



Comhshaol, Pobal agus Rialtas Áitiúil  
Environment, Community and Local Government



# THE NATIONAL LITTER POLLUTION MONITORING SYSTEM

## LITTER MONITORING BODY

### SYSTEM RESULTS 2014

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**Please Note: Individual percentage values illustrated in figures throughout this document are rounded and may, therefore, not total 100%.**



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1. The Department of the Environment, Community and Local Government; and
2. The local authorities that provided us with their Litter Survey Results.



## OVERVIEW OF THE NATIONAL LITTER POLLUTION MONITORING SYSTEM

TOBIN Consulting Engineers were appointed to act as the Litter Monitoring Body (LMB) by the Department of the Environment, Community and Local Government, for the period May 1<sup>st</sup> 2014 to April 30<sup>th</sup> 2015, to continue the development of the National Litter Pollution Monitoring System (NLPMS). The data produced by the NLPMS surveys allow local authorities to gauge:

- ◆ the extent and the severity of litter pollution in each local authority area;
- ◆ the types, most likely sources and causes of litter pollution;
- ◆ the changes in litter levels from location to location and over time;
- ◆ the location of litter black spots; and
- ◆ the impact of new anti-litter measures.

Under the national monitoring system, the **extent** and **severity** of litter pollution is measured using a Litter Pollution Index (LPI), which is a scale of 1 to 5 as described below:

1. Unpolluted or litter free;
2. Slightly polluted;
3. Moderately polluted;
4. Significantly polluted; and
5. Grossly polluted.

Prescribed standards for each category of the LPI have been circulated to all local authorities in the form of area cleanliness rating photographs to ensure a consistent approach nationwide to measuring the extent of litter pollution in the surveyed areas. Examples of those photographs are contained in Appendix B of this report together with an explanation of each LPI. They are also available via the litter website ([www.litter.ie](http://www.litter.ie)).

The area cleanliness rating<sup>1</sup> is then used in the calculation of the Litter Pollution Index for each survey location. The use of photographs ensures that area cleanliness ratings are consistently assigned by all local authorities. In 2014, the Litter Monitoring Body continued to provide training to local authorities, thus ensuring that a consistent methodology for surveying is applied across the country to guarantee that reliable and comparable data is compiled.

A key feature of the national monitoring system is its focus on monitoring in areas that are polluted or are likely to be polluted i.e. where potential sources of litter are located. To this end, local authorities select the locations for their surveys using maps produced by specially designed Litter GIS software, as follows:

- ◆ 40% in “high risk” locations (e.g. in town or city centres) where the concentration of potential litter sources is greatest;
- ◆ 40% in random potential litter generating areas - chosen by the Litter GIS software; and

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<sup>1</sup> The Area Cleanliness Rating is determined using a visual inspection of the survey area and rating it according to prescribed standards.

- ◆ 20% in locations chosen by local authorities, based on local knowledge of litter pollution.

The national monitoring system is therefore biased towards measuring the nature and extent of litter pollution in those areas most likely to be littered i.e. largely in urban areas.

Note that some local authorities do not have the resources to apply Litter GIS. In these instances local authorities randomly choose 40% of their locations by identifying random areas on maps or by using a random function tool on Arc GIS.

Under the national monitoring system, the **type** and **origin** of litter pollution is also measured by counting litter items while they remain on the ground. These surveys are called Litter Quantification Surveys. Litter Quantification Surveys are completed in the most heavily polluted areas (i.e. the clusters or hotspots identified by the Litter Generation Potential Maps) and as long after cleansing as possible to further increase the chances of a large sample size. The statistics obtained during the surveys are divided into a number of litter categories including, food, packaging, paper and plastic.

### Training

In 2014 the Litter Monitoring Body continued to provide training, where required, on the implementation of the NLPMS to local authorities.

### Audit

The Litter Monitoring Body undertook on-site audits of five local authorities to ensure that the system is being implemented as designed. The local authorities audited were:

- ◆ Carlow County Council;
- ◆ Carlow Town Council;
- ◆ Athlone Town Council;
- ◆ Westmeath County Council; and
- ◆ Roscommon County Council.

The Audit Report is available at [www.litter.ie](http://www.litter.ie). The audits have revealed that, for the most part, these local authorities are implementing the system correctly.

The Litter Monitoring Body also completed a number of additional ‘spot check’ audits on the 2014 results received, whereby photographs of survey locations received from local authorities are cross checked with the awarded LPI. These audits revealed that a small number of local authorities were not assigning the correct area cleanliness rating to an area, specifically in assigning an area as “unpolluted or litter free” (LPI 1) that should be considered “slightly polluted” (LPI 2). In some cases, however, the area cleanliness rating assigned to an area by the local authority was a higher index than appropriate.

These audits allowed for reassessments to Litter Pollution Surveys (LPS) in collaboration with the relevant local authority, where necessary, to apply a revised determination of the LPI assigned to the area under study.

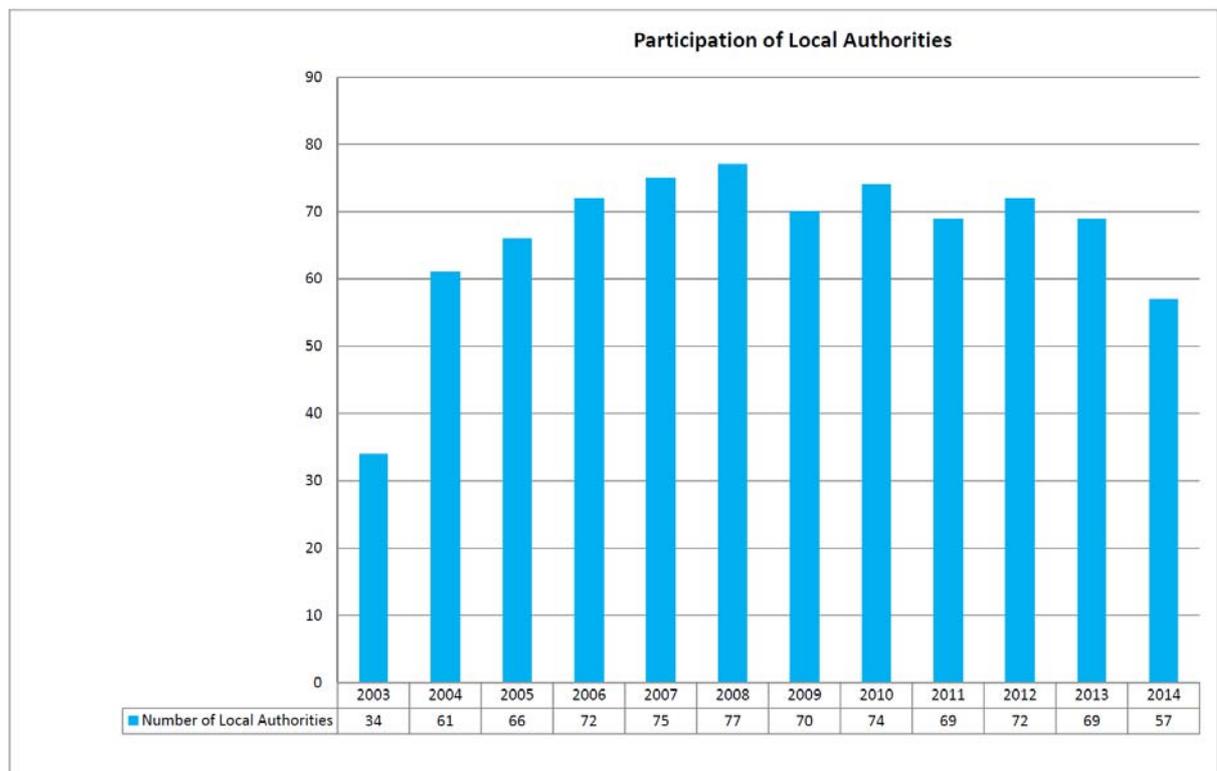
It is considered for future year’s surveys that local authorities should continue to submit photographs with the Litter Pollution Surveys (LPS); this will allow the Litter Monitoring

Body to continually audit the System. The Litter Monitoring Body is satisfied that the results outlined in this report are accurate and reflective of the country as a whole.

## CHAPTER 1: SUMMARY SYSTEM'S SURVEY RESULTS FOR 2014

This report is based on an analysis of data received from 57 local authorities<sup>2</sup>. It is noted that the Local Government Reform Act came into effect in 2014 which has reformed the existing structure of local authorities including the abolition of all town councils and the merging of some county councils. As a result, some local authorities have submitted their 2014 survey results to represent their entire county as one local authority as opposed to previous years i.e. submission of county council and town council results separately; giving a perceived lower overall participation.

Figure 1-1 shows the participation of local authorities since 2003.



**Figure 1-1 Participation of Local Authorities 2003-2014**

The 2014 survey results provide reliable information on the extent, composition and causes of litter pollution in Ireland and facilitate analysis of any emerging trends in litter pollution. The results allow a full and more comprehensive comparison of year-on-year developments with regard to combating litter pollution.

This National Litter Pollution Monitoring System has set out to answer three key questions:

1. How littered is the country at local and national level?

<sup>2</sup> 55 Local Authorities submitted Litter Quantification Surveys, one of which did not submit Litter Pollution Surveys. 56 Local Authorities submitted Litter Pollution Surveys, two of which did not submit Litter Quantification Surveys. Therefore results have been received from 57 Local Authorities. Further details are provided in Appendix A.

2. What are the main constituent elements of litter pollution?
3. What are the main causes of litter pollution?

### **How littered is the country at local and national level?**

- ◆ 12.3% of areas surveyed were unpolluted (LPI 1) in 2014. The percentage of unpolluted (LPI 1) areas has increased by 0.1%, from 12.2% in 2013.
- ◆ 64.4% of all areas surveyed were slightly polluted (LPI 2), a 1.6% increase on 2013.
- ◆ The percentage of moderately polluted areas (LPI 3) has decreased by 1.1%, from 21.0% in 2013 to 19.9% in 2014.
- ◆ The percentage of significantly polluted areas (LPI 4) has decreased slightly by 0.3%, from 3.3% in 2013 to 3.0% in 2014.
- ◆ Grossly polluted areas (LPI 5) have decreased by 0.3%, from 0.6% in 2013 to 0.3% in 2014.

### **What are the main constituent elements of litter pollution?**

- ◆ Cigarette related litter (54.63%), food related litter (16.25%), packaging items (12.42%), sweet related litter (7.41%) and paper items (5.21%) were the main litter constituents identified nationally.

### **What are the main causes of litter pollution?**

- ◆ Passing pedestrians (40.98%), passing motorists (18.68%), retail outlets (10.26%), places of leisure/entertainment (6.11%), gathering points (5.47%), schools / school children (4.80%) and fast food outlets (4.68%) were identified as the main causative factors of litter nationally.

**CHAPTER 2: HOW LITTERED IS THE COUNTRY?**

The 2014 dataset is obtained from 4,163 litter pollution surveys. The national monitoring system results indicate that the percentage of unpolluted (LPI 1) areas has increased slightly from 12.2% in 2013 to 12.3% in 2014.

A comparison of the results from 2013 to 2014 indicates that the percentage of slightly polluted (LPI 2) areas has increased from 62.8% in 2013 to 64.4% in 2014. The percentage of moderately polluted areas (LPI 3) has decreased by 1.1%, from 21.0% in 2013 to 19.9% in 2014. The percentage of significantly polluted areas (LPI 4) has decreased slightly by 0.3%, from 3.3% in 2013 to 3.0% in 2014. The percentage of grossly polluted (LPI 5) areas has decreased by 0.3% from 0.6% in 2013 to 0.3% in 2014.

The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together has increased by 1.7% from 2013 to 2014, thus demonstrating there has been a slight decrease in litter pollution from 2013 to 2014.

Figure 2-1 below compares 2013 and 2014 litter pollution survey results.

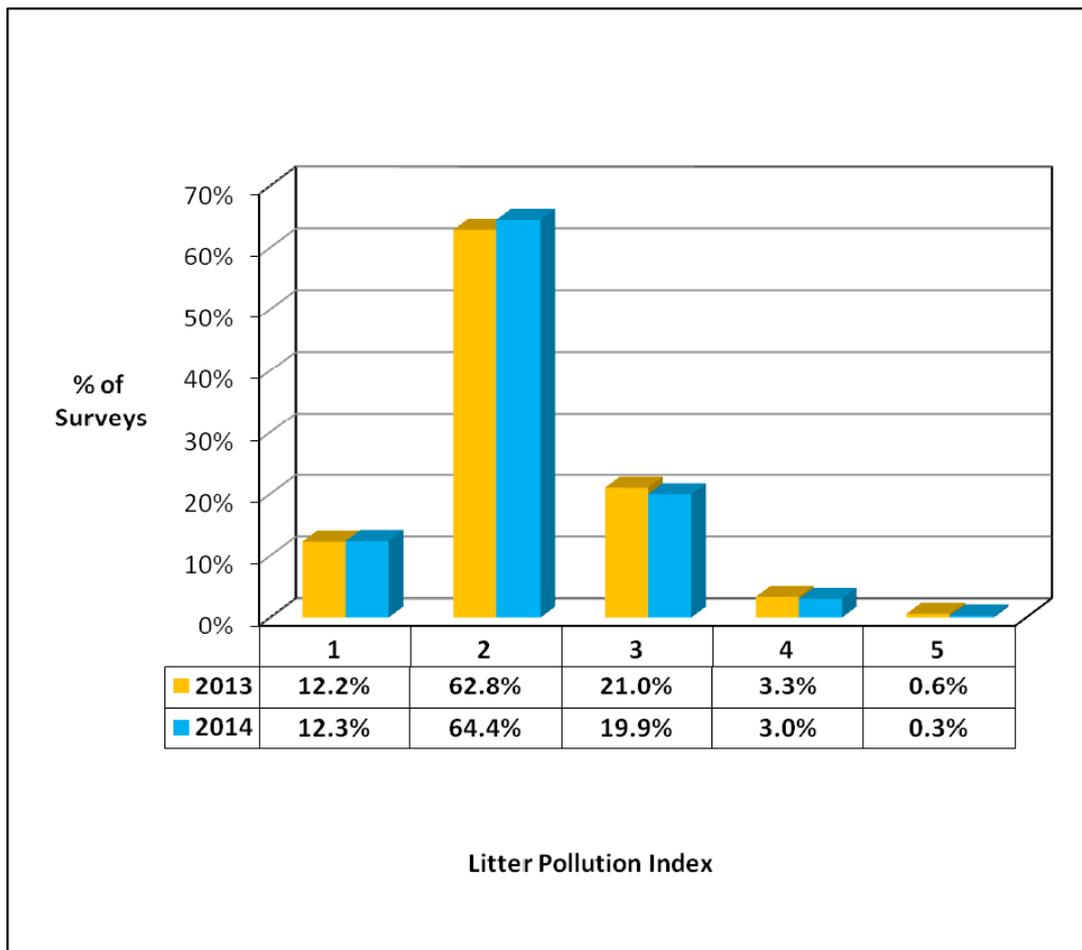


Figure 2-1 Comparison of Litter Pollution Indices (LPI) 2013 – 2014

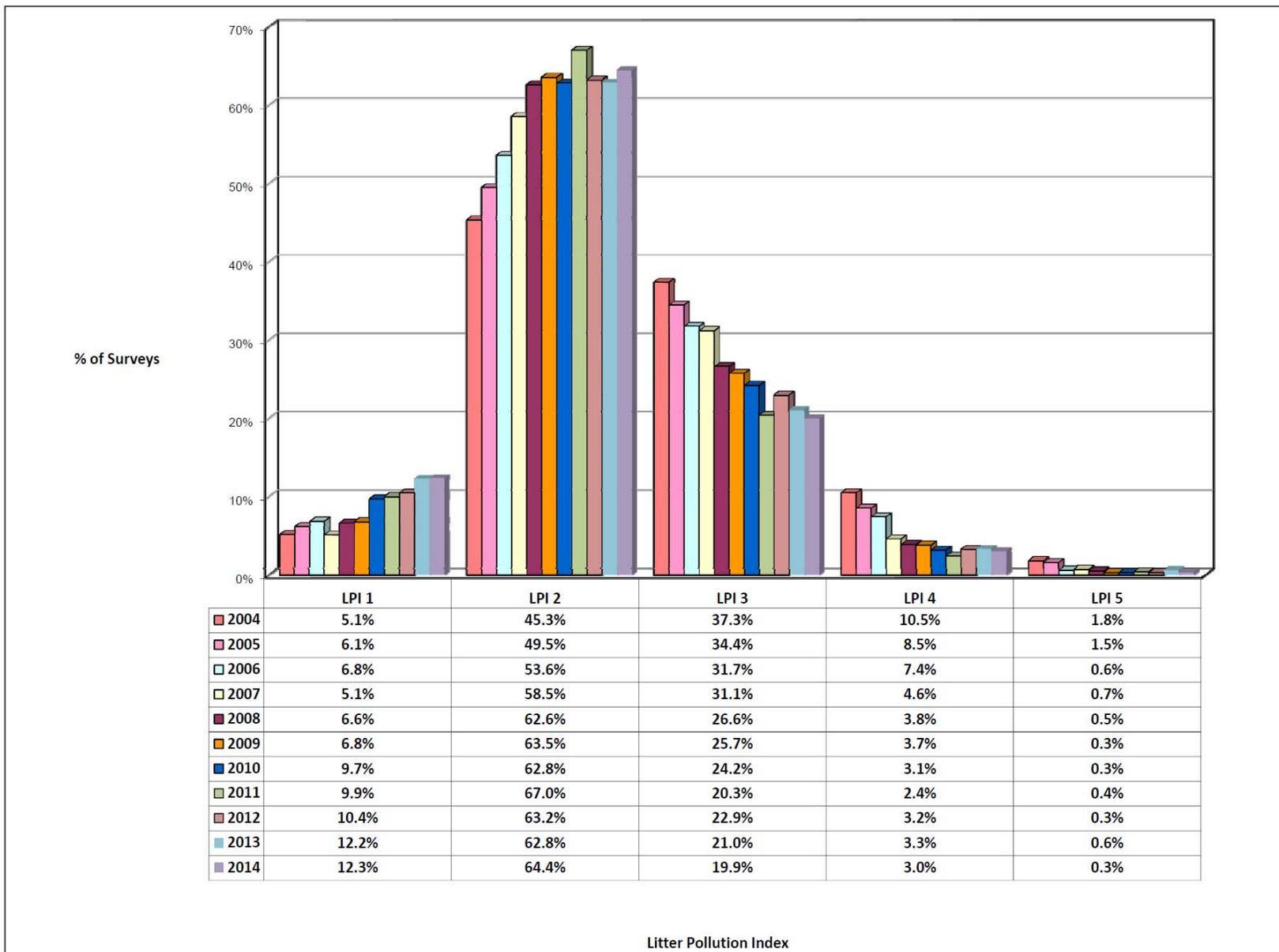


Figure 2-2 Litter Pollution Index 2004-2014

Figure 2-2 illustrates the Litter Pollution Index ratings from 2004 to 2014. The percentage of unpolluted (LPI 1) areas has increased from 5.1% in 2004 to 12.3% in 2014 (a 7.2% increase). The 2014 results had the largest percentage of unpolluted areas ever recorded by the system.

Figure 2-2 also shows the percentage of slightly polluted (LPI 2) areas has increased from 45.3% to 64.4% between 2004 and 2014 (an increase of 19.1%). The number of moderately polluted (LPI 3) areas, significantly polluted (LPI 4) areas and grossly polluted (LPI 5) areas showed a steady decrease between 2004 and 2014. In the 2014 results, these areas are at the lowest percentage ever recorded by the system.

A comparison of urban and rural local authorities is presented in Figure 2-3 below. In 2014, 12.1% of urban areas and 12.6% of rural areas were unpolluted (LPI 1).

The percentage of slightly polluted areas (LPI 2) experienced in urban areas is 63.7%, and in rural areas is 65.5%. The percentage of moderately polluted (LPI 3) areas experienced in urban areas is 20.5% with 19.2% experienced in rural areas. The percentage of significantly polluted (LPI 4) areas is 3.4% in urban areas and 2.4% in rural areas. Grossly polluted (LPI 5) areas are 0.3% in both urban and rural areas. Please refer to Figures 5-5 and 5-6 for further comparison of urban and rural litter pollution data from 2013 to 2014.

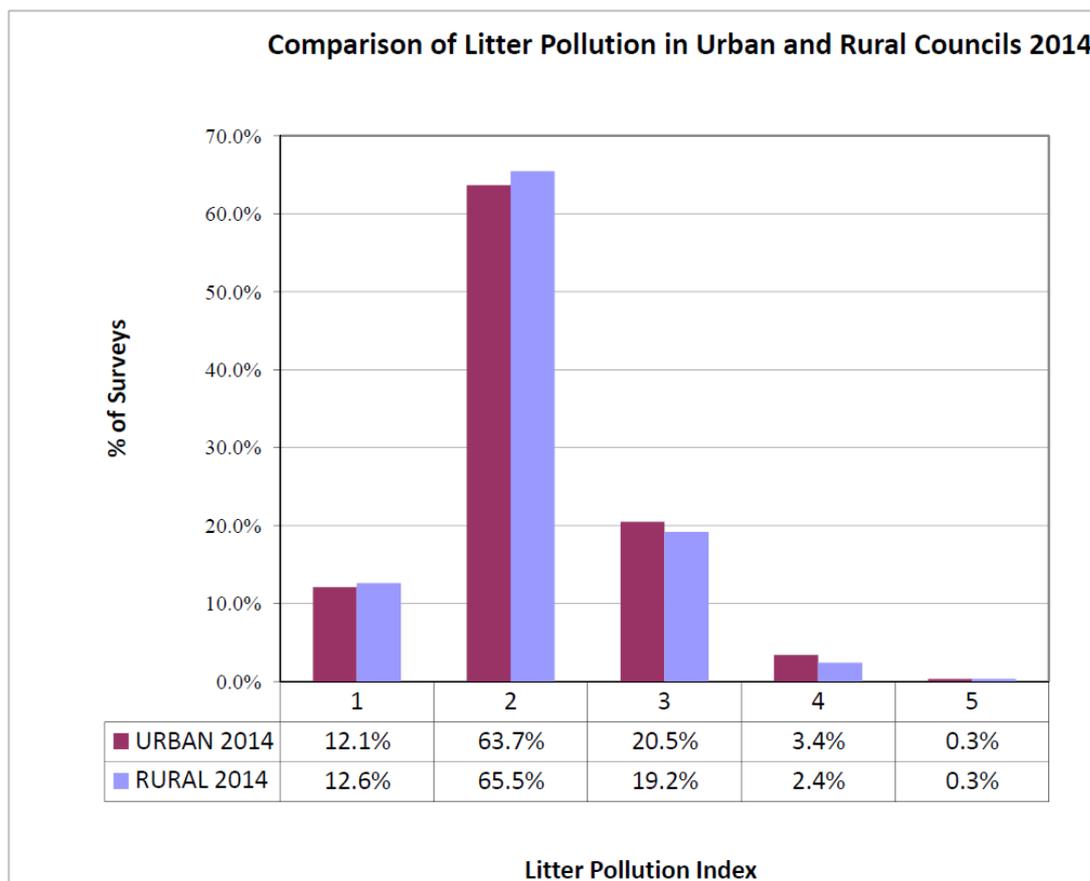


Figure 2-3 Comparison of Litter Pollution within Largely Urban and Rural Areas in 2014

### CHAPTER 3: WHAT ARE THE MAIN CONSTITUENT ELEMENTS OF LITTER POLLUTION?

Local authorities also carried out **litter quantification surveys** (or item counts) to determine the composition of litter in their areas. A breakdown of the main constituents of litter pollution is highlighted in Figure 3-1 below:

From the data below, it can be seen that:

- ◆ **cigarette related litter** continues to constitute the highest percentage (**54.63%**) of litter in the locations surveyed – this is comprised mainly of cigarette ends which constitute **50.20%** of all litter items nationally.
- ◆ **food related litter**, at **16.25%**, is the second largest category of litter pollution recorded. **Chewing gum** is the single largest litter component in the food related litter category, and also the second largest component nationally, comprising **15.03%** of all litter recorded in the litter quantification surveys carried out in 2014. See Table 3-1, on page 12, for a comprehensive breakdown of this category.
- ◆ **packaging litter (12.42%)** is the third largest component of national litter pollution recorded. Bottle caps (**1.44%**), bottles (**1.32%**) and bags and wrappers (**1.26%**) are the main litter items in this category.

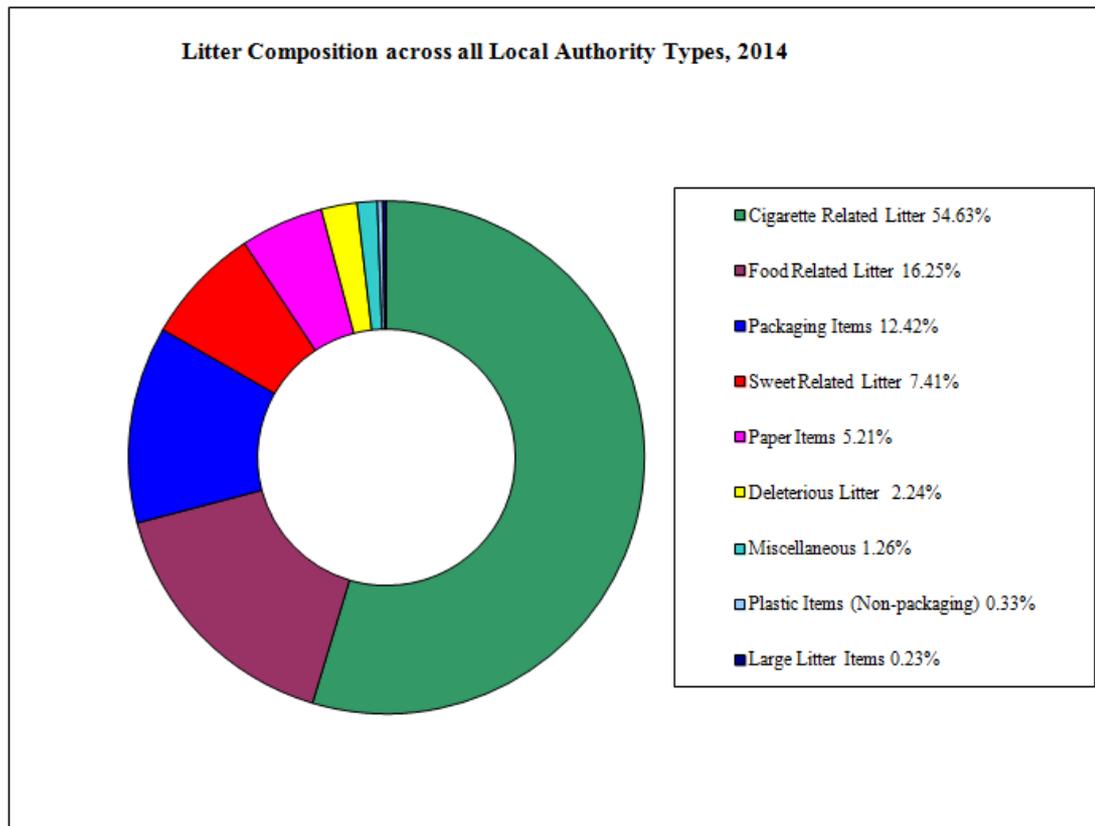


Figure 3-1 Composition of Litter in 2014 Broken Down into Main Categories

### 3.1 Comparison of Litter Quantification Surveys 2013 – 2014

Figure 3-2 below compares the results of the 2013 and 2014 surveys.

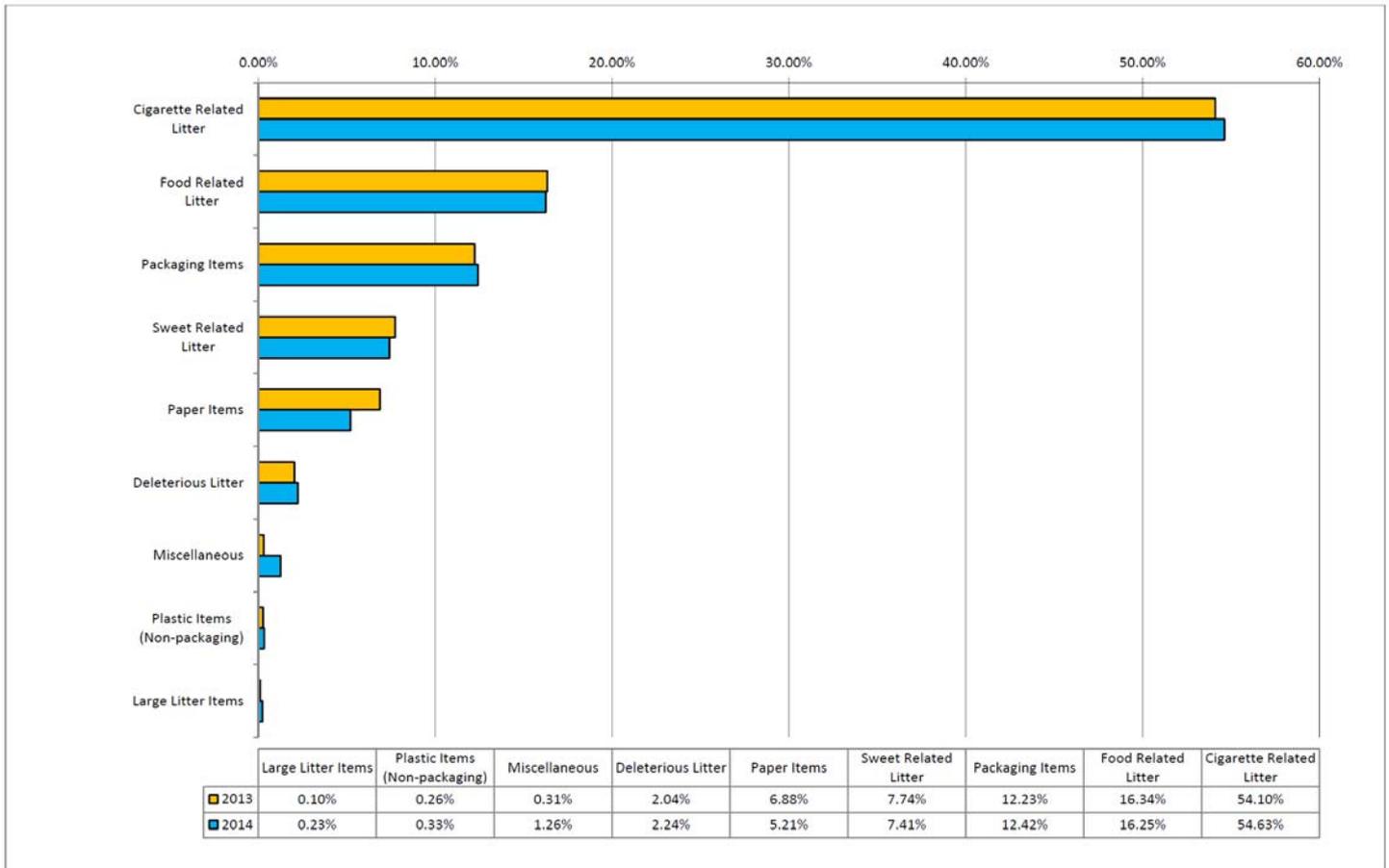


Figure 3-2 Comparison of National Litter Composition from 2013 to 2014

A comparison of the results of Litter Quantification Surveys carried out in 2013 and 2014 shows a relatively similar composition of litter. However, analysis reveals some slight differences in the relative quantities of certain components.

- ◆ The percentage of cigarette related litter has increased by 0.53%.
- ◆ The percentage of food related litter has decreased by 0.09% since 2013.
- ◆ The percentage of packaging items increased by 0.19% since 2013.
- ◆ The percentage of sweet related litter items decreased 0.33% since 2013.
- ◆ The percentage of paper items decreased by 1.67% since 2013.

- ◆ There has also been an increase in deleterious litter (0.20%), miscellaneous litter (0.95%), plastic items (non packaging) (0.07%) and large litter items (0.13%) since 2013.

Table 3-1 on the following page details the composition of litter in 2013 and 2014.

The greatest percentage change in litter composition is in the paper items litter category which has decreased by 1.67% in 2014. This decrease can be attributed to a decrease in receipts (0.20%), tissues (0.02%), bank slips (0.25%), other paper items (0.83%), letters, envelopes and cards (0.50%) and newspapers (0.04%).

Table 3-1 overleaf also details the 0.53% increase in cigarette related litter experienced in 2014, specifically highlighting increases in cigarette ends and matches in 2014 when compared to 2013 figures.

Table 3-1 overleaf also details the 0.19% increase in packaging items litter experienced in 2014, specifically highlighting increases in bottle caps (0.21%), bottles (0.19%), beverage cans – non alcoholic (0.03%), other paper packaging (0.17%), beverage bottles – non alcoholic (0.18%), drink cartons (0.09%) and beverage bottles – alcoholic (0.08%), bags (0.02%), jars and other containers (0.09%), food cans (0.03%), bags – other (e.g. fertiliser) (0.05%) and plastic sheeting (e.g. silage) (0.01%), when compared to 2013 figures.

Refer to Appendix C for “Details of Litter Composition from 2013-2014 according to Local Authority Type”.

| Detailed National Litter Composition 2014 |  |        | Detailed National Litter Composition 2013 |  |        |
|---|--|--------|---|--|--------|
| Cigarette Related Litter 54.63%           | Cigarette ends                                   | 50.20% | Cigarette Related Litter 54.10%           | Cigarette ends                                   | 49.90% |
|   | Cigarette boxes and wrappers                     | 1.85%  |   | Cigarette boxes and wrappers                     | 1.94%  |
|   | Matches  | 2.32%  |   | Matches  | 1.77%  |
|   | Matchboxes and lighters                          | 0.26%  |   | Matchboxes and lighters                          | 0.49%  |
| Food Related Litter 16.25%                | Chewing Gum                                      | 15.03% | Food Related Litter 16.34%                | Chewing Gum                                      | 15.32% |
|   | Fruit/ vegetables                                | 0.31%  |   | Fruit/ vegetables                                | 0.28%  |
|   | Fast-food remnants                               | 0.29%  |   | Fast-food remnants                               | 0.14%  |
|   | Remnants of confectionery food items             | 0.26%  |   | Remnants of confectionery food items             | 0.11%  |
|   | Bread/ biscuits                                  | 0.18%  |   | Bread/ biscuits                                  | 0.25%  |
|   | Other food items                                 | 0.18%  |   | Other food items                                 | 0.23%  |
|   | Bottle Caps                                      | 1.44%  |   | Bottle Caps                                      | 1.23%  |
|   | Bottles  | 1.32%  |   | Bottles  | 1.13%  |
|   | Bags and wrappers                                | 1.26%  |   | Bags and wrappers                                | 1.32%  |
|   | Beverage Cans - Non-alcoholic                    | 0.93%  |   | Beverage Cans - Non-alcoholic                    | 0.90%  |
|   | Drink cups                                       | 0.84%  |   | Drink cups                                       | 0.94%  |
|   | Drink Lids                                       | 0.81%  |   | Drink Lids                                       | 0.93%  |
|   | Beverage Cans - Alcoholic                        | 0.76%  |   | Beverage Cans - Alcoholic                        | 0.93%  |
|   | Other paper packaging                            | 0.74%  |   | Other paper packaging                            | 0.57%  |
| Packaging Items 12.42%                    | Beverage Bottles - Non-alcoholic                 | 0.71%  | Packaging Items 12.23%                    | Beverage Bottles - Non-alcoholic                 | 0.53%  |
|   | Drinks cartons                                   | 0.67%  |   | Drinks cartons                                   | 0.58%  |
|   | Beverage Bottles - Alcoholic                     | 0.60%  |   | Beverage Bottles - Alcoholic                     | 0.52%  |
|   | Other plastic packaging                          | 0.42%  |   | Other plastic packaging                          | 0.78%  |
|   | Tin foil (not sweet wrappers)                    | 0.31%  |   | Tin foil (not sweet wrappers)                    | 0.32%  |
|   | Bags   | 0.30%  |   | Bags   | 0.28%  |
|   | Cardboard  | 0.27%  |   | Cardboard  | 0.24%  |
|   | Plastic film                                     | 0.23%  |   | Plastic film                                     | 0.23%  |
|   | Bags - shopping bags                             | 0.13%  |   | Bags - shopping bags                             | 0.14%  |
|   | Jars and other containers                        | 0.13%  |   | Jars and other containers                        | 0.04%  |
|   | Boxes  | 0.12%  |   | Boxes  | 0.09%  |
|   | Lids (e.g. from bottles, jars)                   | 0.09%  |   | Lids (e.g. from bottles, jars)                   | 0.22%  |
|   | Other metal litter items                         | 0.09%  |   | Other metal litter items                         | 0.11%  |
|   | Food cans  | 0.08%  |   | Food cans  | 0.05%  |
| Sweet Related Litter 7.41%                | Bags - other (e.g. fertiliser)                   | 0.06%  | Sweet Related Litter 7.74%                | Bags - other (e.g. fertiliser)                   | 0.01%  |
|   | Bubble-wrap                                      | 0.05%  |   | Bubble-wrap                                      | 0.07%  |
|   | Plastic sheeting (e.g. silage)                   | 0.03%  |   | Plastic sheeting (e.g. silage)                   | 0.02%  |
|   | Aeroboard  | 0.01%  |   | Aeroboard  | 0.04%  |
|   | Metal drums                                      | 0.01%  |   | Metal drums                                      | 0.01%  |
|   | Sweet Wrappers (plastic/foil)                    | 3.95%  |   | Sweet Wrappers (plastic/foil)                    | 4.26%  |
|   | Crisp Bags                                       | 1.39%  |   | Crisp Bags                                       | 1.38%  |
|   | Lollipop Sticks (wooden/plastics)                | 1.22%  |   | Lollipop Sticks (wooden/plastics)                | 1.33%  |
|   | Straws   | 0.85%  |   | Straws   | 0.77%  |
|   | Receipts   | 1.55%  |   | Receipts   | 1.75%  |
| Paper Items 5.21%                         | Tissues  | 1.36%  | Paper Items 6.88%                         | Tissues  | 1.38%  |
|   | Tickets (e.g. bus, lottery)                      | 0.81%  |   | Tickets (e.g. bus, lottery)                      | 0.70%  |
|   | Bank slips                                       | 0.53%  |   | Bank slips                                       | 0.78%  |
|   | Other paper items                                | 0.37%  |   | Other paper items                                | 1.20%  |
|   | Flyers and posters                               | 0.32%  |   | Flyers and posters                               | 0.24%  |
|   | Letters, envelopes and cards                     | 0.13%  |   | Letters, envelopes and cards                     | 0.63%  |
|   | Magazines/ brochures                             | 0.08%  |   | Magazines/ brochures                             | 0.08%  |
| Deleterious Litter 2.24%                  | Newspapers                                       | 0.07%  | Deleterious Litter 2.04%                  | Newspapers                                       | 0.11%  |
|   | Dog fouling                                      | 2.14%  |   | Dog fouling                                      | 1.90%  |
|   | Other deleterious items                          | 0.06%  |   | Other deleterious items                          | 0.04%  |
|   | Nappies  | 0.03%  |   | Nappies  | 0.07%  |
|   | Feminine hygiene products                        | 0.01%  |   | Feminine hygiene products                        | 0.01%  |
|   | Municipal Hazardous Waste (e.g. paint, solvents) | 0.00%  |   | Municipal Hazardous Waste (e.g. paint, solvents) | 0.02%  |
| Miscellaneous 1.26%                       | Needles and syringes                             | 0.00%  | Miscellaneous 0.31%                       | Needles and syringes                             | 0.00%  |
|   | Miscellaneous Litter Items                       | 1.26%  |   | Miscellaneous Litter Items                       | 0.31%  |
| Plastic Items (Non-packaging) 0.33%       | Plastic items                                    | 0.33%  | Plastic Items (Non-packaging) 0.26%       | Plastic items                                    | 0.26%  |
|   | Household refuse in bags                         | 0.19%  |   | Household refuse in bags                         | 0.08%  |
| Large Litter Items 0.23%                  | Other large items                                | 0.02%  | Large Litter Items 0.10%                  | Other large items                                | 0.02%  |
|   | Appliances (e.g. fridge)                         | 0.01%  |   | Appliances (e.g. fridge)                         | 0.00%  |
|   | Furniture  | 0.01%  |   | Furniture  | 0.00%  |
|   | Scrap cars                                       | 0.00%  |   | Scrap cars                                       | 0.00%  |

Table 3-1 Detailed National Litter Composition 2013 to 2014

## CHAPTER 4: WHAT ARE THE MAIN CAUSES OF LITTER POLLUTION?

The breakdown of causative factors nationally in 2013 and 2014 for all local authorities is presented in Figures 4-1 and 4-2. It can be seen from these figures that the relative ranking of causative factors is similar from 2013 to 2014, with the greatest difference since 2013 occurring between passing pedestrians (increased by 1.4% since 2013) and gathering points (decreased by 1.1% since 2013).

Figure 4-1 illustrates that:

- ◆ Passing pedestrians continue to constitute the greatest single causative factor of litter pollution, accounting for 41.0% across all local authorities.
- ◆ Passing motorists are the second largest causative factor accounting for 18.7% across all local authority types in 2014.
- ◆ In addition to passing pedestrians, causative factors that have increased from 2013 to 2014 include retail outlets (from 10.0% in 2013 to 10.3% in 2014), places of leisure/entertainment (from 5.9% in 2013 to 6.1% in 2014), schools / school children (from 4.3% in 2013 to 4.8% in 2014), fly-tipping / dumping (from 2.2% in 2013 to 2.5% in 2014), bring banks (from 1.4% in 2013 to 1.8% in 2014), bank / ATM (from 1.1% in 2013 to 1.3% in 2014), construction sites (from 0.2% in 2013 to 0.3% in 2014) and major entertainment events (from 0.1% in 2013 to 0.2% in 2014).
- ◆ Causative factors that have decreased from 2013 to 2014 include passing motorists (from 19.7% in 2013 to 18.7% in 2014), gathering points (from 6.6% in 2013 to 5.5% in 2014), fast-food outlets (from 5.3% in 2013 to 4.7% in 2014), bus stops (from 2.5% in 2013 to 2.1% in 2014), bus/train stations (from 0.7% in 2013 to 0.6% in 2014) and overflowing bins (from 0.4% in 2013 to 0.2% in 2014).
- ◆ Refuse collection/ presentation is the only causative factor assessed to have remained constant since 2013 at 0%.

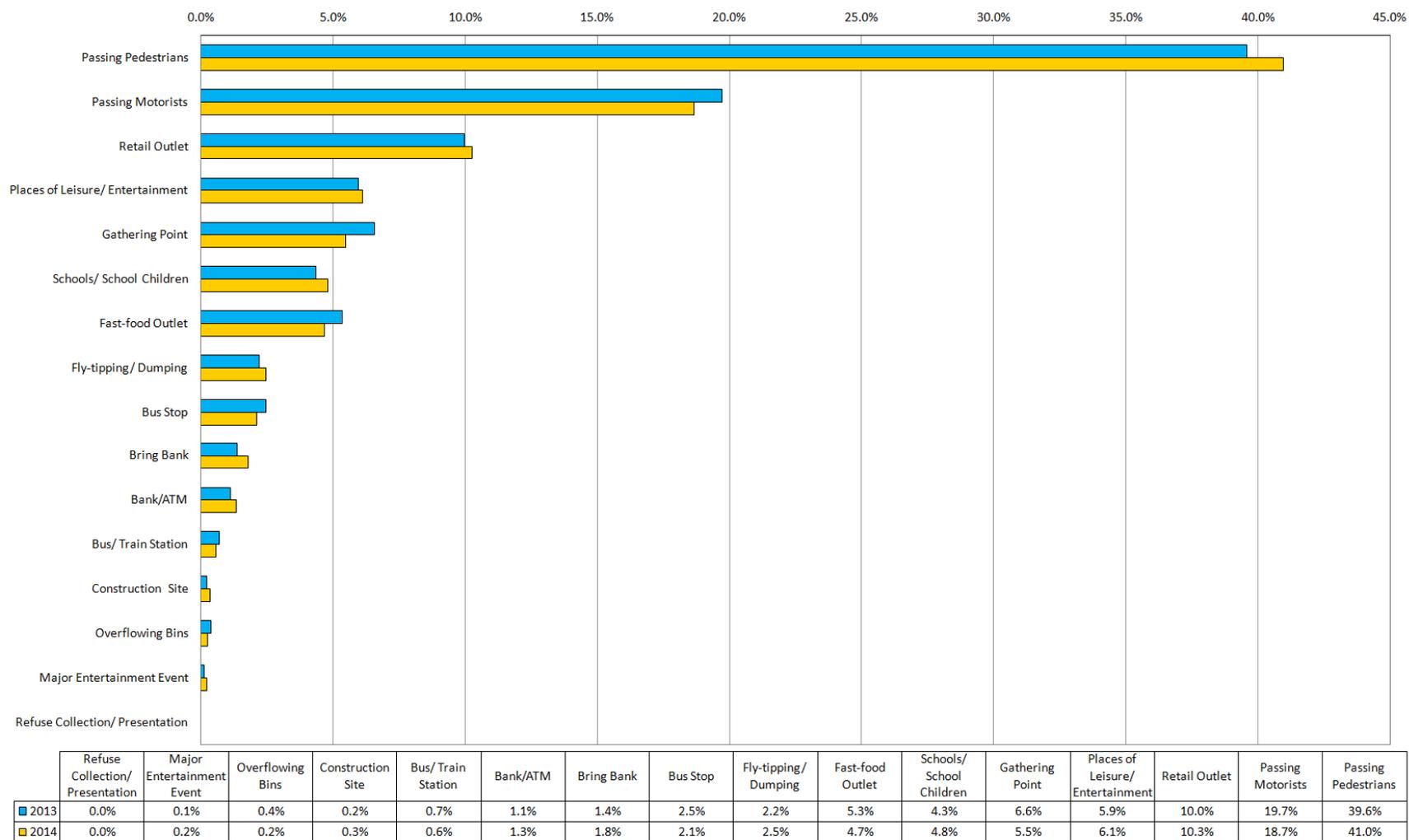


Figure 4-1 Causative Factors of Litter Pollution across all Local Authorities, 2013 compared to 2014

During the Litter Pollution Surveys, surveyors are asked for observations on the primary causes of litter pollution. Causative factors are expressed as a percentage of the total number of causative factors identified in all Litter Pollution Surveys. For each survey, there is usually more than one causative factor of the litter found, e.g. passing pedestrians, fast food outlets and overflowing bins may all be contributing to litter pollution in a particular survey area.

The breakdown of causative factors found in each local authority type is presented in Figure 4-2 on page 16.

The national results for 2014 show that passing pedestrians are the most significant cause of litter pollution within all local authority types. It is also clear from Figure 4-2 that passing motorists, retail outlets, gathering points, places of leisure/ entertainment, schools/ school children and fast-food outlets are considerable sources of litter across all local authority types. Survey results to date show that the contribution of passing motorists, gathering points and bring banks to litter pollution is greater in County Councils than in other local authority types.

Places of leisure / entertainment, schools/ school children, fast-food outlets and major entertainment events are more significant causative factors in City Councils than in other local authority types. Passing pedestrians, retail outlets, bus stops, bus/train stations and construction sites are more significant causative factors in Dublin Local Authorities than in other local authority types. Fly-tipping is a more significant causative factor in Town & Borough Councils than in other local authority types. Bank/ ATMs are more significant causative factors in County Councils and Town and Borough Councils than other local authority types. In 2014, overflowing bins is a causative factor in all local authorities except Borough and Town Councils.

Figure 4-2 also illustrates that less significant causes of litter pollution in all types of local authority include major entertainment events, overflowing bins, construction sites and refuse collection/presentation. This is similar to trends identified in the previous National Litter Pollution Monitoring System annual results. This data indicates that the causes of litter pollution nationwide continue to remain relatively homogeneous, irrespective of local authority type. This is not unexpected, given that local authorities carry out their litter pollution and quantification surveys largely in areas where potential sources of litter (i.e. people) are located.

The homogeneous nature of the causative factors of litter pollution in Ireland is further illustrated by the ranking of these causative factors and the linking of them to the level of litter pollution in the locations surveyed – see Figures D.1 to D.8 in Appendix D. The percentage of causative factors varies with each category of LPI. The data is organised illustrating the 2013 and 2014 graphs under each litter pollution index (on the same page) to facilitate the comparison of the 2013 and 2014 results.

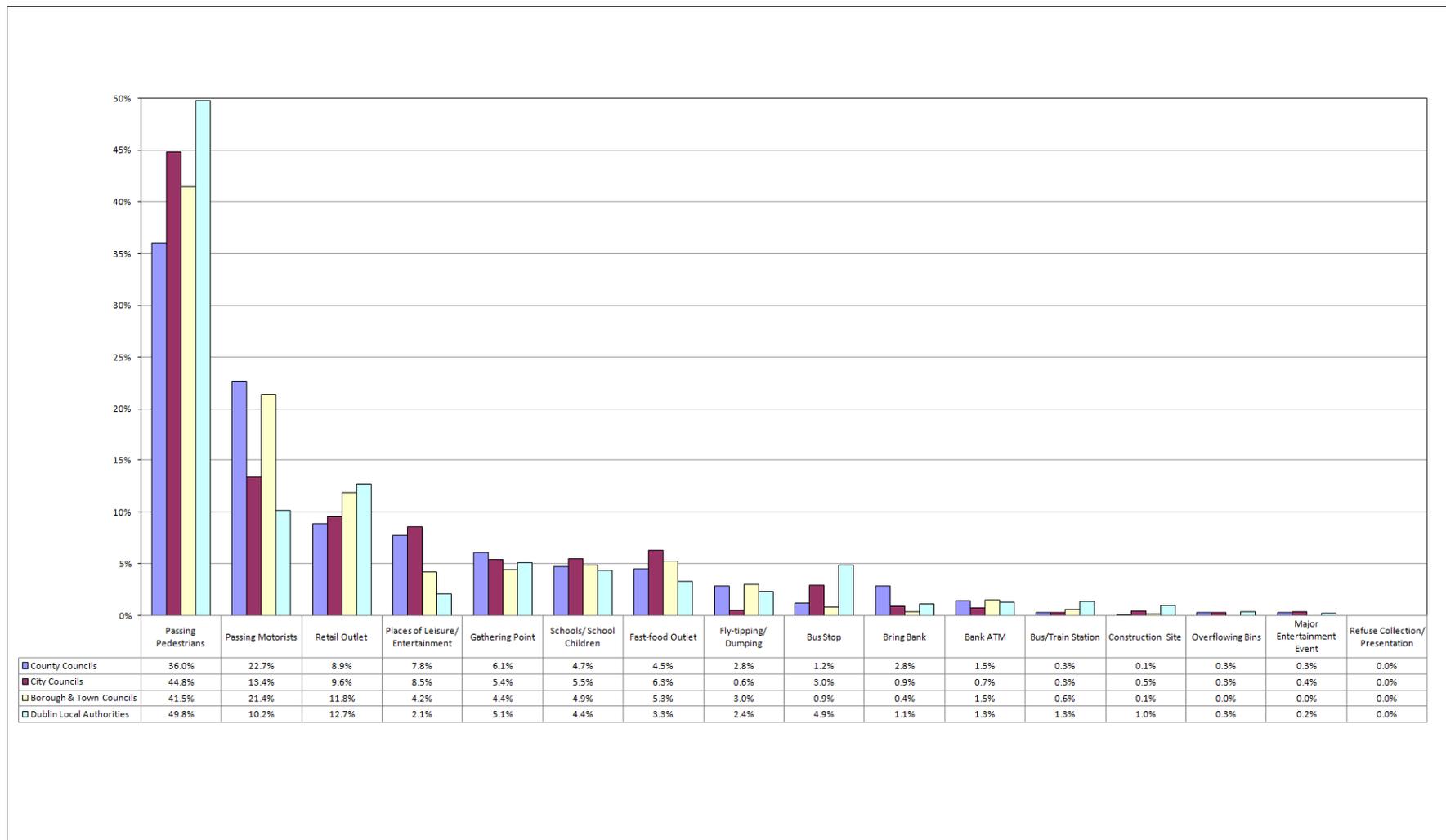


Figure 4-2 Causative Factors of Litter Pollution According to Local Authority Type in 2014

## CHAPTER 5: ASSESSMENT OF LITTER POLLUTION DATA BY LOCAL AUTHORITY TYPE

This chapter focuses on comparative data for litter pollution across different local authority types. Litter Pollution Survey results for 56 out of 90<sup>3</sup> local authorities have been returned to the Litter Monitoring Body and analysed for 2014 - those local authorities are detailed in Appendix A.

Comparison of the 2014 litter pollution survey data for the different categories of local authorities is examined in Figures 5-1, 5-2, 5-3 and 5-4.

### 5.1 Comparison within Dublin Local Authorities

In comparing the litter pollution data for Dublin Local Authorities, Figure 5-1 illustrates the following:

- ◆ The percentage of unpolluted (LPI 1) areas increased from 13.5% in 2013 to 18.2% in 2014. This constitutes an increase of 4.7%.
- ◆ Slightly polluted (LPI 2) areas increased from 50.0% in 2013 to 50.1% in 2014. This constitutes an increase of 0.1%.
- ◆ Moderately polluted (LPI 3) areas decreased from 31.7% in 2013 to 25.7% in 2014. This constitutes a 6% decrease.
- ◆ Significantly polluted (LPI 4) areas increased from 2013 (4.7%) to 2014 (5.7%).
- ◆ Grossly polluted (LPI 5) areas increased from 0.1% in 2013 to 0.4% in 2014.
- ◆ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together, show an increase of 4.8% from 2013 to 2014.

Therefore these results show an overall reduction in the level of litter pollution in Dublin Local Authorities from 2013 to 2014 with the percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together showing an increase. Subsequently there has been a combined decrease of 5% in moderately polluted (LPI 3) and significantly polluted (LPI 4) areas in 2014. However, the percentage of grossly polluted (LPI 5) areas increased by 0.3% in 2014.

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<sup>3</sup> At the date of survey there were 90 local authorities in Ireland. South Cork County Council (City) and South Cork County Council (Hinterland) have since amalgamated as South Cork County Council (City & Rural).

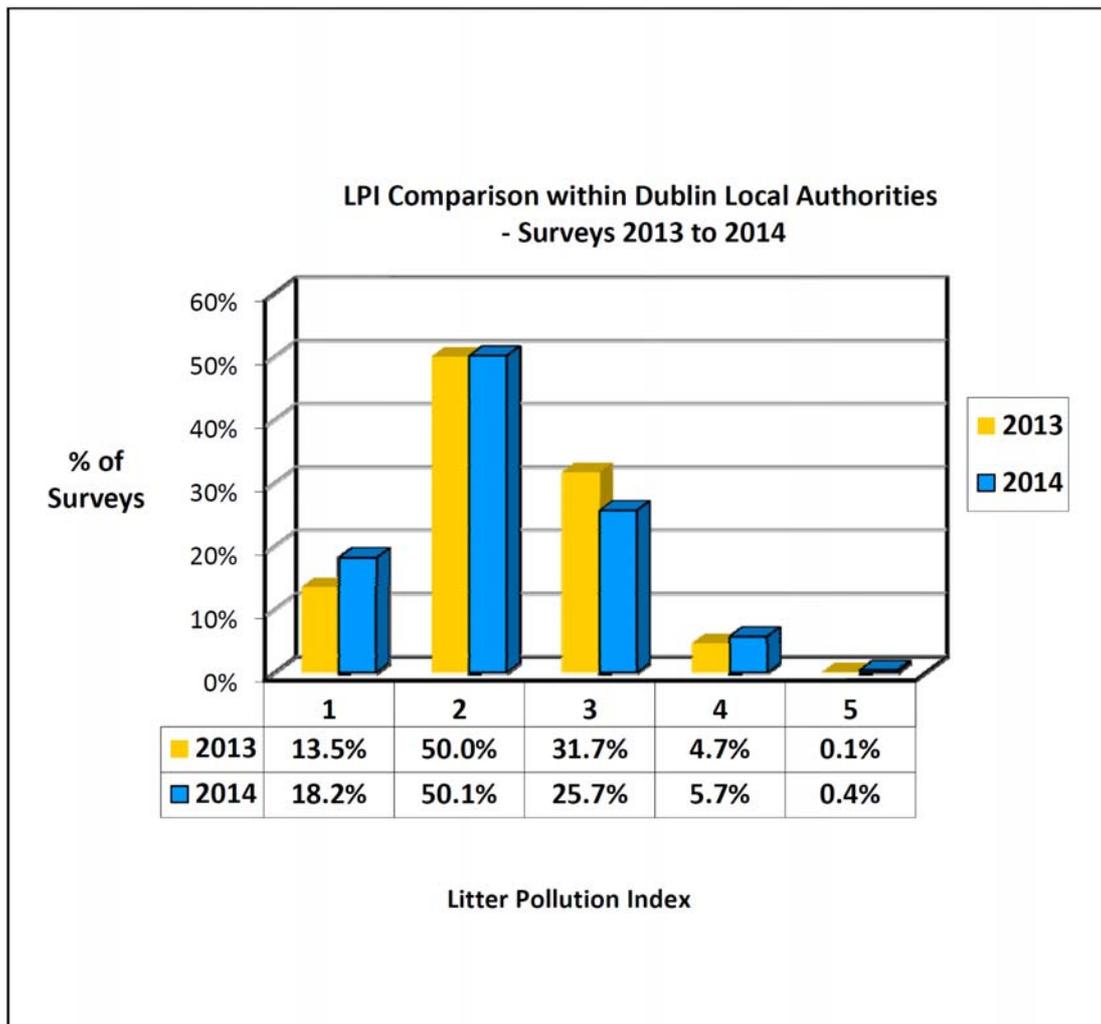


Figure 5-1 Comparison of Litter Pollution within Dublin Local Authorities 2013 to 2014

## 5.2 Comparison within County Councils

In comparing the litter pollution data for County Councils, Figure 5-2 illustrates the following:

- ◆ The percentage of unpolluted (LPI 1) areas increased from 12.1% in 2013 to 12.6% in 2014. This constitutes a slight increase of 0.5%.
- ◆ Slightly polluted (LPI 2) areas increased by 1.2%, from 64.3% in 2013 to 65.5% in 2014.
- ◆ Moderately polluted (LPI 3) areas decreased by 0.2%, from 19.4% in 2013 to 19.2% in 2014.
- ◆ Significantly polluted (LPI 4) areas decreased slightly from 3.3% in 2013 to 2.4% in 2014. This constitutes a decrease of 0.9%.

- ◆ Grossly polluted (LPI 5) areas decreased by 0.6% from 2013 to 2014.
- ◆ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together, show an increase of 1.7% from 2013 to 2014.

Therefore, these results show an overall improvement in the level of litter pollution in County Councils from 2013 to 2014 with the percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together showing an increase. Moderately polluted (LPI 3) and significantly polluted (LPI 4) areas in 2014 showed a combined decrease of 1.1% when compared to 2013. The percentage of grossly polluted (LPI 5) areas also decreased by 0.6% in 2014.

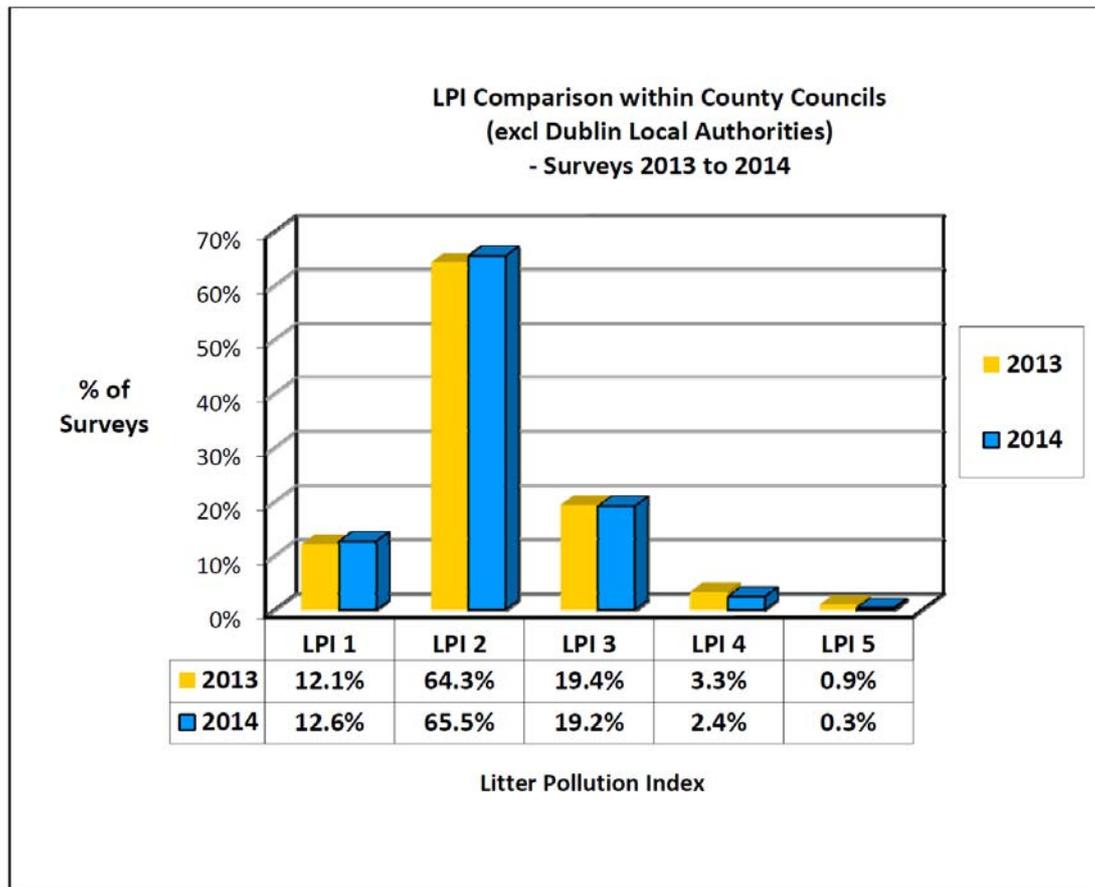


Figure 5-2 Comparison of Litter Pollution within County Councils 2013 to 2014

### 5.3 Comparison within City Councils

In comparing the litter pollution data for City Councils, Figure 5-3 illustrates the following:

- ◆ The percentage of unpolluted (LPI 1) areas has decreased from 1.9% in 2013 to 1.3% in 2014. This constitutes a decrease of 0.6%.
- ◆ Slightly polluted (LPI 2) areas have increased from 68.0% in 2013 to 71.8% in 2014.

- ◆ The percentage of moderately polluted (LPI 3) areas has decreased by 1.5% from 2013 to 2014.
- ◆ Significantly polluted (LPI 4) areas have also decreased from 3.9% in 2013 to 2.7% in 2014, a decrease of 1.2%.
- ◆ The percentage of grossly polluted (LPI 5) areas has decreased by 0.5% since 2013.
- ◆ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together, show an increase of 3.2% from 2013 to 2014.

Therefore, these results show an overall improvement in the level of litter pollution in City Councils from 2013 to 2014 with the percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together showing an increase. There has subsequently been a 2.7% decrease in moderately polluted (LPI3) areas and in significantly polluted (LPI 4) areas combined since 2013, with grossly polluted (LPI 5) areas also decreasing by 0.5% since 2013.

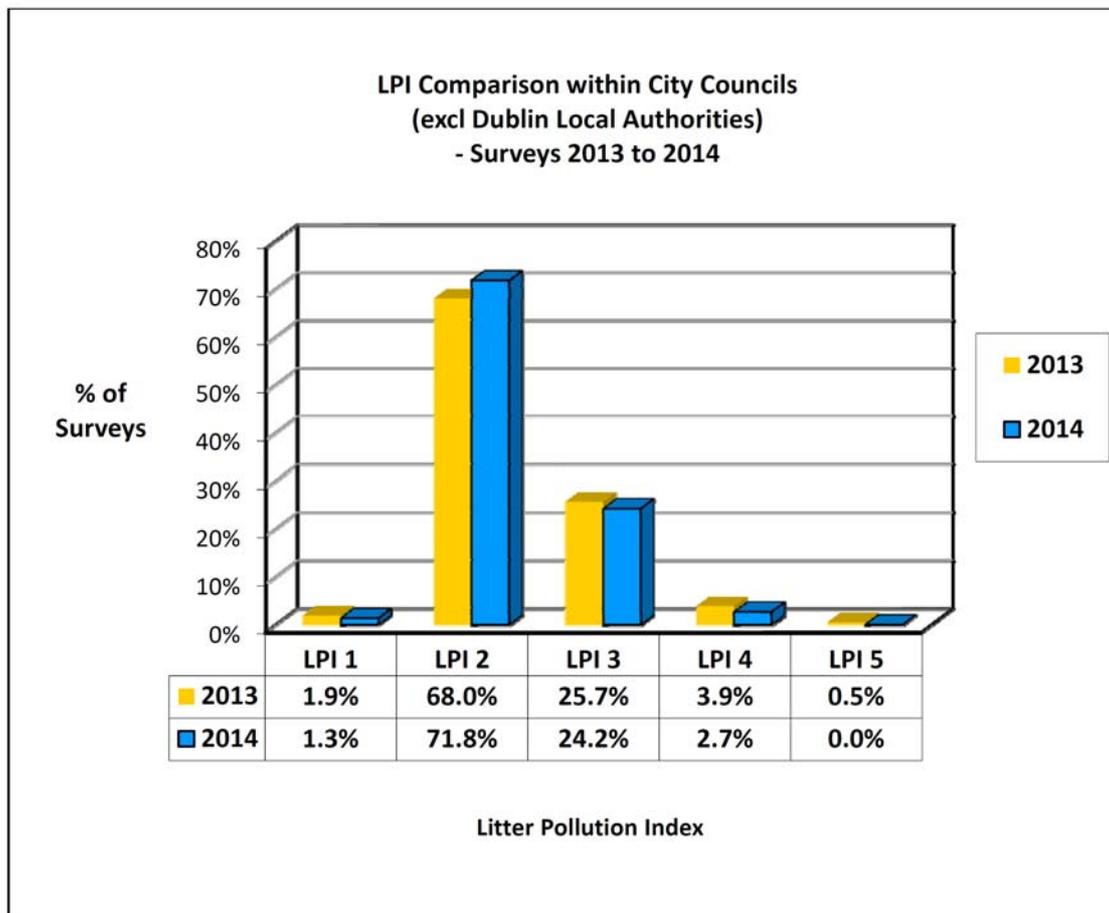


Figure 5-3 Comparison of Litter Pollution within City Councils 2013 to 2014

#### 5.4 Comparison within Town & Borough Councils

In comparing the litter pollution data for Town and Borough Councils, Figure 5-4 illustrates the following:

- ◆ The percentage of unpolluted (LPI 1) areas has decreased from 16.3% in 2013 to 11.1% in 2014. This constitutes a decrease of 5.2%.
- ◆ Slightly polluted (LPI 2) areas also increased from 67.2% in 2013 to 76.3% in 2014. This constitutes an increase of 9.1%.
- ◆ The percentage of moderately polluted (LPI 3) areas decreased by 2.6%, from 13.9% in 2013 to 11.3% in 2014.
- ◆ Significantly polluted (LPI 4) areas have decreased by 1.2%, from 2.1% in 2013 to 0.9% in 2014.
- ◆ Grossly polluted (LPI 5) areas have remained constant at 0.5% in 2013 and 2014.
- ◆ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together, show an increase of 3.9% from 2013 to 2014.

Therefore, these results show there has been an overall improvement in the level of litter pollution in Town and Borough Councils from 2013 to 2014 with the percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together showing an increase. Subsequently there has been a combined decrease of 3.8% in moderately polluted (LPI 3) areas and significantly polluted (LPI 4) areas. Grossly polluted (LPI 5) areas have remained constant at 0.5%.

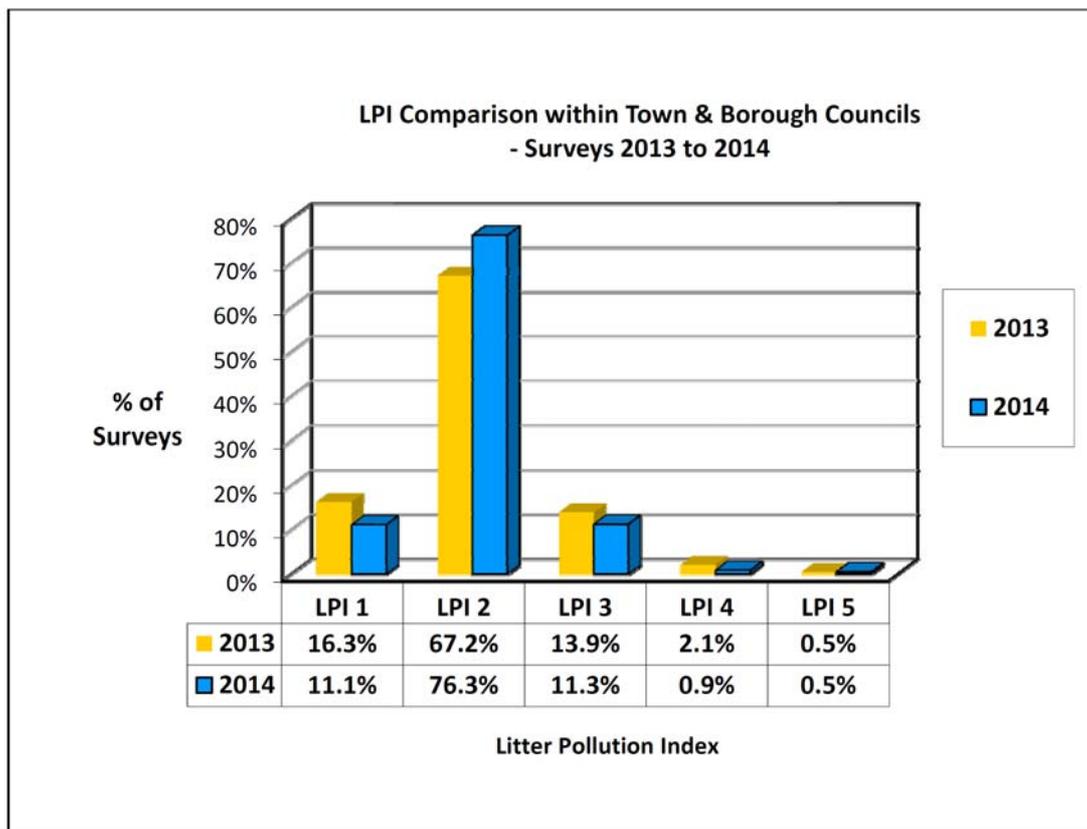


Figure 5-4 Comparison of Litter Pollution within Town & Borough Councils 2013 to 2014

The percentage of unpolluted (LPI 1) areas increased in Dublin Local Authorities and in County Councils from 2013 to 2014.

The percentage of slightly polluted (LPI 2) areas increased in all local authority types from 2013 to 2014.

When the national percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas are combined there is an overall improvement in cleanliness of 1.7% in 2014, when compared to 2013.

The percentage of moderately polluted (LPI 3) areas decreased in all local authority types in 2014.

Significantly polluted (LPI 4) areas also decreased in 2014 in all local authority types except in Dublin Local Authorities (increased by 1%).

Dublin Local Authorities also experienced an increase in the percentage of grossly polluted (LPI 5) areas from 2013 to 2014 by 0.3%, while County Councils and City Councils experienced a decrease by 0.6% and 0.5% respectively. The percentage of grossly polluted (LPI 5) areas remained constant at 0.5% in 2013 and 2014 for Town and Borough Councils.

### 5.5 Comparison within Urban & Rural Areas

Figures 5-5 and 5-6 below provide a comparison of litter pollution in rural and urban areas from 2013 to 2014.

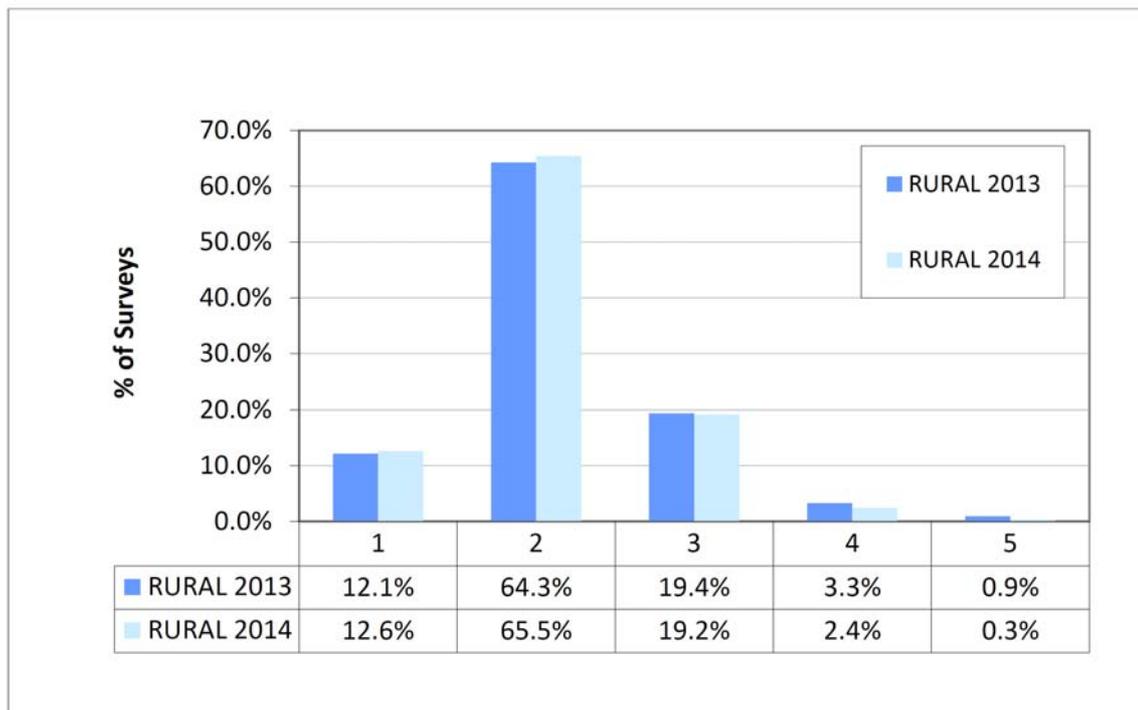


Figure 5-5 Comparison of Litter Pollution in Rural Areas from 2013 to 2014

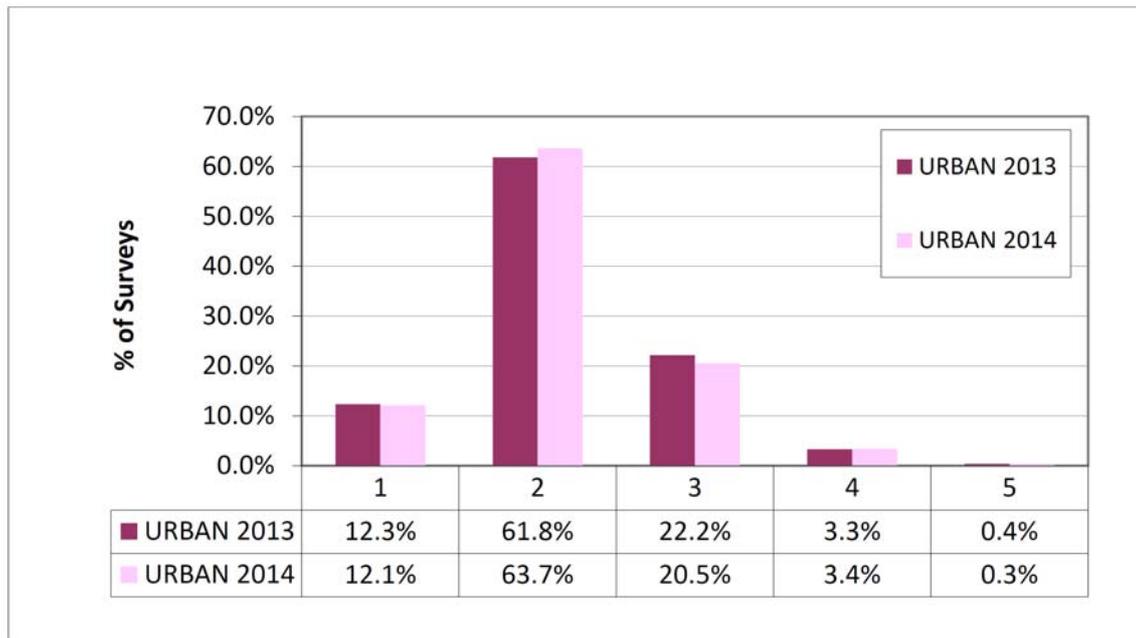


Figure 5-6 Comparison of Litter Pollution in Urban Areas from 2013 to 2014

In rural areas the levels of unpolluted (LPI 1) areas have increased from 12.1% in 2013 to 12.6% in 2014. The percentage of slightly polluted (LPI 2) areas has increased by 1.2% since 2013 in rural areas. Moderately polluted (LPI 3) areas decreased by 0.2% from 2013 to 2014. Significantly polluted (LPI 4) areas have also decreased by 0.9%, from 3.3% in 2013 to 2.4% in 2014. Grossly polluted (LPI 5) areas have decreased by 0.6% from 2013 to 2014.

In summary, as can be seen on Figure 5-5, the level of litter pollution in rural areas has remained similar when comparing 2013 and 2014 results.

The percentage of unpolluted (LPI 1) areas in urban areas has decreased by 0.2% from 12.3% in 2013 to 12.1% in 2014. The percentage of slightly polluted (LPI 2) areas has increased by 1.9%, from 61.8% in 2013 to 63.7% in 2014. Moderately polluted (LPI 3) areas have decreased by 1.7%, from 22.2% in 2013 to 20.5% in 2014. Significantly polluted (LPI 4) areas have increased slightly from 3.3% in 2013 to 3.4% in 2014. Grossly polluted (LPI 5) areas have decreased slightly from 0.4% in 2013 to 0.3% in 2014.

These results show that both rural and urban areas have experienced a slight improvement in cleanliness levels overall since 2013.

Refer to Appendix E “Comparison of Causative Factors of Litter Pollution within Urban and Rural Local Authorities”.

## CHAPTER 6: ANALYSIS OF SPECIFIC COMPONENTS OF LITTER

### 6.1 Chewing Gum Litter

The results of litter quantification surveys can be used to examine trends in chewing gum litter. Figure 6-1 below illustrates trends in chewing gum related litter since 2004.

Chewing gum has remained the single largest component of litter in the food related litter category and the second biggest component of litter nationally over the past ten years.

Chewing gum levels have decreased slightly by 0.29% to 15.03% in 2014, as a percentage of national litter composition. This decrease could possibly be due to a raised public awareness of appropriate chewing gum litter disposal following the recent three year Gum Litter Taskforce (GLT) Awareness Campaign 2012- 2014. This National campaign involved outdoor advertising around the country, national radio advertising, in-store and around store advertising, point of sale materials and promotion of greater awareness of litter fines for irresponsible disposal of gum.

As shown in Figure 6-1 below, chewing gum levels show an improvement over a seven year period from 2008 to 2014. The percentage of national litter represented by chewing gum has decreased from 30.79% in 2008 to 15.03% in 2014, which represents a decrease of 15.76%.

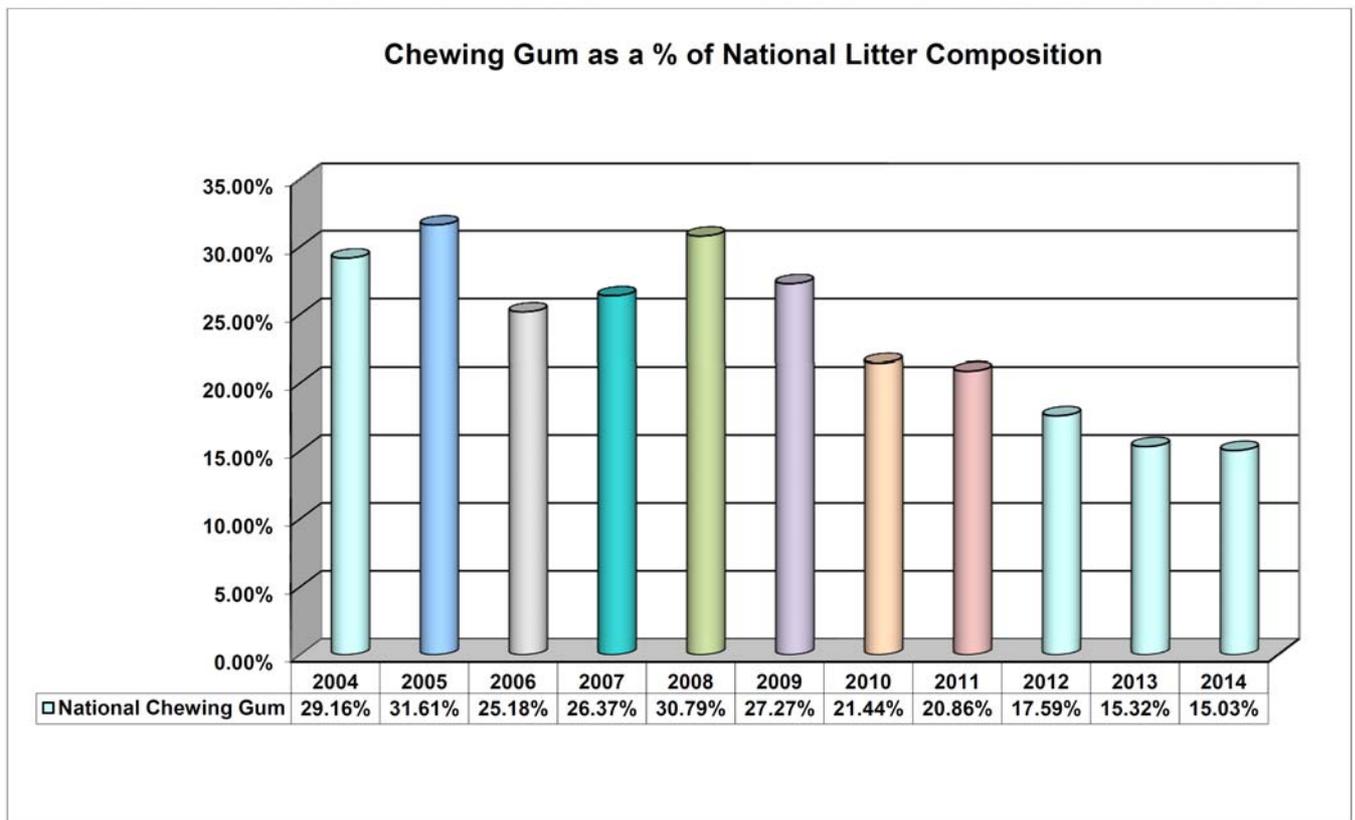


Figure 6-1 Chewing Gum as a Percentage of the National Litter Composition

### 6.2 Sweet Related Litter

In 2006, a new litter category ‘sweet related litter’ was added to the Litter Quantification Surveys, this was to ensure that the ‘Miscellaneous’ litter category was not utilised repeatedly. The results for 2013 and 2014 are presented in Figure 6-2 below.

The results in Figure 6-2 illustrate that sweet related litter has decreased by 0.33% in 2014 compared to 2013. Sweet wrappers (plastic/foil) are the highest component of litter in the sweet related litter category in 2014, although this decreased by 0.31% from 2013 to 2014. The quantity of straws has increased (by 0.08%), although they remain the lowest component of sweet related litter. Crisp bags have also increased in 2014 by 0.01% since 2013. Lollipop sticks (wooden/plastic) also contribute to the sweet related litter category; however, they have decreased by 0.11% from 2013 to 2014.

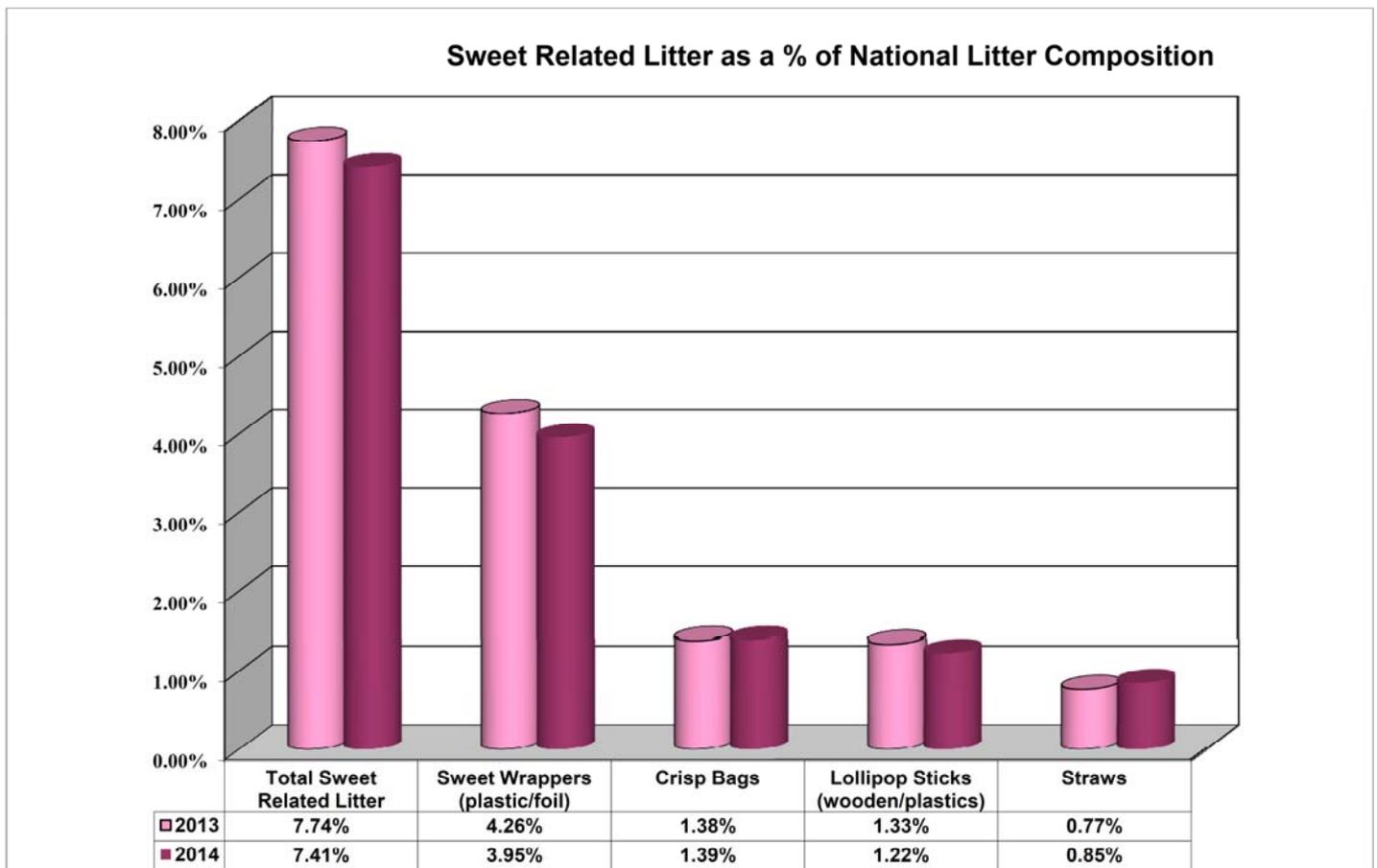


Figure 6-2 Sweet Related Litter Analysed 2013 to 2014

### 6.3 Bank ATM Receipts

The Litter Monitoring System is also used to assess the impact of a protocol to tackle litter generated by ATM advice slips which was announced in January 2007 by the then Minister for the Environment, Heritage and Local Government and the Irish Banking Federation (IBF) on behalf of the retail banking groups with ATM networks.

The litter pollution survey results for 2014 suggest that 'Bank ATM's' as a causative factor has increased by 0.22%, from 1.11% in 2013 to 1.33% in 2014. Bank/ ATMs are more significant causative factors in County Councils and Town and Borough Councils than other local authority types.

The litter quantification survey results, however, illustrate that bank slips as a percentage of the national litter composition, have decreased by 0.22%, from 0.78% in 2013 to 0.56% in 2014.

The Litter Monitoring System will continue to monitor the impact of this protocol.

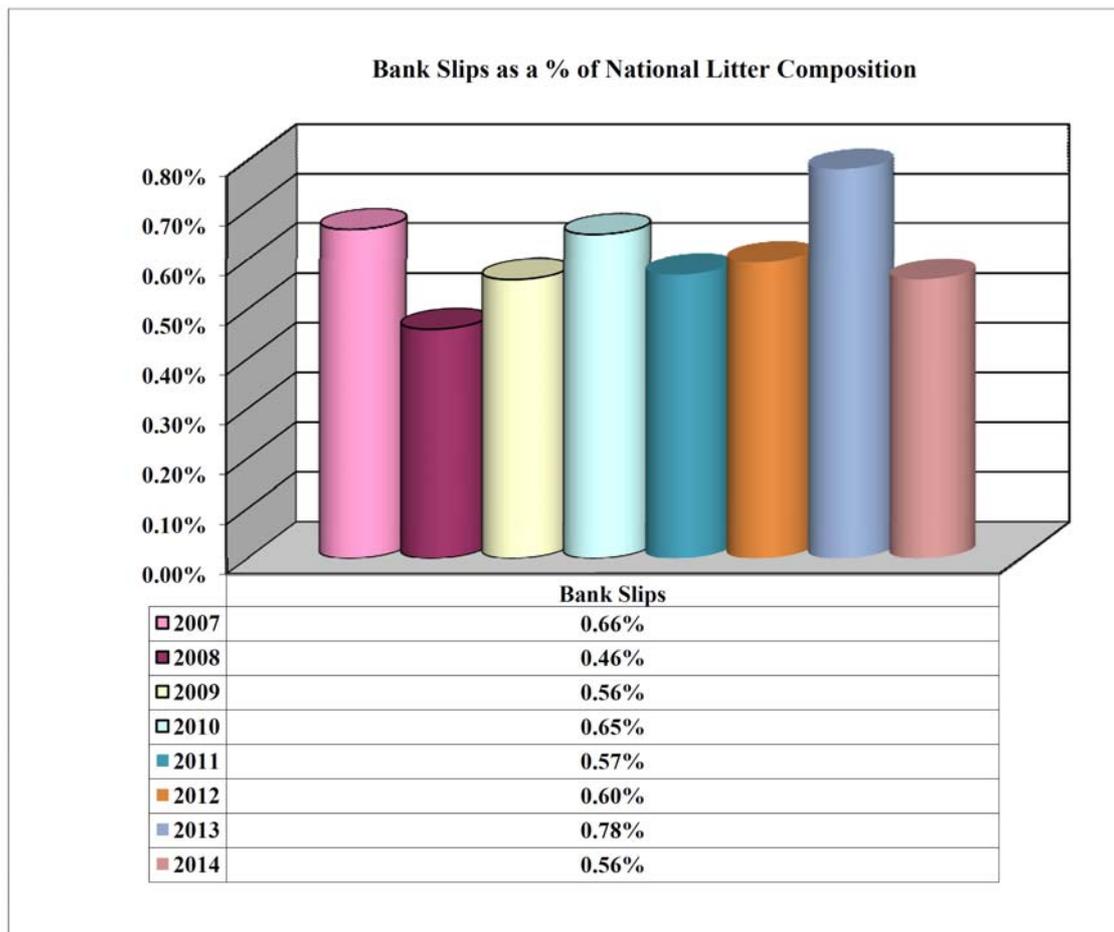


Figure 6-3 Bank Slips as a Percentage of the National Litter Composition

### 6.4 Plastic Bags

Prior to the introduction of the levy in March 2002, it was estimated that 1.3 billion shopping bags were issued annually. As a consequence of incorrect disposal, many plastic bags ended up as a very visually intrusive form of litter pollution. The plastic bag levy was increased from 15c to 22c in July 2007 in a further bid to reduce littering. Figure 6-4 illustrates the percentage of shopping bags as a percentage of the National Litter Composition from the period mid-2001 to 2014.

The most recent survey data available for 2014 shows that plastic bags constitute 0.13% of litter pollution nationally compared to an estimated 5% prior to the introduction of the levy. The 2014 results show that there was decrease in plastic bags during 2014 as a percentage of the National Litter Composition (from 0.14% in 2013 to 0.13% in 2014).

The Litter Monitoring System will continue to monitor the level of plastic bag litter in Ireland and the impact of this levy.

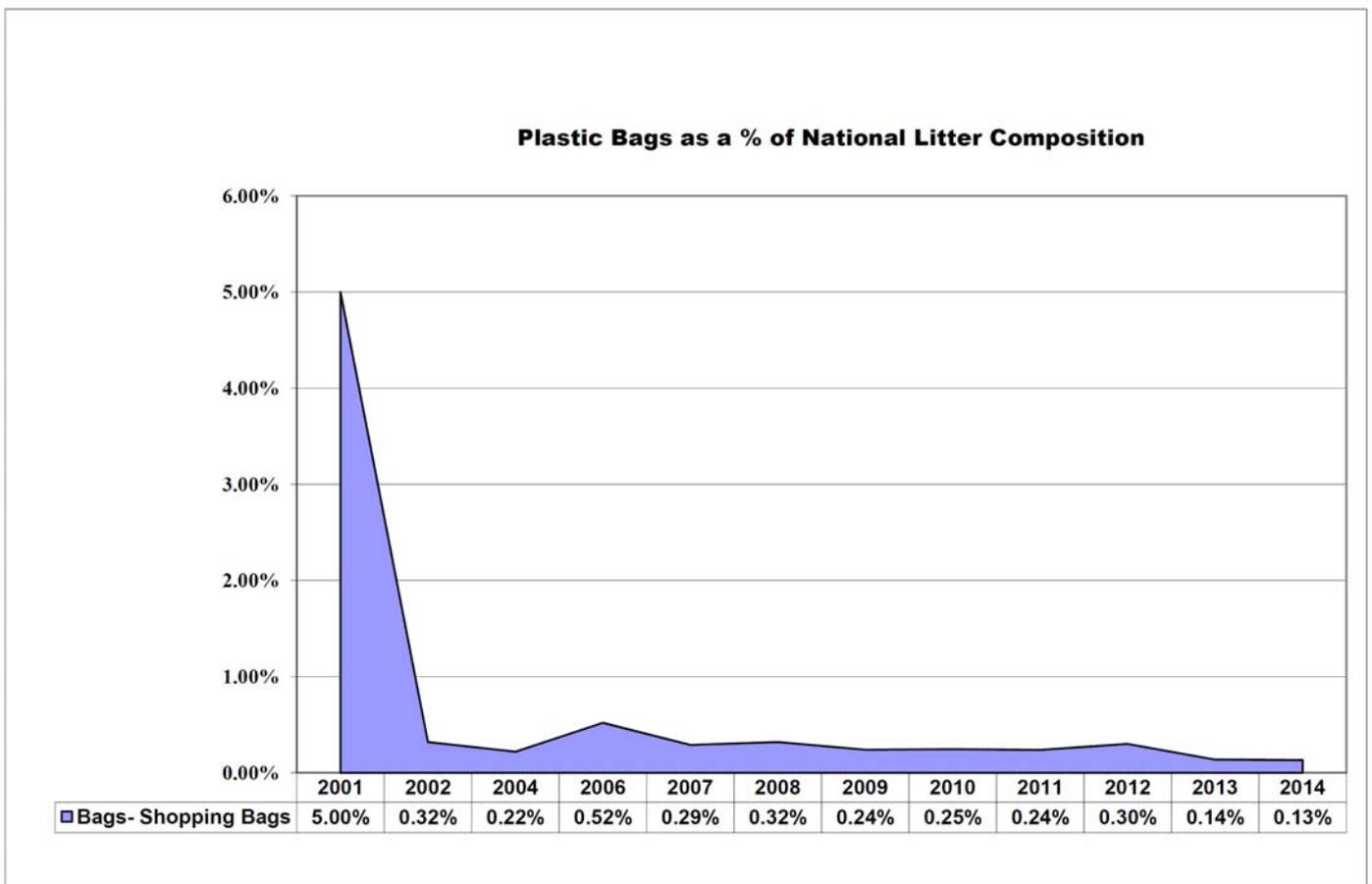


Figure 6-4 Plastic Bags as a Percentage of the National Litter Composition

### 6.5 Cigarette Related Litter

The percentage of national litter represented by cigarette ends has increased from 39.80% in 2004 to 50.20% in 2014, which represents an increase of 10.4%. The percentage of cigarette ends has increased by 0.3% from 49.90% in 2013 to 50.20% in 2014. Note that this is the highest percentage of cigarette related litter in the past ten years of surveys.

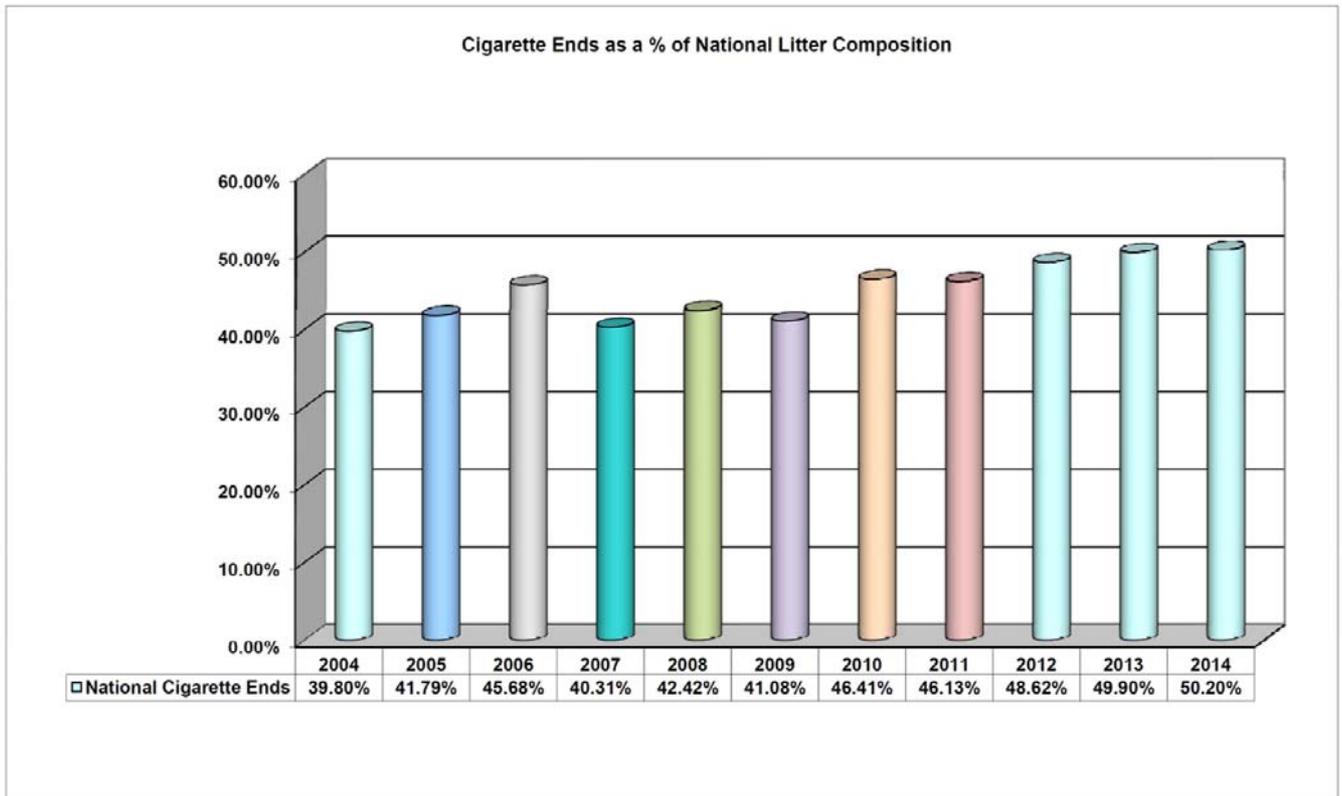


Figure 6-5 Cigarette Ends as a Percentage of the National Litter Composition

## CHAPTER 7: ITEMS FOR FURTHER ATTENTION UNDER THE NLPMS

- ◆ The Litter Monitoring System will be used, to continue to assess, the impact of the Protocol to tackle litter generated by ATM advice slips. This Protocol was announced in January 2007 by the then Minister for the Environment, Heritage and Local Government and the Irish Banking Federation (IBF) on behalf of the retail banking groups with ATM networks.
- ◆ The Litter Monitoring System will be used, to continue to assess the impact of the plastic bag levy, which was introduced in Ireland in March 2002 and which was increased from 15c to 22c in July 2007.
- ◆ The Litter Monitoring System will continue to monitor the level of cigarette related litter which is the largest litter component recorded nationally. In particular the level of cigarette ends, which in 2014 were noted as the highest percentage of cigarette related litter in the past ten years of surveys, will be monitored.

## CHAPTER 8: CONCLUSION

Results from 2014 surveys were received from 57 local authorities. It is noted that the Local Government Reform Act came into effect in 2014 which changed the existing structure of local authorities with the abolition of all town councils and the merging of some county councils. As a result, some local authorities have submitted their 2014 survey results to represent their entire county as one local authority as opposed to previous years i.e. submission of county council and town council results separately; giving a perceived lower overall participation.

The constituent components and the causative factors of litter pollution nationally remain relatively constant across all local authority types from 2013 to 2014.

The percentage of cigarette related litter, plastic items (non-packaging), packaging items, deleterious litter, large litter items and miscellaneous items have all increased since 2013 while sweet related litter, paper litter and food related litter have all decreased since 2013.

The national results for 2014 show that passing pedestrians are the most significant single cause of litter pollution for every type of local authority in Ireland. It is also clear that passing motorists, retail outlets, places of leisure/entertainment, gathering points, schools / school children and fast food outlets are considerable sources of litter for all local authority types.

The 2014 survey results show that the contribution of passing motorists, gathering points and bring banks to litter pollution, is greater in County Councils than in other local authority types. Places of leisure / entertainment, schools/ school children, fast-food outlets and major entertainment events are more significant causative factors in City Councils than in other local authority types. Passing pedestrians, retail outlets, bus stops, bus/train stations and construction sites are more significant causative factors in Dublin Local Authorities than in other local authority types. Fly-tipping is a more significant causative factor in Town & Borough Councils than in other local authority types. Bank/ ATMs are more significant causative factors in County Councils and Town and Borough Councils than other local authority types. In 2014 overflowing bins is a causative factor in all local authorities except Borough and Town Councils.

The percentage of unpolluted (LPI 1) areas increased slightly from 12.2% in 2013 to 12.3% in 2014. This is the largest percentage of unpolluted areas ever recorded by the System.

The 2014 results also indicate that the percentage of slightly polluted (LPI 2) areas has increased from 62.8% in 2013 to 64.4% in 2014. The percentage of moderately polluted areas (LPI 3) has decreased by 1.1%, from 21.0% in 2013 to 19.9% in 2014. This is the lowest percentage of moderately polluted areas ever recorded by the System. The percentage of significantly polluted areas (LPI 4) has also decreased slightly by 0.3%, from 3.3% in 2013 to 3.0% in 2014. The percentage of grossly polluted (LPI 5) areas has decreased by 0.3% from 0.6% in 2013 to 0.3% in 2014.

The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined together has increased by 1.7% from 2013 to 2014, thus demonstrating there has been a slight decrease in litter pollution from 2013 to 2014.

The degree, composition, causes and trends in litter pollution identified and discussed in this report are representative of the national picture, and will continue to be monitored into 2015.

The Litter Monitoring Body is satisfied that local authorities are properly implementing the National Litter Pollution Monitoring System. Local authorities will continue to be audited to ensure the System is being implemented as designed.

## **APPENDIX A**

### **DETAILS OF LOCAL AUTHORITIES THAT CARRIED OUT SURVEYS IN 2014**

## Litter Quantification Survey Results

Litter Quantification Survey results for 55 out of 90 local authorities were returned to the Litter Monitoring Body and analysed for 2014<sup>4</sup>. These are detailed in Table A-1.

**Table A.1 Local Authorities that Submitted Litter Quantification Survey Results for 2014**

|  |
|--|
| <b>County Councils</b>                   |
| Carlow County Council                    |
| Cavan County Council                     |
| Clare County Council                     |
| Donegal County Council                   |
| Dún Laoghaire-Rathdown County Council    |
| Fingal County Council                    |
| Galway County Council                    |
| Kerry County Council                     |
| Kildare County Council                   |
| Kilkenny County Council                  |
| Laois County Council                     |
| Longford County Council                  |
| Louth County Council                     |
| Mayo County Council                      |
| Meath County Council                     |
| Monaghan County Council                  |
| North Tipperary County Council           |
| Offaly County Council                    |
| Roscommon County Council                 |
| Sligo County Council                     |
| South Cork County Council (City & Rural) |
| South Tipperary County Council           |
| Waterford County Council                 |
| Westmeath County Council                 |
| Wexford County Council                   |
| Wicklow County Council                   |
|  |
| <b>City Councils</b>                     |
| Cork City Council                        |
| Dublin City Council                      |
| Galway City Council                      |
| Waterford City Council                   |
|  |
| <b>Borough Councils</b>                  |
| Clonmel Borough Council                  |
| Kilkenny Borough Council                 |

<sup>4</sup> Note South Cork County Council returned Litter Quantification surveys but did not return Litter Pollution Surveys.

|                              |
|------------------------------|
| Sligo Borough Council        |
|                              |
| <b>Town Councils</b>         |
| Arklow Town Council          |
| Athlone Town Council         |
| Ballinasloe Town Council     |
| Birr Town Council            |
| Buncrana Town Council        |
| Bundoran Town Council        |
| Carlow Town Council          |
| Carrickmacross Town Council  |
| Carrick on Suir Town Council |
| Cashel Town Council          |
| Castleblayney Town Council   |
| Cavan Town Council           |
| Clones Town Council          |
| Dungarvan Town Council       |
| Ennis Town Council           |
| Kilrush Town Council         |
| Listowel Town Council        |
| Nenagh Town Council          |
| Tipperary Town Council       |
| Tullamore Town Council       |
| Westport Town Council        |
| Wicklow Town Council         |

## Litter Pollution Survey Results

Litter Pollution Survey results for 56 out of 90 local authorities were returned to the Litter Monitoring Body and analysed for 2014<sup>5</sup>. These are detailed in Table A.2.

**Table A.2 Local Authorities that Submitted Litter Pollution Survey Results for 2014**

|                                       |
|---------------------------------------|
| <b>County Councils</b>                |
| Carlow County Council                 |
| Cavan County Council                  |
| Clare County Council                  |
| Donegal County Council                |
| Dún Laoghaire-Rathdown County Council |
| Fingal County Council                 |
| Galway County Council                 |
| Kerry County Council                  |
| Kildare County Council                |
| Kilkenny County Council               |
| Laois County Council                  |
| Longford County Council               |
| Louth County Council                  |
| Mayo County Council                   |
| Meath County Council                  |
| Monaghan County Council               |
| North Tipperary County Council        |
| Offaly County Council                 |
| Roscommon County Council              |
| Sligo County Council                  |
| South Tipperary County Council        |
| Waterford County Council              |
| West Cork County Council              |
| Westmeath County Council              |
| Wexford County Council                |
| Wicklow County Council                |
|                                       |
| <b>City Councils</b>                  |
| Cork City Council                     |
| Dublin City Council                   |
| Galway City Council                   |
| Waterford City Council                |
|                                       |
| <b>Borough Councils</b>               |
| Clonmel Borough Council               |
| Kilkenny Borough Council              |

<sup>5</sup> Note West Cork County Council and Dundalk Town Council returned Litter Pollution Surveys but did not return Litter Quantification Surveys.

|                              |
|------------------------------|
| Sligo Borough Council        |
|                              |
| <b>Town Councils</b>         |
| Arklow Town Council          |
| Athlone Town Council         |
| Ballinasloe Town Council     |
| Birr Town Council            |
| Buncrana Town Council        |
| Bundoran Town Council        |
| Carlow Town Council          |
| Carrickmacross Town Council  |
| Carrick on Suir Town Council |
| Cashel Town Council          |
| Castleblayney Town Council   |
| Cavan Town Council           |
| Clones Town Council          |
| Dundalk Town Council         |
| Dungarvan Town Council       |
| Ennis Town Council           |
| Kilrush Town Council         |
| Listowel Town Council        |
| Nenagh Town Council          |
| Tipperary Town Council       |
| Tullamore Town Council       |
| Westport Town Council        |
| Wicklow Town Council         |

## **APPENDIX B**

### **AREA CLEANLINESS RATING PHOTOGRAPHS**

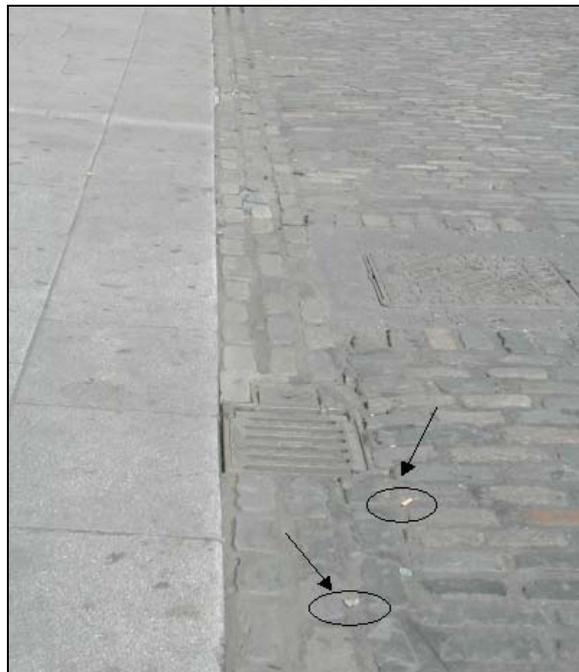
### Area Cleanliness Rating 1 (Unpolluted)

This rating is only given to an area with no litter present i.e. the area may be freshly swept.



### Area Cleanliness Rating 2 (Slightly Polluted)

This rating is only given to an area with small litter items present, i.e. not visually intrusive.



### Area Cleanliness Rating 3 (Moderately Polluted)

This rating is given to an area with some large litter items present, i.e. visually intrusive.



### Area Cleanliness Rating 4 (Significantly Polluted)

This rating is given to an area with large litter items present throughout the survey area.



### Area Cleanliness Rating 5 (Grossly Polluted)

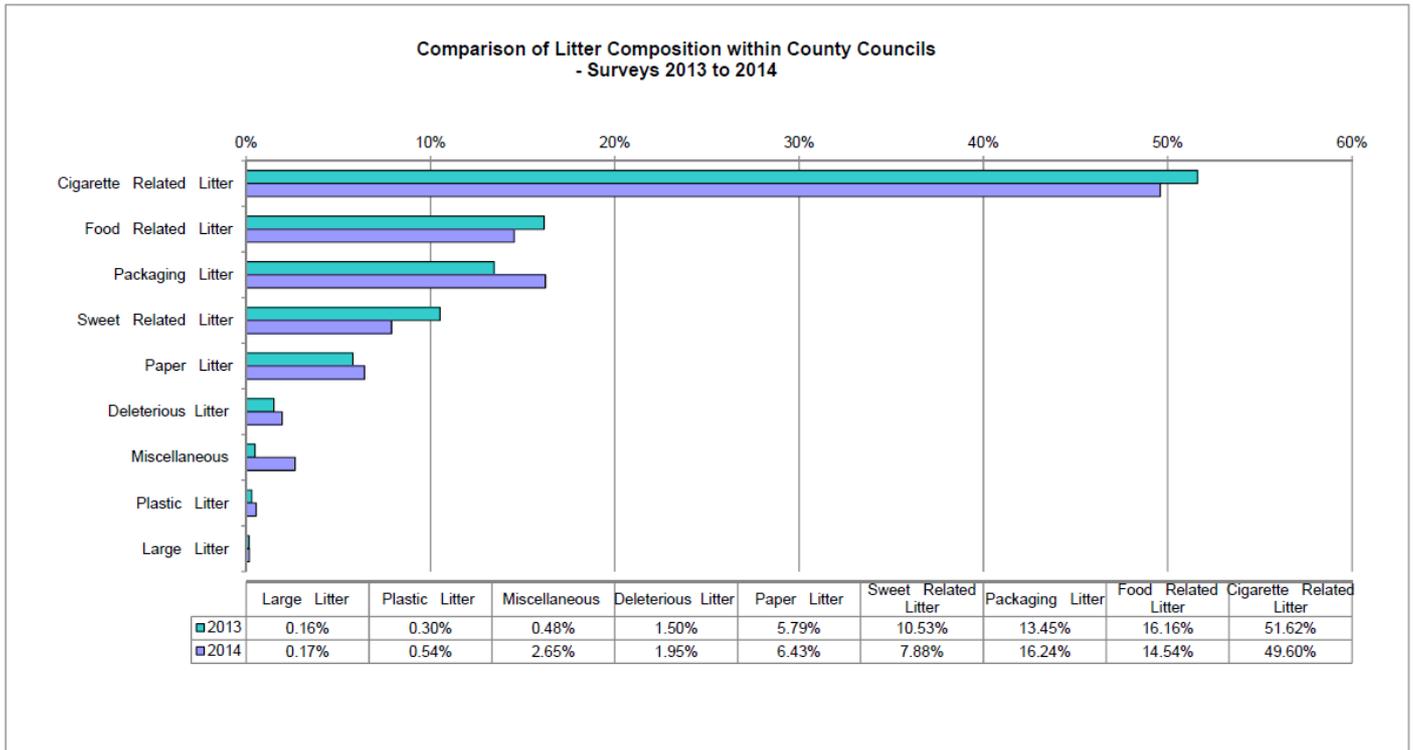
This rating is given to an area, which is heavily littered throughout the survey area, i.e. after an event such as a concert/ festival or a fly-tipping incident.



## **APPENDIX C**

### **DETAILS OF LITTER COMPOSITION FROM 2013 – 2014 ACCORDING TO LOCAL AUTHORITY TYPE**

Figure C.1 compares the results of Litter Quantification Surveys within County Councils from 2013 to 2014. The main observations are that the percentage of packaging litter, paper litter, deleterious litter, miscellaneous, plastic litter and large litter items have all increased in 2014, while cigarette related litter, food related litter and sweet related litter have all decreased between 2013 and 2014.



**Figure C.1 Comparison of Litter Composition within County Councils 2013 to 2014**

Figure C.2 shows that within City Councils, the percentage of cigarette related litter, packaging litter, sweet related litter, paper litter and large litter items have all increased in 2014. Food related litter, deleterious litter, miscellaneous and plastic litter items have all decreased from 2013 to 2014.

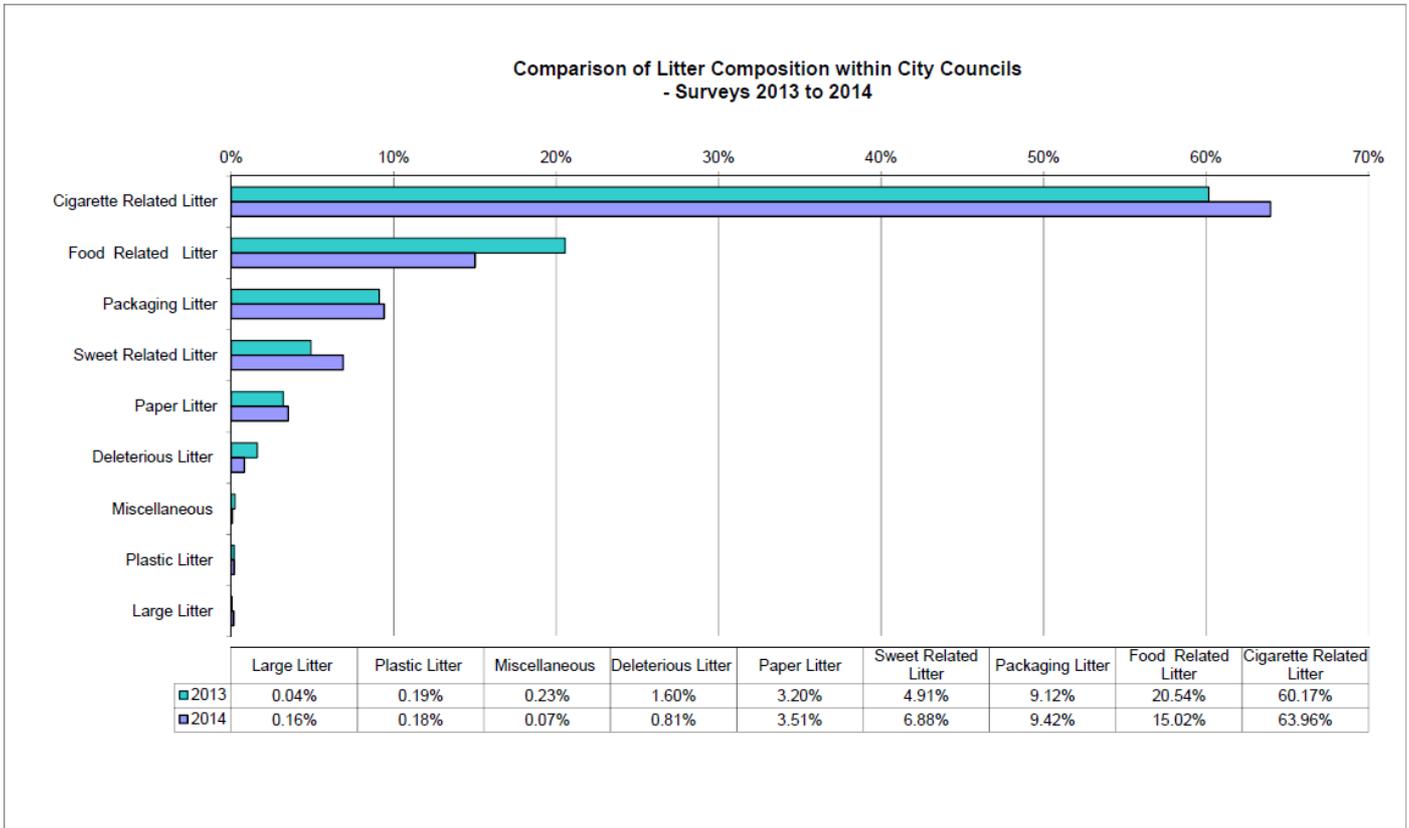
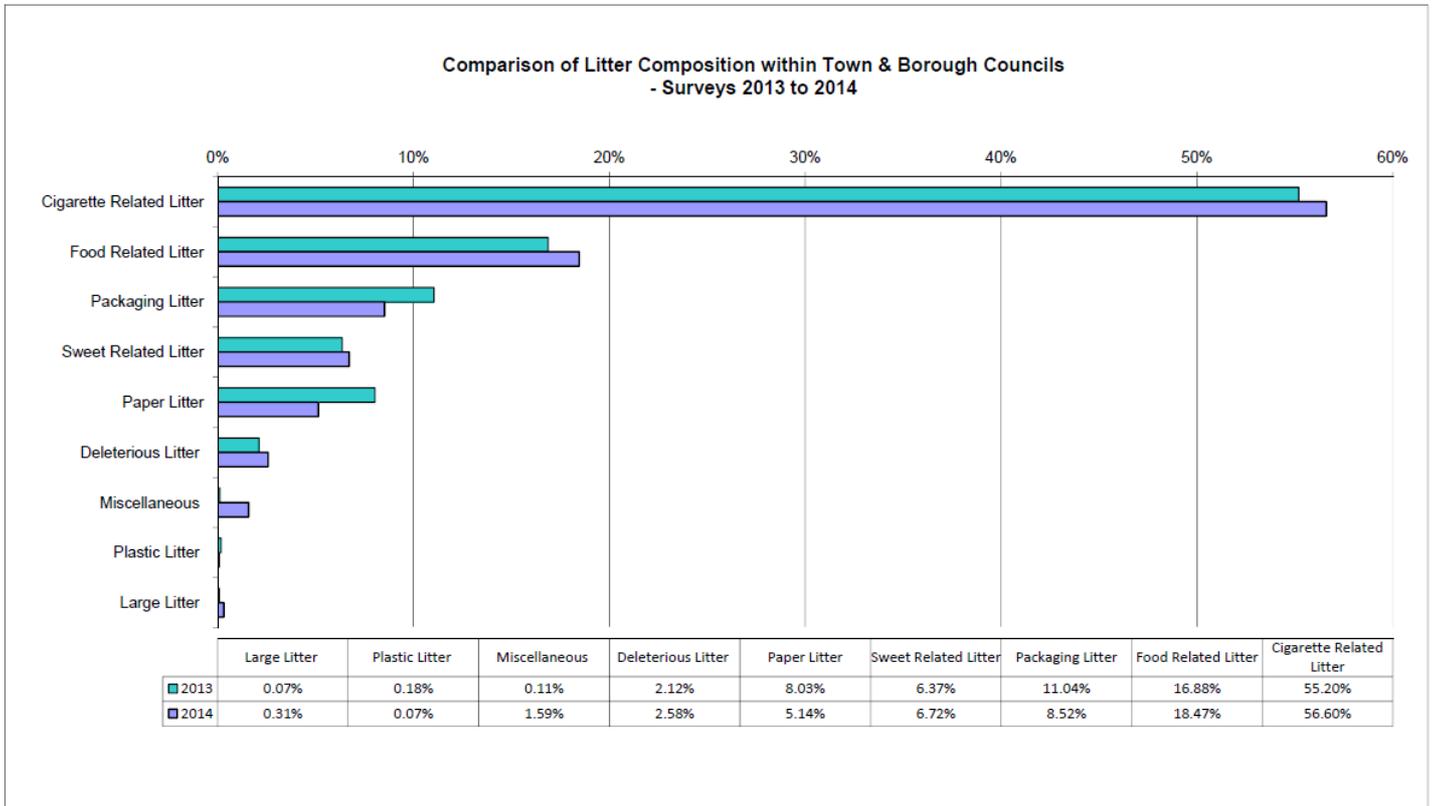


Figure C. 2 Comparison of Litter Composition within City Councils 2013 to 2014

Figure C.3 illustrates that within Town & Borough Councils, the percentages of cigarette related litter, food related litter, sweet related litter, deleterious litter, miscellaneous and large litter items have increased from 2013 to 2014. Packaging litter, paper litter and plastic litter have decreased from 2013 to 2014.



**Figure C.3 Comparison of Litter Composition within Town & Borough Councils 2013 to 2014**

Figure C.4 shows that within Dublin Local Authorities, the percentage of cigarette related litter, sweet related litter, paper litter and plastic litter all increased from 2013 to 2014. Food related litter, packaging litter, deleterious litter, miscellaneous and large litter items decreased from 2013 to 2014.

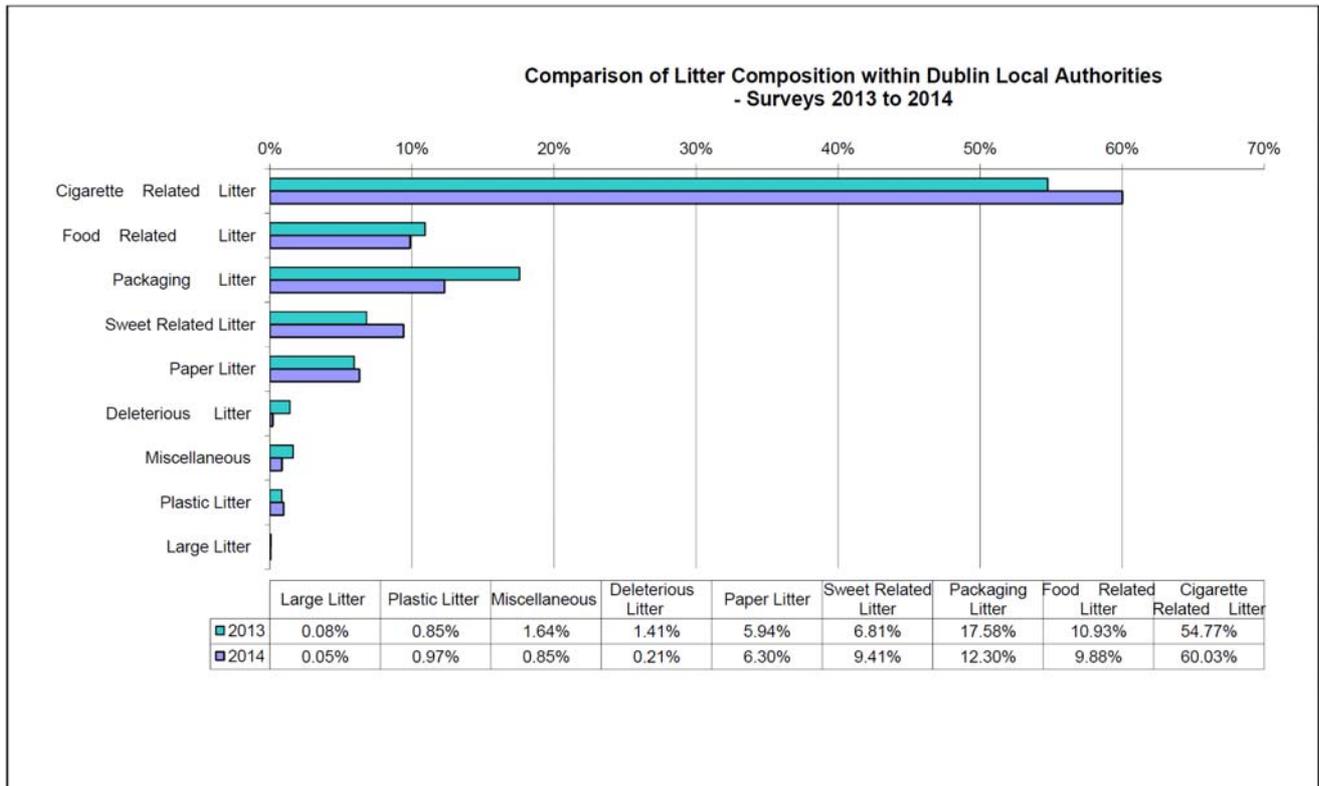


Figure C. 4 Comparison of Litter Composition within Dublin Local Authorities 2013 to 2014

Note that with the exception of County Councils, cigarette related litter increased in all local authority types from 2013 to 2014. Food related litter decreased in all local authority types with the exception of Town and Borough Councils when compared to 2013. Packaging litter increased in County Council and City Council local authorities in 2014 but decreased in Town and Borough Councils and Dublin Local Authorities. Sweet related litter increased in all local authority types from 2013 to 2014 with the exception of County Councils, which experienced a decrease in the percentage of sweet related litter by 2.65% from 2013 to 2014. Paper litter increased in City Council, County Council and Dublin Local Authorities from 2013 to 2014 while there was a reduction in paper litter in Town and Borough Councils.

## **APPENDIX D**

### **COMPARISON OF CAUSATIVE FACTORS OF LITTER POLLUTION WITHIN LITTER POLLUTION INDEX CATEGORIES**

In each category of LPI, passing pedestrians constitute the most significant causative factor of litter pollution. Figures D.1 – D.8 illustrate that as the degree of litter pollution increases (and the LPI value increases), this causative factor becomes a less significant contributor to litter pollution. Accordingly, in 2014 passing pedestrians constitute 42.5% of all causative factors in litter pollution surveys of slightly polluted (LPI 2) areas; this percentage decreased to 38.2% for moderately polluted (LPI 3) areas and to 31.9% for significantly polluted (LPI 4) areas and to 23.5% for grossly polluted (LPI 5) areas.

Passing motorists constitute 18.6% of all causative factors in litter pollution surveys of slightly polluted (LPI 2) areas, this decreases to 16.4% in litter pollution surveys of moderately polluted (LPI 3) areas, then decreases to 14.8% in litter pollution surveys of significantly polluted (LPI 4) areas and increases again to 17.6% in litter pollution surveys of grossly polluted (LPI 5) areas.

In the slightly polluted category (LPI 2), retail outlet, schools/ school children, fly-tipping/ dumping, bring bank and major entertainment event have all increased as causative factors from 2013 to 2014. Fast-food, bank ATM and refuse collection/ presentation remained constant in 2013 and 2014.

Passing pedestrians, passing motorists and retail outlets tend to be the main causative factors in LPI 2 and LPI 3 areas where as in LPI 4 and LPI 5 areas fly-tipping and overflowing bins increase as significant causative factors. This trend is similar to 2013 findings.

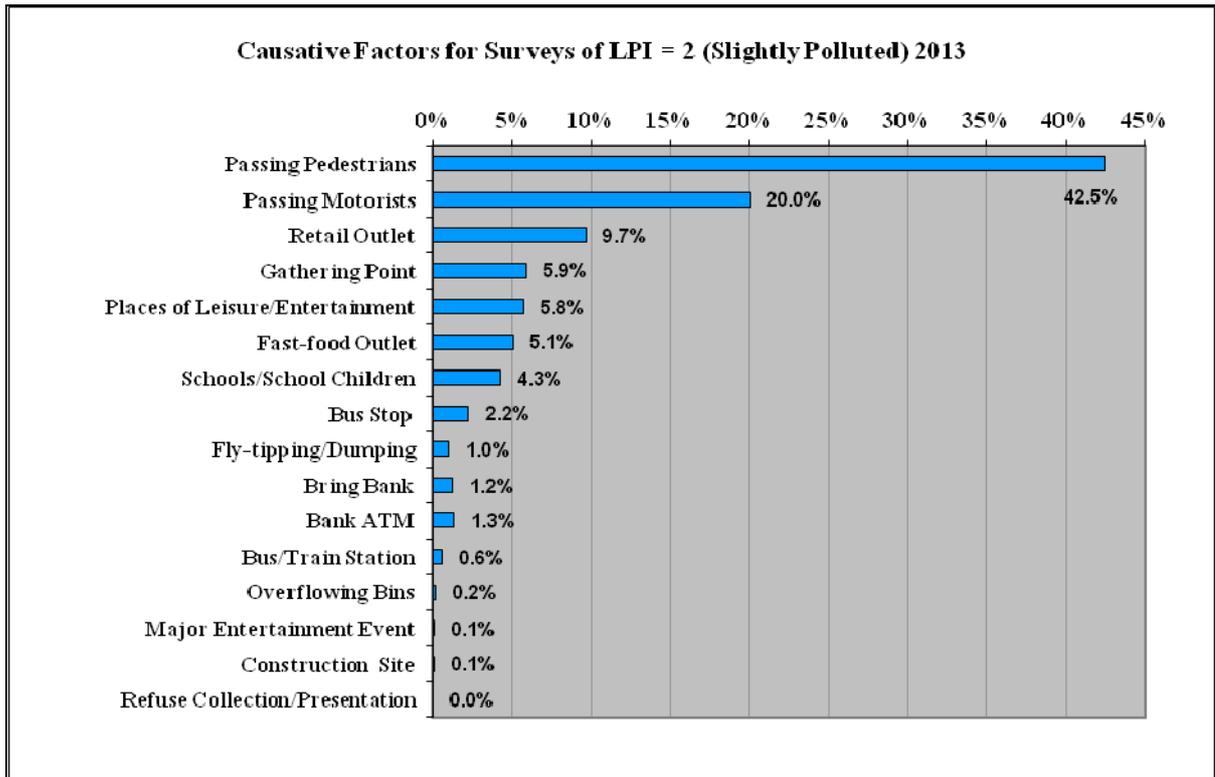


Figure D. 1 Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2013

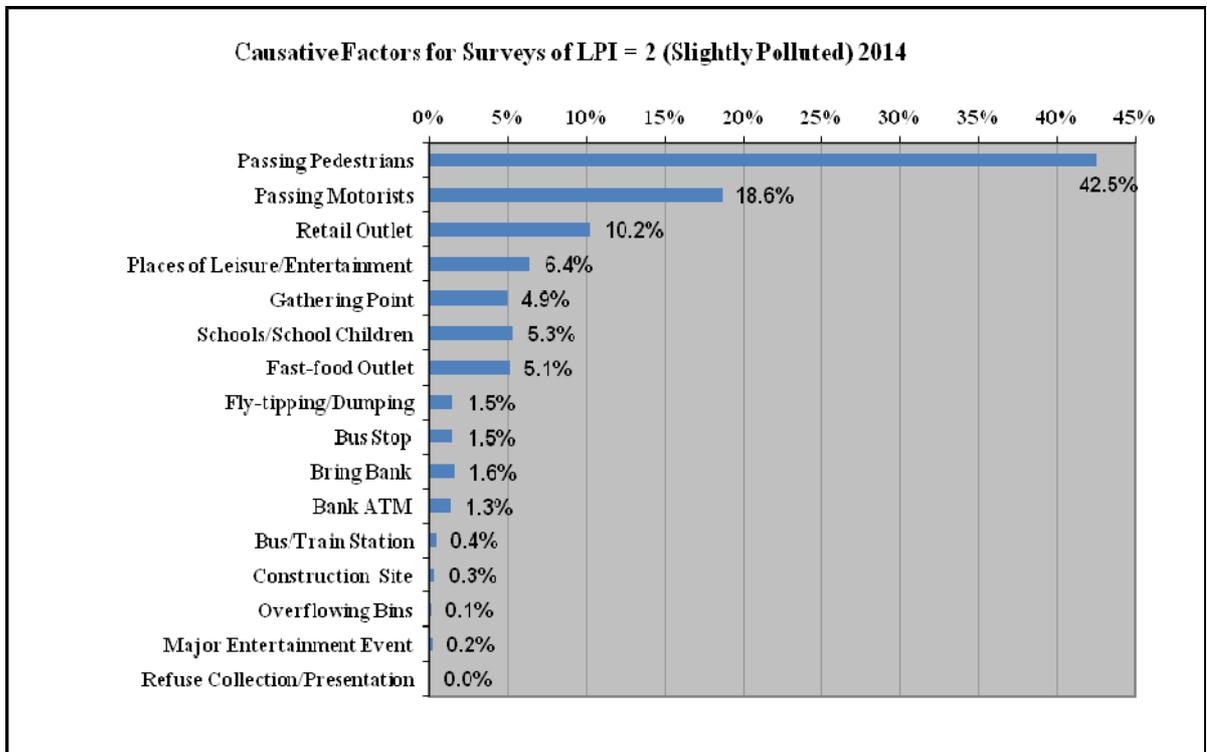


Figure D. 2 Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2014

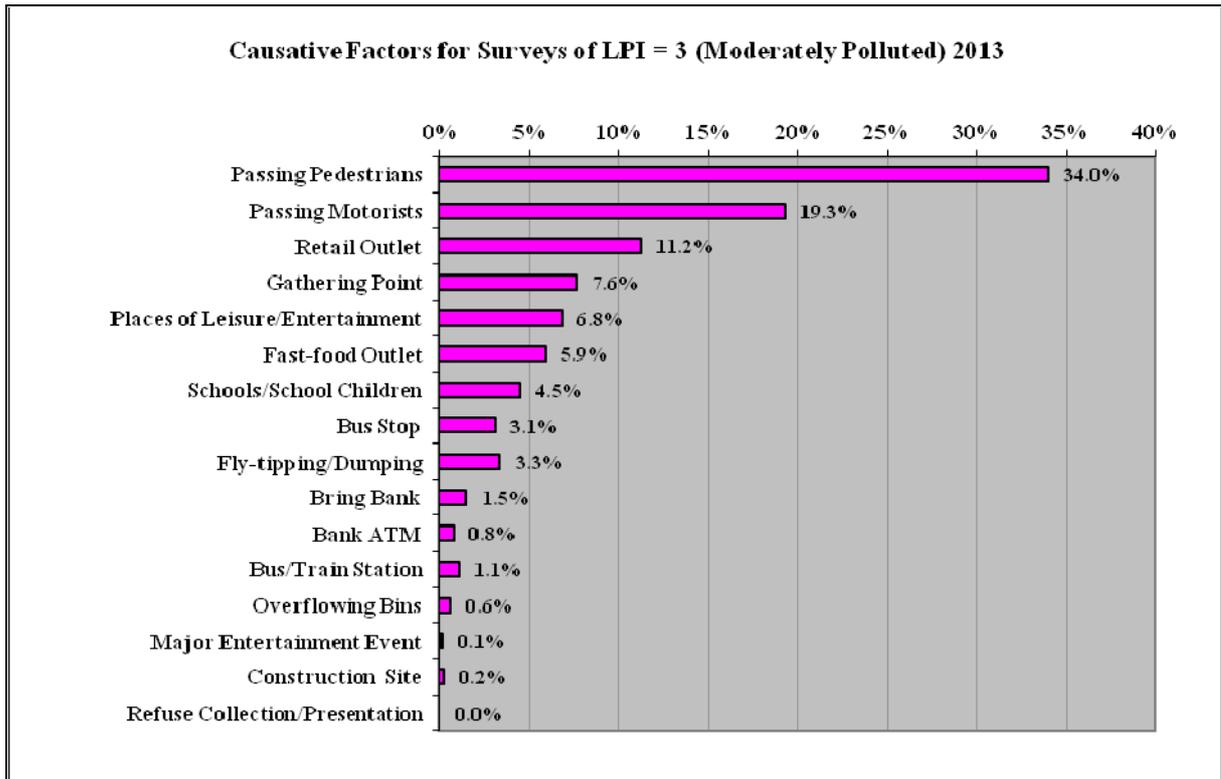


Figure D. 3 Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2013

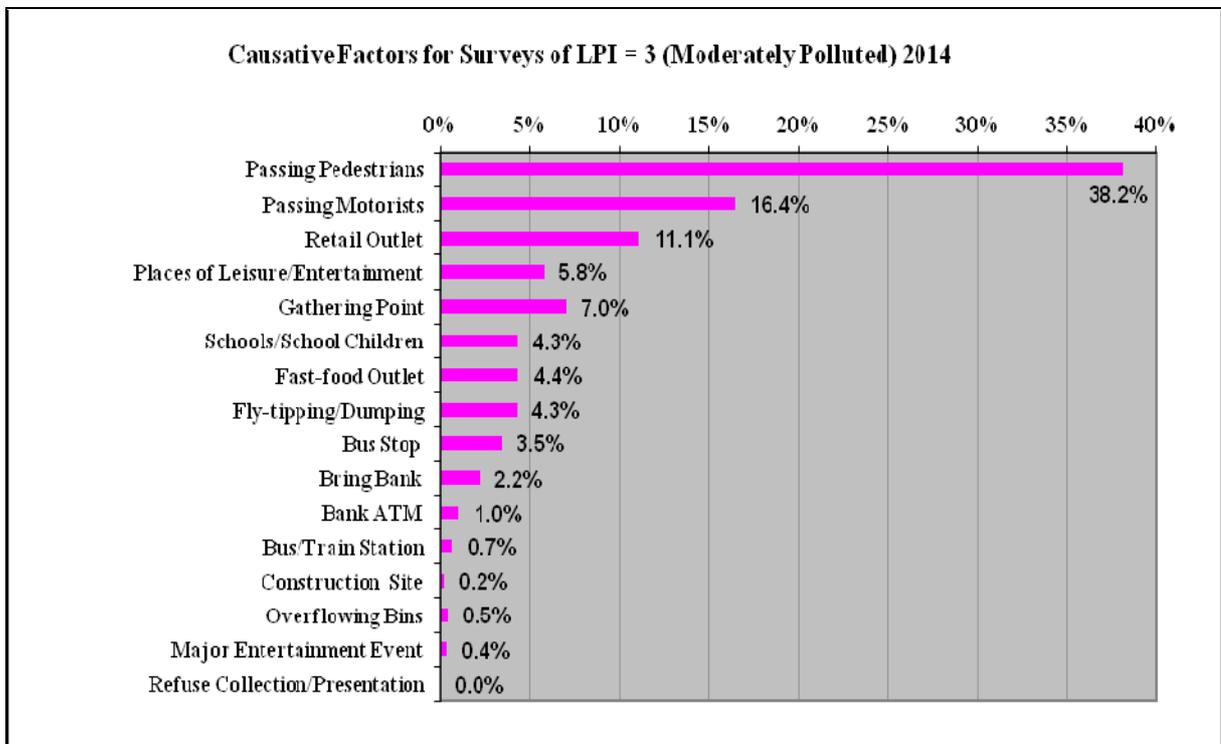


Figure D. 4 Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2014

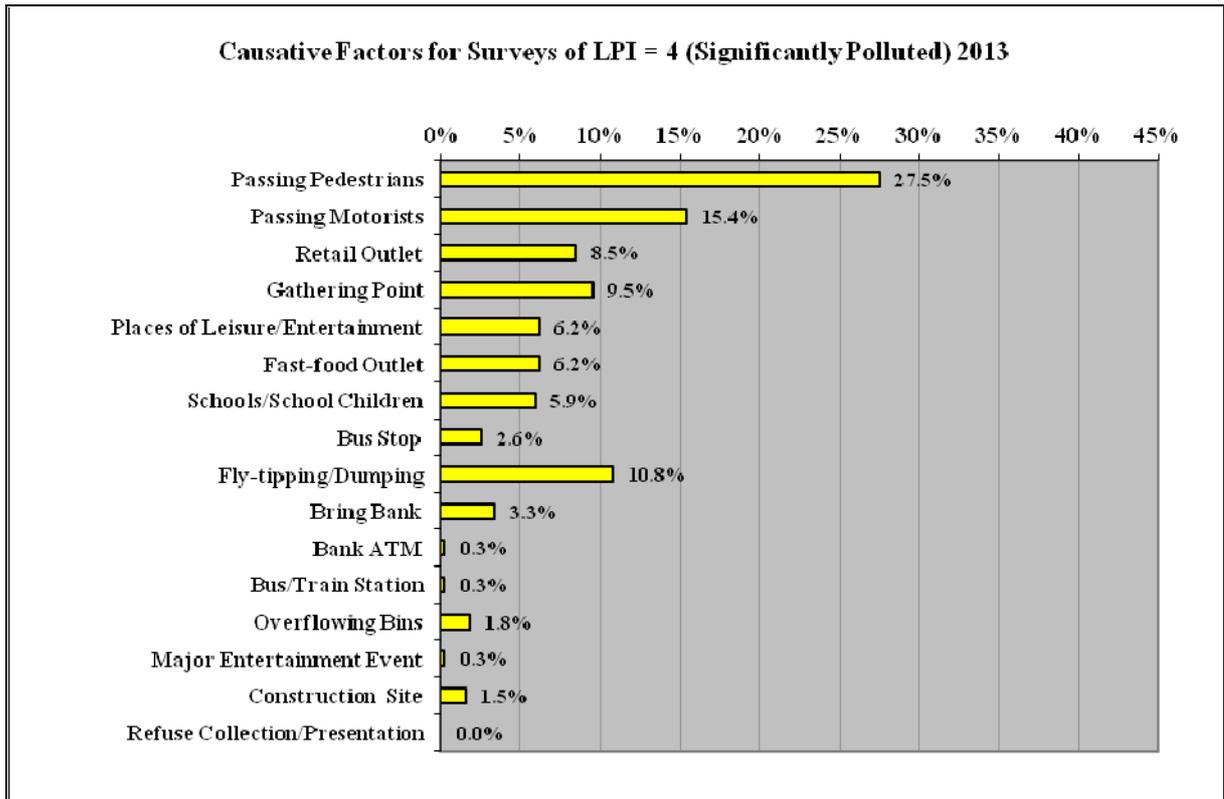


Figure D. 5 Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2013

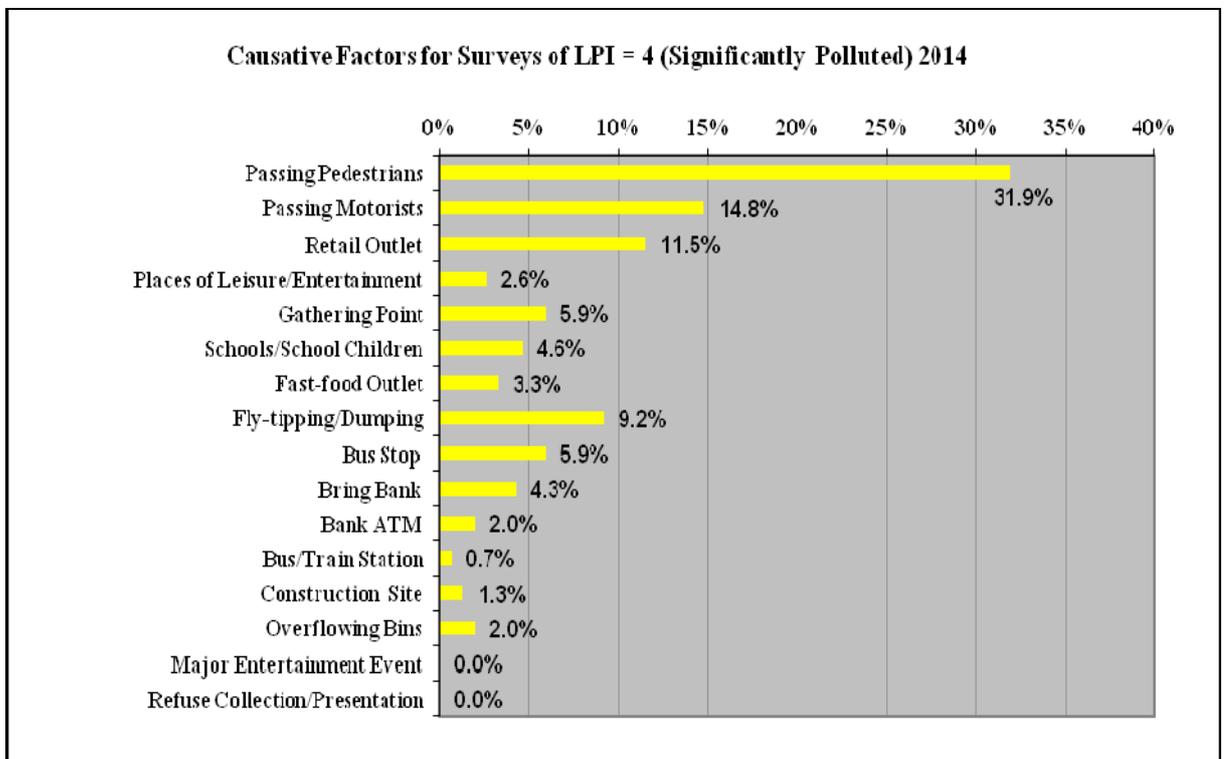


Figure D. 6 Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2014

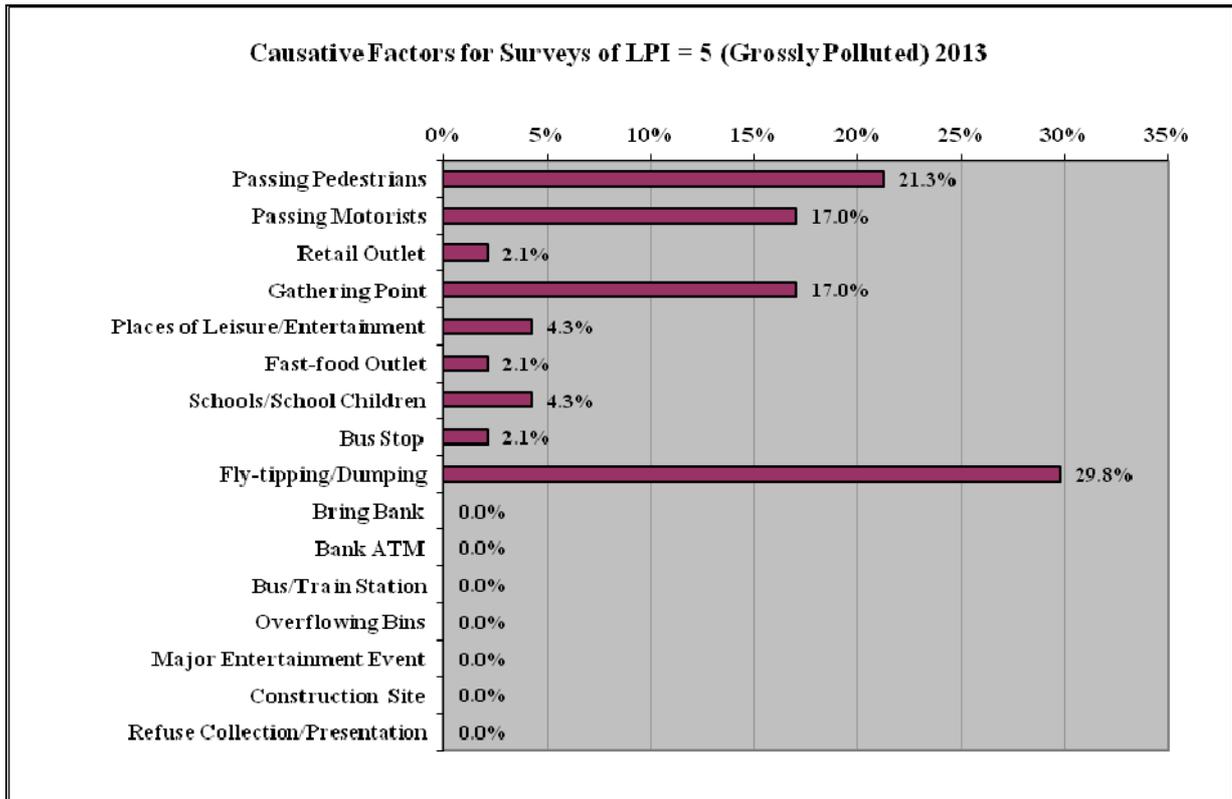


Figure D. 7 Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2013

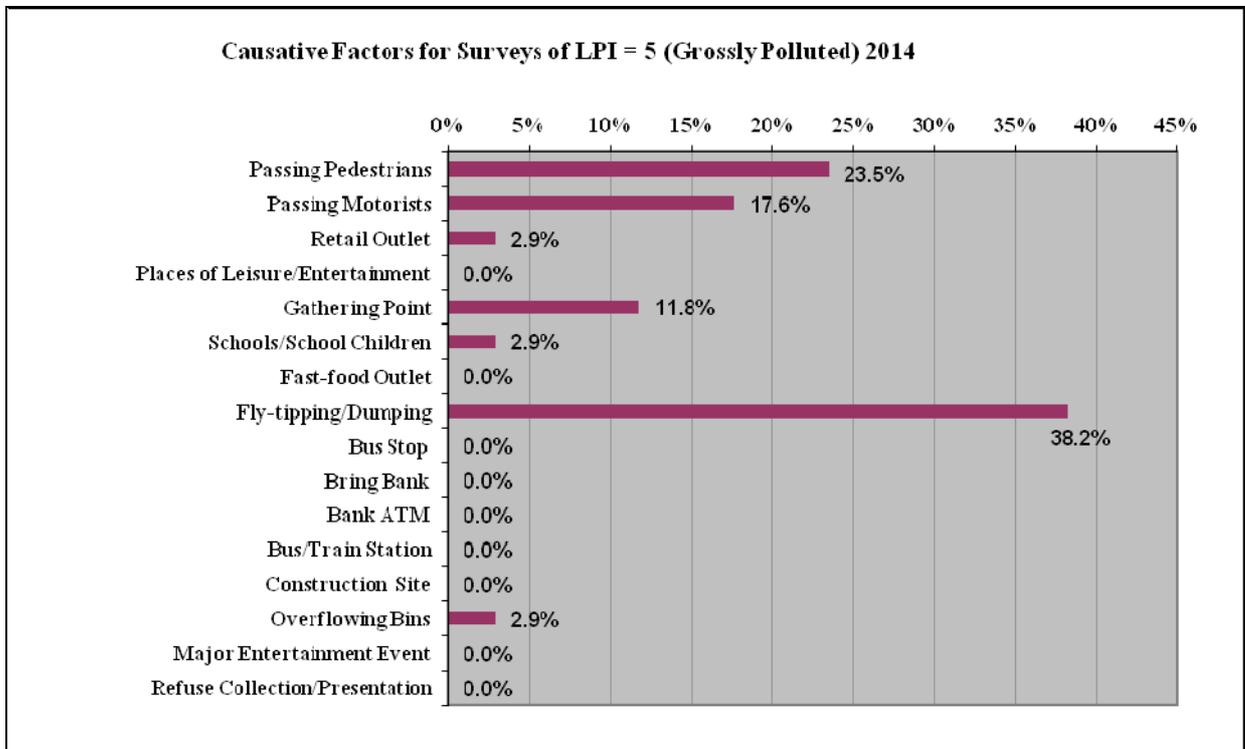


Figure D. 8 Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2014

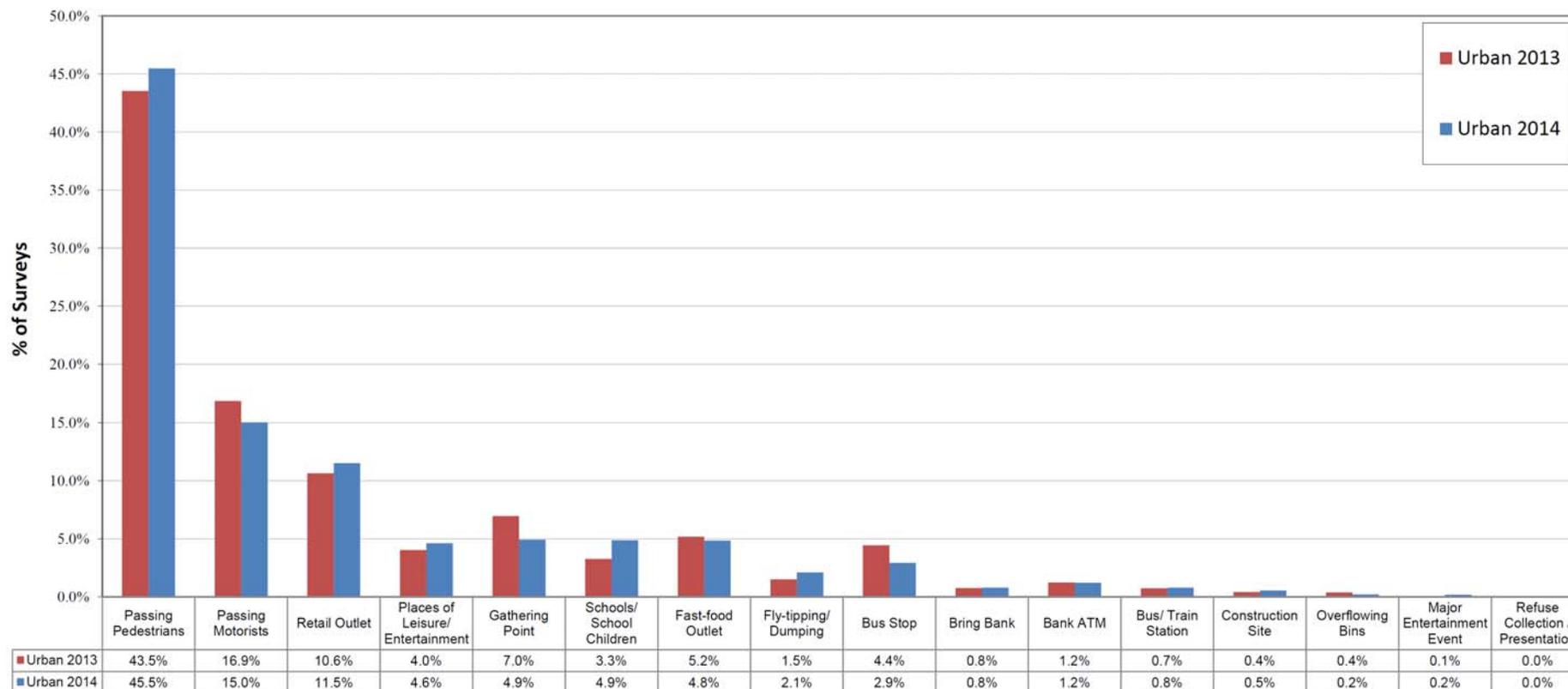
## **APPENDIX E**

### **COMPARISON OF CAUSATIVE FACTORS OF LITTER POLLUTION WITHIN URBAN AND RURAL LOCAL AUTHORITIES**

Figures E.1 and E.2, compare the causes of litter within urban and rural local authorities from 2013 to 2014. In 2014, passing pedestrians are the single greatest cause of litter in both urban and rural areas; this is similar to the results for the past six years.

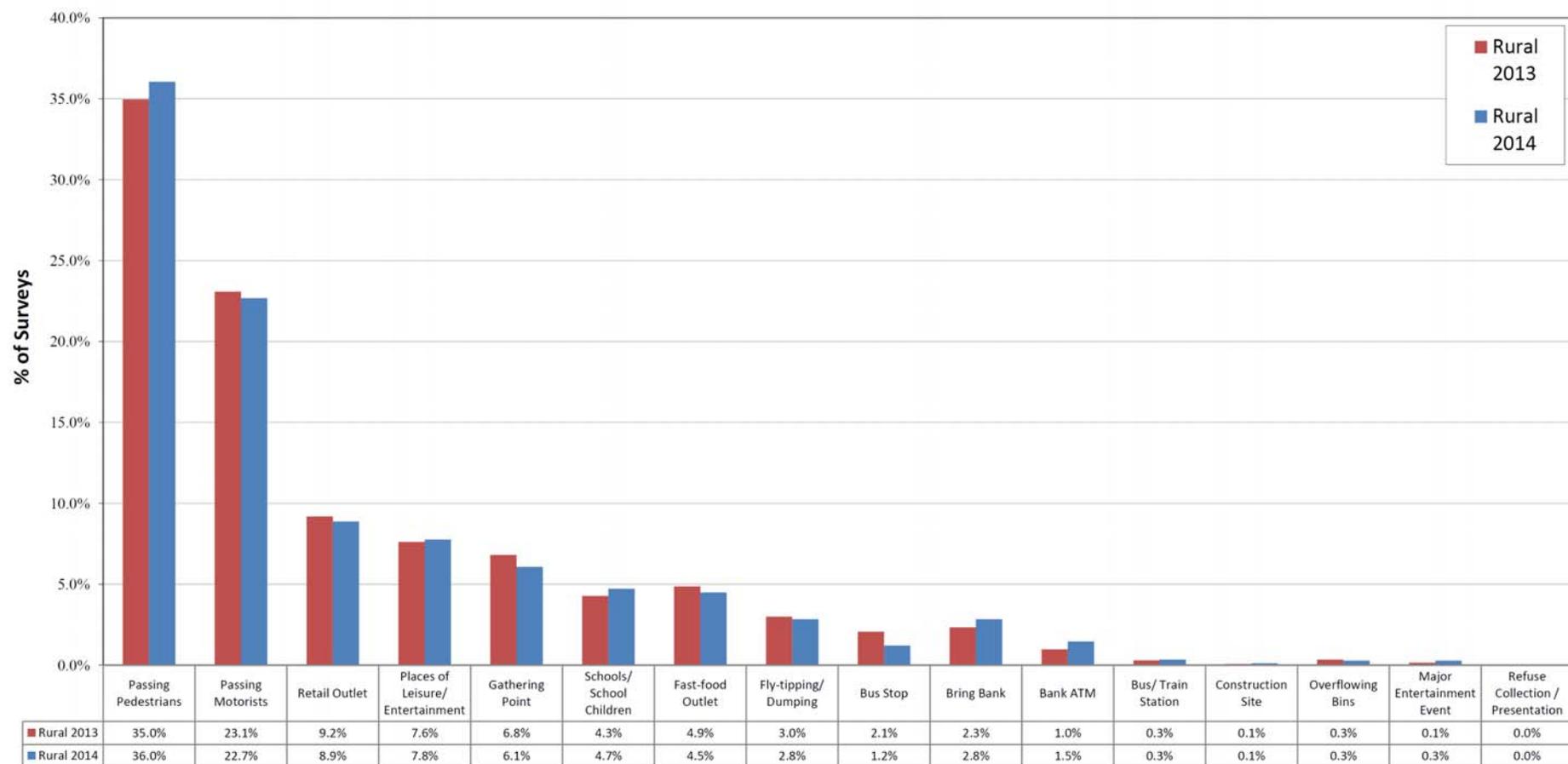
Passing pedestrians, retail outlets, places of leisure/ entertainment, schools/ school children, fly-tipping/ dumping, bus / train stations, construction sites and major entertainment events have all increased as causes of litter pollution in urban areas from 2013 to 2014. Passing motorists, fast-food outlets, gathering points, bus stops and overflowing bins have decreased as causes of litter pollution in urban areas from 2013 to 2014. Bring bank, bank ATM and Refuse collection/ presentation have all remained constant at 0.8%, 1.2% and 0% respectively, in 2013 and 2014.

In rural areas, passing pedestrians, places of leisure/ entertainment, schools/ school children, bank ATM; bring banks and major entertainment events have all increased as causes of litter pollution from 2013 to 2014. Passing motorists, retail outlets, fast-food outlets, fly-tipping/ dumping, gathering points and bus stops have all decreased as causes of litter pollution in rural areas from 2013 to 2014. Bus/train stations, construction site litter, overflowing bins and refuse collection/ presentation litter have remained constant from 2013 to 2014 at 0.3%, 0.1%, 0.3% and 0%, respectively.



Litter Pollution Index

Figure E.1 Comparison of Causative Factors in Urban Councils, 2013 to 2014



Litter Pollution Index

Figure E.2 Comparison of Causative Factors in Rural Councils, 2013 to 2014

Figure E.3 allows for comparison of the various causative factors of litter pollution between urban areas of varying size and population. The ‘Other City Councils’ category comprises results from Galway and Waterford City Councils<sup>6</sup>. Overall, the causes of litter pollution vary somewhat with each category of urban area.

In Dublin, fly-tipping / dumping, bring banks, bank ATM, bus/ train stations, construction site litter and overflowing bins are more significant causative factors of litter pollution than in the other urban categories. Passing pedestrians and bus stops are more significant causative factors of litter pollution in the ‘Cork City Council’ category than in the other urban categories. Fast-food outlets, schools / school children, gathering points, places of leisure/ entertainment and major entertainment events are more significant causative factors of litter pollution in the ‘Other City Councils’ category than in the other urban categories. Passing motorists and retail outlets were identified as more significant causative factors of litter pollution in town and borough councils than in the other urban categories. In 2014 refuse presentation/ collection was not identified as a causative factor in any category.

In Dublin City Council, passing pedestrians as causative factors have increased by 2.4%, from 50.9% in 2013 to 53.3% in 2014. Retail outlets, fast-food outlets, fly-tipping/ dumping, bus stops, bring banks, bus/train stations and construction sites as causative factors have also increased in 2014. Passing motorists, places of leisure / entertainment, gathering points, schools/school children, bank ATM, overflowing bins and refuse collection/ presentation have all decreased as significant causative factors in comparison to 2013. For further detail, please refer to Figure E.4.

In Cork City Council, increases in litter from passing pedestrians, gathering points, schools/school children, fast-food outlets, bus stops, bring banks and overflowing bins was coupled with decreases in litter from retail outlets, places of leisure/ entertainment, bank ATM, construction sites and refuse collection / presentation. For further detail, please refer to Figure E.5.

In 2014 passing pedestrians, gathering points, bank ATM, overflowing bins and refuse collection / presentation have each decreased in their significance in the ‘Other City Councils’ category. However, passing motorists, retail outlets, places of leisure / entertainment, schools/ school children, fast-food outlets, fly-tipping / dumping, bus stops, bring banks, bus/ train stations, construction sites and major entertainment events have each increased in significance as a causative factor of litter pollution. For further comparison, please refer to Figure E.6.

In comparing 2013 and 2014 results, we can see that passing motorists, retail outlets, school/school children, fast-food outlets, fly-tipping/ dumping, bring banks and bus/ train stations have each increased as causative factors within the ‘Town & Borough Councils’ category. Passing pedestrians, places of leisure/ entertainment, gathering points, bus stops and bank ATM have all decreased as a causative factor of litter pollution in 2014. For further comparison, please refer to Figure E.7

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<sup>6</sup> Note Limerick City Council did not take part in the 2014 surveys therefore the 2014 results for ‘Other City Councils’ only includes for results from Waterford City Council and Galway City Council

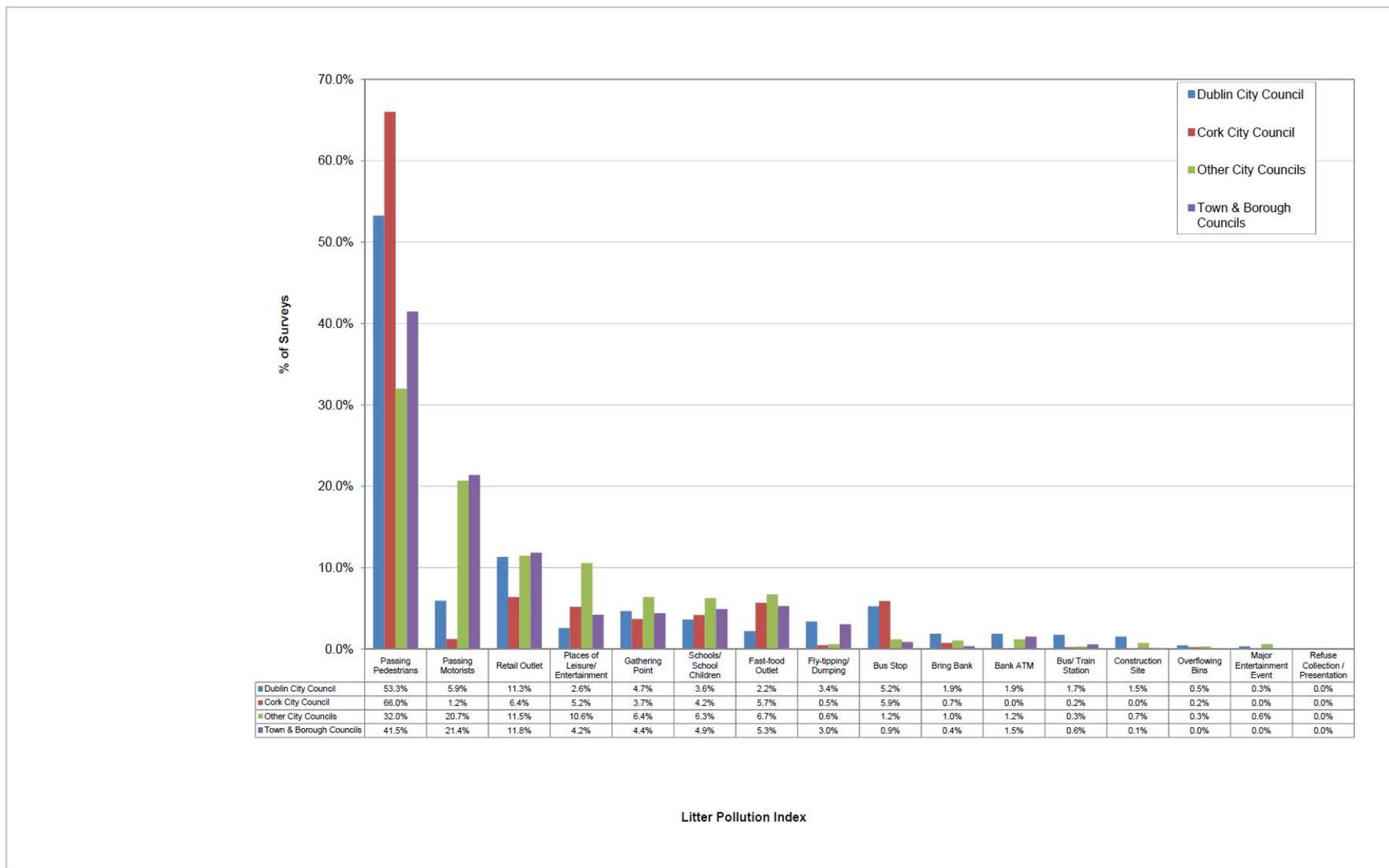


Figure E.3 Comparison of Causative Factors of Litter Pollution within Urban Areas (2014)

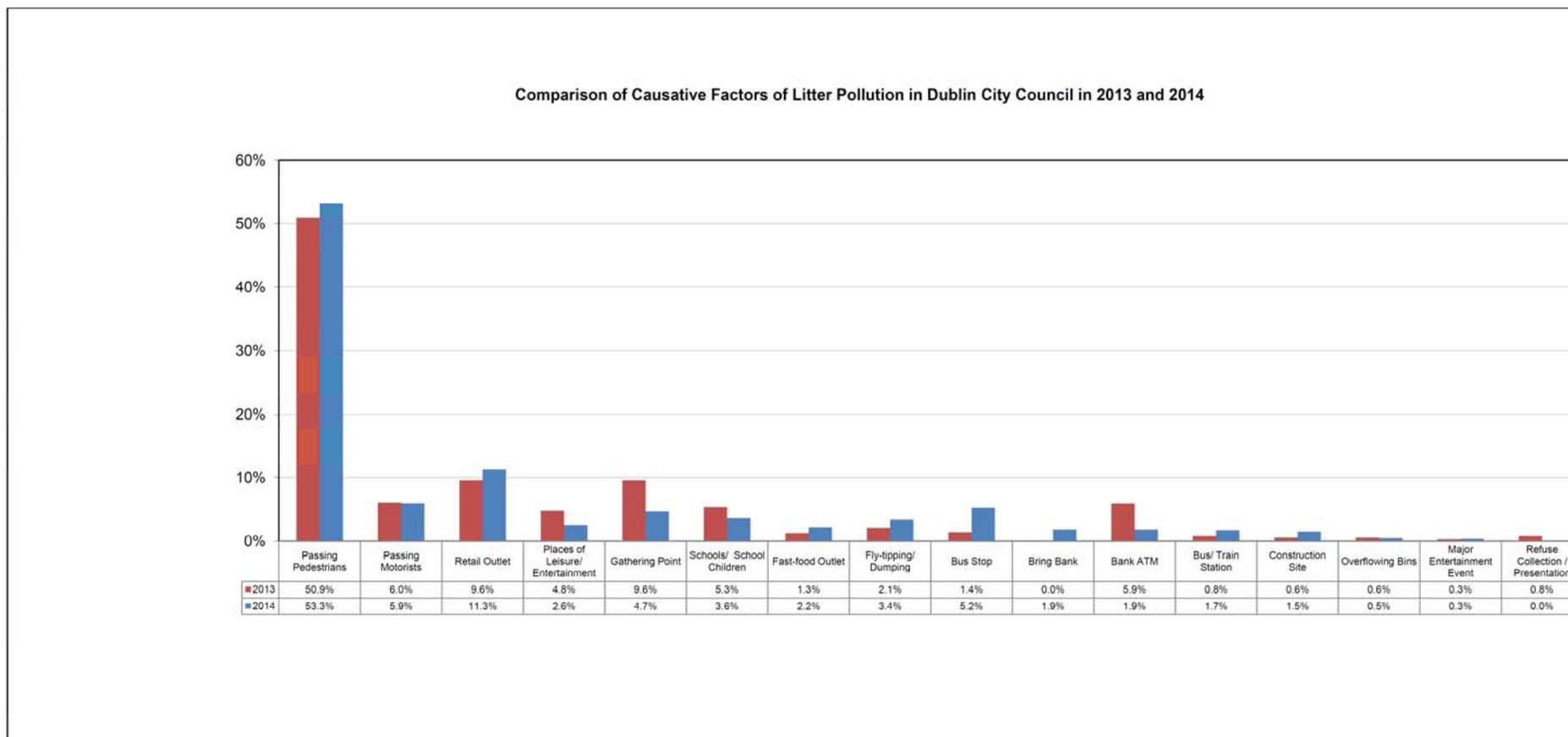


Figure E. 4 Comparison of Causative Factors of Litter Pollution within Dublin City Council 2013 – 2014

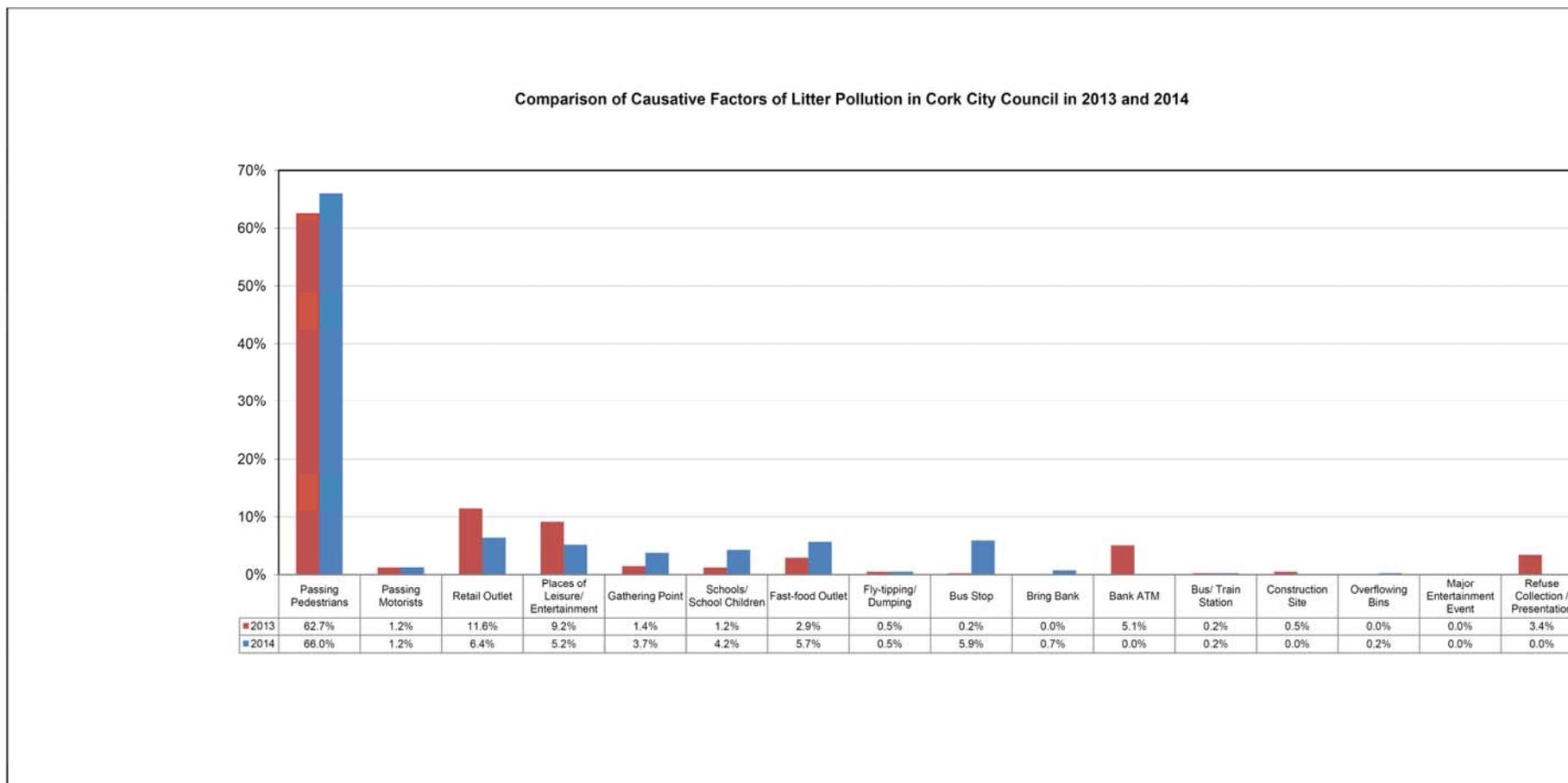


Figure E. 5 Comparison of Causative Factors of Litter Pollution within Cork City Council 2013 – 2014

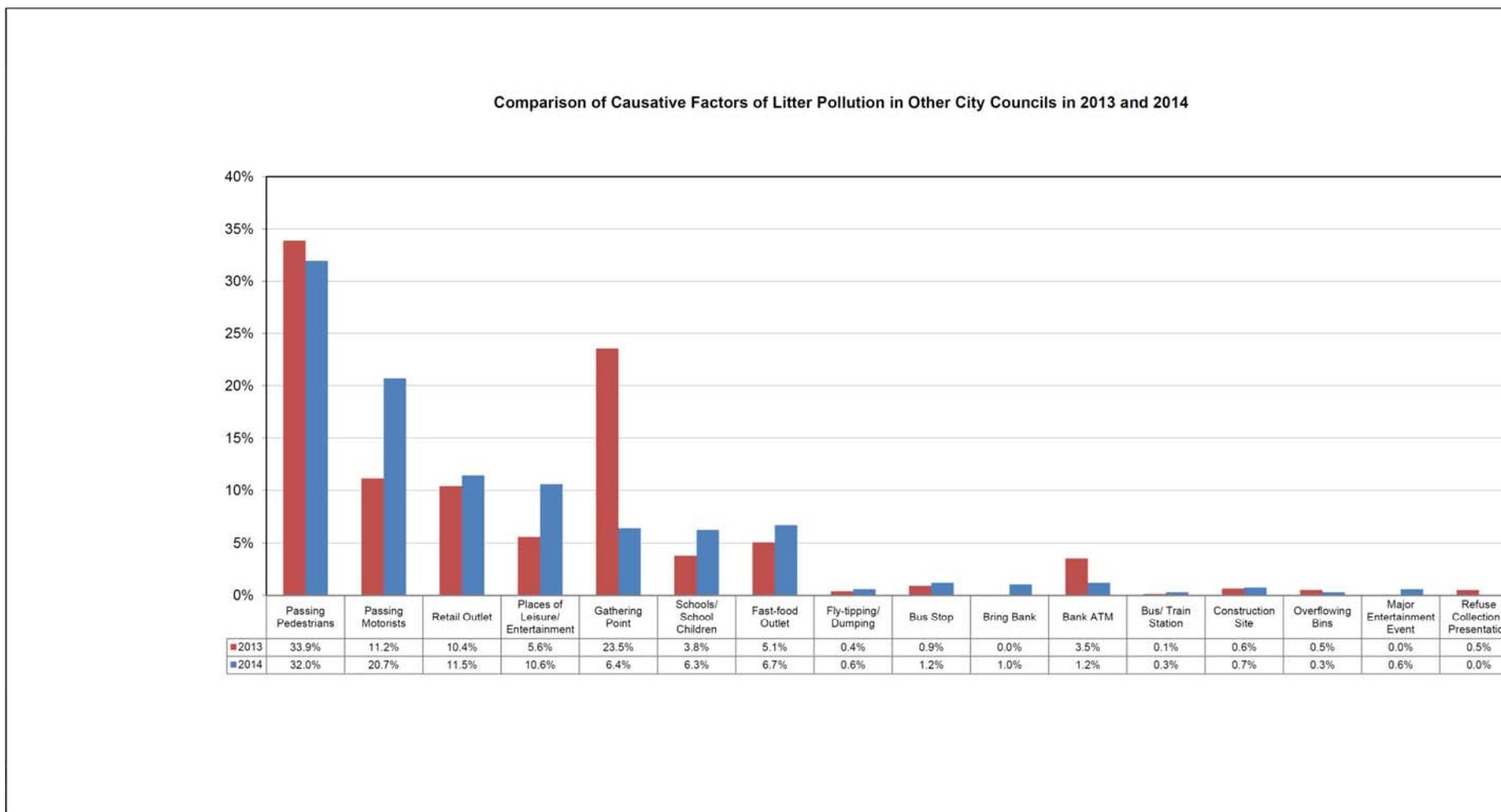


Figure E. 6 Comparison of Causative Factors of Litter Pollution within Other City Councils 2013 – 2014

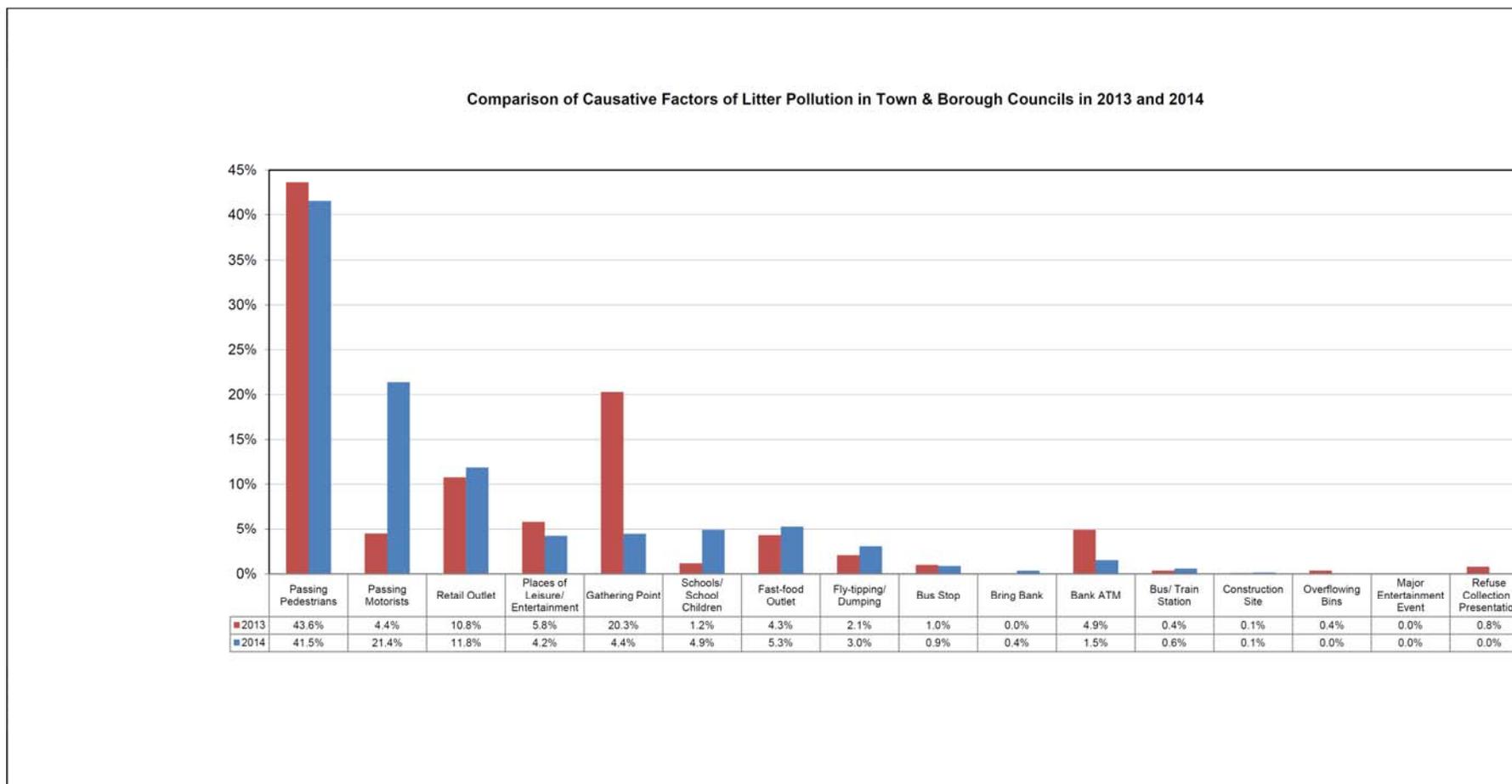


Figure E. 7 Comparison of Causative Factors of Litter Pollution within Town and Borough Councils 2013 – 2014

