduce waste, increase proper sorting and compliance. Some of the drawbacks mentioned were privacy concerns, illegal dumping concerns, and "increase of cost to families" according to one female in the 40-59 bracket, who was the only participant who reported she never complies (Table 4.5).

Interview Results

Unlike surveys, interviews are concerned with quality over quantity. As you may have
noticed from the Chapter 2 section, Solid Waste Resource Manager Matthew Keliher is the
face of public relations for the department. A 45-minute semi-structured interview took
place with the city official at his office in Alderney Landing. As outlined in Chapter 3, fifteen
questions were prepared prior to the interview. The interview was transcribed and
summarized in this section and discussed in Chapter 5. This research seeks to find out what
is working about the CBP from a city perspective, what needs adjusting, and what lessons
can we learn from environmental initiatives in general or more specifically waste
management strategy.

Three main messages arose from the semi-structured interview with HRM Solid Waste
Resources Matthew Keliher. According to him, the CBP has been very effective in reducing
waste: "garbage that has been collected residentially has dropped 24% and that equates to
14,000 tonnes of material that no longer goes into the landfill." In addition to that good
news, Keliher reports that recycling programs have seen a bump of 13% [since
implementation] while the organics outputs stayed relatively the same, even though there
were a couple of changes to that program: grass was no longer permitted, and boxboard
was moved from the green bin over to the blue bag. Keliher says "even with those changes
of materials taken out, it still stayed the same number of tonnes. So that means there was
corresponding bump [as well]."

Recall that in Chapter 1, I outlined the options for waste management, with landfills often being the most expensive option for processing waste. In the HRM, for example, it costs twice as much to process waste at Otter Lake landfill as it does to process the same number of recyclables or compost (CTV, 2015). This means that decreasing waste tonnage saves taxpayers dollars, while the increase of recyclables and compost does too. Keliher believes that most community members are being diligent about sorting their waste. The 13% recycling increase has exceeded the processing capabilities of the HRM recycling plant. As of 2015, Keliher says the plant could process 28,000 tonnes a year. There are now expansion plans in place for the facility to be able to process 36,000 tonnes a year and will hopefully last another 10 years. Keliher says that "this is all due to the clear bag."

 The second message that was relayed in the interview was not much initial resistance about the CBP was reported, as the news articles in Chapter 2 indicated (CTV, 2015). When asked if the same amount of reluctance existed, Keliher responded, "there wasn't that much resistance in the beginning to be honest… It was more just questions around this change, how am I going to adjust to the change?" Similarly, he adds, "I think at the beginning there was some fear of the unknown on how were going to implement it and police it at the curb." He said what they noticed over the first couple of months was that there was a higher than normal rejection of bags at the curb, "and that's to be expected. But, after that it dropped back down to relatively normal levels." Normally, 99.8% of garbage is collected in the HRM, according to Keliher. When the CBP was rolled out, 99.5-99.6% of garbage was collected, meaning roughly 15,000 homes plus or minus in each month had their garbage left to be re-sorted.   In response to this, he says: "so we went out and we did an educational campaign and we rolled out the app to try to help everyone that we can get over that hurdle and we're back down to relatively where we were before, in terms of rejection at the curb".

Lastly, the third message that was relayed in the interview was there has not been an increase in resistance since implementation. When Keliher was asked if there had been an increase in illegal dumping since the program has been implemented, he responded, "it's been fairly consistent." First breaking down the two types of illegal dumping by his definition, first being an illegally dumping which usually looks like a truck dumped a bunch of bags in the woods and the other being "I put out one dark bag when I woke up this morning, there is two." The second is called illegal dumping as well and "that's happened quite frequently." In response to this, Keliher explained, officials go out and inspect the second bag to see if there's anything in there that can be linked to a home. "If we can't find any evidence than we will just leave it on site and the homeowner will make sure it's collected on the next garbage day. But it's ultimately the homeowner's responsibility to re-sort it".

The three messages relayed in the 45-minute interview provided an important perspective to the CBP's success in the HRM and provided framework for understanding city official's perception of the changes success or lack of. On top of learning the city's satisfaction with the changes because of the outcomes, that there was not much initial resistance about the CBP and there has not been an increase in resistance since implementation.

CHAPTER FIVE

Conclusion and Discussion

This is a relatively simple story. If there was pushback at first as illustrated by the news reports in Chapter 2 (CTV, 2015), there isn't now according to the online and door-to-door survey results, and interviewed city official. HRM Solid Waste Manager Matthew Keliher relayed no increase of complaints or increase of illegal dumping apart from the sneaky neighbour kind which he reported has been "fairly consistent". The majority of both the online and door-to-door participants indicated positive to ambivalent initial, and current perspectives to the CBP. The survey results support the lack of increase of complaints noted by the city official. By and large, residents got over it.
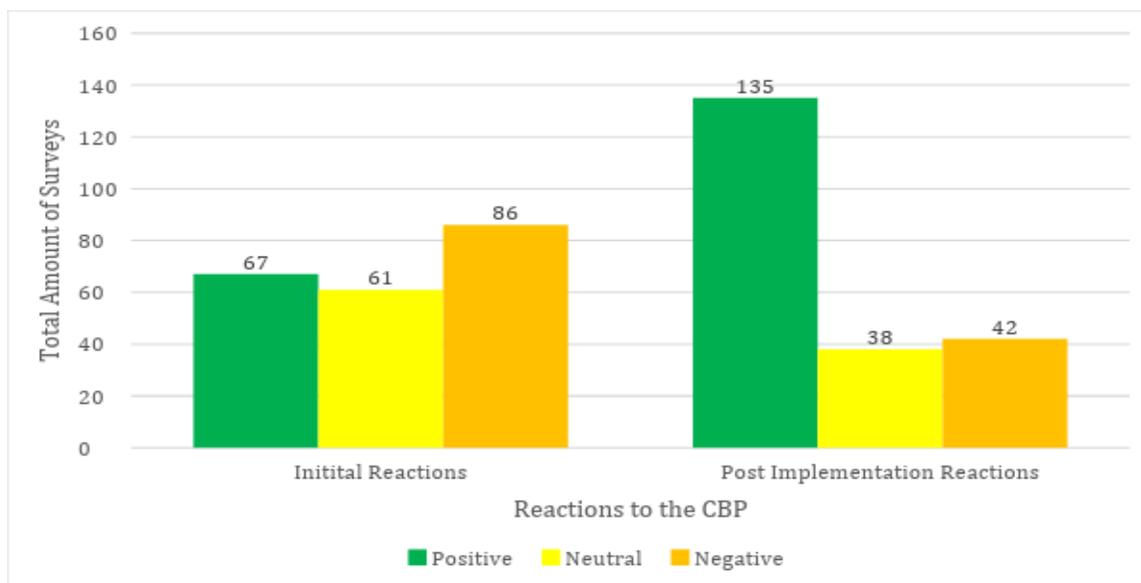

Figure 5.1. Resident Reactions to the CBP Over Time

As illustrated in Chapter Four and Figure 5.1, the online and door-to-door surveys revealed

a decrease in negative responses over time and increase of positive reactions to the CBP.

When asked participants for their initial reactions to the CBP, 58% of participants described

positive to ambivalent reactions. While when asked for their current perspectives to the

same program a year and half after implementation, 82% of the participants described a

positive-ambivalent perspective towards the CBP. Correspondingly, the total amount of

negative reactions decreased from initially, 42% to current perspectives which made up

18%, as illustrated in Figure 5.1

Keliher relayed the CBP and "Let's be Clear" communication campaign has resulted in quite

the success story. Keliher explained the city took a broad communication campaign to

inform residents of the onset of changes to how materials would be sorted by August 2015.

The *What Goes Where* app was rolled out a few weeks prior to the implementation date, so

that residents had a tool to find out the proper stream for any item. According to Keliher,

"and that [App] has been a huge success and it's allowed people to divert calls to our 311

centre." The app allows residents to find out where any item goes at any time of day, he

points out.

Keliher explained the several initiatives that made up the broad communication campaign

including educational manual and online pieces, mailed flyers, TV, Radio and YouTube

announcements, a contest giving away six iPad minis, and more. "We put big signs on our

trucks for the CBP, and we had our haulers who collect the garbage every day, put a sticker

on all of the green bins and give them all free bags to promote it. And we made that

partnership with glad where they gave us around $300,000 worth of free bags that we gave

to all the residents, we handed them out on everybody's green bin but also at parades, trade

shows and customer service centres and really try to push that message that clear bags are

coming and here's one way to help get you on board.

As illustrated throughout Chapter 4 and Chapter 5, the CBP in the HRM seems to be an effective strategy for waste reduction. I think the municipality could have put a little bit more effort into communicating to the residents, that their diligence has been paying off and making a huge difference. I understand however that the city likely wanted to complete a full study to measure the effects of the CBP before communicating with residents.

The By-Law change 600, is an example of what Heberlein refers to as the structural fix. However, it was also accompanied by the communication campaign, "Let's be Clear," which he refers to as a cognitive fix. The author who champions the structural fix, doesn't necessarily imply that the other two fixes (cognitive and technological) are useless, but instead he warns not to rely on one fix in insolation. According to Heberlein (2012), "this notion of technological, cognitive, and structural fix helps us understand how we approach environmental problems, real solutions are more complex and often require all three fixes simultaneously" (p.164). As we have seen with the positive- neutral survey results, lack of complaints and consistent illegal dumping, on top of the 24% decrease of waste and increase of alternative outputs, the CBP in the HRM, has been a success. The success of this waste management strategy suggests the value in using the fixes in combination, however, this approach is not applicable to everywhere but points us in the right direction for navigating human behaviour. Environmental problems such as enhanced climate change are much more complex than waste management strategies but the lesson learned here is the right balance is required between policy implementation and keeping good public relations. This tells us that structural fixes are an effective strategy when implemented carefully. Too drastic of changes would likely lead to a higher pushback. Understanding attitudes and behaviour is important for implementing successful policy implementation while keeping good public relations. Heberlein (2012) suggests designing projects with attitudes is a key factor their success, "effective structural and technological fixes designed with attitudes, take advantage of social contexts rather than relying on attitude change to produce new behaviour" (p.164). Although more research needs to be done on

incorporating social psychology into environmental management, the story in the case of the HRM's CBP is a huge success. This supports Heberlein's favoring of the structural fix and suggestion to use a combination of approaches to solving environmental problems.

APPENDIX A

Questionnaire Sample

Q1) Consent form

Q2) Are you an HRM resident over 18 years of age, who's residence participates in curbside collection?

- Yes

- No

Q3) What is your age bracket?

- 18-24

- 25-39

- 40-59

- 60-79

- 80+

Q4) To which gender do you most identify with?

- Male

- Female

- Other

● Prefer not to disclose

Q5) Are you aware of the changes that took place on August 1st, 2015 in the HRM regarding curbside waste collection?

● Yes

● No

Q6) What were your initial reactions to the change to clear garbage bags?

Q7) What was your experience adjusting to the change?

Q8) What is your current perspective of the program?

Q9) How often does your residence unit comply with the curbside collection guidelines?

● Always

● Most of the time

● Half of the time

● Sometimes

● Never

Q10) Are you aware of any benefits or drawbacks related to this program?

● Yes

● No

Q11) If Yes; they are:
_____

APPENDIX B

Demographic Tables

Table A.2.1. Age Demographics

Age Bracket	Online	Door-to-Door	Totals (%)
18-24	31	0	13.36%
25-39	60	0	25.86%
40-59	103	7	47.41%
60-79	22	9	13.36%
Totals	216	16	/
Totals		232	/

Table A.2.2. Gender Demographics

Gender	Online	Door-to-Door	Totals	Total (%)
Male	78	7	85	36.32%
Female	138	9	147	62.82%
Nonbinary	1	/	1	0.47%
Prefer not to disclose	1	/	1	0.47%
Total	218	16	234	/

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