AN ROINN COMHSHAOIL, OIDHREACHTA AGUS RIALTAIS ÁITIÚIL
DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT

# THE NATIONAL LITTER POLLUTION MONITORING SYSTEM

## LITTER MONITORING BODY

# SYSTEM RESULTS

## August 2004

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1. The Steering Group for the Monitoring System, comprising:

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- Ms Himabindu Achanta, Local Government Computer Services Board; and
- Mr Colm Keenan, Department of the Environment Heritage and Local Government;

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3. The local authorities that provided us with their Litter Survey Results

# EXECUTIVE SUMMARY: NATIONAL LITTER POLLUTION LEVELS ARE IMPROVING

## Introduction

The data produced by the national litter pollution monitoring system surveys allow local authorities to gauge:

- the extent and severity of litter pollution in each local authority area,
- the types, most likely sources and causes of litter,
- 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.

This report is based on an analysis of data received from 34 local authorities (compared to 30 local authorities in the 2002 survey). Therefore the results do not fully represent the national situation. However the sample of over one third of all local authorities which includes data from a full range of local authority types, does afford a reliable overview reflecting clear patterns from which certain conclusions may be drawn.

It is expected that the system results report for 2004 will include information submitted from almost all local authorities. This more complete database will make national and local trends more readily apparent and will facilitate a fuller and more comprehensive comparison of year-on-year developments with regard to anti-litter action. Additionally, as the system develops, it will facilitate accurate assessment of the impact of measures with potentially negative impacts on littering, such as the ban on smoking in the workplace, introduced in March 2004.

## Summary of findings

This report has set out to answer three key questions:

- How littered is the country at local and national level?
- What are the main constituent elements of litter pollution? and,
- What are the main causes of litter pollution?

The survey reveals that:

- 4.4 % of areas surveyed were litter free, less than 2% were grossly littered;
- Almost 50% of all areas surveyed were only slightly littered, a 7% improvement on 2002; the percentage of moderately and significantly polluted areas was also down on the 2002 results;
- Cigarette related litter (50%), food related litter (30%) and packaging litter (14%) were the main litter constituents identified nationally; and

- Passing pedestrians (38%), passing motorists (13%) and fast food outlets (11%) were identified as the main causative factors of litter nationally.

## How littered is the country? - Analysis of Litter Pollution Survey results

Under the national monitoring system, the extent and severity of litter pollution is measured by 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
5. Grossly polluted

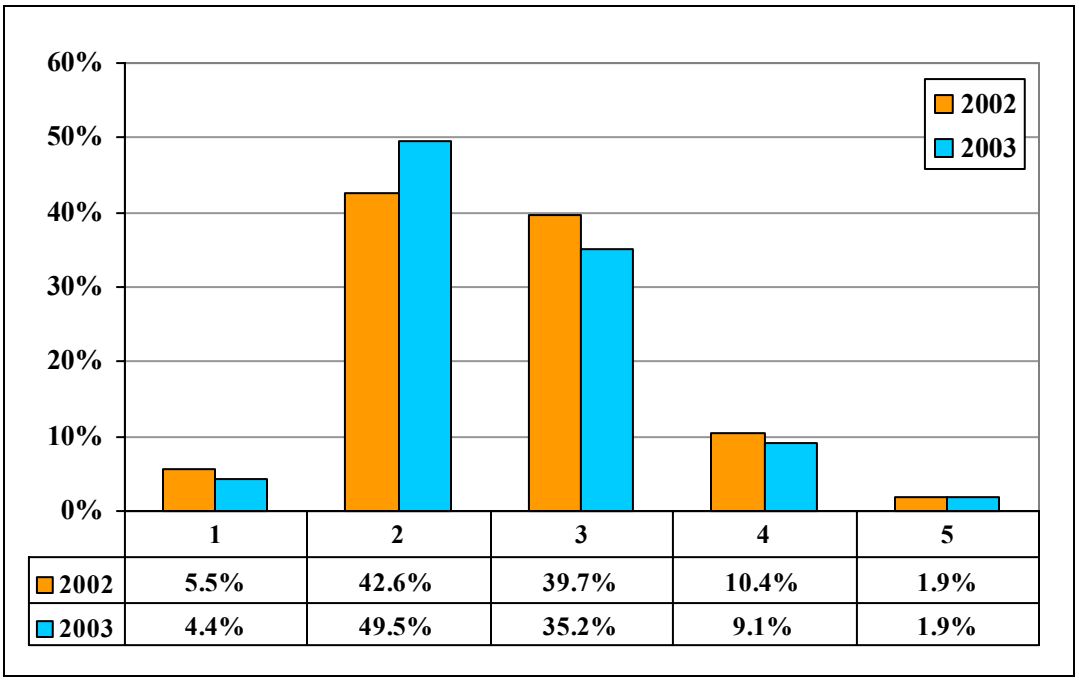
Prescribed standards for each category of LPI have been circulated to all local authorities in the form of photographs to ensure a consistent approach nationwide to measuring the extent of litter pollution in the surveyed areas. Examples of such photographs are contained in Appendix III to this report.

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 determine 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.

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

The national monitoring system results clearly indicate that the incidence of littering is still very high in Ireland despite the increased levels of anti-litter action at national level and by local authorities in recent years. Nonetheless a comparison of the results from 2002 to 2003 indicates that there has been an overall improvement. Figure 1 below compares 2002 and 2003 litter pollution survey results.




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2002 | 5.5% | 42.6% | 39.7% | 10.4% | 1.9% |
| 2003 | 4.4% | 49.5% | 35.2% | 9.1% | 1.9% |

**Figure 1 Comparison of Litter Pollution Indices (LPI) 2002 - 2003[1]**

Figure 1 shows that:

- The percentage of grossly polluted areas (LPI 5) is unchanged at less than 2%, the percentage of areas classified as significantly polluted (LPI 4) has decreased to 9.1%, and moderately polluted areas (LPI 3) account for 35.2 % of areas surveyed, a decrease of over 4% on 2002.
- The most significant development in the 2003 litter pollution survey has occurred in the 'slightly polluted' category (LPI 2).
- The increase in this category, from 42.6% to 49.5%, is a result of the progress made in reducing the numbers of moderately or significantly polluted areas.
- Over time it is anticipated that this trend will continue and an increasing proportion of areas surveyed will be classified as either unpolluted or slightly polluted.
- A comparison of urban and rural local authorities (Figure 2 – p.4) reveals little difference in terms of the extent and severity of litter problems between these local authority types.

[1] Percentages are expressed to one decimal place and therefore totals may not add exactly to 100%.

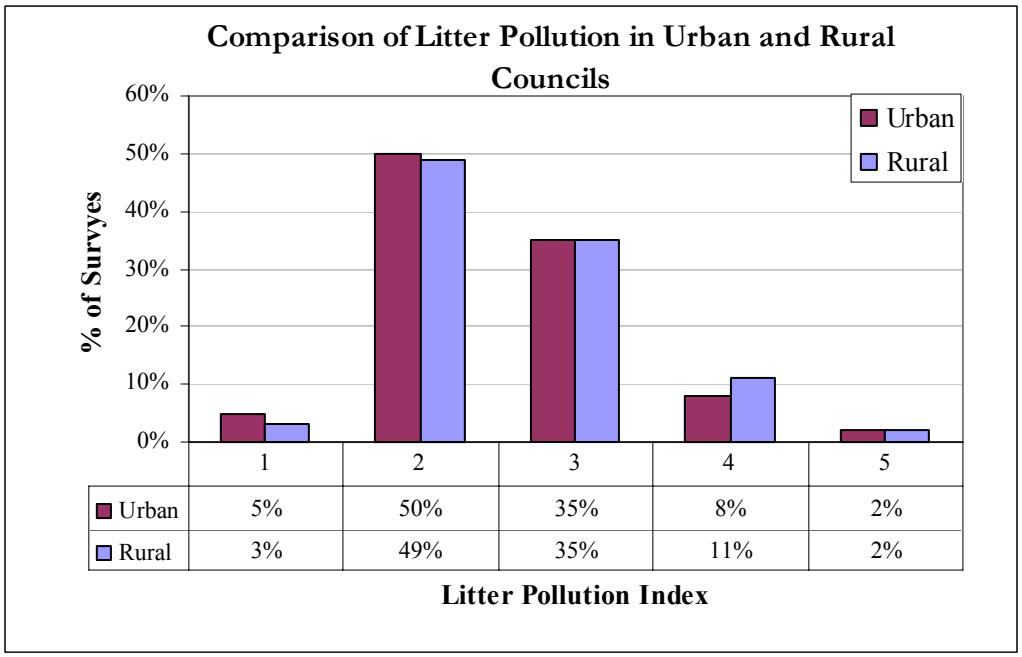



**Figure 2 Comparison of Litter Pollution within Largely Urban and Rural Areas**

## What are the main constituent elements of litter pollution? - Analysis of Litter Quantification Survey results

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 below:

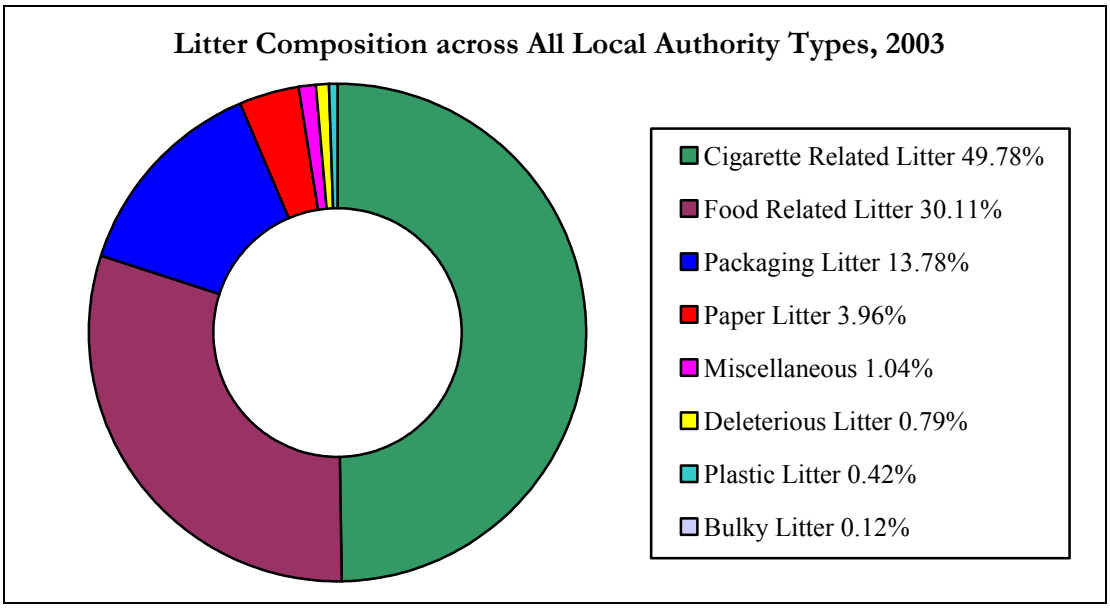



**Figure 3 Composition of Litter in 2003 Broken Down into Main Categories**

From these data, it can be seen that:

- **cigarette related litter** constitutes the highest percentage (**49.78%**) of litter in the locations surveyed**,**
- **food related litter,** at **30.11%**, 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 **28.26%** of all litter recorded in the litter quantification surveys carried out in 2003 compared to 18.49% in the 2002 surveys,
- **packaging litter (13.78%)** is the third largest litter component of national litter pollution recorded. This category of litter can be further broken down to show that:
    - **paper packaging** comprised **4.2%** of all litter recorded;
    - **takeaway wrapping** accounted for **2.7%** of all litter;
    - **bottles (plastic and glass)** comprised over **2%** of all litter; and
    - **beverage cans** comprised **1.63%** of all litter.

Other factors to note in relation to the composition of litter are:

- Cigarette related litter has increased substantially across the Dublin local authorities, rising from 45% in 2002 to almost 73% in 2003.
- The survey results for 2004 will provide an accurate assessment of the impact on litter of the smoking ban. It is likely that incidences of cigarette related littering will increase during year 1 of the ban.
- Taken together, cigarette related litter, food related litter and packaging litter account for some 93.7% of all litter nationally.
- Overall, food related litter has increased in all areas (except in the case of Dublin local authorities) largely due to an increase in chewing gum litter, which now accounts for 28.26% of all litter.
- The proportion of packaging litter has decreased from 19% in 2002 to 14% in 2003.

## What are the main causes of litter pollution? - Analysis of the causative factors of litter pollution

The breakdown of causative factors nationally and for all local authorities is presented in Figures 4 and 5.

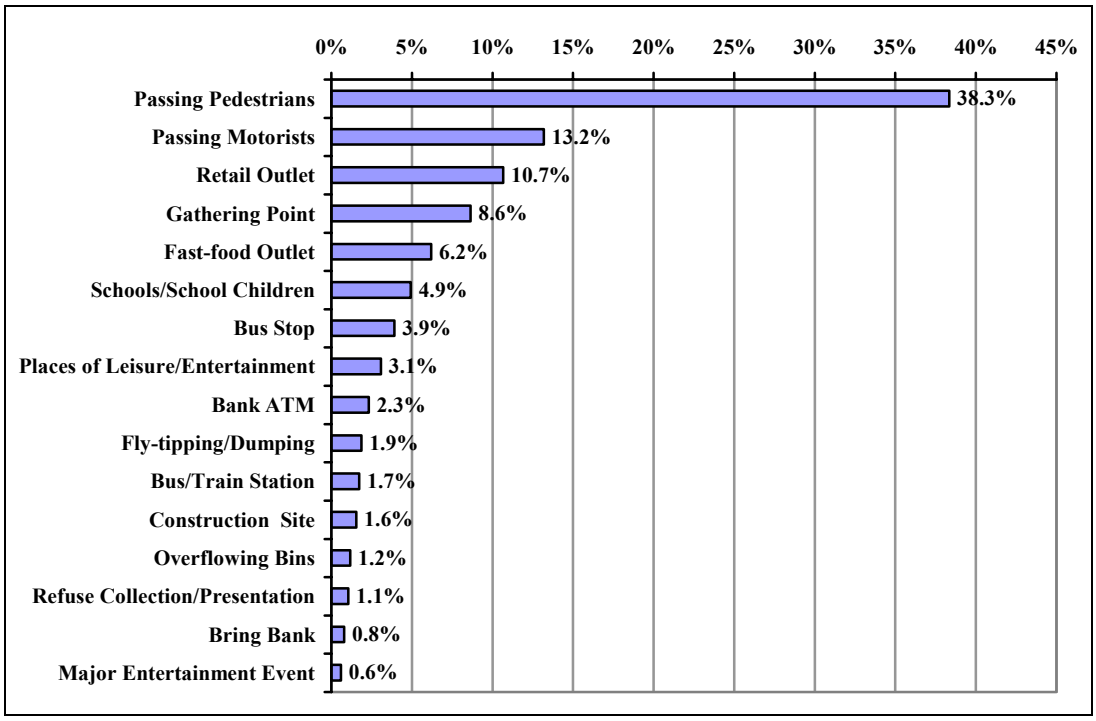
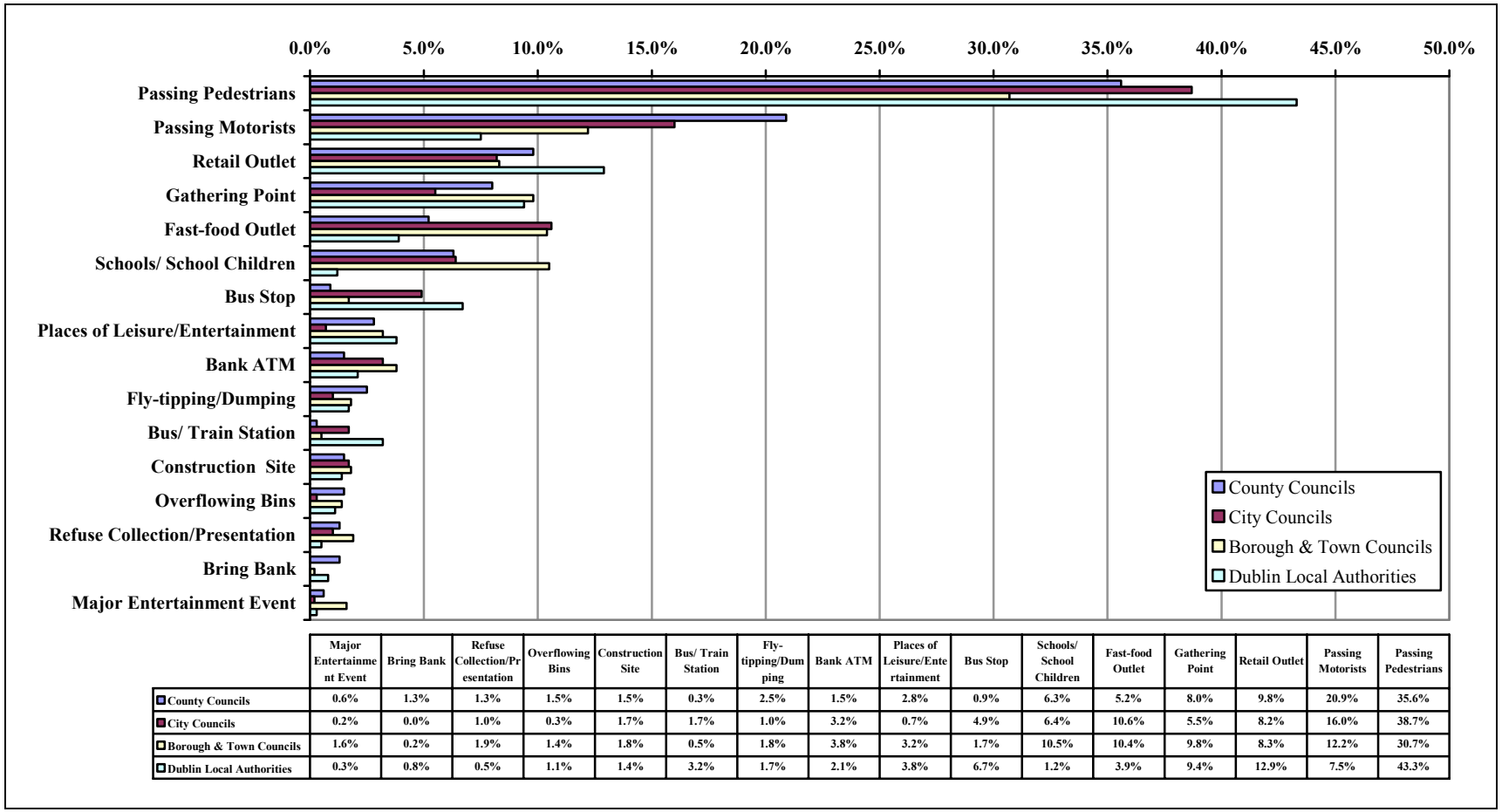



**Figure 4 Causative Factors of Litter Pollution across all Local Authorities, 2003**

Figures 4 (p.6) and 5 (p.7) illustrate that:

- Passing pedestrians continue to constitute the greatest single causative factor of litter pollution, accounting for over 38.3% across all local authorities.
- Passing motorists are the second largest causative factor in County Councils (excluding Dublin) and Borough and Town Councils.
- Retail outlets constitute the second largest causative factors across City Councils and the Dublin local authorities.

Figures 6 – 9 (p.8 – p.9) show the variations of causative factors for each of the different categories of litter pollution. Passing pedestrians are the main cause for each category, followed by passing motorists, retail outlets, and gathering points. The proportions of other factors such as fly tipping, fast food outlets and bus stops increase considerably in the 'significantly' and 'grossly' polluted categories.




| | Major Entertainment Event | Bring Bank | Refuse Collection/Presentation | Overflowing Bins | Construction Site | Bus/ Train Station | Fly-tipping/Dumping | Bank ATM | Places of Leisure/Entertainment | Bus Stop | Schools/ School Children | Fast-food Outlet | Gathering Point | Retail Outlet | Passing Motorists | Passing Pedestrians |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| County Councils | 0.6% | 1.3% | 1.3% | 1.5% | 1.5% | 0.3% | 2.5% | 1.5% | 2.8% | 0.9% | 6.3% | 5.2% | 8.0% | 9.8% | 20.9% | 35.6% |
| City Councils | 0.2% | 0.0% | 1.0% | 0.3% | 1.7% | 1.7% | 1.0% | 3.2% | 0.7% | 4.9% | 6.4% | 10.6% | 5.5% | 8.2% | 16.0% | 38.7% |
| Borough & Town Councils | 1.6% | 0.2% | 1.9% | 1.4% | 1.8% | 0.5% | 1.8% | 3.8% | 3.2% | 1.7% | 10.5% | 10.4% | 9.8% | 8.3% | 12.2% | 30.7% |
| Dublin Local Authorities | 0.3% | 0.8% | 0.5% | 1.1% | 1.4% | 3.2% | 1.7% | 2.1% | 3.8% | 6.7% | 1.2% | 3.9% | 9.4% | 12.9% | 7.5% | 43.3% |

**Figure 5 Causative Factors of Litter Pollution According to Local Authority Type, 2003[2]**

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

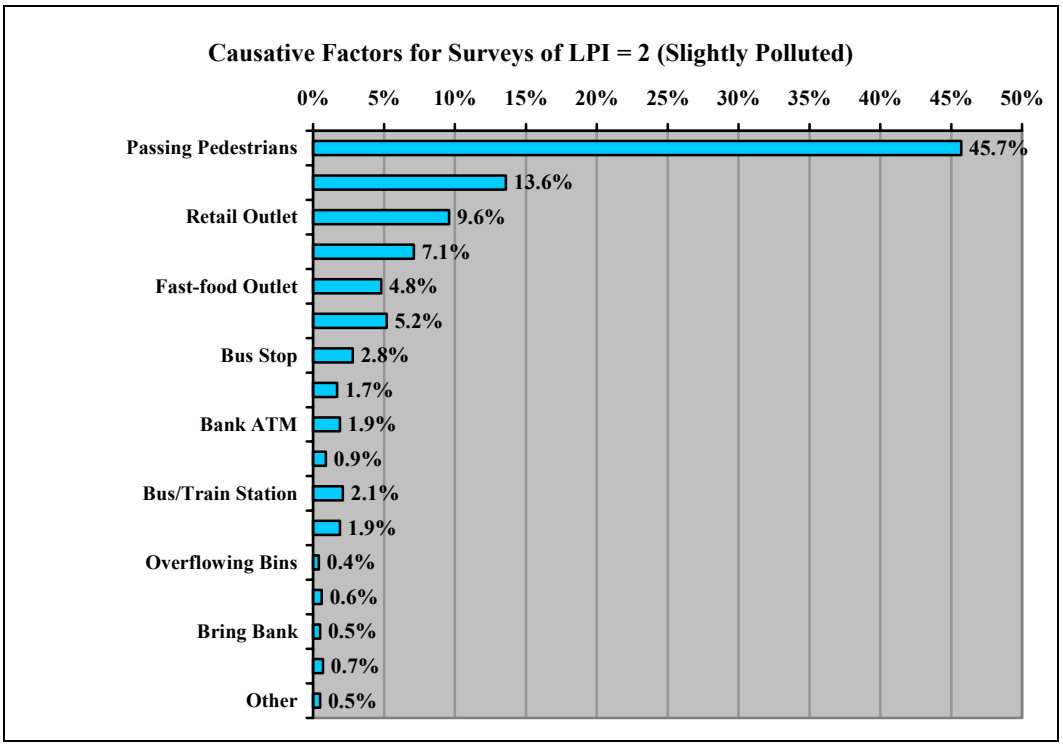



Figure 6 Comparison of causative factors of litter pollution within Litter Pollution Index category 2.

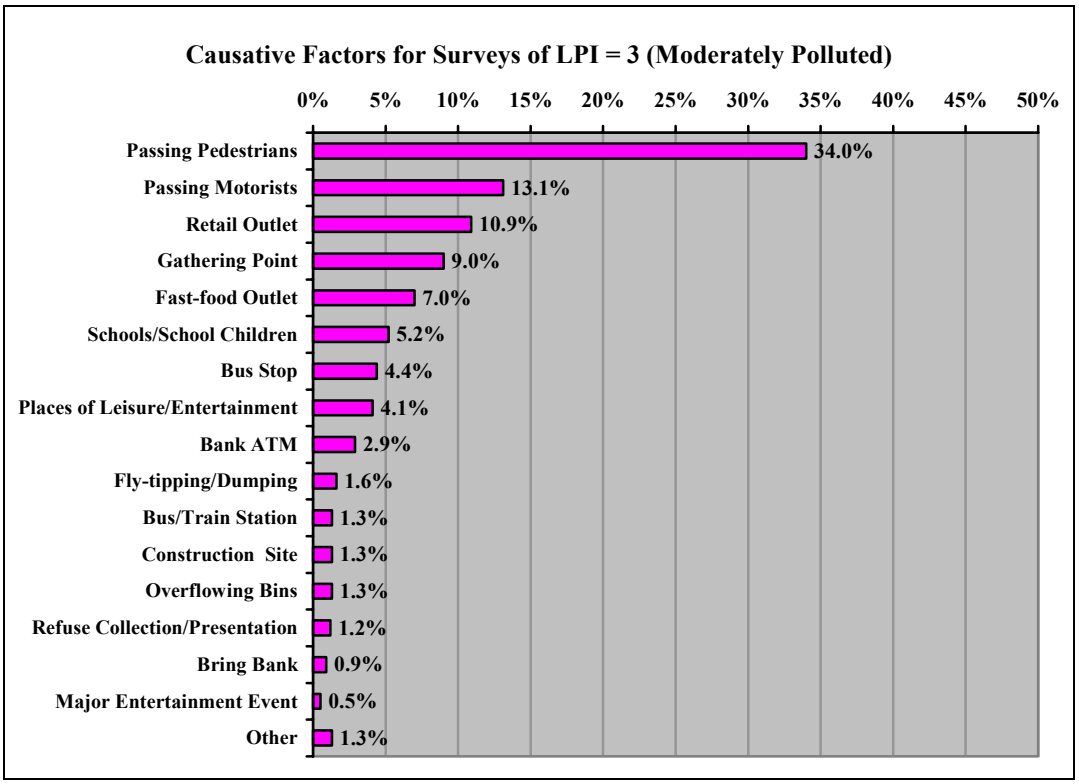



Figure 7 Comparison of causative factors of litter pollution within Litter Pollution Index category 3.

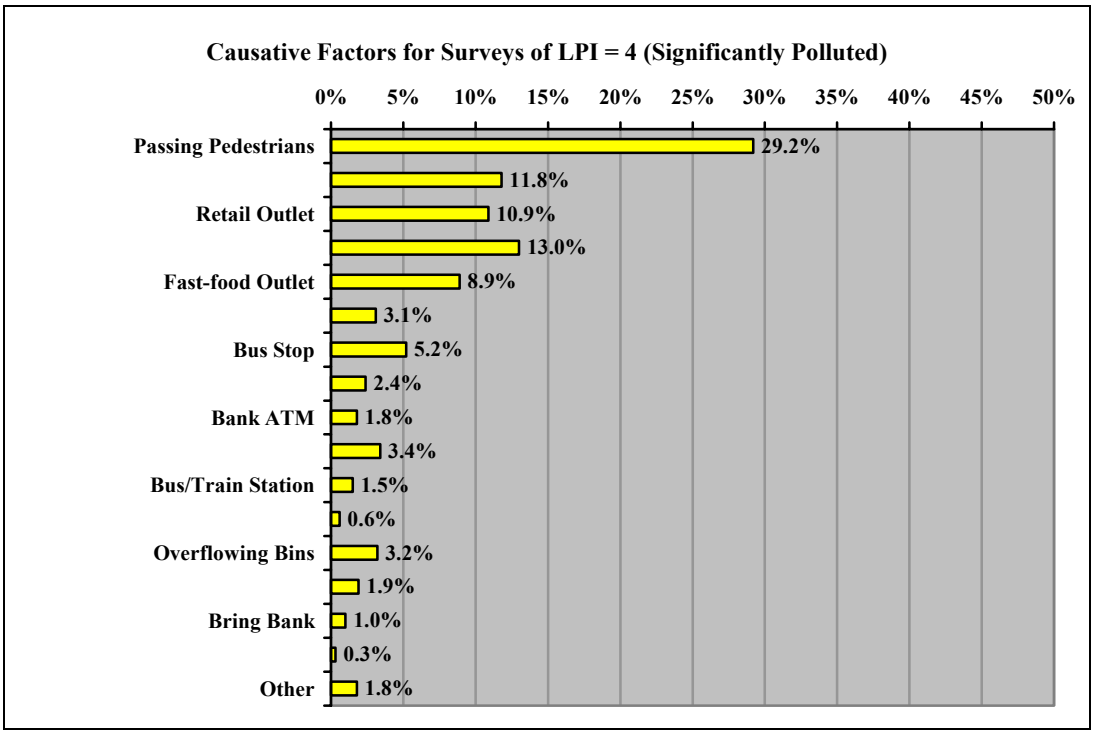



**Figure 8** Comparison of causative factors of litter pollution within Litter Pollution Index category 4.

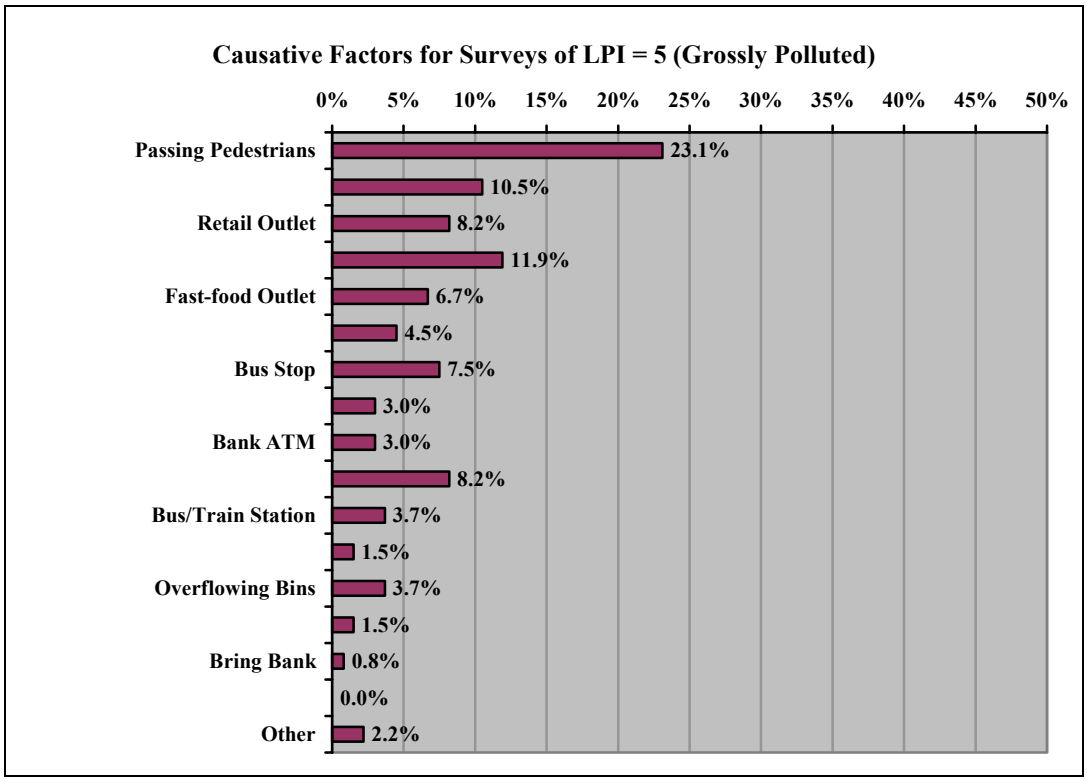
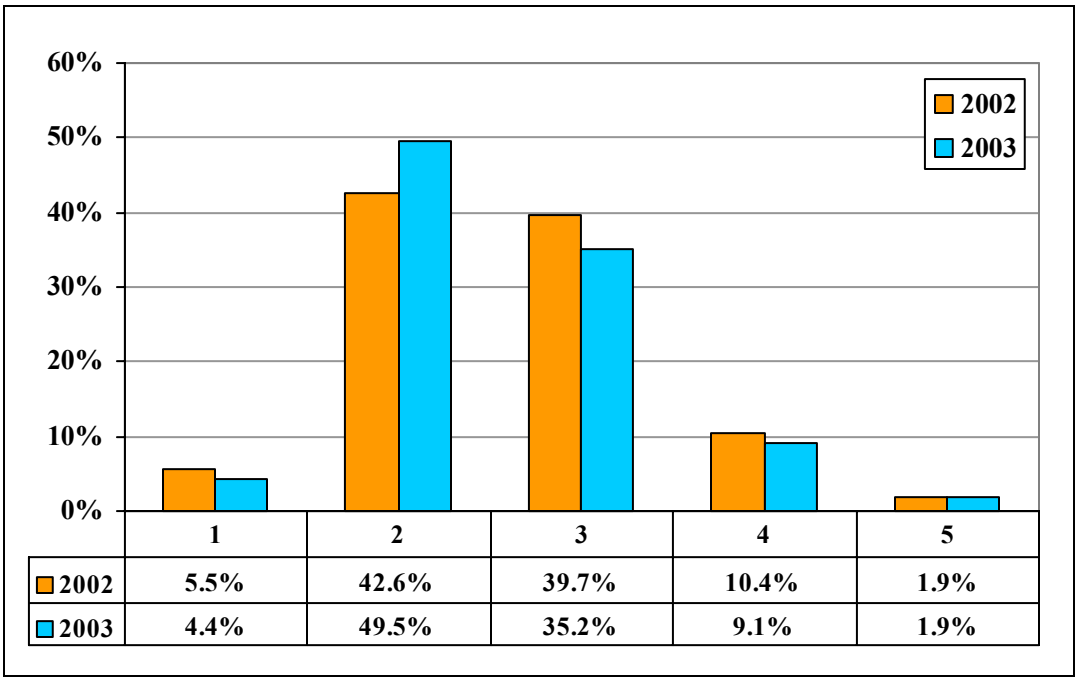



**Figure 9** Comparison of causative factors of litter pollution within Litter Pollution Index category 5.

## Conclusion

This survey confirms the homogeneity of the litter problem nationally. The data reveals that the extent and severity, the constituent components, and the causative factors of litter pollution remain relatively constant across all local authority types. However, the substantial increase expected in the number of local authorities carrying out litter pollution and litter quantification surveys in 2004 will provide a fuller picture of the nature and extent of litter pollution nationally and provide more complete data to track the trends at national and local level already identified in this report.

# CHAPTER 1: HOW LITTERED IS THE COUNTRY AT LOCAL AND NATIONAL LEVEL?




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2002 | 5.5% | 42.6% | 39.7% | 10.4% | 1.9% |
| 2003 | 4.4% | 49.5% | 35.2% | 9.1% | 1.9% |

**Figure 1.1 Comparison of Litter Pollution Indices (LPI) 2002 – 20033**

The Litter Pollution Survey indicates the extent and severity of litter pollution within local authority areas. The severity of litter pollution in each surveyed area is measured using the Litter Pollution Index (LPI) which is a scale from 1 to 5 as described below:

1. **Unpolluted**
2. **Slightly Polluted**
3. **Moderately Polluted**
4. **Significantly Polluted**
5. **Grossly Polluted**

The ratings of the surveyed areas for all local authorities are aggregated to provide a profile of litter pollution nationally.

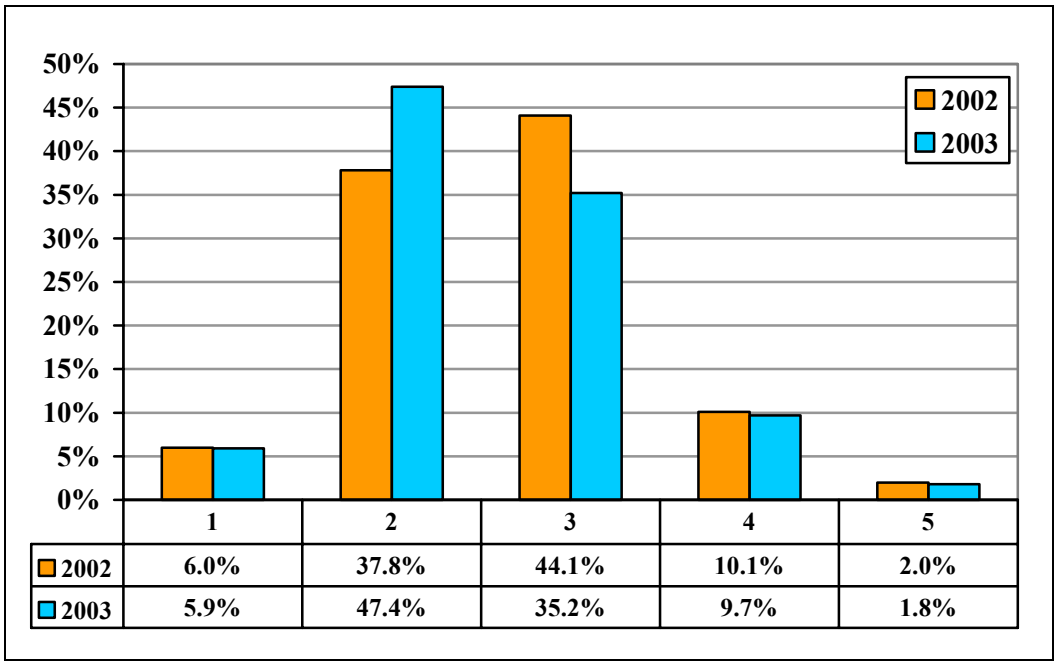
Litter Pollution Survey results for 34 out of 90 local authorities have been returned to the Litter Monitoring Body and analysed for 2003 - those local authorities are detailed in Appendix I.

Figure 1.1 compares the national results of Litter Pollution Surveys carried out in 2002 and 2003 - this indicates the severity of litter pollution on a national basis. The results of the 2003 surveys indicate that despite a slight decrease in the percentage of litter free areas (of

[3] Percentages are expressed to one decimal and therefore totals may not add exactly to 100%.

Litter Pollution Index 1), an overall improvement – a shift of some 7% - has been experienced in relation to litter pollution in the period from 2002 to 2003. Figure 1.1 indicates a significant increase in LPI 2 (slightly polluted), and corresponding decreases in Litter Pollution Indices 3 and 4 (moderately and significantly polluted).

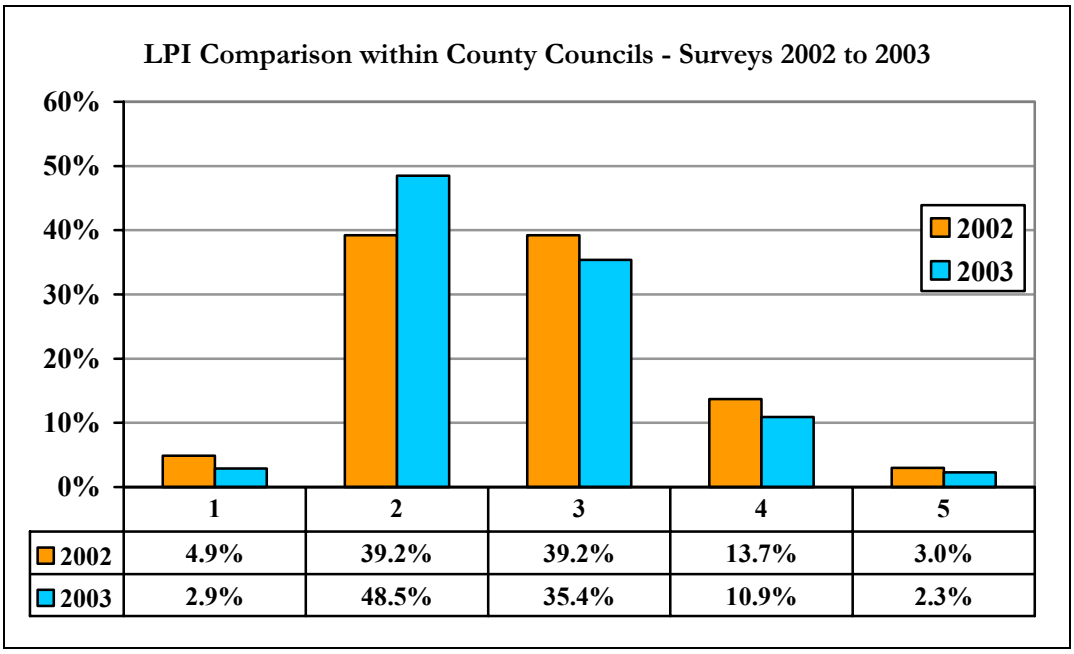
This improvement in the 2003 results over 2002 is also apparent when the litter pollution surveys data for the different categories of local authorities is examined in Figures 1.2, 1.3, 1.4 and 1.5.




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2002 | 6.0% | 37.8% | 44.1% | 10.1% | 2.0% |
| 2003 | 5.9% | 47.4% | 35.2% | 9.7% | 1.8% |

**Figure 1.2 Comparison of Litter Pollution Indices (LPI) within Dublin Local Authorities 2002 – 2003**

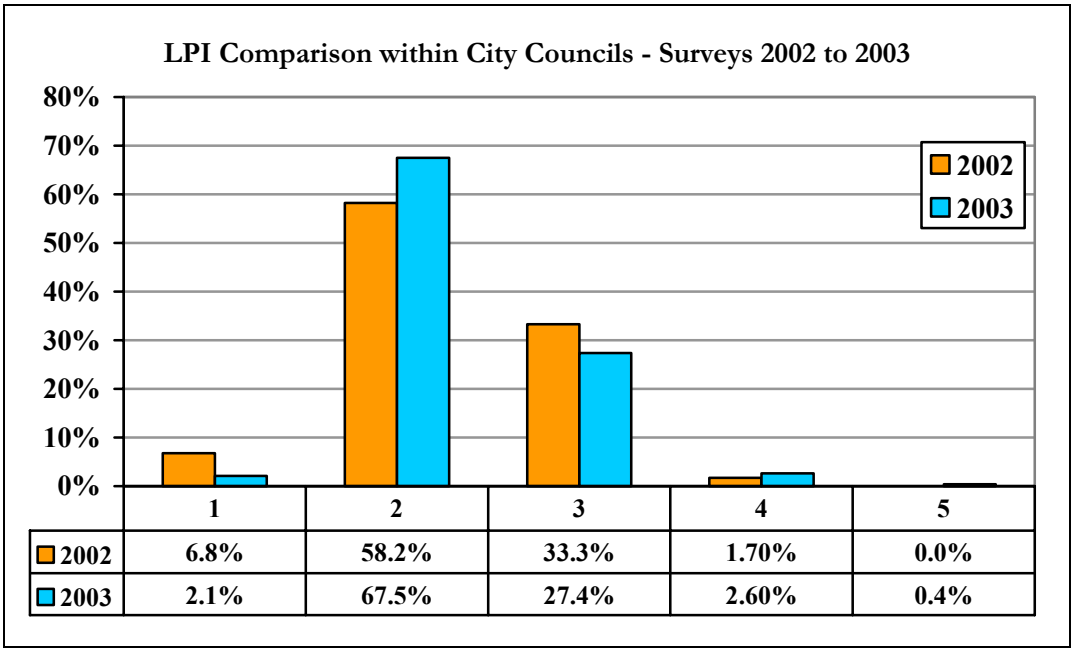
Comparative data for the Dublin local authorities as presented in Figure 1.2, clearly show improvement in 2003 in the severity of litter pollution in the Greater Dublin area, as indicated by a 9% reduction in the level of LPI 3 (moderately polluted) areas and a corresponding increase in areas only LPI 2 (slightly polluted).




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2002 | 4.9% | 39.2% | 39.2% | 13.7% | 3.0% |
| 2003 | 2.9% | 48.5% | 35.4% | 10.9% | 2.3% |

**Figure 1.3 Comparison of Litter Pollution within County Councils 2002 to 2003**

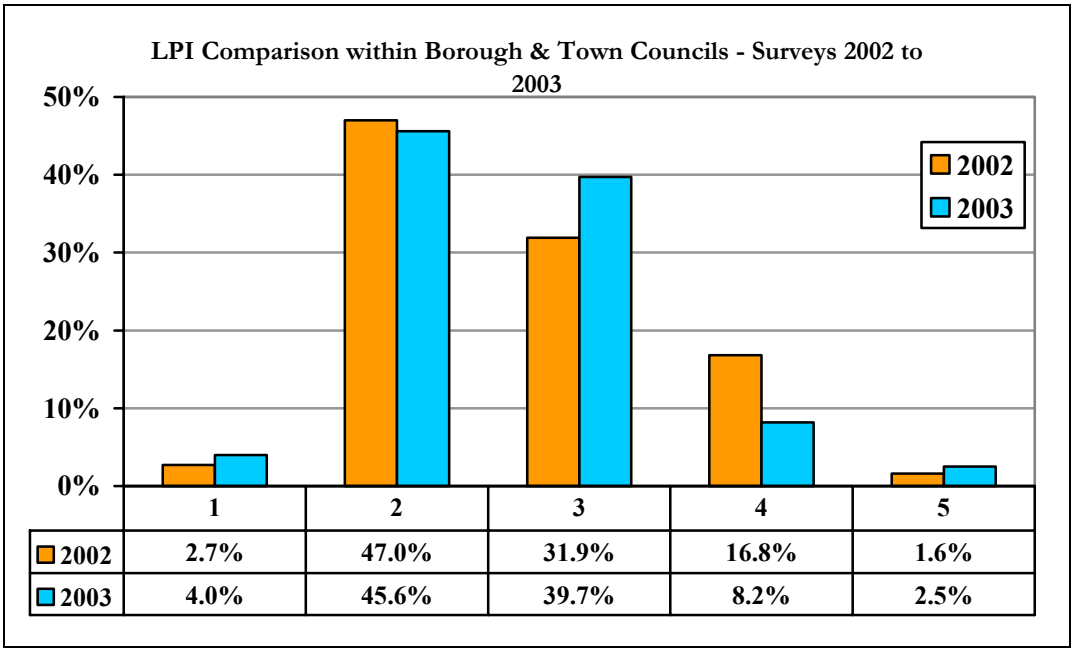
The change in the extent of litter pollution within County Councils from 2002 to 2003 is similar to the national trend. Despite a small decrease in the percentage of LPI 1 (unpolluted areas), there has been a significant improvement of 9% in the percentage of areas slightly polluted, with corresponding reductions in the more heavily littered areas.




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2002 | 6.8% | 58.2% | 33.3% | 1.70% | 0.0% |
| 2003 | 2.1% | 67.5% | 27.4% | 2.60% | 0.4% |

**Figure 1.4 Comparison of Litter Pollution within City Councils 2002 to 2003**

In Figure 1.4, survey results indicate that the profile of litter pollution within the city councils (excluding Dublin) also follows the national pattern.




| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 2002 | 2.7% | 47.0% | 31.9% | 16.8% | 1.6% |
| 2003 | 4.0% | 45.6% | 39.7% | 8.2% | 2.5% |

**Figure 1.5 Comparison of Litter Pollution within Borough & Town Councils 2002 to 2003**

As indicated by Figure 1.5, the severity of litter pollution has improved in Town and Borough Councils from 2002 to 2003, with a significant decrease in the percentage of significantly (or heavily) polluted areas of LPI 4 in 2003.

Please note that for the County Council and City Council categories of local authorities, the percentage of each Litter Pollution Index for 2002 has changed from those percentages published in last year's System Report. This is due to a change in the basis for comparison of data. In the data for 2003, the Dublin Local Authorities are not included in the County Council and City Council categories of local authorities whereas in 2002 they were. Accordingly, it was necessary to amend the data for 2002 in order to make a valid comparison.

Figure 1.6 allows for a comparison of litter pollution between largely Urban and Rural local authorities. In this graph, the county councils are regarded as rural local authorities as their functional areas are predominantly rural in nature; all other local authorities are predominantly urban.

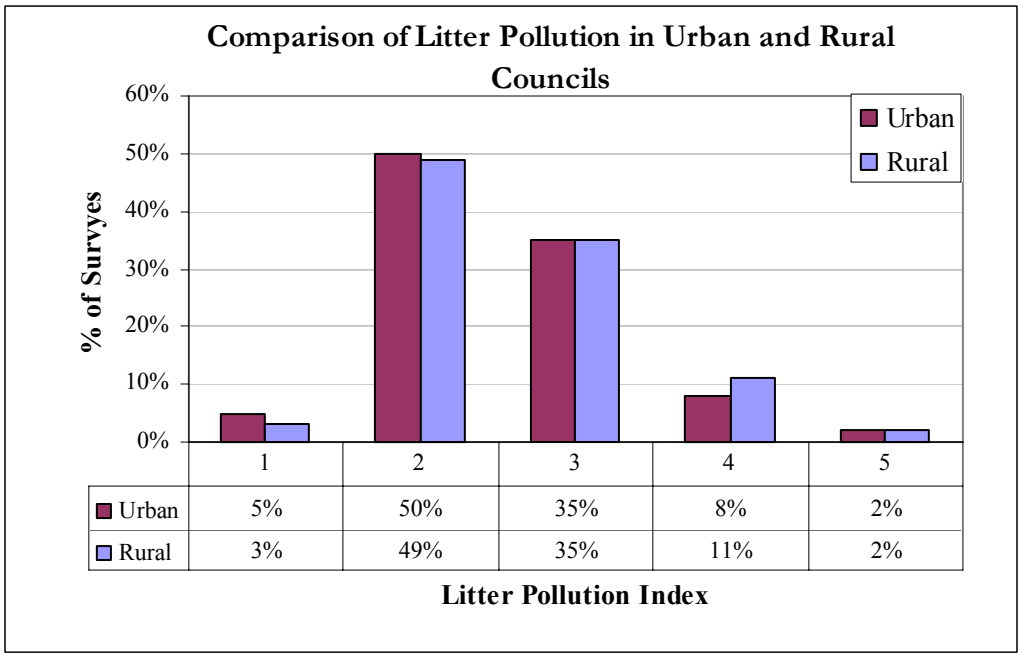



**Figure 1.6 Comparison of Litter Pollution within largely Urban and Rural Councils**

Figure 1.6 shows little difference in the extent and severity of litter pollution in urban and rural areas. Overall, urban areas are slightly less littered than rural areas. This may be due to a greater availability of cleansing resources in urban areas and the fact that urban areas, where litter pollution is most concentrated, are more compact and, for the most part, allow for the more efficient management and use of resources (including more frequent cleansing) to prevent and control litter. Nevertheless, a clearer picture of the nature and extent of litter pollution in urban and rural areas will emerge as more local authorities carry out surveys of their areas. Over time, the resultant data will build into a comprehensive database of litter pollution at national and local level.

The "bell" shaped distribution of values in Figures 1.1 – 1.6 is what one would expect from the initial series of survey results under the National Litter Pollution Monitoring System, with the majority of locations surveyed being slightly or moderately littered. As more local authorities carry out surveys in the years ahead and use the data from the ongoing surveys to improve local litter management planning, the percentage of LPI 1 or litter free values should increase and the other LPI decrease as improved litter management practices are implemented.

As the system is in the developmental stage, methodologies are being reviewed as part of an ongoing review/audit of the system. The system has an external audit built into it in order to ensure that the system is working as designed, to identify and remedy any problems and ensure the accuracy of the system data.

# CHAPTER 2: WHAT ARE THE MAIN CONSTITUENT ELEMENTS OF LITTER POLLUTION?

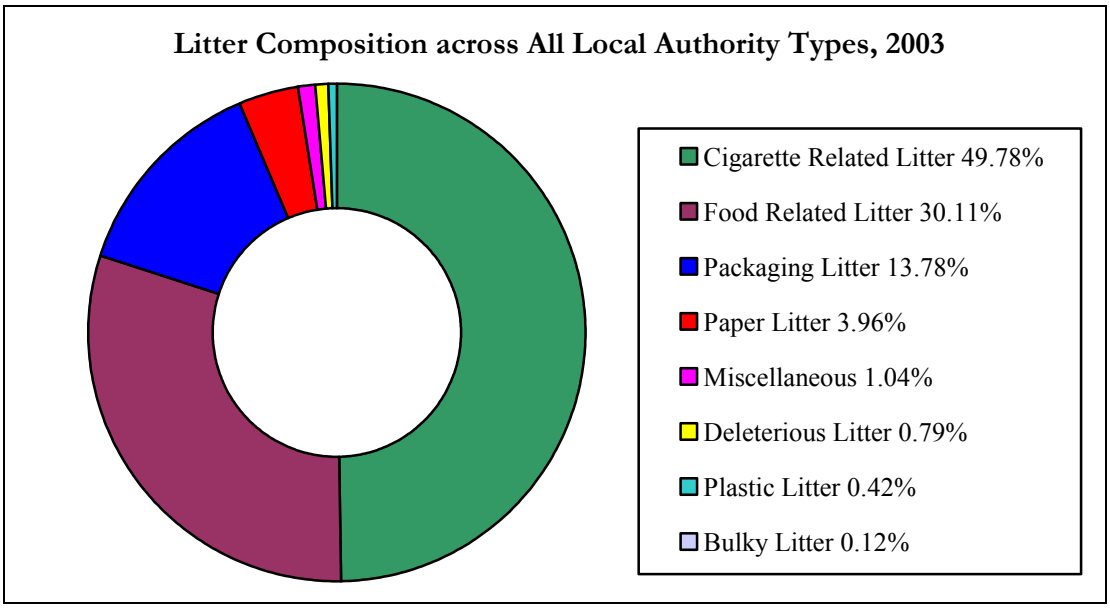
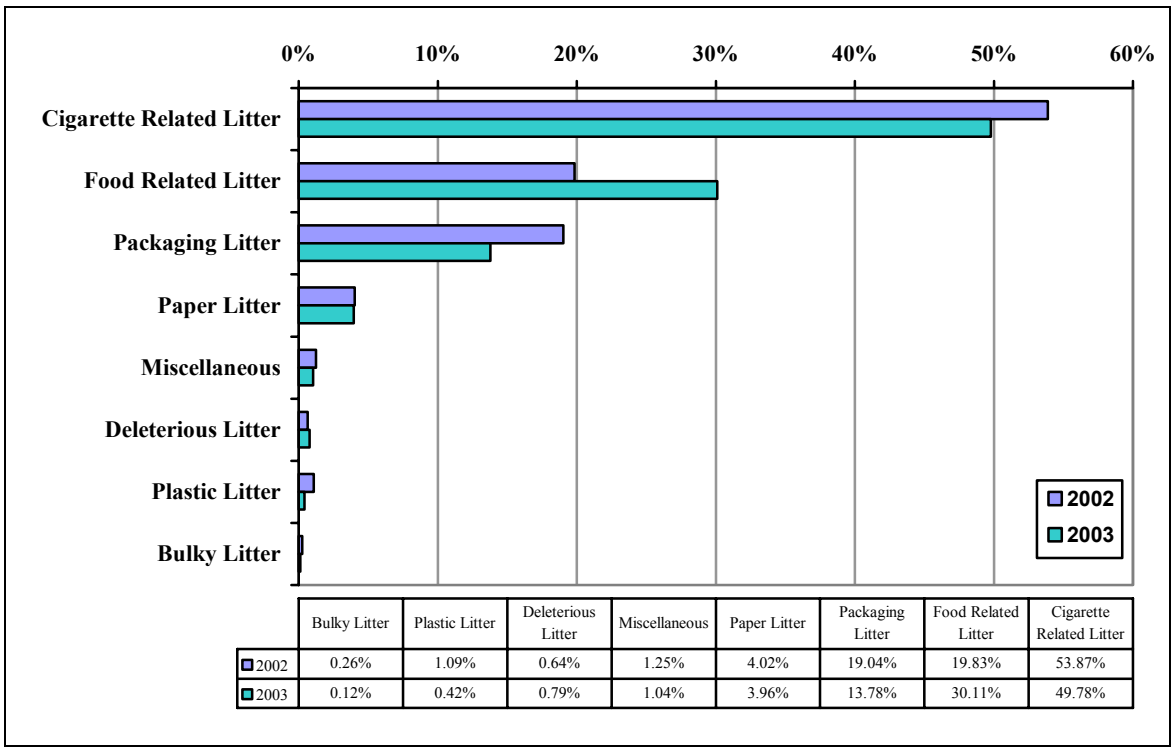



**Figure 2.1 Composition of Litter in 2003 Broken Down into Main Categories**




| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| 2002 | 0.26% | 1.09% | 0.64% | 1.25% | 4.02% | 19.04% | 19.83% | 53.87% |
| 2003 | 0.12% | 0.42% | 0.79% | 1.04% | 3.96% | 13.78% | 30.11% | 49.78% |

**Figure 2.2 Comparison of National Litter Composition from 2002 to 2003**

| | Detailed National Litter Composition 2003 | | Detailed National Litter Composition 2002 | |
|---|---|---|---|---|
| Cigarette Related Litter | Cigarette ends | 40.89% | Cigarette ends | 44.91% |
| | Matches | 6.75% | Matches | 5.43% |
| | Cigarette boxes and wrappers | 1.79% | Cigarette boxes and wrappers | 2.93% |
| | Matchboxes and lighters | 0.35% | Matchboxes and lighters | 0.60% |
| Food Related Litter | Chewing Gum | 28.26% | Chewing Gum | 18.49% |
| | Remnants of confectionery food items | 0.83% | Remnants of confectionery food items | 0.28% |
| | Other food items | 0.40% | Other food items | 0.29% |
| | Bread/ biscuits | 0.25% | Bread/ biscuits | 0.26% |
| | Fruit/ vegetables | 0.24% | Fruit/ vegetables | 0.25% |
| | Fast-food remnants | 0.13% | Fast-food remnants | 0.25% |
| Packaging Litter | Other paper packaging | 2.18% | Other paper packaging | 4.26% |
| | Bags and wrappers (Takeaway packaging) | 2.00% | Bags and wrappers (Takeaway packaging) | 2.67% |
| | Other plastic packaging | 1.56% | Other plastic packaging | 3.64% |
| | Plastic Bottles | 1.21% | Plastic Bottles | 1.07% |
| | Beverage Cans - Non-alcoholic | 1.08% | Beverage Cans - Non-alcoholic | 1.07% |
| | Drinks cartons (Paper) | 0.82% | Drinks cartons (Paper) | 0.58% |
| | Drink cups (Takeaway packaging) | 0.70% | Drink cups (Takeaway packaging) | 0.50% |
| | Beverage Bottles - Non-alcoholic (Glass) | 0.67% | Beverage Bottles - Non-alcoholic (Glass) | 0.76% |
| | Paper Bags | 0.60% | Paper Bags | 0.36% |
| | Beverage Cans – Alcoholic | 0.55% | Beverage Cans – Alcoholic | 0.65% |
| | Beverage Bottles – Alcoholic (Glass) | 0.43% | Beverage Bottles – Alcoholic (Glass) | 0.32% |
| | Cardboard | 0.38% | Cardboard | 0.29% |
| | Plastic film | 0.34% | Plastic film | 0.46% |
| | Tin foil (not sweet wrappers) | 0.27% | Tin foil (not sweet wrappers) | 0.41% |
| | Plastic Shopping Bags | 0.25% | Plastic Shopping Bags | 0.32% |
| | Other Plastic Bags (e.g. fertiliser) | 0.12% | Other Plastic Bags (e.g. fertiliser) | 0.06% |
| | Boxes | 0.12% | Boxes | 0.12% |
| | Lids (e.g. from bottles, jars) (Metal) | 0.12% | Lids (e.g. from bottles, jars) (Metal) | 0.10% |
| | Other metal litter items | 0.11% | Other metal litter items | 0.11% |
| | Bubble-wrap | 0.11% | Bubble-wrap | 1.06% |
| | Aeroboard (Paper) | 0.07% | Aeroboard (Paper) | 0.11% |
| | Jars and other containers (Glass) | 0.06% | Jars and other containers (Glass) | 0.04% |
| | Food cans | 0.04% | Food cans | 0.05% |
| | Plastic sheeting (e.g. silage) | 0.02% | Plastic sheeting (e.g. silage) | 0.03% |
| | Metal drums | 0.00% | Metal drums | 0.00% |
| Paper Litter | Receipts | 0.89% | Receipts | 0.81% |
| | Tickets (e.g. bus, lottery) | 0.83% | Tickets (e.g. bus, lottery) | 0.78% |
| | Other paper items | 0.63% | Other paper items | 0.71% |
| | Tissues | 0.60% | Tissues | 0.94% |
| | Bank slips | 0.51% | Bank slips | 0.28% |
| | Newspapers | 0.24% | Newspapers | 0.17% |
| | Letters, envelopes and cards | 0.12% | Letters, envelopes and cards | 0.06% |
| | Flyers and posters | 0.10% | Flyers and posters | 0.24% |
| | Magazines/ brochures | 0.06% | Magazines/ brochures | 0.03% |
| Miscellaneous | Miscellaneous Litter Items | 1.03% | Miscellaneous Litter Items | 1.25% |
| Deleterious Litter | Dog fouling | 0.73% | Dog fouling | 0.53% |
| | Nappies | 0.03% | Nappies | 0.04% |
| | Feminine hygiene products | 0.01% | Feminine hygiene products | 0.00% |
| | Needles and syringes | 0.01% | Needles and syringes | 0.01% |
| | Municipal Hazardous Waste | 0.00% | Municipal Hazardous Waste | 0.02% |
| | Other deleterious items | 0.00% | Other deleterious items | 0.05% |
| Plastic Litter | Plastic items (Non packaging) | 0.42% | Plastic items (Non packaging) | 1.09% |
| Bulky Litter | Furniture | 0.06% | Furniture | 0.01% |
| | Household refuse in bags | 0.03% | Household refuse in bags | 0.17% |
| | Other large items | 0.02% | Other large items | 0.06% |
| | Scrap cars | 0.01% | Scrap cars | 0.00% |
| | Appliances (e.g. fridge) | 0.00% | Appliances (e.g. fridge) | 0.02% |

Table 2.1 Detailed Comparison of National Litter Composition, 2002 - 2003

Figures 2.1 and 2.2 set out the main categories of litter pollution based on litter quantification surveys carried out in 2003, and allow comparison with 2002 data. Cigarette, food and packaging litter account for over 93% of all litter pollution at national level. A more detailed breakdown of the composition of these and the other main categories of litter is set out in Table 2.1

A comparison of litter composition at national level between the 2002 and 2003 surveys data – see Figure 2.2 and Table 2.1 – shows reductions of 4-5% in cigarette related and packaging litter, but a significant increase of over 10% in the incidence of food related litter in 2003. Analysis shows little difference in the relative percentages of the other litter components.

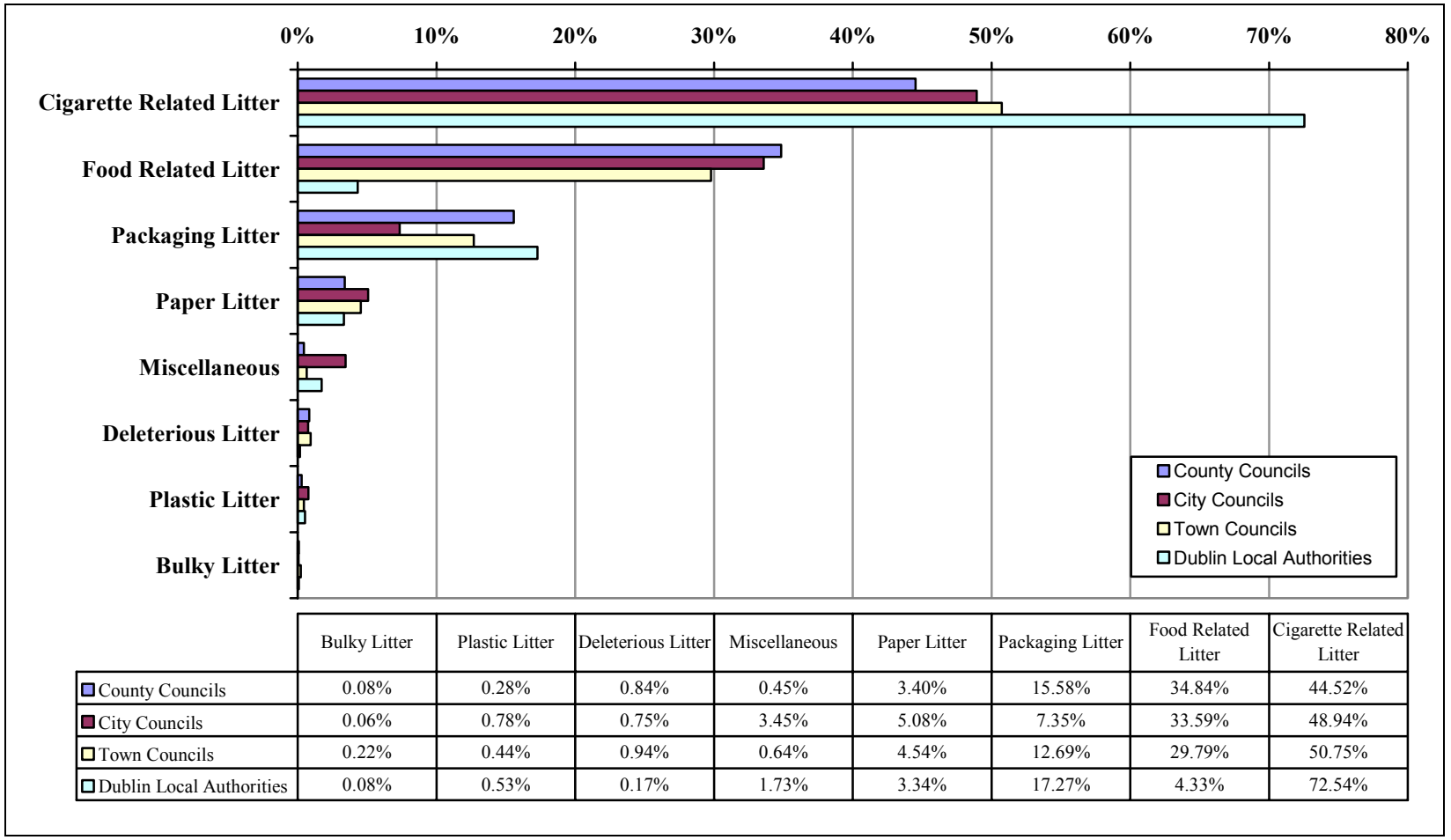
The drop in cigarette related litter is largely explained by the reduction in the number of cigarette butts counted in litter pollution surveys. Note that the survey data on which this report is based was obtained from litter quantification surveys carried out in 2003 **prior** to the implementation of the ban on smoking in the workplace.

The increase in the percentage of food related litter from 2002 to 2003 - as shown in Table 2.1 - shows that this is the result of an increase in chewing gum litter, which constituted 18.49% of all litter items in 2002; this increased to 28.26% in 2003. Chewing gum litter clearly remains a problematic component of litter, and it is recommended that it be tackled in future litter management strategies at both a local and national level. Options include the use of economic instruments by Government (i.e. a levy or a negotiated litter management agreement with the relevant sector or manufacturer), and the fitting of chewing gum receptacles to existing litter bins by local authorities.

| | Chewing Gum Litter | |
|---|---|---|
| | 2002 | 2003 |
| County Councils | 21.90 % | 32.64 % |
| City Councils | 27.01 % | 30.42 % |
| Town Councils | 17.81 % | 28.50 % |

**Table 2.2 Percentage of Chewing Gum Litter according to Local Authority Type**

The data in Table 2.2 shows that chewing gum litter has increased across all local authority types from 2002 to 2003, with the greatest percentage increase in Town Councils. (Note that no Litter Quantification Surveys were carried out in Borough Councils during the survey period of 2003.)




| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| County Councils | 0.08% | 0.28% | 0.84% | 0.45% | 3.40% | 15.58% | 34.84% | 44.52% |
| City Councils | 0.06% | 0.78% | 0.75% | 3.45% | 5.08% | 7.35% | 33.59% | 48.94% |
| Town Councils | 0.22% | 0.44% | 0.94% | 0.64% | 4.54% | 12.69% | 29.79% | 50.75% |
| Dublin Local Authorities | 0.08% | 0.53% | 0.17% | 1.73% | 3.34% | 17.27% | 4.33% | 72.54% |

**Figure 2.3 Comparison of Litter Composition between Local Authority Types (2003).**[4]

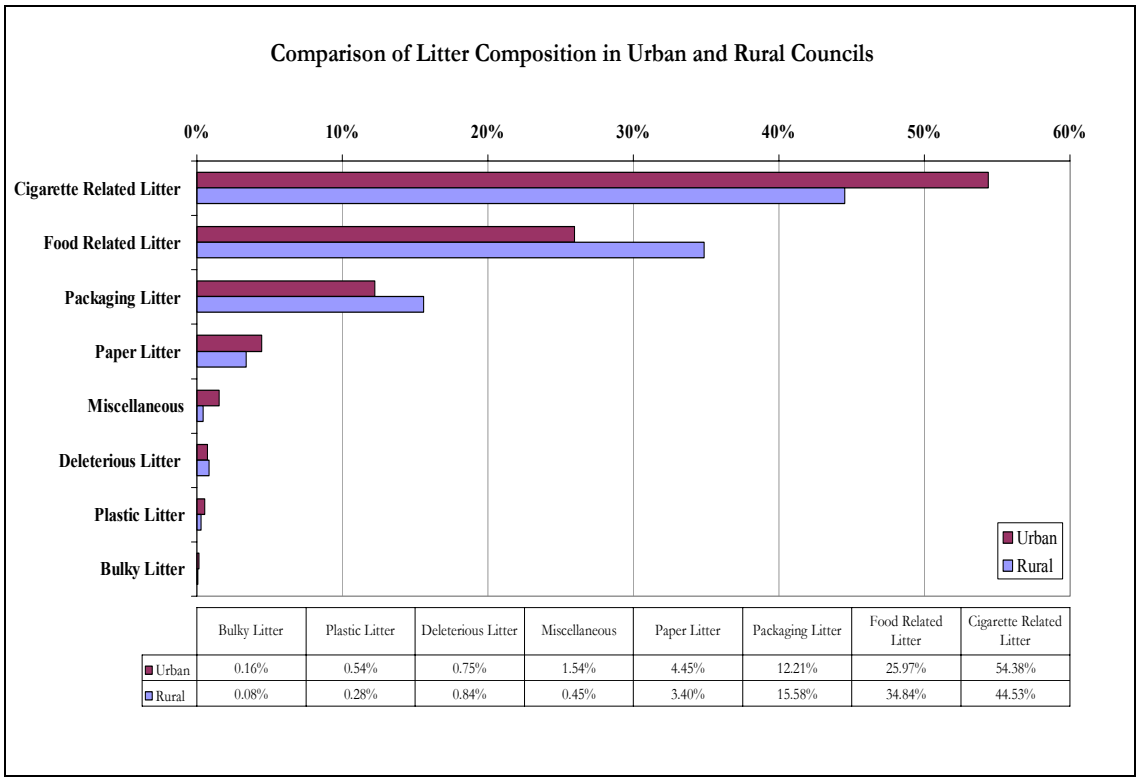
[4] Percentages are expressed to one decimal place, therefore totals for each category of local authority may not add to exactly 100%.

Figure 2.3 (p.19) compares the main categories of litter composition according to local authority type. The Dublin local authorities are shown as a separate subset.

The main points to note from Figure 2.3 is the variance in the percentages for cigarette related and food related litter for the Dublin local authorities compared to the other local authority types for 2003 – cigarette related litter is a much greater component, and food related litter is a much lesser component, of litter in the Greater Dublin area. This is due to the absence of litter composition data for Dublin City Council for 2003 – were such data available, it is likely that the percentages for both categories of litter in the survey results from the Dublin local authorities would be much greater.

Dublin local authority personnel have reported that cigarette ends are most commonly littered at locations where people gather, such as bus stops, and in road gullies, where they are difficult to cleanse. The highly urbanised nature of the Greater Dublin area, with its population density, spread and far greater concentration of gathering points compared to other local authority types, would explain the greater prevalence of cigarette related litter there.

Otherwise, the composition of litter is largely similar across local authority types. Figure 2.4 compares the composition of litter within largely urban and rural councils. In this graph, results from all Dublin Local Authorities, City Councils and Town Councils are categorised as urban areas, and results from County Councils (excluding the County Councils in the greater Dublin area) are regarded as rural authorities since their functional areas are predominantly rural.




| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| Urban | 0.16% | 0.54% | 0.75% | 1.54% | 4.45% | 12.21% | 25.97% | 54.38% |
| Rural | 0.08% | 0.28% | 0.84% | 0.45% | 3.40% | 15.58% | 34.84% | 44.53% |

**Figure 2.4 Comparison of Litter Composition in largely Urban and Rural Councils**

Figure 2.4 illustrates that cigarette related litter is the largest component of litter in both urban and rural councils, with the greater percentage, as expected, in largely urban areas. Food and packaging related litter are more prominent in rural areas.

Further data provided in Appendix II compares the composition of litter from 2002 to 2003 according to local authority type.

## The Impact of the Plastic Bag Levy

The National Litter Pollution Monitoring System may be used to measure the impact of certain anti litter measures. Monitoring the percentage change in the constituent elements of litter pollution at national or local level over time allows conclusions to be drawn on the effectiveness of national or local anti-litter strategies.

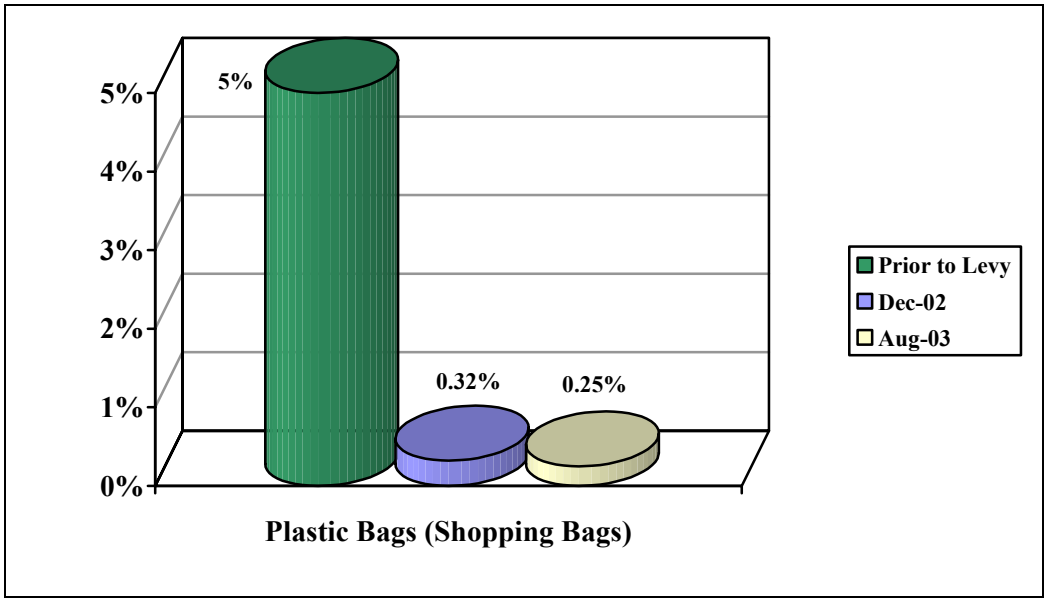



**Figure 2.5 Plastic Bags as a Percentage of National Litter Composition**

The graph in Figure 2.5 illustrates the impact of the plastic bag levy. 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. Based on data from retailers and revenue collected from the levy, the Department of the Environment, Heritage and Local Government estimates that since the introduction of the levy, the number of plastic bags issued has reduced by over 90%. The most recent survey data available from the monitoring system shows that plastic bags constitute approximately 0.25% of litter pollution nationally, compared to an estimated 5% prior to the introduction of the levy.

Future system's reports will be readily able to analyse the effect the ban on smoking in the workplace in Ireland as part of the Public Health (Tobacco) Act, 2002 (Section 47)

Regulations 2003 will have on cigarette related litter in the environs of Public Houses, Shopping Centres and other gathering points.

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

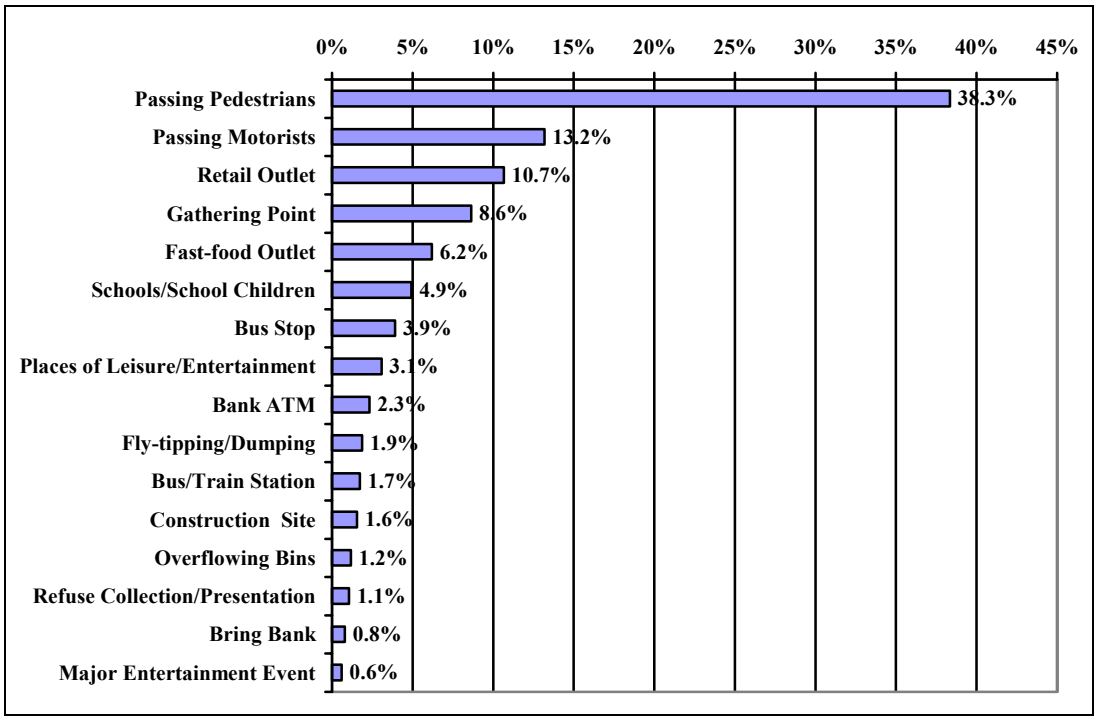


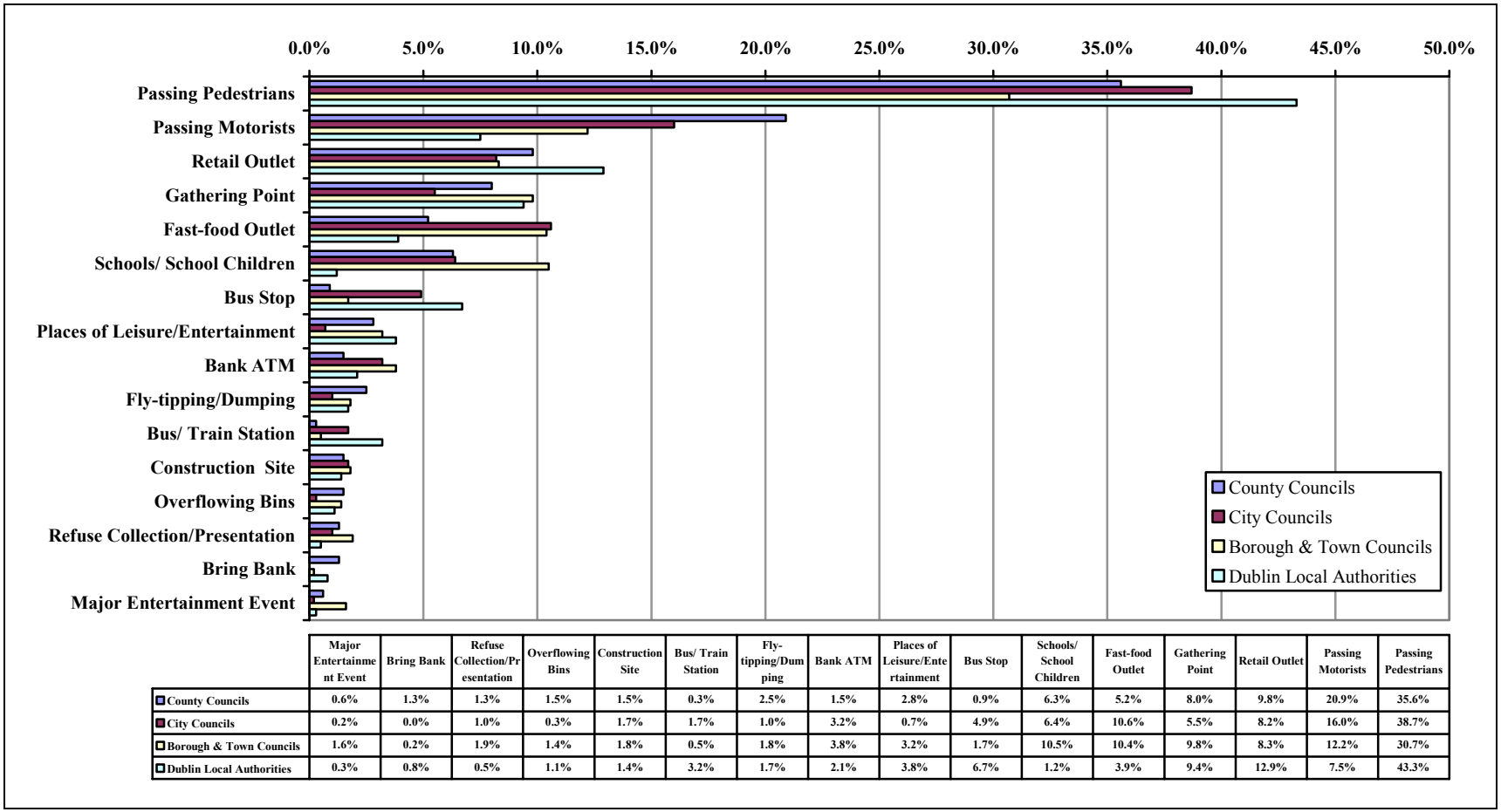

**Figure 3.1 Causative Factors of Litter Pollution across all Local Authorities, 2003**

During the Litter Pollution Surveys, surveyors are asked for observations on the primary causes of litter pollution. The main causative factors identified in Litter Pollution Surveys carried out in 2003 are set out in Figure 3.1. 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.

Figure 3.1 shows that passing pedestrians constituted 38.3 % of all causative factors identified in 2003. Litter caused by passing pedestrians is described as litter that cannot be explained under any of the other categories that clearly relate to pedestrians dropping litter while walking along, e.g. fast food outlet, schools/school children etc. Data is therefore compiled on the basis of the most obvious source of litter.

It is important for local authorities when carrying out Litter Pollution Surveys that they can identify as accurately as possible the causes of litter. The Litter Monitoring Body keep the list of causative factors under constant review based on feedback from local authorities. This has resulted in the introduction of a more comprehensive list of causative factors in 2003 to produce more specific data.

The breakdown of causative factors found in each local authority type is presented in Figure 3.2.




| | Major Entertainment Event | Bring Bank | Refuse Collection/Presentation | Overflowing Bins | Construction Site | Bus/ Train Station | Fly-tipping/Dumping | Bank ATM | Places of Leisure/Entertainment | Bus Stop | Schools/ School Children | Fast-food Outlet | Gathering Point | Retail Outlet | Passing Motorists | Passing Pedestrians |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| County Councils | 0.6% | 1.3% | 1.3% | 1.5% | 1.5% | 0.3% | 2.5% | 1.5% | 2.8% | 0.9% | 6.3% | 5.2% | 8.0% | 9.8% | 20.9% | 35.6% |
| City Councils | 0.2% | 0.0% | 1.0% | 0.3% | 1.7% | 1.7% | 1.0% | 3.2% | 0.7% | 4.9% | 6.4% | 10.6% | 5.5% | 8.2% | 16.0% | 38.7% |
| Borough & Town Councils | 1.6% | 0.2% | 1.9% | 1.4% | 1.8% | 0.5% | 1.8% | 3.8% | 3.2% | 1.7% | 10.5% | 10.4% | 9.8% | 8.3% | 12.2% | 30.7% |
| Dublin Local Authorities | 0.3% | 0.8% | 0.5% | 1.1% | 1.4% | 3.2% | 1.7% | 2.1% | 3.8% | 6.7% | 1.2% | 3.9% | 9.4% | 12.9% | 7.5% | 43.3% |

**Figure 3.2 Causative Factors of Litter Pollution According to Local Authority Type[5] (2003)**

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

As expected from the national results, passing pedestrians are the most significant single cause of litter pollution for every category of local authority. It is also clear from Figure 3.2 that passing motorists, retail and fast food outlets, gathering points, schools and bus stops are significant sources of litter, although not necessarily in that order of ranking priority for every local authority type. Survey results to date show that the contribution of schools/school children to litter pollution is much greater in Town & Borough Councils than in other local authority types. Fast food outlets are also of greater significance in City and Town & Borough Councils. Also of note is that bus stops and bus/train stations are more significant causes of litter pollution in the Greater Dublin Area and in City Councils than in County and Town/Borough Councils.

At the other end of the scale, surveys have found that major events, bring banks, refuse collection/presentation and overflowing bins are the least sources of litter pollution nationwide.

By and large, this data indicates that the nature of litter pollution nationwide is rather homogenous, irrespective of local authority type. This is not un-expected, 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. Accordingly, the national monitoring system is biased towards measuring the nature and extent of litter pollution in those areas most likely to be littered (i.e. largely in urban areas), rather than the country as a whole.

The homogenous nature of litter pollution in Ireland is further illustrated by the ranking of the causative factors linked to the severity of litter pollution in the locations surveyed – see Figures 3.3 to 3.6 on the following pages.

A LPI of 1 indicates that the surveyed area is litter free; there is no litter present and therefore no causative factors. The percentage of causative factors vary with each category of LPI. The data are organised and presented on facing pages so that changes in the ranking of the causative factors according to the severity of litter pollution is readily apparent.

When carrying out litter pollution surveys, surveyors use sample photographs supplied by the Litter Monitoring Body to assess the degree of litter pollution and to assign an area cleanliness rating to the survey location. The area cleanliness rating is then used in the calculation of Litter Pollution Index for each survey location. The use of photographs ensures that area cleanliness ratings are consistently assigned by all local authorities. Examples of such photographs are contained in Appendix III.

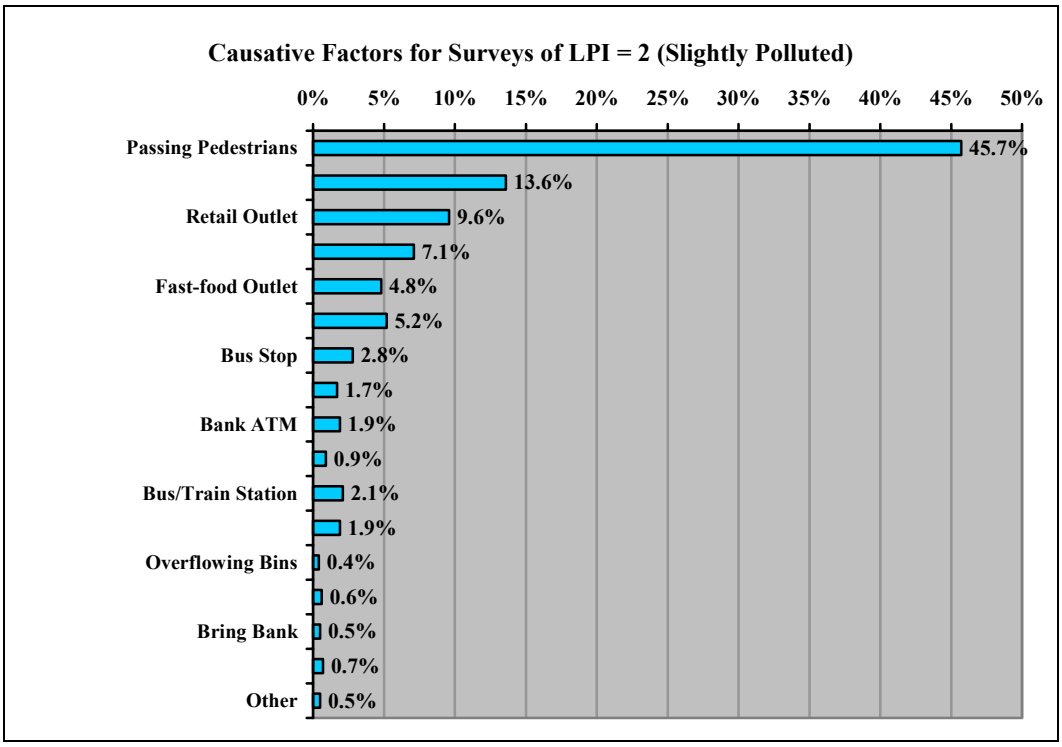



Figure 3.3 Comparison of causative factors of litter pollution within Litter Pollution Index category 2.

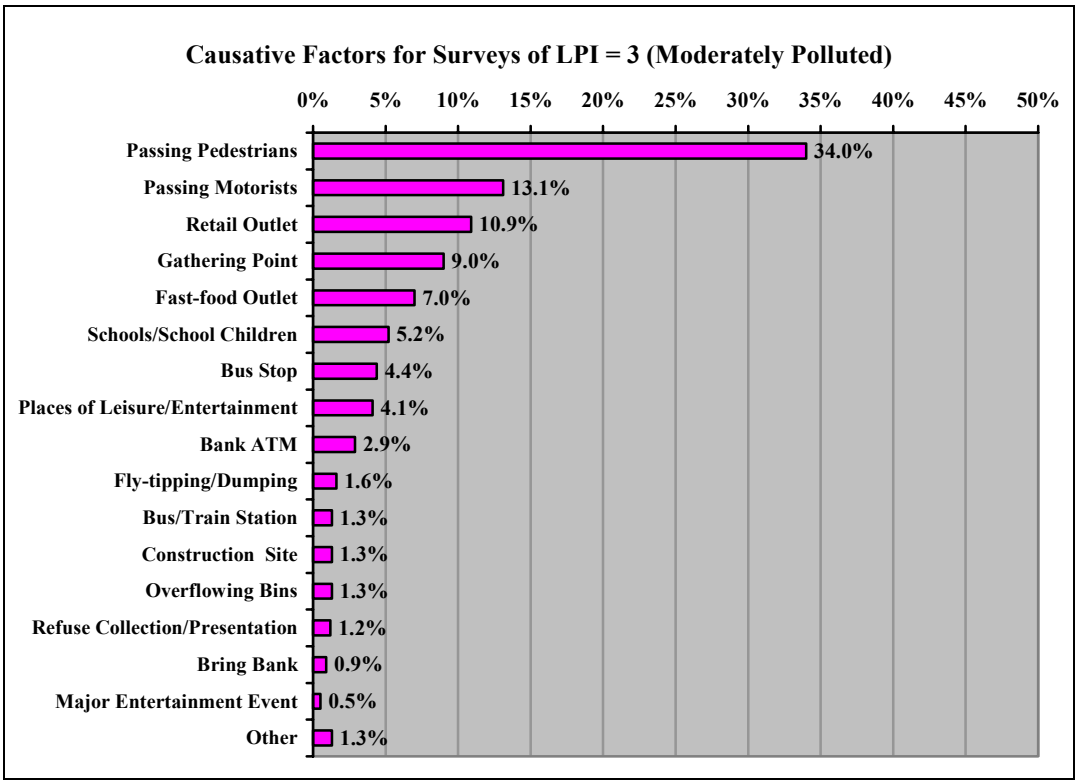



Figure 3.4 Comparison of causative factors of litter pollution within Litter Pollution Index category 3.

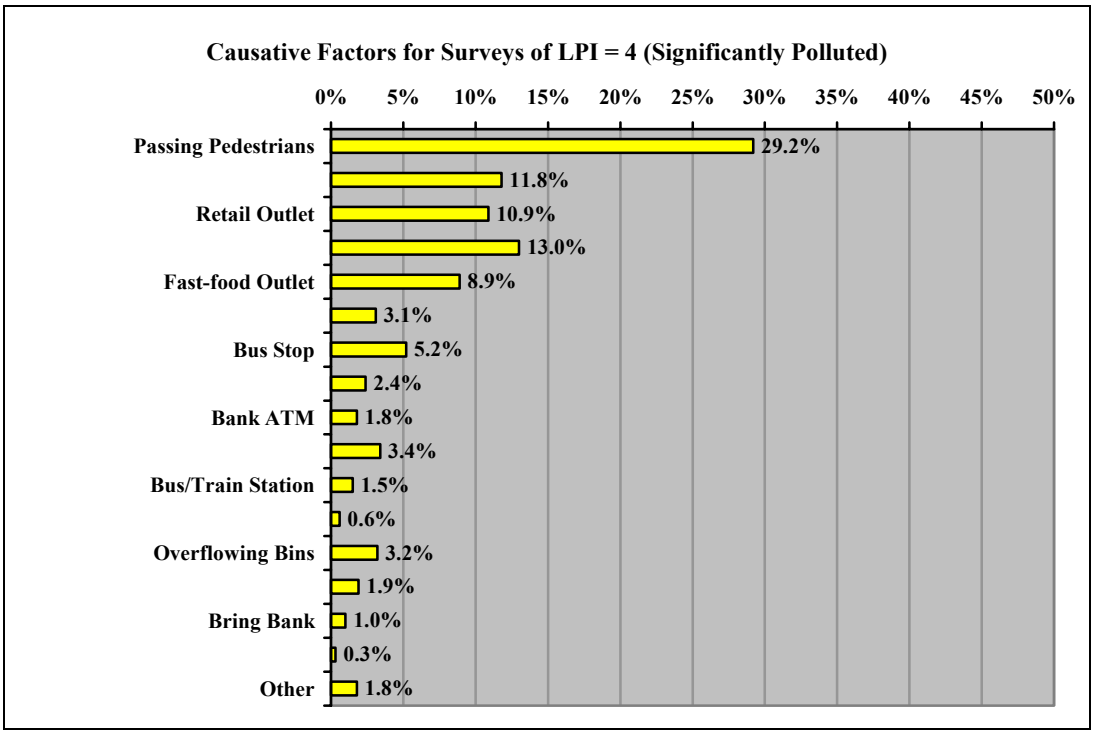



**Figure 3.5** Comparison of causative factors of litter pollution within Litter Pollution Index category 4.

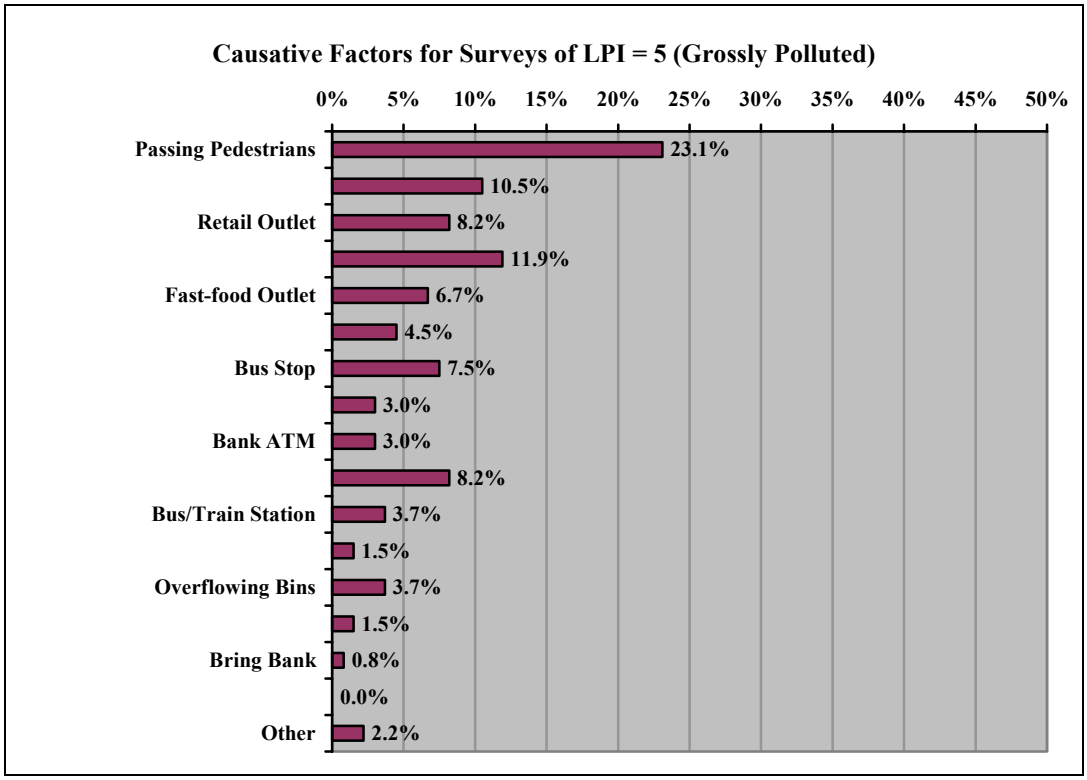


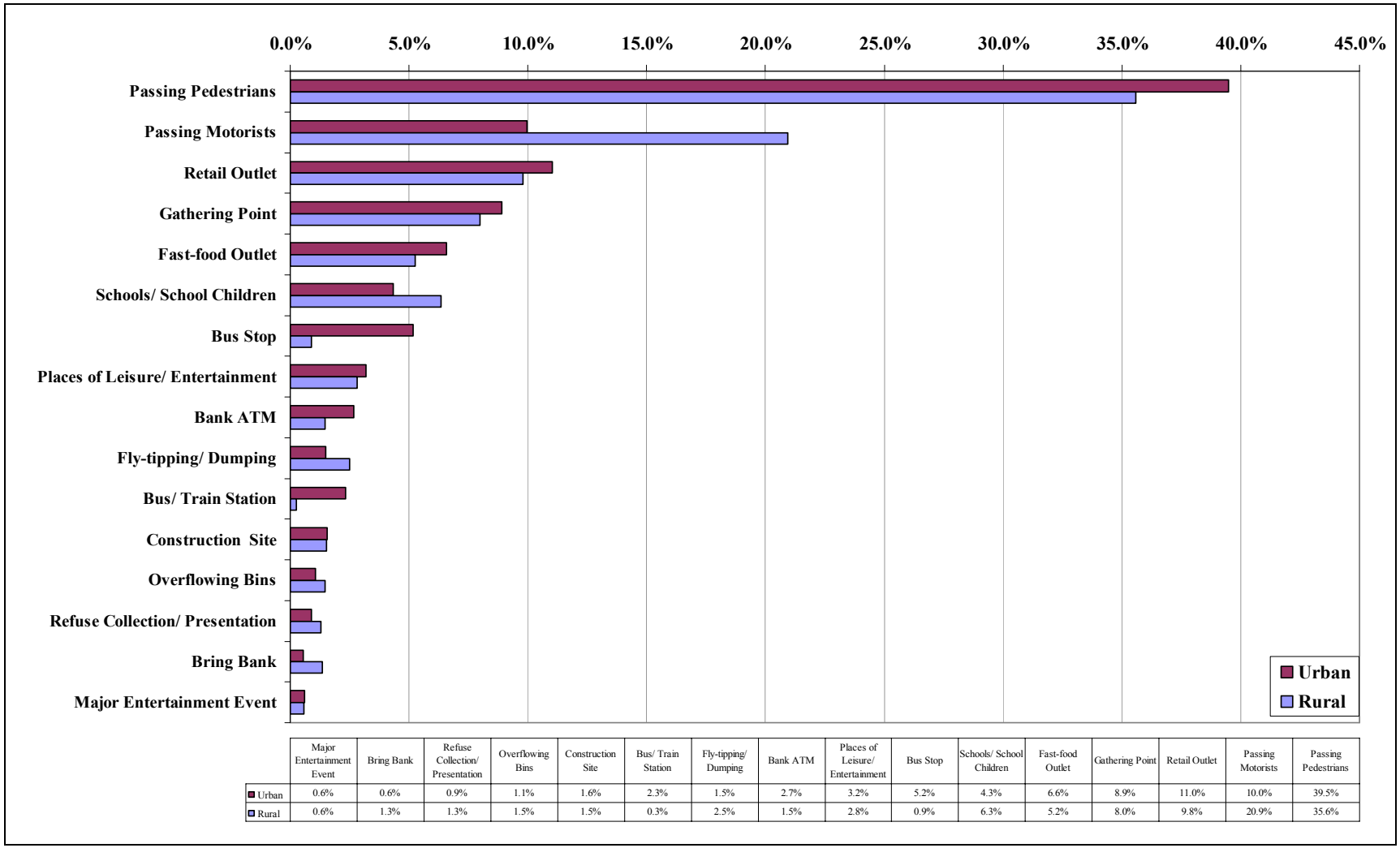

**Figure 3.6** Comparison of causative factors of litter pollution within Litter Pollution Index category 5.

In each category of LPI, passing pedestrians constituted the most significant causative factor of litter pollution. Figures 3.3 – 3.6 show 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, passing pedestrians constituted 45.7% of all causative factors in litter pollution surveys of areas slightly littered (LPI of 2); the percentage decreased to 23.1% as the severity of litter pollution in the surveyed areas reached the maximum ranking of LPI 5. As the severity of litter pollution increases, other causative factors such as gathering points, bus stops and fly-tipping become more predominant.

In the slightly and moderately polluted categories (LPI 2 and 3 respectively), passing motorists, retail outlets and gathering points were significant causes of litter pollution. In the significantly and grossly polluted categories (LPI 4 and 5), causative factors such as fast food outlets and bus stops became more apparent. Also, in the grossly polluted category (LPI 5), incidents of fly-tipping and dumping contributed more to litter pollution (8.2 % of causative factors) than in any other category.

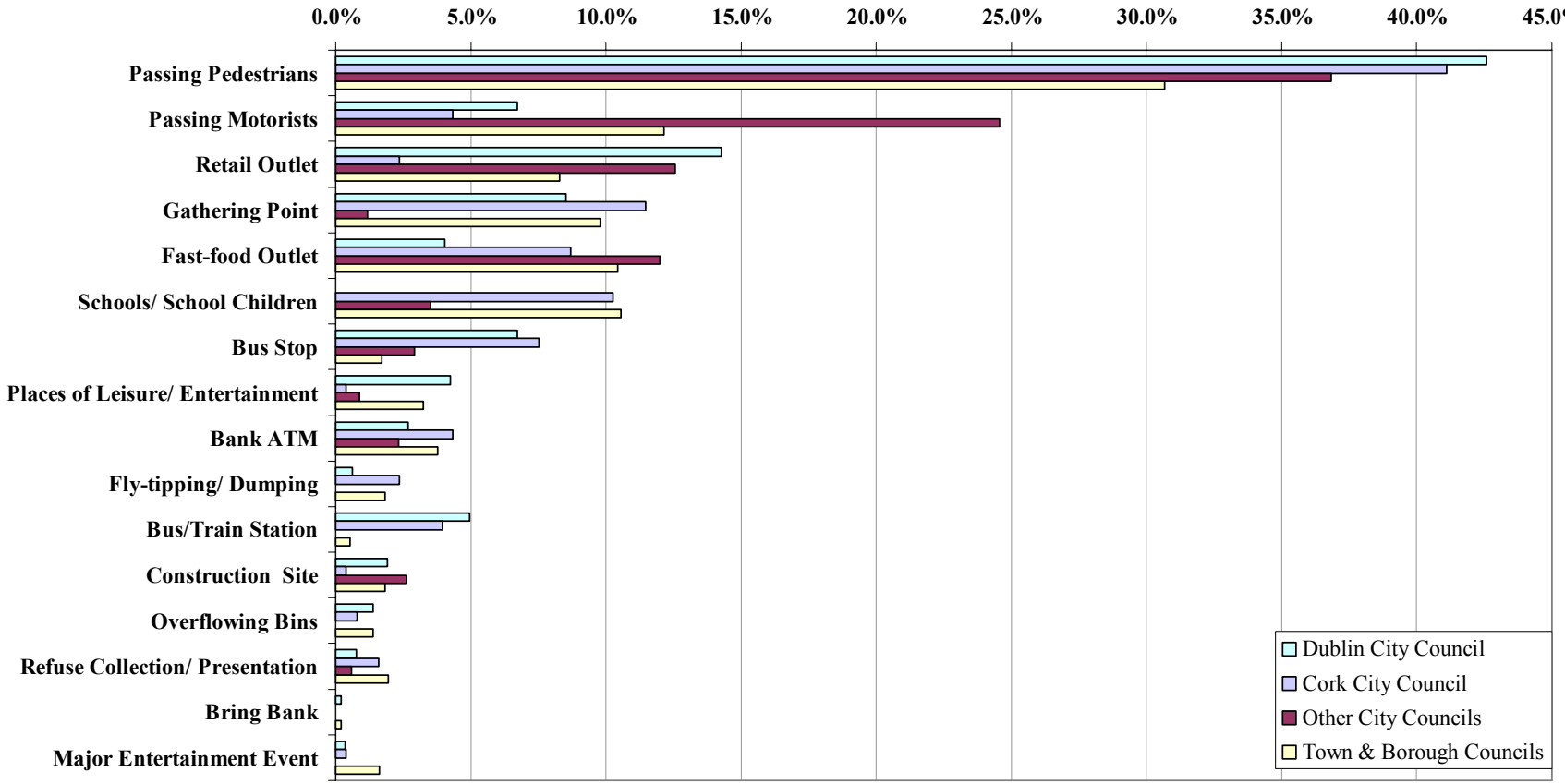
Figure 3.7 (p 29) compares the causes of litter within largely urban and rural local authorities. Again, it will be seen that passing pedestrians are the single greatest cause of litter pollution in both urban and rural councils. Passing motorists and fly tipping are of greater significance in rural areas, as would be expected. Bus stops and bus/train stations contribute more to litter pollution in urban areas.

Figure 3.8 (p.30) allows for comparison of the various causative factors of litter pollution between urban areas of varying size and population. The 'Other City Councils' category includes results from Limerick City and Waterford City. Overall, the causes of litter pollution vary greatly with each category of urban area. The graph illustrates that the greater the size/population of the urban area, the greater the significance of passing pedestrians as a causative factor of litter pollution. Passing motorists are of greatest significance in the 'Other City Councils' category of urban areas.




| | Major Entertainment Event | Bring Bank | Refuse Collection/ Presentation | Overflowing Bins | Construction Site | Bus/ Train Station | Fly-tipping/ Dumping | Bank ATM | Places of Leisure/ Entertainment | Bus Stop | Schools/ School Children | Fast-food Outlet | Gathering Point | Retail Outlet | Passing Motorists | Passing Pedestrians |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Urban | 0.6% | 0.6% | 0.9% | 1.1% | 1.6% | 2.3% | 1.5% | 2.7% | 3.2% | 5.2% | 4.3% | 6.6% | 8.9% | 11.0% | 10.0% | 39.5% |
| Rural | 0.6% | 1.3% | 1.3% | 1.5% | 1.5% | 0.3% | 2.5% | 1.5% | 2.8% | 0.9% | 6.3% | 5.2% | 8.0% | 9.8% | 20.9% | 35.6% |

**Figure 3.7 Comparison of Causative Factors in largely Urban and Rural Councils (2003)**




| | Major Entertainment Event | Bring Bank | Refuse Collection/ Presentation | Overflowing Bins | Construction Site | Bus/Train Station | Fly-tipping/ Dumping | Bank ATM | Places of Leisure/ Entertainment | Bus Stop | Schools/ School Children | Fast-food Outlet | Gathering Point | Retail Outlet | Passing Motorists | Passing Pedestrians |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dublin City Council | 0.3% | 0.2% | 0.8% | 1.4% | 1.9% | 4.9% | 0.6% | 2.7% | 4.3% | 6.7% | 0.0% | 4.1% | 8.5% | 14.3% | 6.7% | 42.6% |
| Cork City Council | 0.4% | 0.0% | 1.6% | 0.8% | 0.4% | 4.0% | 2.4% | 4.3% | 0.4% | 7.5% | 10.3% | 8.7% | 11.5% | 2.4% | 4.3% | 41.1% |
| Other City Councils | 0.0% | 0.0% | 0.6% | 0.0% | 2.6% | 0.0% | 0.0% | 2.3% | 0.9% | 2.9% | 3.5% | 12.0% | 1.2% | 12.6% | 24.6% | 36.8% |
| Town & Borough Councils | 1.6% | 0.2% | 1.9% | 1.4% | 1.8% | 0.5% | 1.8% | 3.8% | 3.2% | 1.7% | 10.5% | 10.4% | 9.8% | 8.3% | 12.2% | 30.7% |

**Figure 3.8 Comparison of Causative Factors of Litter Pollution within Urban Areas6 (2003)**

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

# APPENDIX I
# DETAILS OF LOCAL AUTHORITIES THAT CARRIED OUT SURVEYS IN 2003

## Litter Pollution Survey Results

Litter Pollution Survey results for 34 out of 90 local authorities were returned to the Litter Monitoring Body and analysed for 2003. These are detailed in Table A-1.

**Table A-1 Local Authorities that Submitted Litter Pollution Survey Results for 2003**

| |
|---|
| **County Councils** |
| Carlow County Council & Town Council |
| Clare County Council |
| Dun Laoghaire Rathdown County Council |
| Fingal County Council |
| Galway County Council |
| Kerry County Council |
| Leitrim County Council |
| Mayo County Council |
| Meath County Council |
| Monaghan County Council |
| Offaly County Council |
| Roscommon County Council |
| Sligo County Council |
| South Dublin County Council |
| Waterford County Council |
| Westmeath County Council |
| |
| **City Councils** |
| Cork City Council |
| Dublin City Council |
| Limerick City Council |
| Waterford City Council |
| |
| **Town Councils** |
| Ballinasloe Town Council |
| Birr Town Council |
| Castleblayney Town Council; |
| Clones Town Council |
| Ennis Town Council |
| Kells Town Council |
| Kilrush Town Council |
| Longford Town Council |
| Monaghan Town Council |
| Navan Town Council |
| Trim Town Council |
| Tullamore Town Council |
| |
| **Borough Councils** |
| Clonmel Borough Council |

## Litter Quantification Survey Results

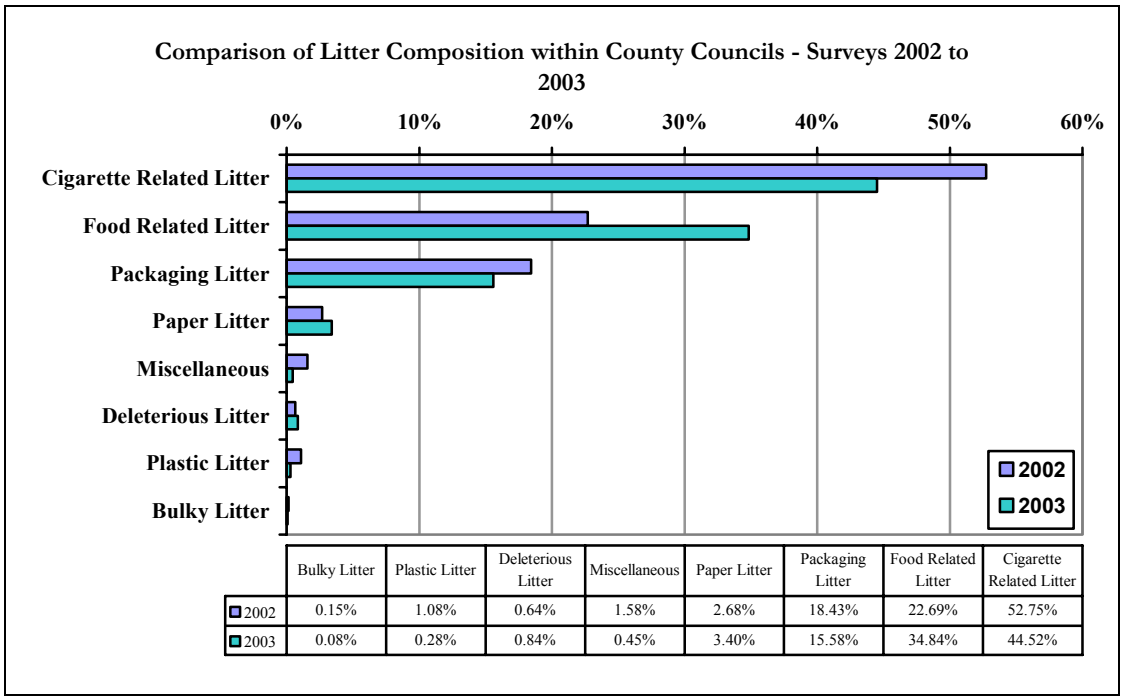
Litter Quantification Survey results for 30 out of 90 local authorities were returned to the Litter Monitoring Body and analysed for 2003. These are detailed in Table A-2.

**Table A-2 Local Authorities that Submitted Litter Quantification Survey Results for 2003**

| **County Councils** |
|---|
| Cavan County Council |
| Clare County Council |
| Dun Laoghaire Rathdown County Council |
| Fingal County Council |
| Kerry County Council |
| Leitrim County Council |
| Limerick County Council |
| Mayo County Council |
| Meath County Council |
| Monaghan County Council |
| Offaly County Council |
| Roscommon County Council |
| Sligo County Council |
| South Dublin County Council |
| South Tipperary County Council |
| Waterford County Council |
| Westmeath County Council |
| |
| **City Councils** |
| Cork City Council |
| Galway City Council |
| Limerick City Council |
| Waterford City Council |
| |
| **Town Councils** |
| Birr Town Council |
| Ennis Town Council |
| Kells Town Council |
| Kilrush Town Council |
| Longford Town Council |
| Navan Town Council |
| Tralee Town Council |
| Trim Town Council |
| Tullamore Town Council |

# APPENDIX II

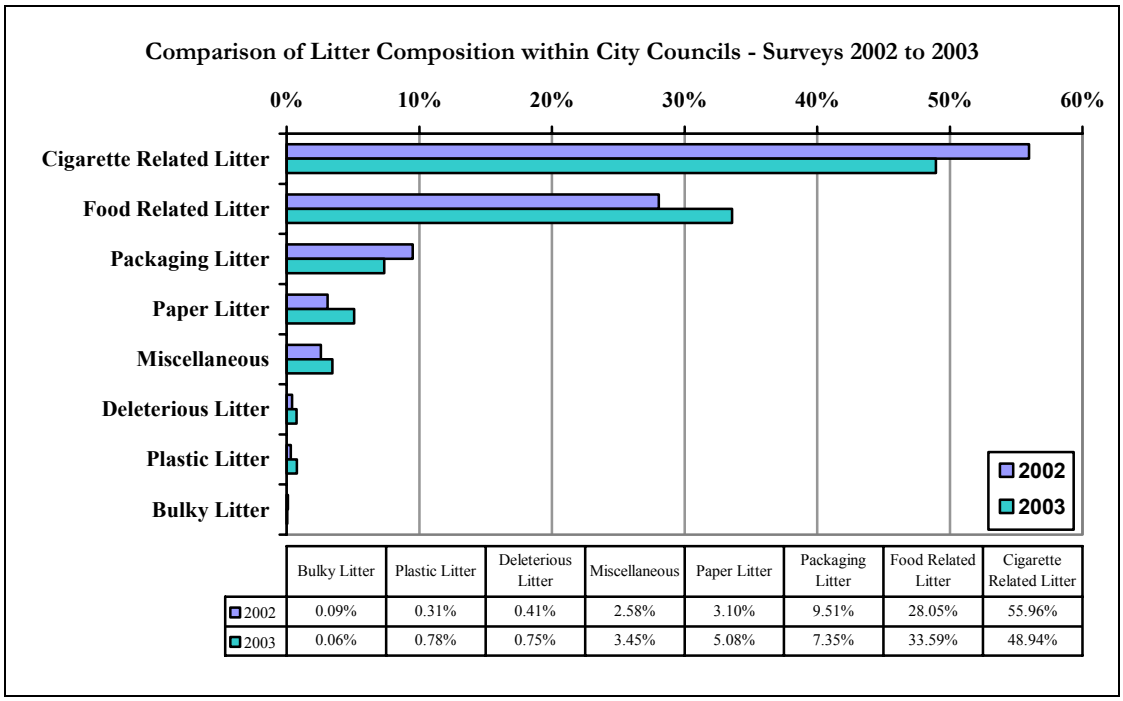
# DETAILS OF LITTER COMPOSITION FROM 2002 – 2003 ACCORDING TO LOCAL AUTHORITY TYPE




| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| 2002 | 0.15% | 1.08% | 0.64% | 1.58% | 2.68% | 18.43% | 22.69% | 52.75% |
| 2003 | 0.08% | 0.28% | 0.84% | 0.45% | 3.40% | 15.58% | 34.84% | 44.52% |

**Figure A.1 Comparison of Litter Composition within County Councils 2002 - 2003**

Figure A.1 compares the results of Litter Quantification Surveys within County Councils from 2002 to 2003; the main observations are that cigarette related litter and packaging litter have decreased; correspondingly food related litter has increased. This is mainly due to an increase in the percentage of chewing gum litter.

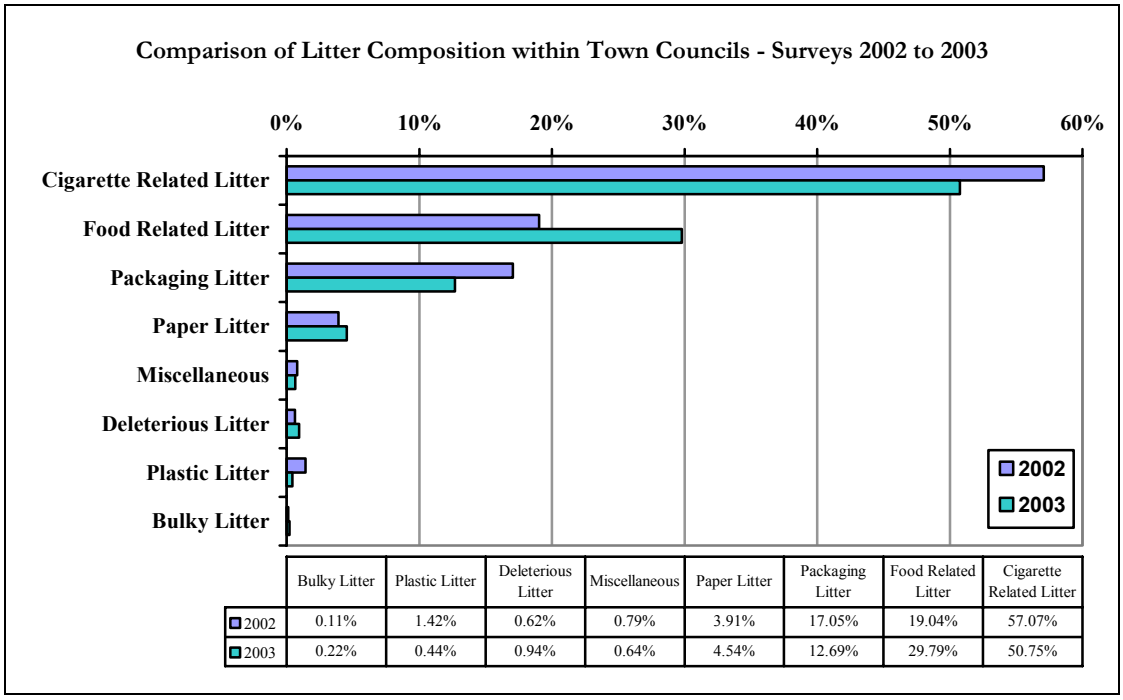



| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| 2002 | 0.09% | 0.31% | 0.41% | 2.58% | 3.10% | 9.51% | 28.05% | 55.96% |
| 2003 | 0.06% | 0.78% | 0.75% | 3.45% | 5.08% | 7.35% | 33.59% | 48.94% |

**Figure A.2 Comparison of Litter Composition within City Councils 2002 to 2003**

In Figure A.2, the data for 2002 includes Litter Quantification Survey Results from all City Councils (i.e. Dublin, Cork, Galway, Limerick and Waterford). In 2003, Litter Quantification Surveys were not carried out in the Dublin City area.

The graph shows that within city councils, the percentage of cigarette related and packaging litter decreased from 2002 to 2003, and the percentage of food related litter increased. This is due to an increase in the percentage of chewing gum litter.

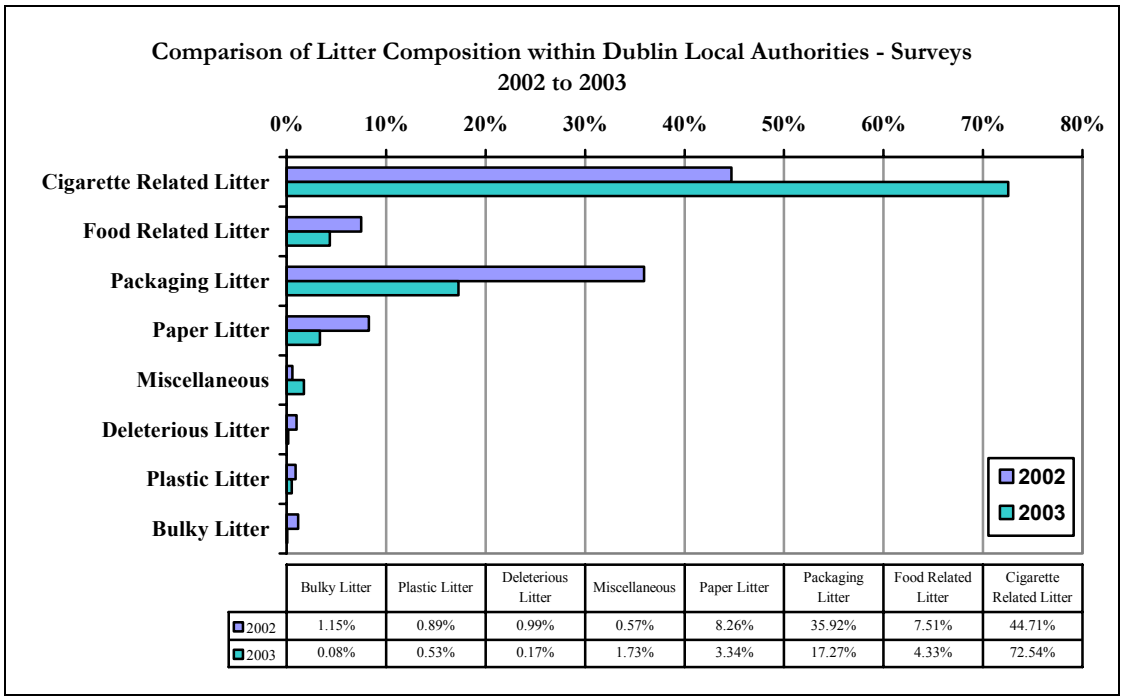



| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| 2002 | 0.11% | 1.42% | 0.62% | 0.79% | 3.91% | 17.05% | 19.04% | 57.07% |
| 2003 | 0.22% | 0.44% | 0.94% | 0.64% | 4.54% | 12.69% | 29.79% | 50.75% |

**Figure A.3 Comparison of Litter Composition within Town Councils 2002 to 2003**

The trend in litter composition within Town Councils is similar to the national trend. See Figure A.3. Again, the percentages of cigarette related and packaging litter have decreased, and the percentage of food related litter has increased. As previously stated, this is due to an increase in the percentage of chewing gum litter.

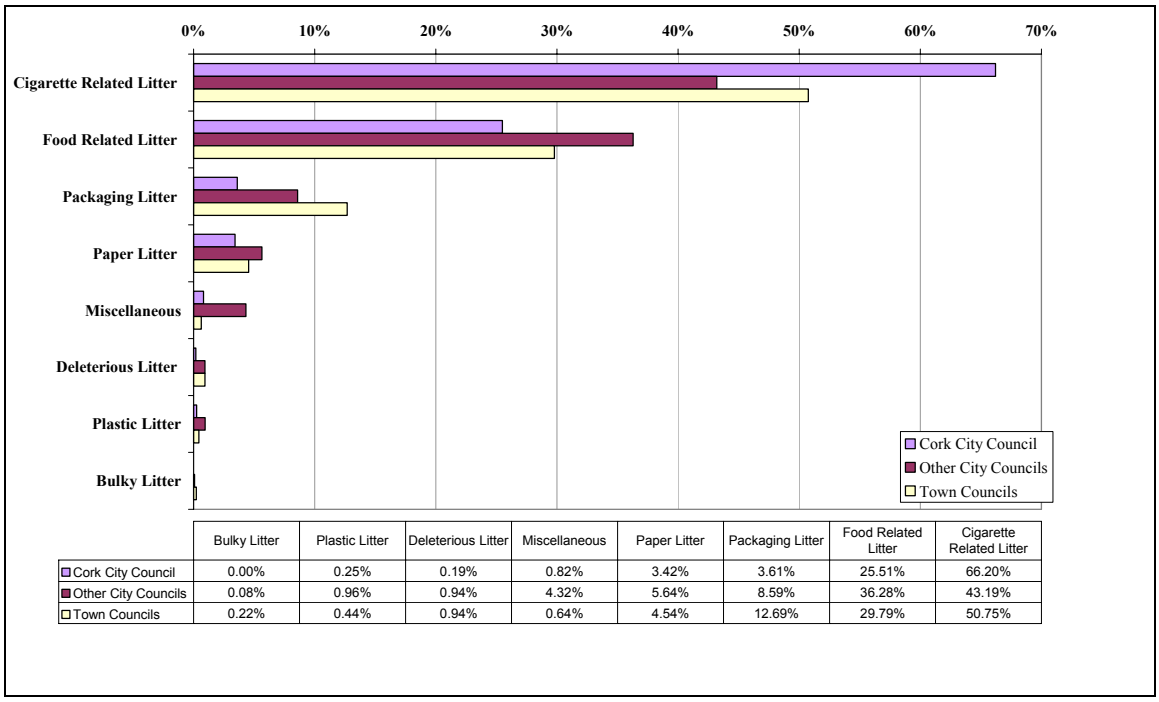
Note that no Litter Quantification Results have yet been submitted to the Litter Monitoring Body from Borough Councils for 2002 or 2003. It is expected that data will be available for 2004.




| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| 2002 | 1.15% | 0.89% | 0.99% | 0.57% | 8.26% | 35.92% | 7.51% | 44.71% |
| 2003 | 0.08% | 0.53% | 0.17% | 1.73% | 3.34% | 17.27% | 4.33% | 72.54% |

**Figure A.4 Comparison of Litter Composition within Dublin Local Authorities 2002 to 2003**

Figure A.4 shows that within Dublin Local Authorities, the percentage of cigarette related litter has increased significantly, and the percentages of food related litter, packaging litter and paper litter have decreased. Note that no litter quantification surveys were carried out by Dublin City Council in 2003. Were Dublin City Council data available, the trends in cigarette related litter would probably be even more pronounced.




| | Bulky Litter | Plastic Litter | Deleterious Litter | Miscellaneous | Paper Litter | Packaging Litter | Food Related Litter | Cigarette Related Litter |
|---|---|---|---|---|---|---|---|---|
| Cork City Council | 0.00% | 0.25% | 0.19% | 0.82% | 3.42% | 3.61% | 25.51% | 66.20% |
| Other City Councils | 0.08% | 0.96% | 0.94% | 4.32% | 5.64% | 8.59% | 36.28% | 43.19% |
| Town Councils | 0.22% | 0.44% | 0.94% | 0.64% | 4.54% | 12.69% | 29.79% | 50.75% |

**Figure A.5 Comparison of Litter Composition within Urban Councils (2003)**

Figure A.5 compares the composition of litter within urban areas of varying size and population. The 'Other City Councils' category includes results from Galway City, Limerick City and Waterford City; no Litter Quantification Surveys were carried out in Dublin City during the survey period of 2003. The graph in Figure A.5 indicates that there is no direct correlation between the size/population of the urban area and litter composition; similar trends are observed in each category.

It should be noted that within the County Council and City Council categories of local authorities, the composition of litter for 2002 has changed from that published in last year's System Report. This is due to a change in the basis for comparison of data. In the data for 2003, the Dublin Local Authorities are not included in the County Council and City Council categories of local authorities whereas in 2002 they were. It was necessary to amend the data for 2002 in order to make a valid comparison.

# APPENDIX III
# AREA CLEANLINESS RATING PHOTOS

**Area Cleanliness Rating 1 (Unpolluted)**

Relates to an area, which gives the impression that it has just been freshly swept. This is only given to area with no litter present.

**Area Cleanliness Rating 2 (Slightly Polluted)**

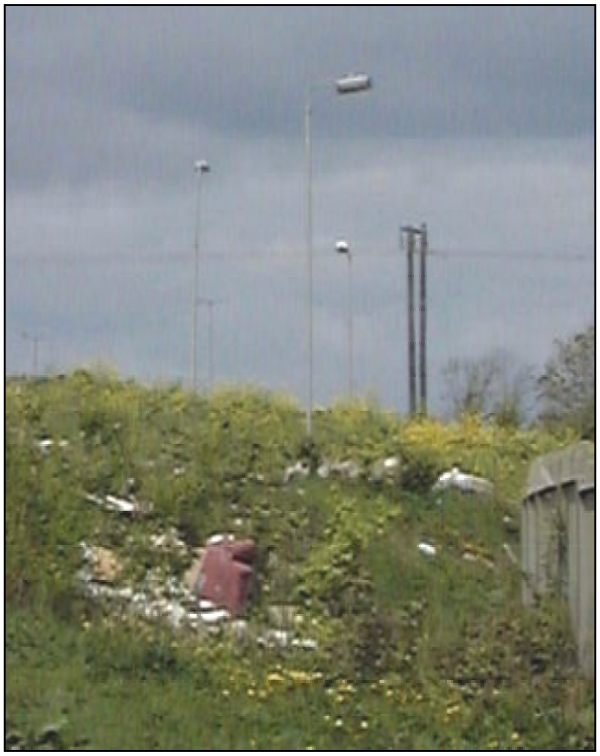
This rating would be given to an area, which contains small amounts of litter as illustrated below.

**Area Cleanliness Rating 3 (Moderately Polluted)**

This is assigned to an area, which contains litter items and quantities of litter which quite obvious as highlighted below.

**Area Cleanliness Rating 4 (Significantly Polluted)**

Areas with significant levels of litter pollution as illustrated below are give a rating of 4.

**Area Cleanliness Rating 5 (Grossly Polluted)**

Areas with gross litter pollution as illustrated below are give a rating of 5