

# **2018 New Jersey Litter Survey**

A Survey of Litter along  
94 Roadways

Conducted for

**New Jersey  
Clean Communities Council, Inc.**

by

**Environmental Resources Planning, LLC**

**Final Report**

**July 2018**



**ER PLANNING**

| Litter Category                      | Percent |
|--------------------------------------|---------|
| Vehicle - Rubber                     | 11.0%   |
| Other Paper - Paper                  | 8.9%    |
| Shrink Wrap - Plastic                | 4.9%    |
| Sweet Snack Packaging - Plastic      | 4.7%    |
| Water Bottles - Plastic              | 3.8%    |
| Unbranded Tissues/Napkins - Paper    | 3.0%    |
| Packs, Matches, Lighters - Composite | 3.0%    |
| Corrugated Boxes - Paper             | 2.9%    |
| Block Construction Foam - Foam       | 2.7%    |
| Cups - Plastic                       | 2.2%    |
| Other Plastics - Hard - Plastic      | 2.1%    |
| Cup Lids - Plastic                   | 2.1%    |
| Straws/Wrappers - Plastic            | 2.1%    |
| Glass - Other                        | 1.9%    |
| Vehicle - Composite                  | 1.8%    |
| Unbranded Retail Bags - Plastic      | 1.7%    |
| Soda Bottles - Plastic               | 1.7%    |
| Beer Cans - Metal                    | 1.6%    |
| Cups - Paper                         | 1.6%    |
| Cups - Foam                          | 1.6%    |
| Vehicle Debris - Plastic             | 1.6%    |
| Salty Snack Packaging - Plastic      | 1.5%    |
| Foil Food Wrappers - Metal           | 1.4%    |
| Sports Drink Bottles - Plastic       | 1.4%    |
| Wine/Liquor Bottles - Plastic        | 1.4%    |
| Clothing - Cloth                     | 1.4%    |
| Construction Materials - Metal       | 1.3%    |
| Newspaper - Paper                    | 1.2%    |
| Tissues - Paper                      | 1.2%    |
| Soda Cans - Metal                    | 0.9%    |
| Ads/Signs/Cards - Paper              | 0.9%    |
| Peanut Foam - Foam                   | 0.9%    |
| Beer Bottles - Glass                 | 0.8%    |
| Bottle Caps/Seals - Plastic          | 0.8%    |
| Branded Retail Bags - Plastic        | 0.8%    |
| Construction - Plastic               | 0.8%    |
| Home Articles                        | 0.8%    |
| Broken Bottles - Glass               | 0.7%    |
| Utensils - Plastic                   | 0.7%    |
| Sweet Snack Packaging - Paper        | 0.6%    |
| Zipper Bags - Plastic                | 0.5%    |
| Construction - Composite             | 0.5%    |
| Non-Retail Leaf/Trash Bags - Plastic | 0.5%    |
| Clamshells - Foam                    | 0.5%    |

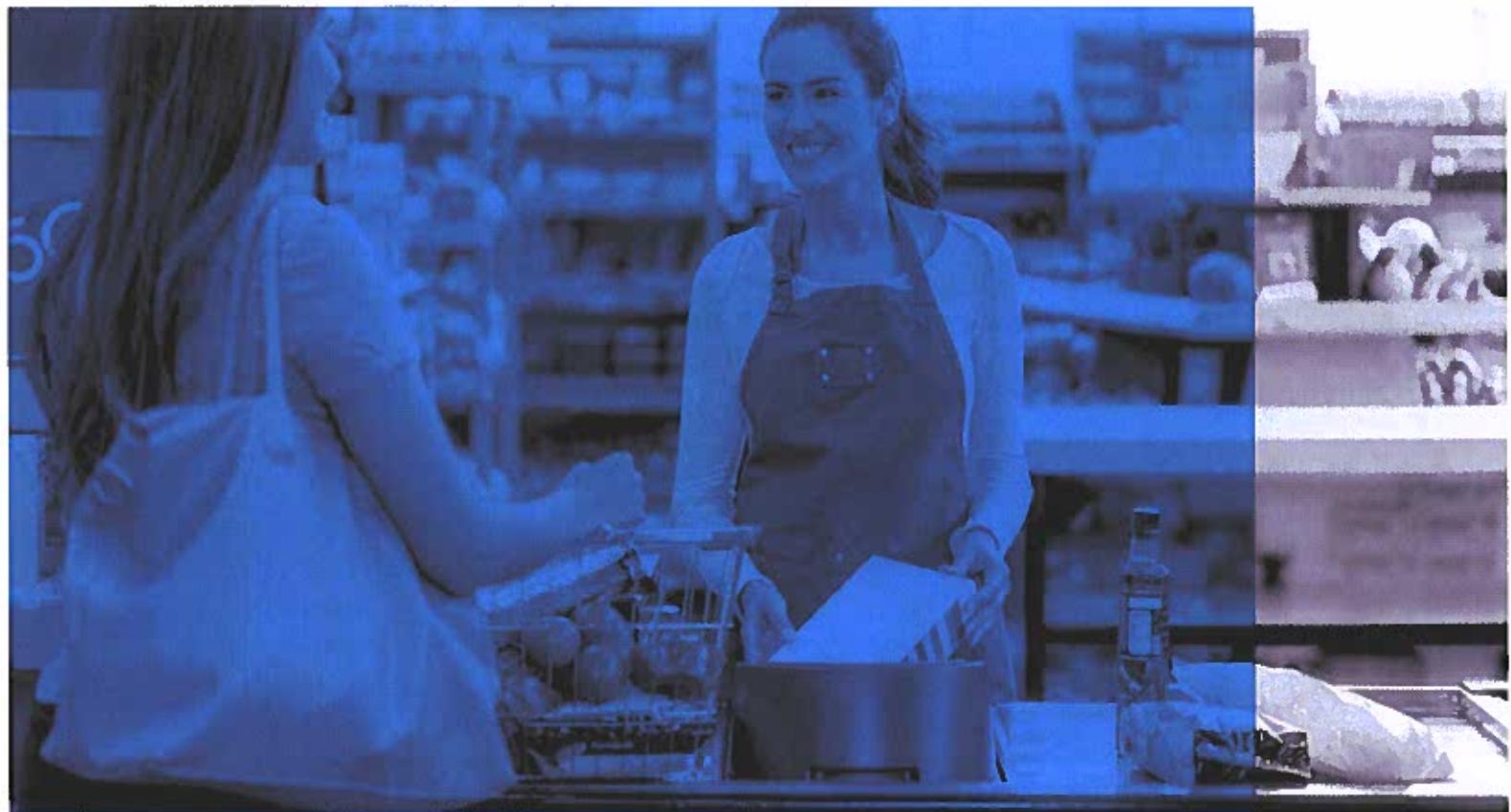
Appendix A - Litter by Item, Material and Percent

## 2018 New Jersey Litter Survey

# 2018 New Jersey Litter Survey

| Litter Category                         | Percent |
|---|---------|
| Vehicle - Metal                         | 0.5%    |
| Sports Drink Bottles - Metal            | 0.4%    |
| Toiletries/Drugs - Composite            | 0.4%    |
| Sweet Snack Packaging - Composite       | 0.4%    |
| Paper Packing - Paper                   | 0.4%    |
| Plates - Paper                          | 0.4%    |
| Fast Food Carrying Bags - Plastic       | 0.4%    |
| Cups/Pieces - Plastic                   | 0.4%    |
| Juice Containers - Plastic              | 0.4%    |
| Large Milk/Juice Containers - Plastic   | 0.4%    |
| Lottery Tickets - Paper                 | 0.4%    |
| Construction - Wood                     | 0.4%    |
| Beverage Cartons - Paper                | 0.3%    |
| Fast Food Carrying Bags - Paper         | 0.3%    |
| Food Jars/Bottles/Cups - Plastic        | 0.3%    |
| Tea Bottles - Plastic                   | 0.3%    |
| Retail - No Brand - Paper               | 0.3%    |
| Straws/Wrappers - Paper                 | 0.3%    |
| Food - Composite                        | 0.3%    |
| Food Wrappers - Paper                   | 0.2%    |
| Napkins - Brand - Paper                 | 0.2%    |
| Non-Clothing Fabric - Cloth             | 0.2%    |
| Clamshells - Plastic                    | 0.2%    |
| Branded Retail Bags - Paper             | 0.2%    |
| Juice Containers - Aseptic              | 0.2%    |
| Games/CDs/Recreational Equipment        | 0.2%    |
| Vehicle Debris - Glass                  | 0.2%    |
| Clamshells - Paper                      | 0.1%    |
| Retail Food/Non-Food/Ice Bags - Plastic | 0.1%    |
| Tea Cans - Metal                        | 0.1%    |
| Wine/Liquor Bottles - Glass             | 0.1%    |
| Boxes - Paper                           | 0.1%    |
| Magazines - Paper                       | 0.1%    |
| Other - Describe                        | 0.1%    |
| Container Lids - Metal                  | 0.1%    |
| Bottle Caps - Metal                     | 0.1%    |
| Aerosol Cans - Metal                    | 0.1%    |
| Six-Pack Rings - Plastic                | 0.1%    |
| Plates - Foam                           | 0.1%    |
| Food Jars/Bottles/Cups - Metal          | 0.1%    |
| Construction - Foam                     | 0.1%    |
| Juice Containers - Composite            | 0.1%    |
| Salty Snack Packaging - Paper           | 0.1%    |
| Construction Debris - Glass             | 0.1%    |
| Carpet - Cloth                          | 0.1%    |
| Non-Foam Peanuts                        | 0.1%    |
| Non-Food Containers - Plastic           | 0.1%    |

| Litter Category                                     | Percent |
|---|---------|
| Conditioned Packaging - Paper                       | 0.0%    |
| Syringes/Drug Paraphernalia - Composite             | 0.0%    |
| Tea Bottles - Glass                                 | 0.0%    |
| Wine/Liquor Cans - Metal                            | 0.0%    |
| Bottle Caps/Seals - Paper                           | 0.0%    |
| Cups - Metal  | 0.0%    |
| Trays - Paper                                       | 0.0%    |
| Books - Paper                                       | 0.0%    |
| Soda Bottles - Glass                                | 0.0%    |
| Plates - Plastic                                    | 0.0%    |
| Juice Cans - Metal                                  | 0.0%    |
| Tea Containers - Aseptic                            | 0.0%    |
| Water Cans - Metal                                  | 0.0%    |
| Water Bottles - Glass                               | 0.0%    |
| Cups - Composite/Other                              | 0.0%    |
| Beverage Cartons - Composite/Other                  | 0.0%    |
| Cups - Foam   | 0.0%    |
| Utensils - Metal                                    | 0.0%    |
| Sweet Snack Packaging - Wood (e.g. Popsicle Sticks) | 0.0%    |
| Salty Snack Packaging - Composite                   | 0.0%    |
| Food Jars/Bottles/Cups - Glass                      | 0.0%    |
| Food Wrappers/Cartons - Plastic                     | 0.0%    |
| Food Wrappers/Cartons - Paper                       | 0.0%    |
| Air-Filled Plastic Cushions - Plastic               | 0.0%    |
| Furniture - Wood                                    | 0.0%    |
| Trays - Plastic                                     | 0.0%    |
| Food - Plastic                                      | 0.0%    |
| Furniture - Wood                                    | 0.0%    |
| Reusabale - Plastic                                 | 0.0%    |
| Non-Retail Leaf/Ttrash Bags- Paper                  | 0.0%    |
| Large Milk/Juice Containers - Aseptic               | 0.0%    |
| Applicances - Metal                                 | 0.0%    |
| Yard Waste - Wood                                   | 0.0%    |
| Ceramic - Other                                     | 0.0%    |



# Environmental and Economic Highlights of the Results of the Life Cycle Assessment of Shopping Bags

RECYC-QUÉBEC December 2017

This document summarizes the results of the environmental and economic life cycle analysis (LCA) of shopping bags ordered by RECYC QUÉBEC and carried out by the Centre international de référence sur le cycle de vie des produits, procédés et services (CIRAIQ).

The objective of the study was to evaluate the potential environmental impacts and costs of the different types of shopping bags present in Quebec.

The results of this study provide a scientific, objective and comprehensive basis on which municipalities considering the banning of conventional plastic bags can make an informed decision.

| Category                        | Type of bag | Features  | Disposabile "or" single-use "bags  | Groceries.  |
|---------------------------------|-------------|---|--|---|
| Conventional                    | Woven PP    | Polypropylene (PP)<br>Plastic # 5                                   | Bags known as "reusable" bags<br>Designed to be used for larger shopping. Generally larger and more robust than disposable bags. | Designed to be used only once to carry                              |
| High-density plastic            | HDPE        | Polyethylene (HDPE)<br>Plastic # 2                                  | Conventional<br>Woven PP   | Conventional<br>Woven PP  |
| Oxodegradable                   | Plastic     | Polyethylene (HDPE)<br>Plastics # 2                                 | Non-woven PP<br>Polypropylene (PP)   | High-density<br>polyethylene (HDPE)<br>Plastics # 2                 |
| Compostable                     | Straps      | Stapless<br>17 microns<br>Made in Canada                            | Cotton   | Stapless<br>20 microns<br>Made in United States                     |
| Low density polyethylene (LDPE) | Plastic # 4 | Plastic # 4<br>50 microns<br>With cut-out handles<br>Made in Québec | Eco-designed bag<br>Polyethylene (PE)  | Plastic # 4<br>50 microns<br>With cut-out handles<br>Made in Québec |
| Thick Plastic                   | Plastic # 1 | Plastic # 1<br>50 microns<br>Unbleached kraft paper                 | Made from 100%<br>(Montéa)   | Plastic # 1<br>50 microns<br>Unbleached kraft paper                 |
| Paper                           |             | Made in the United States<br>from partially recycled<br>paper       | Made from 100%<br>(Montéa)   | Made in Québec<br>from partially recycled<br>paper                  |

The environmental profile of the bag life cycle has been established according to four environmental indicators: human health, ecosystem quality, use of fossil resources and abandonment in the environment.

Nine types of shopping bags identified and grouped into two categories were submitted for study.

## Bag categories and types

## Summary of LCA Results - Disposable Bags

For disposable bags, the results of the study illustrated in the table below tell us about the potential impacts alternative or replacement bags have on the environment compared to the conventional plastic 17 micron HDPE bag. Namely are the possible replacement bags equivalent to or weaker environmentally than those of the conventional 17 micron HDPE bag used just once. The conventional plastic HDPE thin plastic bag is the reference bag (17 microns).

**LCA Results for Disposables:** The bioplastic bag and thick plastic bag have impact scores 2 to 11 times and 4 to 6 times greater respectively than the conventional bag. The paper bag is the least performing bag with 4 to 28 times greater potential impacts than the conventional plastic bag.

### Environmental Performance Among the Five Disposable Bags studied.

|                       | Human Health | Quality of ecosystem | Use of fossil resource | Abandonment of the environment |
|-----------------------|--------------|----------------------|------------------------|--------------------------------|
| Conventional Plastics | ■            | ■                    | ■                      | ■                              |
| Oxodegradable         | ■            | ■                    | ■                      | ■                              |
| Bioplastics           | ■            | ■                    | ■                      | ■                              |
| Thick Plastics        | ■            | ■                    | ■                      | ■                              |
| Paper                 | ■            | ■                    | ■                      | ■                              |

■ Low impact ■ Medium impact ■ High impact

The conventional plastic bag made of thin HDPE is the one with the least environmental impacts among the five disposable bags studied, grouping together the oxodegradable plastic bag, the compostable bioplastic bag, the thick plastic bag and the paper bag. The conventional plastic bag has more environmental impact when abandoned in the environment.

The conventional plastic bag has several environmental and economic advantages. Thin and light, its production requires little material and energy. It also avoids the production and purchase of garbage/bin liner bags since it benefits from a high reuse rate when reused for this purpose (77.7%).

The weakness of this type of bag is related to abandonment in the environment. It's very slow to degrade because of the persistence of plastic (polyethylene). Disposable bags made of source plant materials (such as the compostable bioplastic bag from starch-polyester type and the paper bag) have the advantage of being a limited nuisance when abandoned in the environment.

The oxodegradable bag, on the other hand, does not offer an environmental advantage when compared to its non-degradable equivalent the conventional plastic bag; its life cycle being nearly equal to identical. Except that when it is abandoned in the environment, the oxodegradable bag is subject to an environmental accelerated fragmentation into polyethylene particles (PE) invisible to the naked eye and persistent for a long time in the environment.

Some stores display the thick plastic bag as reusable. In order to make this option more environmentally-friendly than the conventional plastic bag used just once, the thicker plastic bag should be reused between 3 and 6 times to transport groceries.

\*Refer to the Big Shopping Scenario (p. 15) in the full report.

Click here

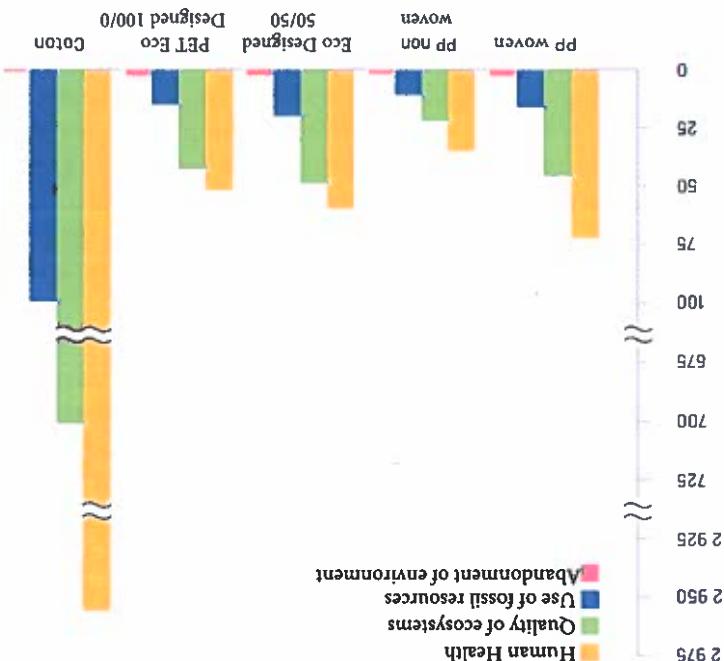
To view the complete report:

The results show that the main cost of the bag's life cycle occurs at the stage of their acquisition by the retailer or consumer. In the case of conventional plastic bags and the oxodegradable bags, these costs are offset by the avoidance of having to purchase bags to manage household waste when a conventional bag is reused for this purpose. The cost to manage bags at the end of their life cycle cost of the bags. In turn, low compared to at the total life are, the convenience bag is reused for this purpose.

What about the cost of shopping bags over their life cycle?

The cotton bag studied is an option that is not recommended because of its significant impact on the "human health" indicator, requiring between 100 and 2,954 uses for its environmental impact to be equivalent to the environmental impacts of the conventional plastic bag.

As an indicator and on the basis of use by week, the reusable bags must be used at least 35 to 75 times so that their impacts on Life Cycle Environmental Indicators are equivalent to or better than those of the conventional plastic bag.



Number of uses needed to be better or equivalent than the conventional plastic bag.

Number of uses needed in order to be better or the scenario and indicator.

PP woven and PP non-woven bags need an equivalent number of uses to equal the thin plastic bag ranging from 16 to 98 and 11 to 59, respectively, depending on the scenario and indicator.

PP disposesable bags. LCA Results for reusable: The advantage of being generally larger and more robust than disposables. LCA Results for reusable: The Quebec has been added. All these bags have the

study, a prototype eco-designed bag (the Credo bag made of 100% recycled PET and manufactured in Quebec) has been added. All these bags have the

polypropylene (PP) bags, non-woven, fabric study, a prototype eco-designed bag (the Credo bag made of 100% recycled PET and manufactured in Quebec) has been added. All these bags have the

The most common reusable bags in Quebec are woven

**Summary of LCA Results Reusable bags**



Ministry of Environment  
and Food of Denmark  
Environmental  
Protection Agency

# Life Cycle Assessment of grocery carrier bags

Environmental Project  
no. 1985

February 2018

| Environmental Indicator       | Carrier bags providing lowest impacts | CARRIER BAGS PROVIDING HIGHEST IMPACTS |
|-------------------------------|---------------------------------------|--|
| Ozone depletion               | LDPE                                  | Human toxicity, non-cancer effects     |
| Photochemical ozone formation | LDPE                                  | Photochemical ozone formation          |
| Ionizing radiation            | LDPE                                  | Human toxicity, cancer effects         |
| Particulate matter            | LDPE                                  | Terrestrial acidification              |
| Terrestrial eutrophication    | LDPE                                  | Freshwater eutrophication              |
| Marine eutrophication         | PP, LDPE                              | Marine eutrophication                  |
| Ecosystem toxicity            | LDPE                                  | Resource depletion, fossil             |
| Resource depletion, abiotic   | PP, LDPE                              | Resource depletion, renewable          |
| Water resource depletion      | LDPE, biopolymer                      | Water resource depletion               |
| All indicators                | LDPE simple, reused as waste bag      | LDPE rigid handle, reused as waste bag |
| Climate Change                | LDPE average, reused as waste bin bag | LDPE simple, reused as waste bag       |

Table IV. Calculated number of primary reuse times for the carrier bags in the rows, for their most preferable disposal option, necessary to provide the same environmental performance of the average LDPE carrier bag, reused as a waste bin bag before incineration. The results refer to the reference flow provided in Table I.

|                               |                                       |  |
|-------------------------------|---------------------------------------|--|
| Climate Change                | Carrier bags providing lowest impacts | Carrier bags providing highest impacts |
| Ozone depletion               | LDPE                                  | Paper unbleached, biopolymer, LDPE     |
| Photochemical ozone formation | LDPE                                  | Human toxicity, non-cancer effects     |
| Ionizing radiation            | LDPE                                  | Terrestrial acidification              |
| Particulate matter            | LDPE                                  | Freshwater eutrophication              |
| Terrestrial eutrophication    | LDPE                                  | Marine eutrophication                  |
| Marine eutrophication         | PP, LDPE                              | Resource depletion, fossil             |
| Ecosystem toxicity            | LDPE                                  | Resource depletion, abiotic            |
| Resource depletion, fossil    | PP, LDPE                              | Water resource depletion               |
| Water resource depletion      | LDPE, biopolymer                      | Water resource depletion               |
| All indicators                | LDPE simple, reused as waste bag      | LDPE rigid handle, reused as waste bag |

Table III. Carrier bags providing the lowest environmental impacts for all the environment indicators considered. The order in which the bags are listed corresponds to the ranking of their LCA results starting from the lowest impact. Only the three lowest scores are listed. The bags providing the lowest impacts for all the environment indicators are listed. The results refer to the reference flow provided in Table I.

Impact categories presented higher reuse times than others. Lastly, the very high number of reuse times scored by cotton and composite bags is primarily due only to the ozone depletion impact category, for which the cotton production dataset provides larger impacts than the reference LDPE carrier bag.



United States  
Environmental Protection  
Agency



# Advancing Sustainable Materials Management: 2015 Tables and Figures

Assessing Trends in Material Generation, Recycling,  
Composting, Combustion with Energy Recovery  
and Landfilling in the United States

July 2018

| Products                              | 1960                     | 1970                     | 1980                     | 1990                     | 2000                     | 2005                     | 2010                     | 2014                     | 2015                     | Percent of Total Generation | (In percent of total generation) |
|---------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------------|----------------------------------|
| <b>Durable Goods</b>                  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                             |                                  |
| (Detail in Table 14)                  | 11.3%                    | 12.1%                    | 14.4%                    | 14.3%                    | 16.0%                    | 17.8%                    | 19.7%                    | 20.5%                    | 20.6%                    |                             |                                  |
| Nondurable Goods                      | 19.7%                    | 20.7%                    | 22.7%                    | 25.0%                    | 26.3%                    | 25.1%                    | 21.2%                    | 20.0%                    | 19.8%                    |                             |                                  |
| (Detail in Table 18)                  | (Detail in Table 18)     |                          |                          |                          |                          |                          |                          |                          |                          |                             |                                  |
| Glass Packaging                       | Glass Packaging          |                          |                          |                          |                          |                          |                          |                          |                          |                             |                                  |
| Beer and Soft Drink Bottles*          | 1.6%                     | 4.6%                     | 4.4%                     | 2.7%                     | 2.3%                     | 2.6%                     | 2.3%                     | 2.1%                     | 2.0%                     |                             |                                  |
| Wine and Liquor Bottles               | 1.2%                     | 1.6%                     | 1.0%                     | 3.2%                     | 0.8%                     | 0.1%                     | 1.4%                     | 0.9%                     | 0.7%                     | 0.7%                        |                                  |
| Other Bottles & Jars                  | 4.2%                     | 3.7%                     | 1.6%                     | 1.9%                     | 1.2%                     | 1.1%                     | 0.8%                     | 0.6%                     | 0.8%                     | 0.8%                        |                                  |
| Total Glass Packaging                 | 7.0%                     | 9.8%                     | 9.2%                     | 5.7%                     | 4.5%                     | 4.1%                     | 3.7%                     | 3.6%                     | 3.5%                     |                             |                                  |
| Beverage Cans                         | 0.7%                     | 1.3%                     | 0.3%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Beer and Soft Drink Cans              | 0.7%                     | 1.3%                     | 0.3%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Cans                                  | 4.3%                     | 2.9%                     | 1.9%                     | 0.2%                     | 1.2%                     | 1.1%                     | 0.8%                     | 0.9%                     | 0.7%                     | 0.7%                        |                                  |
| Other Steel Packaging                 | 0.3%                     | 0.2%                     | 0.2%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Total Steel Packaging                 | 5.3%                     | 4.4%                     | 2.4%                     | 1.4%                     | 1.2%                     | 0.9%                     | 1.1%                     | 0.9%                     | 0.9%                     | 0.9%                        |                                  |
| Beer and Soft Drink Cans              | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans    |                                  |
| Brewery Cans                          | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Aluminum Packaging                    | 5.3%                     | 4.4%                     | 2.4%                     | 1.4%                     | 1.2%                     | 0.9%                     | 1.1%                     | 0.9%                     | 0.9%                     | 0.9%                        |                                  |
| Beer and Soft Drink Cans              | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans | Beer and Soft Drink Cans    |                                  |
| Other Cans                            | 0.2%                     | 0.2%                     | 0.3%                     | 0.3%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                        |                                  |
| Foil and Closures                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                        |                                  |
| Total Aluminum Packaging              | 0.2%                     | 0.5%                     | 0.5%                     | 0.5%                     | 0.5%                     | 0.5%                     | 0.5%                     | 0.5%                     | 0.5%                     | 0.5%                        |                                  |
| Paper & Paperboard Pkg                | Paper & Paperboard Pkg   |                          |                          |                          |                          |                          |                          |                          |                          |                             |                                  |
| Other Paper Packaging                 | 3.3%                     | 3.1%                     | 0.6%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Wrapping Papers                       | 2.2%                     | 1.2%                     | 0.6%                     | 0.4%                     | 0.4%                     | 0.4%                     | 0.4%                     | 0.3%                     | 0.4%                     | 0.4%                        |                                  |
| Bags and Sacks                        | 4.4%                     | 4.0%                     | 0.2%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Other Paperboard Packaging            | 2.5%                     | 2.1%                     | 2.4%                     | 2.2%                     | 2.2%                     | 2.1%                     | 2.1%                     | 2.1%                     | 2.1%                     | 2.1%                        |                                  |
| Folding Cartons                       | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                        |                                  |
| Gable Top/Aseptic Cartons             | 0.5%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                        |                                  |
| Other Paper & Paperboard Pkg          | 8.3%                     | 10.5%                    | 11.3%                    | 11.5%                    | 12.4%                    | 12.2%                    | 11.6%                    | 11.8%                    | 11.9%                    |                             |                                  |
| Corrugated Boxes                      | Corrugated Boxes         |                          |                          |                          |                          |                          |                          |                          |                          |                             |                                  |
| Other Paper & Paperboard Pkg          | 16.0%                    | 17.7%                    | 17.4%                    | 17.7%                    | 16.4%                    | 15.6%                    | 15.0%                    | 15.1%                    | 15.1%                    |                             |                                  |
| Total Paper & Board Pkg               | 3.3%                     | 3.1%                     | 0.6%                     | 0.5%                     | 0.5%                     | 0.7%                     | 0.6%                     | 0.7%                     | 0.7%                     | 0.6%                        |                                  |
| Subtotal Other Paper & Paperboard Pkg | 3.3%                     | 3.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Plastics Packaging                    | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                        |                                  |
| HDPE Natural Bottles                  | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                     | 0.2%                        |                                  |
| Other Containers                      | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Bags and Sacks                        | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Wraps                                 | 0.6%                     | 0.5%                     | 0.7%                     | 0.7%                     | 0.6%                     | 0.6%                     | 0.6%                     | 0.6%                     | 0.6%                     | 0.6%                        |                                  |
| Subtotal Bags, Sacks, and Wraps       | 0.8%                     | 1.0%                     | 1.2%                     | 1.7%                     | 1.8%                     | 1.6%                     | 1.3%                     | 1.56%                    | 1.6%                     | 1.6%                        |                                  |
| Other Plastics Packaging              | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                     | 0.1%                        |                                  |
| Total Plastics Packaging              | 0.1%                     | 0.1%                     | 0.5%                     | 1.0%                     | 1.2%                     | 1.3%                     | 1.39%                    | 1.49%                    | 1.5%                     | 1.55%                       |                                  |
| Wood Packaging                        | 2.3%                     | 1.7%                     | 2.6%                     | 3.9%                     | 3.5%                     | 3.6%                     | 3.9%                     | 3.7%                     | 3.7%                     | 3.7%                        |                                  |
| Other Materials                       | 2.3%                     | 1.7%                     | 2.6%                     | 3.9%                     | 3.5%                     | 3.6%                     | 3.9%                     | 3.7%                     | 3.7%                     | 3.7%                        |                                  |
| Food Trimmings                        | 13.8%                    | 10.6%                    | 11.5%                    | 12.6%                    | 13.0%                    | 14.2%                    | 14.9%                    | 15.1%                    | 15.1%                    | 15.1%                       |                                  |
| Food                                  | 62.0%                    | 68.8%                    | 71.8%                    | 70.3%                    | 73.4%                    | 72.9%                    | 70.9%                    | 70.2%                    | 70.1%                    | 70.1%                       |                                  |
| Total Composted Wastes                | 31.1%                    | 36.0%                    | 34.7%                    | 31.0%                    | 31.2%                    | 30.1%                    | 30.1%                    | 30.1%                    | 30.1%                    | 30.1%                       |                                  |
| Miscellaneous Inorganic Wastes        | 1.5%                     | 1.5%                     | 1.5%                     | 1.4%                     | 1.4%                     | 1.5%                     | 1.5%                     | 1.5%                     | 1.5%                     | 1.5%                        |                                  |
| Total Other Wastes                    | 38.0%                    | 31.2%                    | 28.2%                    | 29.7%                    | 26.9%                    | 27.1%                    | 29.1%                    | 29.8%                    | 29.9%                    | 29.9%                       |                                  |
| Other Wastes                          | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                   | 100.0%                      |                                  |

Table 23. Products Generated\* in the Municipal Waste Stream, 1960 to 2015  
 (With Detail on Containers and Packaging)

Neg. = Less than 5,000 tons or 0.05 percent.

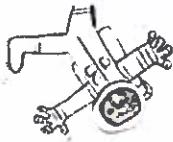
\* Includes materials before materials recycling, composting, combustion with energy recovery or landfilling. Details may not add to totals due to rounding.

† Includes carbonated drinks and non-carbonated water, teas, flavored drinks and ready-to-drink alcoholic coolers and cocktails.

‡ Other than food products.

§ Includes materials before materials recycling, composting, combustion with energy recovery or landfilling. Details may not add to totals due to rounding.

\*\* Includes milk, juice, and other products packaged in glass, plastic, or metal containers.

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# Are Plastic Bag Bans Garbage?

April 9, 2019 8:04 AM ET

GREG ROSALSKY



Fiona Goodall/Getty Images

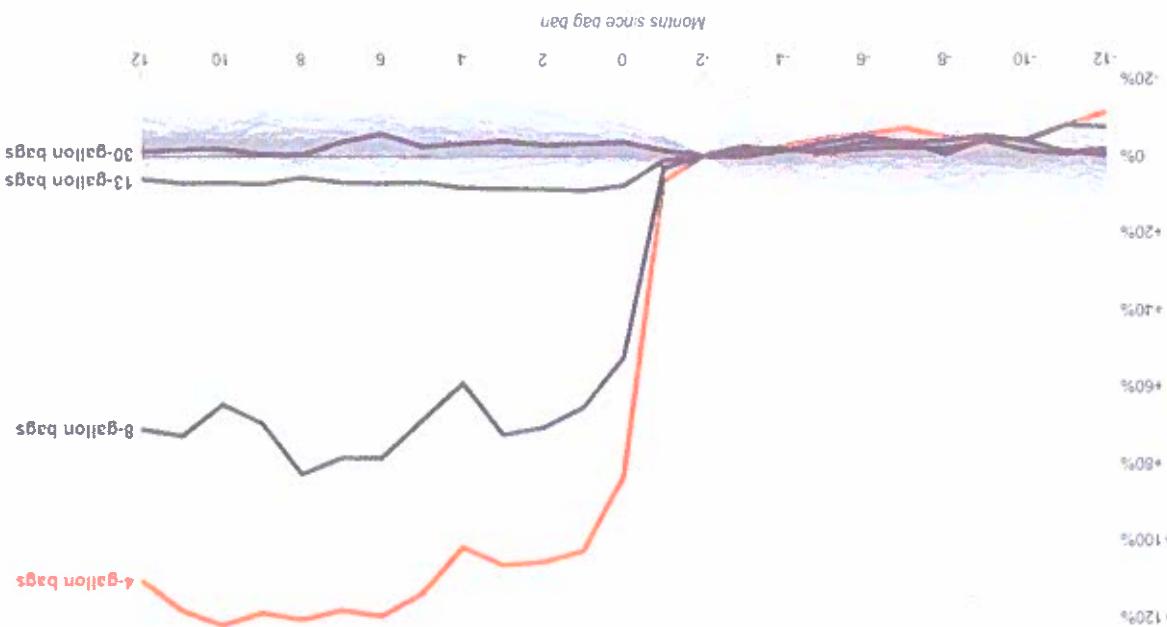
**Editor's note:** This is an excerpt of Planet Money's newsletter. You can [sign up here](#).

It was only about [40 years ago](#) that plastic bags became standard at U.S. grocery stores. This also made them standard in sewers, landfills, rivers and [the Great Pacific Garbage Patch](#). They clog drains and cause floods, litter landscapes and kill wildlife. The national movement to get rid of them is gaining steam — with [more than 240 cities and counties](#) passing laws that ban or tax them since 2007. [New York](#) recently became the second U.S. state to ban them. But these bans may be hurting the environment more than helping it.

University of Sydney economist Rebecca Taylor started studying bag regulations because it seemed as though every time she moved for a new job — from Washington, D.C., to California to Australia — bag restrictions were implemented shortly after. "Yeah, these policies might be following me," she jokes. Taylor [recently published](#) a study of bag regulations in California. It's a classic tale of unintended consequences.

Taylor found these bag bans did what they were supposed to: People in the cities with the bans used fewer plastic bags, which led to about 40 million fewer pounds of plastic trash per year. But small, 4-gallon bags, still needed bags. "What I found was that sales of garbage bags actually liming trash bins, still needed bags. "What I found was that sales of garbage bags actually skyrocketed after plastic grocery bags were banned," she says. This was particularly the case for 30-gallon bags. Taylor found that sales of 30-gallon bags increased by 120 percent in cities with the bans.

Source: Taylor, 2019. Bag leakage: The effect of dispensable canayout bag regulations on unregulated bags. *Regulation & Governance* 13(1). DOI: 10.1111/1467-9329.12181. The University of Chicago Booth School of Business. The authors draw from these data to estimate the effects of the regulation on the use of paper bags. The results are presented in the following figure. Note that the y-axis is labeled "Percent change in paper bag sales" and the x-axis is labeled "Months since bag ban".



## Trash Bag Sales Jumped After Grocery Bag Bans

Before California banned plastic shopping bags statewide in late 2016, a wave of 39 California cities and counties implemented the policy themselves. Taylor and colleagues compared bag use in cities with bans with those without them. For six months, they spent weekends in grocery stores tallying the types of bags people carried out (she admits these weren't her wildest weekends). She also analyzed these stores' sales data.

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## Paper or Plastic?

Plastic haters, it's time to brace yourselves. A [bunch of studies](#) find that [paper bags](#) are actually worse for the environment. They require cutting down and processing trees, which involves lots of water, toxic chemicals, fuel and heavy machinery. While paper is biodegradable and avoids some of the problems of plastic, Taylor says, the huge increase of paper, together with the uptick in plastic trash bags, means banning plastic shopping bags increases greenhouse gas emissions. That said, these bans do reduce nonbiodegradable litter.

### **Are tote bags killing us?**

What about reusable cloth bags? We know die-hard public radio fans love them! They've got to be great, right?

Nope. They can be even worse.

A [2011 study](#) by the U.K. government found a person would have to reuse a cotton tote bag 131 times before it was better for climate change than using a plastic grocery bag once. The Danish government recently did [a study](#) that took into account environmental impacts beyond simply greenhouse gas emissions, including water use, damage to ecosystems and air pollution. These factors make cloth bags even worse. They estimate you would have to use an organic cotton bag *20,000 times* more than a plastic grocery bag to make using it better for the environment.

That said, the Danish government's estimate doesn't take into account the effects of bags littering land and sea, where plastic is clearly the worst offender.

### **Stop depressing me. What should we do?**

The most environment-friendly way to carry groceries is to use the same bag over and over again. According to the Danish study, the best reusable ones are made from polyester or plastics like polypropylene. Those still have to be used dozens and dozens of times to be greener than plastic grocery bags, which have [the smallest carbon footprint](#) for a single use.

As for bag policies, Taylor says a fee is smarter than a ban. She has [a second paper](#) showing a small fee for bags is just as effective as a ban when it comes to encouraging use of reusable bags. But a fee offers flexibility for people who reuse plastic bags for garbage disposal or dog walking.

Taylor believes the recent legislation passed in New York is a bad version of the policy. It bans only plastic bags and gives free rein to using paper ones ([counties have the option](#) to impose a 5-cent fee on them). Taylor is concerned this will drive up paper use. The best policy, Taylor says, imposes a fee on both paper and plastic bags and encourages reuse.

This bag research makes public radio's love for tote bags awkward, doesn't it? It might be weird, though, if we started giving out plastic grocery bags.

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# RECYCLE

empty, clean & dry plastic  
bags & wraps at store drop-offs

**NOT in Curbside Recycling**

Also look for any  
packaging with this  
How2Recycle label



**NO candy bar wrappers • chip bags • six-pack rings • degradable bags • prewashed salad bags**

←  
Carryout  
bags too!

Find drop-off locations at  
[PlasticFilmRecycling.org/drop-off](http://PlasticFilmRecycling.org/drop-off)

 Plastic Film  
Recycling



# Recycle empty, clean & dry plastic film, bags & wraps at participating drop-offs.

## Did you know?

You can recycle plastic film packaging items like air pillows, product overwraps, bubble wrap, and dry cleaning bags along with your plastic carryout bags at participating drop-off locations.

## How to Recycle

Find your local drop-off location at [PlasticFilmRecycling.org/drop-off](http://PlasticFilmRecycling.org/drop-off). Put all your clean and dry plastic bags and film packaging in a single bag and return to a local store drop-off.

## Remember to:

- make sure bags are clean and dry
- remove any labels and tape

## What to Recycle

If it's stretchy it can be recycled.  
If it's crinkly or tears like paper  
it cannot be recycled.



Or look for the  
How2Recycle label

## DO NOT INCLUDE:

These are made of different plastics that cannot be recycled with the bags and film.

- degradable bags
- frozen food bags
- salad bag mix bags
- chip bags
- candy wrappers
- six-pack rings

## Want to do more?

The Wrap Recycling Action Program (WRAP) is working with communities, consumers and other organizations to support the 5 Habits to Handle Film Responsibly:

- 1 REDUCE WASTE
- 2 REUSE FILM
- 3 RECYCLE RIGHT
- 4 PREVENT LITTER
- 5 BUY RECYCLED



For more information on film recycling, the 5 Habits to Handle Film Responsibly, and more, visit: [PlasticFilmRecycling.org](http://PlasticFilmRecycling.org)

**PlasticFilm  
Recycling**



**5**  
**HABITS**  
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RESPONSIBLY

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