



ROADSIDE LITTER SURVEY REPORT 2022

This report was commissioned by the Department of Environment, Energy, and Climate Action
and produced by the PEI Watershed Alliance



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1.0 Introduction

This study was commissioned by the Provincial Department of Environment, Energy, and Climate Action and is designed to gauge the severity of roadside litter in Prince Edward Island, assist policy and decision makers within the department to make informed decisions based on the composition and quantity of accumulated litter along island roadsides, and to begin to close the gap in data gathering since the last roadside litter survey in 2010.

A total of 46 Sites were surveyed using the same sites as the 2010 roadside litter survey with the exception of the site designated “Bypass Rd”. Locational data within the report was unclear and thus accurate identification of the sites was not possible, and in the case of the “Bypass Rd” the site could not be found. The survey did acknowledge branding of items when collecting data. While noting product types, the survey also lists the company that produced and distributed that product.

PEIWA would like to recognize the support of the PEI Department of Environment, Energy and Climate Action in the development of this survey. We would also like to acknowledge the hard work of our staff – Gaige Waugh, Katrina Clow, Benjamin Armstrong, and Kale Parnham – who collected the litter and assisted in the gathering of data.

2.0 Survey Methodology

2.1 Overview

The methodology uses the harmonized survey methodologies and litter categories and sub-categories as outlined on the completion of the 2021 Nova Scotia litter survey. This methodology has been discussed by Prince Edward Island along with other Atlantic jurisdictions.

As this survey aims to build upon the work done in the 2010 roadside litter survey, it has utilized much of the same methodology and locations with some alterations to conform to the 2021 harmonized survey methodologies.

2.2 Litter Definition

This survey utilizes the same approach as the survey conducted in the 2021 roadside litter survey of Nova Scotia in its designation of litter. Litter has been separated into two broad classifications:

- Large Litter (greater than or equal to 25 square centimeters in size)
- Small Litter (less than 25 square centimeters in size)

Large Litter collected in this survey was separated into 13 main categories and 91 sub-categories. The complete list of categories and sub-categories of large litter are shown in Appendix “A”. Some examples include: Masks, steel cans, chip packaging, etc.

Branded Litter form a part of the large litter classification and for the sake of this survey is described as large litter where a recognizable brand name can be identified.

Small Litter collected in this survey was separated into 16 categories. The complete list of categories are shown in Appendix “A”. Some examples include: cigarette butts, glass, chewing gum, etc.

2.3 Site Length and Width

This survey uses the same length as in the 2010 roadside litter survey with each site remaining at 100 meters, though the width of the survey site has been reduced to 5 meters measured from the road shoulder. The change in site width was to reduce the varied and inconsistent width from earlier surveys due to terrain differences or working hazards to the surveilling crew. Along the width of the road there were at times litter catch points present that have been identified by past surveys as environmental obstacles, such as tall grass or hedgerows, which often catch and tangle litter within themselves. These were searched through up to the 5 meter measurement from the road shoulder.

Small litter was observed and collected by examining three sections within each of the 46 survey sites along the beginning, middle, and end of the 100 meter site length. Each small litter observation section measured 0.3 meters in width and 5.4 meters long and was observed for any litter less than 25 square centimeters in size.

2.4 Site Selection

A total of forty-six (46) sites across Prince Edward Island were surveyed in the 2010 roadside litter survey, representing both rural and urban locations across all three counties of the island. As much as possible this survey has utilized the same locations. Site descriptions were available for most, allowing crews to identify the roads and locations of past sites. Site descriptions for “Bypass Rd” were too vague and did not allow for the identification of the site. Instead a new location at Stradford Road was surveyed. While working within these sites the surveying crew for this survey took coordinates at each to ensure clarity of information, which can be seen in Appendix “B”.

Amongst all sites none were rejected for lack or excess of litter, and no environmental obstructions required sites to be moved.

2.5 Enforcement Action

Sites containing hazardous materials or what could be deemed to be illegal dumping were to be reported immediately to the Prince Edward Island Department of Environment, Energy and Forestry via their toll-free number (1-800-565-1633). Surveying staff were to take photos of the incident area if conditions were suitable so as not to pose a risk to safety. No incidents were encountered in the 2022 survey.

2.6 Sampling Time Frame

Surveys for the entire selection of sites occurred from June until the end of August, to ensure the maximum amount of waste could be found without environmental interruptions, while balancing additional responsibilities within the Watershed Alliance. The survey began June 15th 2022 and ended August 12th 2022.

2.7 Quality Control

Surveyors were trained to conduct the survey through hands-on training and were under full supervision for the duration of the survey. Digital photographs were taken at each site to record the quantity and type of litter present.

Surveys were conducted in teams of at least three with a minimum of two collecting waste and one taking photographs while completing the survey sheet. All litter collected at each site was gathered in clear bags for appropriate disposal at a local waste management facility in the part of the province where it was collected.

3.0 Reporting Methodology

The final report contains the following elements:

- Methodology – An overview of the methods used to collect the data and determine which survey sites will be presented
- Results – Presentation of the results across all 46 sites. Results will be presented in graphs as general categories of product types collected. Analysis of the data will also be broken out by region and by the demographics of the sites; either urban or rural. Limited interpretation of the results will be offered including any complications or issues that may have served to affect the results of the survey from that region.
- Appendices – A sample of the data survey sheets and a compendium of the information collected per site will be attached. The information presented per site will include a location description of the survey site and any influencing factors that may account for the observed results.

4.0 Discussion/Results

The timing of the survey having been conducted over three months was an attempt to best fit with the suggestion of the 2010 roadside litter survey site in order to reduce environmental interruptions to the conduction of the surveys, while also completing other required duties. The surveying team was not aware of the Women's institute roadside cleanup or provincial highway clean up during the conduction of the surveys and so did not press the timeline of completion to avoid either. Clean ups by both parties could have had an effect of the quantity of litter collected at the selected 46 sites. In addition, by conducting surveys in August, the surveying team they had to fight roadside overgrowth and tall grass while searching for litter during the survey. In light of this it is highly recommended that the survey should start as soon as the snow has gone from the ditches and be completed as quickly as possible to avoid overgrowth, prevent

the collection or destruction of litter present, and allow for ease of work. In addition, the surveying crew responsible for the survey should be hired in advance and be trained and ready to begin as soon as the ditches are clear.

All Survey results indicate number of items collected and not the total volume. All percentages presented allow for one decimal point rounded up for the sake of specificity and representation of smaller values, unless presenting historic data from previous sites. In the case of historic data the values have been unchanged from previous survey reports. Any large or small litter categories that did not have litter found have been removed from graphs for the sake of clarity.

Within the survey there were 12 general categories and 91 sub-categories to classify large waste, along with a singular category and 16 sub-categories to classify small waste items collected. Forty-six historic survey sites, the same chosen in all past surveys, have also been used in this survey. The only exception being the site "Bypass Rd", which was unable to be found. In its place "Stratford Rd", another urban site, was selected. This presented some challenges as one of the annual 3 sites selected for cigarette bud collection is "Bypass Rd". Given "Bypass Rd" has consistently been a site where a large number of cigarette butts have been found this survey utilized site #16 "Souris" to attempt to maintain some form of accurate annual comparison.

The reintroduction of the branded survey allowed a more in depth understanding of roadside litter. Branded surveys have taken place on Prince Edward Island in 2005, 2009, and 2010. No raw numerical data exists within the surveys on the quantity of each brand per litter item to create an accurate database, but the percentages offered allowed for reflection within this survey on the changing trends of brand contribution to roadside litter.

While Branded surveys have been conducted since 2005, the earlier surveys of 2004, 2003, and 2002 used broad waste categories. The 2010, 2009, and 2005 survey used broad waste categories in order to take advantage of the historic data, despite having taken branded surveys. This survey has used the same method, while also offering the modern branded data that was collected whenever possible.

The total amount of litter collected on average at each survey site for 2022 has increased since the 2010 survey, with an average of 82.54 items collected per site while 2010 showed an average of 61.09. This marks a potentially troubling trend of steadily increasing roadside litter as 2010 was also an increase when in comparison to the previous year of 2009, that year's survey collecting 52.94 items per site. There is a

significant gap in data between this survey and that taken in 2010 so it is certainly possible that this year's increase is an outlier. Over the two decades the survey has been taken it has remained fairly consistent excluding the sharp decline of roadside litter between the 2005 and 2009 survey.

Methodology used in the reports has been stated to be consistent throughout and so environmental factors and changes in public littering and cleanup practices are likely to be behind the sudden fluctuation. The methodology of this survey differs from those in the past in two major ways. The first being the categorization of collected litter into 12 general categories and 91 subcategories instead of the 5 general categories and 32 subcategories of past surveys. The second being that this survey collected a sample of small liter, including cigarette butts, at each site instead of utilizing the past method of using 3 sites to be representative of the expected number for the survey as a whole. In order to take advantage of historic data this survey has organized its display of data to be able to compare both with past surveys and their methods as well as offering survey data in line with the harmonized survey methodologies and litter categories and sub-categories as outlined on the completion of the 2021 Nova Scotia litter survey.

The 2022 survey displayed a new dominant form of litter in the form of tobacco and cannabis liter at 29.2% of the total liter found island wide. This is due to the fact that a sub-category of the large liter category for tobacco and cannabis liter allows for the collection of cigarette debris and thus to count cigarette butts into the collected total, with a staggering 1202 cigarette butts collected. For the sake of annual comparison, when utilizing the general categorization of past surveys the second most littered item island-wide are general plastics which include plastic packaging and other unmarked and unbranded plastics. This breaks the trend dating back to the 2009 survey of cups being the most littered item island wide. In 2022, 10.5% of total liter found island wide has been general plastics. In 'Figure 2' it seems as though cups should have remained the secondary most littered item. Cups in the 2021 Nova Scotia litter survey combine cans, bottles both plastic and glass, and to go style cups all in one category while the general category treats cups as only the to go style cups. This means we see the cup category fall to half of what it was in 2010, falling from 10.2% to 5.7%.

An annual consistency is that cans continue to represent the third most common item found in collection surveys, rising from the 3.4% of 2010 to a record setting 7.32% of total litter collected island wide. Never has the representation or collection of cans been so high in the two decades this survey has taken place, despite the collection of cans still occurring for deposit. The declining trend from past surveys continues for glass bottles as it falls from 0.98% to 0.52% per site in 2022. Glass bottles were a rarity in collection,

finding only 22 beer bottles (2 of which were broken) and 2 pop bottles. Plastic bottles had a stronger presence with 14 alcohol products and 85 pop and water bottles. Despite the increase from plastic, the clear dominating force in terms of beverage receptacle were cans, with 234 beer cans and 103 pop cans respectively. One concerning trend was the frequency the survey team found spirits bottles or beer cans far from residences, implying the possibility of driving under the influence being a common occurrence along rural roads.

Cigarette packages continue their downwards trend in collection frequency, falling from their 2010 total of 2.5% to the 2022 total 1.23%. They have fallen to the 13th most collected item amongst liter, from their 8th most collected item from 2009.

Annual trends continue in the comparison of rural and urban sites. Urban sites continue to produce more litter than their rural counterpart and unlike the 2010 survey the gap between the two is noteworthy. The average for rural areas sits at 74.4 items collected while urban areas average to 95.1 items collected. Urban sites had 6 sites to collect over 100 items and rural sites had 9 sites to collect over 100 items. New London overtook Brookfield as the most littered rural site with 156 items. In the number two spot for rural sites is Primrose with 147, overtaking St. Mary's from 2010. The third most is the only rank not to change with Lower Montague retaining its spot with 143 items collected. The most consistent litter found amongst all three sites were beer cans, plastic packaging, and cigarette butts. As stated in the 2010 survey, these roads serve as the main avenue for people to go to and return from work, along which a cigarette would be had and tossed from the window. Along all these roads were fields, thus making it possible some debris originated from the farmers at work in their fields.

Unlike previous surveys, each site had been examined for cigarette butts. To take advantage of historic data, this survey took the result from those examinations and compared them to 2002 through to 2010. Three sites had been chosen in the past to gain an understanding of the quantity of cigarette butts present on our roadsides. The sites being chosen were Pooles Corner, Bypass Rd, and Rte 2 Summerside. Given Bypass Rd could not be found Souris was used as a replacement given it appeared to follow the same trajectory as the Bypass Rd. Following the results of 2010, the quantity of cigarette butts continued to fall quite drastically. From 217 vs 98, 216 vs 101, and 119 vs 38. Despite the sharp decline in numbers cigarette butts continue to be an item that far exceeds other litter during collection. The continual reduction in numbers could be due to social pressures traveling the opposite way in 2022 for many to quit smoking and laws surrounding cigarette advertisement having long-term effects. It seems likely the

longer time passes and the more smoking substitutes such as vaping increase in popularity that we will see the continued decline of cigarette debris.

Figure 1. Average littered items per site from 2002 to 2022

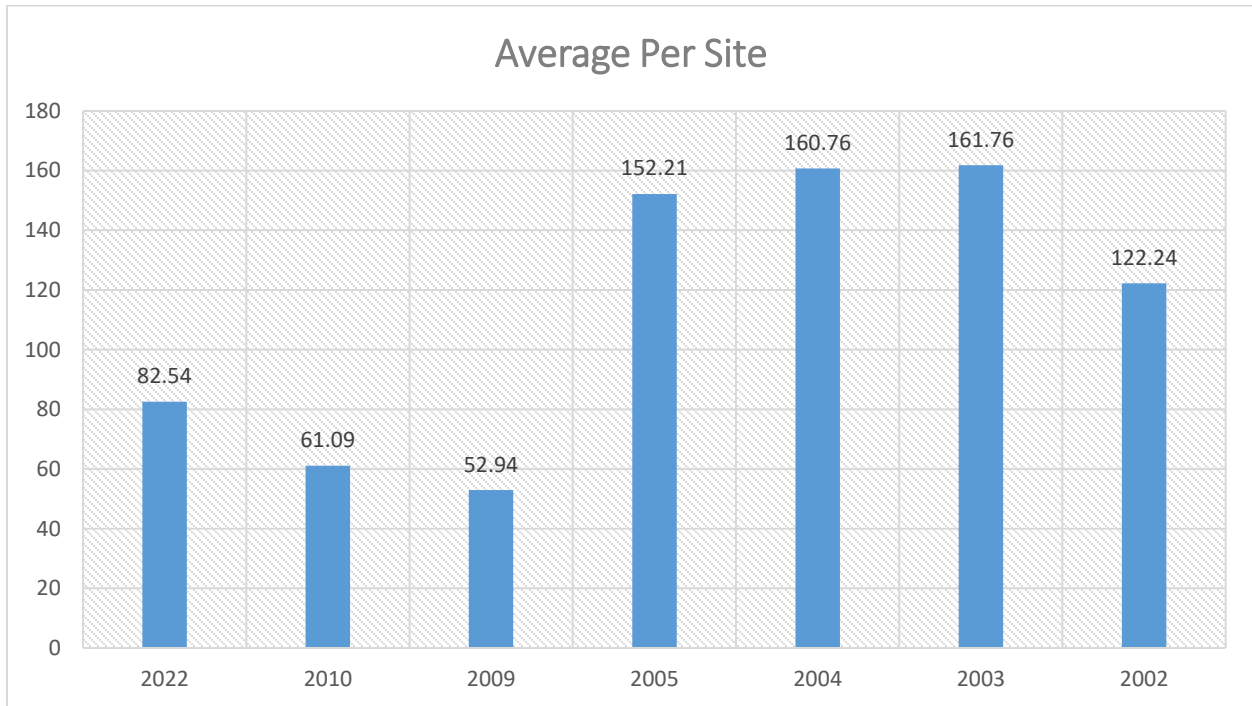


Figure 1, average litter collected per site, gives a visual to the changes in the average roadside litter over two decades. An upwards trend in collected litter is continuing after the sharp drop in 2005, though given the large gap between this survey and the one taken in 2010 it would be very useful to see if this is a stable upwards trend or an uncommon spike in collection. Overall the 2022 survey saw a sharp increase in cups and cans, along with a notable decrease in glass bottles and fast food containers.

*For legibility, the following “Large Litter” category has been broken down by section, with each getting a representative chart. It was deemed having 91 subcategories on a chart caused unnecessary legibility issues.

Figure 2. Overview of waste found island-wide by general 'Large Litter' categories.

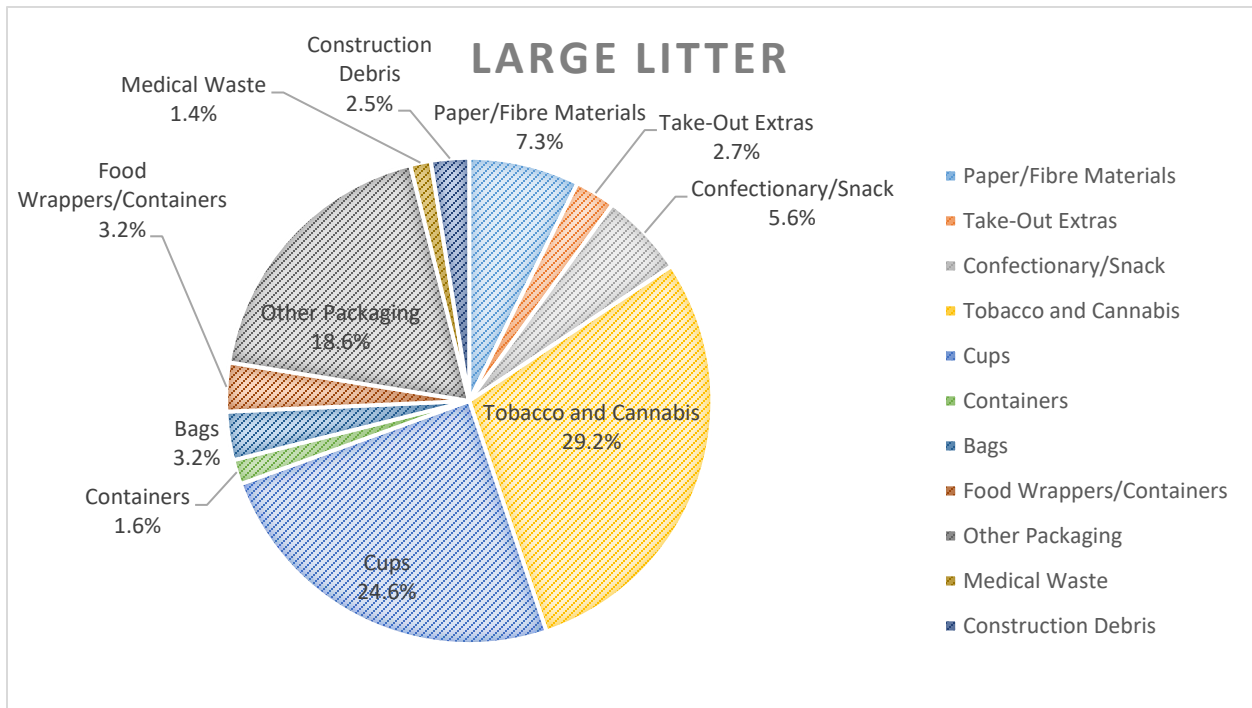


Figure 3a. Overview of waste found island-wide by 'Paper and Fiber Material'.

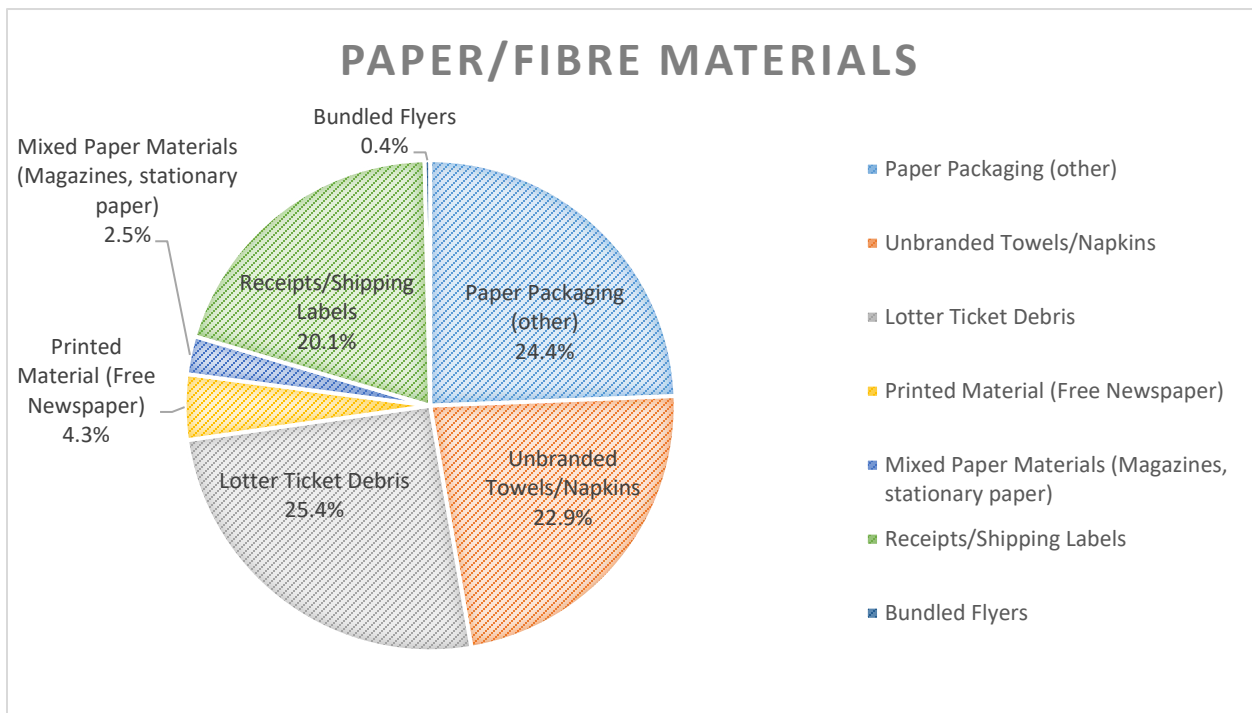


Figure 3b. Overview of waste found island-wide by 'Confectionary/Snack'.

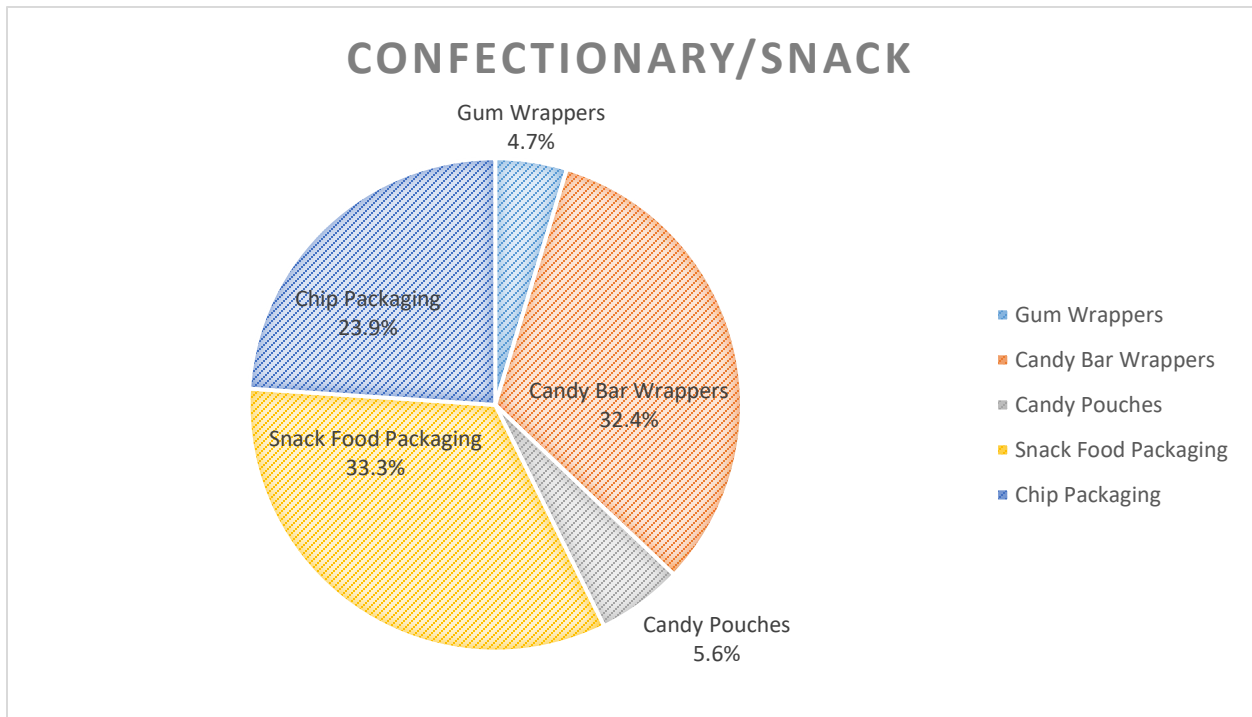


Figure 3c. Overview of waste found island-wide by 'Cups'.

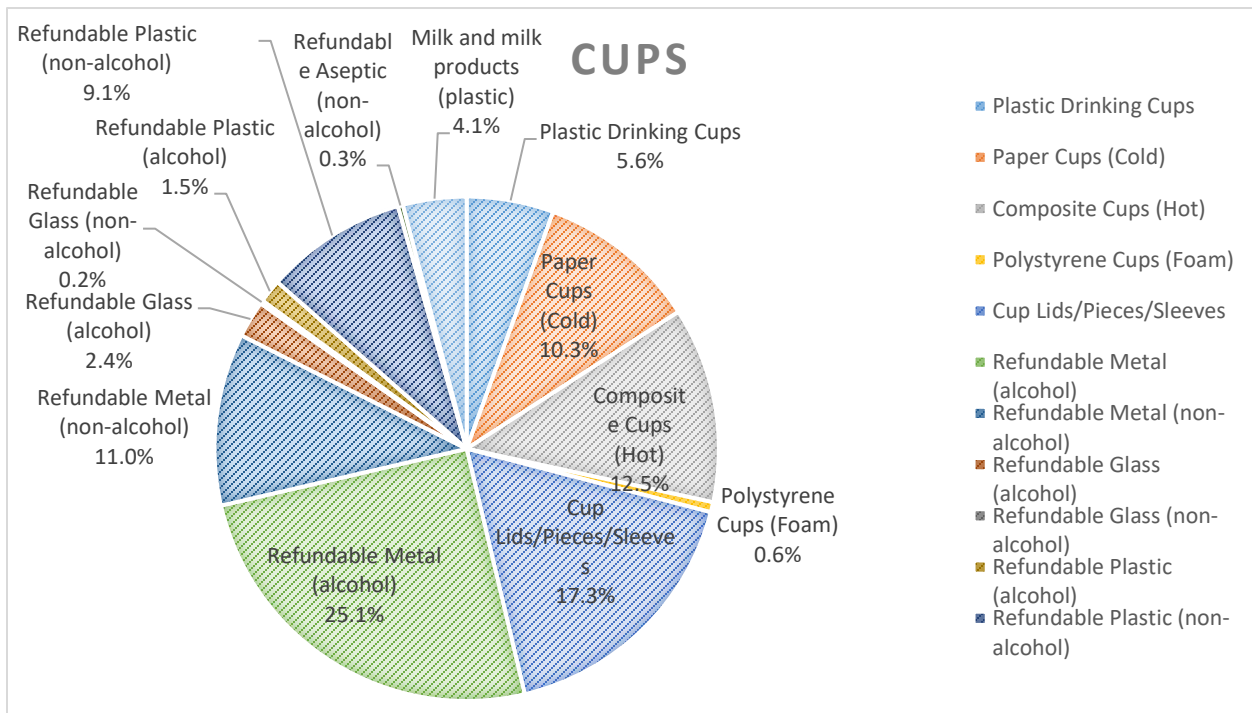


Figure 3d. Overview of waste found island-wide by 'Bags'.

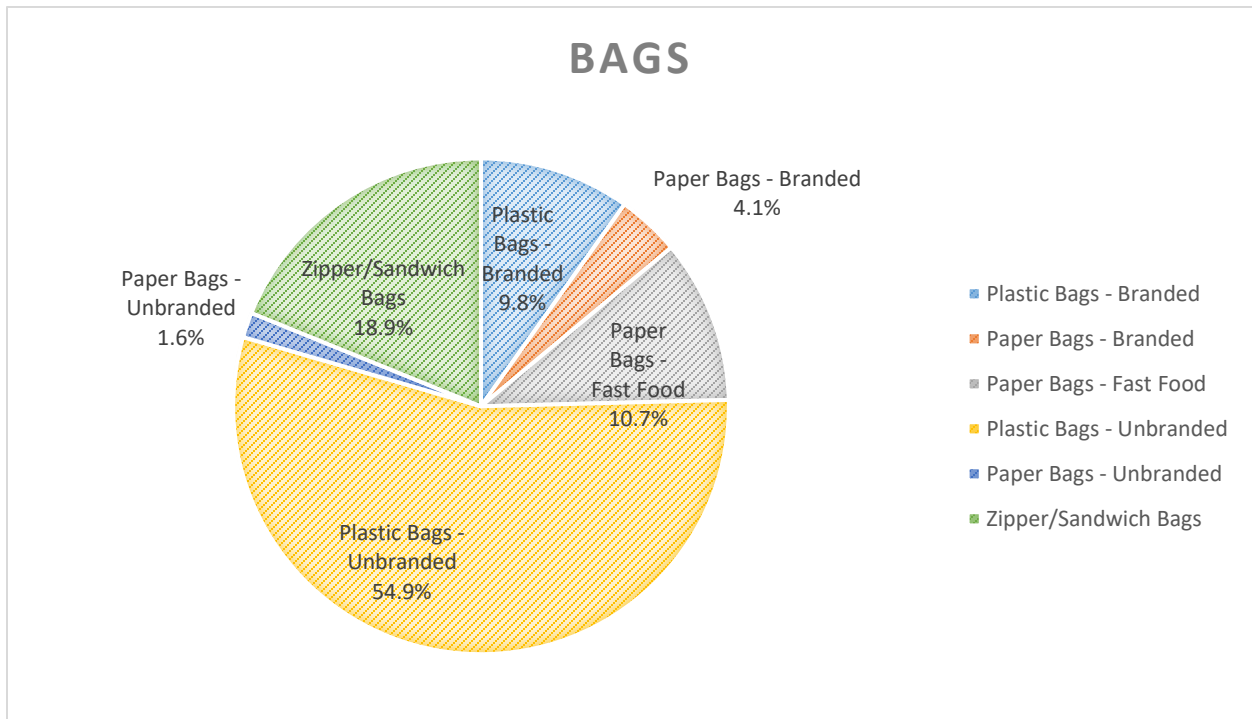


Figure 3e. Overview of waste found island-wide by 'Take Out Extras'.

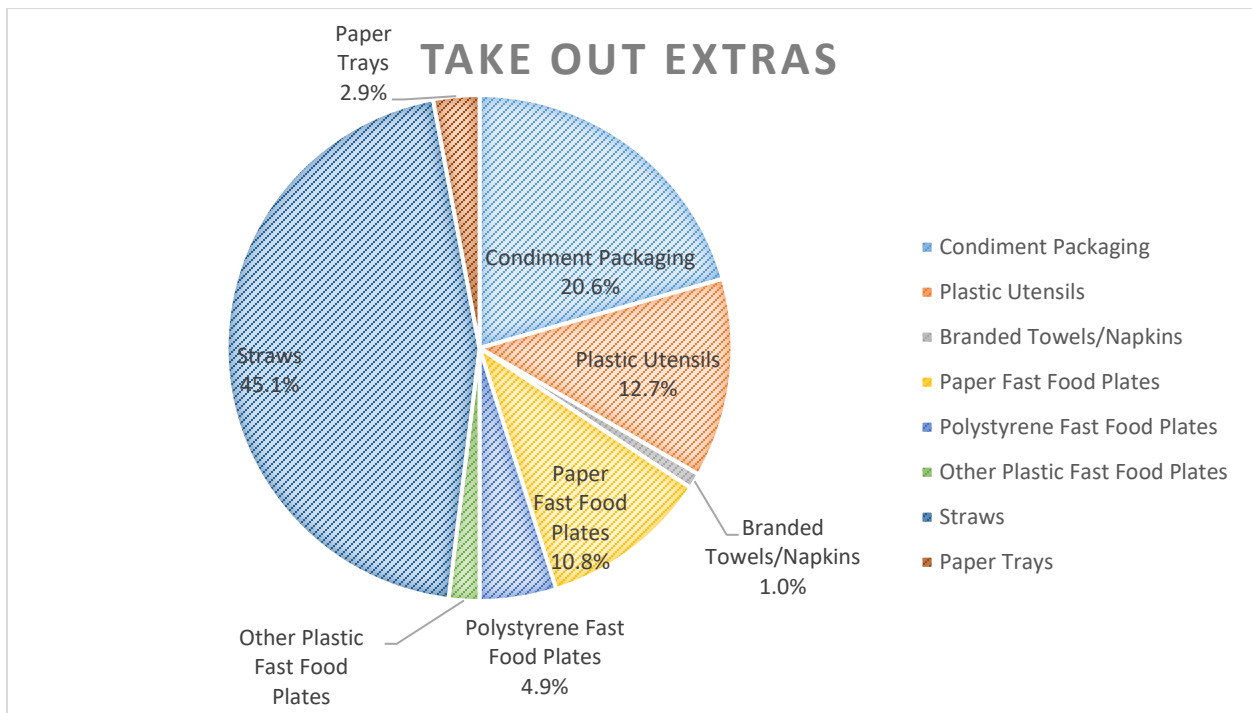


Figure 3f. Overview of waste found island-wide by 'Tobacco and Cannabis'.

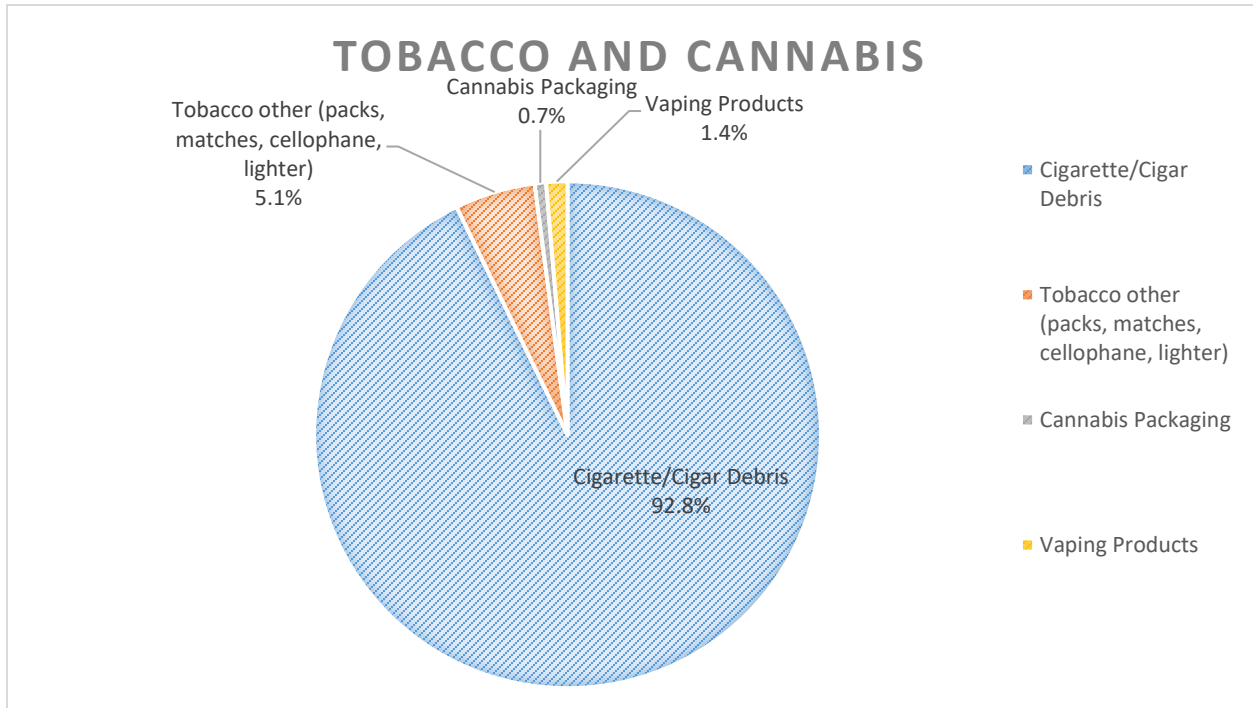


Figure 3g. Overview of waste found island-wide by 'Containers'.

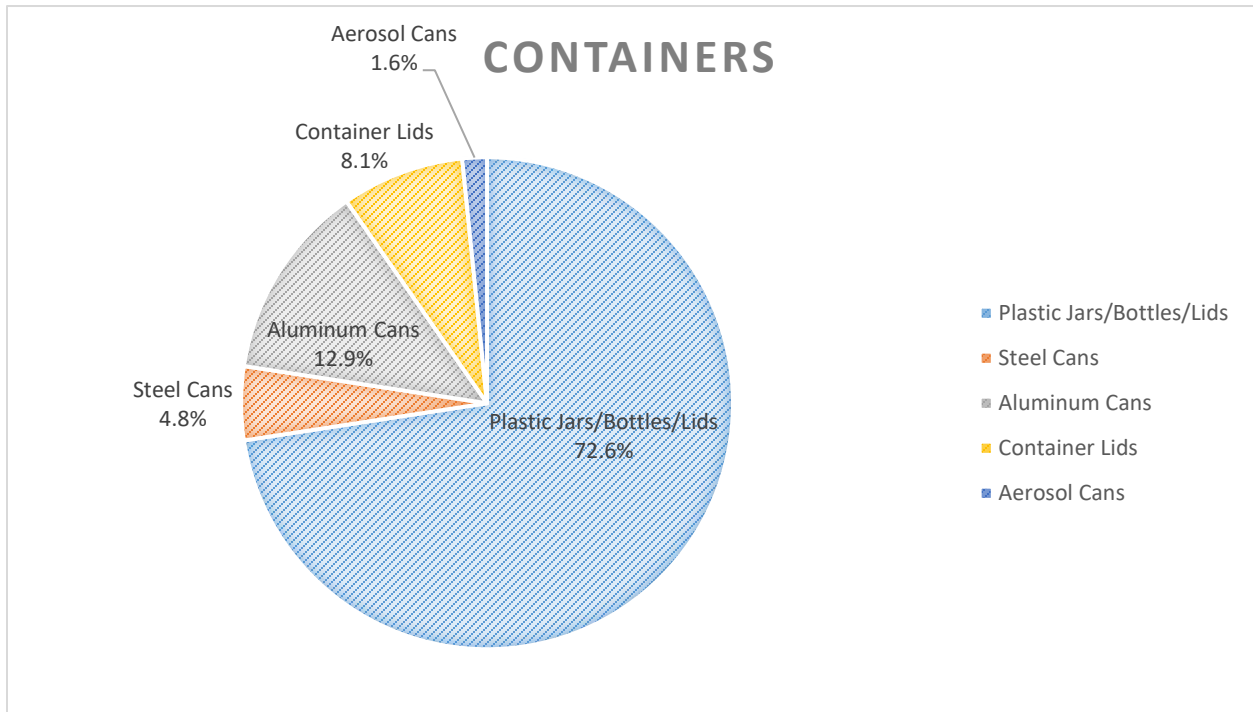


Figure 3h. Overview of waste found island-wide by 'Containers'.

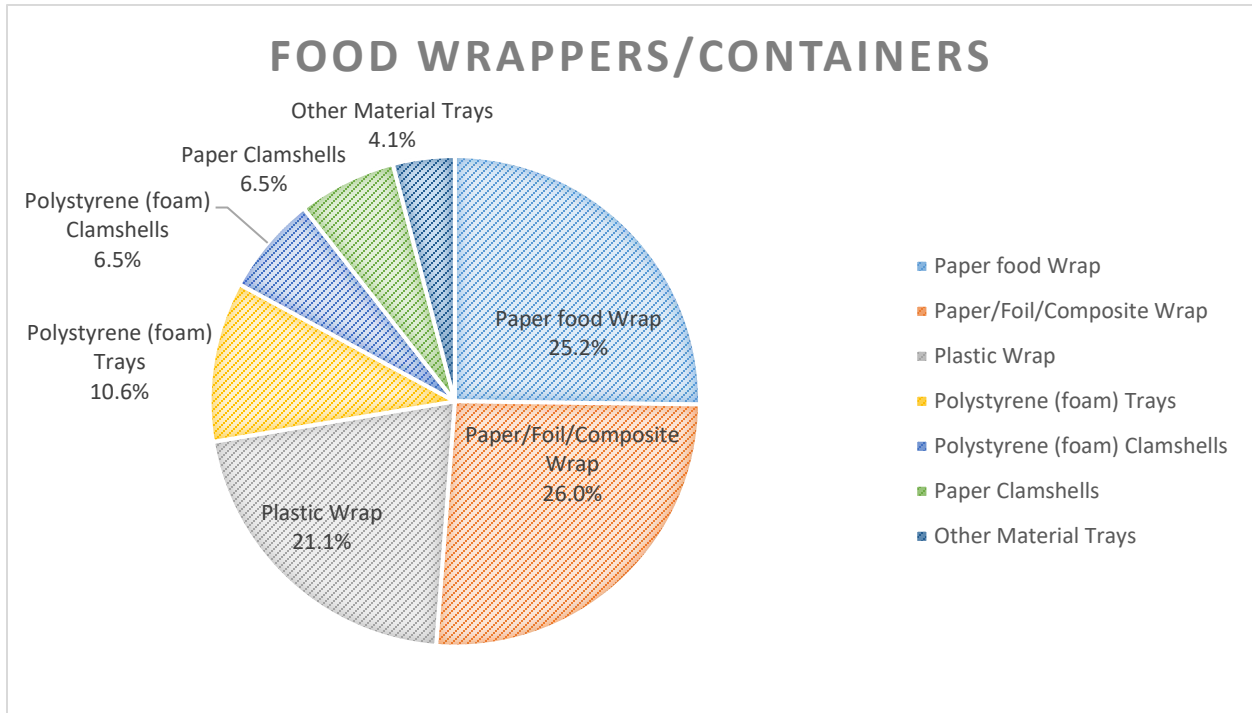


Figure 3i. Overview of waste found island-wide by 'Medical Waste'.

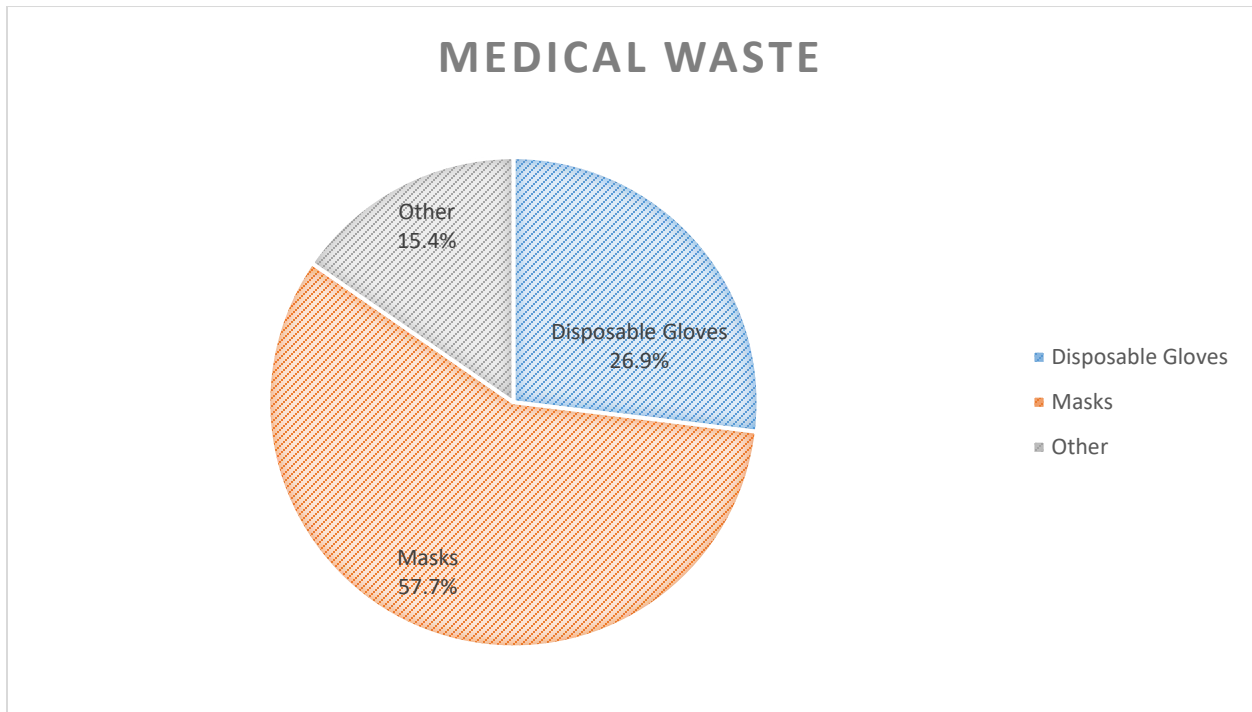


Figure 3j. Overview of waste found island-wide by 'Other Packaging'.

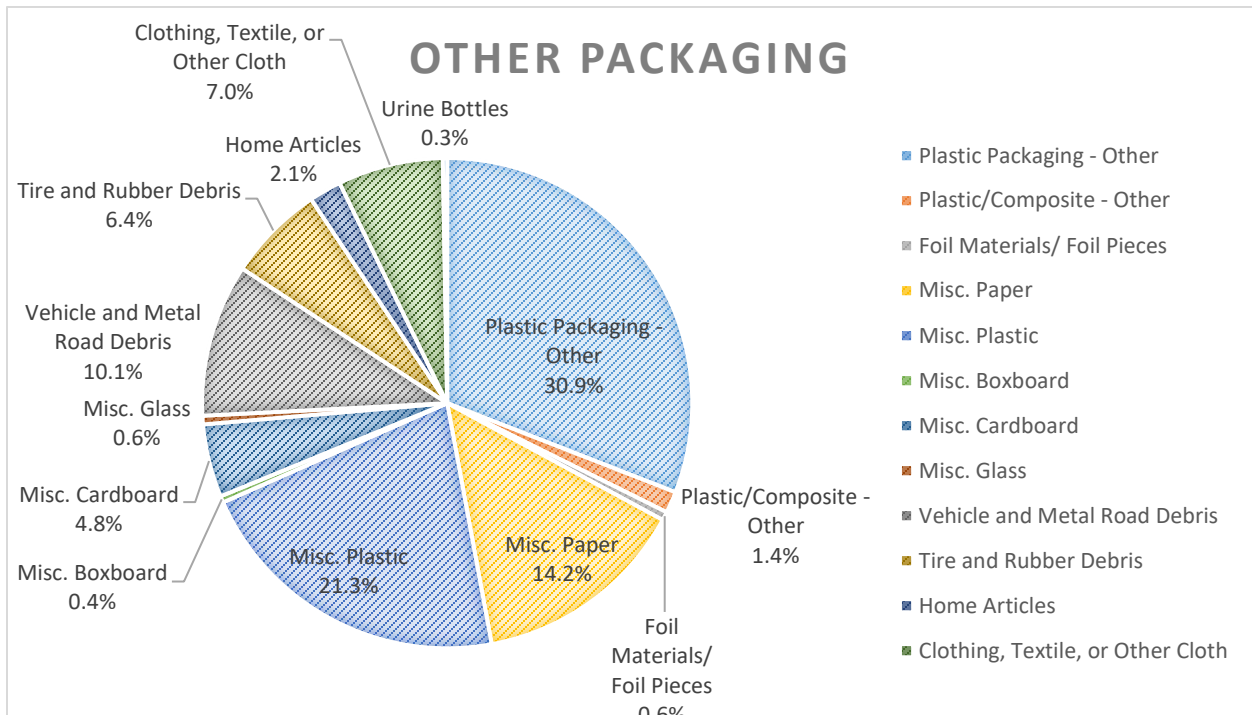


Figure 3k. Overview of waste found island-wide by 'Construction Debris'.

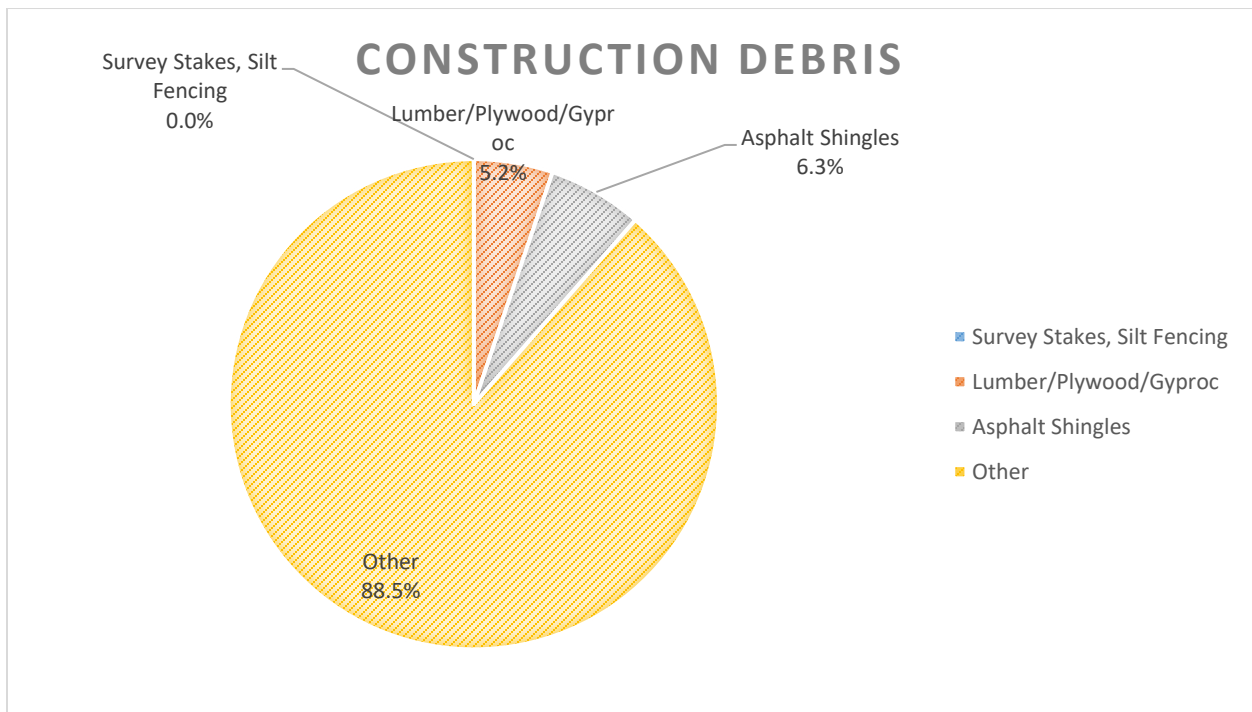
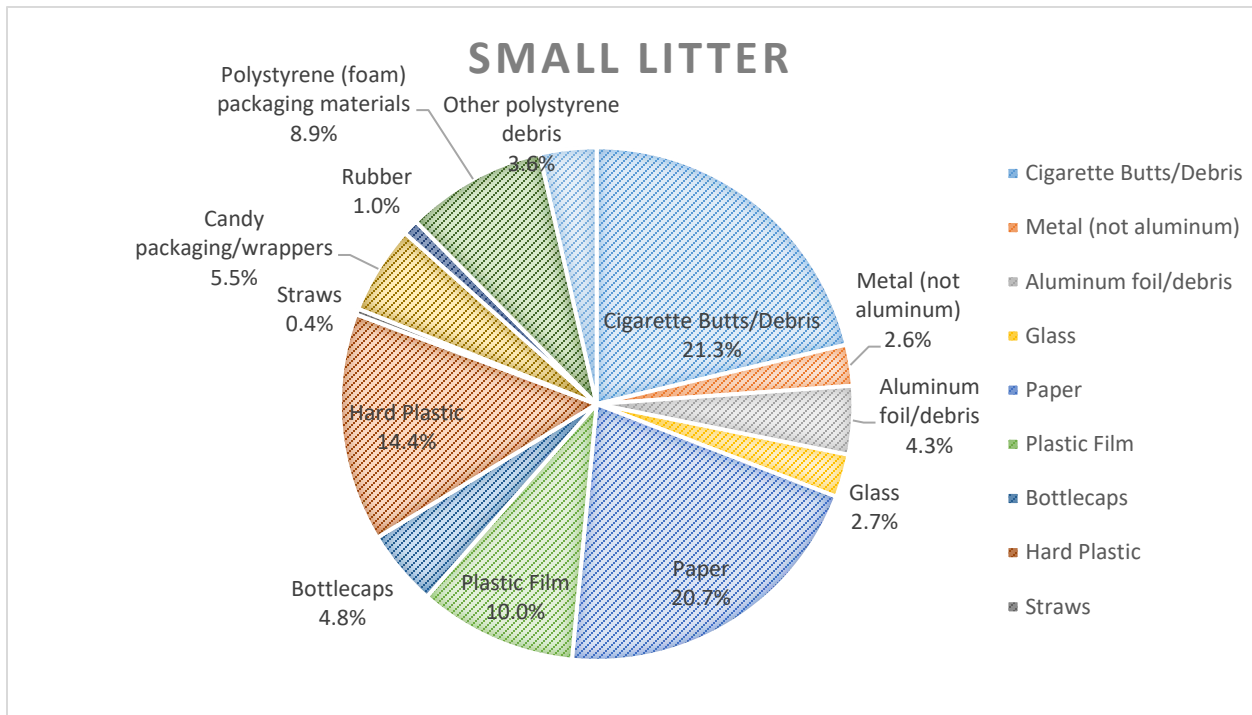


Figure 4. Overview of waste found island-wide by 'Small Litter'.

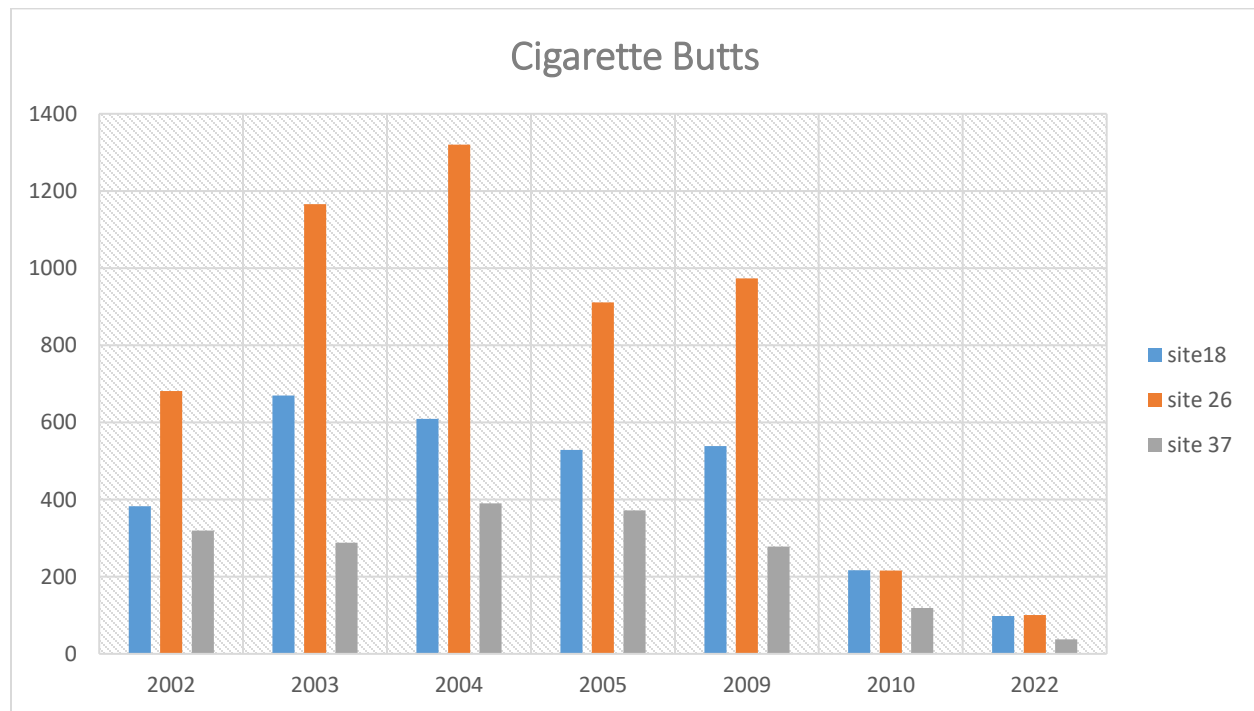


4.1 Cigarette Butts

Unlike previous years, cigarette debris has become part of the general survey, in addition to smaller items being searched for within a 5.4 meter stretch within every 100 meter measurement of road. To allow for annual comparison with historic data, the results from this survey have been compared to the results from previous years in which sites 18, 26, and 37 and only those sites were selected to be searched for cigarette butts. Unfortunately for 2022 site 26 had to be replaced by site 16. It is important to note that while the volume or size of the litter is not significant, the number continues to exceed any other collected litter and thus remains important to collect in the survey.

The results for each site were 98, 101, and 38 butts collected. This represents a decrease by over half for each site when compared to the results of 2010 (217, 216, and 119). Results for each site over the last two decades can be seen below in figure 5. Over the decades' cigarette butts as a percentage of roadside litter experienced a steady presence from 2002 to 2005 (averaging 74% of total roadside litter over the 7 years) before experiencing the sharp decline of 2010 to 21%, and this year a small increase to 26% of total roadside litter.

Figure 5. Comparison of quantities of cigarette butts at three selected sites from 2002 to 2022

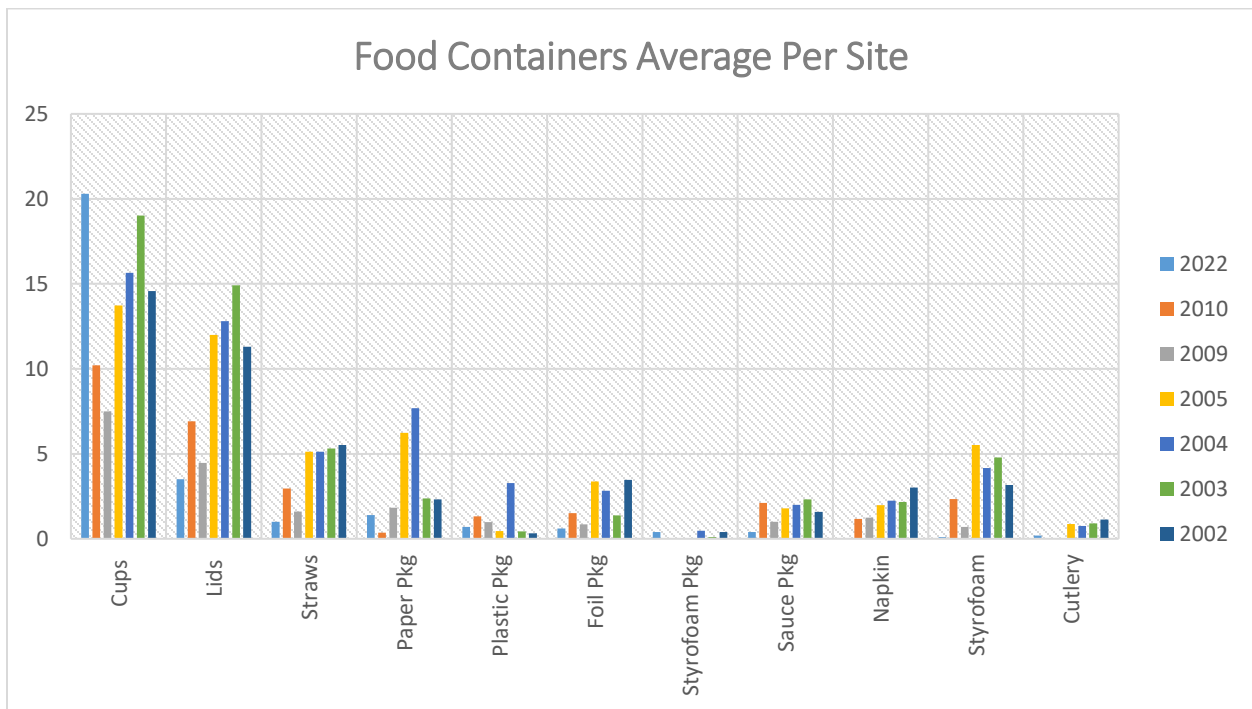


4.2 Food Containers

Fast food containers remains the largest representative of the food container category, though this survey marked a significant decrease in food containers found with the exception of fast food cups with a 200% increase over 2010 and the highest amount in two decades. The overall decrease and singular increase can be seen in figure 6 below.

The category is mostly represented by packaging used by restaurants or fast food businesses. Cups (both hot and cold), and items related to them such as straws and lids are the most common item found amongst this category. The next largest category found for this survey was paper and foil packaging in which sandwiches and burgers would be packaged in.

Figure 6. Comparison of averages of food containers found per site from 2002 to 2022.

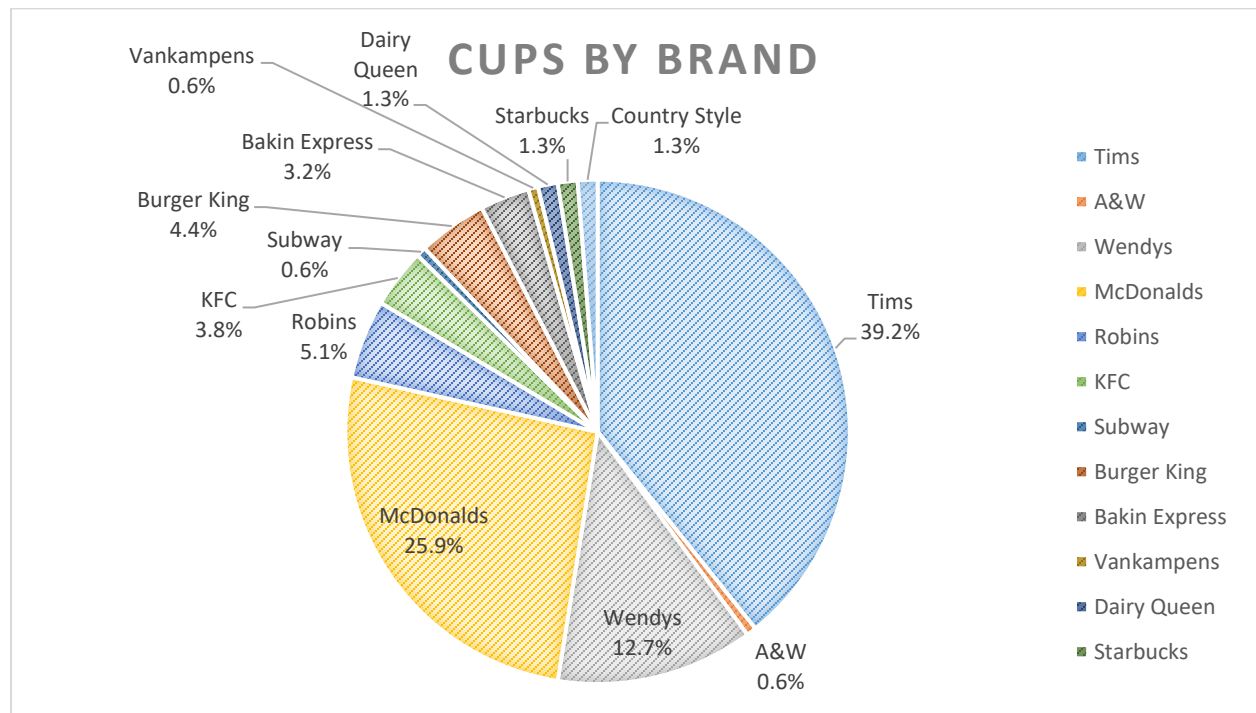


4.3 Cups

Paper, plastic, and composite cups represent 6.9% of the roadside litter collected in the 2022 litter survey with 265 cups collected at the 46 survey sites. Tim Horton’s cups represented 39.2% of this category and 2.7% of overall roadside cup litter when not including cigarette butts. Tim Horton’s cups were found mostly as composite but also plastic. McDonald’s represents another dominant presence in this category at 25.9% of roadside cup litter. McDonald’s cups were an even mix of paper, plastic, and composite. At a distant third is Wendy’s, representing 12.7% of the roadside cup litter and appeared as both plastic and paper cups. The 2009 estimate that Robin’s would catch up to its competitors turned out to be very wrong. A Robin’s cup was a rarity amongst the survey sites.

Looking to past surveys, Tim Horton’s held a 40% dominance in 2009 and a 50% hold in 2010 in their representation of this category. Since then McDonalds has risen from 10% in both 2009 and 2010 to 25.9%. This could be due to the contentions transition Tim Horton’s made with their coffee distributor in the decade between surveys. Now that McDonalds operates with Tim Horton’s old distributor it could explain the nearly equal representation seen in this survey.

Figure 7. Distribution of fast food beverage containers found per site from 2002 to 2022 by brand.

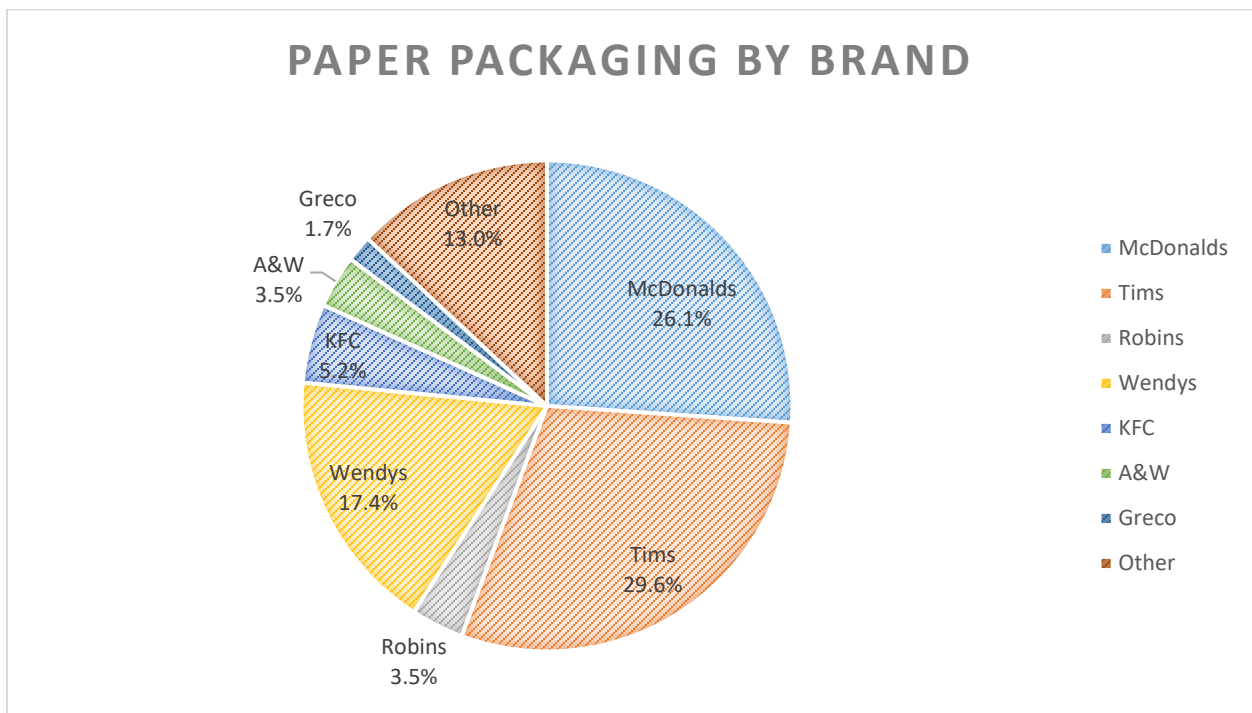


4.4 Paper Packaging (118 items)

Paper packaging for take away food came to represent 5.9% of roadside litter with 118 items. Paper packaging remained the second most collected food container item collected as it had in 2010 and 2009. The category includes fast food wrappers, French fry cartons, paper fast food bags, and paper clamshell containers.

The most common brand found amongst this category was Tim Hortons with 29.6%, though closely followed by McDonalds with 26.1%. Other in this category represents paper packaging that has no discernable logo or branding, such as a brown lunch bag.

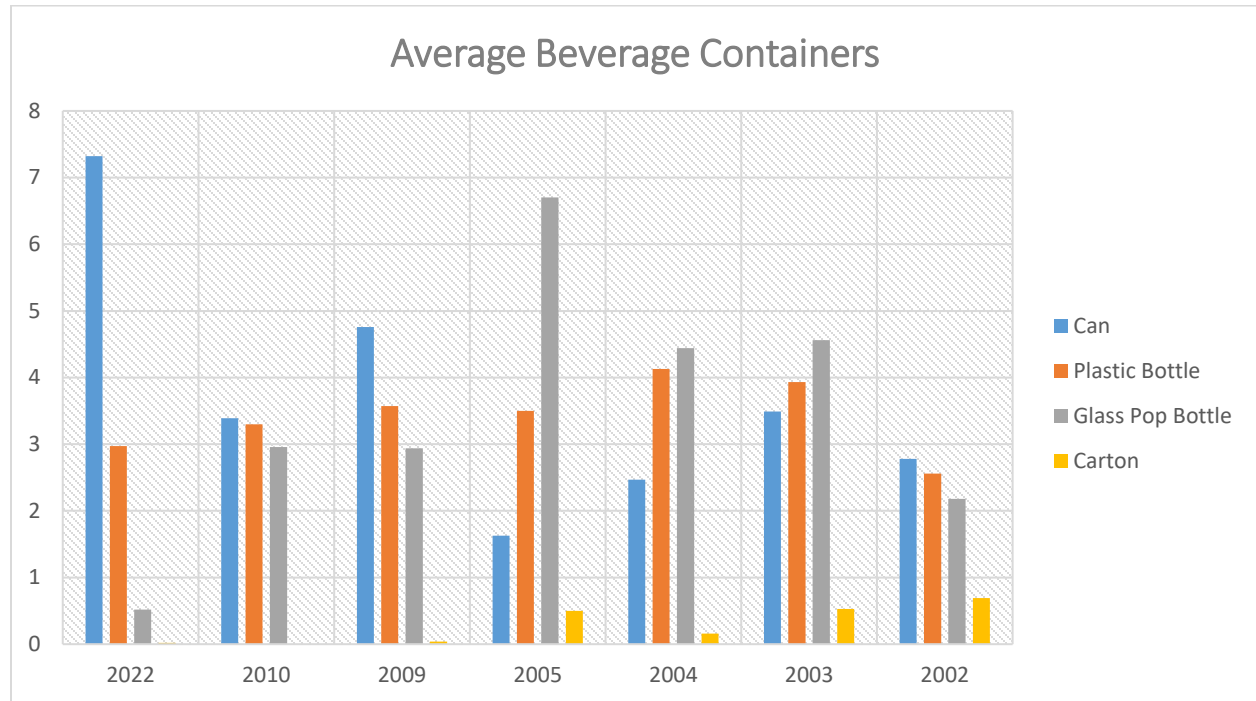
Figure 8. Distribution of fast food paper packaging found per site from 2002 to 2022 by brand.



4.5 Beverage Containers

Beverage containers formed 13.2% of roadside litter collected, a decrease from the 17% of the 2010 litter survey. Although the overall representative percentage has decreased, the average number per site has risen from 9.65 in 2010 to 10.91. Glass pop bottles remained a rarity as it had in the 2010 litter survey, with only 2 being found in 2022.

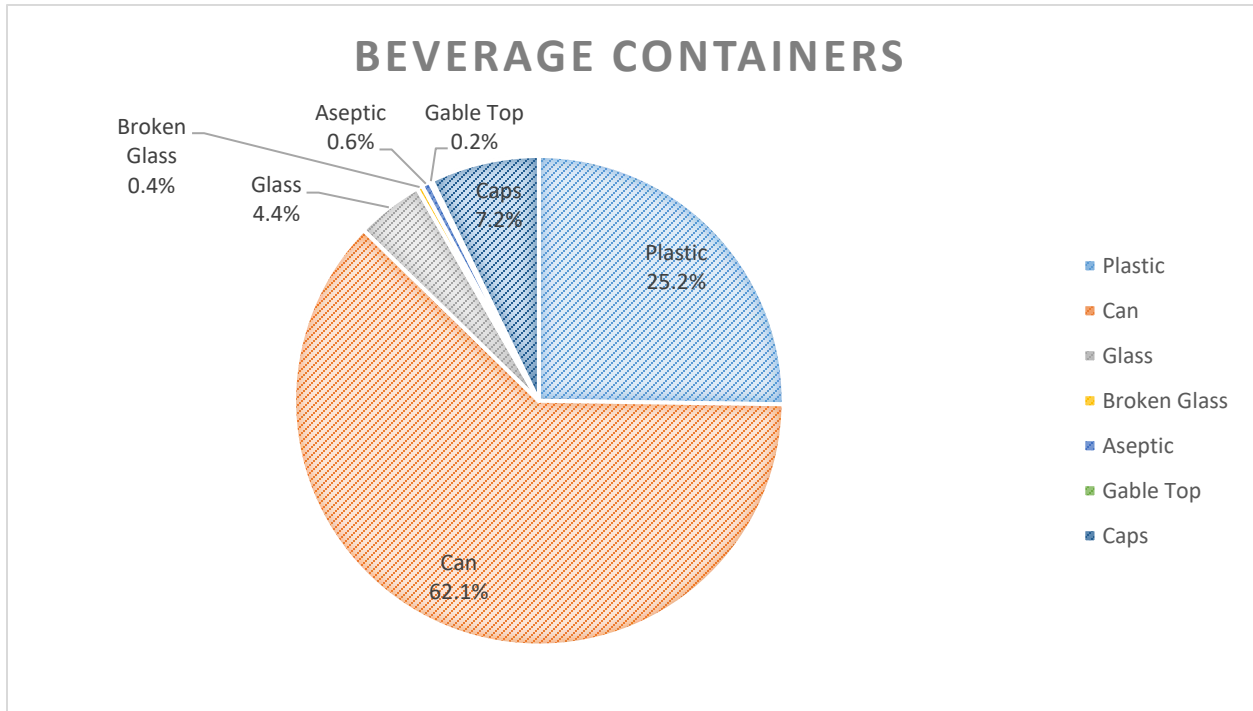
Figure 9a. Comparison of averages of beverage containers found per site from 2002 to 2022.



Breaking away from the even distribution of the 2010 survey and adopting a more extreme rendition of the results found in 2009, cans dominated the representation in this category.

The 2010 survey report states that a strange data quirk worked its way into past reports. They state that alcoholic beverages had been included into the can category for 2009 and 2010 but the bottles were not. They ensured to note that glass bottles had a slight decrease in 2010 dropping from 3.1 in 2009 to 2.93 in average per site. To represent this, this survey has labeled the glass bottles as glass pop bottles.

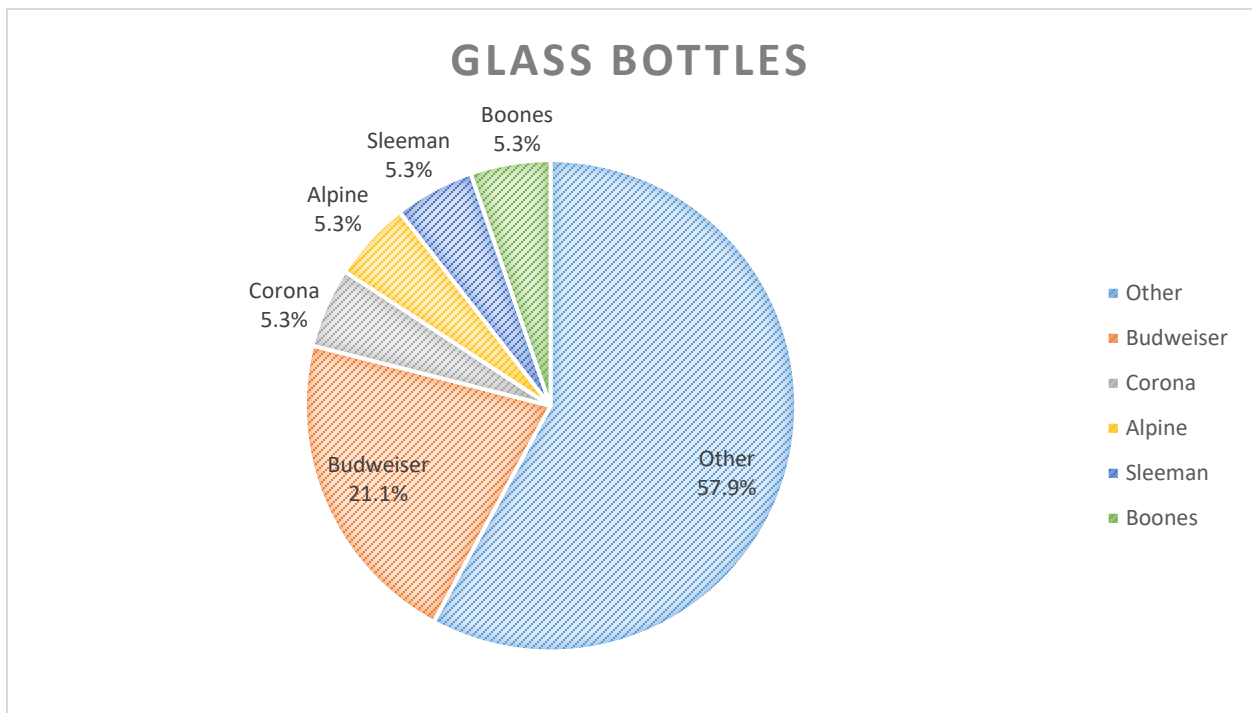
Figure 9b. Distribution of 2022 beverage containers.



4.6 Glass Bottles

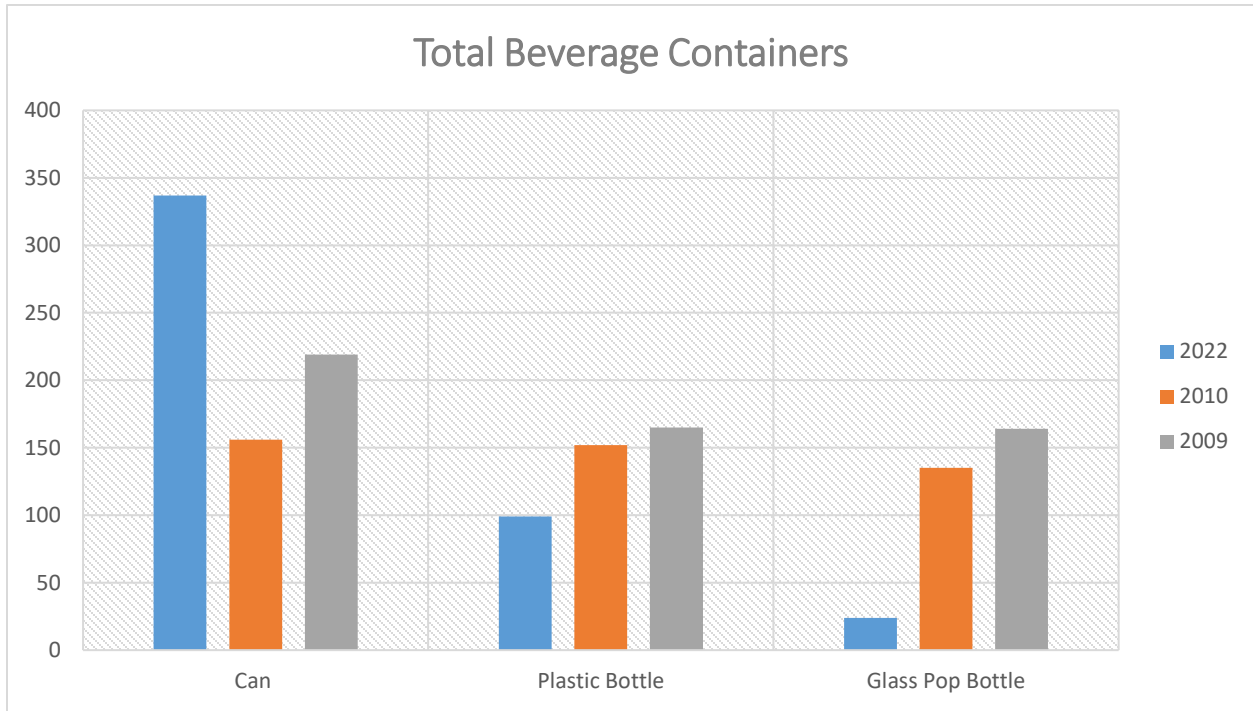
Glass bottles represented a mere 0.6% of total roadside litter found, with 24 items collected at 46 sites. This represents a massive drop from the 2010 result of 5.5%. Only two broken bottles were found during the survey and they were added to the result of glass bottles. Amongst the bottles, 2 pop bottles and 22 beer or alcoholic beverage bottle were found. There is a strong assumption that glass bottles may be being collected from roadside as well as simply losing ground to canned alternatives in island communities given the stark difference between the two categories' numbers.

Figure 10a. Distribution of glass bottles found per site in 2022 by brand.



Visible in figure 10a is the dispersion of brand name amongst the bottles found. Other refers to bottles whose label had been cleanly removed by hand or weather and identification of the brand of the bottle was not possible.

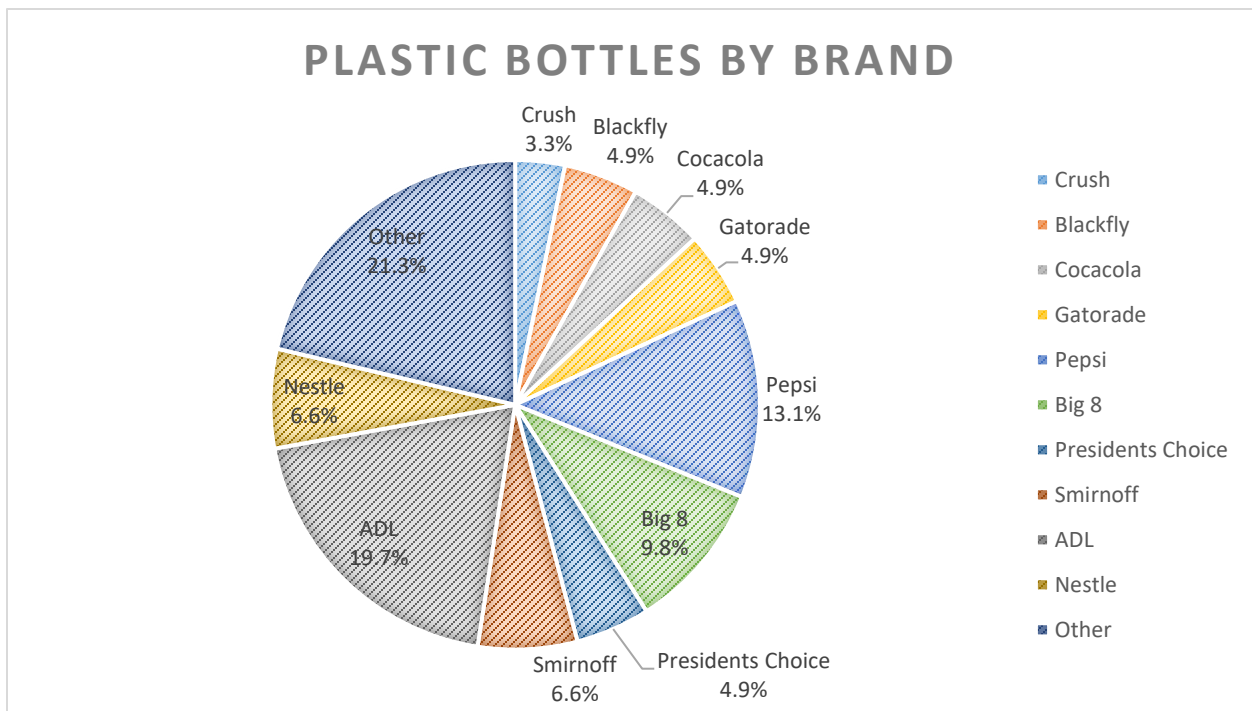
Figure 10b. Comparison of total glass bottles collected per survey from 2009 to 2022.



4.7 Plastic Bottles

Plastic Bottles came to represent 2.6% of roadside litter collected during the survey, with a total of 99 items. Continuing a dominating trend from the 2010 litter survey, ADL represents 19.7% of total plastic bottles found. Pepsi comes in second with 13.1% and Big 8 with 9.8%. The other category in figure 11 encompasses brands where only one bottle was found and so to cut down on visual clutter they were placed in one larger category. Those in other include: Canadian Dry, Boathouse, Powerade, Ensure, Mudshine, Brisk, Aquafina, Perfection, Purity, Captain Morgan, and Milk 2 Go.

Figure 11. Distribution of plastic bottles found per site in 2022 by brand.

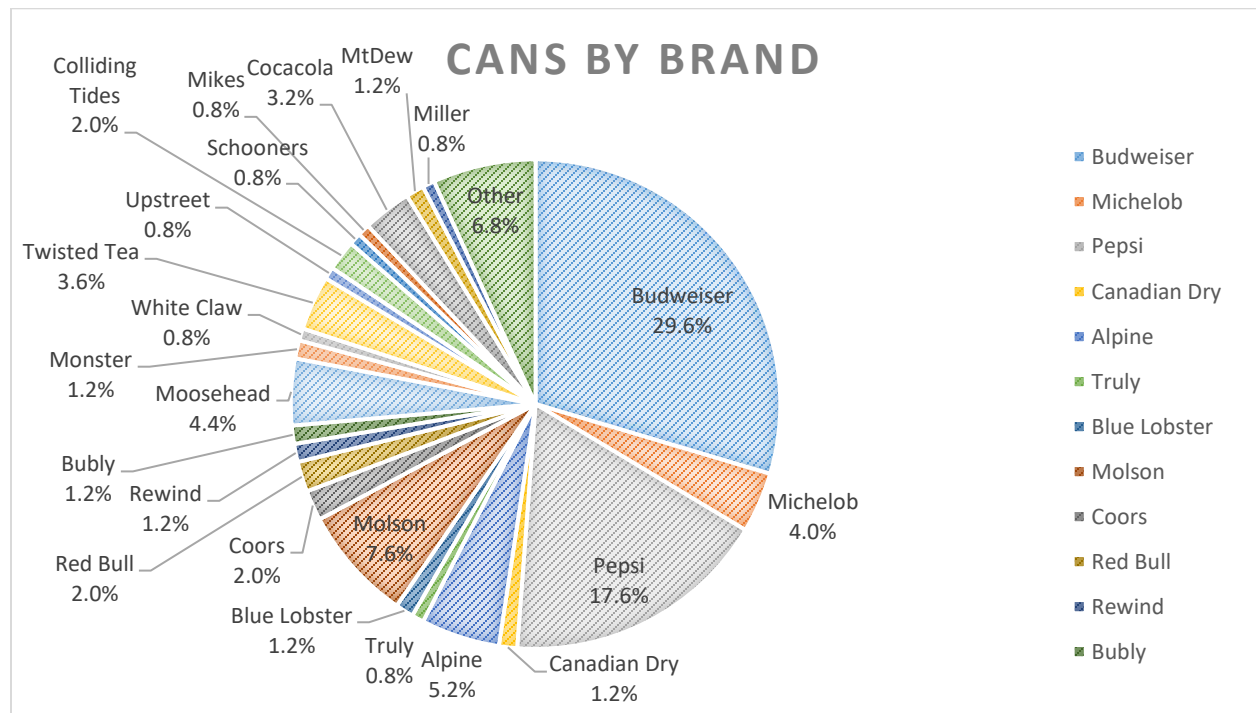


Similar to glass bottles, the collected number of plastic bottles may have been affected by collectors looking to return the plastic bottles for a refund.

4.8 Cans

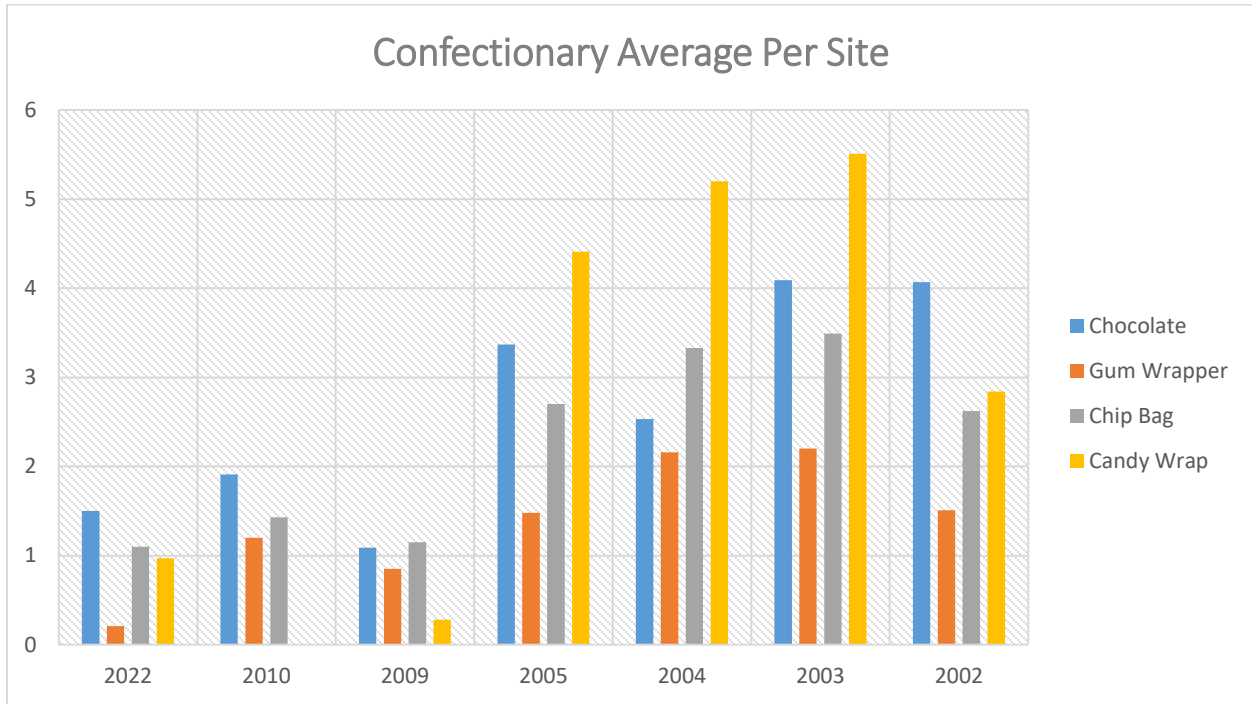
Plastic Bottles came to represent 10.4% of roadside litter collected during the survey, with a total of 365 items. Similar to plastic bottles, the other category in figure 12 represents cans where only one of a brand was found during the survey. These include: Amp, Clamato’s, Grace, Aha, Blackfly, Sprite, Keith’s, Crush, Copper Bottom, Rockstar, Heineken, Red Rain, Starbucks, Libra, 7up, Busch, and Okanagan. Budweiser holds a commanding presence in this category, representing 29.6% of all cans found during the litter survey. In second is Pepsi representing 17.6% of found cans. In a distant third is Molson with 7.6%. It was certainly unexpected to find so many liquor cans on the shoulder of the road, and what behavioral trends that may be revealing for.

Figure 12. Distribution of cans found per site in 2022 by brand.



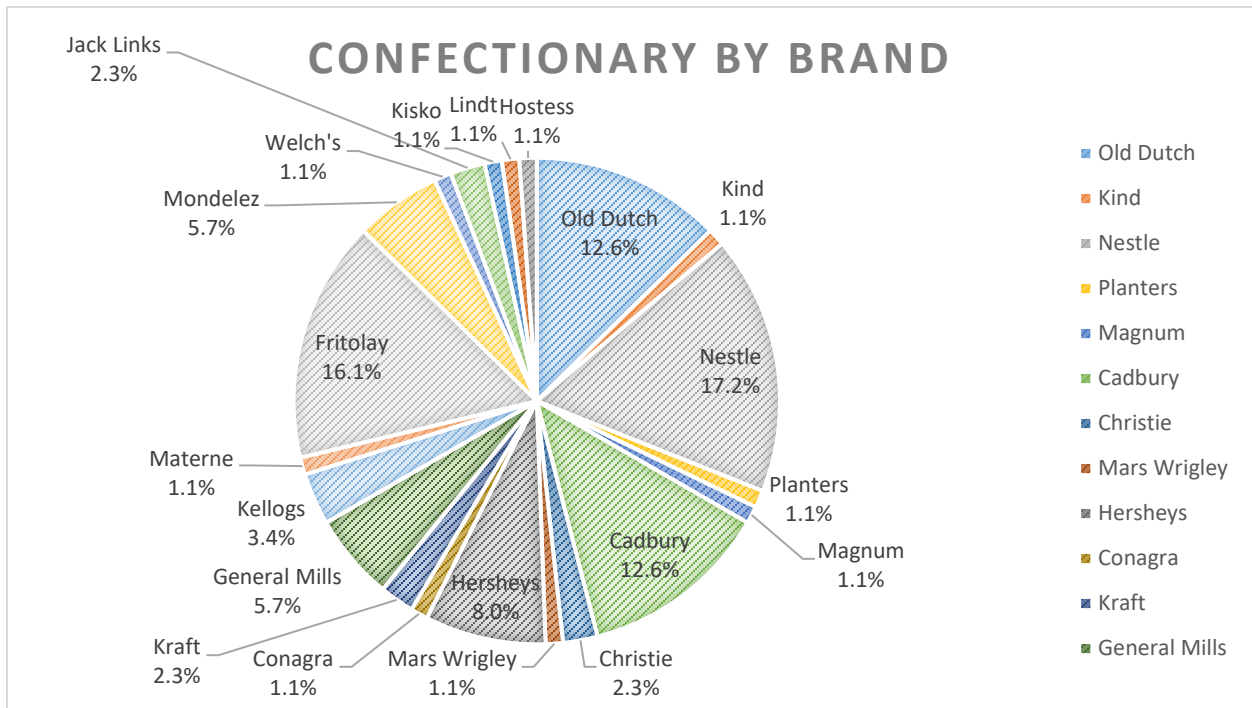
4.9 Confectionary

Figure 13. Comparison of averages of confectionary items found per site from 2002 to 2022.



Confectionary items collected for the survey represent 4.6% of total items collected, with 175 items total collected for this category. This notes a slight decrease in collection from 2010 and their 209 items collected. The overall number of confectionary appear to follow the sharp decline in litter seen in 2009 and have plateaued since that point. The last two surveys and this one pale in comparison to the confectionary collected from 2002 to 2005. Below in figure 14 is the composition of confectionary items by brand.

Figure 14. Distribution of confectionary items found per site in 2022 by brand.

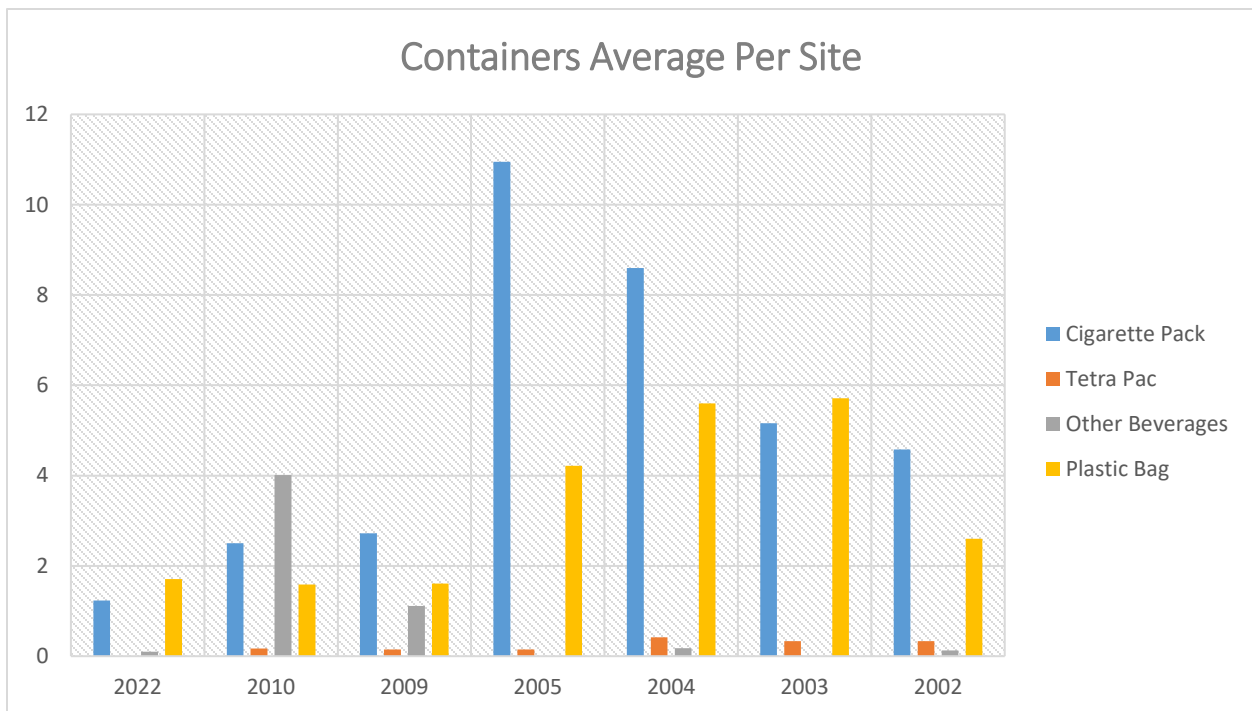


For the composition of confectionary items by brand, research was conducted into each item to learn the parent company who owned the smaller subsidiary. The idea in this being that to act on roadside litter the conversation has to move to those who could properly enact change. Fritolay and Nestle are nearly perfectly even in their representation of the category with Nestle barely ahead with 17.2% and Fritolay hardly behind with 16.1%. In joint third is Old Dutch and Cadbury both with 12.6%.

4.10 Containers

Containers collected for the survey represent 3.6% of total items collected, with 136 items total collected for this category. Other Beverage containers refers to beer boxes and broken beer bottles; this meaning taken from past surveys. Given the collection categories that were to be used for the 2022 survey, additional care had to be taken to ensure proper comparisons could be made with historical data as tetra pac and other beverage containers are no longer subsections in the collection sheet. In terms of collection, there is a notable decrease from 2010 to 2022 and the sharp decline of 2009 roadside litter is once again visible in figure 15.

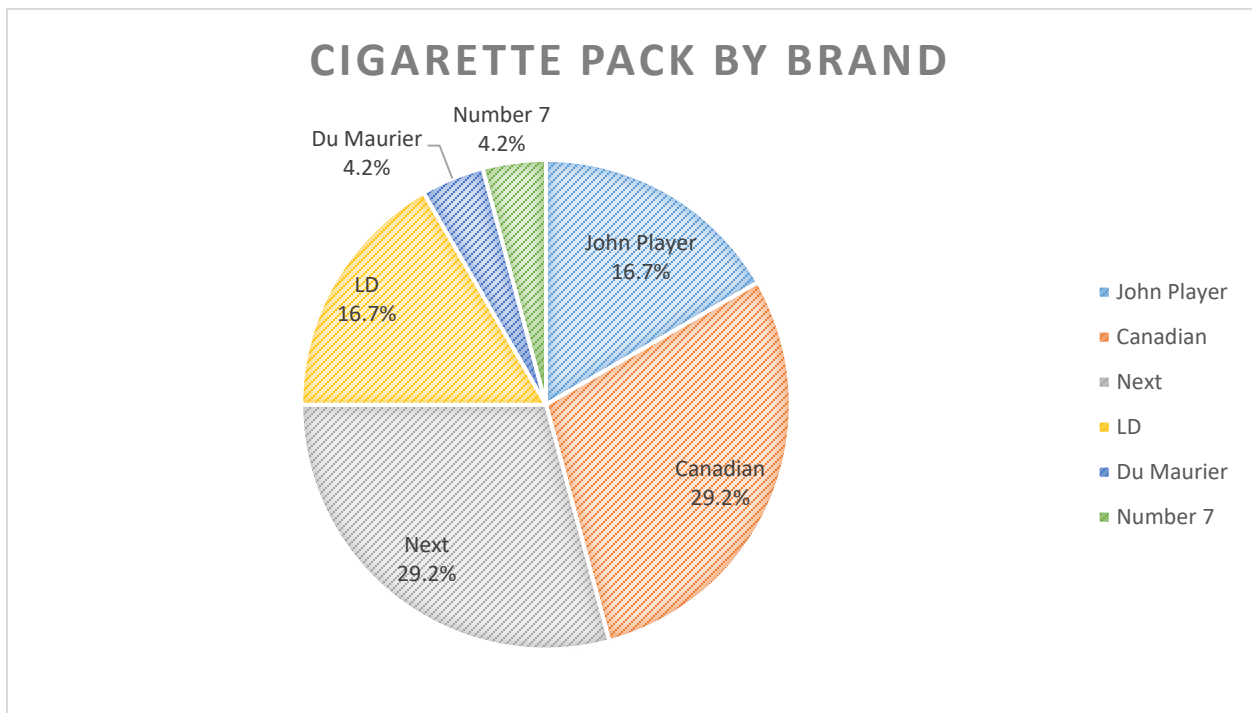
Figure 15. Comparison of averages of containers found per site from 2002 to 2022.



4.11 Cigarette Packages

Cigarette packages collected for the survey represent 1.5% of total items collected, with 57 items total collected for this category. There was a steady increase in cigarette packages noted in the 2010 survey since the 2002 litter survey, though in 2010 that steady rise had been broken as the average package found per site dropped from the high 10.96 of 2005 down to the far calmer 2.50. It's all the more encouraging as the number has dropped all the way down to a 1.2 average for 2022.

Figure 16. Distribution of cigarette packages found per site in 2022 by brand.

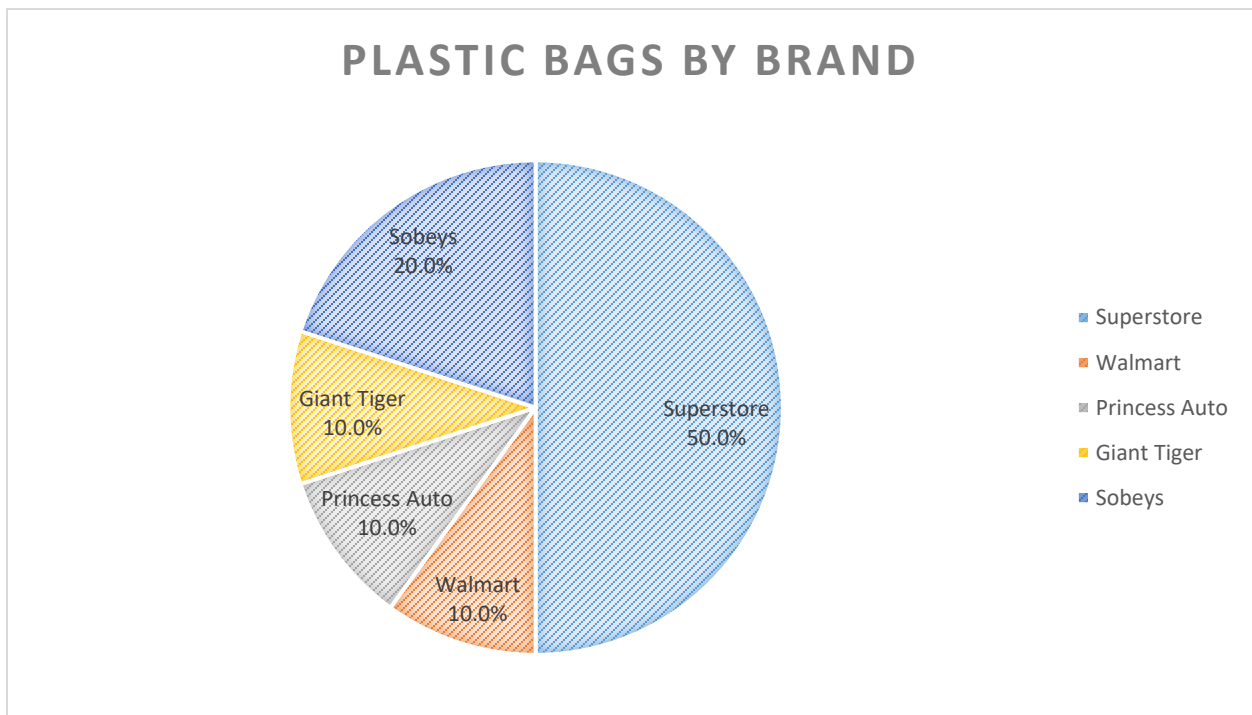


Amongst the brand names of the cigarette packages it appears to be fairly even. Next and Canadian Bold both hold 29.2% of the representation for this category. Just behind those two are LD and John player who also are tied for second at 16.7%. Compared to the dominant spot John Player held in 2010 at 50.43% this is certainly quite the fall in representation.

4.12 Plastic Bags

Plastic Bags collected for the survey represent 2% of total items collected, with 79 items total collected for this category. This notes a slight increase in collection from 2010 and their 73 items collected. The overall number of confectionary appear to follow the sharp decline in litter seen in 2009 and have plateaued since then. In terms of brand named bags, only 12 were found with labels or a brand visible while 67 generic grey or white bags were collected. It appears the strong push away from grocery store bags have been evened by convenience stores and personal purchases as seen from the increase in generic plastic bags.

Figure 17. Distribution of plastic bags found per site in 2022 by brand.

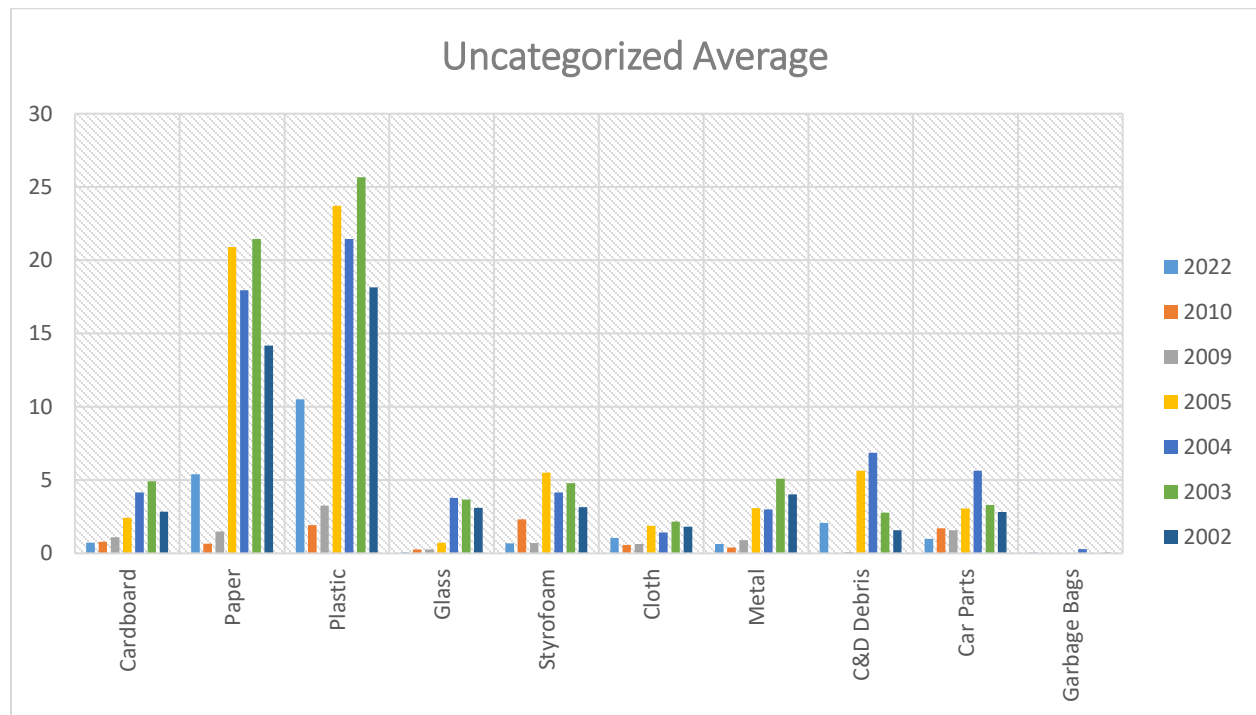


Amongst the branded plastic bags Superstore holds a confident hold on representation with 50%, Sobeys in second with 20%, and the other three brands found scrambling for third. Despite the large amount of liquor bottles found, there were no signs of PEILCC bags which certainly came as a surprise.

4.13 Uncategorized

Uncategorized waste is perennially the largest category (44% in 2005) of litter collected from roadside. 2009 ended this trend with uncategorized making up 20% of the total litter collected and was further reduced in 2010 when it dropped to 17%. 2022 marks a small climb in its overall representation of collected litter at 18.5% but continues to remain low. The product types within the category are generic in brand or do not have a recognizable brand. Miscellaneous paper and plastic comprised the majority of the litter collected from this category, paper averaging 2.17 and plastic 3.2 per site. Garbage bags indicates a full bag collected and not sorted for their contents, which 2 were found this year. C&D Debris refer to construction or demolition material such as lumber, shingles, or insulation.

Figure 18. Comparison of averages of uncategorized litter per site from 2002 to 2022.

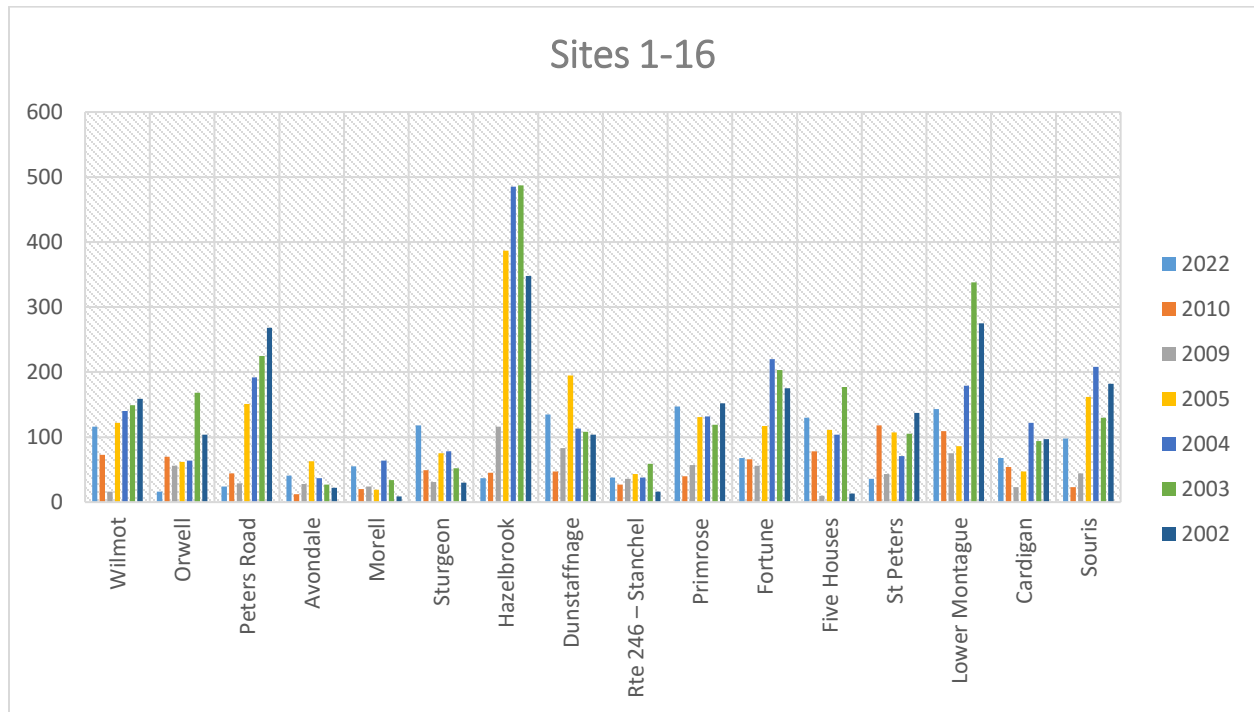


4.14 Overall Comparisons

Figure 19. Annual comparison of collection averages of the litter survey sites 1-16 from 2002 to 2022

Annual Comparison

Sites 1-16



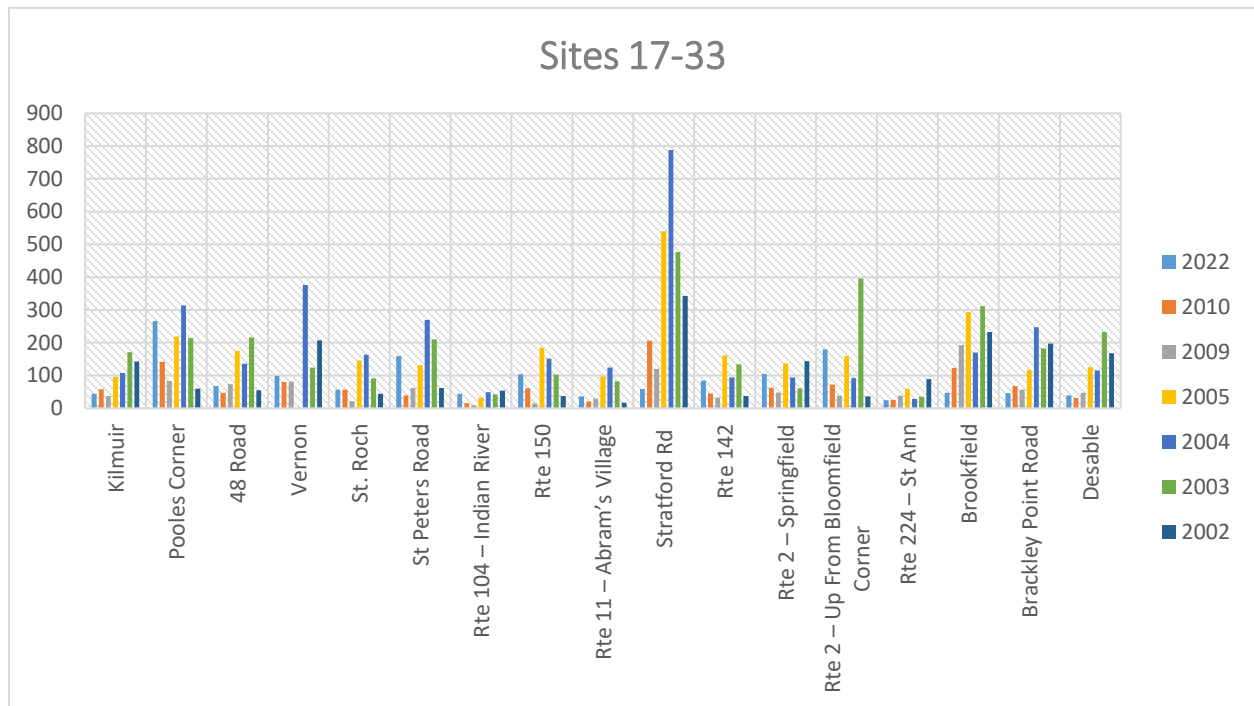
Sites 1-16

Site 5 (Morell) is beginning to rise in found litter after a long clean streak. Since 2005 it hasn't risen above 25 items found. During 2022, 55 items were found. The cleanest of the 16 was Site 2 (Orwell) with just 16 items. Site 10 (Primrose) stood as the worst with 147 items found during the survey. Dunstaffnage saw a sharp climb in litter from 47 in 2010 to 147. St Peters drastically reduced their litter from 118 in 2010 to 36.

Figure 20. Annual comparison of collection averages of the litter survey sites 17-33 from 2002 to 2022

Annual Comparison

Sites 17-33



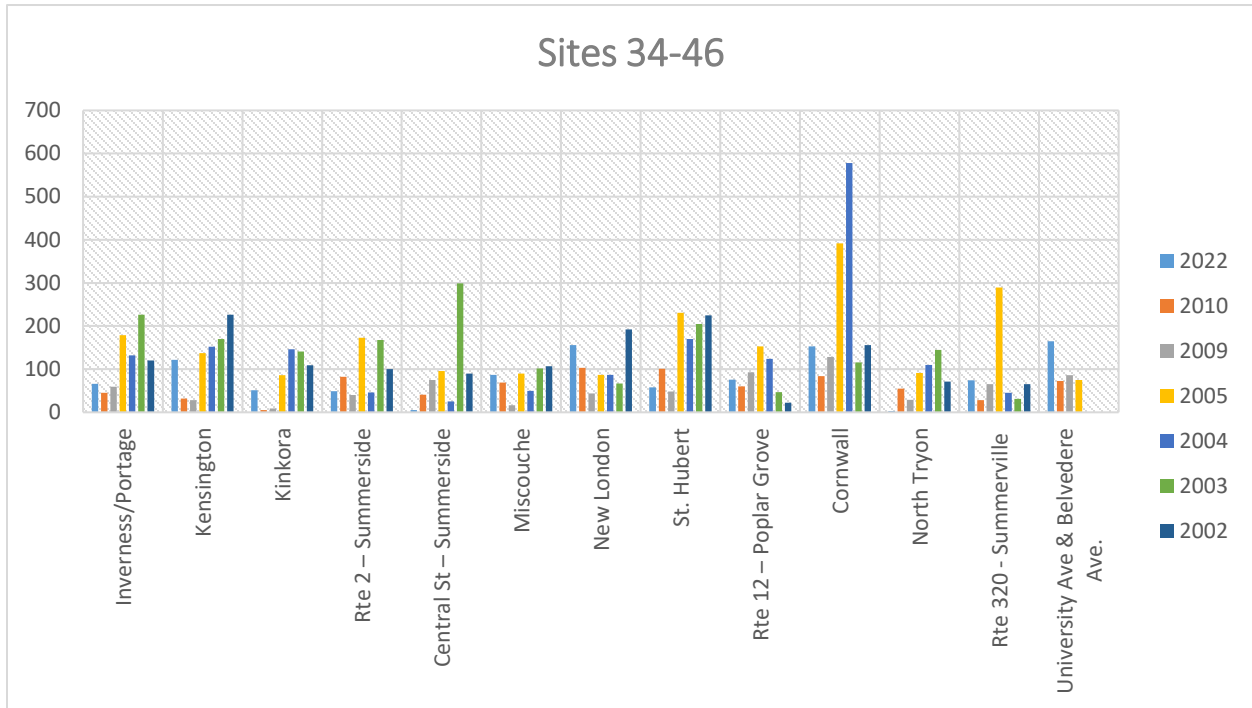
Sites 17-33

The best site for litter is Rte 224 – St Ann with 25 items collected. Brookfield saw a major improvement in liter from 2010 from 123 to 43. The worst for litter amongst these sites was Pooles Corner with a whopping 266 items and appears to be a consistent trouble area.

Figure 21. Annual comparison of collection averages of the litter survey sites 34-46 from 2002 to 2022

Annual Comparison

Sites 34-46

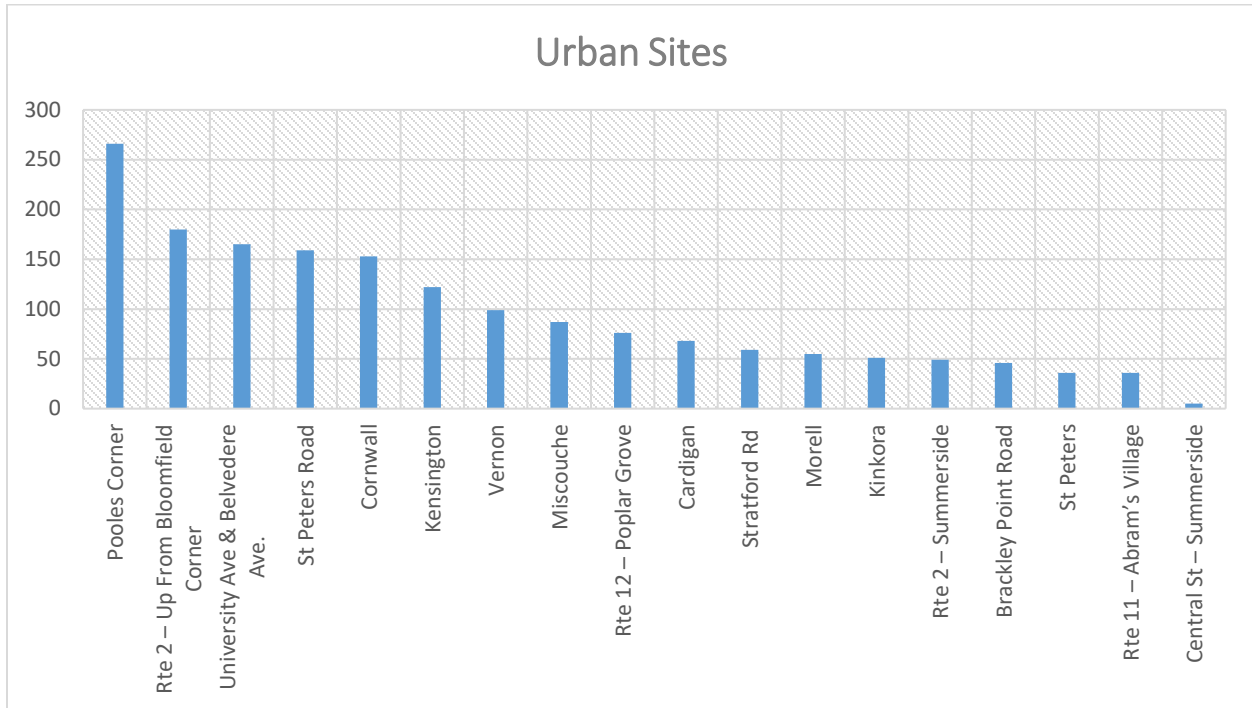


Sites 34-46

New London, Cornwall, and University Ave all were trouble spots for 2022 with each site counting more than 150 litter items each. Central St – Summerside was easily the best with only 5 items. Kensington saw the most shocking increase from 2010, going from 32 items to 122. This may be a problem as Kensington seemed to struggle with litter before 2009, reaching similar numbers in 2005 and beyond.

Figure 22. Total items collected at urban sites for the 2022 Litter Survey.

Total Items per Urban Sites

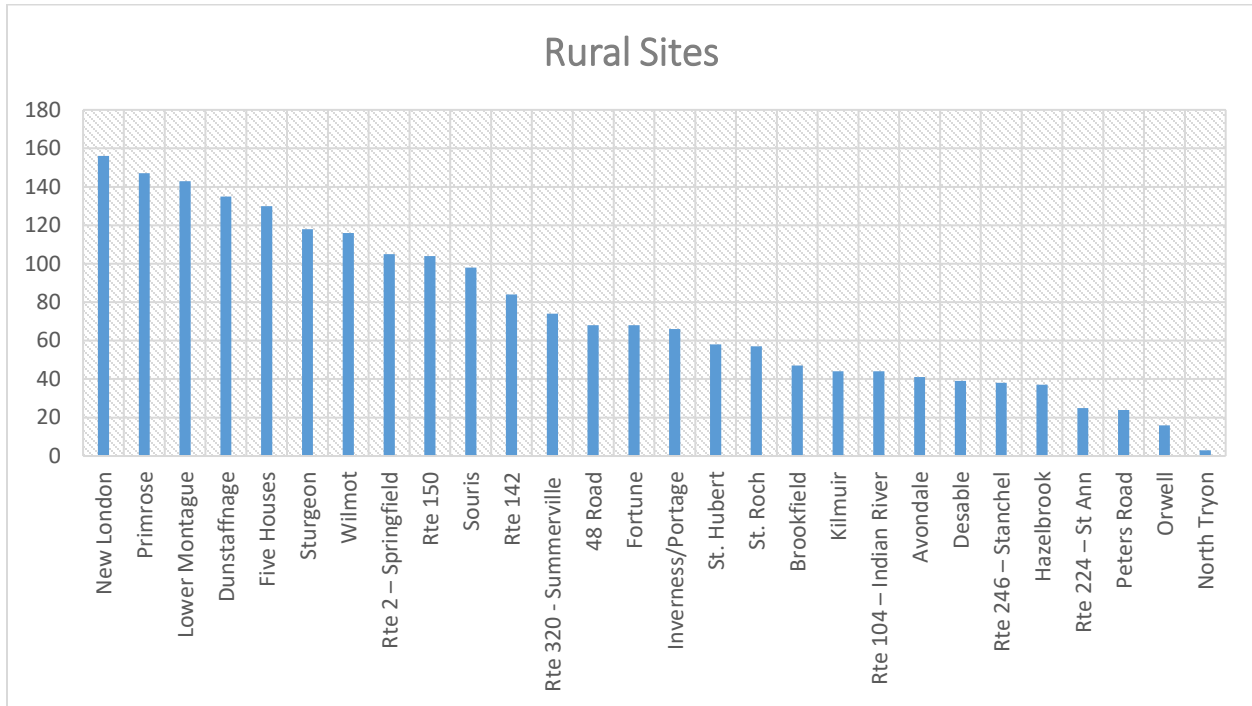


Urban Areas

The average number of items collected in urban sites is 95.1, a considerable increase of 27.6 average items per site. Pooles Corner remains one of the hottest spots for litter from 2010 with a considerable presence of all litter. Rte 2 – Summerside has managed to slide far bag compared to its 4th worst spot in 2010.

Figure 23. Total items collected at rural sites for the 2022 Litter Survey.

Total Items per Rural Sites



Rural Areas

The average amount of litter found in rural areas is certainly less than that of urban areas at 74.4. From 2010 that’s an increase of 17 items per site from their 57. Similar extremes to what was seen in 2010 as New London approaches 160 items of litter while North Tryon has 5.

Appendix A – Waste Sorting Categories

All waste was sorted into one of 12 main categories and, when applicable, further sorted into 91 sub-categories.

Large Litter Categories:

<p>Paper/Fiber Materials</p> <ol style="list-style-type: none"> 1. Paper Packaging (Other) 2. Unbranded Towels/Napkins 3. Lottery Ticket Debris 4. Printed Material (Cost Newspaper) 5. Printed Material (Free Newspaper) 6. Mixed Paper Materials (magazines, stationary paper) 7. Receipts/Shipping Labels 8. Bundled Flyers <p>Take-out Extra</p> <ol style="list-style-type: none"> 9. Condiment Packaging 10. Plastic Utensils 11. Branded Towels/Napkins 12. Paper Fast Food Plates 13. Polystyrene Fast Food Plates 14. Other Plastic Fast Food Plates 15. Plates – Other Material 16. Straws 17. Paper Trays <p>Confectionary/Snack</p> <ol style="list-style-type: none"> 18. Gum Wrappers 19. Candy Bar Wrappers 20. Candy Pouches 21. Sweet Packaging (describe) 22. Other Confectionary (describe) 23. Snack Food Packaging 24. Chip Packaging <p>Tobacco and Cannabis</p> <ol style="list-style-type: none"> 25. Cigarette/Cigar Debris 26. Tobacco other (packs, cellophane, lighters) 27. Cannabis Packaging 28. Vaping Products <p>Cups</p> <ol style="list-style-type: none"> 29. Plastic Drinking Cups 30. Paper Cups (Cold) 31. Composite Cups (Hot) 32. Polystyrene Cups (foam) 33. Other Paper Cups 34. Cup Lids/Pieces/Sleeves 35. Refundable Metal (Alcohol) 36. Refundable Metal (Non-Alcohol) 37. Refundable Glass (Alcohol) 38. Refundable Glass (Non-Alcohol) 39. Refundable Plastic (Alcohol) 40. Refundable Plastic (Non-Alcohol) 41. Refundable Aseptic (Alcohol) 	<ol style="list-style-type: none"> 42. Refundable Aseptic (Non-Alcohol) 43. Refundable Gable Top (Alcohol) 44. Refundable Gable Top (Non-alcohol) 45. Milk and Milk Products (plastic) 46. Milk and Milk Products (Gable Top) 47. Milk and Milk Products (Glass) <p>Containers</p> <ol style="list-style-type: none"> 48. Plastic Jars/Bottles/Lids 49. Glass Jars/Bottles/Lids 50. Steel Cans 51. Aluminum Cans 52. Container Lids 53. Aerosol Cans <p>Bags</p> <ol style="list-style-type: none"> 54. Plastic Bags (Branded) 55. Paper Bags (Branded) 56. Paper Bags (Fast Food) 57. Plastic Bags (Unbranded) 58. Paper Bags (Unbranded) 59. Zipper/Sandwich Bags <p>Food Wrappers/Containers</p> <ol style="list-style-type: none"> 60. Paper Food Wrap 61. Paper/Foil/Composite Wrap 62. Plastic Wrap 63. Polystyrene (foam) Trays 64. Polystyrene (foam) Clamshells 65. Paper Clamshells 66. Other Material Trays <p>Other Packaging</p> <ol style="list-style-type: none"> 67. Plastic Packaging (Other) 68. Plastic/Composite (Other) 69. Foil Materials/Foil Pieces 70. Misc. Paper 71. Misc. Plastic 72. Misc. Boxboard 73. Misc. Cardboard 74. Misc. Glass 75. Vehicle and Metal Road Debris 76. Tire and Rubber Debris 77. Home Articles 78. Organic Waste (Food Waste) 79. Clothing, textile or Other Cloth 80. Bagged Pet Waste 81. Urine Bottles 82. Cosmetics <p><i>...list continued on next page.....</i></p>
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Medical Waste

83. Disposable Gloves
84. Masks
85. Disinfecting Wipes
86. Hand Sanitizer Bottles
87. Other

Construction Debris

88. Survey Stakes, Silt Fencing
89. Lumber/Plywood/Gyproc
90. Asphalt Shingles
91. Other

Small Litter Categories**Small Litter**

1. Cigarette Butts/Debris
2. Other Tobacco
3. Metal (Not Aluminum)
4. Aluminum Foil/Debris
5. Glass
6. Paper
7. Plastic Film
8. Bottle Caps
9. Hard Plastic
10. Straws
11. Candy Packaging/Wrappers
12. Rubber
13. Polystyrene (Foam) Packaging Materials
14. Other Polystyrene Debris
15. Other Material
16. Chewing Gum

Appendix B – Survey Locations

<u>No.</u>	<u>Site</u>	<u>Coordinates</u>	<u>County</u>	<u>Setting</u>
1	Wilmot	46.00698, -62.58219	Kings	Rural
2	Orwell	46.15926, -62.83931	Kings	Rural
3	Peters Road	46.06757, -62.55896	Kings	Rural
4	Avondale	46.24753, -62.83034	Queens	Rural
5	Morell	46.41615, -62.70388	Kings	Urban
6	Sturgeon	46.11100, -62.52981	Kings	Rural
7	Hazelbrook	46.21929, -62.98410	Queens	Rural
8	Dunstaffnage	46.32453, -63.02917	Queens	Rural
9	Rte 246 – Stanchel	46.32098, -63.46643	Queens	Rural
10	Primrose	46.29492, -62.54858	Kings	Rural
11	Fortune	46.34788, -62.38125	Kings	Rural
12	Five Houses	46.40425, -62.52842	Kings	Rural
13	St Peters	46.41751, -62.57680	Kings	Urban
14	Lower Montague	46.16352, -62.56492	Kings	Rural
15	Cardigan	46.2357, -62.61975	Kings	Urban
16	Souris	46.35852, -62.28650	Kings	Rural
17	Kilmuir	46.11999, -62.66687	Kings	Rural
18	Pooles Corner	46.21218, -62.65110	Kings	Urban
19	48 Road	46.25587, -62.71103	Kings	Rural
20	Vernon	46.20204, -62.85672	Kings	Urban
21	St. Roch	46.91601, -64.04549	Prince	Rural
22	St Peters Road	46.29197, -63.08531	Queens	Urban
23	Rte 104 – Indian River	46.47658, -63.68383	Prince	Rural
24	Rte 150	46.82358, -64.12141	Prince	Rural
25	Rte 11 – Abram’s Village	46.45780, -64.08072	Prince	Urban
26	Stratford Rd	46.22617, -63.10313	Queens	Urban
27	Rte 142	46.72209, -64.13985	Prince	Rural
28	Rte 2 – Springfield	46.38558, -63.51279	Queens	Rural
29	Rte 2 – Up From Bloomfield Corner	46.76579, -64.17716	Prince	Urban
30	Rte 224 – St Ann	46.43475, -63.40185	Queens	Rural
31	Brookfield	46.33022, -63.29401	Queens	Rural
32	Brackley Point Road	46.29129, -63.13892	Queens	Urban
33	Desable	46.19921, -63.41925	Queens	Rural
34	Inverness/Portage	46.65806, -64.04645	Prince	Rural
35	Kensington	46.44001, -63.63891	Prince	Urban
36	Kinkora	46.32254, -63.59432	Prince	Urban
37	Rte 2 – Summerside	46.42294, -63.78765	Prince	Urban
38	Central St – Summerside	46.40601, -63.78816	Prince	Urban
39	Miscouche	46.43198, -63.86481	Prince	Urban
40	New London	46.46423, -63.51210	Queens	Rural
41	St. Hubert	46.50409, -64.03771	Prince	Rural
42	Rte 12 – Poplar Grove	46.64741, -63.94984	Prince	Urban
43	Cornwall	46.22743, -63.22363	Queens	Urban
44	North Tryon	46.25311, -63.54473	Prince	Rural
45	Rte 320 - Summerville	46.22240, -62.75649	Kings	Rural
46	University Ave & Belvedere Ave.	46.25939, -63.14352	Queens	Urban

Appendix C – Average unites per Site (100 meters both sides)

Product	2002	2003	2004	2005	2009	2010	2022
Cups	14.58	19.02	15.64	13.72	7.5	10.2	5.7
Lids	11.29	14.91	12.8	12	4.46	6.91	3.5
Straws	5.51	5.31	5.13	5.13	1.61	2.96	1
Paper Pkg.	2.31	2.36	7.69	6.24	1.83	0.37	1.4
Plastic Pkg.	0.33	0.44	3.27	0.46	0.98	1.33	0.7
Foil Pkg.	3.47	1.38	2.82	3.37	.85	1.5	0.6
Styrofoam Pkg.	0.4	0.09	0.47	0	0	0	0.4
Sauce Pkg.	1.58	2.31	2	1.8	1	2.11	0.4
Napkin	3.02	2.16	2	1.8	1	2.11	0.02
Cutlery	1.13	0.91	0.76	0.87	0	0	0.1
Cap					2.54	2.57	0.2
Can	2.78	3.49	2.47	1.63	4.76	3.39	7.32
Plastic Bottle	2.56	3.93	4.13	3.5	3.57	3.3	2.97
Glass Bottle	2.18	4.56	4.44	6.7	2.94	0.98	0.52
Carton	0.69	0.53	0.16	0.5	0.04	0	0.02
Chocolate	4.07	4.09	2.53	3.37	1.09	1.91	1.5
Gum Wrapper	1.51	2.2	2.16	1.48	0.85	1.20	0.21
Chip Bag	2.62	3.49	3.33	2.7	1.15	1.43	1.1
Candy Wrap	2.84	5.51	5.2	4.41	0.28	0	0.97
Cigarette Pack	4.58	5.16	8.6	10.96	2.72	2.50	1.23
Tetra Pac	0.33	0.33	0.42	0.15	0.15	0.17	0
Other Beverages	0.13	0	0.18	0	1.11	0	0.1
Plastic Bag	2.6	5.71	5.6	4.22	1.61	1.59	1.71
Cardboard	2.84	4.93	4.16	2.43	1.09	0.80	0.73
Paper	14.18	21.44	17.96	20.91	1.50	0.67	5.39
Plastic	18.16	25.67	21.44	23.72	3.26	1.93	10.5
Glass	3.11	3.67	3.78	0.72	0.26	0.26	0.08
Styrofoam	3.16	4.78	4.16	5.52	0.70	2.33	0.69
Cloth	1.82	2.16	1.42	1.89	0.63	0.57	1.06
Metal	4.02	5.09	3	3.09	0.91	0.41	0.63
C&D Debris	1.58	2.78	6.87	5.65	0.09	0.02	2.08
Car Parts	2.82	3.31	5.64	3.07	1.57	1.72	1
Garbage Bags	0.04	0.02	0.29	0.02	0	0	0.04
Other					0.65	4.80	
TOTAL (Without Butts)	122.24	161.76	160.76	152.21	52.94	61.09	82.54
Cigarette Butts	461.33	708	773	604	1790	597	1202

Appendix D – Site-by-Site Comparison

No.	Site	2002	2003	2004	2005	2009	2010	2022
1	Wilmot	159	149	140	122	16	73	116
2	Orwell	104	168	64	62	56	70	16
3	Peters Road	268	225	192	151	29	44	24
4	Avondale	22	27	37	63	28	12	41
5	Morell	9	34	64	19	24	20	55
6	Sturgeon	30	52	78	75	31	49	118
7	Hazelbrook	348	487	485	387	116	45	37
8	Dunstaffnage	104	108	113	195	83	47	135
9	Rte 246 – Stanchel	16	59	38	43	36	27	38
10	Primrose	152	119	132	131	57	40	147
11	Fortune	175	203	220	117	56	66	68
12	Five Houses	13	177	104	111	10	78	130
13	St Peters	137	105	71	107	43	118	36
14	Lower Montague	275	338	179	86	75	109	143
15	Cardigan	97	94	122	47	23	54	68
16	Souris	182	130	208	162	44	23	98
17	Kilmuir	143	171	108	96	37	58	44
18	Pooles Corner	60	214	314	219	83	142	226
19	48 Road	55	219	136	175	74	47	68
20	Vernon	207	124	376	0	81	80	99
21	St. Roch	44	91	163	146	22	57	57
22	St Peters Road	62	210	270	132	62	39	159
23	Rte 104 – Indian River	54	42	49	33	9	16	44
24	Rte 150	37	103	152	185	15	61	104
25	Rte 11 – Abram’s Village	17	82	124	97	30	21	36
26	Stratford Rd	343	477	788	540	120	206	59
27	Rte 142	37	134	94	161	33	45	84
28	Rte 2 – Springfield	144	61	94	137	48	63	105
29	Rte 2 – Up From Bloomfield Corner	36	396	92	159	38	73	180
30	Rte 224 – St Ann	89	35	29	60	38	26	25
31	Brookfield	233	312	170	293	193	123	47
32	Brackley Point Road	198	183	247	117	57	68	46
33	Desable	168	233	116	125	47	32	39
34	Inverness/Portage	120	226	132	179	59	45	66
35	Kensington	226	170	152	127	27	32	122
36	Kinkora	109	141	146	86	9	5	51
37	Rte 2 – Summerside	100	167	46	172	40	82	49
38	Central St – Summerside	90	299	25	96	75	41	5
39	Miscouche	107	102	50	90	16	69	87
40	New London	192	67	87	87	44	103	156
41	St. Hubert	225	205	170	231	48	101	58
42	Rte 12 – Poplar Grove	22	47	124	153	93	60	76
43	Cornwall	156	116	578	392	128	84	153
44	North Tryon	71	145	110	91	29	55	3
45	Rte 320 - Summerville	65	31	45	289	65	28	74
46	University Ave & Belvedere Ave.	-	-	-	75	86	73	165

Appendix E – Ranking of Survey Sites

<u>No.</u>	<u>Site</u>	<u>County</u>	<u>Setting</u>	<u>2010 Litter Count</u>	<u>Rank</u>
18	Pooles Corner	Kings	Urban	142	1
29	Rte 2 – Up From Bloomfield Corner	Prince	Urban	73	2
46	University Ave & Belvedere Ave.	Queens	Urban	73	3
22	St Peters Road	Queens	Urban	39	4
40	New London	Queens	Rural	103	5
43	Cornwall	Queens	Urban	84	6
10	Primrose	Kings	Rural	40	7
14	Lower Montague	Kings	Rural	109	8
8	Dunstaffnage	Queens	Rural	47	9
12	Five Houses	Kings	Rural	78	10
35	Kensington	Prince	Urban	32	11
6	Sturgeon	Kings	Rural	49	12
1	Wilmot	Kings	Rural	73	13
28	Rte 2 – Springfield	Queens	Rural	63	14
24	Rte 150	Prince	Rural	61	15
20	Vernon	Kings	Urban	80	16
16	Souris	Kings	Rural	23	17
39	Miscouche	Prince	Urban	69	18
27	Rte 142	Prince	Rural	45	19
42	Rte 12 – Poplar Grove	Prince	Urban	60	20
45	Rte 320 - Summerville	Kings	Rural	28	21
11	Fortune	Kings	Rural	66	22
15	Cardigan	Kings	Urban	54	23
19	48 Road	Kings	Rural	47	24
34	Inverness/Portage	Prince	Rural	45	25
26	Stratford Rd	Queens	Urban	206	26
41	St. Hubert	Prince	Rural	101	27
21	St. Roch	Prince	Rural	57	28
5	Morell	Kings	Urban	20	29
36	Kinkora	Prince	Urban	5	30
37	Rte 2 – Summerside	Prince	Urban	82	31
31	Brookfield	Queens	Rural	123	32
32	Brackley Point Road	Queens	Urban	68	33
17	Kilmuir	Kings	Rural	58	34
23	Rte 104 – Indian River	Prince	Rural	16	35
4	Avondale	Queens	Rural	12	36
33	Desable	Queens	Rural	32	37
9	Rte 246 – Stanchel	Queens	Rural	27	38
7	Hazelbrook	Queens	Rural	45	39
13	St Peters	Kings	Urban	118	40
25	Rte 11 – Abram's Village	Prince	Urban	21	41
30	Rte 224 – St Ann	Queens	Rural	26	42
3	Peters Road	Kings	Rural	44	43
2	Orwell	Kings	Rural	70	44
38	Central St – Summerside	Prince	Urban	41	45
44	North Tryon	Prince	Rural	55	46

