THE NATIONAL LITTER POLLUTION MONITORING SYSTEM

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

LITTER MONITORING BODY

SYSTEM RESULTS 2019

Prepared for:

The Department of Communications, Climate Action and Environment,
29-31 Adelaide Road,
Dublin 2.
D02 X285

Prepared by:

The Litter Monitoring Body,
TOBIN Consulting Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15.
D15 X98N

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ACKNOWLEDGEMENTS

We would like to thank the following organisations for their help in the preparation of this report:

1.   The Department of Communications, Climate Action and Environment; 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 Communications, Climate Action and Environment, for the period May 1st 2019 to April 30th 2020, to continue the development of the National Litter Pollution Monitoring System (NLPMS).

The Sustainable Development Goals - National Implementation Plan 2018-2020, published in April 2018, is the Government's response to the United Nations Sustainable Development Goals (SDGs) and Agenda 2030.

The SDGs cover the three dimensions of sustainable development; economic growth, social inclusion and the protection of the environment. They aim to address inequalities, economic growth, decent jobs, cities and human settlements, industrialization, oceans, ecosystems, energy, climate change, sustainable consumption and production, peace and justice.

The Government's vision is for Ireland to fully implement the Sustainable Development Goals at home, and to contribute to their achievement internationally through our role as a responsible global citizen, so that no one is left behind.

The Government has adopted a 'whole-of-government' approach to SDG implementation at the national level, with the Minister for Communications, Climate Action and Environment leading on **SDG 12**. *Responsible Production and Consumption*. This SDG also includes issues such as responsible recycling, reducing all waste going to landfill sites and incinerator facilities, and the socially unacceptable issue of litter.

Of course, litter not only relates to **SDG 12**, it also relates to **SDG 13** *Climate Action,* **SDG 14** *Life below Water* and **SDG 15** *Life on land.* Because all of the SDGs are interlinked, an action like litter is far reaching in terms of environmental damage.

Local Authorities already play a key role in the area of recycling, waste collection and litter control. Carlow County Council in their capacity as one of Ireland's first SDG Champion Organisations has clearly linked the issue of litter into **SDG 12**.

Behavioural change will be a key driver in assisting Ireland to fully achieve all the SDGs and in particular change the damaging blight of littering across the country. Local Authorities through targeted messaging on the SDGs will play a pivotal role in this task.

This Report and the data gathered in its composition surveys allow for 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 NLPMS, the **extent** and **severity** of litter pollution is measured using a Litter Pollution Index (LPI), which is on 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).

The area cleanliness rating[1] is then used in the calculation of the LPI for each survey location. The use of photographs ensures that area cleanliness ratings are consistently assigned by all local authorities. In 2019, the LMB continued to provide guidance 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
♦ 20% in locations chosen by local authorities, based on local knowledge of litter pollution.

Note that some local authorities do not have the resources to apply Litter GIS. In these instances, local authorities use local knowledge to select their 'high risk' and 'chosen' survey areas and then randomly choose 40% of their locations by identifying random areas on maps or by using a random function tool on Arc GIS.

Under the NLPMS, 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 (LQS). LQS are completed in the most heavily polluted areas (i.e. the clusters or 'black spots' 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 several litter categories including, food, packaging, paper and plastic.

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[1] The Area Cleanliness Rating is determined using a visual inspection of the survey area and rating it according to prescribed standards.

Training

In 2019, the LMB continued to provide training, where required, on the implementation of the NLPMS to local authorities.

Audit

The LMB undertook audits of five local authorities to ensure that the system is being implemented as designed. The local authorities audited were:

♦ Mayo County Council;
♦ Meath County Council;
♦ Monaghan County Council;
♦ Tipperary County Council; and
♦ Wicklow County Council.

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

The LMB also completed several additional 'spot check' audits on the 2019 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).

These audits allowed for reassessments of Litter Pollution Surveys (LPS) in collaboration with the relevant local authority, and 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 LPS; this will allow the LMB to continually audit the System. The LMB 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 2019

In 2019, all 31 local authorities participated in the National Litter Pollution Monitoring System (NLPMS) Survey.
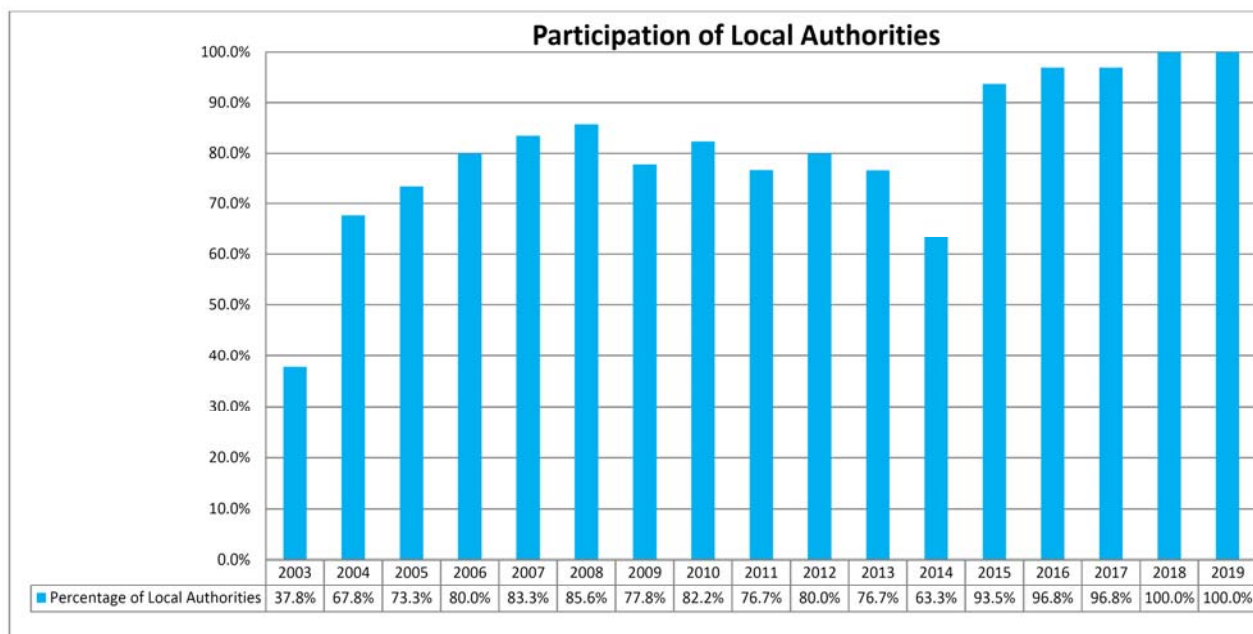
Figure 1-1   Participation of Local Authorities 2003 to 2019

Figure 1-1 shows the percentage of local authorities that have participated in the System annually since 2003.

The 2019 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 NLPMS 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?

In 2019, 5484 Litter Pollution Surveys (LPS) were undertaken nationally. This was an increase of 226 surveys from 2018.

♦ 17.3% of areas surveyed were unpolluted (LPI 1) in 2019. The percentage of unpolluted (LPI 1) areas has decreased by 3.2%, from 20.5% in 2018.

♦ 61.7% of all areas surveyed in 2019 were slightly polluted (LPI 2), an increase of 2.1% on 2018 (59.6%).

♦ 18.0% of all areas surveyed in 2019 were moderately polluted areas (LPI 3), an increase of 0.9% on 2018 (17.1%).

♦ The percentage of significantly polluted areas (LPI 4) has increased slightly (by 0.3%), from 2.4% in 2018 to 2.7% in 2019.

♦ Grossly polluted areas (LPI 5) has decreased slightly from 0.4% in 2018 to 0.3% in 2019.

What are the main constituent elements of litter pollution?

♦ Cigarette related litter (53.9%), packaging items (14.9%), food related litter (12.3%), sweet related litter (9.4%), paper items (5.9%) and deleterious litter (1.6%) were the main litter constituents identified nationally.

What are the main causes of litter pollution?

♦ Passing pedestrians (41.1%), passing motorists (22.8%), retail outlets (8.9%), gathering points (6.2%), places of leisure/entertainment (4.8%), schools/school children (4.3%), fast food outlets (4.2%), fly-tipping/dumping (2.4%), bus stops (2.3%) and bring banks (1.3%) were identified as the main causative factors of litter nationally.

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CHAPTER 2:   HOW LITTERED IS THE COUNTRY?

The 2019 dataset is obtained from 5484 LPS.
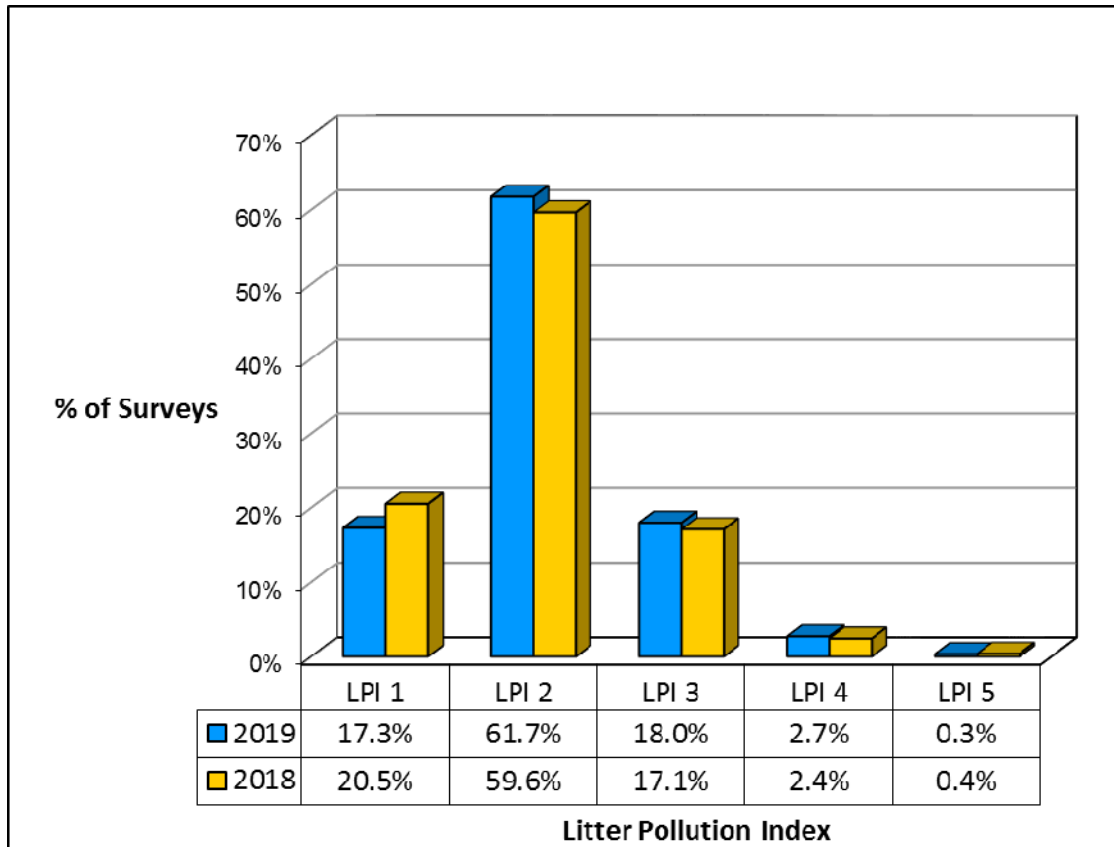
Figure 2-1   Comparison of Litter Pollution Indices (LPI) 2018 to 2019

Figure 2-1 compares the 2018 and 2019 LPS results.

The NLPMS results indicate that the percentage of unpolluted (LPI 1) areas has decreased from 20.5% in 2018 to 17.3% in 2019.

A comparison of the results from 2018 to 2019 indicates that the percentage of slightly polluted (LPI 2) areas has increased from 59.6% in 2018 to 61.7% in 2019.

The percentage of moderately polluted areas (LPI 3) has increased from 17.1% in 2018 to 18.0% in 2019. The percentage of significantly polluted areas (LPI 4) has increased slightly from 2.4% in 2018 to 2.7% in 2019. Grossly polluted areas (LPI 5) has decreased slightly from 0.4% in 2018 to 0.3% in 2019.

The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined has decreased slightly (by 1.1%) from 2018 to 2019, thus demonstrating that there has been an increase in litter pollution from 2018 to 2019.

	LPI 1	LPI 2	LPI 3	LPI 4	LPI 5
2004	5.1%	45.3%	37.3%	10.5%	1.8%
2005	6.1%	49.5%	34.4%	8.5%	1.5%
2006	6.8%	53.6%	31.7%	7.4%	0.6%
2007	5.1%	58.5%	31.1%	4.6%	0.7%
2008	6.6%	62.6%	26.6%	3.8%	0.5%
2009	6.8%	63.5%	25.7%	3.7%	0.3%
2010	9.7%	62.8%	24.2%	3.1%	0.3%
2011	9.9%	67.0%	20.3%	2.4%	0.4%
2012	10.4%	63.2%	22.9%	3.2%	0.3%
2013	12.2%	62.8%	21.0%	3.3%	0.6%
2014	12.3%	64.4%	19.9%	3.0%	0.3%
2015	16.4%	62.8%	16.7%	3.6%	0.4%
2016	13.2%	65.1%	18.0%	3.3%	0.3%
2017	15.6%	63.9%	17.1%	3.0%	0.3%
2018	20.5%	59.6%	17.1%	2.4%	0.4%
2019	17.3%	61.7%	18.0%	2.7%	0.3%

Litter Pollution Index
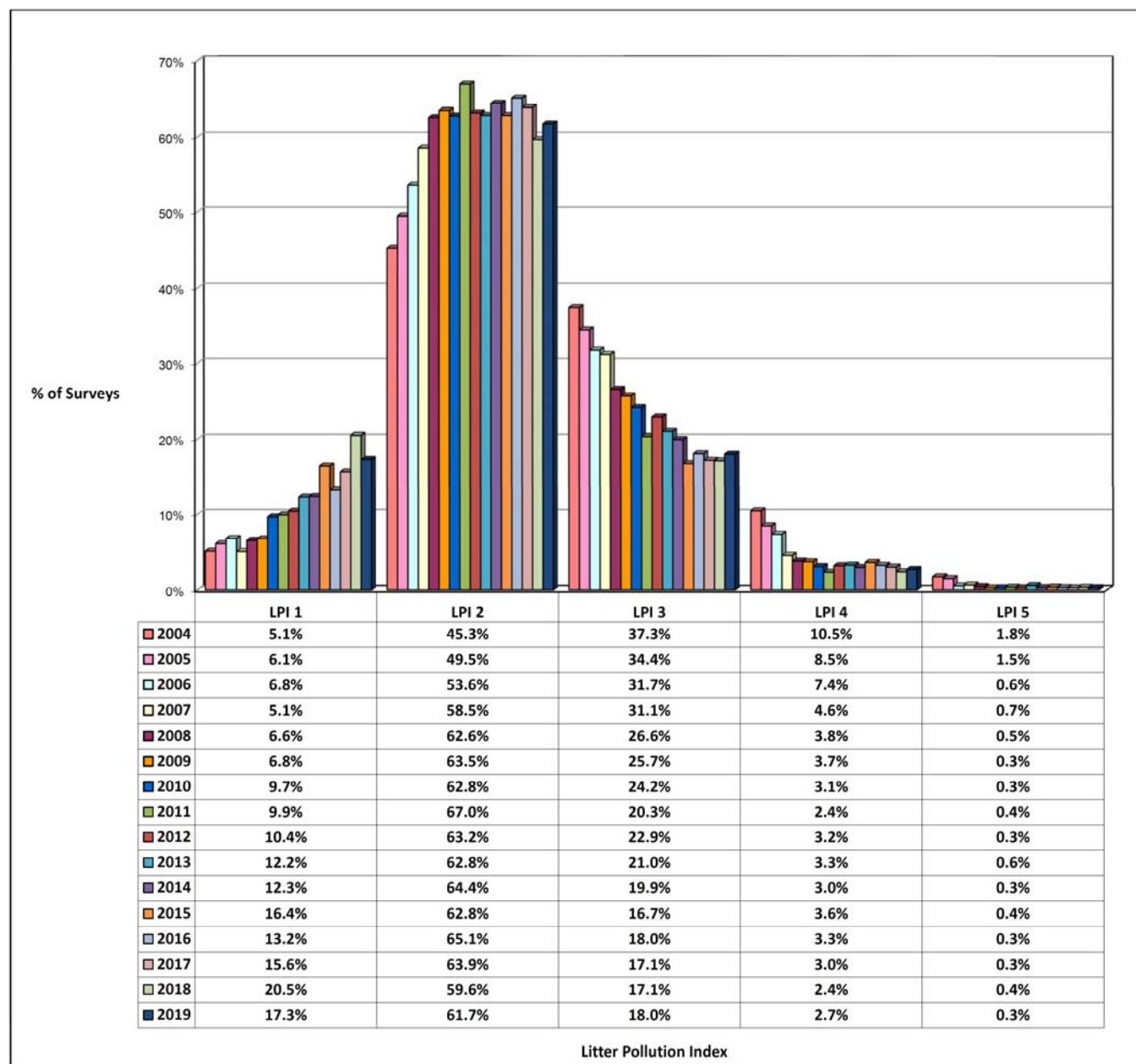
Figure 2-2   Litter Pollution Index 2004 to 2019

Figure 2-2 illustrates the Litter Pollution Index (LPI) ratings from 2004 to 2019. The percentage of unpolluted (LPI 1) areas has increased from 5.1% in 2004 to 17.3% in 2019 (an increase of 12.2%). The percentage of slightly polluted (LPI 2) areas has increased from 45.3% to 61.7% between 2004 and 2019 (an increase of 16.4%). The number of recorded moderately polluted (LPI 3) areas has shown a steady decrease between 2004 (37.3%) and 2019 (18.0%), with an overall decrease of 19.3%. The number of significantly polluted (LPI 4) areas has decreased from 10.5% in 2004 to 2.7% in 2019 (a decrease of 7.8%). The number of grossly polluted (LPI 5) areas has decreased from 1.8% in 2004 to 0.3% in 2019 (a decrease of 1.5%).

Comparison of Litter Pollution in Urban and Rural Councils 2019

Litter Pollution Index	LPI 1	LPI 2	LPI 3	LPI 4	LPI 5
URBAN 2019	11.8%	60.1%	25.3%	2.7%	0.1%
RURAL 2019	20.6%	62.7%	13.5%	2.8%	0.4%
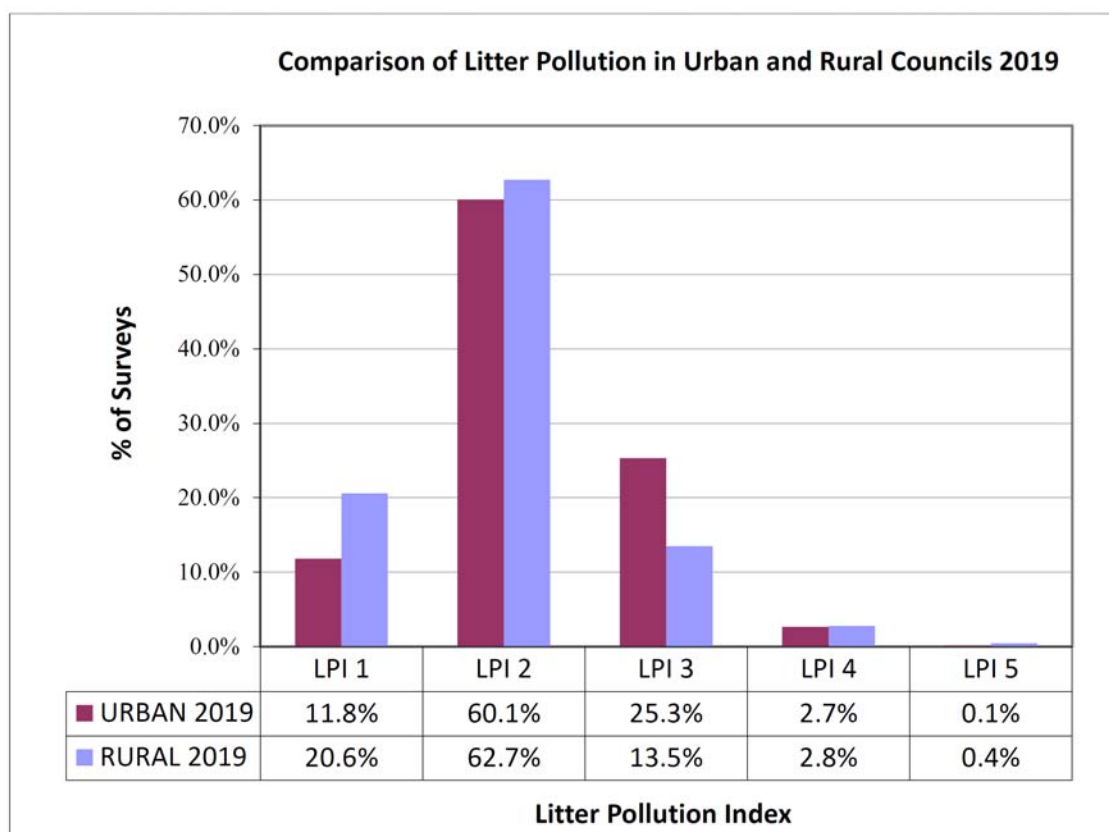
Figure 2-3   Comparison of Litter Pollution within Largely Urban and Rural Areas in 2019

A comparison of urban[2] and rural local authorities[3] is presented above in Figure 2-3.

In 2019, 11.8% of urban areas and 20.6% of rural areas were unpolluted (LPI 1). The percentage of slightly polluted areas (LPI 2) experienced in urban areas is 60.1%, and in rural areas is 62.7%. The percentage of moderately polluted (LPI 3) areas experienced in urban areas is 25.3%, with 13.5% experienced in rural areas. The percentage of significantly

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[2] For the purpose of this Report urban local authorities include Cork City Council, Dublin City Council, Dun Laoghaire Rathdown County Council, Fingal County Council, Galway City Council, Limerick City and County Council, South Dublin County Council and Waterford City and County Council.

[3] For the purpose of this Report rural local authorities include all other county councils.

polluted (LPI 4) areas is 2.7% in urban areas and 2.8% in rural areas. Grossly polluted (LPI 5) areas are 0.1% in urban areas and 0.4% in rural areas.

Please refer to Figures 5-4 and 5-5 for further comparison of urban and rural litter pollution data from 2018 to 2019.

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

Local authorities also carried out 1552 **Litter Quantification Surveys (LQS)** (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.

Litter Composition across all Local Authority Types, 2019

- Cigarette Related Litter 53.9%
- Packaging Items 14.9%
- Food Related Litter 12.3%
- Sweet Related Litter 9.4%
- Paper Items 5.9%
- Deleterious Litter 1.6%
- Miscellaneous 0.8%
- Large Litter Items 0.7%
- Plastic Items (non-packaging) 0.5%
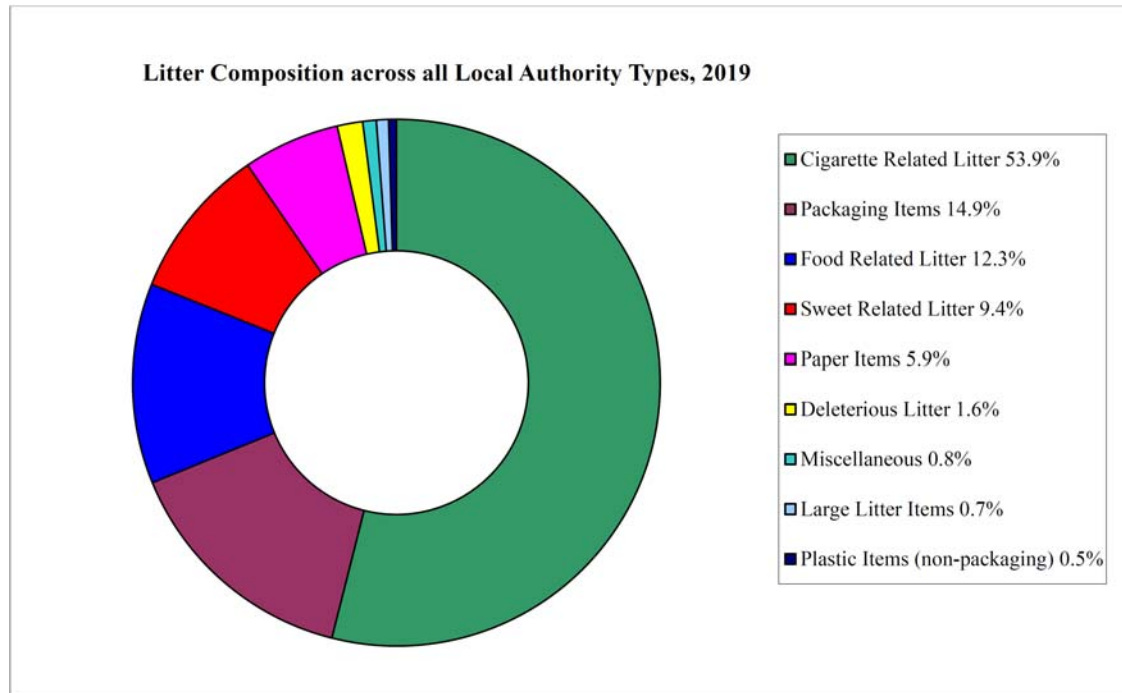
Figure 3-1   **Composition of Litter in 2019 Broken Down into Main Categories**

From the data in Figure 3-1, it can be seen that:

♦ **Cigarette related litter (53.9%)** continues to constitute the highest percentage of litter in the locations surveyed – this is comprised mainly of cigarette ends which constitute 50.9% of all litter items nationally.

♦ **Packaging litter (14.9%)** is the second largest component of national litter pollution recorded. Bottle caps (1.8%), bottles (1.6%), drink lids (1.3%), drink cups (1.2%), beverage cans (non-alcoholic) (1.2%) and bags and wrappers (1.0%) are the main litter items in this category.

♦ **Food related litter (12.3%)** is the third largest category of litter pollution recorded. Chewing gum is the single largest litter component in the food related litter category, and the second largest component nationally, comprising 10.6% of all litter recorded in the LQS carried out in 2019.

♦ **Sweet related litter (9.4%)** is the fourth largest category of litter pollution recorded. Sweet wrappers (plastic/foil) (5.2%) is the largest litter component in the sweet related litter category in 2019.

3.1   Comparison of Litter Quantification Surveys (LQS) 2018 – 2019

Figure 3-2 below compares the results of the 2018 and 2019 LQS.

Comparison of National Litter Composition from 2018 to 2019

	Plastic Items (non-packaging)	Large Litter Items	Miscellaneous	Deleterious Litter	Paper Items	Sweet Related Litter	Food Related Litter	Packaging Items	Cigarette Related Litter
2019	0.5%	0.7%	0.8%	1.6%	5.9%	9.4%	12.3%	14.9%	53.9%
2018	0.4%	0.5%	0.6%	2.1%	5.8%	9.2%	8.9%	18.2%	54.4%
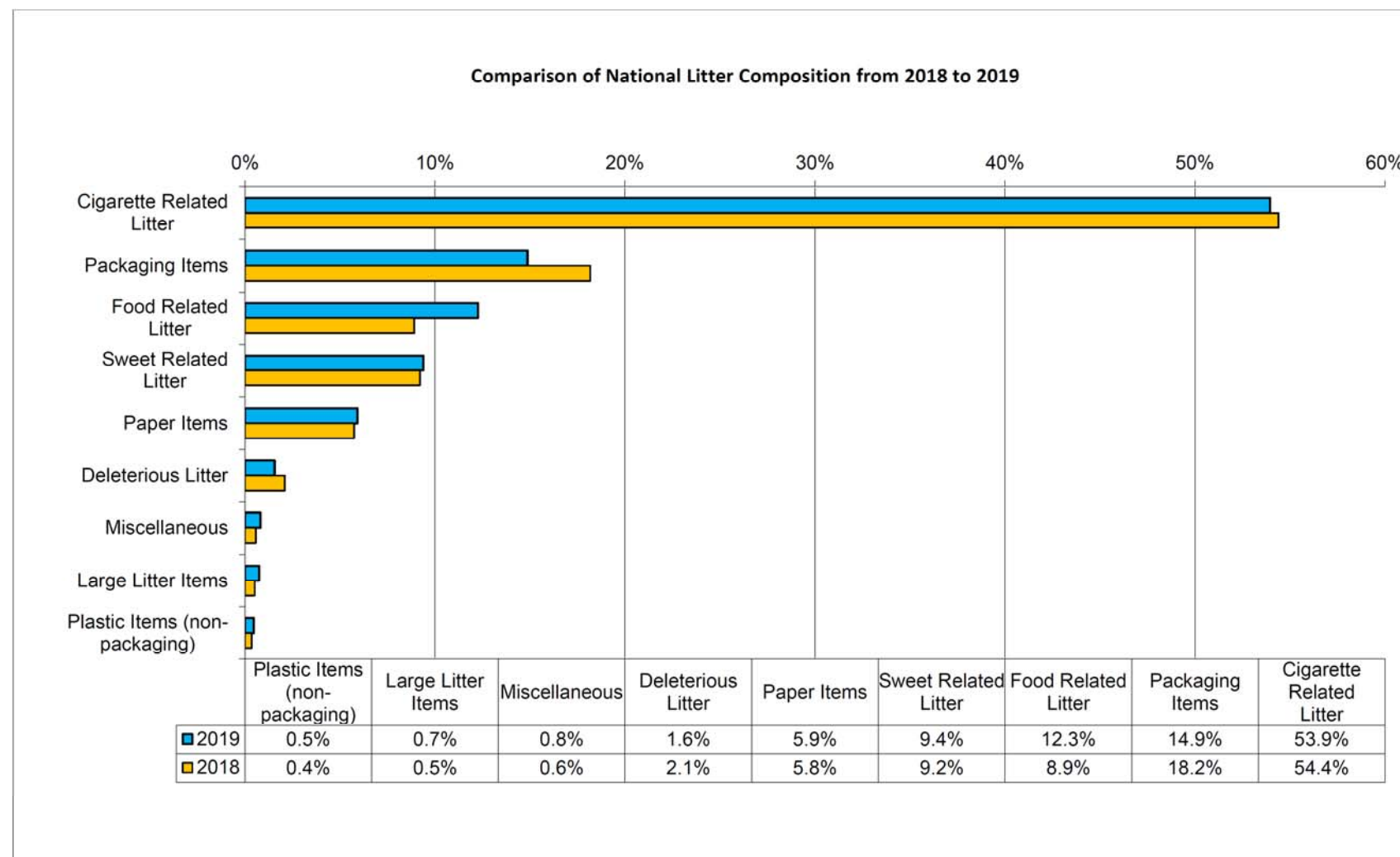
Figure 3-2   Comparison of National Litter Composition from 2018 to 2019

A comparison of the results of LQS carried out in 2018 and 2019 shows a relatively similar composition of litter. However, analysis reveals some differences in the relative quantities of certain components.

♦ The percentage of cigarette related litter has decreased by 0.5% since 2018.

♦ The percentage of packaging items decreased by 3.3% since 2018.

♦ The percentage of food related litter has increased by 3.4% since 2018.

♦ The percentage of sweet related litter items increased 0.2% since 2018.

♦ The percentage of paper items increased by 0.1% since 2018.

♦ The percentage of deleterious litter has decreased by 0.5% since 2018.

♦ The number of items recorded as miscellaneous litter has increased by 0.2% since 2018.

♦ There has been an increase in large litter items (0.2%) since 2018.

♦ The percentage of plastic items (non-packaging) has increased slightly by 0.1% since 2018.

Table 3-1 on the following page details the composition of litter in 2018 and 2019.

The greatest percentage change in litter composition is in food related litter which has increased by 3.4% since 2018. This increase can mainly be attributed to an increase in chewing gum (increased by 2.8%).

Packaging items had the largest decrease since 2018 (3.3%). This can be attributed to a decrease in several items in this category including beverage cans (alcoholic) (0.6%), bottle caps (0.4%), drink cups (0.3%), and beverage bottles (non-alcoholic) (0.3%).

Refer to Appendix C for "Details of Litter Composition from 2018-2019 according to Local Authority Type".

	Detailed National Litter Composition 2019			Detailed National Litter Composition 2018	
Cigarette Related Litter **53.9%**	Cigarette ends	50.9%	**Cigarette Related Litter** **54.4%**	Cigarette ends	51.1%
	Cigarette boxes and wrappers	1.7%		Cigarette boxes and wrappers	1.6%
	Matches	1.1%		Matches	1.4%
	Matchboxes and lighters	0.3%		Matchboxes and lighters	0.2%
Food Related Litter **12.3%**	Chewing Gum	10.6%	**Food Related Litter** **8.9%**	Chewing Gum	7.8%
	Remnants of confectionery food items	0.3%		Remnants of confectionery food items	0.2%
	Other food items	0.2%		Other food items	0.3%
	Fast-food remnants	0.3%		Fast-food remnants	0.2%
	Bread/ biscuits	0.5%		Bread/ biscuits	0.2%
	Fruit/ vegetables	0.4%		Fruit/ vegetables	0.2%
Packaging Items **14.9%**	Bottle Caps	1.8%	**Packaging Items** **18.2%**	Bottle Caps	2.2%
	Bottles	1.6%		Bottles	1.8%
	Drink cups	1.2%		Drink cups	1.5%
	Drink Lids	1.3%		Drink Lids	1.2%
	Bags and wrappers	1.0%		Bags and wrappers	1.2%
	Beverage Cans - Non-alcoholic	1.2%		Beverage Cans - Non-alcoholic	1.3%
	Beverage Cans - Alcoholic	0.9%		Beverage Cans - Alcoholic	1.5%
	Beverage Bottles - Alcoholic	0.6%		Beverage Bottles - Alcoholic	0.7%
	Other paper packaging	0.7%		Other paper packaging	0.7%
	Beverage Bottles - Non-alcoholic	0.6%		Beverage Bottles - Non-alcoholic	0.9%
	Drinks cartons	0.6%		Drinks cartons	0.6%
	Plastic film	0.5%		Plastic film	0.5%
	Other plastic packaging	0.5%		Other plastic packaging	0.7%
	Cardboard	0.4%		Cardboard	0.5%
	Tin foil (not sweet wrappers)	0.3%		Tin foil (not sweet wrappers)	0.4%
	Bags - shopping bags	0.3%		Bags - shopping bags	0.6%
	Other metal litter items	0.1%		Other metal litter items	0.2%
	Lids (e.g. from bottles, jars)	0.1%		Lids (e.g. from bottles, jars)	0.2%
	Food cans	0.1%		Food cans	0.2%
	Aeroboard	0.0%		Aeroboard	0.1%
	Jars and other containers	0.1%		Jars and other containers	0.1%
	Metal drums	0.0%		Metal drums	0.0%
	Bags	0.5%		Bags	0.5%
	Boxes	0.2%		Boxes	0.3%
	Bags - other (e.g. fertiliser)	0.1%		Bags - other (e.g. fertiliser)	0.1%
	Plastic sheeting (e.g. silage)	0.1%		Plastic sheeting (e.g. silage)	0.0%
	Bubble-wrap	0.1%		Bubble-wrap	0.0%
Sweet Related Litter **9.4%**	Sweet Wrappers (plastic/foil)	5.2%	**Sweet Related Litter** **9.2%**	Sweet Wrappers (plastic/foil)	5.1%
	Lollipop Sticks (wooden/plastics)	1.2%		Lollipop Sticks (wooden/plastics)	1.5%
	Straws	1.6%		Straws	1.2%
	Crisp Bags	1.5%		Crisp Bags	1.5%
Paper Items **5.9%**	Tissues	1.9%	**Paper Items** **5.8%**	Tissues	1.9%
	Receipts	1.5%		Receipts	1.3%
	Other paper items	0.7%		Other paper items	0.9%
	Tickets (e.g. bus, lottery)	0.7%		Tickets (e.g. bus, lottery)	0.6%
	Bank slips	0.8%		Bank slips	0.7%
	Newspapers	0.1%		Newspapers	0.1%
	Flyers and posters	0.2%		Flyers and posters	0.1%
	Letters, envelopes and cards	0.0%		Letters, envelopes and cards	0.1%
	Magazines/ brochures	0.1%		Magazines/ brochures	0.1%
Deleterious Litter **1.6%**	Dog fouling	1.3%	**Deleterious Litter** **2.1%**	Dog fouling	1.9%
	Municipal Hazardous Waste (e.g. paint, solvents)	0.0%		Municipal Hazardous Waste (e.g. paint, solvents)	0.0%
	Other deleterious items	0.0%		Other deleterious items	0.0%
	Feminine hygiene products	0.1%		Feminine hygiene products	0.0%
	Nappies	0.2%		Nappies	0.1%
	Needles and syringes	0.0%		Needles and syringes	0.0%
Large Litter Items **0.7%**	Other large items	0.3%	**Large Litter Items** **0.5%**	Other large items	0.2%
	Household refuse in bags	0.4%		Household refuse in bags	0.2%
	Appliances (e.g. fridge)	0.0%		Appliances (e.g. fridge)	0.0%
	Furniture	0.0%		Furniture	0.1%
	Scrap cars	0.0%		Scrap cars	0.0%
Miscellaneous **0.8%**	Miscellaneous Litter Items	0.8%	**Miscellaneous** **0.6%**	Miscellaneous Litter Items	0.6%
Plastic Items (Non-packaging) **0.5%**	Plastic items	0.5%	**Plastic Items (Non-packaging)** **0.4%**	Plastic items	0.4%

Table 3-1   Detailed National Litter Composition 2018 to 2019

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

The breakdown of causative factors nationally in 2018 and 2019 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 2018 to 2019, with the greatest difference occurring between passing pedestrians (decrease of 0.9% since 2018).

	Refuse Collection / Presentation	Major Entertainment Event	Construction Site	Overflowing Bins	Bus / Train Station	Bank ATM	Bring Bank	Bus Stop	Fly-tipping / Dumping	Fast-food Outlet	Schools / School Children	Places of Leisure / Entertainment	Gathering Point	Retail Outlet	Passing Motorists	Passing Pedestrians
2019	0.1%	0.1%	0.2%	0.4%	0.4%	0.8%	1.3%	2.3%	2.4%	4.2%	4.3%	4.8%	6.2%	8.9%	22.8%	41.1%
2018	0.0%	0.3%	0.1%	0.4%	0.3%	0.9%	1.3%	2.6%	2.2%	3.9%	3.5%	4.7%	6.0%	9.4%	22.4%	42.0%

Figure 4-1 Causative Factors of Litter Pollution across all Local Authorities in 2018 and 2019

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Figure 4-1 illustrates that:

♦ Passing pedestrians continue to constitute the greatest single causative factor of litter pollution, accounting for 41.1% across all local authorities.

♦ Passing motorists are the second largest causative factor accounting for 22.8% across all local authority types in 2019.

♦ Causative factors that have increased from 2018 to 2019 include passing motorists (from 22.4% to 22.8%), gathering points (from 6.0% to 6.2%), places of leisure/entertainment (from 4.7% to 4.8%), fast food outlets (from 3.9% to 4.2%), schools/school children (from 3.5% to 4.3%), fly-tipping/dumping (from 2.2% to 2.4%), bus/train stations (from 0.3% to 0.4%), construction sites (from 0.1% to 0.2%) and refuse collection/presentation (from 0.0% to 0.1%).

♦ Causative factors that have decreased from 2018 to 2019 include passing pedestrians (from 42.0% to 41.1%), retail outlets (from 9.4% to 8.9%), bus stops (from 2.6% to 2.3%), bank ATMs (from 0.9% to 0.8%) and major entertainment events (from 0.3% to 0.1%).

During the LPS, 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 LPS. 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 survey area.

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

	Passing Pedestrians	Passing Motorists	Retail Outlet	Gathering Point	Places of Leisure / Entertainment	Schools / School Children	Fast-food Outlet	Fly-tipping / Dumping	Bus Stop	Bring Bank	Bank ATM	Bus / Train Station	Overflowing Bins	Construction Site	Major Entertainment Event	Refuse Collection / Presentation
County Councils	39.7%	25.0%	9.3%	5.0%	5.7%	3.8%	4.1%	3.3%	0.9%	1.6%	0.8%	0.2%	0.3%	0.1%	0.1%	0.1%
City Councils	35.0%	22.2%	9.3%	10.7%	5.5%	5.1%	5.9%	0.8%	1.9%	0.7%	1.2%	0.3%	0.5%	0.5%	0.3%	0.0%
Dublin Local Authorities	53.2%	16.4%	7.0%	4.5%	1.1%	4.5%	2.6%	1.3%	7.2%	0.7%	0.2%	0.8%	0.3%	0.2%	0.0%	0.0%

*City Council results also include the Limerick and Waterford county areas (i.e. these local authorities are now known as Limerick City and County Council and Waterford City and County Council).

**County Council results exclude Limerick and Waterford.

Figure 4-2　　　　Causative Factors of Litter Pollution According to Local Authority Type in 2019

The national results for 2019 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, fast-food outlets and schools/school children are considerable sources of litter across all local authority types.

Survey results from 2019 show that the contribution of passing motorists, places of leisure/entertainment, fly-tipping/dumping, bring banks and refuse collection/presentation are greater in County Councils than in other local authority types.

Gathering points, schools/school children, fast-food outlets, bank ATM, overflowing bins, construction sites and major entertainment events are more significant causative factors in City Councils than in other local authority types.

Passing pedestrians, bus stops and bus/train stations are more significant causative factors in Dublin Local Authorities than in other local authority types.

The data in Figure 4-2 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 2018 and 2019 graphs under each litter pollution index (on the same page) to facilitate the comparison of the 2018 and 2019 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. LPS results for 31 local authorities have been returned to the Litter Monitoring Body (LMB) and analysed for 2019 – a list of local authorities is detailed in Appendix A.

Comparison of the 2019 LPS 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
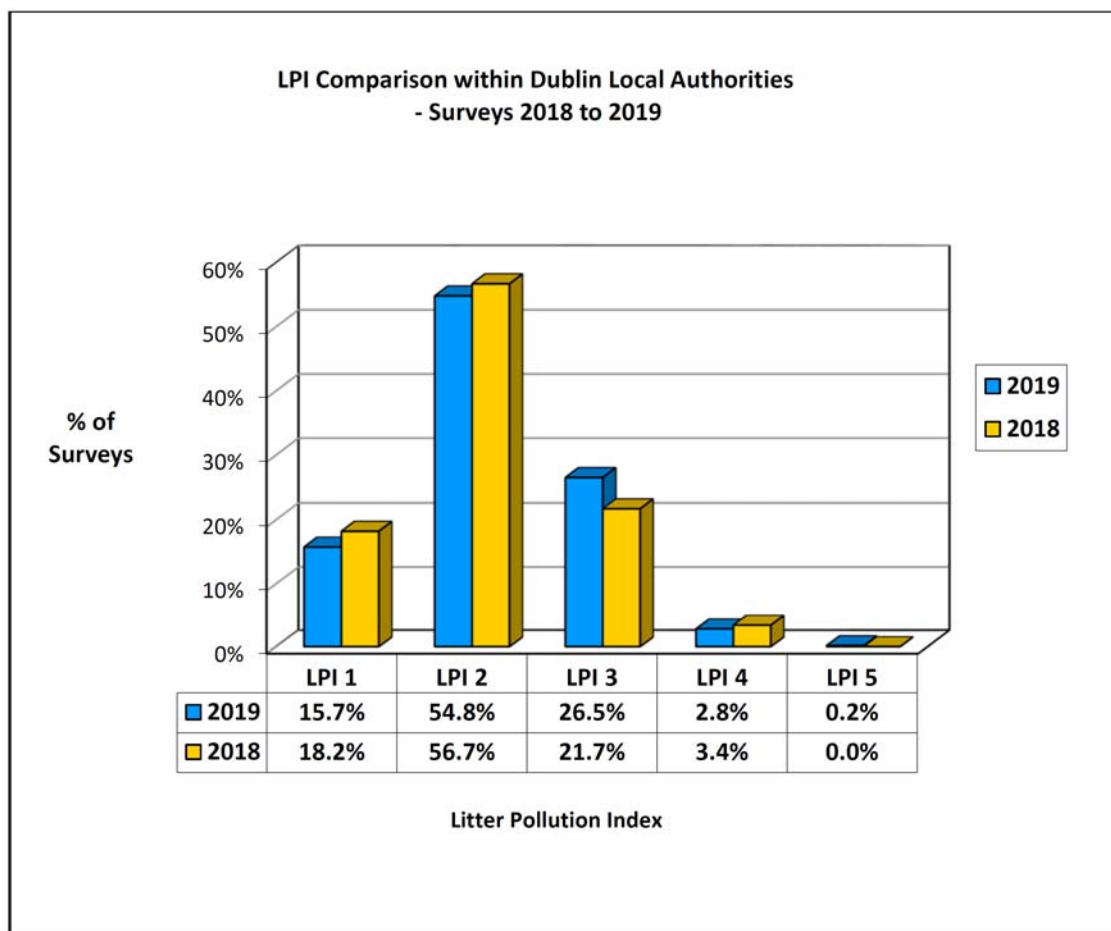
Figure 5-1   **Comparison of Litter Pollution within Dublin Local Authorities 2018 to 2019**

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

♦ The percentage of unpolluted (LPI 1) areas decreased from 18.2% in 2018 to 15.7% in 2018. This constitutes a decrease of 2.5%.

♦ Slightly polluted (LPI 2) areas decreased from 56.7% in 2018 to 54.8% in 2019. This constitutes a decrease of 1.9%.

♦ Moderately polluted (LPI 3) areas increased from 21.7% in 2018 to 26.5% in 2019. This constitutes a 4.8% increase.

♦ Significantly polluted (LPI 4) areas decreased from 3.4% in 2018 to 2.8% in 2019. This constitutes a 0.6% decrease.

♦ Grossly polluted (LPI 5) areas increased by 0.2%, from 0.0% in 2018 to 0.2% in 2019.

♦ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined, show a decrease of 4.4% from 2018 to 2019.

Overall, the results show an increase in the level of litter pollution in Dublin Local Authorities from 2018 to 2019. Furthermore, there was also a combined increase, of 4.4%, in moderately polluted (LPI 3), significantly polluted (LP4) and grossly polluted (LP1 5) areas between 2018 and 2019.

5.2   Comparison within County Councils

LPI Comparison within County Councils - Surveys 2018 to 2019

	1	2	3	4	5
2019	20.6%	62.7%	13.5%	2.8%	0.4%
2018	24.4%	59.4%	13.8%	2.0%	0.4%

Litter Pollution Index
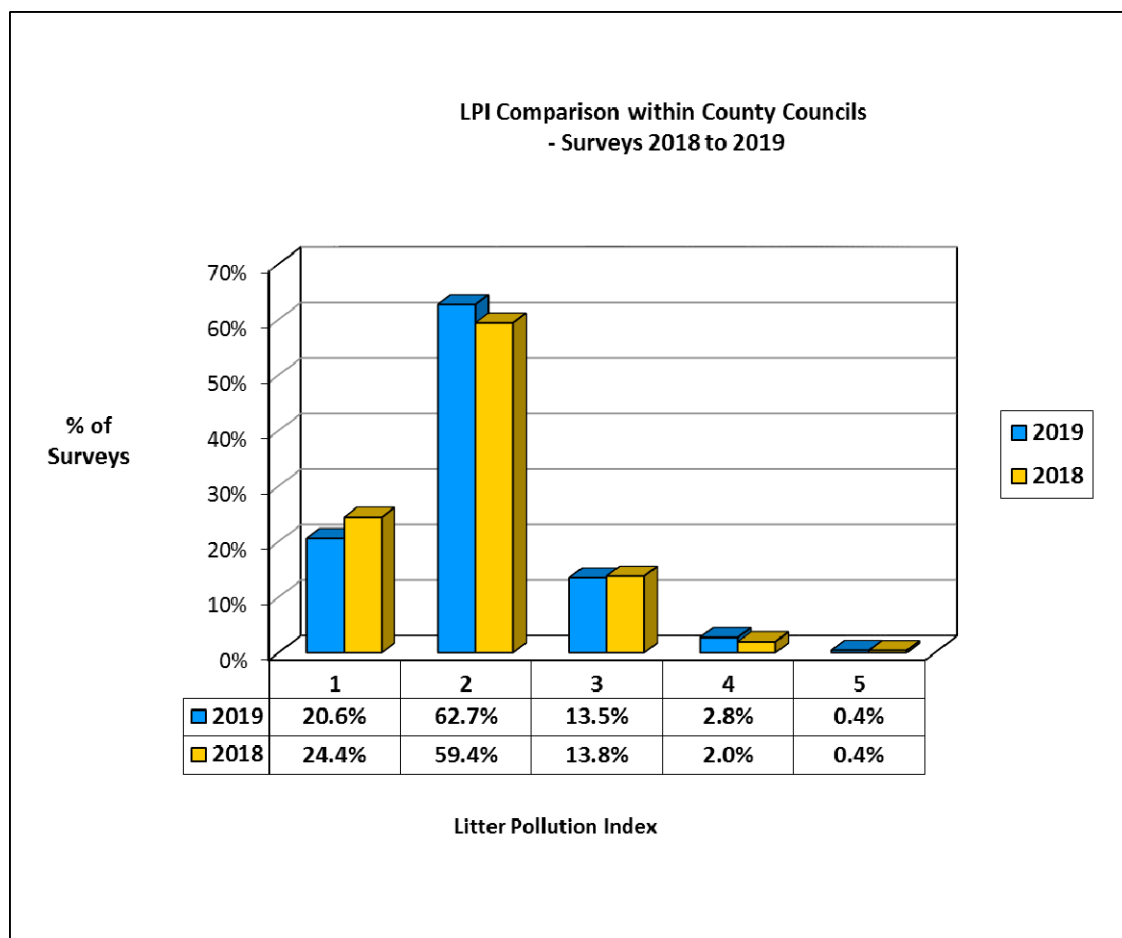
Figure 5-2   Comparison of Litter Pollution within County Councils 2018 to 2019

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

♦ The percentage of unpolluted (LPI 1) areas decreased from 24.4% in 2018 to 20.6% in 2019. This constitutes a decrease of 3.8%.

♦ Slightly polluted (LPI 2) areas increased by 3.3%, from 59.4% in 2018 to 62.7% in 2019.

♦ Moderately polluted (LPI 3) areas decreased by 0.3%, from 13.8% in 2018 to 13.5% in 2019.

♦ Significantly polluted (LPI 4) areas increased from 2.0% in 2018 to 2.8% in 2019. This constitutes an increase of 0.8%.

♦ The percentage of grossly polluted (LPI 5) areas remained constant at 0.4% from 2018 to 2019.

♦ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined, show a decrease of 0.5% from 2018 to 2019.

Overall, these results show a slight increase in the level of litter pollution in County Councils from 2018 to 2019. The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas, when combined, showed a decrease of 0.5%; whilst moderately polluted (LPI 3) and significantly polluted (LP4) and grossly polluted (LPI 5) areas showed a combined increase of 0.5% when compared to 2018.

5.3   Comparison within City Councils
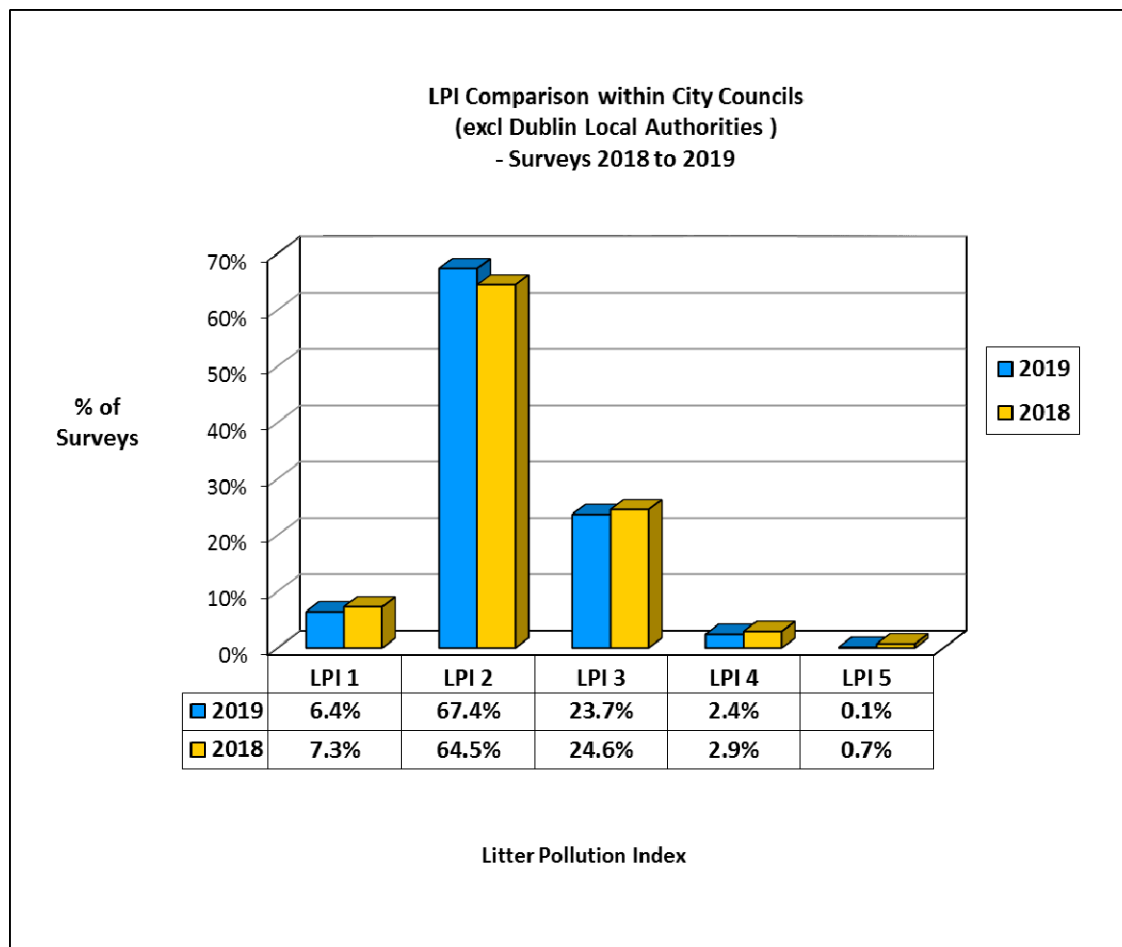
Figure 5-3   Comparison of Litter Pollution within City Councils 2018 to 2019

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 7.3% in 2018 to 6.4% in 2019. This constitutes a decrease of 0.9%.

- Slightly polluted (LPI 2) areas have increased by 2.9%, from 64.5% in 2018 to 67.4% in 2019.

- The percentage of moderately polluted (LPI 3) areas has decreased by 0.9%, from 24.6% in 2018 to 23.7% in 2019.

- Significantly polluted (LPI 4) areas have decreased from 2.9% in 2018 to 2.4% in 2019, a decrease of 0.5%.

- The percentage of grossly polluted (LPI 5) has decreased by 0.6%, from to 0.7% in 2018 to 0.1% in 2019.

♦ The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined, shows an increase of 2.0% from 2018 to 2019.

These results show an overall decrease in the level of litter pollution in City Councils from 2018 to 2019. The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas, when combined, show an increase of 2.0%., while, there has been a decrease of 2.0% in moderately polluted (LPI3), significantly polluted (LPI 4) and grossly polluted (LPI 5) areas, when combined, since 2018.

The percentage of unpolluted (LPI 1) areas decreased in all local authority types from 2018 to 2019.

The percentage of slightly polluted (LPI 2) areas increased in both County Councils and City Councils but decreased in Dublin Local Authorities from 2018 to 2019.

The percentage of moderately polluted (LPI 3) areas increased in Dublin Local Authorities but decreased in both City Council areas and County Council areas.

The percentage of significantly polluted (LPI 4) areas decreased in Dublin Local Authorities and City Council areas from 2018 to 2019 while increasing in County Council areas.

The percentage of grossly polluted (LPI 5) areas increased slightly in Dublin Local Authorities from 2018 to 2019 while decreasing in City Council areas. The percentage of LPI 5 areas remained the same in County Council areas from 2018 to 2019.

5.4   Comparison within Urban & Rural Areas[4]

Figures 5-4 and 5-5 provide a comparison of litter pollution in rural and urban areas from 2018 to 2019.

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[4] For the purpose of this Report urban local authorities include Cork City Council, Dublin City Council, Dun Laoghaire Rathdown County Council, Fingal County Council, Galway City Council, Limerick City and County Council, South Dublin County Council and Waterford City and County Council. For the purpose of this report, rural local authorities include all other County Councils.
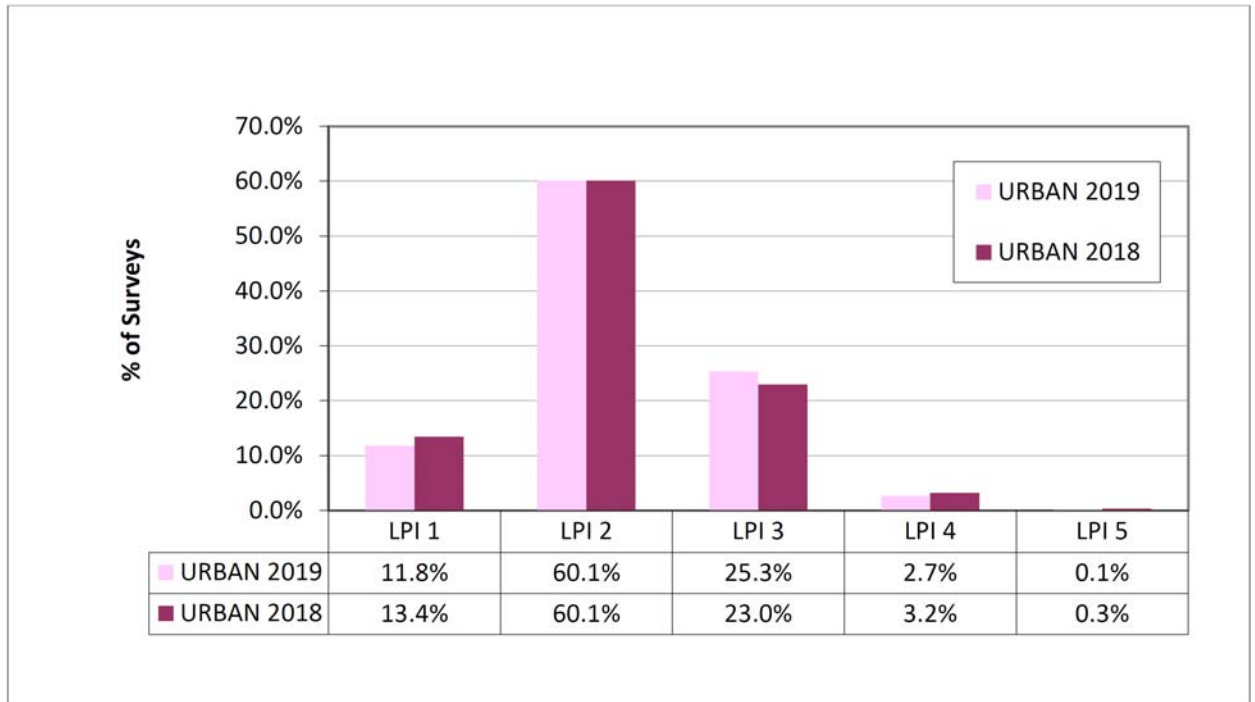
Figure 5-4   Comparison of Litter Pollution in Urban Areas from 2018 to 2019
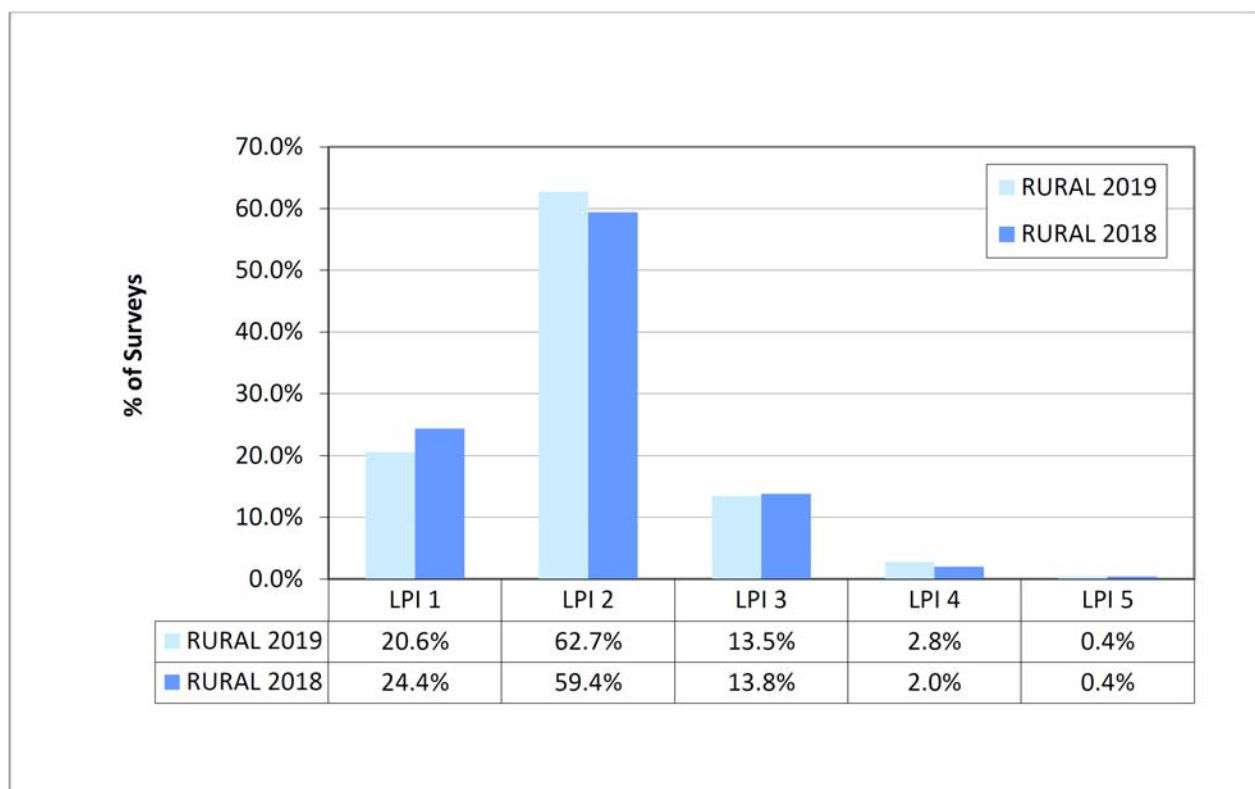
Figure 5-5   Comparison of Litter Pollution in Rural Areas from 2018 to 2019

The percentage of unpolluted (LPI 1) areas in urban areas has decreased by 1.6%, from 13.4% in 2018 to 11.8% in 2019. The percentage of slightly polluted (LPI 2) areas has remained the same at 60.1% in 2018 and 2019. Moderately polluted (LPI 3) areas have increased by 2.3%, from 23.0% in 2018 to 25.3% in 2019. Significantly polluted (LPI 4) areas

have decreased by 0.5%, from 3.2% in 2018 to 2.7% in 2019. Grossly polluted (LPI 5) areas have decreased slightly by 0.2%, from 0.3% in 2018 to 0.1% in 2019.

In rural areas, the levels of unpolluted (LPI 1) areas have decreased by 3.8%, from 24.4% in 2018 to 20.6% in 2019. The percentage of slightly polluted (LPI 2) areas has increased by 3.3%, from 59.4% in 2018 to 62.7% in 2019. Moderately polluted (LPI 3) areas have decreased by 0.3%, from 13.8% in 2018 to 13.5% in 2019. Significantly polluted (LPI 4) areas have increased by 0.8%, from 2.0% in 2018 to 2.8% in 2019. Grossly polluted (LPI 5) areas have remained the same, at 0.4%, from 2018 to 2019.

The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined, show that urban areas have shown a decrease in cleanliness levels by 1.6% from 2018 to 2019. Rural areas have also shown an overall decrease in cleanliness levels by 0.5% since 2018.

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   Cigarette Related Litter

The percentage of national litter represented by cigarette related litter has decreased from 54.4% in 2018 to 53.9% in 2019, a decrease of 0.5% (see Table 3-1, page 12). Cigarette related litter continues to be the largest component of litter nationally in 2019.
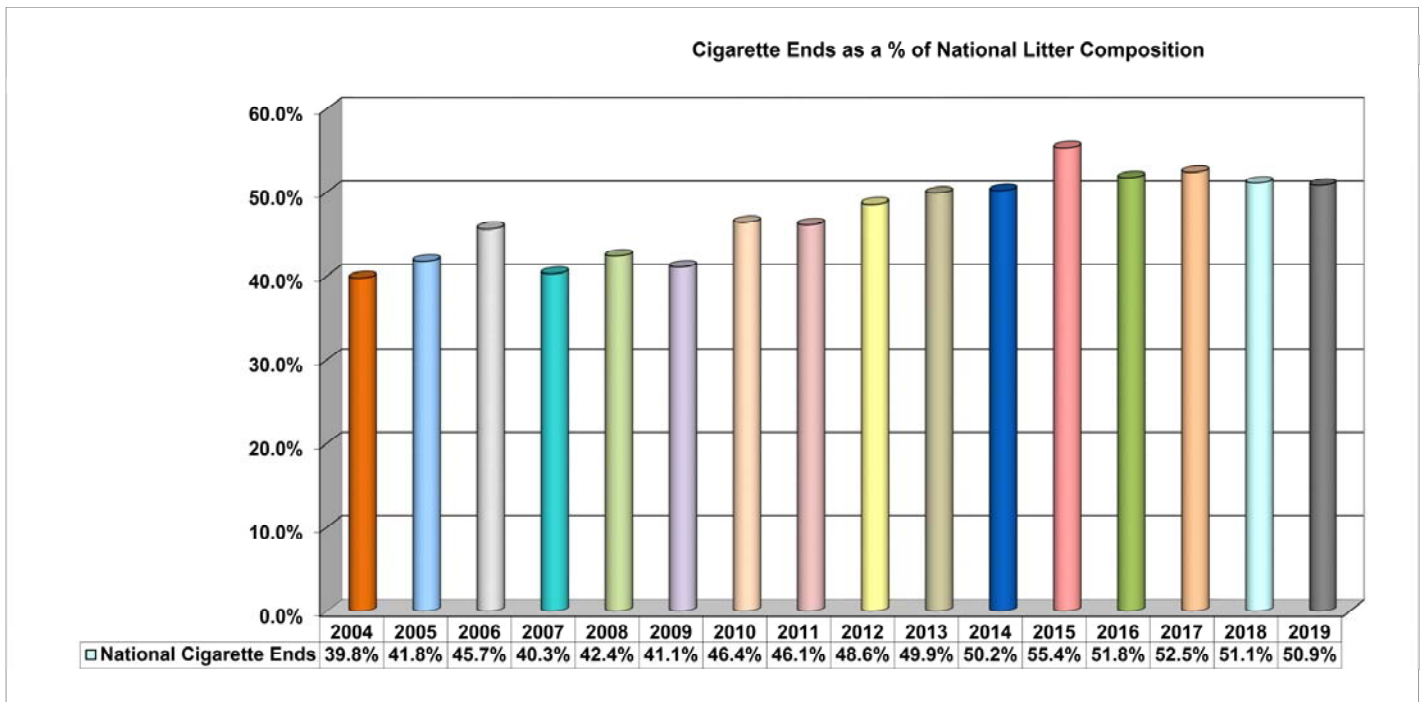
Figure 6-1   Cigarette Ends as a Percentage of the National Litter Composition

Cigarette ends continue to be the biggest component of cigarette related litter. The percentage of cigarette ends, as a component of national litter, decreased (by 0.2%), from 51.1% in 2018 to 50.9% in 2019 (Figure 6-1).

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6.2   Chewing Gum Litter
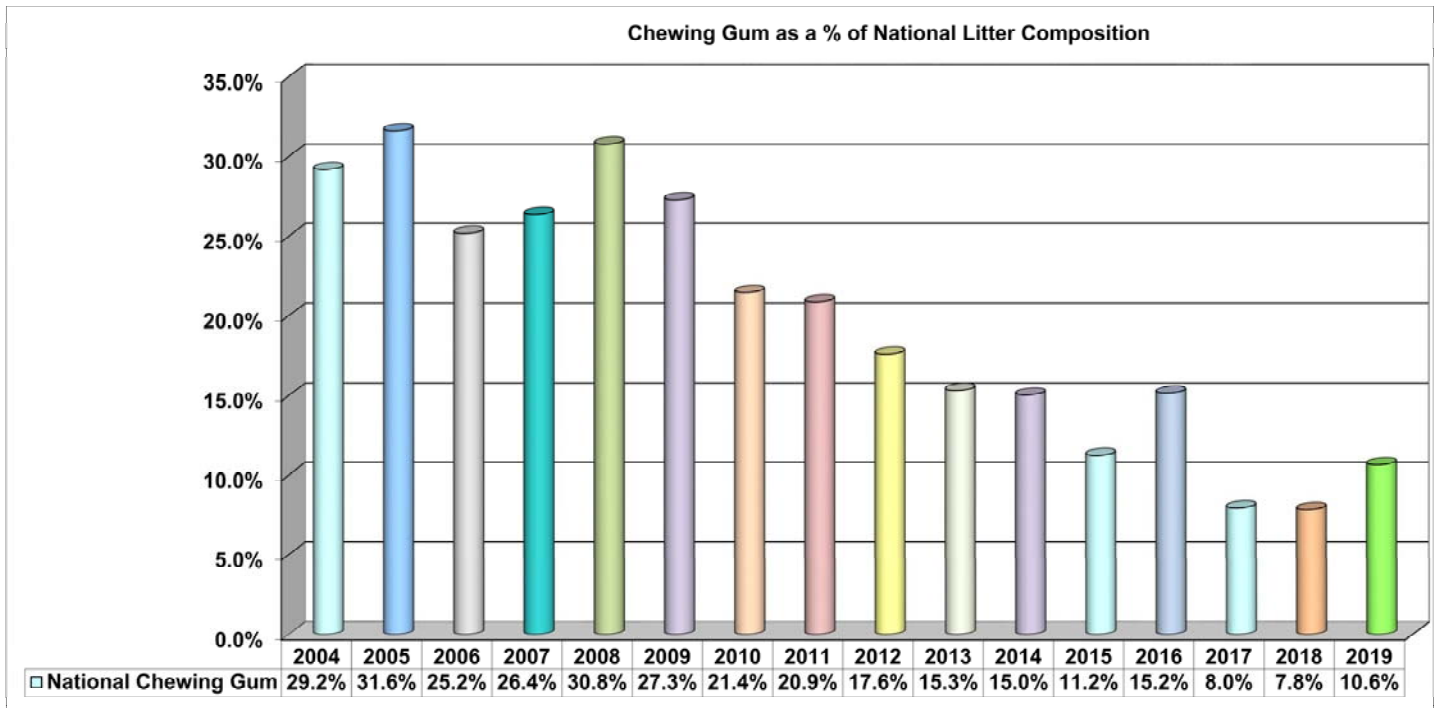
Figure 6-2   Chewing Gum as a Percentage of the National Litter Composition

Food related litter, and specifically chewing gum, continued to be a noticeable component of litter nationally in 2019. Figure 6-2 above illustrates trends in chewing gum related litter since 2004.

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

Chewing gum litter in 2019 (10.6%) had increased by 2.8% since 2018.

6.3   Sweet Related Litter
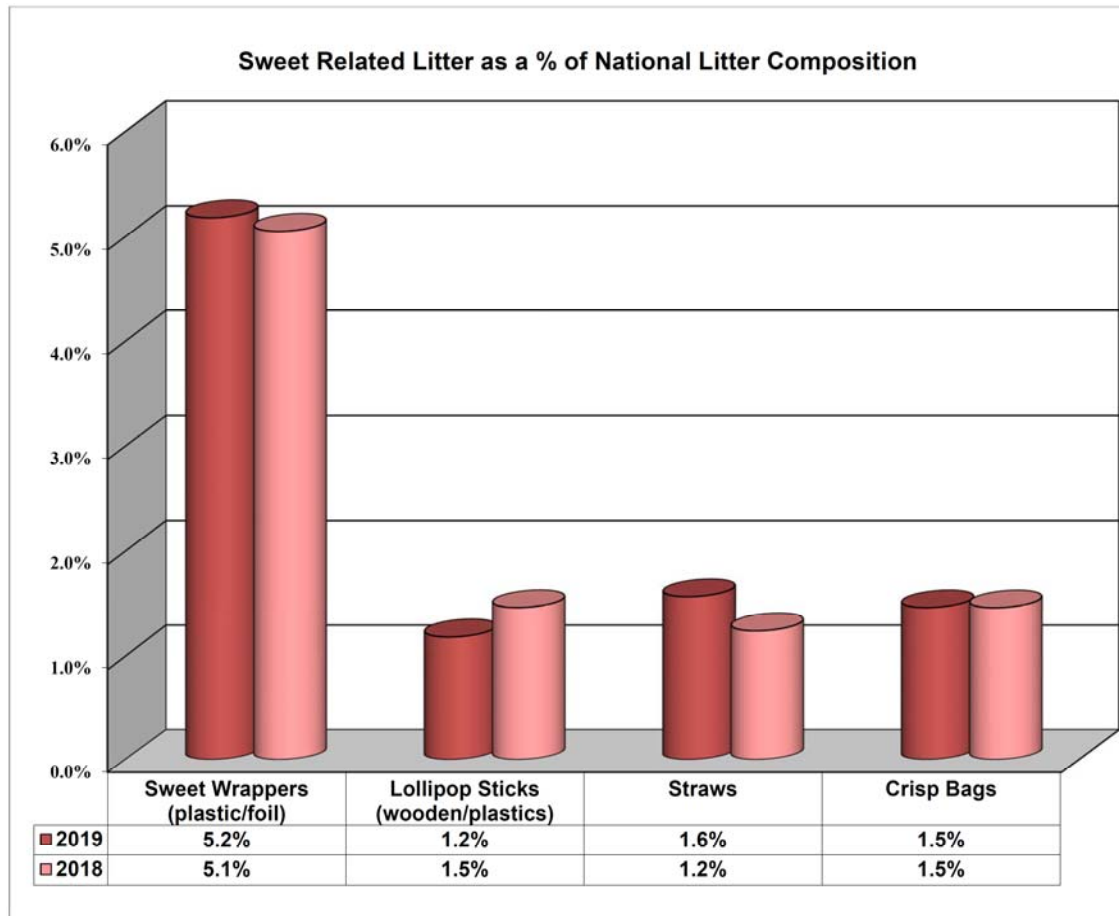
Figure 6-3   Sweet Related Litter Analysed 2018 to 2019

Sweet related litter, or sweet wrappers (plastic/foil) more specifically, continues to be a large component of national litter. The components of sweet related litter between 2018 and 2019 are presented in Figure 6-3 above.

Sweet related litter, as a component of national litter, increased from 9.2% in 2018 to 9.4% in 2019. The results in Figure 6-3, illustrates that sweet wrappers (plastic/foil), are the highest component of litter in the sweet related litter category. The quantity of lollipop sticks (wooden/plastic) has decreased by 0.3%, in 2019. Straws have increased, by 0.4%, in 2019. Crisp bags also contribute to the sweet related litter category and have remained the same at 1.5% from 2018 to 2019.

6.4 Bank ATM Receipts

The NLPMS 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 then Irish Banking Federation (IBF) on behalf of the retail banking groups with ATM networks.

Bank Slips as a % of National Litter Composition

	Bank Slips
2007	0.7%
2008	0.5%
2009	0.6%
2010	0.7%
2011	0.6%
2012	0.6%
2013	0.8%
2014	0.6%
2015	0.5%
2016	0.5%
2017	0.3%
2018	0.7%
2019	0.8%

Figure 6-4   Bank Slips as a Percentage of the National Litter Composition

Figure 6-4 illustrates that bank slips, as a percentage of the national litter composition has increased (by 0.1%) from 0.7% in 2018 to 0.8% in 2019. The LPS results for 2019 suggest that 'bank ATM's' as a causative factor continue to remain prominent with 2019 survey results similar to those recorded in the 2007, 2010, 2013 and 2018 surveys (Figure 6-4).

The NLPMS will continue to monitor the impact of this protocol.

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6.5   Plastic Bags

Plastic Bags as a % of National Litter Composition

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bags- Shopping Bags	5.0%	0.3%	0.3%	0.2%	0.2%	0.5%	0.3%	0.3%	0.2%	0.2%	0.2%	0.3%	0.1%	0.1%	0.2%	0.2%	0.3%	0.6%	0.3%
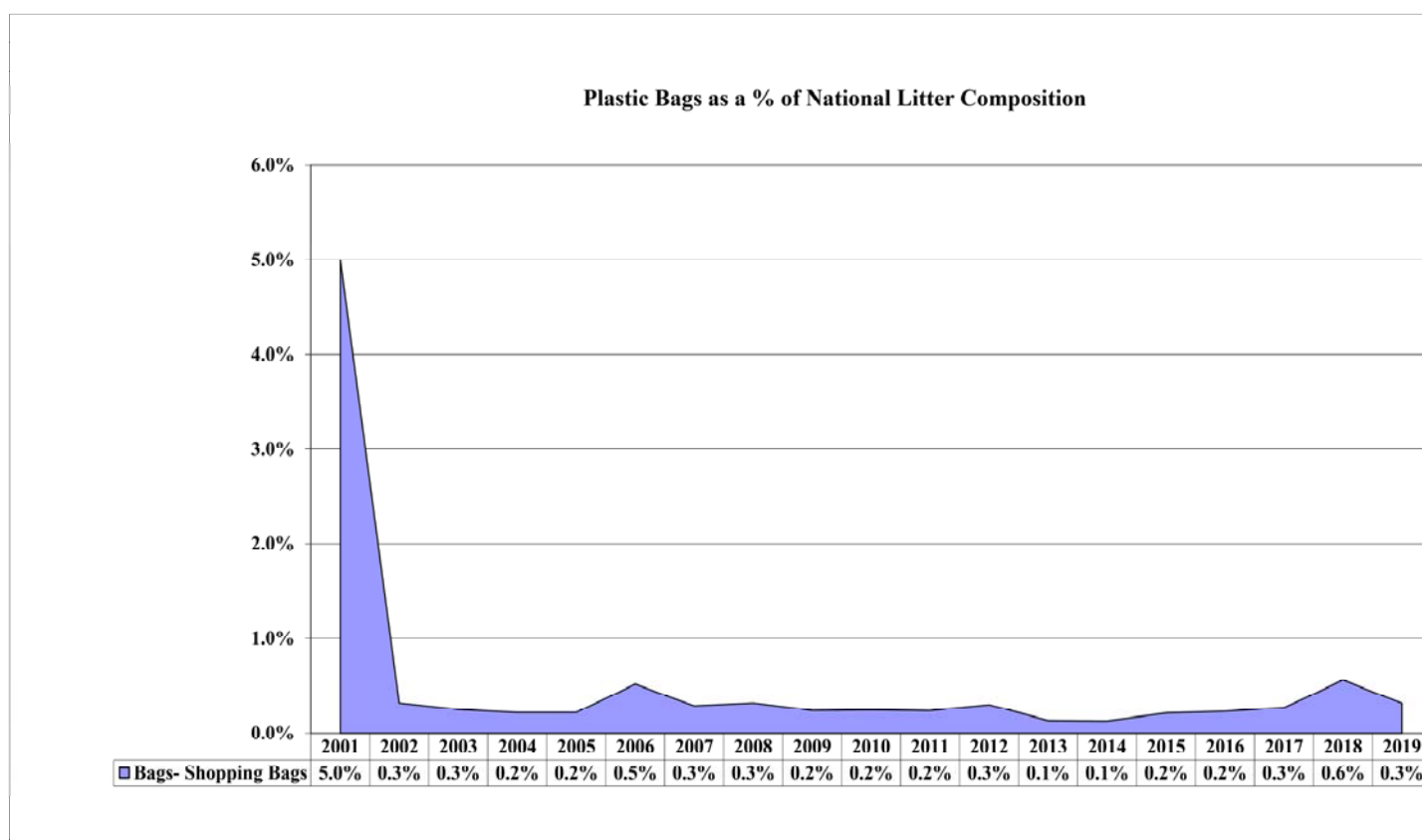
Figure 6-5   Plastic Bags as a Percentage of the National Litter Composition

The NLPMS can be used as a tool to monitor the success of measures implemented to tackle specific issues. Prior to 2002, it was estimated that 1.3 billion shopping bags were issued annually. Because of incorrect disposal, many plastic bags ended up as a very visually intrusive form of litter pollution. Prior to the introduction of the NLPMS, it was estimated that plastic bags constituted 5% of litter. A plastic bag levy was introduced in March 2002 in order to tackle this issue. Results of the System indicated that plastic bags, as a component of national litter, responded positively and plastic bag litter began decreasing.

Between 2004 and 2006, levels of plastic bags recorded by the System steadily began to climb again. The plastic bag levy increased, from 15c to 22c, in July 2007 in a further bid to reduce littering. The results of the System once again indicated that the measures were having a positive impact on littering; plastic bags as a percentage of National Litter Composition reached an all-time low in 2014 (0.13%).

Figure 6-5 above illustrates the percentage of shopping bags as a percentage of the National Litter Composition from the period mid-2001 to 2019. The 2019 results show that there has been a 0.3% decrease in plastic bags as a percentage of the National Litter Composition since 2018. The NLPMS will continue to monitor the level of plastic bag litter in Ireland and the impact of this levy.

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CHAPTER 7:   ITEMS FOR FURTHER ATTENTION UNDER THE NLPMS

♦ The NLPMS 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 (IB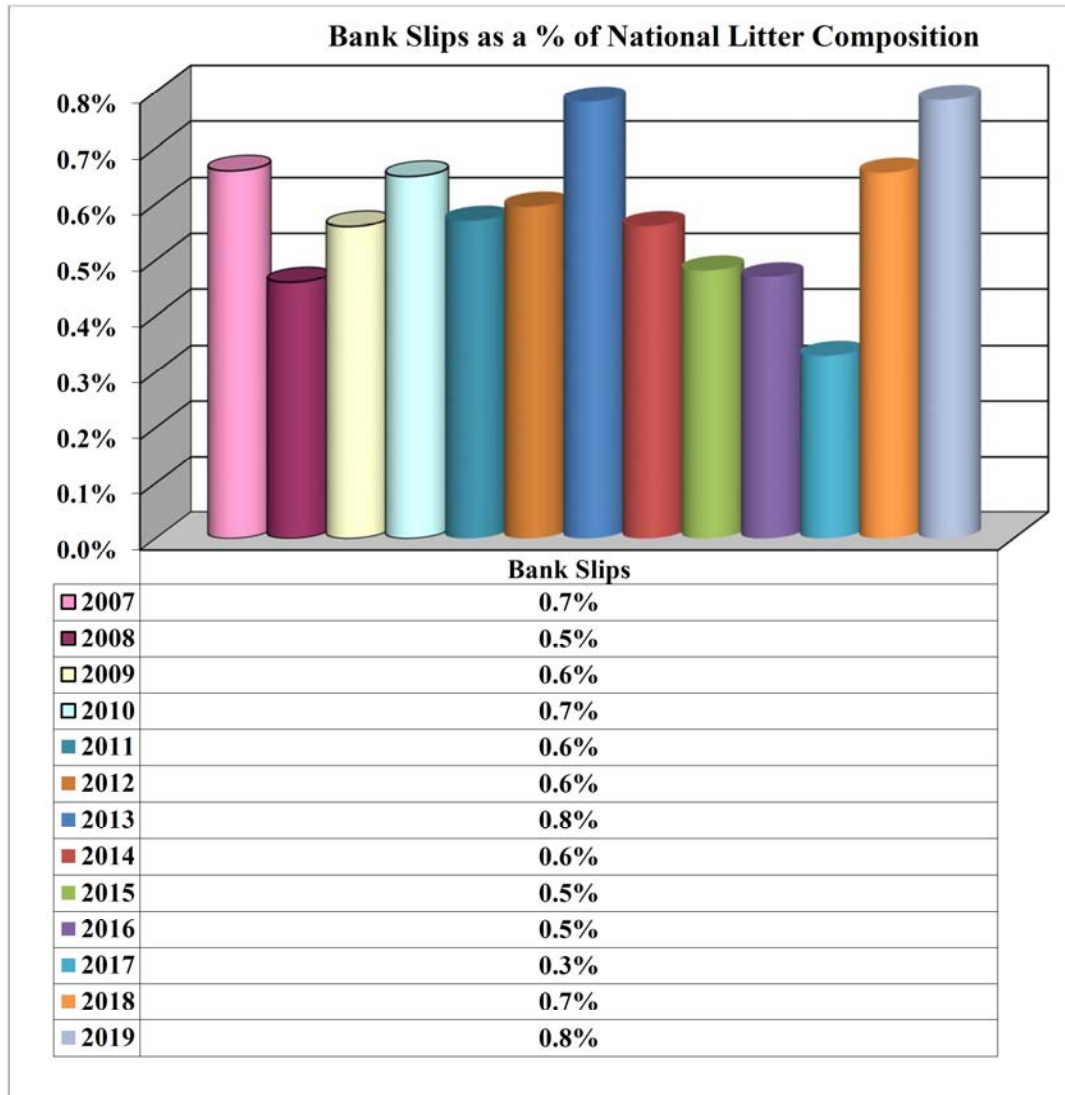F) on behalf of the retail banking groups with ATM networks. The agreement currently operates between the Minister for Communications, Climate Action and Environment and the Banking and Payments Federation Ireland (BPFI).

♦ The NLPMS 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 NLPMS will continue to monitor the level of cigarette related litter which is the largest litter component recorded nationally.

♦ The NLPMS will continue to monitor the level of chewing gum litter recorded which is the second largest litter component recorded nationally.

♦ The NLPMS will continue to monitor the causative factors of national litter pollution.

CHAPTER 8:   CONCLUSION

As a result of the Local Government Reform Act, 31 local authorities exist in Ireland. In 2019, all 31 local authorities submitted their NLPMS survey results.

The constituent components and the causative factors of litter pollution nationally remain relatively constant across all local authority types from 2018 to 2019.

The percentage of cigarette related litter, packaging items and deleterious litter have all decreased since 2018. Food related litter, sweet related litter, paper items, large litter items, miscellaneous litter and plastic items (non- packaging) have all increased since 2018.

The national results for 2019 indicate that passing pedestrians are the most significant cause of litter pollution for every local authority type in Ireland. It is also clear that that passing motorists, retail outlets, gathering points, places of leisure/entertainment, fast-food outlets and schools/school children are considerable sources of litter across all local authority types.

Survey results from 2019 show that the litter contribution of passing motorists, places of leisure/entertainment, fly-tipping/dumping, bring banks and refuse collection/presentation are greater in County Councils than in other local authority types.

Gathering points, school/school children, fast food outlets, bank ATMs, overflowing bins, construction sites and major entertainment events are more significant causative factors in City Councils than in other local authority types.

Passing pedestrians, bus stops and bus/train stations are more significant causative factors in Dublin Local Authorities than in other local authority types.

The 2019 national litter monitoring system results indicate that the percentage of unpolluted (LPI 1) areas has decreased from 20.5% in 2018 to 17.3% in 2019.

A comparison of the results from 2018 to 2019 indicates that the percentage of slightly polluted (LPI 2) areas has increased from 59.6% in 2018 to 61.7% in 2019.

The percentage of moderately polluted areas (LPI 3) has increased from 17.1% in 2018 to 18.0% in 2019. The percentage of significantly polluted areas (LPI 4) has increased slightly from 2.4% in 2018 to 2.7% in 2019. Grossly polluted areas (LPI 5) has decreased slightly from 0.4% in 2018 to 0.3% in 2019.

The percentage of unpolluted (LPI 1) and slightly polluted (LPI 2) areas combined has decreased slightly (by 1.1%) from 2018 to 2019, thus demonstrating there has been an increase in litter pollution from 2018 to 2019.

Analysis of specific components of litter in 2019 resulted in the following observations:

♦ Cigarette related litter, and more specifically cigarette ends, continues to be the greatest component of litter nationally.

♦ Chewing gum continues to be the second largest litter component nationally. In 2019 it has increased by 2.8%, from 7.8% in 2018 to 10.6% in 2019. The NLPMS will continue to monitor the level of chewing gum litter recorded nationally.

♦ Monitoring of plastic bags, as a component of national litter, has indicated the number of plastic bags responded positively to the introduction and increases in the levy in 2002 and 2007, respectively. Monitoring by the System recorded an all-time low in the levels of plastic bags in the environment in 2014, after which time the level has slowly increased.

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 2020.

The LMB is satisfied that local authorities are properly implementing the NLPMS. 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 2019

Litter Quantification Survey (LQS) Results

LQS results for 31 local authorities were returned to the LMB and analysed for 2019. These are detailed in Table A-1.

Table A.1   Local Authorities that Submitted Litter Quantification Survey Results for 2019

County Councils
Carlow County Council
Cavan County Council
Clare County Council
Cork County Council
Donegal County Council
Galway County Council
Kerry County Council
Kildare County Council
Kilkenny County Council
Laois County Council
Leitrim County Council
Longford County Council
Louth County Council
Mayo County Council
Meath County Council
Monaghan County Council
Offaly County Council
Roscommon County Council
Sligo County Council
Tipperary County Council
Westmeath County Council
Wexford County Council
Wicklow County Council
City Councils
Cork City Council
Galway City Council
Limerick City and County Council
Waterford City and County Council
Dublin Local Authorities
Dublin City Council
Dún Laoghaire-Rathdown County Council
Fingal County Council
South Dublin County Council

Litter Pollution Survey (LPS) Results

LPS results for 31 local authorities were returned to the LMB and analysed for 2019. These are detailed in Table A.2.

Table A.2   Local Authorities that Submitted Litter Pollution Survey Results for 2019

County Councils
Carlow County Council
Cavan County Council
Clare County Council
Cork County Council
Donegal County Council
Galway County Council
Kerry County Council
Kildare County Council
Kilkenny County Council
Laois County Council
Leitrim County Council
Longford County Council
Louth County Council
Mayo County Council
Meath County Council
Monaghan County Council
Offaly County Council
Roscommon County Council
Sligo County Council
Tipperary County Council
Westmeath County Council
Wexford County Council
Wicklow County Council
City Councils
Cork City Council
Galway City Council
Limerick City and County Council
Waterford City and County Council
Dublin Local Authorities
Dublin City Council
Dún Laoghaire-Rathdown County Council
Fingal County Council
South Dublin County 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.
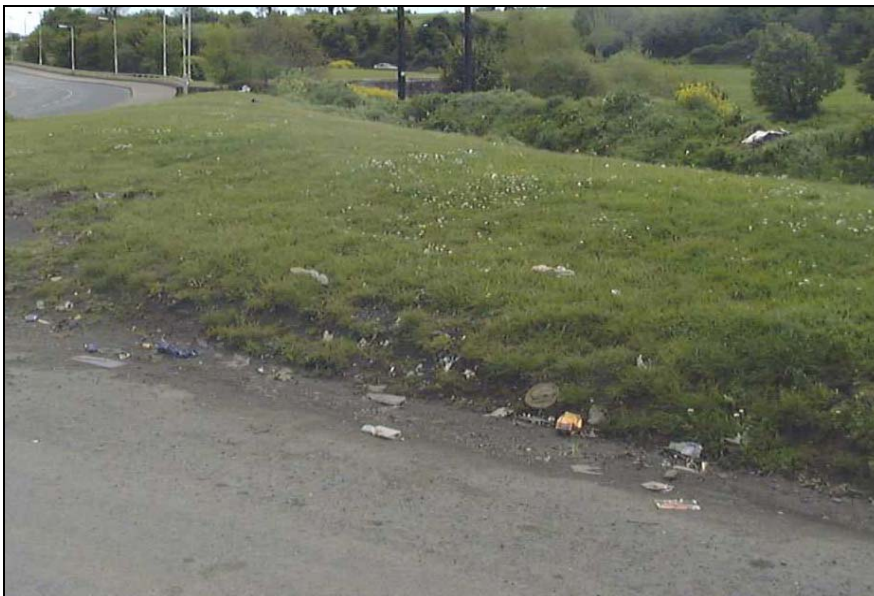
Area Cleanliness Rating 4 (Significantly Polluted)

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/ dumping incident.

APPENDIX C

DETAILS OF LITTER COMPOSITION FROM 2018 – 2019 ACCORDING TO LOCAL AUTHORITY TYPE

Comparison of Litter Composition within County Councils - Surveys 2018 to 2019

	Plastic Items (non-packaging)	Large Litter Items	Miscellaneous	Deleterious Litter	Paper Items	Sweet Related Litter	Food Related Litter	Packaging Items	Cigarette Related Litter
2019	0.5%	1.0%	0.8%	1.9%	6.3%	9.8%	11.7%	14.8%	53.1%
2018	0.3%	0.6%	0.7%	2.5%	6.4%	9.3%	9.3%	16.8%	54.1%
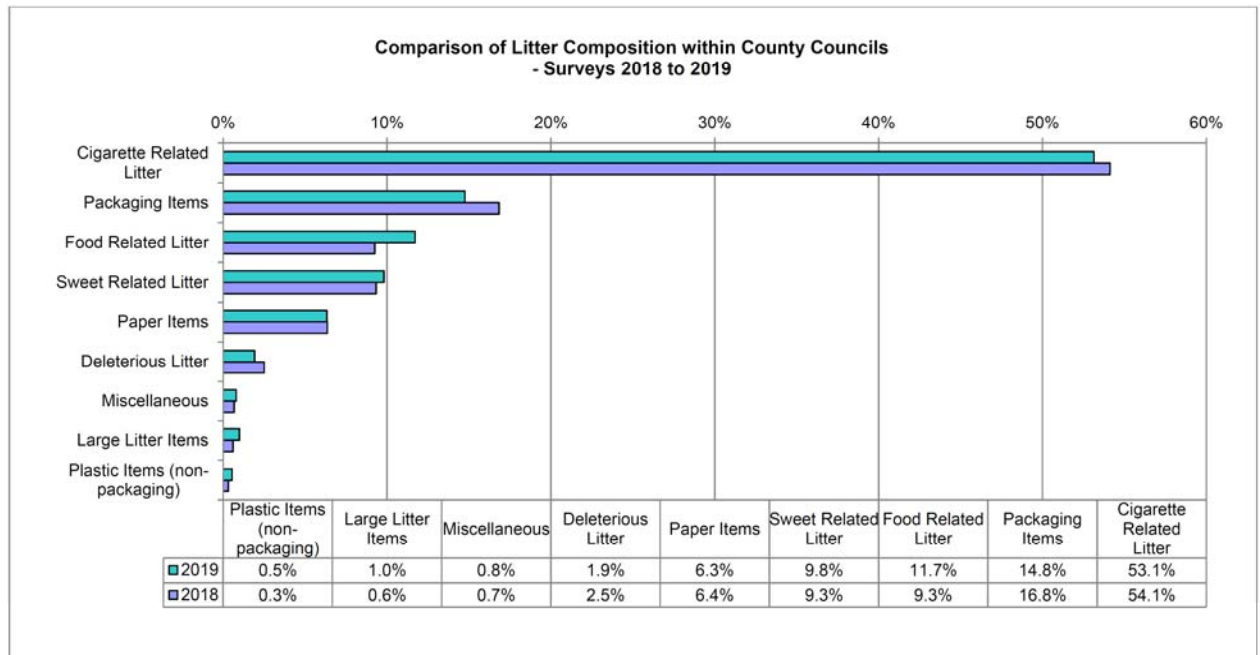
Figure C. 1   Comparison of Litter Composition within County Councils 2018 to 2019

Figure C.1 compares the results of LQS within County Councils from 2018 to 2019. The main observations are that the percentage of cigarette related litter, packaging items, paper items and deleterious litter have all decreased from 2018 to 2019. Food related litter, sweet related litter, miscellaneous litter, large litter items and plastic items (non-packaging) have all increased from 2018 to 2019.

Comparison of Litter Composition within City Councils - Surveys 2018 to 2019

	Plastic Items (non-packaging)	Large Litter Items	Miscellaneous	Deleterious Litter	Paper Items	Sweet Related Litter	Food Related Litter	Packaging Items	Cigarette Related Litter
2019	0.4%	0.0%	0.8%	0.5%	5.7%	7.2%	22.8%	9.1%	53.5%
2018	0.4%	0.3%	0.1%	1.0%	4.0%	6.8%	12.7%	17.2%	57.6%
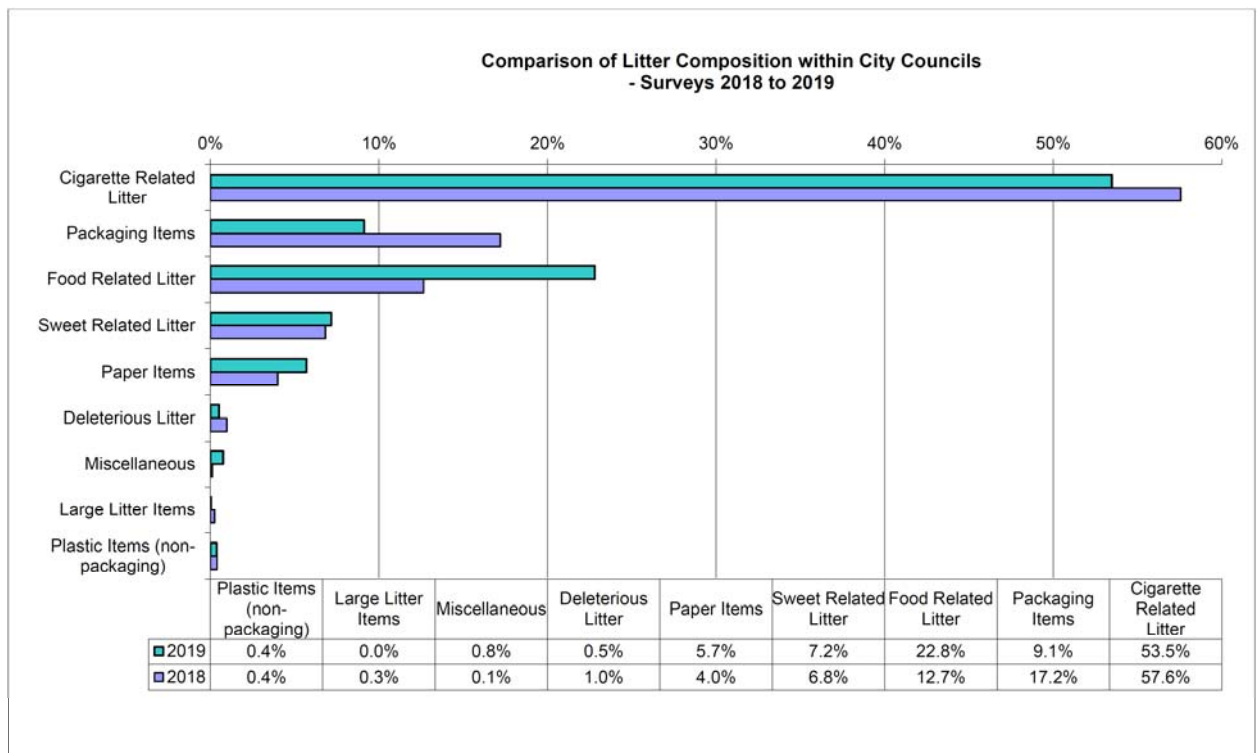
Figure C. 2   Comparison of Litter Composition within City Councils 2018 to 2019

Figure C.2 shows that within City Councils the percentage of cigarette related litter, packaging items, deleterious litter and large litter items all decreased from 2018 to 2019. Food related litter, sweet related litter, paper items and miscellaneous litter have all increased from 2018 to 2019. Plastic Items (non-packaging) remained the same at 0.4% from 2018 to 2019.

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Comparison of Litter Composition within Dublin Local Authorities - Surveys 2018 to 2019

	Plastic Items (non-packaging)	Large Litter Items	Miscellaneous	Deleterious Litter	Paper Items	Sweet Related Litter	Food Related Litter	Packaging Items	Cigarette Related Litter
2019	0.2%	0.1%	1.0%	0.6%	3.8%	9.1%	4.9%	21.3%	59.0%
2018	0.6%	0.3%	0.5%	0.9%	4.0%	10.9%	3.3%	26.9%	52.7%
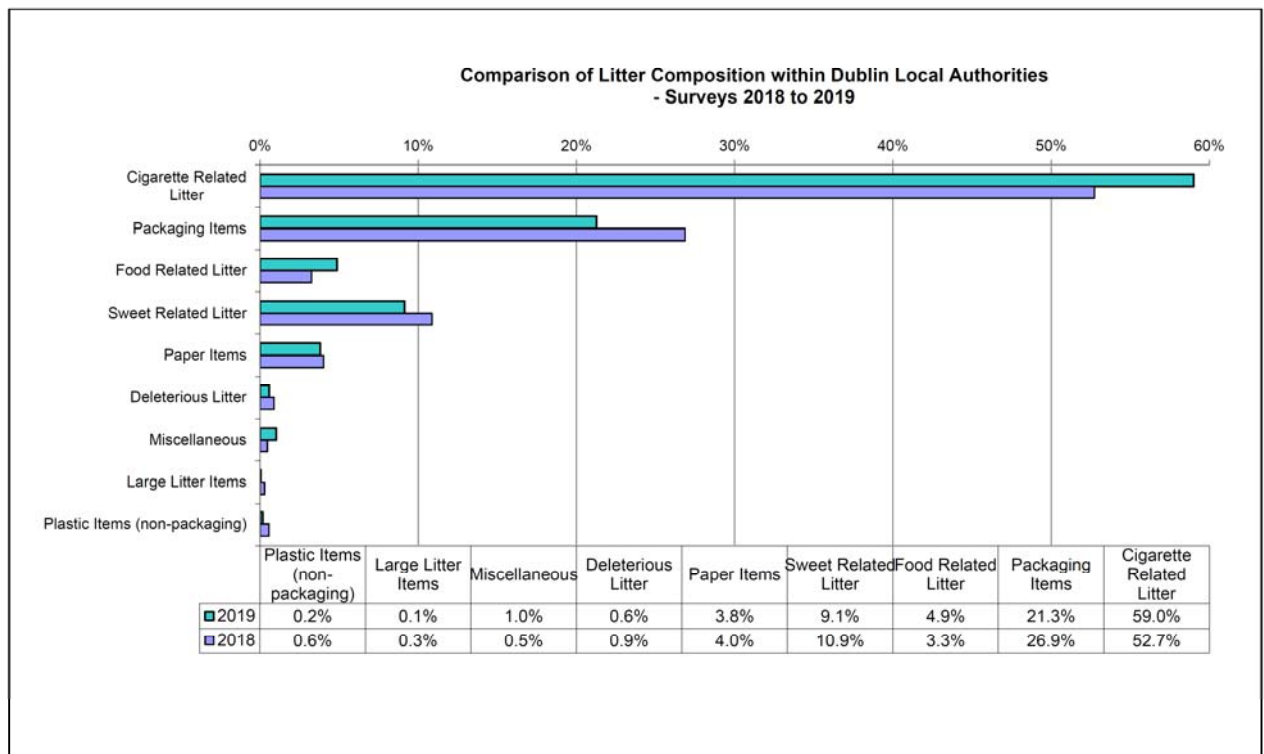
Figure C. 3   Comparison of Litter Composition within Dublin Local Authorities 2018 to 2019

Figure C.3 shows that within Dublin Local Authorities the percentage of packaging items, sweet related litter, paper items, deleterious litter, large litter items and plastic items (non-packaging) have all decreased from 2018 to 2019. Cigarette related litter, food related litter, and miscellaneous litter have all increased from 2018 to 2019.

Note: Packaging Items and deleterious litter decreased in all local authority types in 2019. Food related litter and miscellaneous litter increased in all local authority types in 2019.

Cigarette related litter decreased in both County and City County Councils but increased in Dublin Local Authority areas in 2019.

Sweet related litter decreased in Dublin Local Authority areas but increased in both County and City County Councils in 2019.

Paper items decreased in both Dublin Local Authority areas and County Council areas but increased in City Council areas in 2019.

Plastic items (non-packaging) increased in County Council areas in 2019 but decreased in Dublin Local Authority areas. It remained the same in City County Council areas as per 2018 levels.

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APPENDIX D

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

In each category of LPI for 2019, 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, for the most part, a less significant contributor to litter pollution. Accordingly, in 2019 passing pedestrians constitute 43.7% of all causative factors in LPS of slightly polluted (LPI 2) areas; this percentage decreased to 35.3% for moderately polluted (LPI 3) areas and to 31.1% for significantly polluted (LPI 4) areas and to 27.5% for grossly polluted (LPI 5) areas.

Passing motorists constitute 23.2% of all causative factors in LPS of slightly polluted (LPI 2) areas; this decreases to 21.9% in LPS of moderately polluted (LPI 3) areas, then decreases to 19.0% in LPS of significantly polluted (LPI 4) areas. However, this causative factor increases to 27.5% in LPS of grossly polluted (LPI 5) areas.

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; bring banks, gathering places and major entertainment events increase as significant causative factors. This trend is similar to previous yearly results.

Causative Factors for Surveys of LPI = 2 (Slightly Polluted) 2018

Factor	Value
Passing Pedestrians	44.7%
Passing Motorists	23.2%
Retail Outlet	9.1%
Gathering Point	5.0%
Fast-food Outlet	3.3%
Schools/School Children	3.4%
Bus Stop	2.2%
Places of Leisure/Entertainment	4.9%
Bank ATM	1.1%
Fly-tipping/Dumping	1.2%
Bus/Train Station	0.3%
Construction Site	0.1%
Overflowing Bins	0.3%
Refuse Collection/Presentation	0.0%
Bring Bank	1.1%
Major Entertainment Event	0.1%

Figure D. 1   Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2018

Causative Factors for Surveys of LPI = 2 (Slightly Polluted) 2019

Factor	Value
Passing Pedestrians	43.7%
Passing Motorists	23.2%
Retail Outlet	8.6%
Gathering Point	5.5%
Fast-food Outlet	3.8%
Schools/School Children	3.8%
Bus Stop	2.1%
Places of Leisure/Entertainment	4.9%
Bank ATM	0.8%
Fly-tipping/Dumping	1.6%
Bus/Train Station	0.4%
Construction Site	0.2%
Overflowing Bins	0.2%
Refuse Collection/Presentation	0.1%
Bring Bank	1.0%
Major Entertainment Event	0.1%

Figure D. 2   Causative Factors of Litter Pollution within Litter Pollution Index Category 2, 2019

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Figure D. 3   Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2018

Figure D. 4   Causative Factors of Litter Pollution within Litter Pollution Index Category 3, 2019

Causative Factors for Surveys of LPI = 4 (Significantly Polluted) 2018

Factor	Value
Passing Pedestrians	35.8%
Passing Motorists	14.6%
Retail Outlet	7.3%
Gathering Point	9.6%
Fast-food Outlet	5.4%
Schools/School Children	3.5%
Bus Stop	2.3%
Places of Leisure/Entertainment	5.4%
Bank ATM	0.4%
Fly-tipping/Dumping	10.8%
Bus/Train Station	0.0%
Construction Site	0.0%
Overflowing Bins	1.2%
Refuse Collection/Presentation	0.0%
Bring Bank	1.9%
Major Entertainment Event	1.9%

Figure D. 5   Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2018

Causative Factors for Surveys of LPI = 4 (Significantly Polluted) 2019

Factor	Value
Passing Pedestrians	31.1%
Passing Motorists	19.0%
Retail Outlet	8.5%
Gathering Point	9.4%
Fast-food Outlet	5.5%
Schools/School Children	6.6%
Bus Stop	1.7%
Places of Leisure/Entertainment	5.8%
Bank ATM	1.9%
Fly-tipping/Dumping	7.4%
Bus/Train Station	0.0%
Construction Site	0.3%
Overflowing Bins	0.6%
Refuse Collection/Presentation	0.0%
Bring Bank	2.2%
Major Entertainment Event	0.0%

Figure D. 6   Causative Factors of Litter Pollution within Litter Pollution Index Category 4, 2019
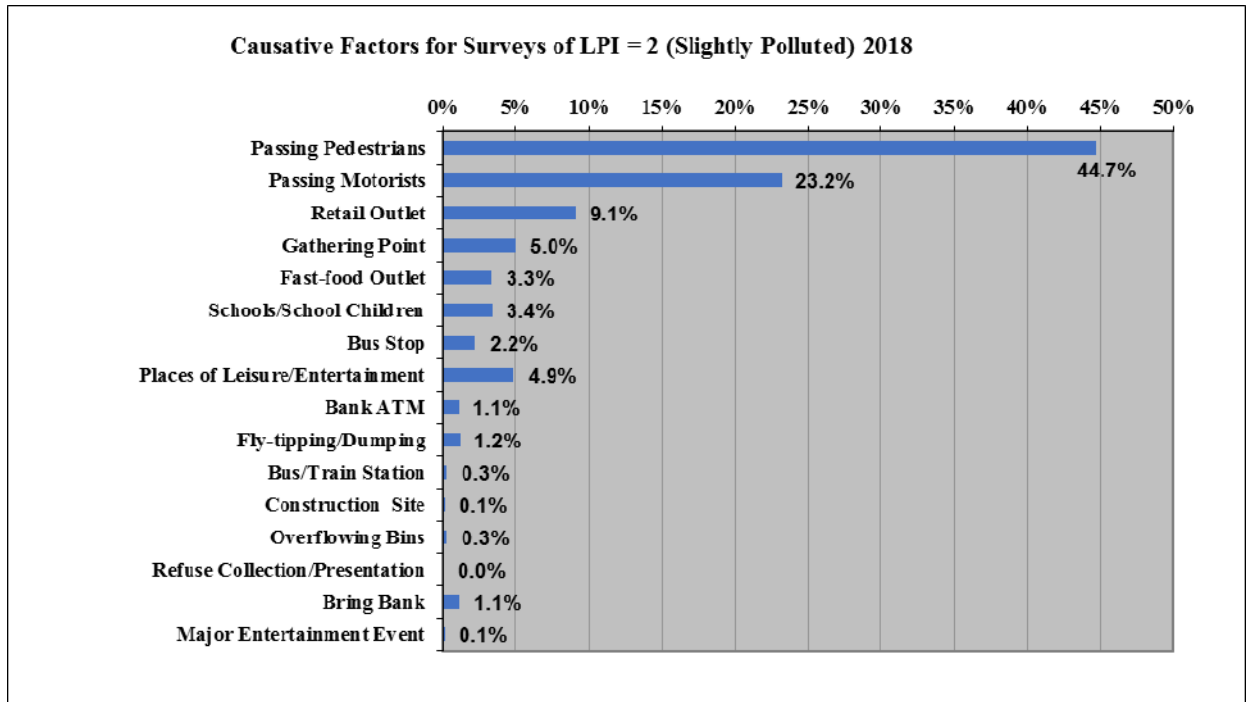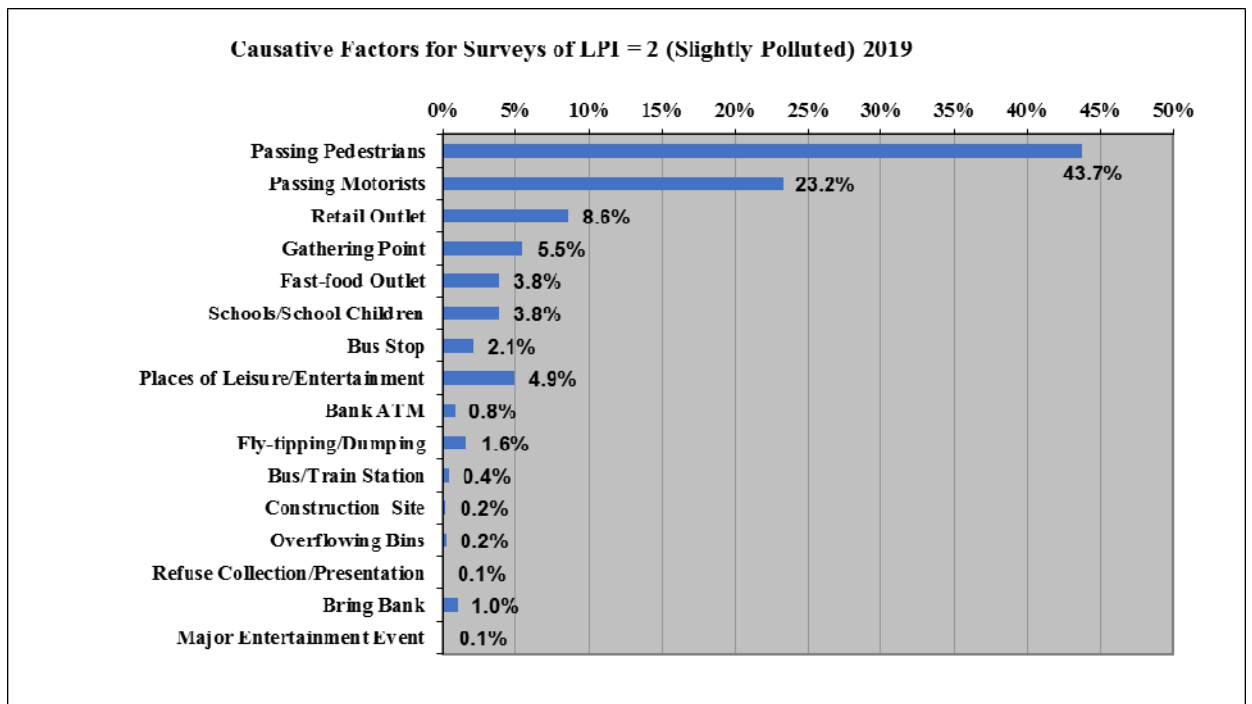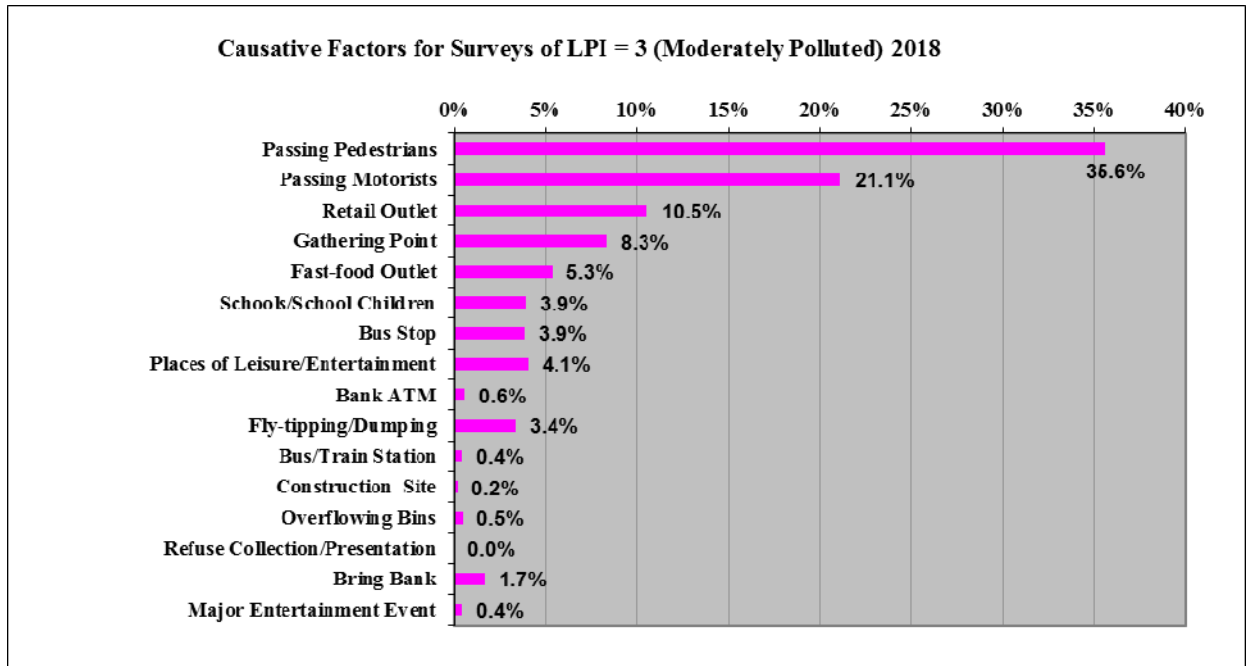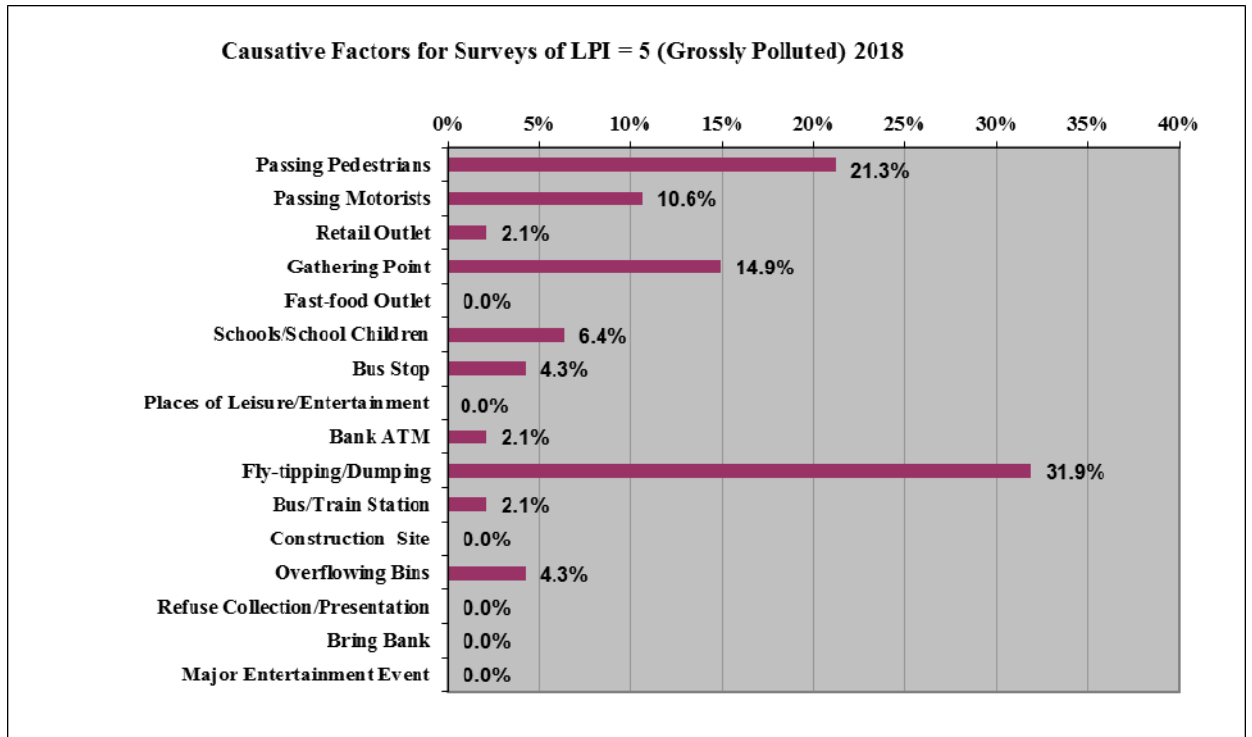
Figure D. 7   Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2018
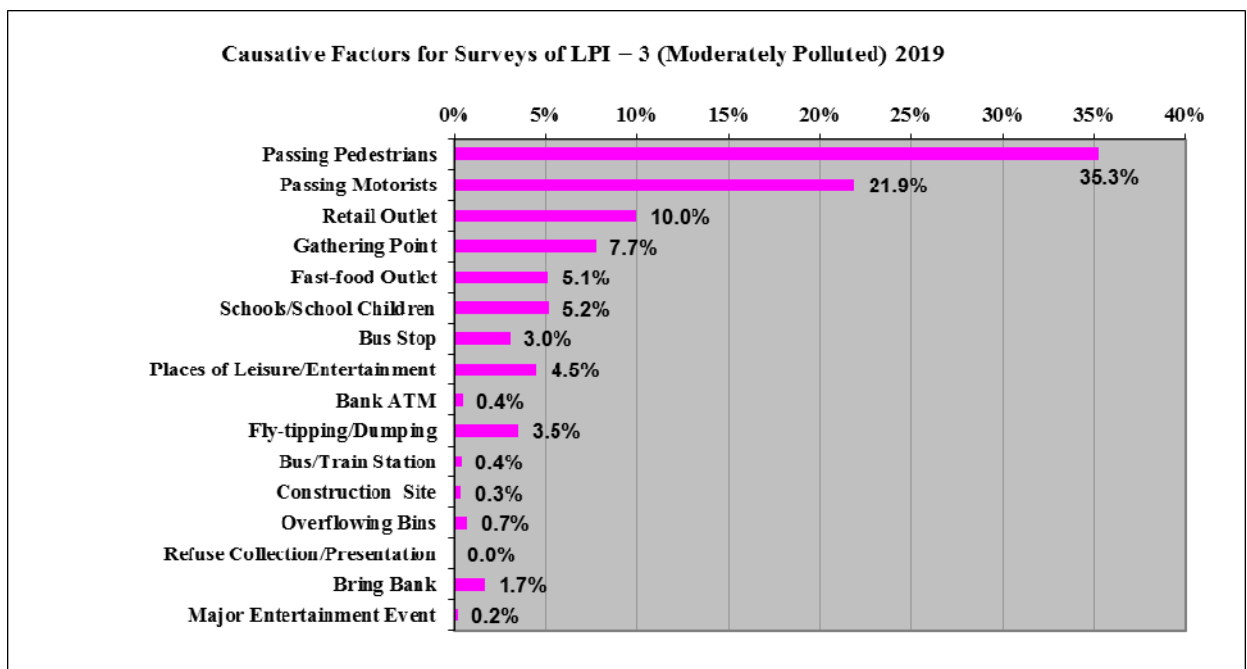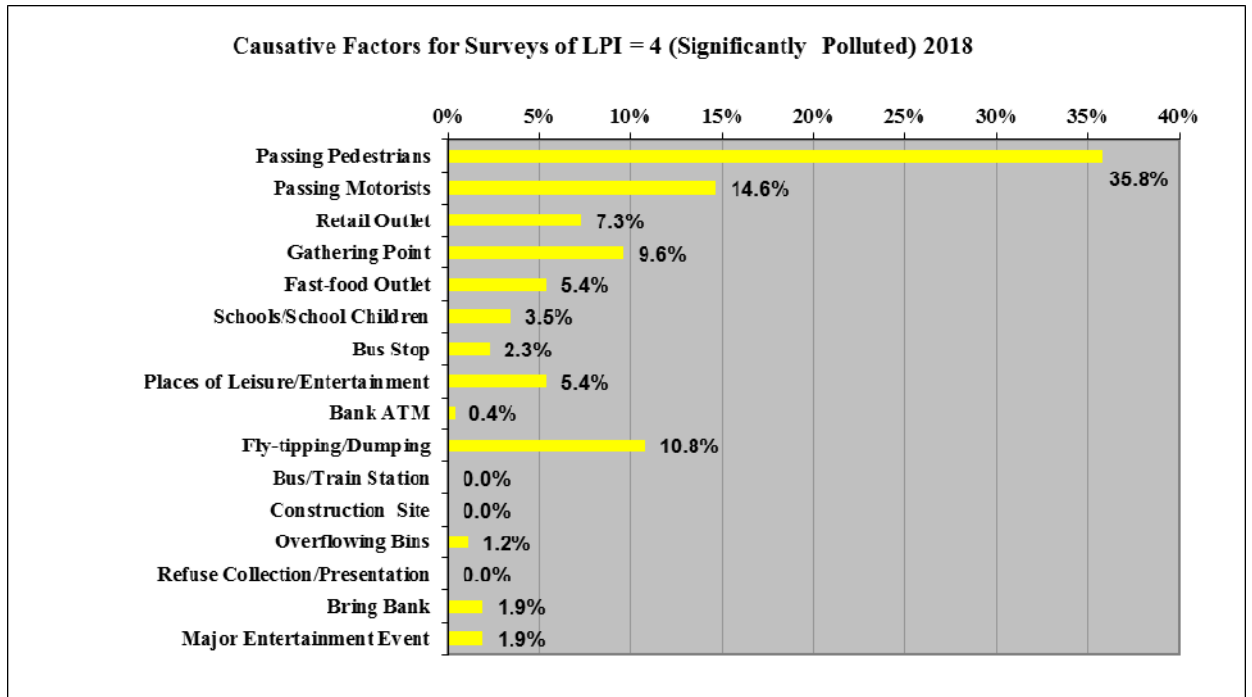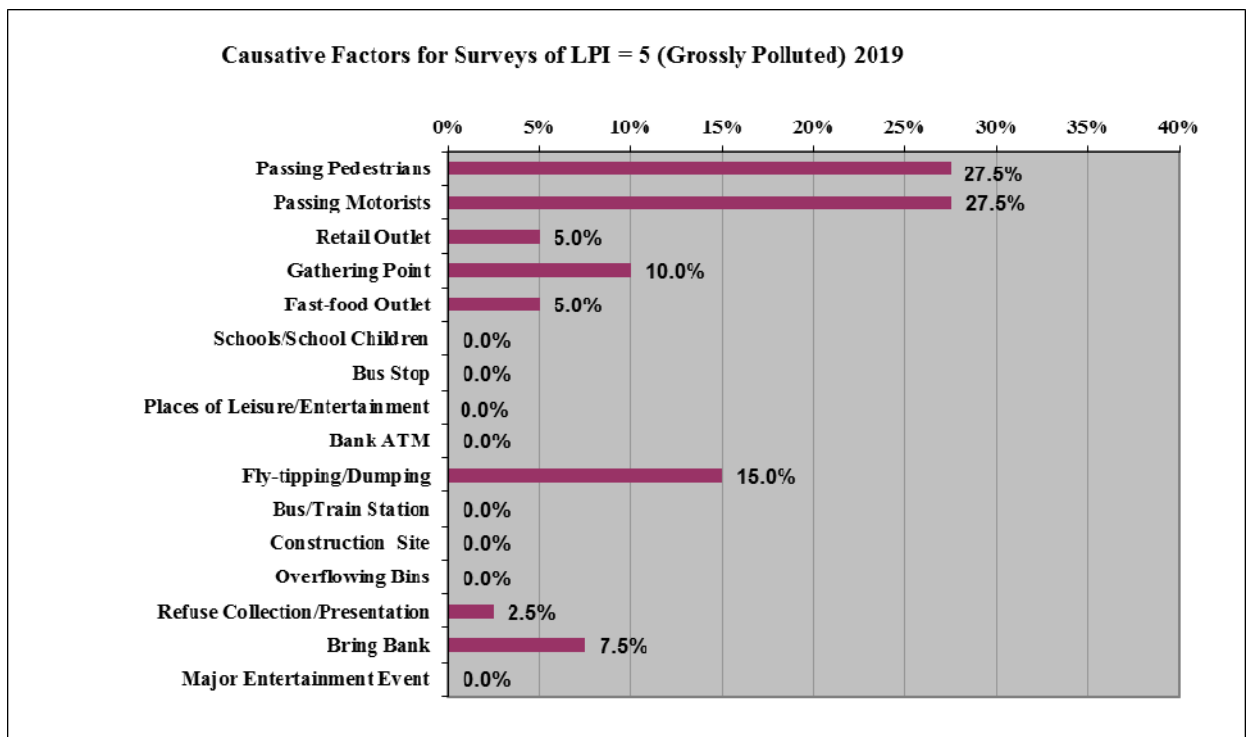

Figure D. 8   Causative Factors of Litter Pollution within Litter Pollution Index Category 5, 2019

APPENDIX E

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

	Passing Pedestrians	Passing Motorists	Retail Outlet	Gathering Point	Fast-food Outlet	Schools/ School Children	Bus Stop	Places of Leisure/ Entertainment	Bank ATM	Fly-tipping/ Dumping	Bus/Train Station	Construction Site	Overflowing Bins	Refuse Collection/ Presentation	Bring Bank	Major Entertainment Event
URBAN 2019	43.1%	19.6%	8.3%	7.9%	4.4%	4.8%	4.3%	3.6%	0.7%	1.1%	0.5%	0.4%	0.4%	0.0%	0.7%	0.2%
URBAN 2018	44.6%	17.5%	9.5%	7.0%	4.7%	3.7%	5.5%	4.1%	0.7%	1.3%	0.4%	0.2%	0.4%	0.0%	0.5%	0.1%
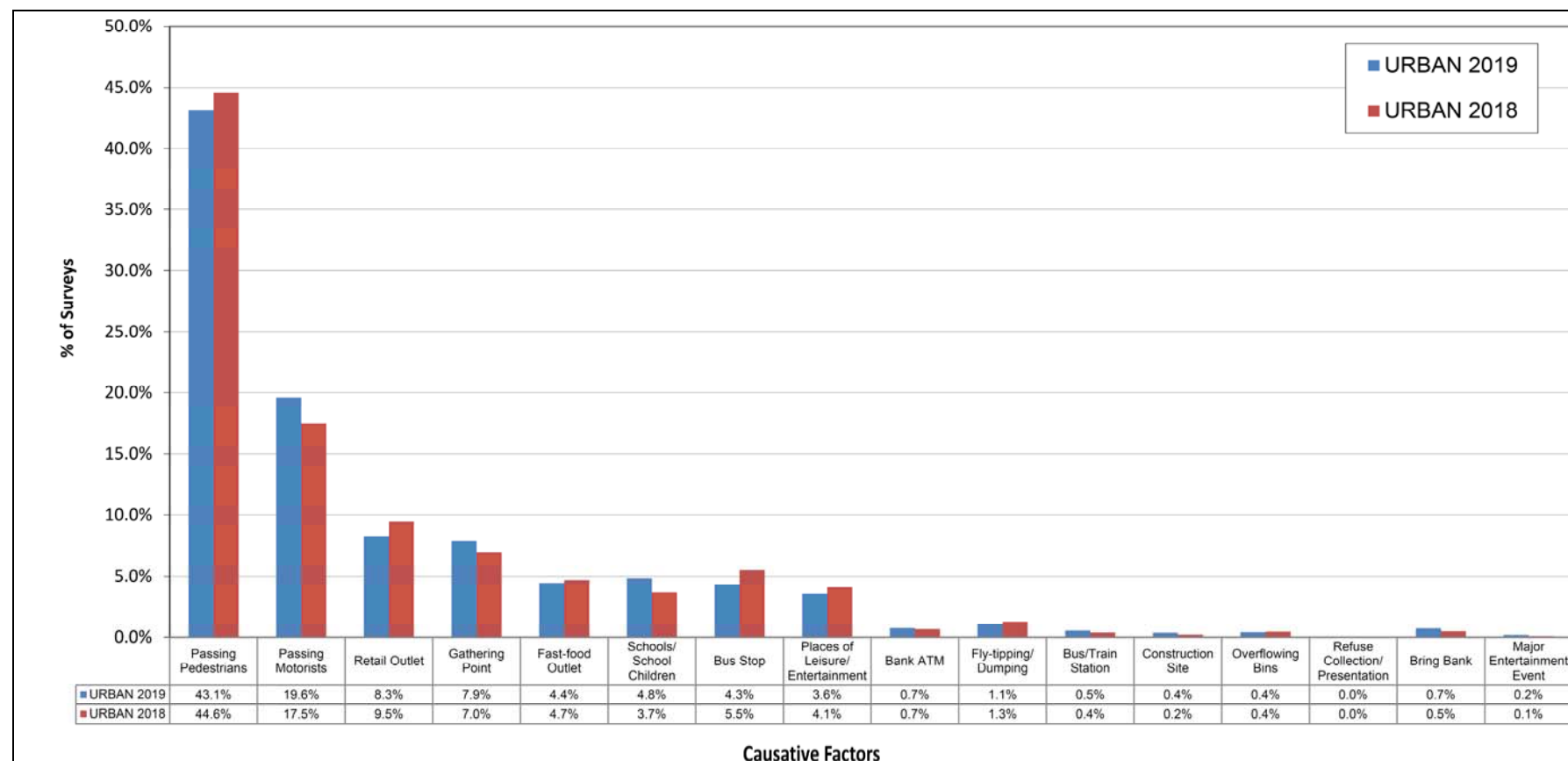
Causative Factors

Figure E. 1   Comparison of Causative Factors in Urban Councils, 2018 to 2019

	Passing Pedestrians	Passing Motorists	Retail Outlet	Gathering Point	Fast-food Outlet	Schools/ School Children	Bus Stop	Places of Leisure/ Entertainment	Bank ATM	Fly-tipping/ Dumping	Bus/Train Station	Construction Site	Overflowing Bins	Refuse Collection/ Presentation	Bring Bank	Major Entertainment Event
Rural 2019	39.7%	25.0%	9.3%	5.0%	4.1%	3.8%	0.9%	5.7%	0.8%	3.3%	0.2%	0.1%	0.3%	0.1%	1.6%	0.1%
Rural 2018	40.4%	25.5%	9.3%	5.4%	3.3%	3.5%	0.8%	5.0%	1.1%	2.8%	0.3%	0.1%	0.3%	0.0%	1.8%	0.4%

Causative Factors

Figure E. 2   Comparison of Causative Factors in Rural Councils, 2018 to 2019

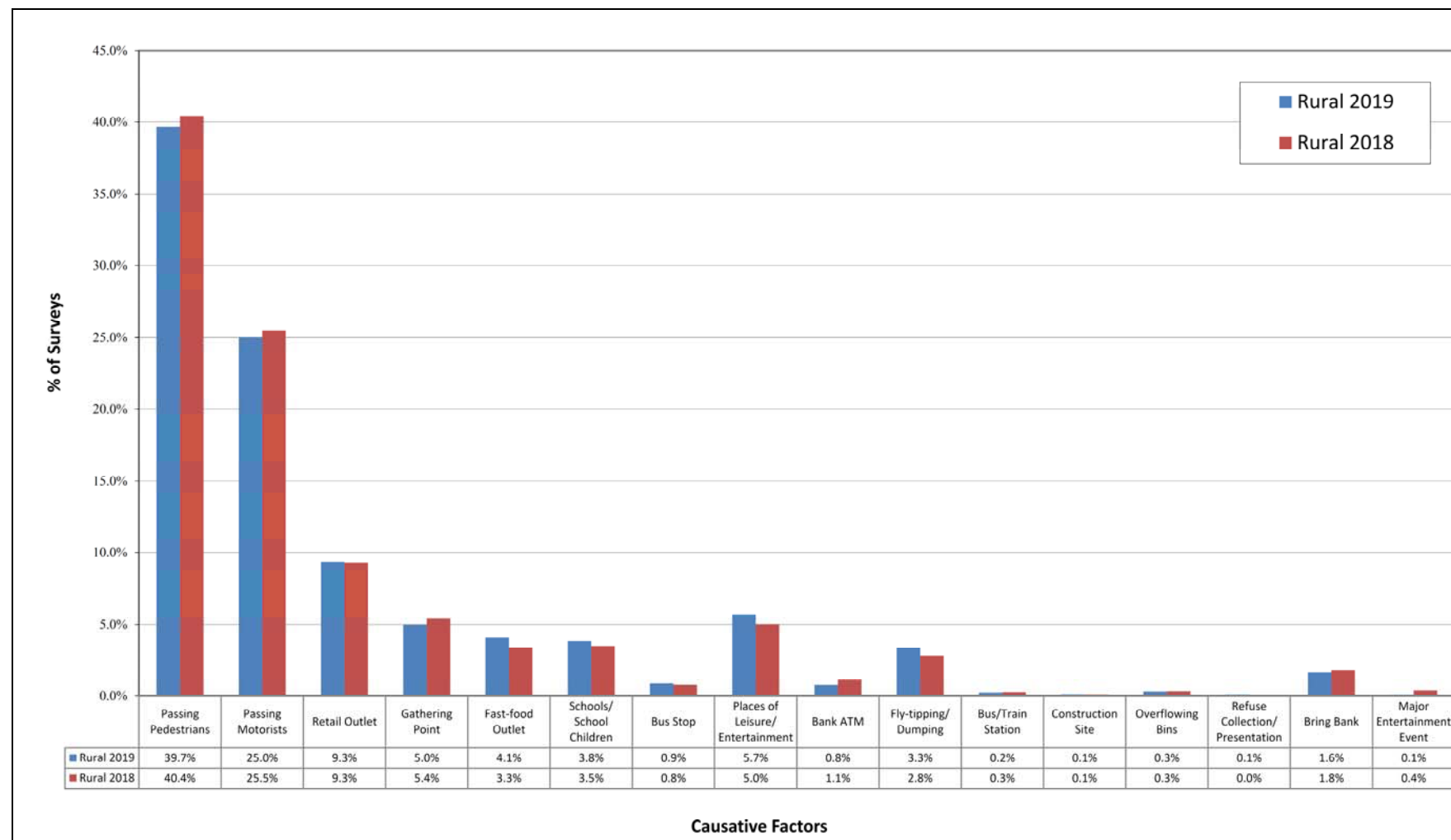Figures E.1 and E.2 compare the causes of litter within urban and rural local authorities from 2018 to 2019.

In 2019, passing pedestrians are the single greatest cause of litter in both urban and rural areas; this is similar to previous yearly results.

Passing motorists, gathering points, schools/ school children, bus/ train stations, bring banks, construction sites and major entertainment events have all increased as causes of litter pollution in urban areas from 2018 to 2019.

Passing pedestrians, retail outlets, fast-food outlets, places of leisure/ entertainment, bus stops and fly-tipping/dumping have all decreased as causes of litter pollution in urban areas from 2018 to 2019.

Levels of litter pollution in urban areas from bank ATM, overflowing bins and refuse presentation/collection; have remained the same in 2019 as recorded in 2018.

In rural areas, fast-food outlets, schools/ school children, bus stops, places of leisure/entertainment, fly-tipping/dumping and refuse presentation/collection have all increased as causes of litter pollution from 2018 to 2019.

Passing pedestrians, passing motorists, gathering points, bus/train stations, bring banks, bank ATMs and major entertainment events have all decreased as causes of litter pollution from 2018 to 2019.

Levels of litter pollution in rural areas from retail outlets, construction sites and overflowing bins have remained the same in 2019 as recorded in 2018.
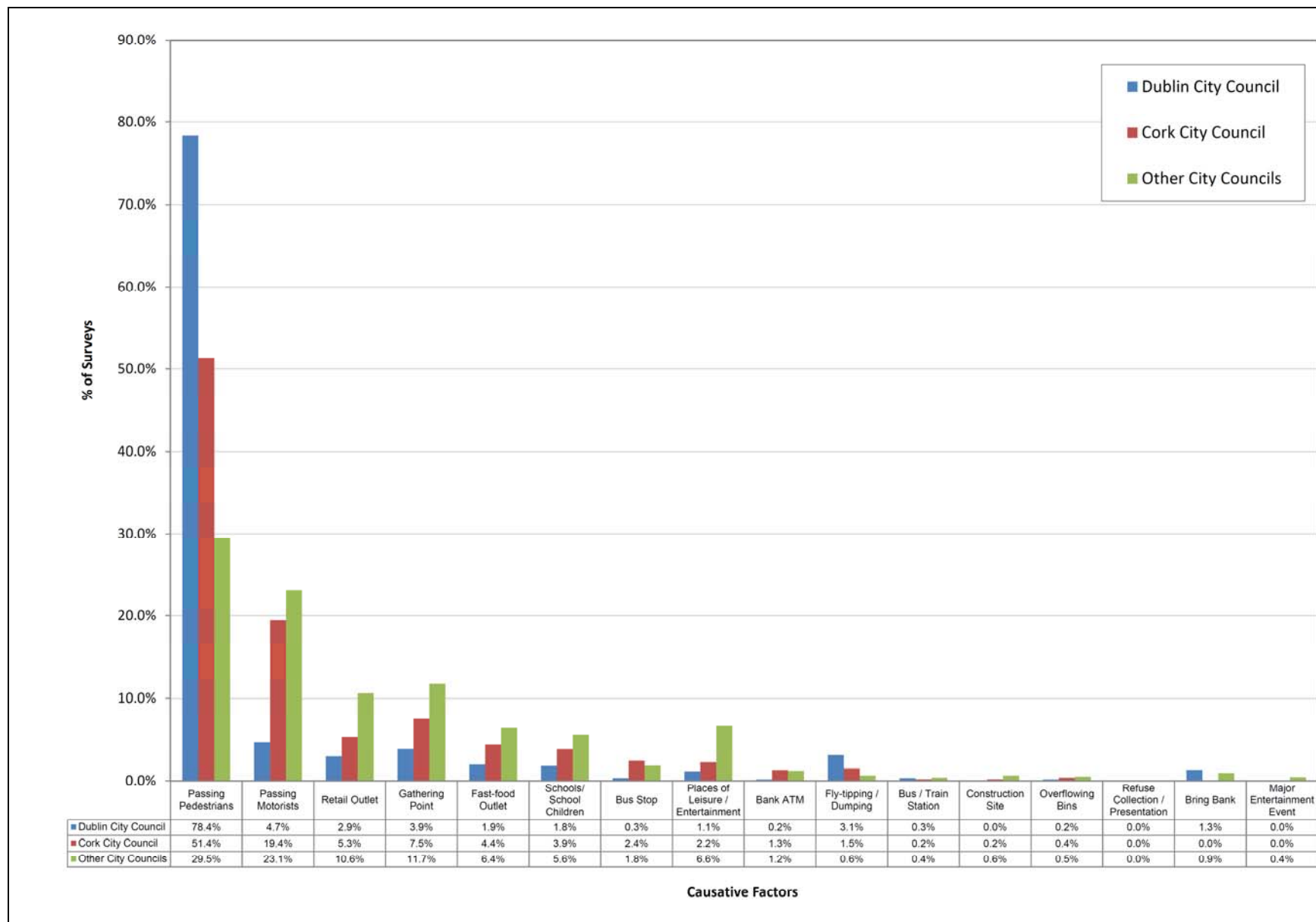
Figure E. 3   Comparison of Causative Factors of Litter Pollution within Urban Areas (2019)

	Passing Pedestrians	Passing Motorists	Retail Outlet	Gathering Point	Fast-food Outlet	Schools/ School Children	Bus Stop	Places of Leisure / Entertainment	Bank ATM	Fly-tipping / Dumping	Bus / Train Station	Construction Site	Overflowing Bins	Refuse Collection / Presentation	Bring Bank	Major Entertainment Event
Dublin City Council	78.4%	4.7%	2.9%	3.9%	1.9%	1.8%	0.3%	1.1%	0.2%	3.1%	0.3%	0.0%	0.2%	0.0%	1.3%	0.0%
Cork City Council	51.4%	19.4%	5.3%	7.5%	4.4%	3.9%	2.4%	2.2%	1.3%	1.5%	0.2%	0.2%	0.4%	0.0%	0.0%	0.0%
Other City Councils	29.5%	23.1%	10.6%	11.7%	6.4%	5.6%	1.8%	6.6%	1.2%	0.6%	0.4%	0.6%	0.5%	0.0%	0.9%	0.4%

Comparison of Causative Factors of Litter Pollution in Dublin City Council in 2018 and 2019

	Passing Pedestrians	Passing Motorists	Retail Outlet	Gathering Point	Fast-food Outlet	Schools/ School Children	Bus Stop	Places of Leisure / Entertainment	Bank ATM	Fly-tipping / Dumping	Bus / Train Station	Construction Site	Overflowing Bins	Refuse Collection / Presentation	Bring Bank	Major Entertainment Event
2019	78.4%	4.7%	2.9%	3.9%	1.9%	1.8%	0.3%	1.1%	0.2%	3.1%	0.3%	0.0%	0.2%	0.0%	1.3%	0.0%
2018	61.5%	8.1%	5.8%	2.2%	2.2%	2.7%	7.4%	4.7%	1.6%	2.3%	0.2%	0.0%	0.0%	0.0%	1.3%	0.2%

Causative Factors

Figure E. 4   Comparison of Causative Factors of Litter Pollution within Dublin City Council 2018 to 2019
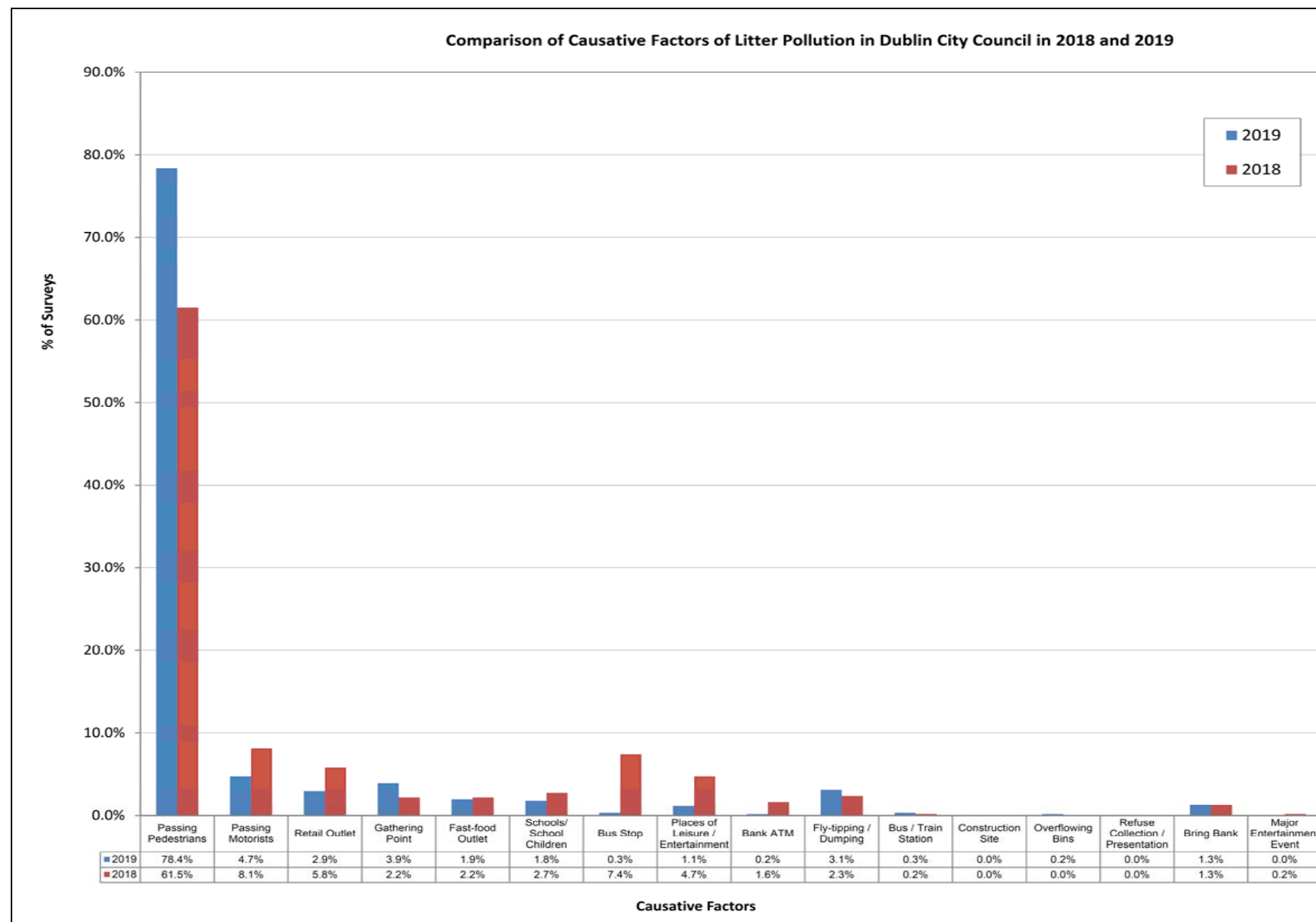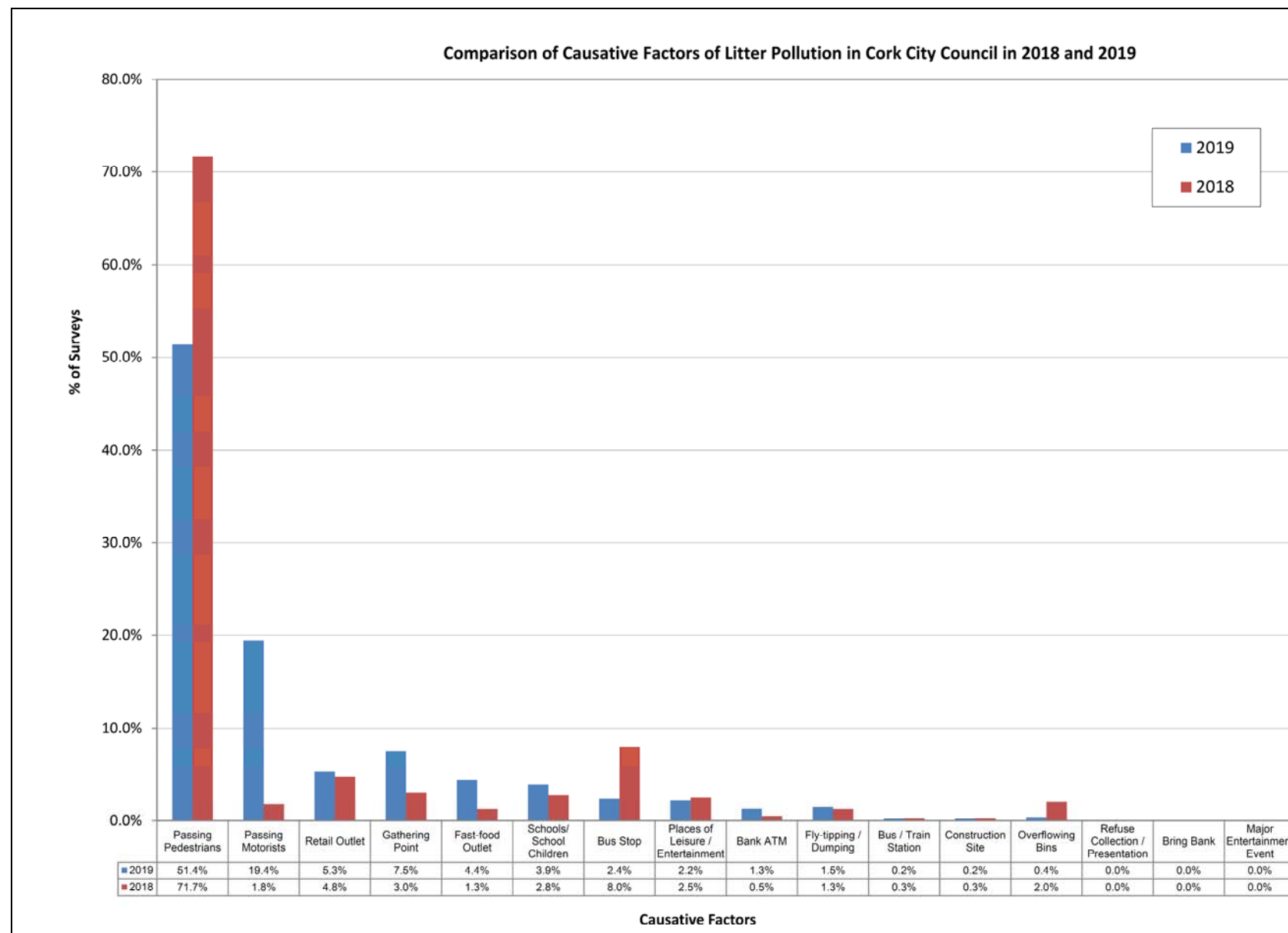
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Figure E. 5   Comparison of Causative Factors of Litter Pollution within Cork City Council 2018 to 2019

Figure E.3 allows for comparison of the various causative factors of litter pollution between urban areas. The 'Other City Councils' category comprises results from Galway City, Limerick City and County Council and Waterford City and County Councils. Overall, the causes of litter pollution vary somewhat with each category of urban area.

In Dublin City, passing pedestrians, fly-tipping/dumping and bring banks are more significant causative factors of litter pollution than in the other urban categories. Bus stops and bank ATMs are more significant causative factors of litter pollution in the 'Cork City Council' category than in the other urban categories. Passing motorists, retail outlets, gathering points, fast-food outlets, schools/ school children, places of leisure/entertainment, bus/train stations, construction sites, overflowing bins and major entertainment events are more significant causative factors of litter pollution in the 'Other City Councils' category than in the other urban categories.

In the Dublin City Council area, passing pedestrians, gathering points, fly-tipping/dumping, bus/train stations and overflowing bins have all increased as causative factors in comparison to 2018. For further detail, please refer to Figure E.4.

In the Cork City Council area, increases in litter from passing motorists, retail outlets, gathering points, fast-food outlets, schools /school children, bank ATMs and fly-tipping/dumping all increased as causative factors in comparison to 2018. For further detail, please refer to Figure E.5.