



Comhshaol, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government



THE NATIONAL LITTER POLLUTION MONITORING SYSTEM

LITTER MONITORING BODY

SYSTEM RESULTS 2010

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TABLE OF CONTENTS

LIST OF TABLES	ii
LIST OF FIGURES	ii
ACKNOWLEDGEMENTS	iii
OVERVIEW OF THE NATIONAL LITTER POLLUTION MONITORING SYSTEM.....	1
CHAPTER 1: SUMMARY SYSTEM’S SURVEY RESULTS FOR 2010.....	3
CHAPTER 2: HOW LITTERED IS THE COUNTRY?	5
CHAPTER 3: WHAT ARE THE MAIN CONSTITUENT ELEMENTS OF LITTER POLLUTION?	8
CHAPTER 4: WHAT ARE THE MAIN CAUSES OF LITTER POLLUTION?	11
CHAPTER 5: ASSESSMENT OF LITTER POLLUTION DATA BY LOCAL AUTHORITY TYPE	16
CHAPTER 6: ANALYSIS OF SPECIFIC COMPONENTS OF LITTER	22
CHAPTER 7: CONCLUSION	26
CHAPTER 8: ITEMS FOR FURTHER ATTENTION UNDER THE NLPMS.....	27
APPENDIX A: Details of Local Authorities that Carried out Surveys in 2010	A-i
APPENDIX B: Area Cleanliness Rating Photographs.....	A-vi
APPENDIX C: Details of Litter Composition from 2009 – 2010 According to Local Authority Type	A-xii
APPENDIX D: Comparison of Causative factors of Litter Pollution within Litter Pollution Index Categories	A-xvii
APPENDIX E: Comparison of Causative Factors of Litter Pollution within Urban and Rural Local Authorities.....	A-xxiii

LIST OF TABLES

Table 3.1	Detailed National Litter Composition, 2009 to 2010.....	10
Table A.1	Local Authorities that Submitted Litter Quantification Survey Results for 2010.....	A-ii
Table A.2	Local Authorities that Submitted Litter Pollution Survey Results for 2010.....	A-iv

LIST OF FIGURES

Figure 2.1	Comparison of Litter Pollution Indices (LPI) 2009 – 2010.....	5
Figure 2.2	Litter Pollution Index 2004-2010.....	6
Figure 2.3	Comparison of Litter Pollution within Largely Urban and Rural Areas in 2010.....	7
Figure 3.1	Composition of Litter in 2010 Broken Down into Main Categories.....	8
Figure 3.2	Comparison of National Litter Composition from 2009 to 2010.....	9
Figure 4.1	Causative Factors of Litter Pollution across all Local Authorities, 2009 compared to 2010.....	12
Figure 4.2	Causative Factors of Litter Pollution According to Local Authority Type in 2010.....	14
Figure 5.1	Comparison of Litter Pollution within Dublin Local Authorities 2009 to 2010.....	16
Figure 5.2	Comparison of Litter Pollution within County Councils 2009 to 2010.....	17
Figure 5.3	Comparison of Litter Pollution within City Councils 2009 to 2010.....	18
Figure 5.4	Comparison of Litter Pollution within Borough & Town Councils 2009 to 2010.....	19
Figure 5.5	Comparison of Litter Pollution in Rural Areas from 2009 to 2010.....	20
Figure 5.6	Comparison of Litter Pollution in Urban Areas from 2009 to 2010.....	20
Figure 6.1	Chewing Gum as a Percentage of the National Litter Composition.....	22
Figure 6.2	Sweet Related Litter Analysed 2009 and 2010.....	23
Figure 6.3	Bank Slips as a Percentage of the National Litter Composition.....	24
Figure 6.4	Plastic Bags as a Percentage of the National Litter Composition.....	25
Figure C. 1	Comparison of Litter Composition within County Councils 2009 to 2010.....	A-xiii
Figure C. 2	Comparison of Litter Composition within City Councils 2009 to 2010.....	A-xiv
Figure C. 3	Comparison of Litter Composition within Town and Borough Councils 2009 to 2010.....	A-xv
Figure C. 4	Comparison of Litter Composition within Dublin Local Authorities 2009 to 2010.....	A-xvi
Figure D. 1	Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2009.....	A-xix
Figure D. 2	Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2010.....	A-xix
Figure D. 3	Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2009.....	A-xx
Figure D. 4	Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2010.....	A-xx
Figure D. 5	Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2009.....	A-xxi
Figure D. 6	Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2010.....	A-xxi
Figure D. 7	Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2009.....	A-xxii
Figure D. 8	Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2010.....	A-xxii
Figure E. 1	Comparison of Causative Factors in Urban Councils, 2009 to 2010.....	A-xxv
Figure E. 2	Comparison of Causative Factors in Rural Councils, 2009 to 2010.....	A-xxvi
Figure E. 3	Comparison of Causative Factors of Litter Pollution within Urban Areas (2010).....	A-xxvii

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 - ◆ Ms Bernie Lillis, Dublin City Council;
 - ◆ Mr Paddy Mathews, Fáilte Ireland;
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OVERVIEW OF THE NATIONAL LITTER POLLUTION MONITORING SYSTEM

The data produced by the National Litter Pollution Monitoring System 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 to this report together with an explanation of each LPI.

The area cleanliness rating¹ 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 2010 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

¹ 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 GIS, in these instances local authorities randomly choose 40% of their locations by identifying random areas on maps.

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 soon before 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 2010 the Litter Monitoring Body continued to provide training, where required on the implementation of the NLPMS to local authorities.

Audit

In 2010, the Litter Monitoring Body undertook on site audits of three local authorities to ensure that the system is being implemented as designed. The local authorities audited were:

- ◆ Ballinasloe Town Council;
- ◆ Galway County Council; and
- ◆ Galway City Council.

The Audit Report is available on www.litter.ie. The audits have revealed that for the most part these local authorities are implementing the system correctly.

The Litter Monitoring Body completed a number of additional audits in 2010 as the percentage of “unpolluted or litter free” (LPI 1) areas for 2010 were considered high when compared with previous year’s surveys. These audits revealed that a 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).

These audits allowed for modifications to Litter Pollution Surveys (LPS) in collaboration with the relevant local authority, where necessary.

It is considered for future years surveys, that local authorities should 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 2010

This report is based on an analysis of data received from 74 local authorities². Results were submitted by 70 local authorities in 2009, 77 local authorities in 2008, 75 local authorities in 2007, 72 in 2006, 66 in 2005, 61 in 2004 and 34 in 2003. Survey results in 2010 were submitted by over 82% of local authorities, including data from all local authority types (i.e. county councils, city, town and borough councils). The survey results provide reliable information on the extent, composition and causes of litter pollution in Ireland in 2010 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?
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?

- ◆ 9.7% of areas surveyed were unpolluted (LPI 1). The percentage of unpolluted (LPI 1) areas have increased by 2.9% from 6.8% in 2009 to 9.7% in 2010;
- ◆ 62.8% of all areas surveyed were slightly polluted (LPI 2), a 0.7% decrease on 2009;
- ◆ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined increased by 2.2% from 70.3% in 2009 to 72.5% in 2010;
- ◆ The percentage of moderately polluted areas (LPI 3) has decreased by 1.5% from 25.7% in 2009 to 24.2% in 2010;
- ◆ The percentage of significantly polluted areas (LPI 4) has decreased slightly by 0.6% from 3.7% in 2009 to 3.1% in 2010; and
- ◆ Grossly polluted areas (LPI 5) has remained constant at 0.3% from 2009 to 2010.

² While 70 Local Authorities submitted Litter Quantification Surveys, an additional four Local Authorities submitted Litter Pollution Surveys but did not submit Litter Quantification Surveys. Therefore results have been received from 74 Local Authorities. Further details are provided in Appendix A.

What are the main constituent elements of litter pollution?

- ◆ Cigarette related litter (51.43%), food related litter (23.46%) packaging litter (11.32%) and sweet related litter (7.37%) were the main litter constituents identified nationally.

What are the main causes of litter pollution?

- ◆ Passing pedestrians (37.8%), passing motorists (19.5%), retail outlets (10.2%), gathering points (7.8%) and fast food outlets (5.7%) were identified as the main causative factors of litter nationally.

CHAPTER 2: HOW LITTERED IS THE COUNTRY?

The national monitoring system results indicate that the percentage of unpolluted (LPI 1) areas have increased from 6.8% in 2009 to 9.7% in 2010. This indicates an overall improvement in the level of litter pollution from 2009 to 2010. This improvement is a reflection of anti-litter action at a national level and by local authorities. A comparison of the results from 2009 to 2010 indicates that the percentage of slightly polluted (LPI 2) areas have decreased from 63.5% in 2009 to 62.8% in 2010. There is also a decrease in the percentage of moderately (LPI 3) and significantly (LPI 4) polluted areas. Grossly polluted (LPI 5) areas have remained constant at 0.3% from 2009 to 2010.

The 2010 dataset is obtained from over 4,868 litter pollution surveys.

Figure 2.1 below compares 2009 and 2010 litter pollution survey results:

- ◆ The percentage of unpolluted (LPI 1) areas has increased from 6.8% in 2009 to 9.7% in 2010;
- ◆ The percentage of slightly polluted (LPI 2) areas has decreased from 63.5% in 2009 to 62.8% in 2010;
- ◆ There is also a decrease (1.5%) in the moderately polluted (LPI 3) category, from 25.7% in 2009 to 24.2% in 2010;
- ◆ The percentage of areas classified as significantly polluted (LPI 4) has decreased slightly from 3.7% in 2009 to 3.1% in 2010; and
- ◆ The percentage of grossly polluted (LPI 5) areas has remained constant at 0.3% from 2009 to 2010.

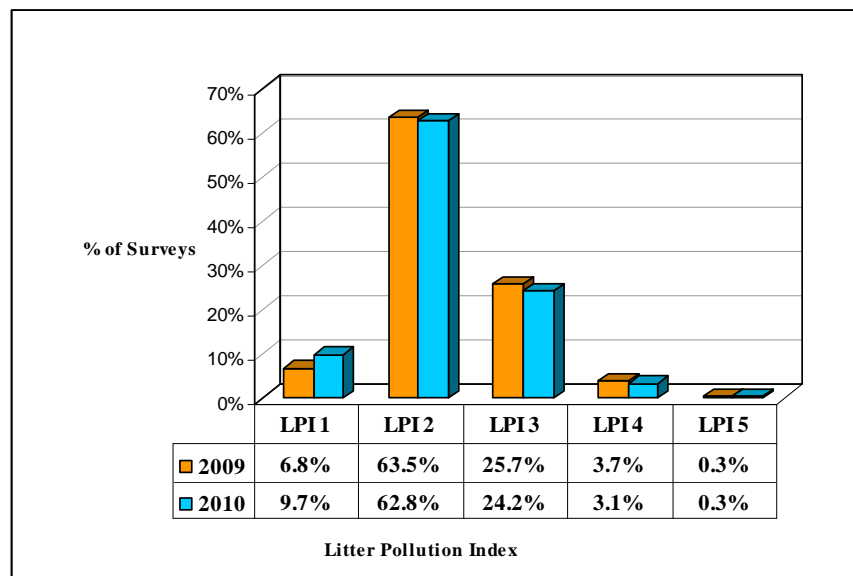


Figure 2.1 Comparison of Litter Pollution Indices (LPI) 2009 – 2010

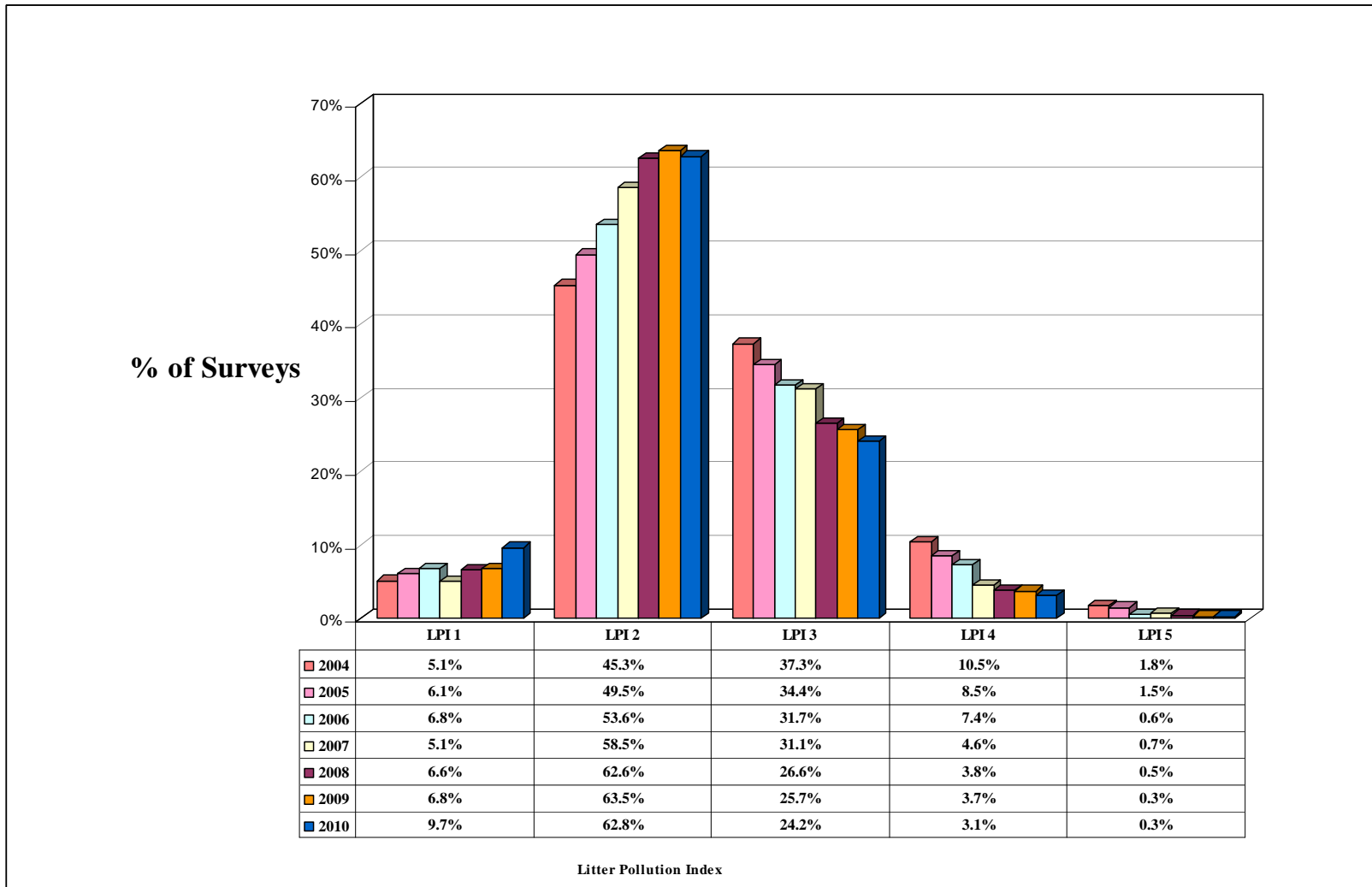


Figure 2.2 Litter Pollution Index 2004-2010

Figure 2.2 illustrates the Litter Pollution Index ratings from 2004 to 2010. The percentage of unpolluted (LPI 1) areas has increased from 5.1% in 2004 to 9.7% in 2010. The 2010 results show the highest percentage of unpolluted (LPI 1) areas at 9.7%. The greatest percentage of slightly polluted (LPI 2) areas was experienced in 2009 at 63.5% and 2010 at 62.8% respectively. The 2010 results show the lowest percentage of moderately polluted (LPI 3) areas at 24.2% and significantly polluted (LPI 4) areas at 3.1%. The lowest percentage of grossly polluted (LPI 5) areas was experienced in 2009 and 2010 at 0.3%.

A comparison of urban and rural local authorities in Figure 2.3 below reveals a similarity in terms of the extent and severity of litter problems between these local authority types. In 2010, 10% of rural areas were unpolluted (LPI 1), compared to 9% of urban areas.

Overall, there are more unpolluted (LPI 1) areas in rural areas than in urban areas. The percentage of slightly polluted (LPI 2) areas experienced in urban areas is 65% with 59% experienced in rural areas. The percentage of moderately polluted (LPI 3) areas experienced in urban areas is 22% with 28% experienced in rural areas. The percentage of significantly polluted (LPI 4) and grossly polluted (LPI 5) areas experienced in urban and rural areas are the same at 3% (LPI 4) and 0% (LPI 5).

(Refer to Figure 5.5 and 5.6, page 20 for further comparison of urban and rural litter pollution data from 2009 to 2010).

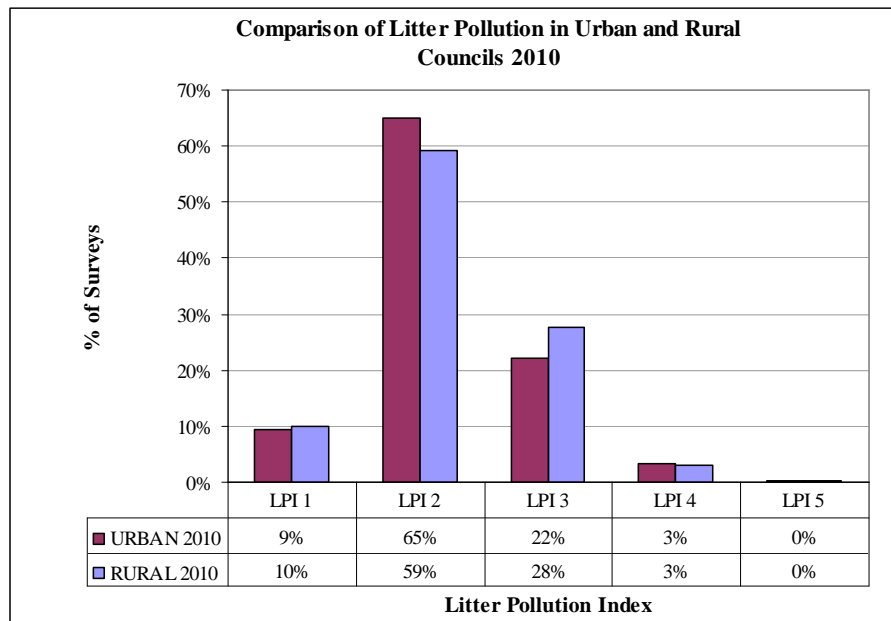


Figure 2.3 Comparison of Litter Pollution within Largely Urban and Rural Areas³ in 2010

³ Percentages are expressed as whole numbers and therefore totals for urban and rural local authorities may not add to exactly 100%.

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 (**51.43%**) of litter in the locations surveyed – this is comprised mainly of cigarette ends which constitute **46.41%** of all litter items nationally;
- ◆ **food related litter**, at **23.46%**, 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 **21.44%** of all litter recorded in the litter quantification surveys carried out in 2010;
- ◆ **packaging litter (11.32%)** is the third largest component of national litter pollution recorded.

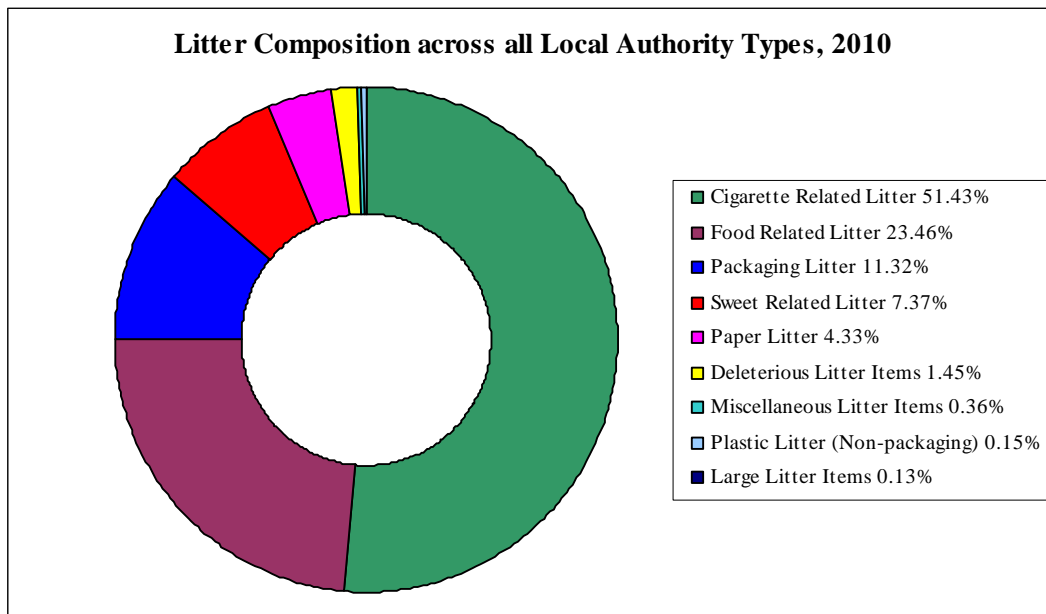


Figure 3.1 Composition of Litter in 2010 Broken Down into Main Categories

3.1 Comparison of Litter Quantification Surveys 2009 – 2010

Figure 3.2 below compares the results of the 2009/2010 surveys.

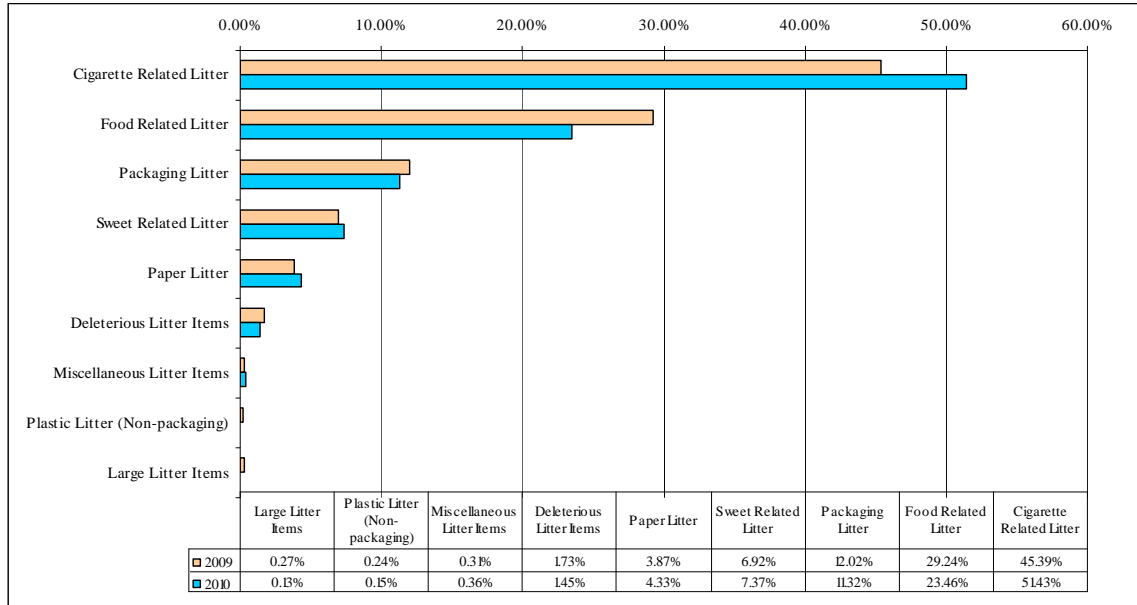


Figure 3.2 Comparison of National Litter Composition from 2009 to 2010

A comparison of the results of Litter Quantification Surveys carried out in 2009 and 2010 shows a relatively similar composition of litter. However, analysis reveals differences in the relative quantities of certain components. The percentages of cigarette related litter, sweet related litter, paper litter and miscellaneous litter items have increased. The percentages of food related litter, packaging litter, deleterious litter items, plastic litter (non-packaging) and large litter items have decreased. Table 3.1 on the following page details the composition of litter in 2010 and 2009.

The greatest percentage change in litter composition is in the food related litter category; specifically chewing gum litter has decreased by 5.83% from 2009 to 2010. In the cigarette related litter category, cigarette ends increased by 5.33% from 2009 to 2010.

Refer to Appendix C for “Details of Litter Composition from 2009-2010 according to Local Authority Type”.

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

The breakdown of causative factors nationally in 2009 and 2010 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 2009 to 2010.

Figure 4.1 illustrates that:

- ◆ Passing pedestrians continue to constitute the greatest single causative factor of litter pollution, accounting for 37.8% across all local authorities;
- ◆ Passing Motorists are the second largest causative factor accounting for 19.5% across all local authority types in 2010 compared to 18.3% across all local authority types in 2009;
- ◆ Retail outlets have decreased as causative factors of litter pollution from 11.0% in 2009 to 10.2% in 2010;
- ◆ Causative factors that have increased from 2009 to 2010 include gathering points (from 7.7% in 2009 to 7.8% in 2010), fast food outlets (from 5.2% in 2009 to 5.7% in 2010), places of leisure/entertainment (from 4.6% in 2009 to 5.3% in 2010) and fly tipping/dumping (from 1.1% in 2009 to 1.4% in 2010);
- ◆ Additional causative factors that have decreased from 2009 to 2010 include schools/school children (from 5.4% in 2009 to 5.3% in 2010), bus stops (from 3.5% in 2009 to 2.8% in 2010), bus/train station (from 0.8% in 2009 to 0.4% in 2010) and construction sites (from 0.4% in 2009 to 0.3% in 2010); and
- ◆ Causative factors that have remained constant from 2009 to 2010 include bank/ATM, bring banks, overflowing bins, major entertainment events and refuse collection/presentation.

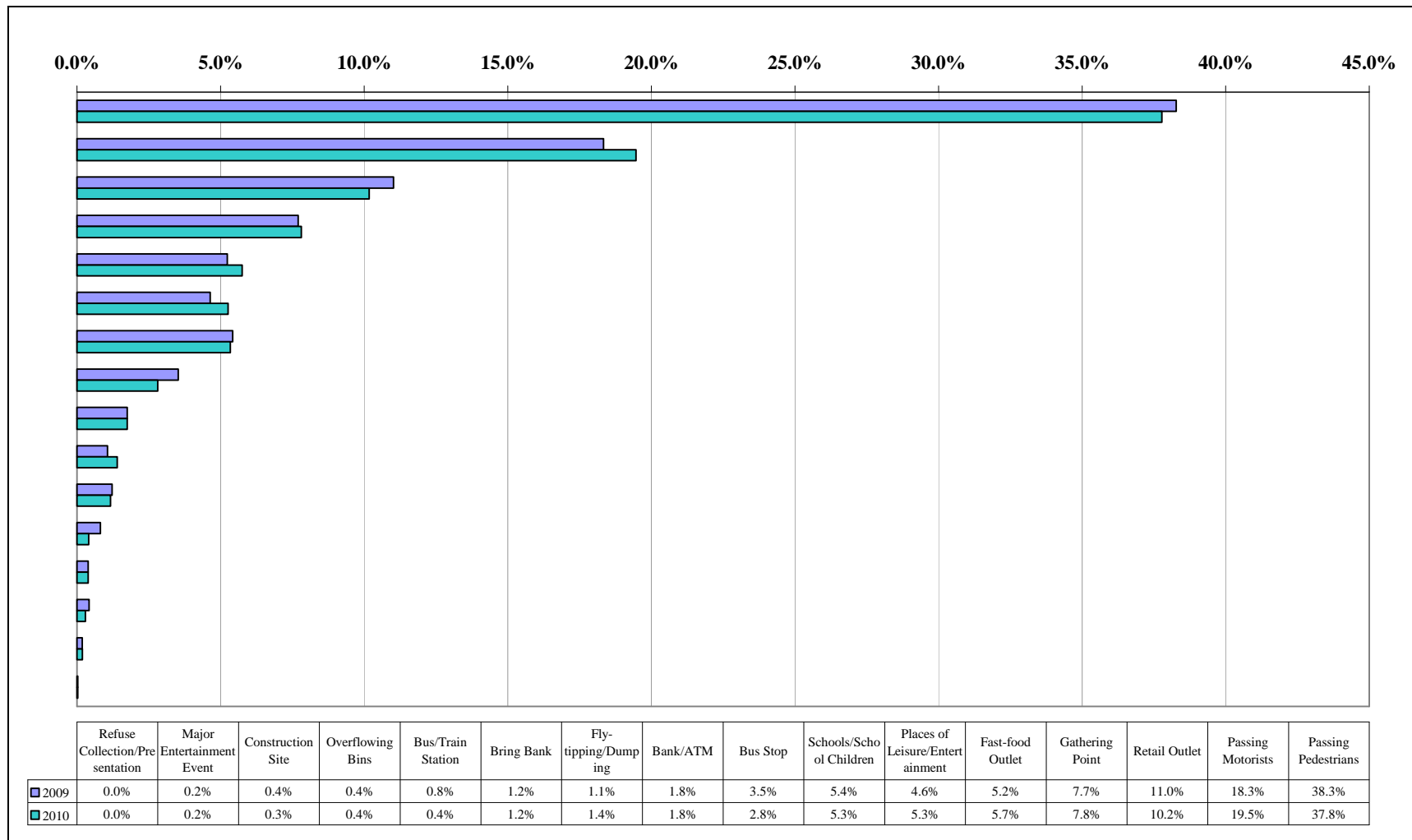


Figure 4.1 Causative Factors of Litter Pollution across all Local Authorities, 2009 compared to 2010

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 14.

The national results for 2010 show that passing pedestrians are the most significant single cause of litter pollution for every type of local authority. It is also clear from Figure 4.2 that passing motorists, retail outlets, gathering points and fast food outlets are considerable sources of litter for all local authority types. Survey results to date show that the contribution of passing motorists and bring banks to litter pollution is greater in County Councils than in other local authority types. Passing pedestrians, fast food outlets, places of leisure/entertainment and construction sites are more significant causative factors in City Councils than in other local authority types. Retail outlets, bus stops, fly-tipping/dumping, bus/train station and overflowing bins are more significant causative factors in Dublin Local Authorities than in other local authority types. Gathering points, schools/school children and bank/ATM are more significant causative factors in Borough and Town Councils than in other local authority types.

Figure 4.2 also illustrates that less significant causes of litter pollution in all types of local authority includes overflowing bins, construction sites, major entertainment events and refuse collection/presentation. This is similar to trends identified in the 2009, 2008 and 2007 National Litter Pollution Monitoring System results. This data indicates that the cause of litter pollution nationwide continues 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.

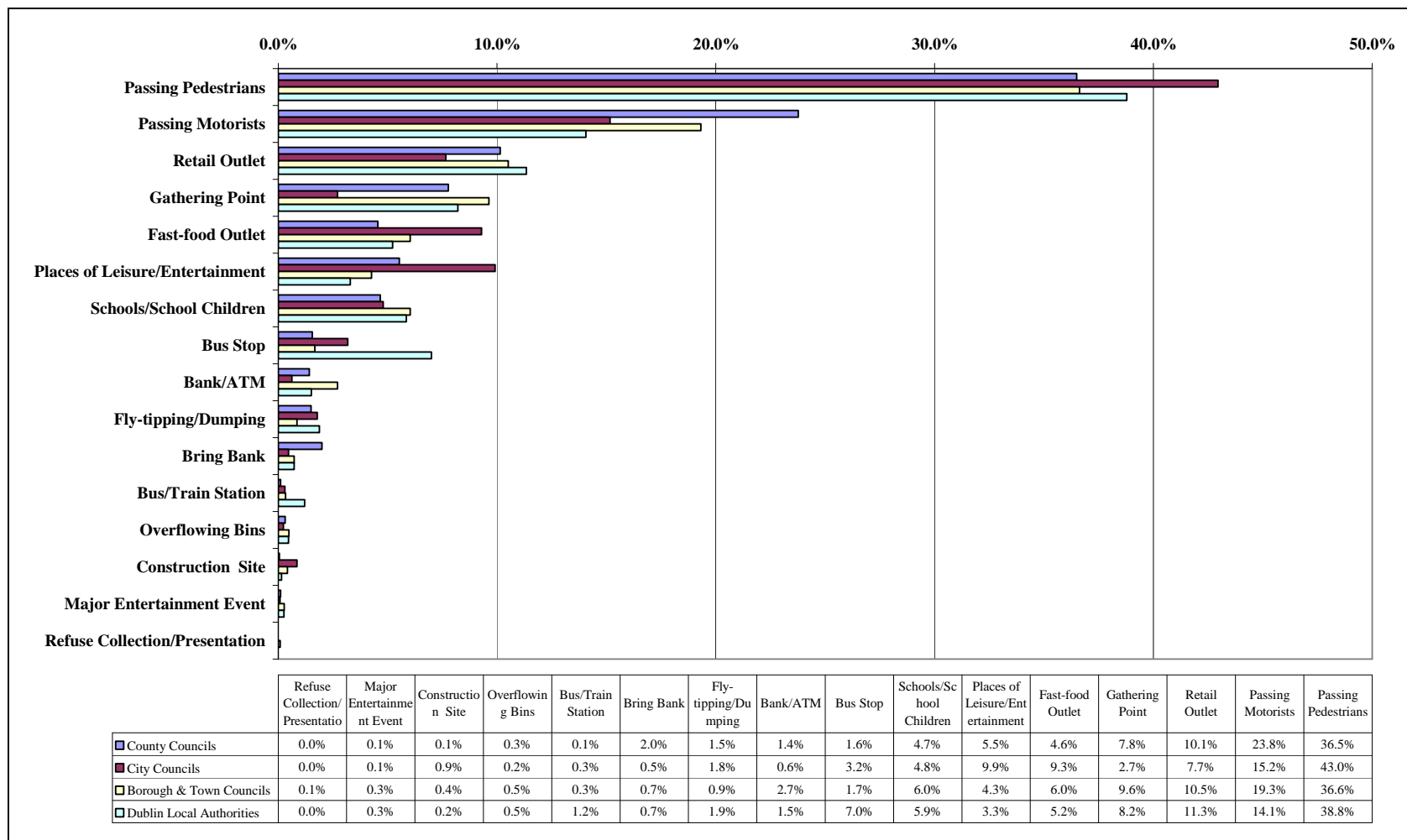


Figure 4.2 Causative Factors of Litter Pollution According to Local Authority Type in 2010⁴

⁴ Percentages are expressed to one decimal place and therefore totals for each category of local authority may not add to exactly 100%.

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 2010 and 2009 graphs under each litter pollution index (on the same page) to facilitate the comparison of the 2010 and 2009 results.

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 68 out of 90⁵ local authorities have been returned to the Litter Monitoring Body and analysed for 2010 - those local authorities are detailed in Appendix A.

Comparison of the 2010 litter pollution surveys 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 from 2009 to 2010, it is clear that there has been an overall improvement in the level of litter pollution in Dublin Local Authorities from 2009 to 2010. Figure 5.1 illustrates that the percentage of unpolluted (LPI 1) areas increased from 8.7% in 2009 to 16.6% in 2010; this constitutes an increase of 7.9%. Slightly polluted (LPI 2) areas remained constant at 62.7% from 2009 to 2010. Moderately polluted (LPI 3) areas decreased by 7.1% from 25.8% in 2009 to 18.7% in 2010. Significantly polluted (LPI 4) areas also decreased by 0.8% from 2.8% in 2009 to 2.0% in 2010. Grossly polluted (LPI 5) areas remained constant at 0% from 2009 to 2010.

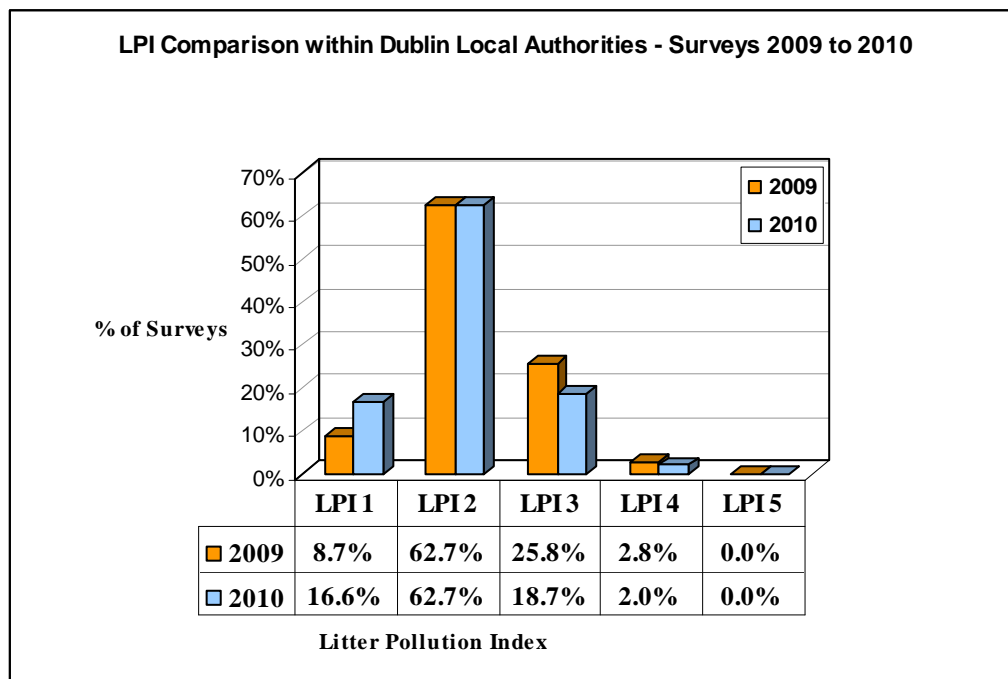


Figure 5.1 Comparison of Litter Pollution within Dublin Local Authorities 2009 to 2010

⁵ Note that there are 90 local authorities in Ireland as South Cork County Council (City) and South Cork County Council (Hinterland) have amalgamated as South Cork County Council (City & Rural).

5.2 Comparison within County Councils

In comparing the litter pollution data for County Councils, Figure 5.2 illustrates that the percentage of unpolluted (LPI 1) areas increased from 8.8% in 2009 to 10.0% in 2010; this constitutes an increase of 1.2%. Slightly polluted (LPI 2) and significantly polluted (LPI 4) areas decreased from 2009 to 2010. Slightly polluted (LPI 2) areas decreased by 4.1% from 63.2% in 2009 to 59.1% in 2010. Significantly polluted (LPI 4) areas decreased by 1.6% from 4.6% in 2009 to 3.0% in 2010. Moderately polluted (LPI 3) and grossly polluted (LPI 5) areas increased from 2009 to 2010. Moderately polluted (LPI 3) areas increased by 4.5% from 23.1% in 2009 to 27.6% in 2010. Grossly polluted (LPI 5) areas increased slightly by 0.2% from 0.2% in 2009 to 0.4% in 2010. Overall a deterioration in the level of litter pollution has been experienced in County Council Local Authorities due to a decrease in the percentage of slightly polluted (LPI 2) areas and a subsequent increase in the percentage of moderately polluted (LPI 3) and grossly polluted (LPI 5) areas.

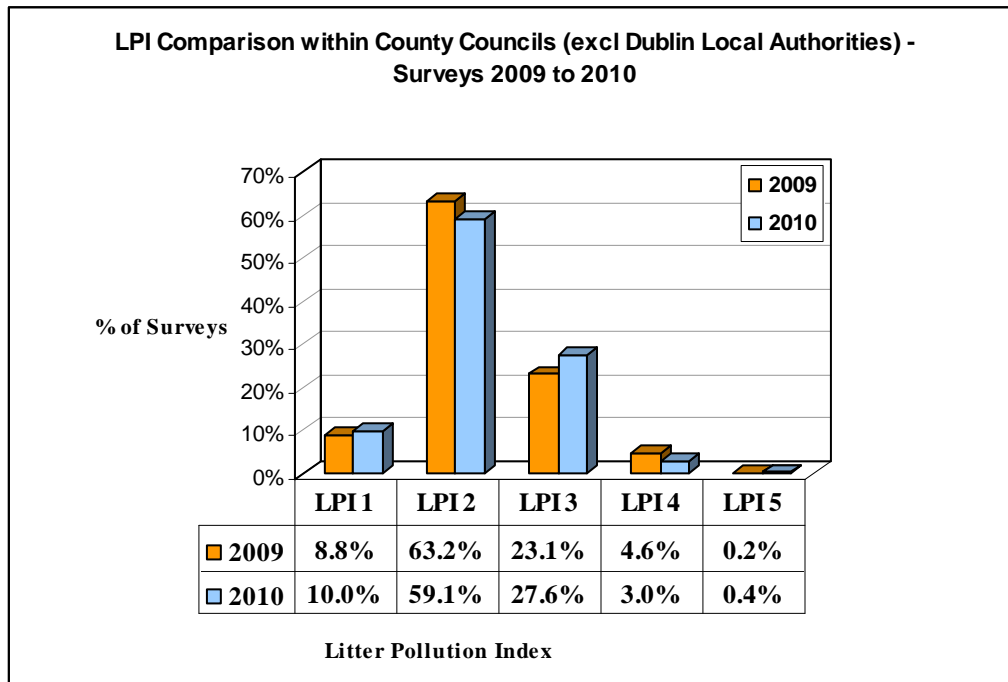


Figure 5.2 Comparison of Litter Pollution within County Councils 2009 to 2010

5.3 Comparison within City Councils

Figure 5.3 illustrates that the percentage of unpolluted (LPI 1) areas increased by 2.7% from 0.9% in 2009 to 3.6% in 2010. Slightly polluted (LPI 2) areas also increased from 63.0% in 2009 to 67.0% in 2010. The percentage of moderately polluted (LPI 3) areas decreased significantly from 31.6% in 2009 to 23.4% in 2010. Significantly polluted (LPI 4) and grossly polluted (LPI 5) areas increased from 2009 to 2010. Significantly polluted (LPI 4) areas increased by 1.3% from 3.9% in 2009 to 5.2% in 2010. The percentage of grossly polluted (LPI 5) areas increased slightly from 0.6% in 2009 to 0.8% in 2010.

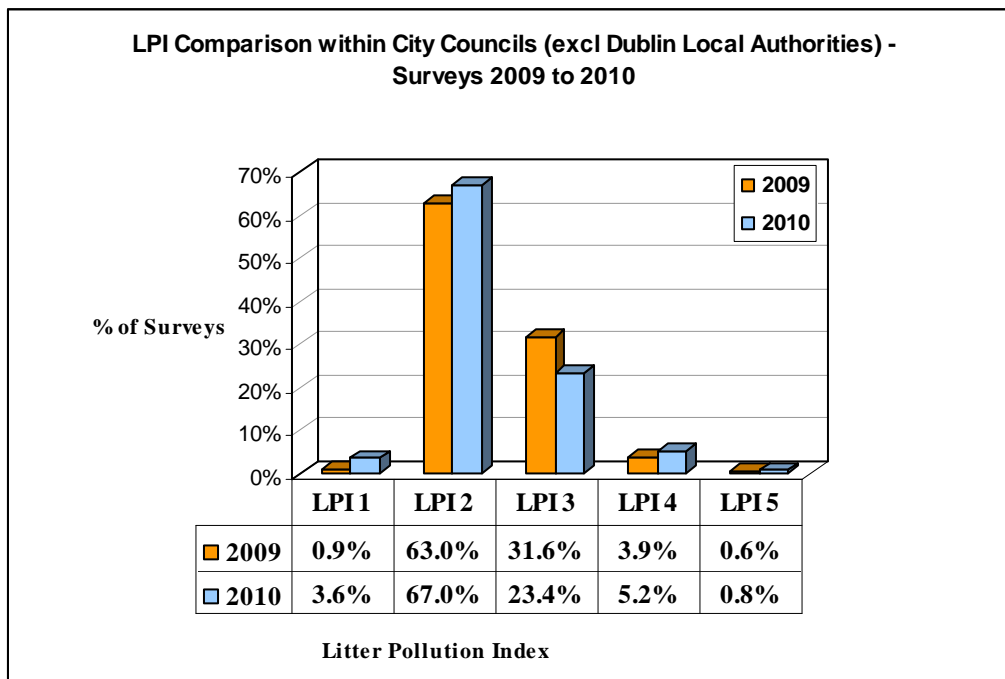


Figure 5.3 Comparison of Litter Pollution within City Councils 2009 to 2010

5.4 Comparison within Borough/Town Councils

The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas have increased from 2009 to 2010. Unpolluted (LPI 1) areas increased by 1.5% from 5.9% in 2009 to 7.4% in 2010. Slightly polluted (LPI 2) areas increased by 2.5% from 64.8% in 2009 to 67.3% in 2010. The percentage of moderately polluted (LPI 3), significantly polluted (LPI 4) and grossly polluted (LPI 5) areas have decreased from 2009 to 2010. Moderately polluted (LPI 3) areas have decreased from 25.8% in 2009 to 23.1% in 2010. Significantly polluted (LPI 4) areas decreased from 3.2% in 2009 to 2.0% in 2010. The percentage of grossly polluted (LPI 5) areas decreased from 0.4% in 2009 to 0.1% in 2010. This shows an improvement in the levels of litter pollution in 2010 in the Borough and Town Council Local Authorities.

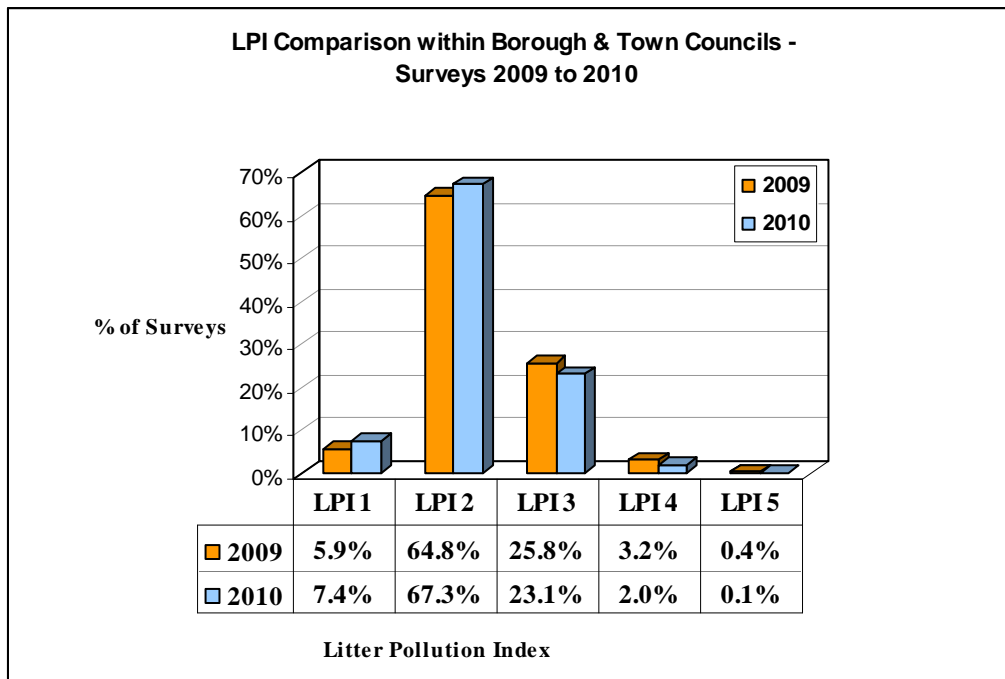


Figure 5.4 Comparison of Litter Pollution within Borough & Town Councils 2009 to 2010

The percentage of unpolluted (LPI 1) areas have increased in all local authority types from 2009 to 2010. City Councils and Borough & Town Councils experienced an increase in the percentage of slightly polluted (LPI 2) areas from 2009 to 2010, with County Councils experiencing a decrease and Dublin Local Authorities remaining constant from 2009 to 2010. The percentage of moderately polluted (LPI 3) decreased in all local authority types with the exception of County Councils, which experienced an increase of 4.5% in the level of moderately polluted (LPI 3) areas from 23.1% in 2009 to 27.6% in 2010. Significantly polluted (LPI 4) areas also decreased in all local authority types with the exception of City Councils, which experienced an increase in the level of significantly polluted (LPI 4) areas from 3.9% in 2009 to 5.2% in 2010. County Councils and City Councils experienced an increase in the percentage of grossly polluted (LPI 5) areas from 2009 to 2010, with Town & Borough Councils experiencing a decrease and Dublin Local Authorities remaining constant from 2009 to 2010.

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 2009 to 2010.

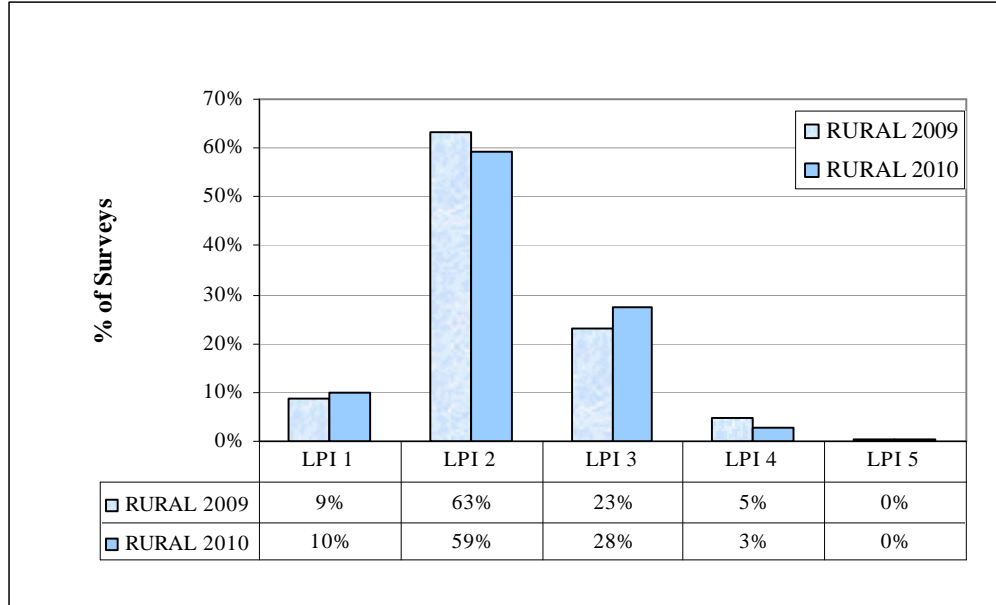


Figure 5.5 Comparison of Litter Pollution in Rural Areas from 2009 to 2010

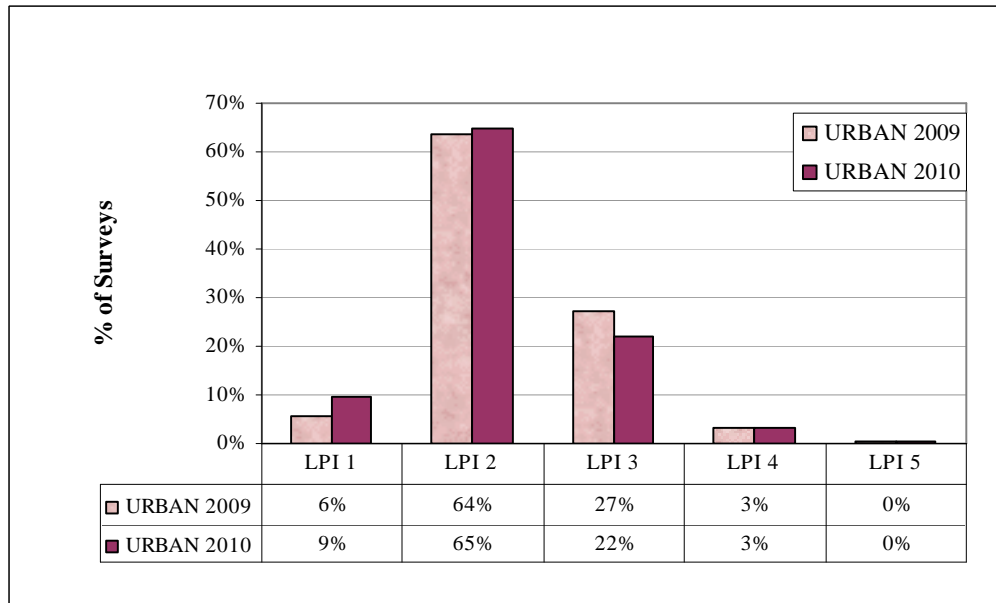


Figure 5.6 Comparison of Litter Pollution in Urban Areas from 2009 to 2010

In Rural areas the levels of unpolluted (LPI 1) areas have increased by 1% from 9% in 2009 to 10% in 2010. The percentage of slightly polluted (LPI 2) areas has decreased by 4% from 63% in 2009 to 59% in 2010. Moderately polluted (LPI 3) areas have increased by 5% from 23% in 2009 to 28% in 2010. Significantly polluted (LPI 4) areas have decreased from 5% in 2009 to 3% in 2010. Grossly polluted (LPI 5) areas have remained constant at 0%.

Urban areas have experienced an improvement in relation to the levels of litter pollution. The percentage of unpolluted (LPI 1) areas increased by 3% from 6% in 2009 to 9% in 2010. The percentage of slightly polluted (LPI 2) areas has also increased by 1% from 64% in 2009 to 65% in 2010. Moderately polluted (LPI 3) areas have decreased by 5% from 27% in 2009 to 22% in 2010. Significantly polluted (LPI 4) and grossly polluted (LPI 5) areas have remained constant at 3% and 0% respectively from 2009 to 2010.

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 last seven years.

Chewing gum levels show an improvement over a three year period from 2008 to 2010. Chewing gum levels have decreased by 5.83% from 2009 to 2010. The percentage of national litter represented by chewing gum has decreased from 29.16% in 2004 to 21.44% in 2010, which represents a decrease of 7.72%. Over the past seven years, chewing gum represents an average of 27.4% of all litter items nationally.

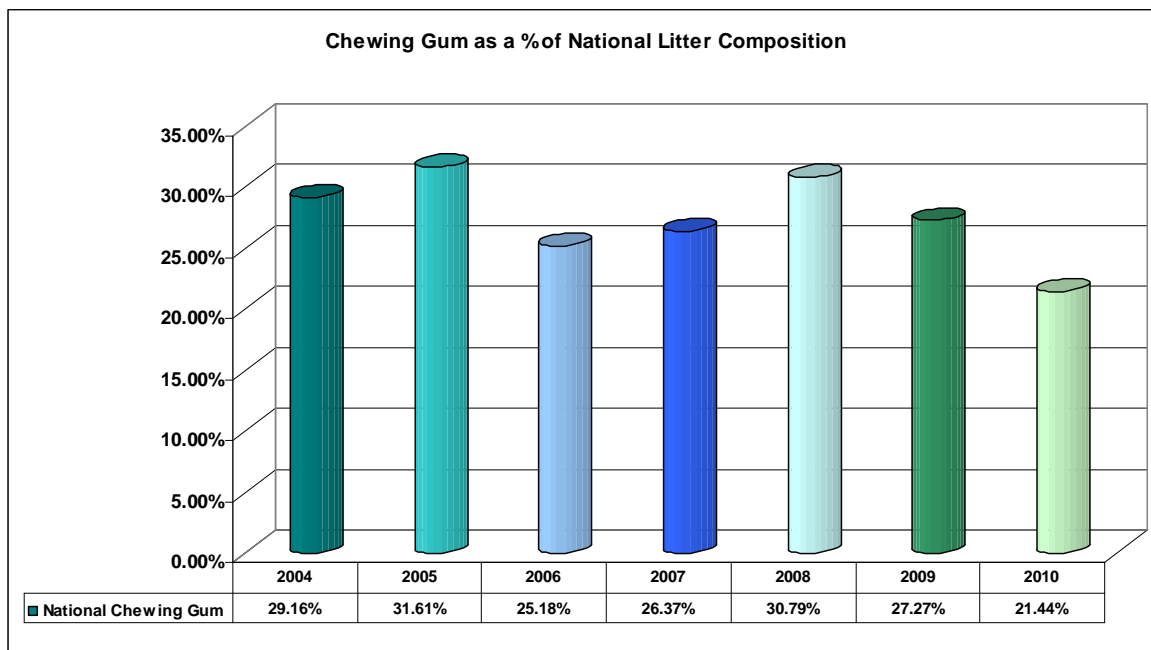


Figure 6.1 Chewing Gum as a Percentage of the National Litter Composition

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 2009 and 2010 are presented in Figure 6.2 below.

The results in Figure 6.2 illustrates that sweet related litter has increased by 0.45% in 2010 compared to 2009. Sweet wrappers (plastic/foil) are the highest component of litter in the sweet related litter category at 3.10% in 2010. This has decreased by 0.08% from 3.18% in 2009. Crisp bags and lollipop sticks (wooden/plastic) also contribute to this litter category. Crisp bags increased by 0.65% from 1.43% in 2009 to 2.08% in 2010. Lollipop sticks also increased slightly by 0.12% from 1.35% in 2009 to 1.47% in 2010. Straws decreased slightly by 0.24% from 0.96% in 2009 to 0.72% in 2010.

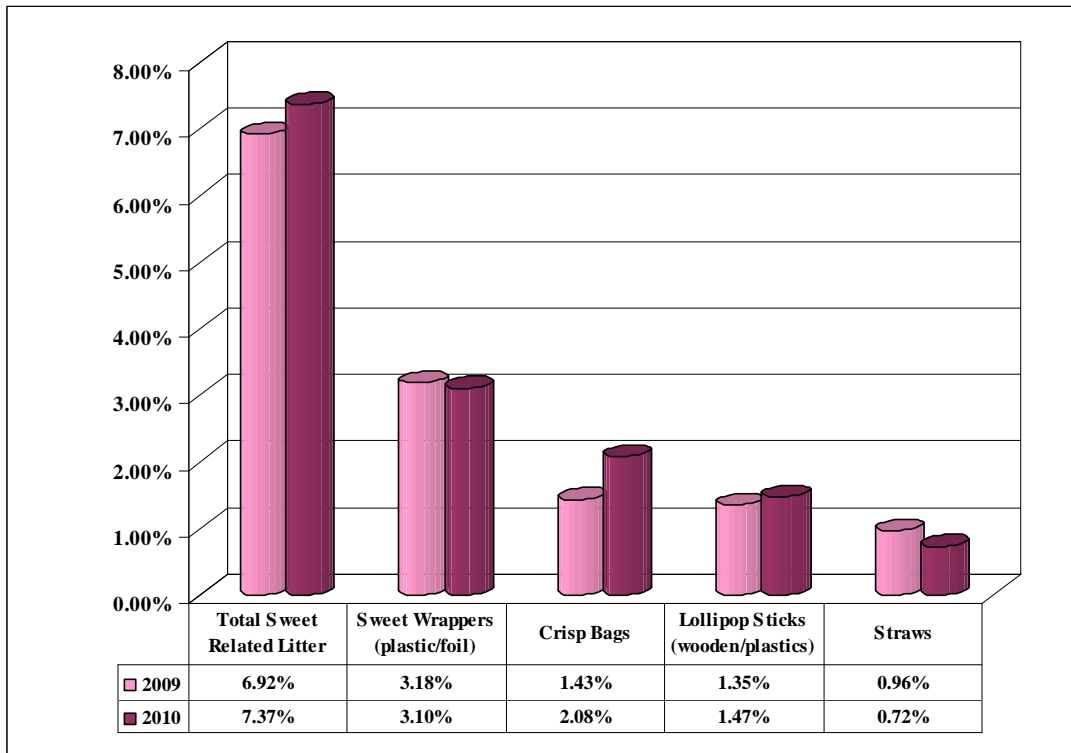


Figure 6.2 Sweet Related Litter Analysed 2009 and 2010

6.3 Bank ATM Receipts

The Litter Monitoring System was used to assess the impact of a Protocol to tackle litter generated by ATM advice slips which was announced in January 2007 by the 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 2010 suggest that “Bank ATMs” decreased slightly as a causative factor from 1.8% in 2009 to 1.7% in 2010.

The results in Figure 6.3 illustrate that the quantity of bank slips has increased from 0.56% in 2009 to 0.65% in 2010. The Litter Monitoring System will continue to monitor the impact of this protocol.

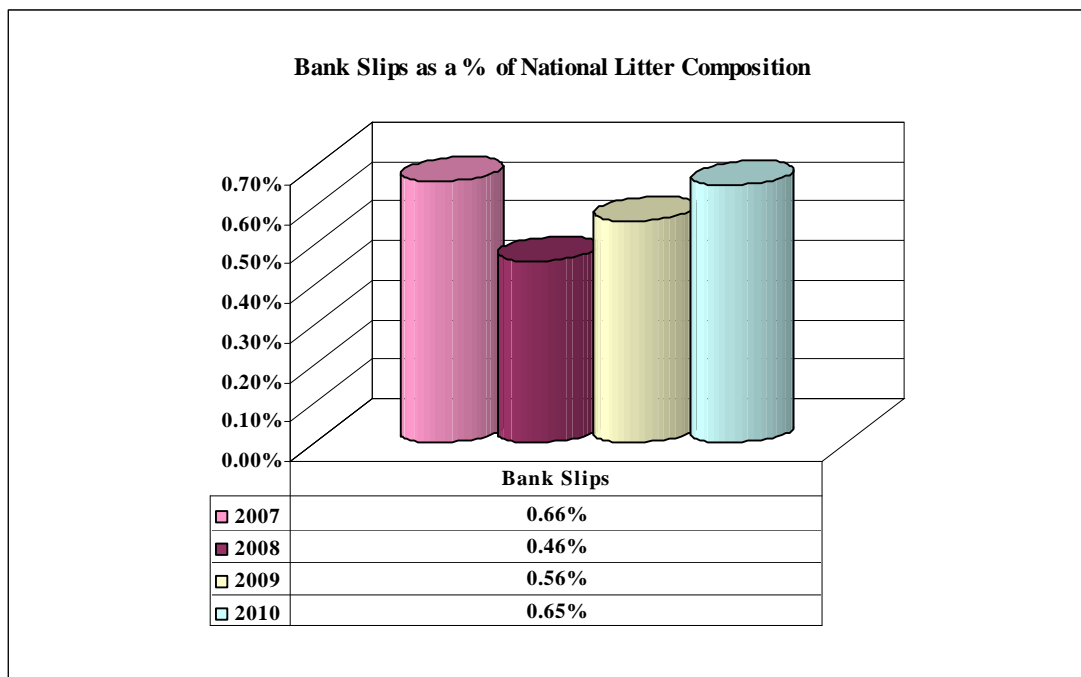


Figure 6.3 Bank Slips as a Percentage of the National Litter Composition

6.4 Plastic Bags

The results in Figure 6.4 illustrate the percentage of shopping bags as a percentage of the National Litter Composition since 2002. 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 which, plastic bags ended up as a very visually intrusive form of litter pollution. The most recent survey data available for 2010 shows that plastic bags constitute 0.25% of litter pollution nationally compared to an estimated 5% prior to the introduction of the levy.

The plastic bag levy was increased from 15c to 22c in July 2007 in a further bid to reduce littering. There was a slight increase in plastic bags as a percentage of the National Litter Composition from 0.24% in 2009 to 0.25% in 2010.

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

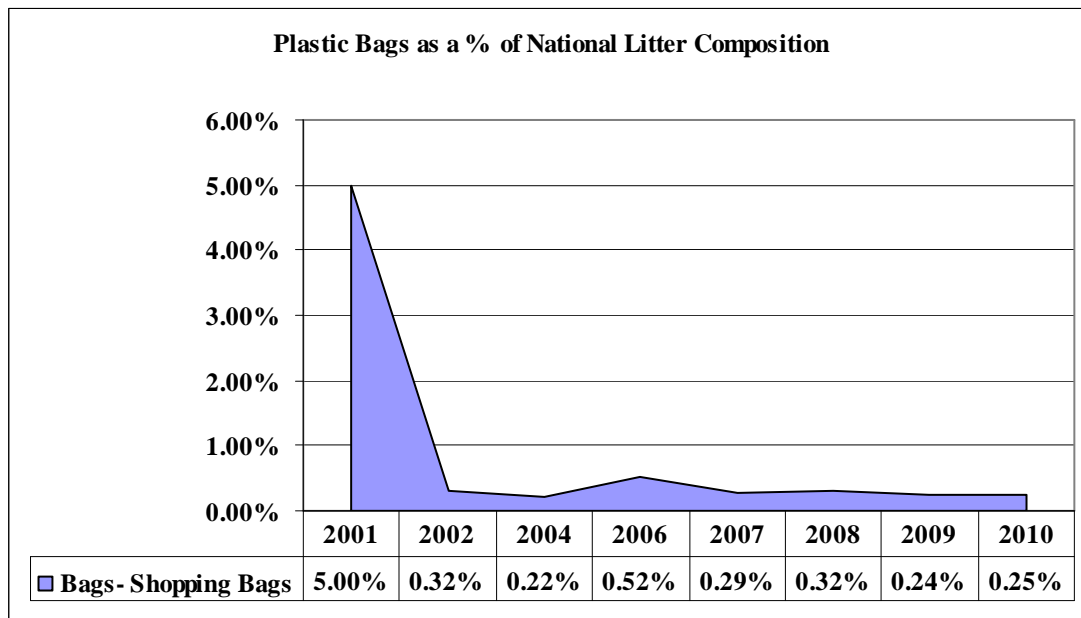


Figure 6.4 Plastic Bags as a Percentage of the National Litter Composition

CHAPTER 7: CONCLUSION

The data reveals that the extent and severity of litter pollution has improved nationally from 2009 to 2010. The percentage of unpolluted (LPI 1) areas increased from 6.8% in 2009 to 9.7% in 2010. The constituent components and the causative factors of litter pollution remain relatively constant across all local authority types from 2009 to 2010.

The results of the National Litter Pollution Monitoring System survey carried out in 2010 have revealed when unpolluted (LPI 1) and slightly polluted (LPI 2) areas are considered together, there is an increase of 2.2% from 2009 to 2010. This suggests that the severity of litter pollution is improving consistently in 2010. Over the last five years, the percentage of unpolluted (LPI 1) areas has increased from 5.1% in 2004 to 9.7% in 2010.

Passing motorists, gathering points, fast food outlets, places of leisure/entertainment and fly tipping/dumping have increased as causative factors of litter in 2010 compared to 2009.

The number of local authorities carrying out litter pollution and quantification surveys in 2010 is 74. 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 2011.

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.

CHAPTER 8: 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 which was announced in January 2007 by the 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.

APPENDIX A

DETAILS OF LOCAL AUTHORITIES THAT CARRIED OUT SURVEYS IN 2010

Litter Quantification Survey Results

Litter Quantification Survey results for 70 out of 90 local authorities were returned to the Litter Monitoring Body and analysed for 2010⁶. These are detailed in Table A-1.

Table A.1 Local Authorities that Submitted Litter Quantification Survey Results for 2010

County Councils
Carlow County Council
Cavan County Council
Clare County Council
Donegal County Council
Dún Laoghaire Rathdown 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 Cork 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
West Cork County Council
Westmeath County Council
Wexford County Council
Wicklow County Council
City Councils
Cork City Council
Dublin City Council
Galway City Council
Limerick City Council
Waterford City Council

⁶ Note South Cork County Council (City & Rural), West Cork County Council, Arklow Town Council, Skibbereen Town Council, Sligo Borough Council and Westport Town Council returned Litter Quantification surveys but did not return Litter Pollution Surveys.

Borough Councils
Clonmel Borough Council
Drogheda Borough Council
Kilkenny Borough Council
Sligo Borough Council
Wexford Borough Council
Town Councils
Arklow Town Council
Athlone Town Council
Ballina Town Council
Ballinasloe Town Council
Birr Town Council
Bray Town Council
Buncrana Town Council
Bundoran Town Council
Carlow Town Council
Carrickmacross Town Council
Carrick on Suir Town Council
Cashel Town Council
Castlebar Town Council
Cavan Town Council
Clones Town Council
Dungarvan Town Council
Ennis Town Council
Fermoy Town Council
Killarney Town Council
Kilrush Town Council
Letterkenny Town Council
Listowel Town Council
Monaghan Town Council
Nenagh Town Council
New Ross Town Council
Skibbereen Town Council
Templemore Town Council
Thurles Town Council
Tipperary Town Council
Tralee Town Council
Tullamore Town Council
Westport Town Council
Wicklow Town Council

Litter Pollution Survey Results

Litter Pollution Survey results for 68 out of 90 local authorities were returned to the Litter Monitoring Body and analysed for 2010⁷. These are detailed in Table A.2.

Table A.2 Local Authorities that Submitted Litter Pollution Survey Results for 2010

County Councils
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
Limerick County Council
Longford County Council
Louth County Council
Mayo County Council
Meath County Council
Monaghan County Council
North Cork County Council
North Tipperary County Council
Offaly County Council
Roscommon County Council
Sligo County Council
South Tipperary County Council
Waterford County Council
Westmeath County Council
Wexford County Council
Wicklow County Council
City Councils
Cork City Council
Dublin City Council
Galway City Council
Limerick City Council
Waterford City Council

⁷ Note Fingal County Council, Limerick County Council, Castleblayney Town Council and Enniscorthy Town Council returned Litter Pollution Surveys but did not return Litter Quantification Surveys.

Borough Councils
Clonmel Borough Council
Drogheda Borough Council
Kilkenny Borough Council
Wexford Borough Council
Town Councils
Athlone Town Council
Ballina Town Council
Ballinasloe Town Council
Birr Town Council
Bray Town Council
Buncrana Town Council
Bundoran Town Council
Carlow Town Council
Carrickmacross Town Council
Carrick on Suir Town Council
Cashel Town Council
Castlebar Town Council
Castleblayney Town Council
Cavan Town Council
Clones Town Council
Dungarvan Town Council
Ennis Town Council
Enniscorthy Town Council
Fermoy Town Council
Killarney Town Council
Kilrush Town Council
Letterkenny Town Council
Listowel Town Council
Monaghan Town Council
Nenagh Town Council
New Ross Town Council
Templemore Town Council
Thurles Town Council
Tipperary Town Council
Tralee Town Council
Tullamore Town Council
Wicklow Town Council

APPENDIX B
AREA CLEANLINESS RATING PHOTOGRAPHS

Area Cleanliness Rating 1 (Unpolluted)

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



Area Cleanliness Rating 2 (Slightly Polluted)

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



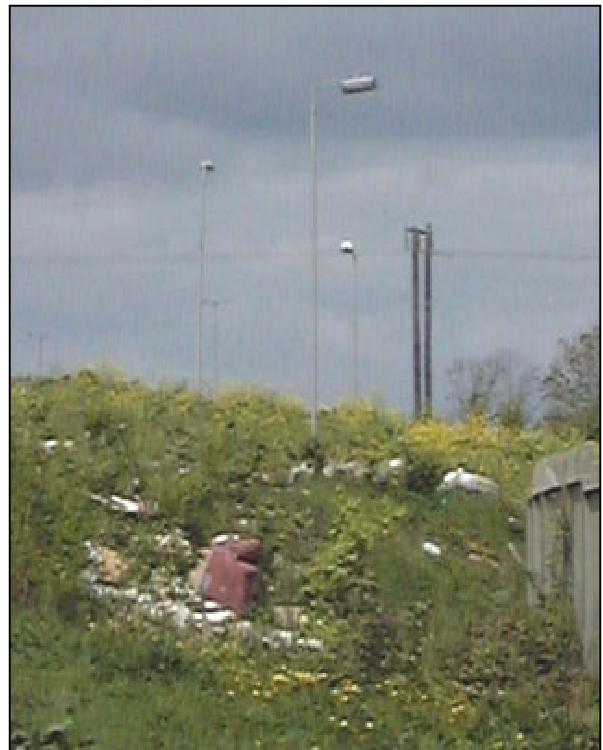
Area Cleanliness Rating (Moderately Polluted)

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



Area Cleanliness Rating (Significantly Polluted)

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



Area Cleanliness Rating (Grossly Polluted)

This is given to an area, which is heavily littered throughout the survey area i.e. after an event like a Concert/ Festival or fly-tipping.



APPENDIX C

**DETAILS OF LITTER COMPOSITION FROM 2009 – 2010 ACCORDING TO
LOCAL AUTHORITY TYPE**

Figure C.1 compares the results of Litter Quantification Surveys within County Councils from 2009 to 2010; the main observations are that the percentage of cigarette related litter, sweet related litter and paper litter have increased, while food related litter and packaging litter have decreased. Note food related litter has decreased significantly from 25.08% in 2009 to 16.24% in 2010.

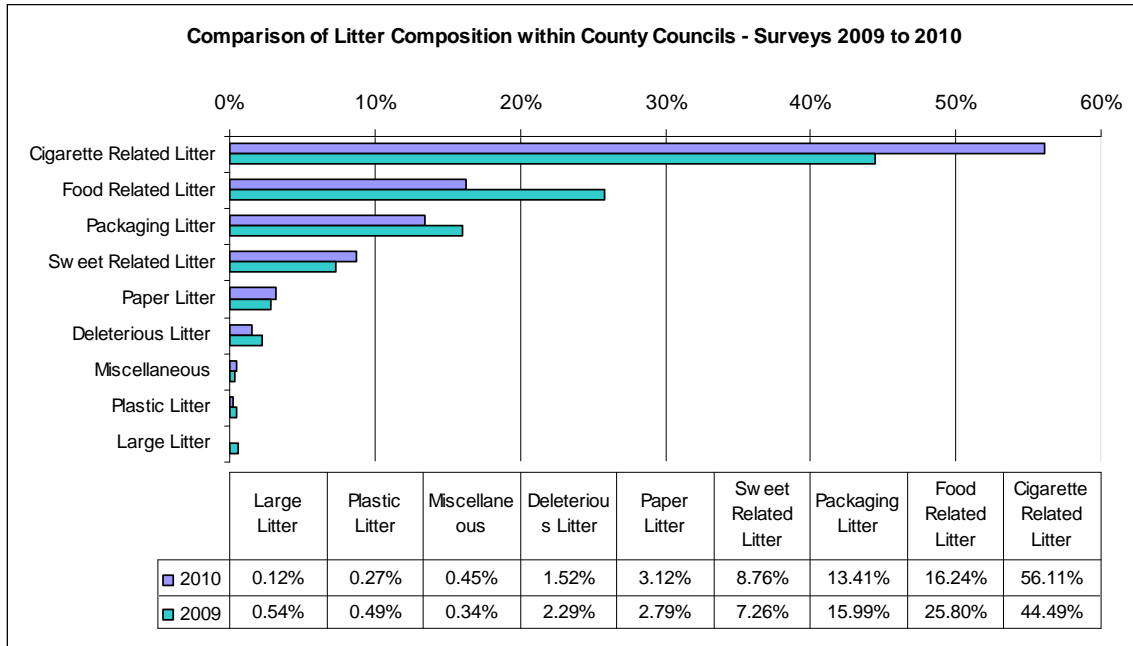


Figure C.1 Comparison of Litter Composition within County Councils 2009 to 2010

Figure C.2 shows that within City Councils, the percentage of food related litter and paper litter have decreased from 2009 to 2010, while the percentage of cigarette related litter, packaging litter and sweet related litter have increased from 2009 to 2010.

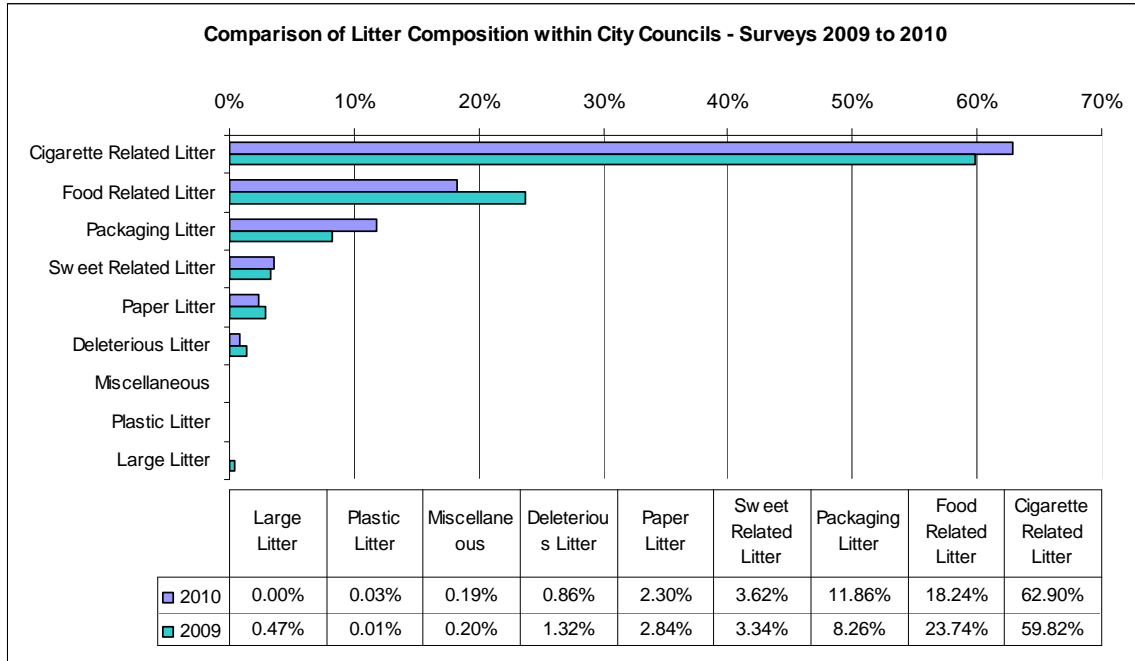


Figure C. 2 Comparison of Litter Composition within City Councils 2009 to 2010

Figure C.3 illustrates that within Town & Borough Councils, the percentages of cigarette related litter and paper litter have increased from 2009 to 2010. Cigarette related litter has increased from 44.70% in 2009 to 46.85% in 2010. Paper litter has increased from 4.27% in 2009 to 5.17% in 2010. The percentages of food related litter, packaging litter and sweet related litter have decreased from 2009 to 2010.

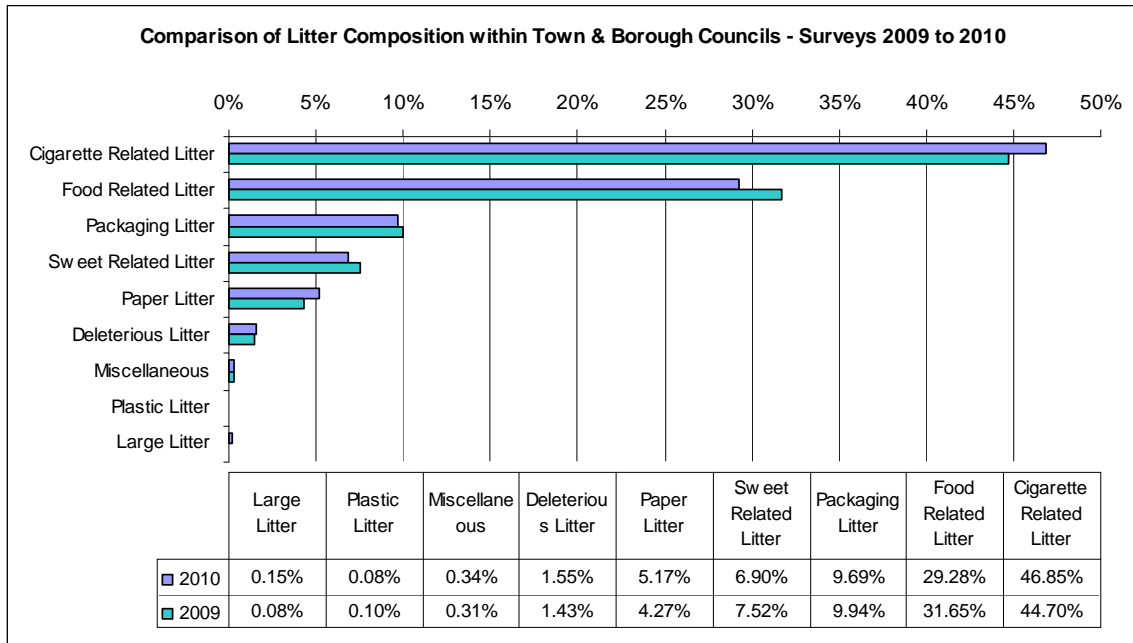


Figure C. 3 Comparison of Litter Composition within Town and Borough Councils 2009 to 2010

Figure C.4 shows that within Dublin Local Authorities, the percentage of food related litter and paper litter have decreased, while cigarette related litter, packaging litter and sweet related litter have increased. Note paper litter has decreased significantly from 14.84% in 2009 to 9.70% in 2010.

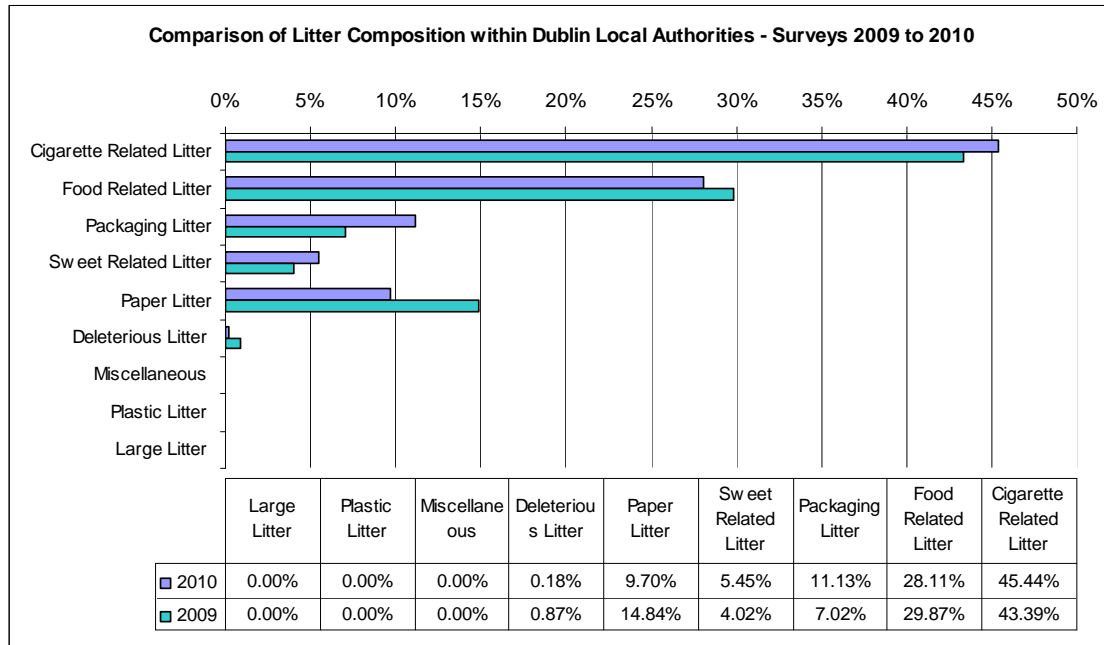


Figure C. 4 Comparison of Litter Composition within Dublin Local Authorities 2009 to 2010

Note that cigarette related litter increased and food related litter decreased in all local authority types from 2009 to 2010. Cigarette related litter increased significantly in County Councils by 11.62% from 44.49% in 2009 to 56.11% in 2010. Cigarette related litter increased in all other local authority types, with an average increase of 2.4%. Food related litter decreased significantly in County Councils by 9.56% from 16.24% in 2009 to 25.80% in 2010.

Packaging litter increased in City Councils and Dublin Local Authorities by 3.60% and 4.11% respectively. Packaging litter decreased in County Councils and Town & Borough Councils by 2.58% and 0.25% respectively. Sweet related litter increased in County Councils, City Councils and Dublin Local Authorities. Paper litter decreased in City Councils and Dublin Local Authorities by 0.54% and 5.14% respectively. Paper litter increased in County Councils and Town & Borough Councils by 0.33% and 0.90% respectively.

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 2010 passing pedestrians constitute 39.2% of all causative factors in litter pollution surveys of slightly polluted (LPI 2) areas; this percentage decreased to 36.0% for moderately polluted (LPI 3) areas, to 29.9% for significantly polluted (LPI 4) areas and to 21.1% as the severity of litter pollution in the surveyed areas reached grossly polluted (LPI 5) areas. In 2010, retail outlets, fast food outlets and bank/ATM all decrease as causes of litter as the degree of pollution increases from slightly polluted (LPI 2) to grossly polluted (LPI 5) areas. Retail outlets constitute 10.5% of all causative factors in litter pollution surveys of slightly polluted (LPI 2) areas and moderately polluted (LPI 3) areas, this decreases to 2.6% in litter pollution surveys of grossly polluted (LPI 5) areas. Fast food outlets decrease from 5.9% in slightly polluted (LPI 2) areas to 0% in grossly polluted (LPI 5) areas. Bank/ATM decrease from 1.9% in slightly polluted (LPI 2) areas to 0% in grossly polluted (LPI 5) areas.

In 2010 fly-tipping/dumping, schools/school children and bring banks all increase as causes of litter as the degree of pollution increases from slightly polluted (LPI 2) to grossly polluted (LPI 5) areas. Fly-tipping/dumping constitutes 0.6% of all causative factors in litter pollution surveys of slightly polluted (LPI 2) areas, this increases to 34.2% in litter pollution surveys of grossly polluted (LPI 5) areas.

Schools/school children increase from 4.6% in slightly polluted (LPI 2) areas to 10.5% in grossly polluted (LPI 5) areas. Bring banks increase from 1.1% in slightly polluted (LPI 2) areas to 2.6% in grossly polluted (LPI 5) areas.

In the slightly and moderately polluted categories (LPI 2 and LPI 3 respectively), passing pedestrians, passing motorists, retail outlets and gathering points are significant causes of litter pollution; this is a similar trend to 2009, 2008, 2007 and 2006.

In the slightly polluted category (LPI 2), passing pedestrians, retail outlets, gathering points, schools/school children, bus stops, overflowing bins and construction sites decreased as causative factors from 2009 to 2010. Gathering points contribute more to litter pollution than in any other category at 10.8% in significantly polluted (LPI 4) areas and at 10.5% in grossly polluted (LPI 5) areas, compared to 7.3% in slightly polluted (LPI 2) areas and 7.7% in moderately polluted (LPI 3) areas. Fly-tipping/dumping contributes more to litter pollution than in any other category at 34.2% in grossly polluted (LPI 5) areas

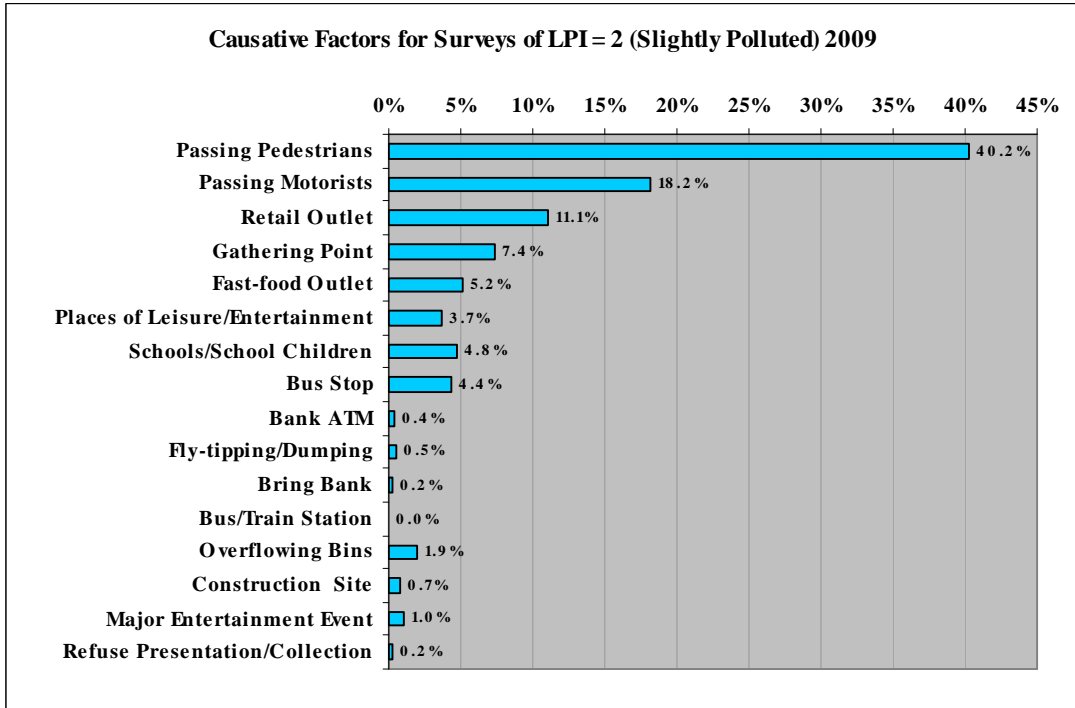


Figure D.1 Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2009

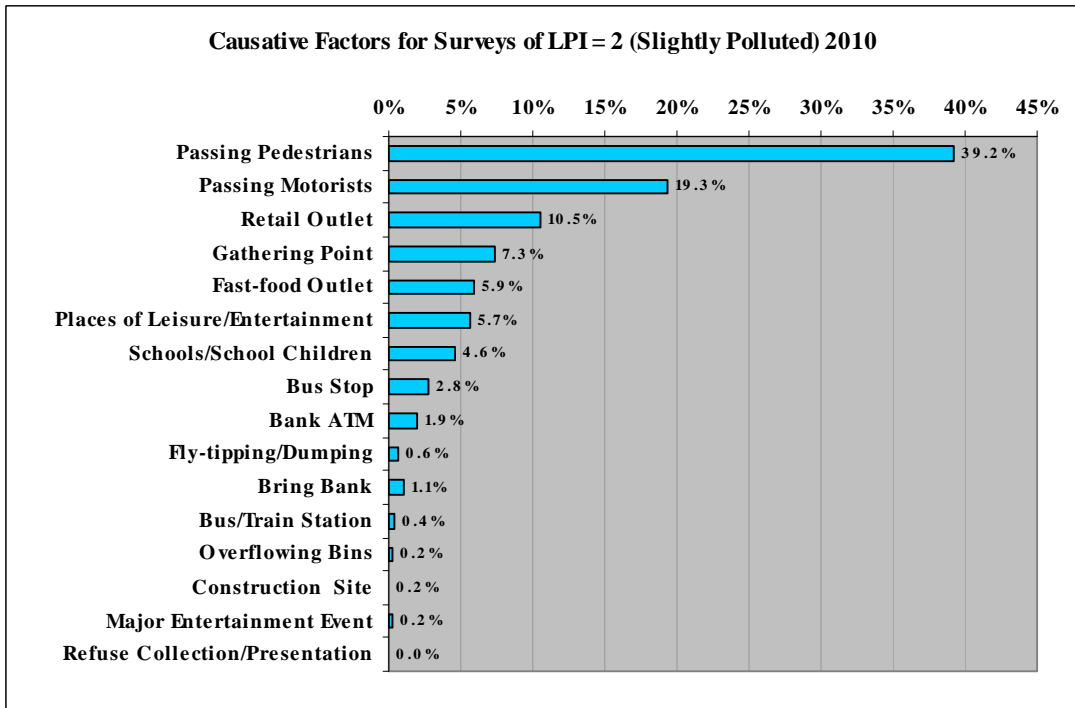


Figure D.2 Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2010

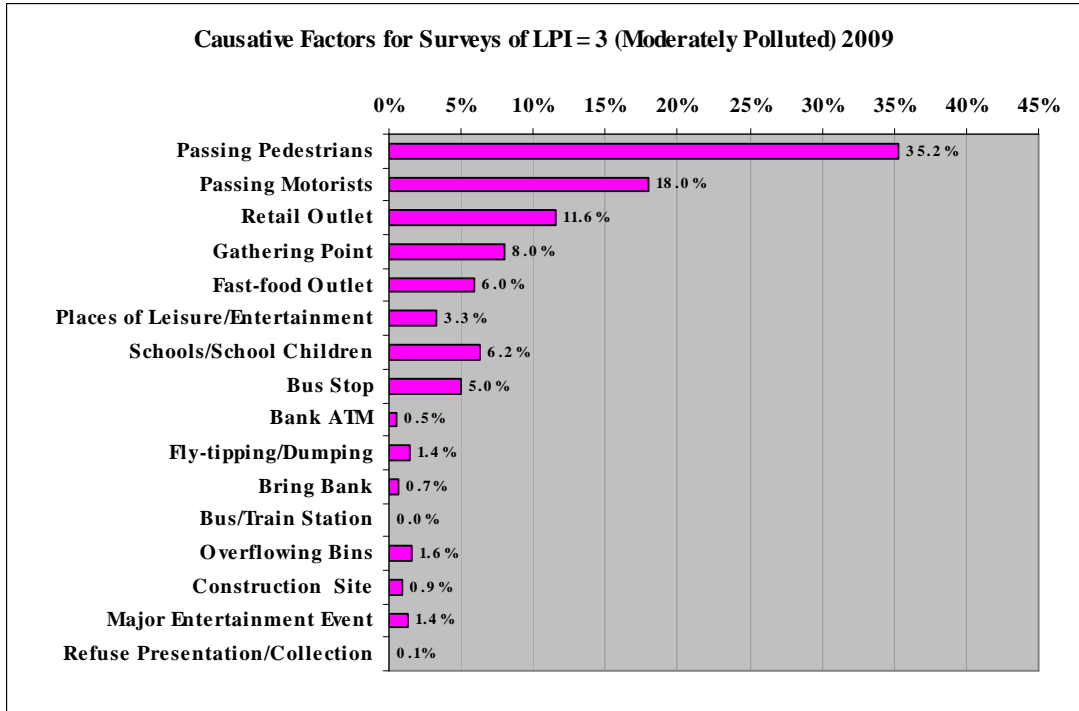


Figure D. 3 Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2009

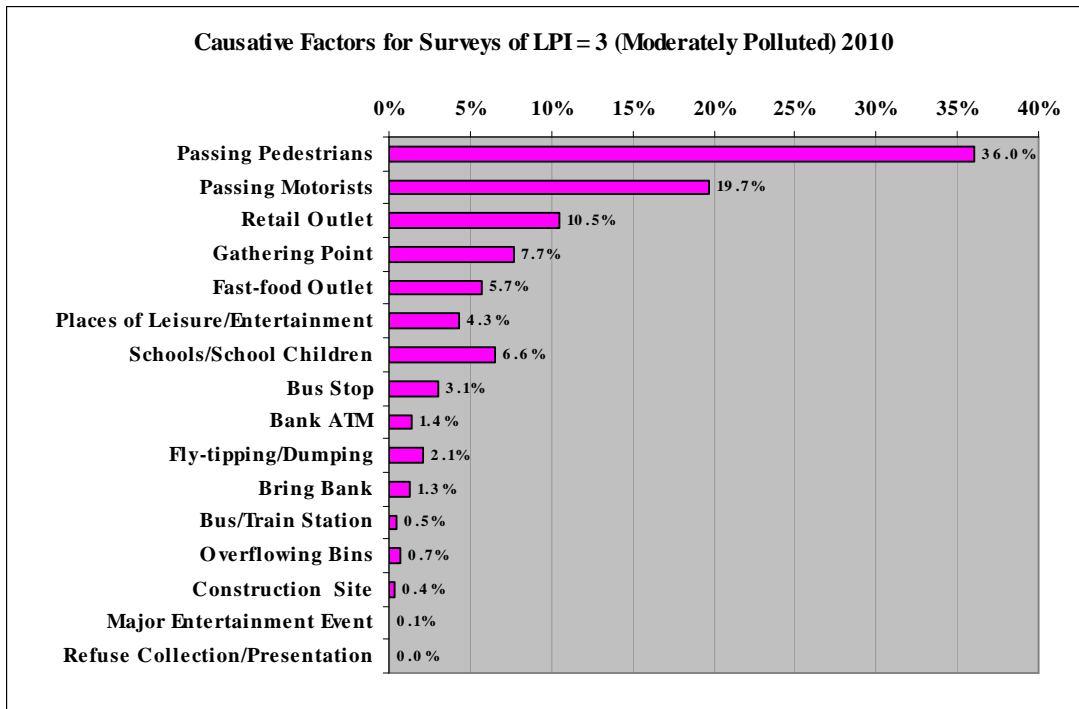


Figure D. 4 Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2010

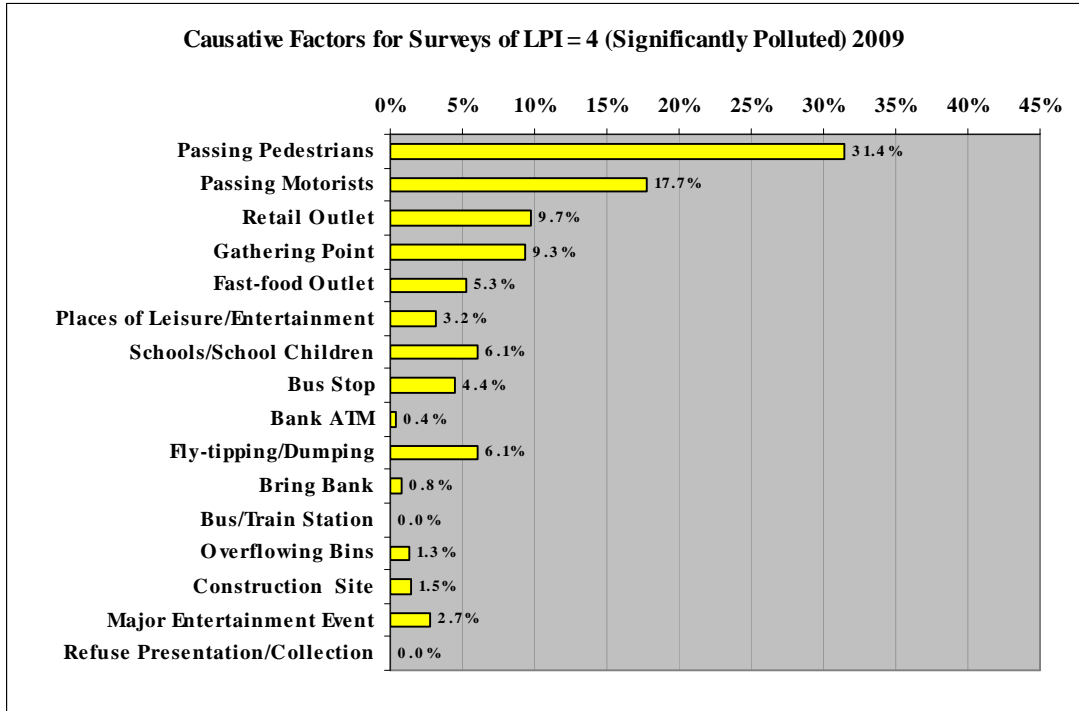


Figure D. 5 Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2009

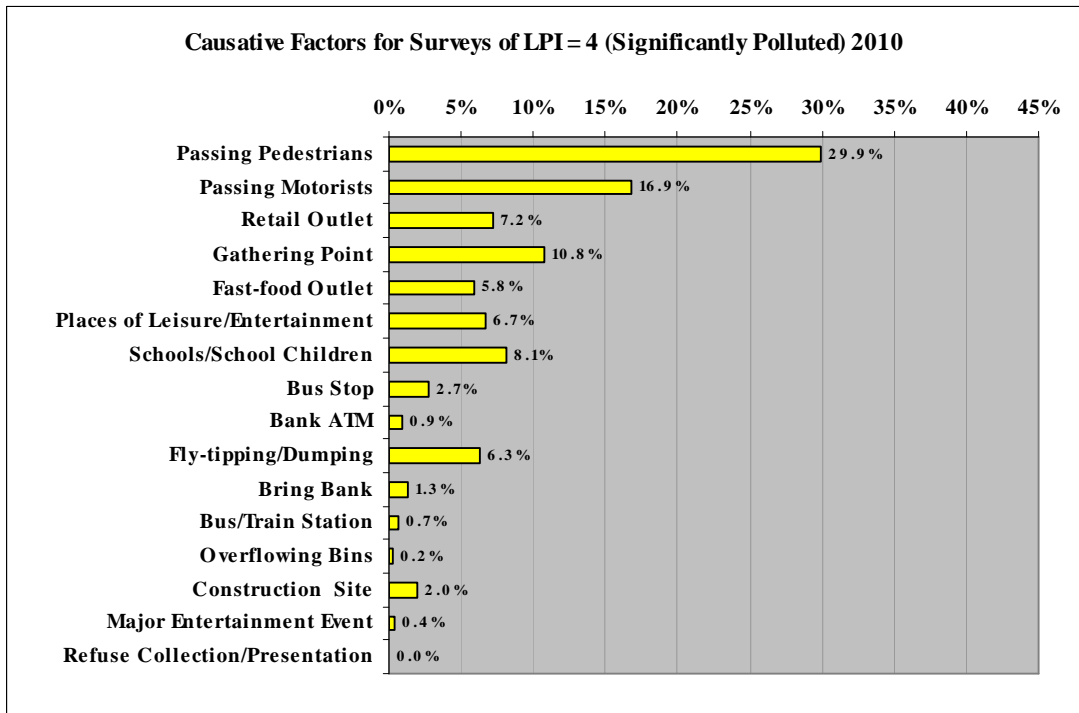


Figure D. 6 Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2010

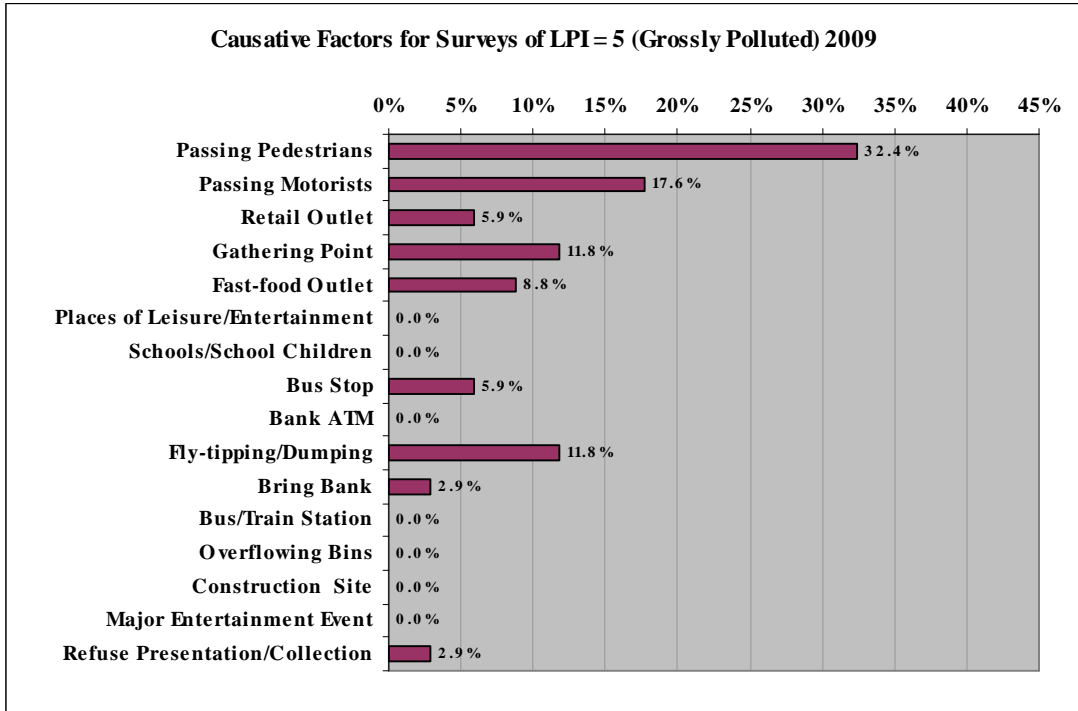


Figure D. 7 Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2009

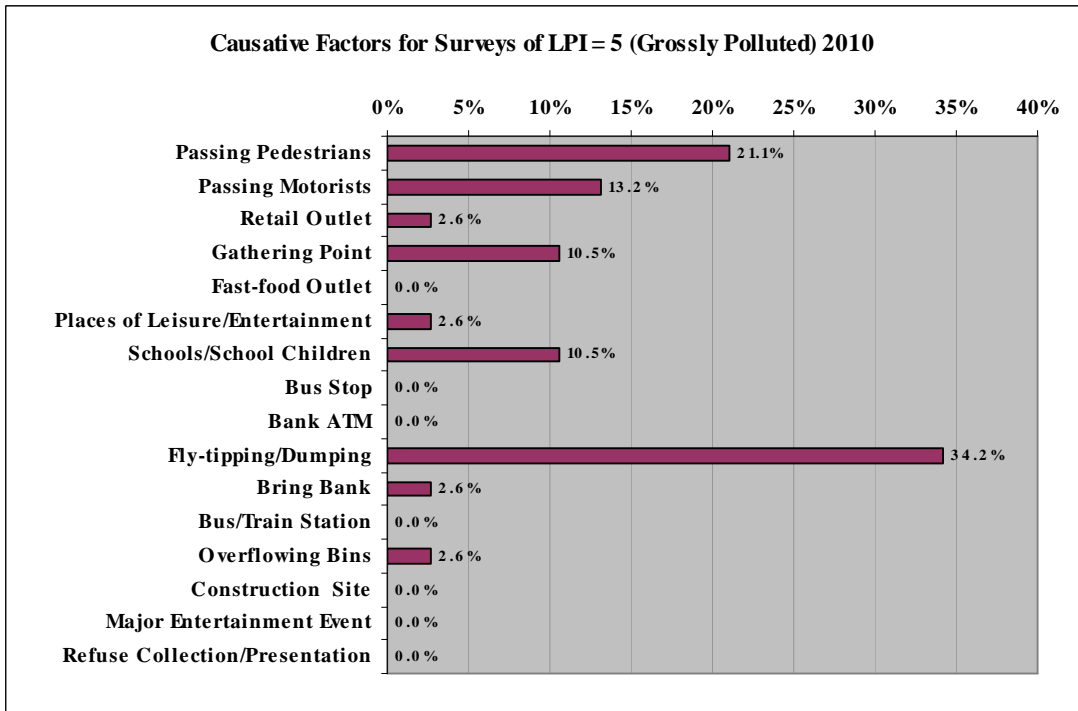


Figure D. 8 Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2010

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 2009 to 2010. Passing pedestrians are the single greatest cause of litter in both urban and rural areas; this is similar to the 2009 and 2008 results. Passing pedestrians, fast food outlets, places of leisure/entertainment, schools/school children and fly-tipping/dumping have increased as causes of litter pollution in urban areas from 2009 to 2010.

Retail outlets, gathering points, bus stops, bank ATM, bus/train stations and construction sites have decreased as causes of litter pollution in urban areas from 2009 to 2010. Passing motorists, bring banks, overflowing bins, major entertainment events and refuse collection/presentation have remained constant from 2009 to 2010.

In rural areas, the causes of litter pollution are similar in 2009 and 2010. Passing pedestrians has decreased as a causative factor of litter pollution in rural areas at 38.5% in 2009 to 36.5% in 2010. Passing motorists, retail outlets, gathering points, fast food outlets and bank/ATM have become more significant causes of litter pollution in rural areas from 2009 to 2010. Places of leisure/entertainment, schools/school children, fly-tipping/dumping, bring banks, bus/train stations, overflowing bins, construction sites and major entertainment events have decreased as causative factors of litter pollution in rural areas from 2009 to 2010. Bus stops and refuse collection/presentation have remained constant in rural areas from 2009 to 2010.

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, Limerick and Waterford City Councils. Overall, the causes of litter pollution vary somewhat with each category of urban area. Passing pedestrians, places of leisure/entertainment and bank/ATM are more significant causative factors of litter pollution in the ‘Cork City Council’ category than in the other urban categories. Gathering points and construction sites are more significant causative factors of litter pollution in the ‘Other City Councils’ category than in the other urban categories. Passing motorists, retail outlets, fast food outlets, bus stops and bring banks are more significant causative factors of litter pollution in the ‘Town & Borough Councils’ category than in the other urban categories. Schools/school children (6.9%) are more of a significant causative factor in the Dublin City Council areas than in other urban areas in 2009. This is similar to the 2009 and 2008 results where schools/school children (12.6% - 2009) (9.0% - 2008) were more of a significant causative factor in Dublin City Council areas than in other urban areas. Fly-tipping/dumping, bus/train station, overflowing bins, major entertainment events and refuse collection/presentation are more significant causative factors of litter pollution in the ‘Dublin City Councils’ category than in the other urban categories.

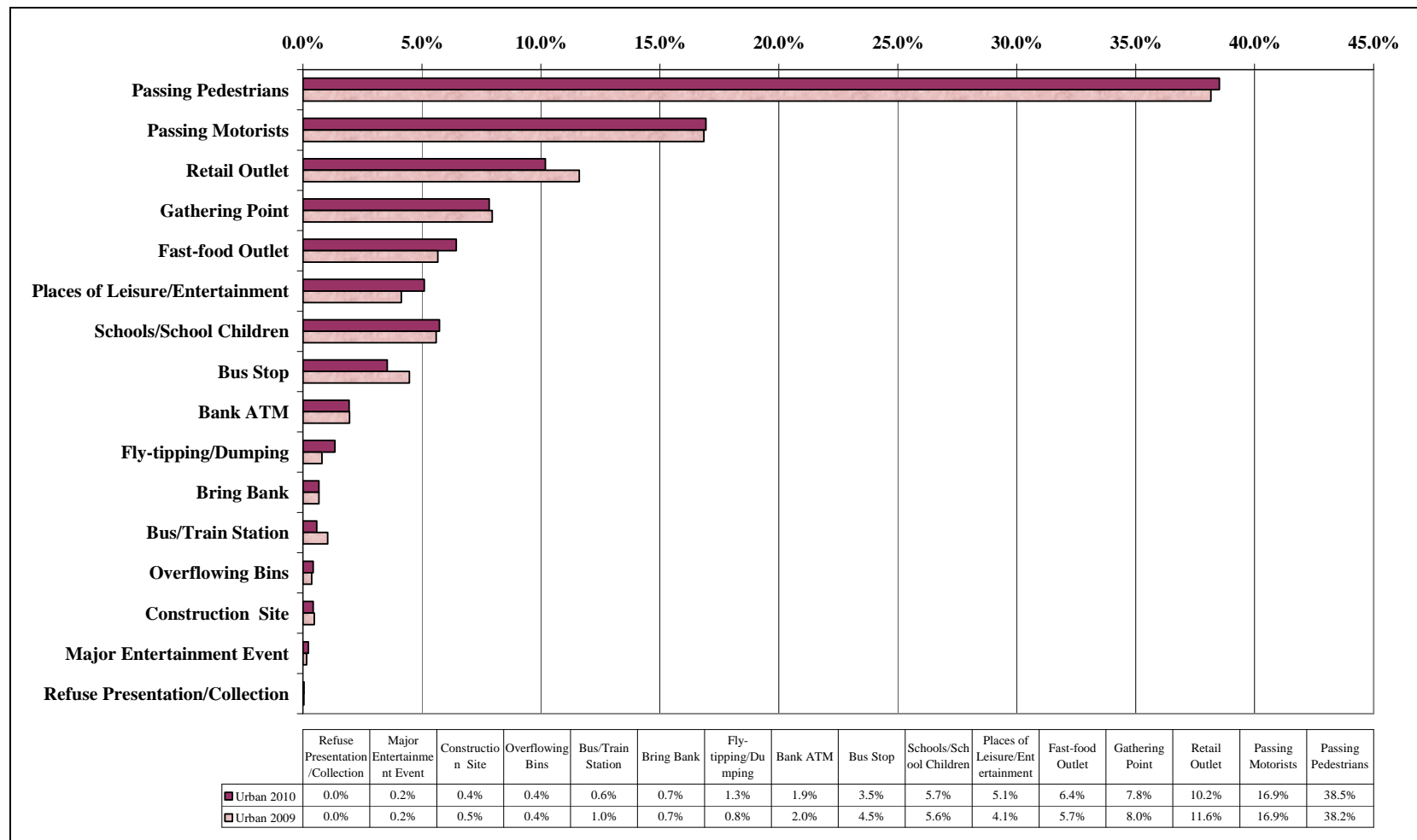


Figure E. 1 Comparison of Causative Factors in Urban Councils, 2009 to 2010

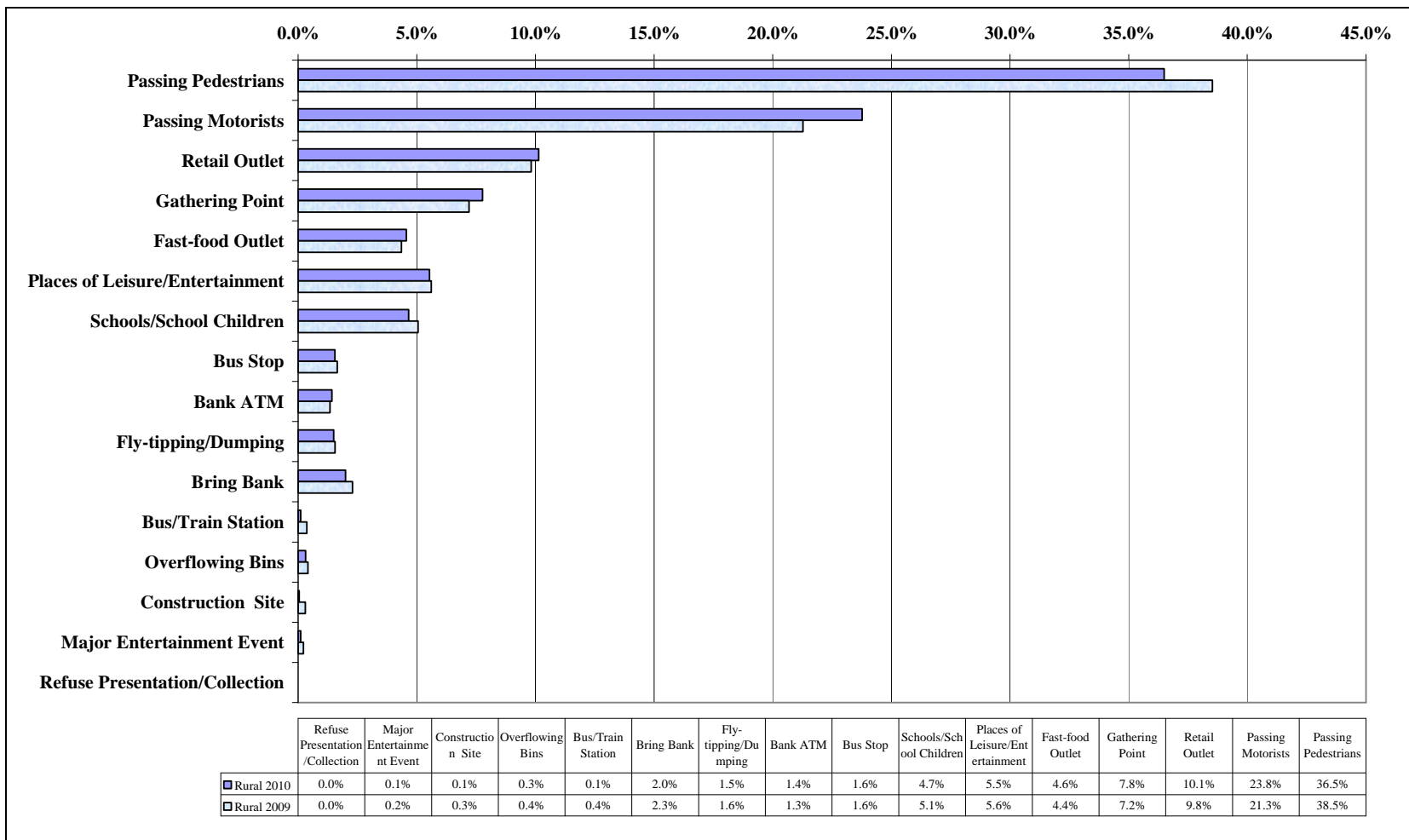


Figure E. 2 Comparison of Causative Factors in Rural Councils, 2009 to 2010

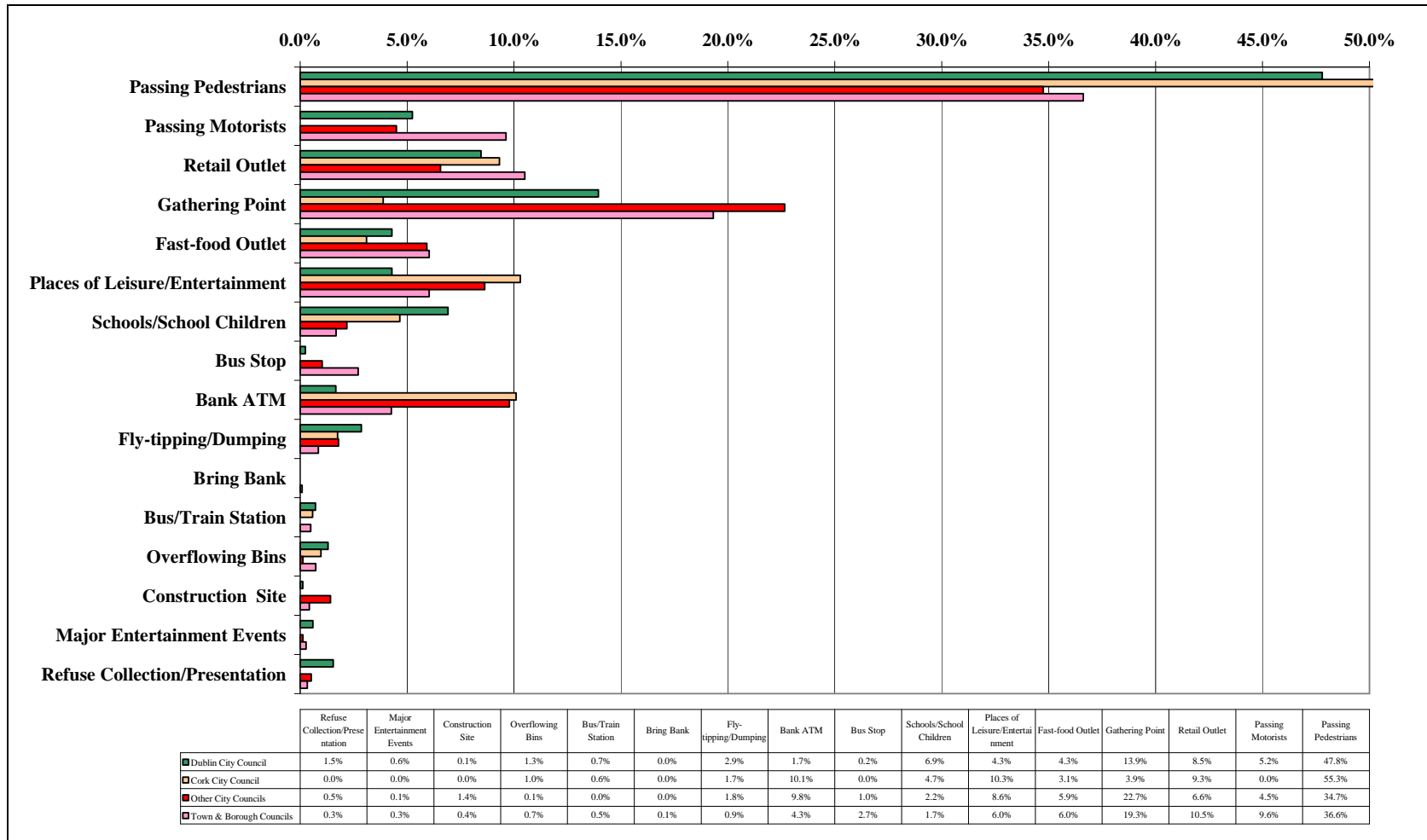


Figure E. 3 Comparison of Causative Factors of Litter Pollution within Urban Areas⁸ (2010)

⁸ Percentages are expressed to one decimal place and therefore totals for each category of local authority may not add to exactly 100%.

