



2019 NYC Reuse Sector Report

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Acronym Directory

DCA: NYC Department of Consumer Affairs

DCAS: NYC Department of Citywide Administrative Services

DSNY: NYC Department of Sanitation

GHG: Greenhouse Gases

GPC: Global Product Classification System

MSW: Municipal Solid Waste

NAICS: North American Industry Classification System

NYCCMR: NYC Center for Materials Reuse (City College of New York)

NYCEM: NYC Emergency Management

RIC: Reuse Impact Calculator

US EPA: US Environmental Protection Agency

WARM: US Environmental Protection Agency's Waste Reduction Model

WCS: Waste Characterization Study

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Grand Bazaar Flea Market | Manhattan

Introduction

Reuse and Waste Reduction

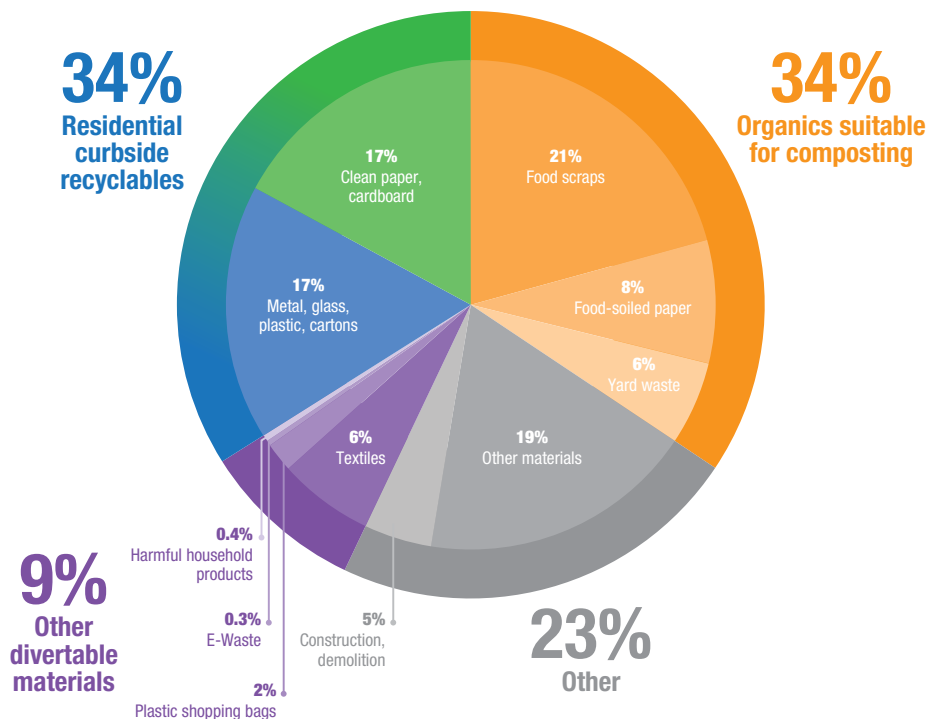
New York City’s residents discard 3.1 million tons of waste every year. For the average New York City household, that amounts to around 1,990 pounds of material thrown away in one year.¹

Reducing the amount of waste sent to landfill has well-documented benefits, such as avoiding the costs of garbage collection and transportation² and the associated environmental pollution.³ To understand the composition of the City’s residential waste stream and inform planning for sustainable waste management, the New York City Department of Sanitation (DSNY) has performed waste characterization studies (WCS) since the late 1980s.

NYC Residential Waste Profile in 2017

Waste characterization studies help to identify categories of products in the waste stream for which there are already recycling programs in place—for instance, the most recent WCS, performed in 2017, estimated that approximately 34% of materials are designated recyclables and another 34% are organic materials suitable for composting. Waste characterization studies also draw attention to categories of products that could still have value if they were made available for reuse instead of being discarded. Six percent of the waste stream is composed of clothing, linens, shoes, and accessories. Other items that could be suitable for reuse include discarded furniture, working appliances, and other housewares.

2017 Composition of Residential Curbside Aggregate Discards



Reuse has great potential to reduce waste and mitigate the environmental impacts associated with landfilling.

Reuse, defined as “the use of a product more than once in its same form for the same purpose or for different purposes”⁴ has great potential to reduce waste and to mitigate the environmental impacts associated with landfilling. In addition, reusing items instead of discarding them conserves the energy and natural resources needed to produce new goods.⁵

As such, reuse is a vital part of DSNY’s strategy to send zero waste to landfills, as set forth in the City’s sustainability blueprint, OneNYC.⁶ DSNY and its donateNYC program support activities encouraging and enabling New Yorkers to donate and reuse items.⁷ DonateNYC provides a searchable map of close to 1,000 locations where residents can donate and procure gently used items and refashionNYC provides convenient in-building donation bins for clothing, shoes, and textiles.⁸

DSNY also supports the reuse sector by gathering and analyzing data on the size, distribution, and capacity of the materials reuse organizations in New York City and presenting research findings in Reuse Sector Reports such as this one.

New York City is home to one of the largest, most varied, and most active reuse sectors in the country that shows consistent overall growth. New York City’s reuse sector encompasses a wide range of organizations, businesses, and government agencies. While for many, the first type of venue that comes to mind upon hearing the word “reuse” may be a thrift shop or vintage boutique, repair services, rental outlets, community-based donation drives, and online materials exchanges contribute significantly to the practice of reuse by New Yorkers.

Reuse Sector Assessments in NYC

This 2019 NYC Reuse Sector Report is an update of the data presented in the 2017 NYC Reuse Sector Report.⁹

The 2017 Reuse Sector Report followed two previous surveys focused on quantifying materials reuse in New York City. The aim of DSNY’s series of reuse sector assessments has been to provide a census overview of reuse activity in New York City and to expand knowledge about the enterprises that contribute to product reuse and waste prevention in the City. Such research allows DSNY to better leverage this growing sector in order to support waste diversion goals.

Past reuse sector assessments have laid the groundwork for meaningful developments in waste diversion through reuse. In 1995, DSNY conducted its first poll of reuse outlets in New York City, gathering information from dozens of entities about the needs of the sector, seeking to answer questions such as which parts of the sector are growing most quickly and how residents learn about and access reuse options. The needs identified in this survey led to the development of a reuse hotline that later became the Stuff Exchange web portal, which has today grown into the donateNYC program’s web-based



The 2017 NYC Reuse Sector Report

map and exchange tools. These tools connect thousands of businesses and residents interested in reuse to information and opportunities every day.

In 2008, DSNY's first expanded Reuse Sector Assessment surveyed a broader swath of reuse organizations and businesses with the goal of gauging not only the needs and the reach, but this time also the material makeup of the reuse sector. This assessment uncovered a critical need for data standards that could be adopted by the entire sector to quantify the impacts of their reuse activities. In response to these findings, DSNY and the New York City Center for Materials Reuse (NYCCMR), based at the City College of New York, developed the Reuse Data Management Program, which aimed to create best practices and replicable standards for materials reuse data, as well as the proprietary Reuse Impact Calculator (RIC), a tool that calculates the environmental impacts of materials reuse in New York City.

The 2017 Reuse Sector Report aimed to identify the size of the entire reuse sector by estimating the total number of existing enterprises in NYC whose activities involve materials reuse. This report, using a new, rigorous research and verification process, identified 2,257 businesses and organizations operating in 3,654 locations throughout the five boroughs of New York City that engage in donations, reuse, repair, and rental services.¹⁰ The data presented were from both nonprofit and for-profit entities operating as storefront organizations, recurring drives, or virtual reuse outlets. Comparing the different operations types and their geographical distribution enabled donateNYC to develop detailed outreach strategies and ensure that as many reuse entities as possible were registered for the program's searchable reuse and donations map, which to date is approaching 1,000 locations distributed throughout most ZIP codes in New York City.¹¹

While the main body of this 2019 Reuse Sector Report presents a direct update of the sector survey data presented in the 2017 report, it also contains a supplement outlining new research methods for estimating the capacity of the reuse sector. These approaches aim to quantify the flow of items through the reuse sector, bringing us one step closer to calculating how much reusable product this sector could accommodate. In future, this understanding could inform best practices for leveraging materials reuse to promote a closed product loop in New York City, keeping resources in use for as long as possible instead of going directly to landfill.

Following up: Reuse Opportunities

The 2017 Reuse Sector Report identified eight areas of reuse with potential for growth. Over the past two years, DSNY has made progress in each area as follows.

The role of repair within the reuse sector. The 2017 Report revealed the prevalence of repair outlets in New York, representing close to 40% of reuse locations. As follow up, the 2017 donateNYC Annual Conference, “Repair, Reuse, Collaborate: Developing NYC’s Circular Economy,” highlighted repair as a reuse solution on par with donation and shopping secondhand and included a headline presentation on the contributions of repair to a zero waste city.¹² In addition, for the first time, a repair station was included at donateNYC’s 2018 Earth Day Fest showcasing household item repair by FIXUP, an organization that has diverted over 10,000 pounds of items from landfill through pop-up repair events.¹³ Most recently, DSNY launched its first-ever ReFashion Week, a series of events bringing together businesses, nonprofits, and residents to challenge the waste created by fast fashion through reuse. ReFashion Week featured an event run by esa New York that combined a clothing swap with mending stations and upcycling workshops, with the goal of empowering residents to reduce textile waste by equipping them with repair skills.^{14 15}

Food Rescue. The 2017 Report focused only on durable non-food related goods, but identified food rescue as an area of growth for donateNYC. Subsequently, Local Law 176 was enacted on September 9, 2017, requiring DSNY to research food waste, food insecurity, and food rescue operations in New York City, and to develop an online platform for food donations.¹⁶ Findings revealed that if only 25% of the edible food discarded annually by commercial food establishments were rescued, it would help mitigate 53% of identified food insecurity in NYC. The existing food rescue and redistribution network already addresses 45% of feeding needs with another 9% addressed through NYC’s Emergency Food Assistance Program, but there remains a significant gap. Informed by a review of existing food donation and rescue technology platforms, and organizations expert in food rescue such as City Harvest, Food Bank for New York City, Rescuing Leftover Cuisine, and Feeding America, DSNY developed a food donation portal for businesses and nonprofit organizations. The donateNYC food portal, released on March 8, 2019, connects donors of safe, edible food to recipient organizations through a matching algorithm based on food type and donor-recipient distance. Two factors were crucial in the design of the portal to complement the ongoing, successful work of food rescue organizations – no minimum donation weight, and prioritizing matches between donors and recipients in the same neighborhood. These two factors together minimize the need for large transportation vehicles or substantial storage

Recipients

- Community Centers
- Religious Organizations
- Senior Centers

Businesses

- Bakeries
- Caterers
- Food Distributors
- Restaurants
- Supermarkets

Food donations, Locally.

donateNYC now matches businesses with extra food to groups that feed hungry New Yorkers. From couches to clothing and now carrots, donateNYC is New York City's easy way to give goods, find goods and do good. Help us keep useful things from going to waste — while helping New Yorkers in need.

Connect at [nyc.gov/donate!](https://nyc.gov/donate)

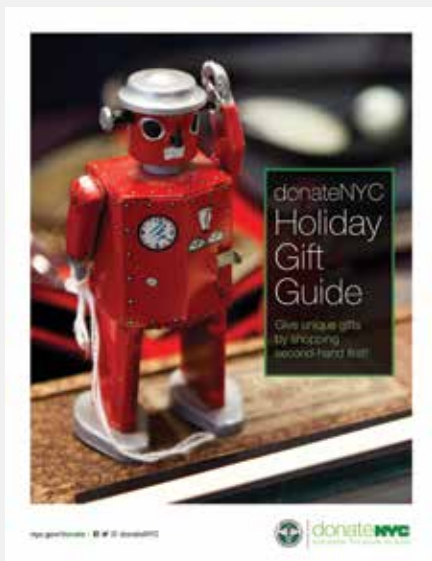
nyc.gov/donate | call 311
@ donateNYC

donateNYC

The donateNYC food portal launched in March 2019.



An ad campaign for donateNYC appeared in subway cars throughout the transit system in Spring 2018.



The 2018 donateNYC Holiday Gift Guide encouraged New Yorkers to buy secondhand holiday gifts at nonprofit organizations working on the donation model.

facilities, both capacity challenges that can prevent smaller community feeding organizations from accessing food donation opportunities. The goal of the portal is to create lasting, hyper-local donation connections between neighboring donors and recipients and spread further positive effects throughout communities.

Sharing economy. The 2017 Report recommended researching the current role and future potential of rental and sharing in NYC. DonateNYC has piloted working with established sharing economy hubs, such as public libraries, to distribute information about the benefits of reuse and to tie product sharing to waste reduction goals. Libraries, for example, serve a dual purpose as a sharing program and a donation outlet. These venues have been prioritized for registration on the donateNYC map, and many have been added over the last two years.

The "donation model." The 2017 Report underscored the importance of in-kind donations to support the missions of nonprofit organizations that serve millions of New Yorkers each year. DSNY has increased its public engagement efforts over the last two years, culminating in several cooperative campaigns to collectively raise the profile of donateNYC's nonprofit Partners and increase their impact. These campaigns included public reuse and donation events coordinated among several Partners, augmented messaging about the annual collection of discarded clothing at the NYC Marathon by Goodwill and the New York Road Runners, a secondhand holiday gift guide campaign that was featured in widely-read news publications and television programs, as well as a city-wide subway poster campaign promoting the donateNYC mobile app. The donateNYC website was expanded to promote seasonal opportunities for donation, such as the annual guide to back-to-school donation drives and the map of donation locations for prom or graduation wear.^{17 18}

Disaster response planning. The 2017 Report described the role of the nonprofit reuse sector in disaster donation management including donateNYC's collaboration with NYC Emergency Management (NYCEM) to manage unsolicited donations during and after disasters. To improve coordination and reduce the waste that can result from well-meaning, but unsolicited donations, a disaster-activated goods exchange is being developed on the donateNYC website to allow organizations responding to a disaster to receive only the large-volume donations they need, while a disaster-activated map will list donation locations that are accessible and actively accepting or distributing approved donations following disaster. These tools, to be launched in late 2019, will allow gather data and inform future disaster response strategies.

Distribution of reuse outlets throughout the City. The 2017 Report revealed a disproportionate concentration of reuse outlets in Manhattan and Brooklyn. To identify demand for reuse and convenient opportunities for those residents, donateNYC staff conducted an analysis of donations and reuse inquiries received from City’s public information hotline, 311. Staff identified patterns such as which areas of the City place the most calls, whether those calls are about donating or acquiring donated goods, what types of materials are most frequently called about, how time of day and time of year impact frequency of calls, and whether callers have access to the Internet and donateNYC’s searchable map. In response to these findings, staff targeted outreach to find reuse organizations that service high call-density areas to add them to the database of reuse locations. Using this method of targeted outreach, nearly every ZIP code in New York City has had at least one reuse location registered with donateNYC, which makes staff more readily able to answer future 311 calls from those areas and gives additional visibility to those reuse outlets.

New technology. The 2017 Report set a goal to simplify reuse via technology. Over the last two years, donateNYC has optimized its materials exchange, expanded the searchable map, added the food donation portal and is developing tools to streamline disaster donations. Together, this suite of online and mobile platforms will increase both the types of items New Yorkers can donate or receive secondhand and the number of opportunities for engaging in reuse.

Reuse and exchange of surplus goods. The 2017 Report identified surplus goods as another source to target for waste reduction through redistribution. Since 2017, DSNY has worked with NYCEM and the NYC Department of Citywide Administrative Services (DCAS) to pilot a new way for City agencies to relinquish surplus goods. NYCEM regularly rotates and refreshes its Emergency Supply Stockpile (ESS) of perishable humanitarian supplies to keep New York City prepared for disasters. These three agencies coordinated to donate supplies that were nearing their ESS rotation deadlines to vetted nonprofit organizations providing valuable social services using the donateNYC program. Between July 1, 2017 and June 30, 2018, DSNY was able to redistribute 652.6 tons of perishable supplies such as baby formula, boxed water, and over-the-counter medicine packs to nonprofit organizations providing feeding and medical programs—instead of taking the risk that valuable humanitarian supplies may expire and go to landfill. This collaboration has continued since its pilot year and has set a sustainable model for other City agencies to consider when taking stock of their surplus.



DonateNYC’s searchable map connects New Yorkers with hundreds of locations throughout the five boroughs to give or find secondhand goods.



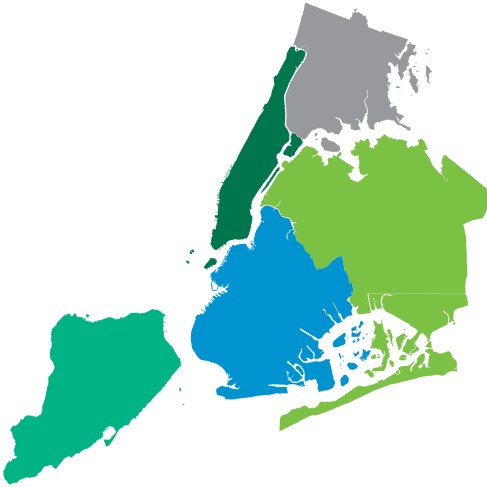
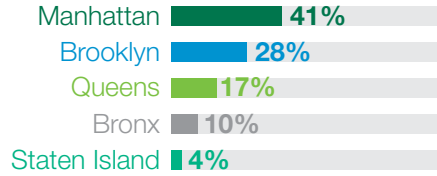
The donateNYC exchange connects businesses looking to donate surplus and gently-used goods with nonprofits and small businesses in need of supplies.



Recycle-A-Bicycle | Brooklyn

Reuse Sector Assessment

Reuse Outlets by Borough



2,755 businesses and organizations, in **4,085** locations throughout the City currently engage in donations, reuse, repair, and rental services.

In total, the 2019 Reuse Sector Assessment identified 2,755 businesses and organizations actively involved in donations, reuse, repair, and rental services in New York City. These 2,755 reuse entities operate in 4,085 locations throughout the City. They include but are not limited to thrift stores, flea markets, public libraries, online classifieds, and food banks that provide residents with outlets where they can buy, donate, rent, and repair products in NYC. The total number of reuse entities in NYC increased by 22%, from 2,257 in 2017 to 2,755 in 2019. This increase in the reuse sector in NYC is discussed in more detail later in this report.

Methodology and Definitions

The methodology employed in the 2019 Reuse Sector Report is largely identical to that described in the 2017 report.¹⁹ One major difference is that the 2019 methodology is based primarily on NYC Department of Consumer Affairs (DCA) licenses to identify reuse entities, while the 2017 methodology relied more on the North American Industry Classification System (NAICS) codes. Since NAICS codes are updated every 5 years, the existing and new reuse entities in 2019 were identified only through DCA licenses to ensure the most accurate and up-to-date data regarding the size of the reuse sector in NYC.

Organizations included in the 2017 Reuse Sector Report were cross-referenced with DCA licenses to determine if they were still active (an out-of-business organization was indicated by an expired DCA license). New reuse entities, defined as organizations created after July 2017, were identified via DCA licenses and incorporated into the NYC reuse sector size reported here. Similar to the 2017 methodology, all reuse organizations identified via DCA licenses were verified for activity status and type of reuse operation through a combination of email correspondence, individual phone calls, and supplementary internet search.

Definition of Reuse

For the reuse sector assessment, the process of reuse is defined as the use of a product more than once (often multiple times) in its original form, for the same purpose or for a different purpose,²⁰ by:

- selling or giving away items, or donating items to charity or a community group;²¹
- renting or sharing products, which reduces the need for manufacturing new products;
- extending the useful life of products through repair instead of discarding and replacing them with new products; or
- food rescued from entities that process, distribute, or serve food that can potentially be donated.

Reuse Outlets Surveyed

This report defines New York City reuse entities as organizations or businesses that:

- redistribute or actively facilitate the redistribution of used or surplus products from New York City residences, businesses, nonprofit organizations, or government agencies, for the purpose of reuse;
- operate a venue or website accessible to the general public, where used goods can be purchased or received free of charge for the purpose of reuse;
- provide repair services to restore products that otherwise are no longer usable to like-new conditions; or
- operate a venue or website accessible to the general public where products can be rented or shared.

This assessment is limited to the businesses and organizations that engage in the reuse, repair, and rental of products within the five boroughs of New York City. In addition, it focuses on outlets facilitating the reuse of residential products, or products that, if not reused, would end up as residential waste. For the first time in this 2019 report, food rescue organizations are also included in the reuse sector, represented by organizations such as City Harvest, Food Bank for New York City, and Rescuing Leftover Cuisine.

Retail Outlets	Repair Outlets	Rental Outlets	Social Services and Reuse Drives
Flea markets and consignment shops	Tailors or sewing and alterations businesses; clothing repair services offered at dry cleaners and laundromats	Clothing rental	Food banks, food drives, and food rescue entities
Thrift stores and vintage shops	Shoe repair	Furniture rental (for personal use only; entities offering furniture rental for events are excluded)	Clothing and accessory drives and drop off sites
Furniture shops; antique shops	Jewelry and watch repair	Appliance rental shops (lease centers are excluded)	Local churches that host events for collecting donations.
Used bookstores	Upholstery and furniture repair shops	Libraries	Community centers that use donated items to provide resources for community members.
Electronic stores carrying mostly secondhand items (e.g. cell phones, TVs, computers), though generally not limited to secondhand	Furnishing repairs (e.g. lamp repair shops)	Media (CDs, DVDs, Records) rental stores	
Used appliance stores	Electronic repair shops (e.g. cell phone and computer repair shops)	Bike sharing and rental	
Musical instrument stores	Appliance repair services (only businesses with stores or websites)	Musical instruments rental	
	Bike repair shops		
	Musical instruments repair (only businesses with stores or websites)		

Electronics continue to be the most common product reused throughout New York City, handled by **22%** of reuse entities.



Lower East Side Ecology Center Electronics Warehouse, Brooklyn

Exclusions

- Businesses handling products that if discarded would not be disposed of as residential waste.
- Outlets not engaged in reuse activities as defined in this survey, such as dry cleaners that do not offer garment alterations.
- Tool repair and rental outlets, because of the inability to ascertain if these products are being repaired for personal/residential or professional/industrial use.
- Donation bins placed on private properties, because they cannot be accessed by the general public, and because it cannot be determined if products are reused or diverted directly to recyclers.
- Pawn shops, because they are associated more with cash loans than with reuse.
- Salvage enterprises that divert used products directly to recyclers (often outside the United States).²² These enterprises are outside the scope of the assessment because their activities do not extract value from products for local reuse. Some reuse enterprises surveyed do engage in selling to salvage markets, particularly textile recyclers and scrap-metal dealers; however, the primary operational focus of these enterprises is the reuse of products.

Products

Products included in this reuse sector assessment correspond to the products identified by the U.S. Environmental Protection Agency (EPA) as items that are found in the municipal waste stream that are also commonly reused. These are:

- Appliances
- Art Supplies
- Baby/Children’s products
- Books & Media
- Building materials
- Clothing
- Electronics
- Food
- Furniture
- Housewares & Collectibles
- Musical instruments
- Personal Accessories
- Shoes
- Sports equipment
- Textiles (non-clothing)
- Toys/Games
- Miscellaneous

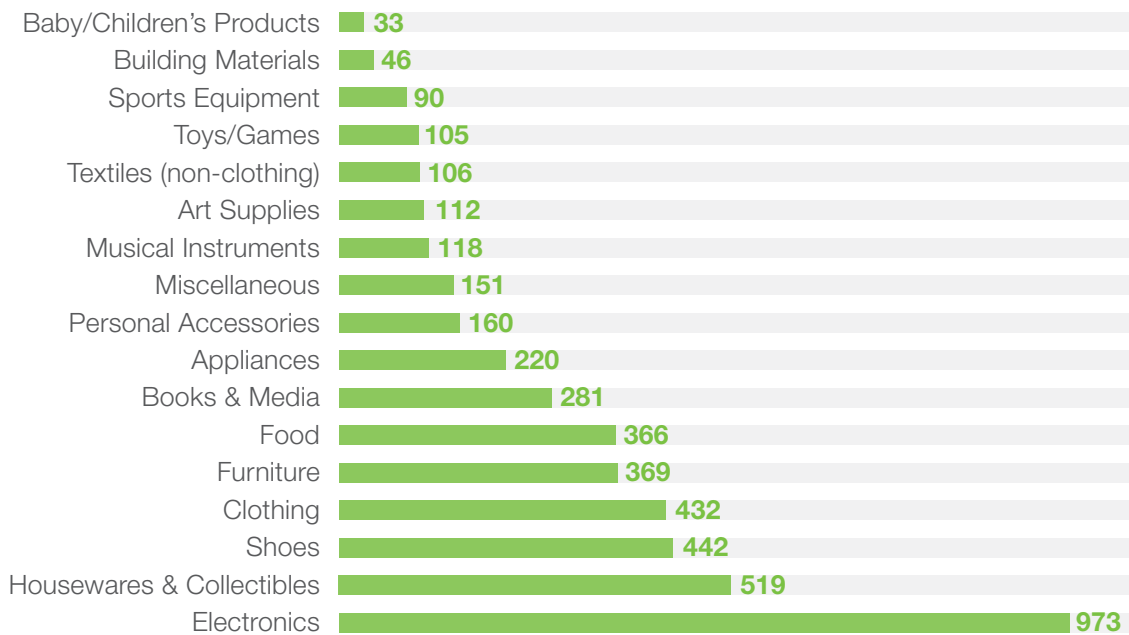


For definitions of each category, please see “Product Categories Assessed” on page 42 of the appendix to this report.

Reuse by Product

Figure 1 shows the 2019 breakdown of reuse businesses and organizations in NYC by products handled. The values next to each bar indicate the number of reuse entities that handle each type of product. For example, 973 reuse outlets in NYC surveyed for this assessment identified themselves as primarily handling electronics. These 973 reuse entities account for approximately 22% of the total number of reuse entities in NYC.

Figure 1 Breakdown of Reuse Entities in NYC Based on Products Handled

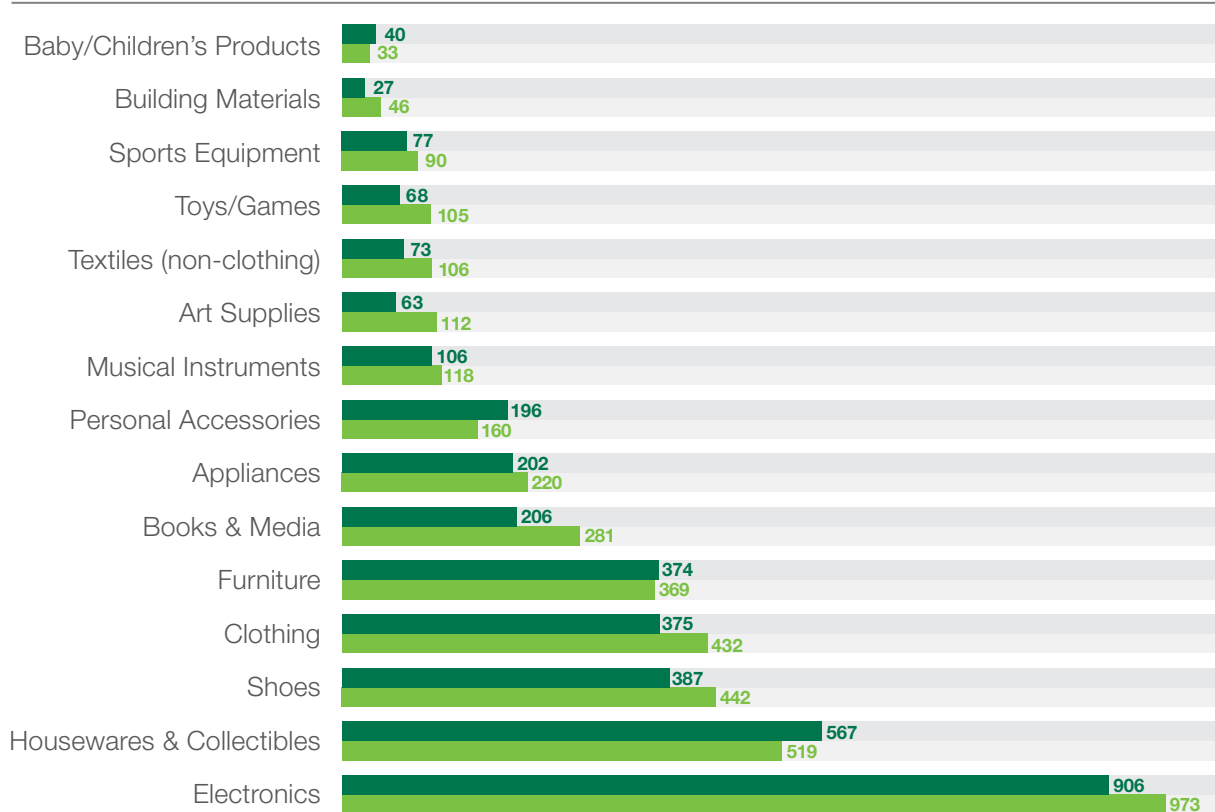


The most prevalent type of product handled by reuse entities in NYC is currently electronics. The next most prevalent product category is housewares & collectibles, accounting for approximately 11% of all reuse entities in NYC, followed by shoes and clothing, which each account for about 10% of the reuse entities.

The breakdown of reuse entities handling different product classes in 2019 was compared to the same data from 2017 to assess the shift in products handled by NYC reuse businesses and organizations. Figure 2 compares the current distribution of reuse entities by products handled to the data presented in the 2017 Reuse Sector Report.¹

Figure 2 Breakdown of Reuse Entities in NYC Based on Products Handled

■ 2017 ■ 2019



This comparison shows a few small shifts in the distribution of products reused in NYC since the 2017 assessment but overall, the distribution of items handled remains the same. Electronics continue to be the most common product reused, potentially because of electronic items' higher relative value per item, followed by housewares and collectibles.

Reuse by Platform

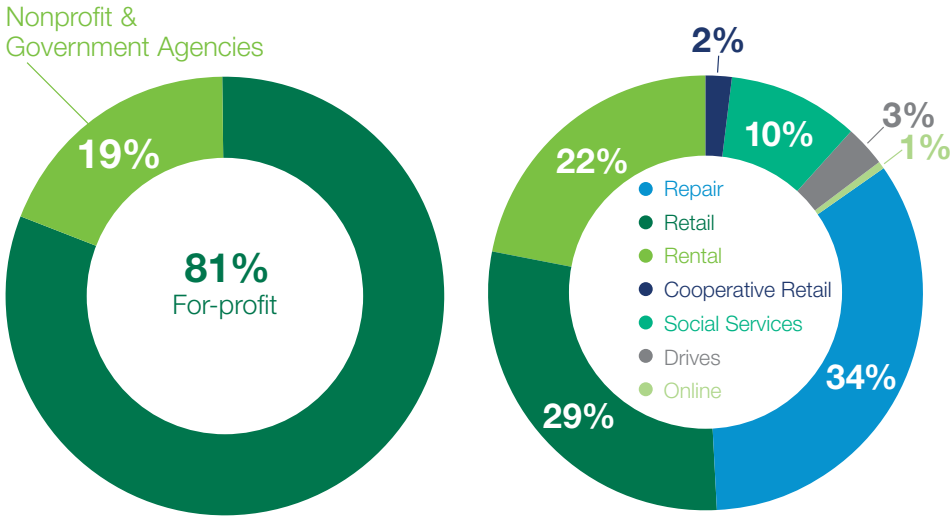
The main types of platforms for reuse activities in New York City can be described as:

- Retail
- Rental and Product Sharing
- Repair
- Cooperative Retail
- Reuse Drives
- Social Services
- Online and Virtual Reuse Outlets

Figure 3 shows the breakdown of the reuse sector in NYC between for-profit and nonprofit based on total number of reuse entities (not total number of locations). Figure 4 shows the percentage breakdown of NYC’s reuse sector by reuse activity platform. Figure 4 is based on total number of reuse entity locations, as an organization with multiple branches may provide different services at different locations.

Figure 3 For-profit and Nonprofit Reuse Entities in NYC

Figure 4 Reuse Activity Platforms in NYC



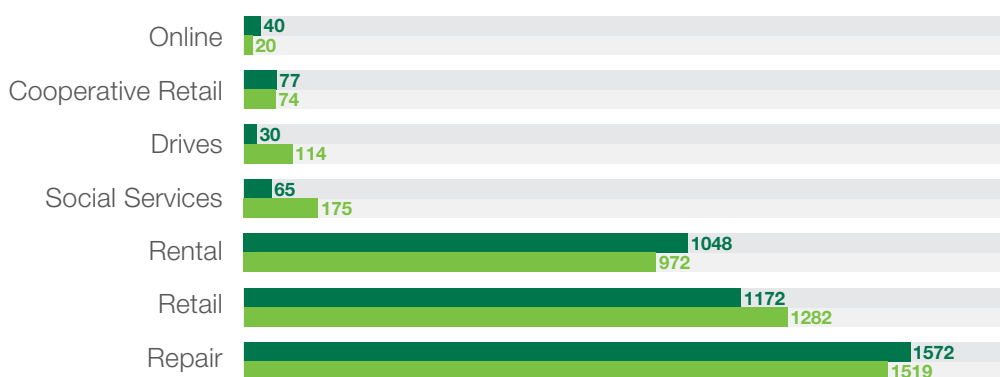
Currently, 81% of reuse entities in NYC are for-profit businesses and 19% are nonprofit organizations and government agencies. The distribution of for-profit and nonprofit entities engaged in reuse has significantly shifted since the 2017 assessment, which showed that NYC’s reuse sector was composed of 95% for-profit businesses and 5% nonprofit organizations and government agencies.

The 14% shift toward nonprofit reuse entities shown in this report may be due more to improvements in DSNY’s data collection methods since 2017 and less to actual legal status changes across the sector. Since the 2017 assessment, DSNY has made a concerted effort to increase membership in the donateNYC Partnership program, which works exclusively with nonprofit reuse organizations. As this Partnership has grown, DSNY has learned from its new members and has become aware of more nonprofit reuse entities in the City that are not accessible through public databases, such as those used to gather data for this report. The research team collaborated with the outreach team to refine its data collection by developing strategies to gather more such “local knowledge” data.

In terms of platform breakdown, about 11% of the identified entities provide more than one type of service; about 180 of the total 2,755 reuse entities in NYC offer both retail and repair services. The most predominant reuse activity platform is repair, accounting for 34% of the total reuse sector in NYC, followed by retail at 29% and rental & product sharing at 22%.

Currently, **81%** of reuse entities in NYC are for-profit businesses and **19%** are nonprofit organizations or government agencies.

Figure 5 Comparison of Reuse Activity Platforms in 2017 and 2019 ■ 2017 ■ 2019



Housewares & Collectibles, Electronics, Furniture, Clothing, and Books & Media are the top five item categories handled by retail-based reuse entities in NYC.

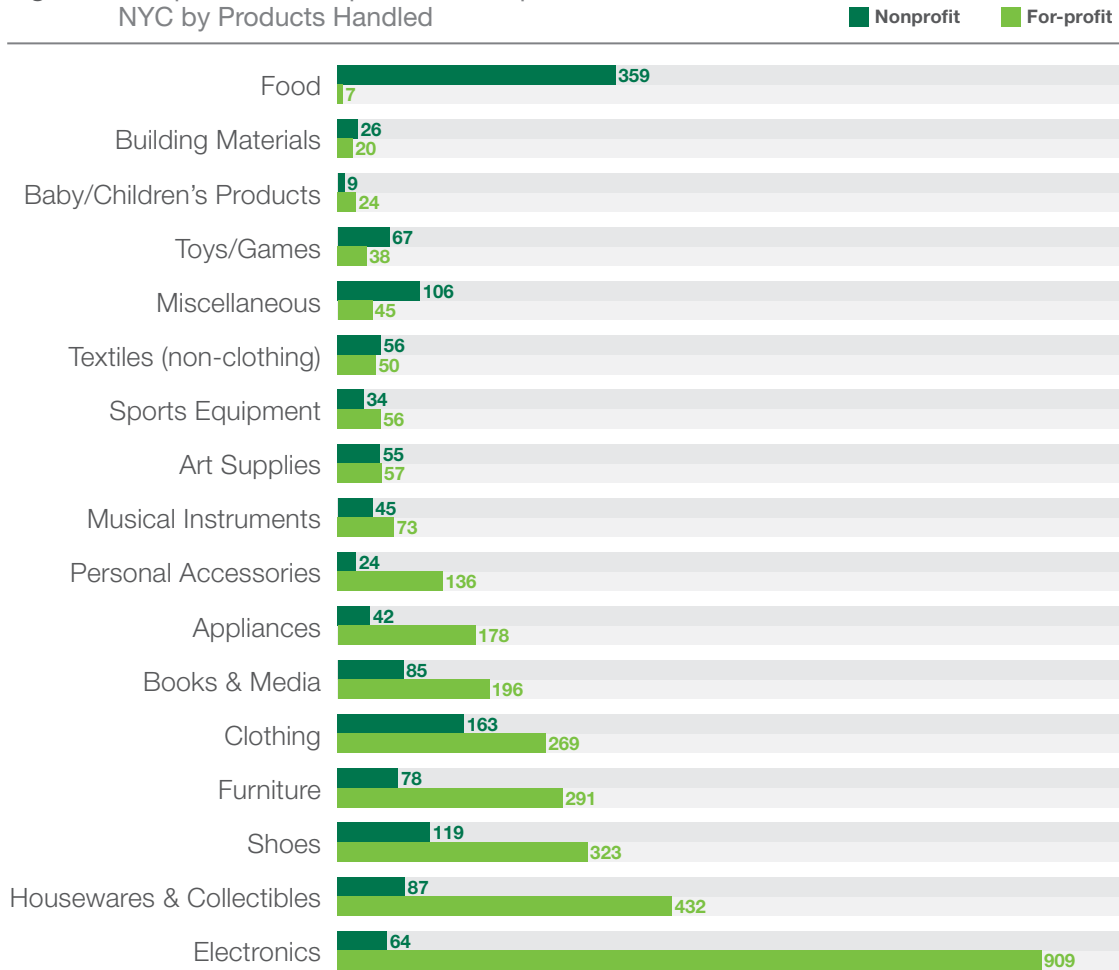
Figure 5 compares the current distribution of reuse activity platforms in NYC to the data presented in the 2017 Reuse Sector Report. This two-year comparison shows that the distribution of reuse platforms in NYC has not significantly shifted since the 2017 assessment. The most common reuse platforms in NYC are still repair, retail, and rental. There was a 2% decrease in repair and a 3% decrease in rental, while there was a 2% increase in retail from 2017 to 2019.

While the overall distribution of reuse platforms across the city has not changed, the comparison shows a notable increase in both social services (up by about 9%) and reuse drives (showing an increase of almost 3%). This again may be due to the research team’s increased interaction with “local knowledge”-based nonprofit organizations, which often provide social services and engage in donation and distribution drives, highlighting the importance of on-the-ground information gathering in addition to reviews of large data sets.

Since the publication of the 2017 Reuse Sector Report, one of DSNY’s research goals has been to gain detailed quantitative insight into NYC’s reuse sector, both for-profit and nonprofit, as a way to begin quantifying the total capacity of the reuse sector. To outline some initial insights, Figure 6 compares the breakdown of the for-profit and nonprofit reuse sectors by products handled and Figure 7 compares the two sectors by reuse activity platform. Figure 6 is based on number of reuse entities and Figure 7 is based on number of reuse entity locations.

Figure 6 shows that the majority of for-profit reuse entities (29%) handle electronics, while less than 5% of nonprofit reuse entities do so. After electronics, the second most prevalent product handled by for-profit entities is housewares & collectibles (near 15%), while less than 5% of nonprofits handle this category. By contrast, the prevalent product type in the nonprofit reuse sector is food, handled by 25% of the total number of nonprofit reuse entities in NYC (but only about 1% of the for-profit sector), followed by clothing at 11%. Clothing is the one product category that is handled by a comparable percentage of entities on both sides.

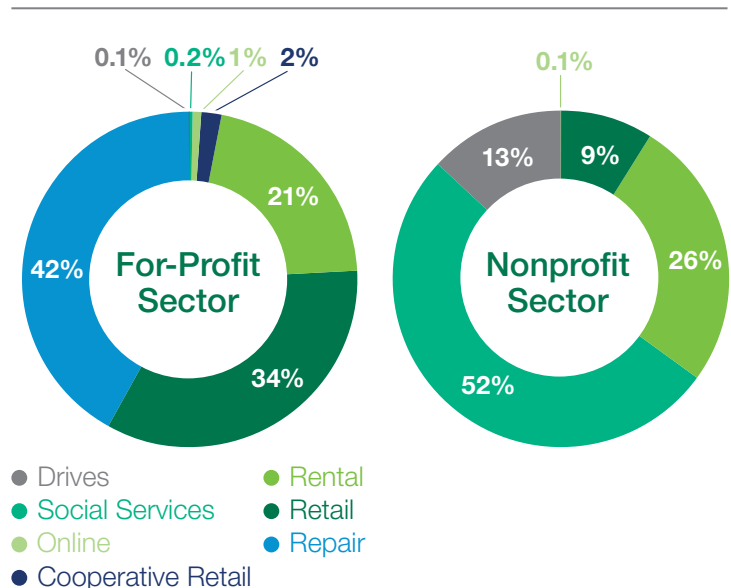
Figure 6 Comparison of For-profit and Nonprofit Reuse Sectors in NYC by Products Handled



In terms of breakdown by reuse activity platform, Figure 7 shows that the majority of for-profit reuse entities in NYC fall under repair (42%), followed by retail (34%), whereas social services account for the majority of the nonprofit reuse sector (52%), followed by rental (26%).

A comparison of Figures 6 and 7 suggests a connection between product category handled and type of reuse activity platform. The most prevalent product type handled by for-profit reuse entities is electronics and the most prevalent for-profit reuse platform is repair. Meanwhile, the most prevalent products handled by nonprofits are food and clothing and the predominant platform is social services. It cannot be definitively determined from the data whether product type handled determines reuse activity platform or vice versa but it is clear that there is a connection.

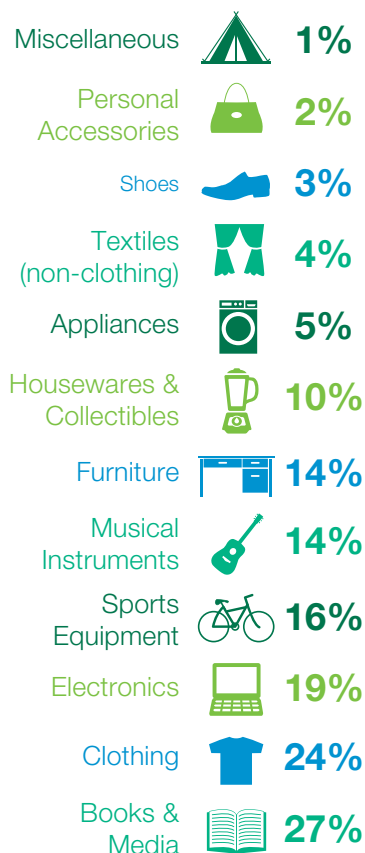
Figure 7 Comparison of the For-profit and Nonprofit Reuse Sectors in NYC by Platform Type





Books and Media account for the largest category of items handled by rental and product sharing entities, thanks to the large number of public libraries in New York City.

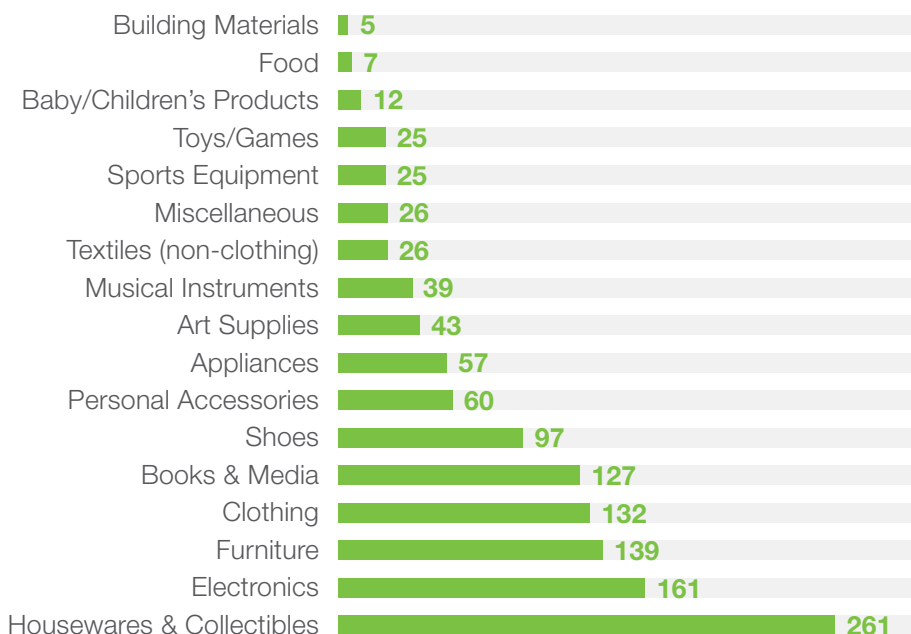
Figure 9 Distribution of Rental Entities in NYC Reuse Sector by Products Handled



Retail

Businesses and organizations that sell secondhand products include thrift shops, vintage boutiques, and antique stores. This category also includes stores that sell new products alongside secondhand items, such as stores that sell new cell phones as well as refurbished phones. Figure 8 shows the breakdown of the reuse retail sector in NYC by product type handled.

Figure 8 Distribution of Retail Entities in NYC Reuse Sector by Products Handled



This reuse sector assessment identified 730 entities (for-profit and nonprofit) engaged in retail activities, spread across more than 1,285 locations. Almost 1,919 locations are in Manhattan. Approximately 21% of retail reuse entities in NYC handle housewares & collectibles, followed by electronics at 13% and clothing and furniture each at approximately 11% of the total retail reuse entities in NYC.

Rental and Product Sharing

This study identified 116 NYC entities in approximately 972 locations that provide services for rental and product sharing of consumer products for use by NYC residents. It should be noted that the rental and product sharing entities surveyed for this report include both online services and brick-and-mortar locations.

Books & media account for approximately 19% of the products handled by rental outlets in the NYC reuse sector followed by clothing at 17%. Libraries are prime examples of rental and sharing reuse entities for books, while online entities like Rent the Runway are examples of clothing rental outlets.

Repair

In general, the most common outlets that provide repair services for consumer products are electronics repair outlets, shoe repair shops, tailoring services, and appliance services. This sector assessment identified 1,359 entities in approximately 1,519 locations in the City that provide repair services. The majority of repair entities are located in Manhattan (32%) and Brooklyn (29%).

Electronics dominate the repair sector in NYC, accounting for approximately 54% of the total number of repair entities. This is followed by shoes and then appliances, which account for 13% and 10% of the total number of repair entities, respectively.

Cooperative Retail

Cooperative retail includes entities such as consignment stores and flea markets that provide the opportunity for individuals or businesses to sell secondhand products. This study identified 60 entities engaged in cooperative retail in 74 locations in all five boroughs of the City.

The majority of products handled by cooperative retail entities are housewares & collectibles, clothing, and shoes, each accounting for around 14% each of the total number of cooperative retail entities.



Electronics repair establishments account for approximately 54% of the total number of repair entities in NYC.

Figure 10 Distribution of Repair Entities in NYC Reuse Sector by Products Handled

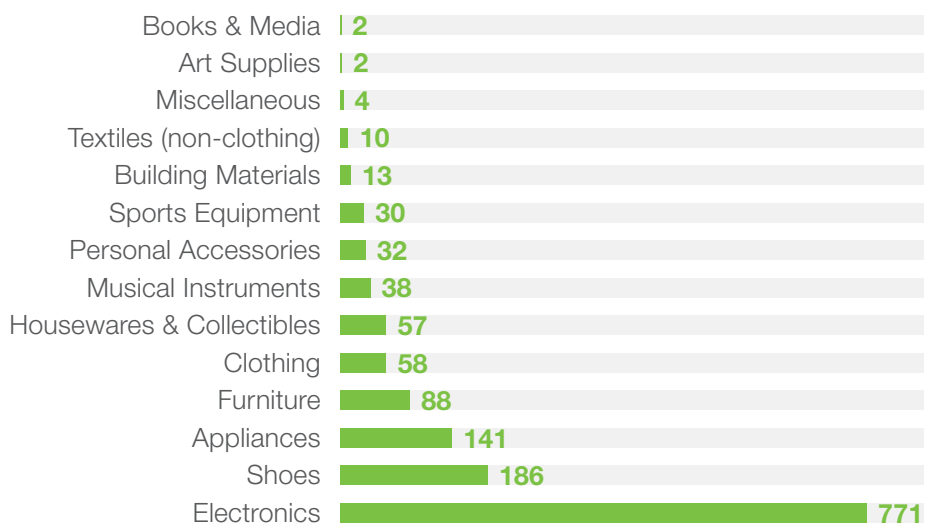
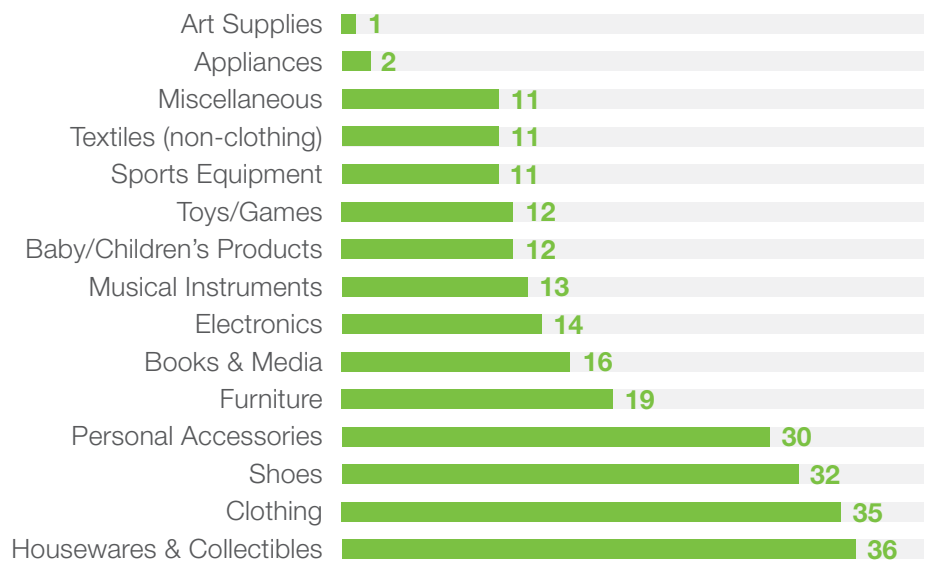


Figure 11 Distribution of Cooperative Retail Entities in NYC Reuse Sector by Products Handled



Reuse Drives

Reuse drives are defined as points of collection of secondhand products, primarily through the placement of collection bins across the City (except for collection bins placed on private property). The 2019 reuse sector assessment identified 108 drives in 114 locations throughout NYC. Seasonal drives collect products through bins in temporary locations across the City for limited periods of time. Not all collection points for these seasonal reuse drives were included in this assessment. Despite

being temporary, seasonal drives have the potential to collect large amounts of items; one well-known local example is the New York Cares Coat Drive, the City’s largest outerwear drive, which has been in operation every winter for 30 years.

Clothing and shoes each make up approximately 12% of the reuse drive entities followed by miscellaneous at 10% and food at 9%.

Social Services

Social service programs include entities, mostly nonprofit organizations, that collect and distribute secondhand and surplus products free of charge as part of social missions. Social service programs do not have retail outlets. The majority of these organizations collect donations from the general public or private companies and redistribute them to other nonprofit organizations or to individuals enrolled in their services. This reuse sector assessment identified 436 social service organizations operating in NYC that accept and distribute secondhand products.

Food is handled by more than one-third of the social service programs in NYC’s reuse sector. Clothing and shoes cumulatively account for approximately an additional 20% of social service reuse programs.

Figure 12 Distribution of Drives in NYC Reuse Sector by Products Handled

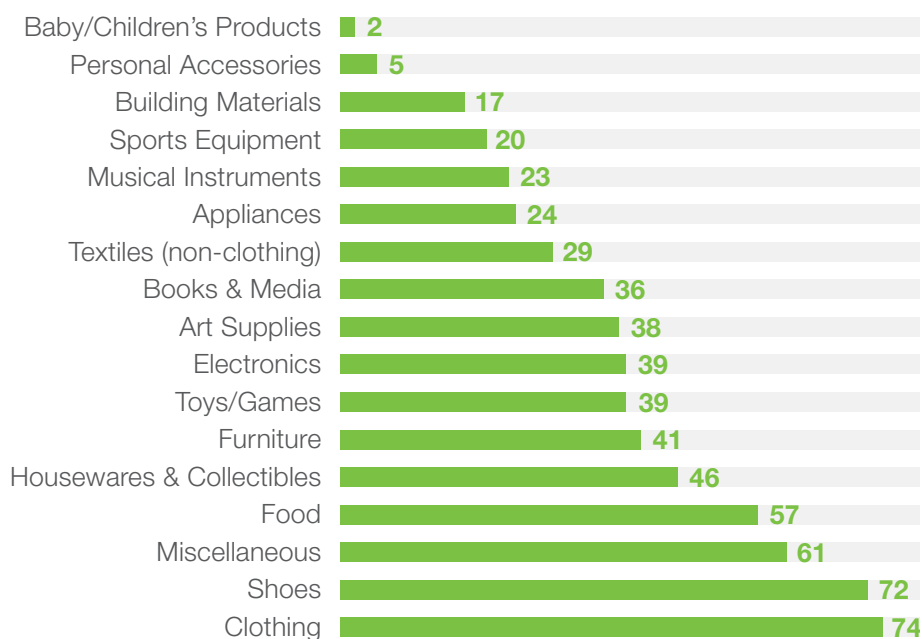


Figure 13 Distribution of Social Services Programs in NYC Reuse Sector by Products Handled

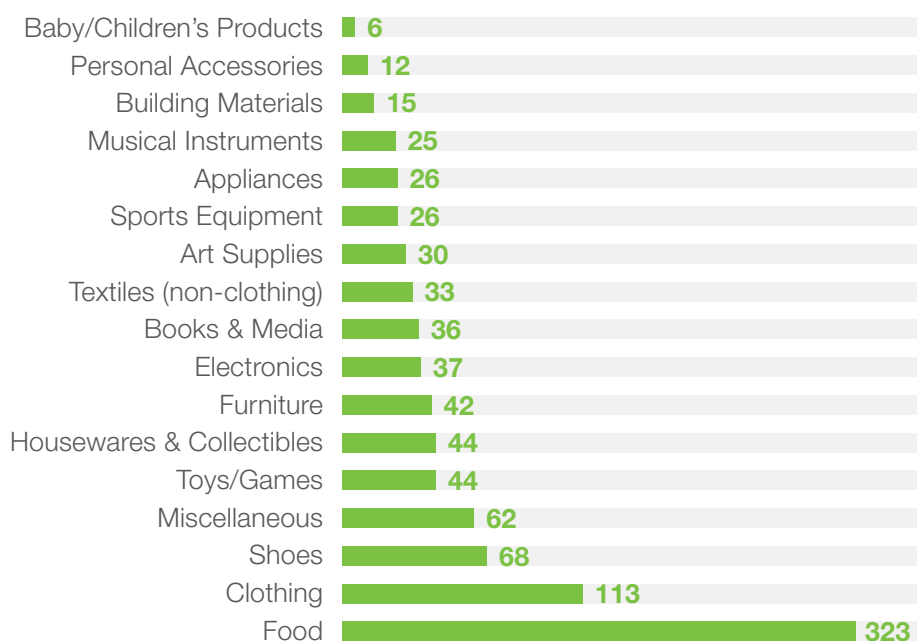


Figure 14 Distribution of Online and Virtual Entities in NYC Reuse Sector by Products Handled



Online and Virtual Reuse Outlets

This category of reuse platforms includes online stores, classified listings that allow users to sell used products, exchange forums where products are exchanged between users free of charge, and online rental stores. This assessment identified 24 entities selling secondhand products that operate online and do not have brick-and-mortar stores. These online entities all operate in NYC; some have reach in regions outside of the City, as well. Among these outlets, online stores and classified listings are the majority.

The number of online outlets verified has decreased by 16 entities compared to the 2017 assessment. This decrease is a result of the available data sources and the closing of online businesses that were reported in the 2017 Reuse Sector Report. The main public databases used for this report are more effective at identifying businesses and organizations with brick-and-mortar stores than online outlets. In addition, a significant number of online outlets identified in 2017 are no longer active.

Although the number of online outlets identified in this assessment is relatively small, these outlets reach a larger clientele because they can be accessed and used by a large number of people. Further, long-standing online classified listings such as Craigslist and Freecycle have a large potential to match used goods with new owners.

Food rescue online and virtual reuse outlets were not included in this assessment. Food rescue businesses facilitate the distribution of rescued excess food by online and mobile applications similar to exchange forums. Such applications were not targeted in this report because public databases, such as DCA licenses and NAICS codes, are not largely focused on online entities.

Online and virtual reuse entities handle a diverse array of products. Housewares & collectibles are handled by approximately 13% of all online and virtual reuse entities in NYC, followed by clothing at 11% and electronics at 9%.

Reuse by Location

Currently, there are 2,755 reuse businesses and organizations in 4,085 locations throughout NYC. These reuse entities include for-profit and nonprofit enterprises that exist as either brick-and-mortar organizations or online platforms. The total number of reuse businesses and organizations verified in NYC increased by approximately 22% since the 2017 Reuse Sector Report, from 2,257 total reuse entities in 2017 to 2,755 in 2019. Figure 15 provides a comparison of reuse entities' geographic distributions in 2019 compared to the distribution of entities verified in 2017.

Currently, the most reuse entity locations in NYC are in Manhattan, accounting for 41% of all verified locations. The borough with the second highest number of reuse entity locations is Brooklyn, which has 28% of all reuse entity locations in NYC, followed by Queens at 17%.

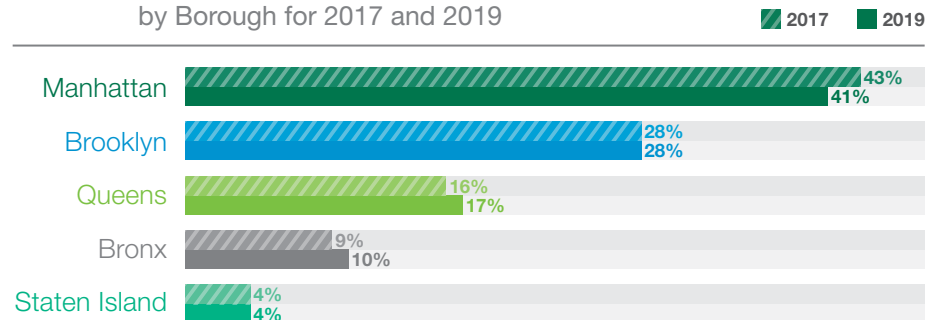
There was a 2% decrease in reuse locations in Manhattan and a 1% increase in reuse locations in both Queens and the Bronx. This slight shift may be due to rising rents in Manhattan, which could make it difficult for brick-and-mortar organizations to remain in operation, especially nonprofits.

Overall, there has not been a significant shift in reuse location distribution since the 2017 sector report. The distribution of reuse activity platforms has also remained comparable, with a few exceptions.

Cooperative retail reuse locations shifted the most in Brooklyn since 2017. There was a 5% decrease in cooperative retail locations in Brooklyn. There was a 2% increase on Staten Island and 1% increases in both Manhattan and Queens since 2017.

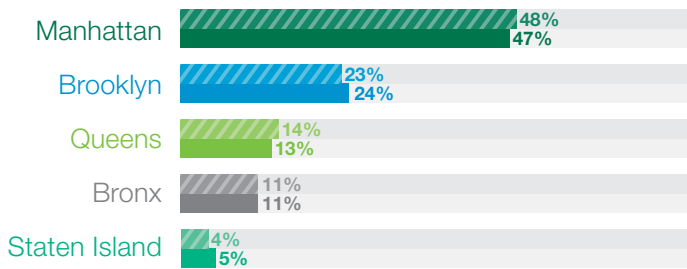
Reuse drives and social services saw significant changes in distribution between 2017 and 2019. Both reuse drives and social services decreased in Manhattan but there were increases in all other boroughs. The percentage of reuse drive locations in Manhattan decreased by 17% since 2017 and increased by 6% in the Bronx, 4% in Brooklyn and Staten Island, and 2% in Queens. The percentage of social services locations decreased by 7% in Manhattan and 1% in Staten Island, but increased by 4% in Queens, 3% in the Bronx, and 1% in Brooklyn.

Figure 15 Comparison of Reuse Sector Distribution by Borough for 2017 and 2019

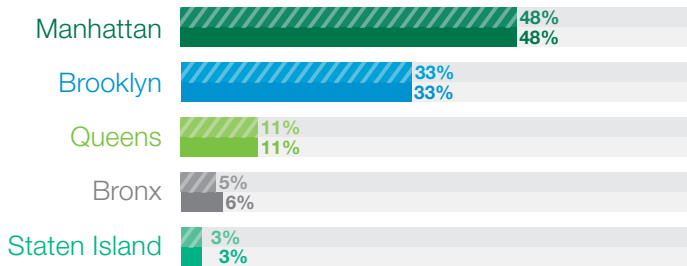


Retail Locations in Each Borough

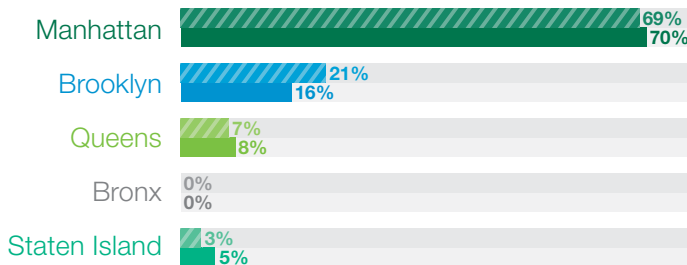
2017 2019



Retail and Product Sharing Locations in Each Borough



Cooperative Retail Reuse Locations in Each Borough

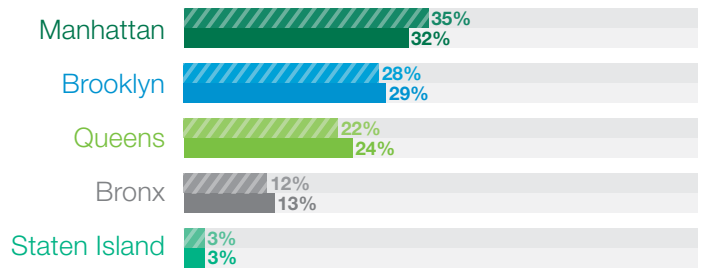


As New York City works toward the goal of sending zero waste to landfills, DSNY will work to enhance its support of materials reuse. In addition to engaging entities across the entire reuse sector and educating the public about the impacts of reuse across the City, DSNY will continue to assess and analyze the sector.

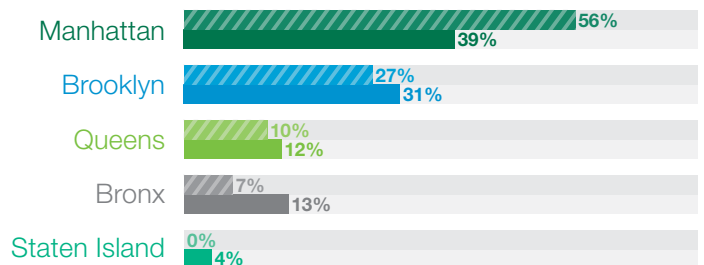
The research methods outlined in the following supplement provide overviews of several research concepts that could lead to improved accuracy in reuse data as well as a greater breadth of data that can be gathered.



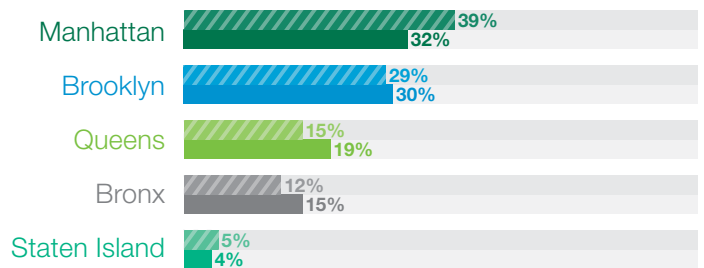
Repair Locations in Each Borough



Reuse Drive Locations in Each Borough



Social Services Locations in Each Borough





Vintage Thrift | Manhattan

Supplement: New Approaches to Quantifying Reuse

This supplement outlines new research methods aimed at estimating the capacity of New York City’s reuse sector. It provides a basic framework for the entire sector and then outlines approaches to quantifying the nonprofit and the for-profit parts of the sector.

As a field of study, materials reuse is relatively new and methods of researching it are not codified. However, materials reuse has recently gained international attention as a valuable way to reduce waste and support closed-loop systems. As cities and industries aim to understand and leverage reuse, it becomes more important to share new methods.

Materials reuse has gained international attention as a valuable way to reduce waste and support closed-loop systems.

From a quantitative standpoint, reuse is among the least understood methods of waste management, largely due to a lack of data. While waste diversion is measured in terms of weight—e.g., tons kept from landfill—reuse entities typically track data in terms of item categories and quantities. Further, there are no universal standards in place for materials measurements. For instance, if a donation drive accepts 100 bags of clothing, “bag” could mean a large garbage bag or a small shopping bag, and “clothing” could include shoes and accessories or it could exclude them. Even for entities that track items in great detail, there are no standards for the material composition of items: a chair, for instance, could be made of any material such as metal, wood, plastic, or a combination of materials.

Finally, reuse entities track the products they handle in different ways; some do not track materials data at all. While DSNY has worked with nonprofit donateNYC Partners for close to a decade to develop standards for materials data, there has been no equivalent data reporting from for-profit reuse entities, which make up the majority of the sector.

The research methods outlined below are proofs of concept to help answer difficult questions, such as what quantity of items NYC’s reuse sector handles, what the resulting waste diversion impact is, and how much more the sector could accept if more people engaged in reuse.

By sharing these concepts, this supplement encourages future researchers to collaborate on and eventually codify quantitative research methods for materials reuse. Only by accurately quantifying reuse can its true impact come to light.

How much more material could the sector accept if more people engaged in reuse?

Reuse in New York City: A Mass Balance Model

To quantify the capacity of the reuse sector, it is necessary to begin with a model. Figure 22 provides an overview of a mass balance model for NYC’s reuse sector. The purpose is to show what information is required to develop a quantitative profile of the reuse sector in NYC and what data gaps currently exist. The boxes represent the total tonnage of Municipal Solid Waste (MSW) that is reused or available for reuse by each sector and its subsets.

Figure 22 Overview of Reuse in NYC on a Mass Basis (FY18)



Number 1 represents the total amount of MSW in New York City that is potentially reusable. This figure can be estimated based on what we know of the overall waste stream from DSNY’s Waste Characterization Studies. For instance, in 2017, NYC residents generated 3.1 million tons of waste. About 9% of residential waste is classified as “other divertible materials.” A portion of that category can be diverted via reuse, such as textiles, which accounted for 6% of residential curbside aggregate discards.²³ A full list of categories in the Waste Characterization Study potentially containing reusable products is included on page 45 in the appendix to this report.

Number 2 of Figure 22 represents an estimate of the tonnage of MSW listed for reuse in the for-profit reuse sector in NYC. This tonnage can be estimated based on the findings from a web scraper such as the one outlined in a later section of this report.

Number 3 represents the MSW tonnage estimated as reused by the nonprofit reuse sector in NYC. This tonnage would be a sum of the tonnages from Numbers 4 and 5. Number 4 indicates the items reused by nonprofit reuse entities outside of the donateNYC Partnership program. This tonnage could be estimated based on the warehouse area correlation discussed later in this report. Number 5 shows the tonnage of materials reused by nonprofit reuse organizations that are members of the donateNYC Partnership program, who are asked to submit materials reuse data on a biannual basis.

It is important for future researchers to collaborate on methods to quantify materials reuse. Only by accurately quantifying reuse can its true impact come to light.

Quantitative Profile of the Nonprofit Reuse Sector in NYC

For the purposes of this report, the nonprofit reuse sector in NYC can be divided into two categories: the 72 organizations that are members of the donateNYC Partnership program and all other nonprofit reuse organizations that are not currently members of the donateNYC Partnership program. The donateNYC Partnership program aims to support and develop the nonprofit reuse sector in NYC through cross-sector engagement, publicity, capacity development and, crucially, data management and analysis.

DonateNYC Partners submit reuse data on a bi-annual basis detailing item types and quantities that have been donated, sold, distributed, or otherwise reused. This data enables DSNY to gain quantitative insights into the reuse activities of an active portion of the NYC reuse sector. From the data, DSNY is able to provide each Partner with a breakdown of their reuse operations by mass, product type, and environmental impact. Environmental impact reporting includes equivalencies such as greenhouse gas (GHG) savings, calculated by the proprietary Reuse Impact Calculator (RIC), outlined in full on page 44 of the appendix to this report. DSNY's data analysis provides Partners with a quantitative understanding of their operations, which, in turn, enables them to improve their operations and increase the amount of goods they divert through reuse.

Nonprofit reuse entities outside of the donateNYC Partnership do not provide reuse data to DSNY and as a result, reuse tonnages in this part of the City's nonprofit reuse sector are currently unknown. However, analyzing the reuse data provided by donateNYC Partners could identify reuse patterns throughout the entire nonprofit reuse sector.

Reuse by Nonprofit Entities Within the donateNYC Partnership

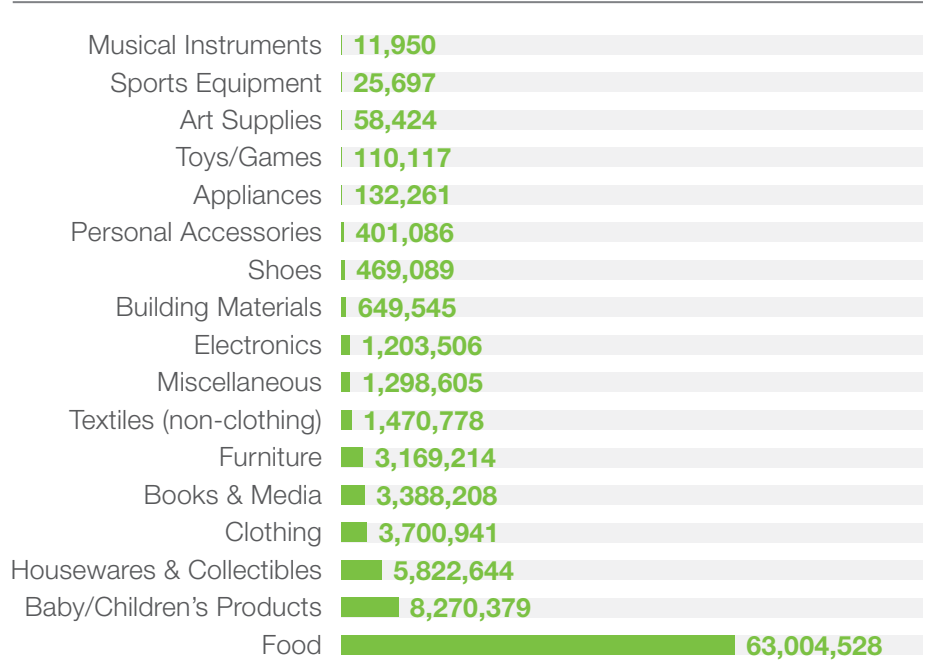
Currently, a total of 72 nonprofit reuse entities participate in the donateNYC Partnership program. In the most recent data monitoring cycle (July 1, 2017 to June 30, 2018), donateNYC Partners were able to divert 46,593 tons of items from landfill through materials reuse—this could mean reselling, redistributing, or repurposing items donated to these organizations. This diversion figure accounts for approximately 1% of the total MSW generated in NYC during the same period.

To better understand donateNYC Partners' diversion data, the research team analyzed the weights of the items diverted by product category (see Figures 23 and 24).

As shown in Figure 23, the product category most frequently diverted by donateNYC Partners on a weight basis is food, accounting for approximately 68% by weight of Partners' total diversion. The next most prevalent product category by weight was baby/children's products at approximately 9%, followed by housewares & collectibles at approximately 6%. If food is excluded, as shown in Figure 24, the top five most prevalent product categories in Partners' reuse output stream on a weight basis are baby/children's products at 27.4%, housewares & collectibles at 19.3%, clothing at 12.3%, books & media at 11.2%, and furniture at 10.5%.

Although mass is a necessary metric when analyzing the impact of a waste diversion strategy, it is not an accurate indicator of the types of products that are most commonly found in MSW and most commonly reused. For this type of analysis, item quantity is the key metric. Based on submitted data, during the 2017-2018 monitoring period, donateNYC Partners reused 12,112,107 items.

Figure 23 Product Breakdown of donateNYC Partner Reuse Output by Weight in Pounds (Including Food)



Lower East Side Ecology Center
Electronics Warehouse, Brooklyn

Figure 24 Product Breakdown of donateNYC Partner Reuse Output by Weight in Pounds (Excluding Food)

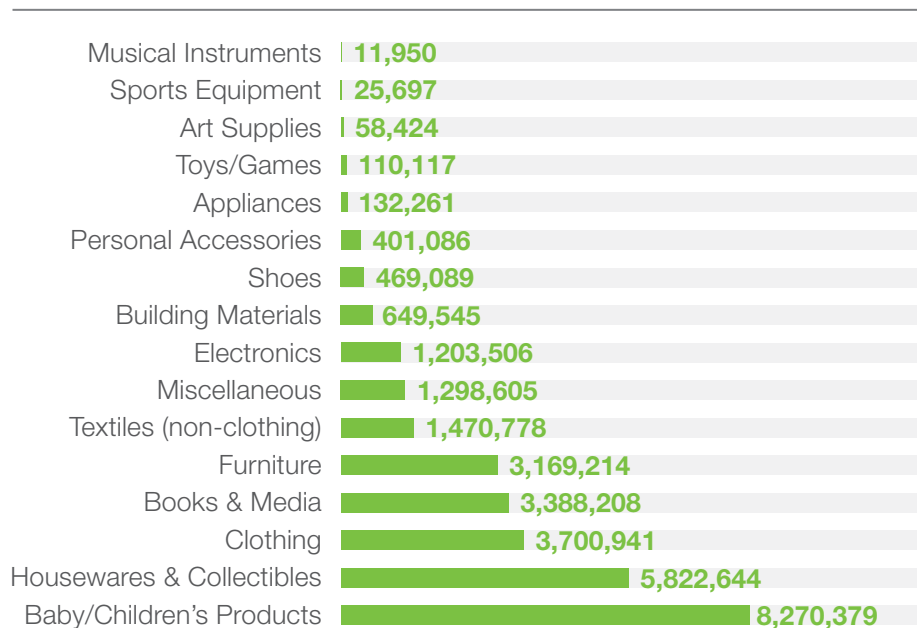
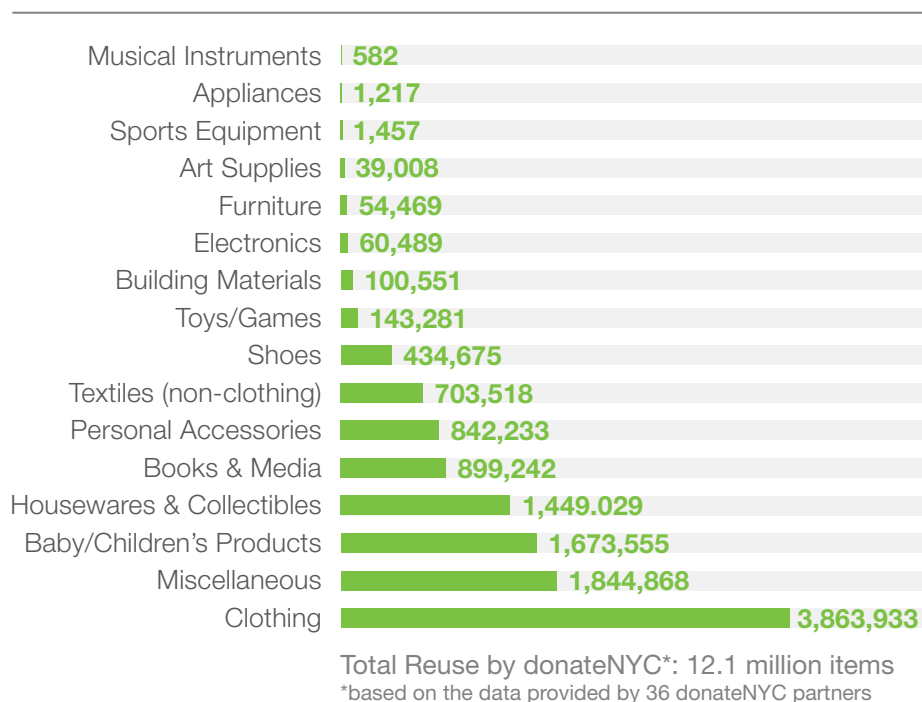


Figure 25 Product Breakdown of donateNYC Reuse Output by Quantity (Excluding Food)



As shown in Figure 25, clothing was the most prevalent product category reused on a quantity basis, accounting for approximately 32% of the total number of items reused by donateNYC Partners. Miscellaneous (which includes categories such as glass, paper, medical equipment, toiletries, cleaning products, and office supplies) was the next most prevalent category at 15.2%, followed by baby/children's products at 13.8%. Food is excluded from the breakdown shown in Figure 25 because donateNYC Partners engaged in food rescue only reported their data on a mass basis and not on a quantity basis.

Examining the reuse output of donateNYC Partners by item reveals interesting patterns. For example, considering the largest category reused by quantity (clothing), it can be deduced that clothing is a sought-after item for people receiving or buying from reuse organizations. From that, it can also be assumed that clothing makes up a large portion of the *input* donations to reuse organizations.

The results shown in Figure 25 may also provide insights into the link between reuse and location. The items that are more frequently reused—clothing, miscellaneous, baby/children's products—are typically smaller individual items than the items that are reused in lower quantities—such as appliances and furniture. This fact could be dependent on the ease of transport in a densely populated city such as NYC, where many people do not own vehicles.

A comparison of Figures 24 and 25 shows that both mass and quantity must be considered when analyzing data. For example, even though furniture makes up 10.5% of reuse output on a mass basis, it accounts for only 0.45% of reuse output on a quantity basis. This comparison may suggest that furniture is not as readily reused as items like clothing, likely because it is a relatively heavier product category—however, when it is reused, it has a more significant impact by mass.

Reuse by Nonprofit Entities Outside of the donateNYC Partnership

Currently, there are 464 nonprofit reuse entities in New York City outside of the donateNYC Partnership. Since DSNY currently does not have mass or quantity data from these nonprofit reuse entities, the research team attempted a statistical analysis based on available Partner data to estimate the total reuse activity of the nonprofit reuse sector in NYC. Data such as area and volume of warehouses and number of volunteers were obtained from Partners and preliminary correlations were developed to estimate the total reuse amounts. A large part of this effort included identifying relevant indicators that can predict total reuse mass.

Preliminary efforts show that reuse mass can be correlated to the area of the building storing products available for reuse. Additional variables related to an organization’s operations, such as number of participating volunteers, energy consumption, and reuse product variety, can strengthen predictions of reuse mass. Developing a reliable model would make it possible to predict reuse activities and enable mass-based reuse estimates for any reuse entity outside of the donateNYC network.

Developing a reliable correlation model would make it possible to predict activities for any reuse entity outside of the donateNYC Partnership.

Goodwill Thrift Store, Manhattan



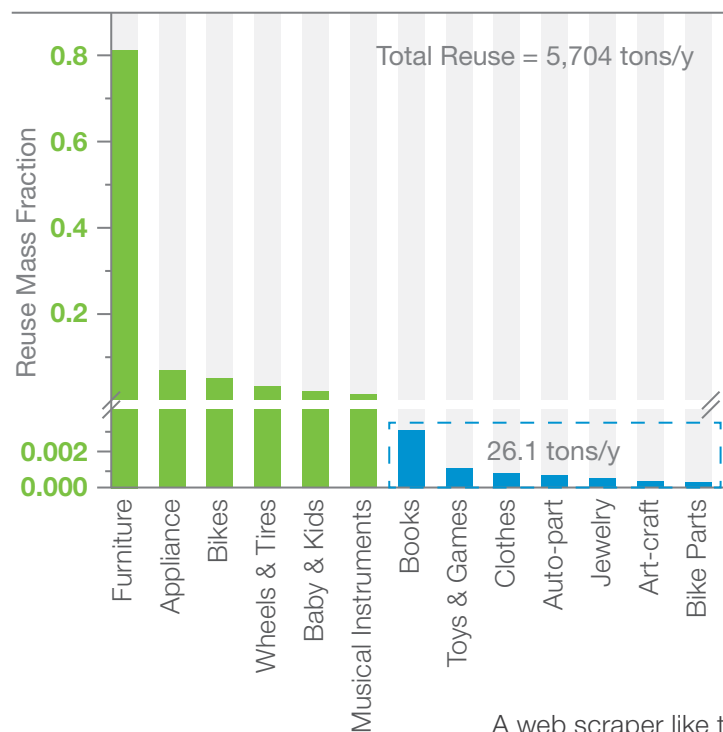
Quantitative Profile of the For-Profit Reuse Sector in NYC

With more for-profit entities developing their online presence, web scraping may provide a model to gather reuse data from businesses.

To date, very few for-profit reuse entities have shared any data with DSNY regarding quantity or categories of products reused. To provide preliminary quantitative insights into this sector, the research team developed a web scraper tool. With more for-profit entities developing their online presence via marketplaces or other listings of products handled, web scraping may provide a model to gather reuse data or identify patterns regarding product types and quantities available for reuse.

Specifically, this tool was used to determine the variety and quantity of products reused by the for-profit sector. Using a computer program that systematically examines web sites, or “crawls the web,” valid data can be extracted and tabulated—in this case, the web scraper extracted data from web-based for-profit organizations reselling items within New York City. The for-profit organizations used for the initial run of the web scraper have broad reach, high traffic, and, presumably, account for a significant portion of the reuse activity among the residents of NYC.

Figure 26 Product Breakdown of Online For-Profit Reuse Entity Output by Weight



Reuse data was obtained for a wide range of commonly reused products such as clothing, accessories, bicycles, books, and furniture, among others. The program converted information on quantity and category of items into a corresponding mass of products understood to be diverted from landfill through reuse. The web scraper extracted data from these websites at fixed intervals to provide a sense of the temporal variation in reuse activities.

The initial test period of the web scraper gathered data from two reuse websites over four months and extrapolated to an entire year. The first estimate projected by the web scraper for a full year of reuse activity by the sites it crawled was approximately 5,704 tons, as shown in Figure 26. Furniture was found to be the most frequently reused item category, while the combined categories of clothing, jewelry, books, toys & games and art & craft together made up less than 1% by weight of the overall mass reused.

A web scraper like this could find and acquire data from all possible for-profit entities that have a web presence and engage in reuse. Parallel research would be needed to determine what portion of the for-profit reuse sector does not have a web presence with usable product information, in order to develop a projection of the web scraper’s data for the entire for-profit sector.

Snapshot: Mass Balance Case Study

While the methods outlined in this supplement estimate sector-wide quantities, important information can also come from analyses at the organizational level. Complete material flow data on items donated to and distributed by one reuse outlet can reveal crucial patterns.

Currently, few reuse entities track the amount of items that are donated to their organizations, reporting only on the quantity of items that are sold or given away. One donateNYC Partner provided input and output data sufficiently detailed to allow for a mass balance analysis. Mass balances, commonly used in engineering, describe the flow of materials through a system by weight.

Figure 27 shows that over one year, the organization diverted 36.4% of donations by weight via reuse and recycling. 18.7% of the donations were reused, meaning sold, distributed, or used on site, and 17.7% of donations were recycled, such as into insulation material. Based on the input and output data, approximately 63% of donations were not moved out via reuse or recycling within the reporting period, remaining in storage.²

Figure 27 Mass Balance of donateNYC Partner



Mass balance analyses can provide insights to help organizations optimize their operations. If reuse entities know the weight and product breakdown of items most often remaining in storage, they can put more effort toward identifying outlets for their product streams, ensuring that surplus donations could become reused output.

Analyzing product breakdowns of surplus donations could also shed light on types of products that best lend themselves to reuse. For example, mass balance analyses across the sector may show that donated chairs constructed of a certain material end up frequently not being reused. Such data-driven research can educate manufacturers on materials and construction that do and do not encourage reuse behavior among consumers, potentially encouraging change at the source of the supply chain.



Time Galleries Furniture Repair and Thrift Store | Brooklyn

Appendix

Methodology Notes: 2019 Reuse Sector Report

For the reuse sector assessment, businesses and organizations meeting the reuse entity definition on page 11 were obtained from the following sources:

- **North American Industry Classification System (NAICS).** This is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.²⁴ For this assessment, businesses with NAICS codes associated with reuse activities operating in New York City were identified. A list of the relevant codes is shown in Table 1 on the next page.
- **NYC Department of Consumer Affairs (DCA).** DCA licenses more than 81,000 businesses in more than 50 industries and enforces key consumer protection, licensing, and workplace laws that apply to countless more.²⁵ Businesses licensed as “Electronic and Home Appliances Service Dealers,” “Secondhand Dealer—Auto,” and “Secondhand Dealer—General” were identified and included in this assessment.
- **DonateNYC Directory and Partnership program databases.** This includes businesses and nonprofit organizations registered on donateNYC platforms, as well as current organizations in the donateNYC Partnership.
- **Online search.** A search was undertaken for key words such as “thrift stores,” “antique shops,” and “vintage shops” to identify relevant businesses and organizations for this report.

Monkey Girlz Vintage Consignment,
Staten Island



In total, out of an initial list of 3,143 entities, 2,755 businesses and organizations were confirmed as actively operating within the City that also meet the appropriate definition of reuse and handle the appropriate reusable products. The data validation process was similar to that undertaken for DSNY’s 2017 Reuse Sector Report. The initial survey set number was reduced from 3,143 to 2,755 through online research and phone calls that identified operations that had permanently closed or do not practice reuse as defined by this report. The remainder of businesses that were in the initial list of 3,143 entities but were not included the final 2,755 were: entities legally registered as secondhand dealers in New York City but with no existing physical operation within the City (such as a storefront or warehouse); repair services without a storefront facility or website; businesses selling auto parts; libraries in educational institutions (removed because they are not open to the public); commercial repair services (such as plumbing, garage doors, and windows); laundromats; and party equipment rental outlets.



FIXUP pop-up repair events, Citywide

Table 1 – Name of relevant NAICS categories included in the assessment

NAICS Code	Category
453310	Used Merchandise Stores
454390	Other Direct Selling Establishments
519120	Libraries and Archives
532210	Consumer Electronics and Appliances Rental
532220	Formal Wear and Costume Rental
532230	Video Tape and Disc Rental
532291	Home Health Equipment Rental
532292	Recreational Goods Rental
532299	All Other Consumer Goods Rental
532310	General Rental Centers
811211	Consumer Electronics Repair and Maintenance
811212	Computer and Office Machine Repair and Maintenance
811213	Communication Equipment Repair and Maintenance
811411	Home and Garden Equipment Repair and Maintenance
811412	Appliance Repair and Maintenance
811420	Reupholstery and Furniture Repair
811430	Footwear and Leather Goods Repair
811490	Other Personal and Household Goods Repair and Maintenance

Definitions

Product Categories Assessed^{26,27}

Appliances	This category includes both small and major appliances. In accordance with the US EPA definition, this category includes items such as refrigerators, washing machines, water heaters, hair dryers, and electric coffee pots.
Art Supplies	Includes items such as paints, brushes, and canvases.
Baby/Children's Products	Includes items such as diapers, strollers, and breast pumps.
Books & Media	Includes textbooks, magazines, paperback and CDs, LPs, and DVDs.
Building Materials	Includes items such as power tools, hand tools, carpets, lumber/wood panels, insulation, and flooring.
Clothing	Includes items such as full body wear, lower body wear/bottoms, upper body wear/tops, sleepwear, sportswear, undergarments, and protective wear.
Electronics	In accordance with the US EPA definition, this category includes items such as TVs, VCRs, PCs, DVD players, video cameras, stereo systems, telephones, computer equipment.
Food	Edible food; includes cereal, breads, and packaged and canned prepared items.
Furniture	In accordance with the US EPA definition, this category includes items such as sofas, tables, chairs, and mattresses.
Housewares & Collectibles	"Housewares" includes items such as laundry hampers, trashcans, and home décor; "Collectibles" include items such as antiques, jewelry, and art.
Musical instruments	Includes woodwind and brass instruments, keyboards/pianos, percussion instruments, and string instruments.
Personal Accessories	Includes items such as hats, scarves, belts, and bags.
Shoes	Includes athletic, safety/protective, and general-purpose footwear.
Sports Equipment	Includes equipment for track/field, cycling, running, swimming, skating, gymnastics equipment, etc. Some examples are sports balls, pucks, Frisbees, racquets, bats, sleds, skies, and bikes.
Textiles (Non-Clothing)	Includes items such as unused fabrics, sheets, and linens.
Toys/Games	Includes items such as board games, cards, puzzles, dolls/puppets/action figures/soft toys, developmental/educational toys, and musical toys.

Other Terms Used in this Report

Cooperative Retail	A group of individuals, businesses, and organizations that sell secondhand products, such as flea markets.
Global Product Classification (GPC)	A universal classification system developed by GS1 that groups products into categories by their physical properties and their relationships to other products in the system.
Greenhouse Gas	Any gas that absorbs infrared radiation (e.g. sunlight) and traps heat. A common greenhouse gas is Carbon Dioxide (CO ₂).
Mass Balance	This is a calculation done to account for the weight of materials or products entering and exiting a location.
Mass Flow	A product's weight multiplied by the number of that product transferred from one location to another in a given timeframe such as a year.
Meal Gap	The number of meals unavailable for members of insufficient households that do not have the resources to purchase necessary food. ²⁸
Miscellaneous	Product classes that are not associated with the 16 other product classes are categorized as miscellaneous. Miscellaneous products, include, but are not limited to, glass, medical equipment and furniture, paper and cardboard, toiletries, cleaning products, furnishings, and office supplies.
Online and Virtual Reuse Outlets	Businesses and organizations that buy, sell, distribute, rent and receive secondhand products through online stores, classified listings (where users can sell used products), and exchange forums (where products are exchanged between users free of charge).
Product Flow	The number of products transferred from one location to another over a given timeframe such as a year.
Rental and Product Sharing	Businesses and organizations that provide rental services for products such as bikes, and specialty equipment.
Repair	Businesses and organizations that repair worn or broken items that would have otherwise been discarded.
Retail	Businesses and organizations that sell and donate secondhand products include thrift shops, vintage, and antique stores.
Reuse Drives	Points of collection of secondhand products, primarily through the placement of collection bins across the City (except collection bins placed on private properties) and donation events.
Social Services	Typically nonprofit organizations that collect and distribute secondhand and surplus products free of charge as part of their social mission.

Methodology Notes: Supplement

In 2013, DSNY, with the NYC Center for Materials Reuse, developed a data management system that uses qualitative and quantitative information, provided by donateNYC Partners, to analytically describe the environmental, social, and economic impact of the nonprofit reuse sector in NYC, both for individual organizations and for the donateNYC Partnership as a whole. In order to quantify the impact of materials data, DSNY and NYCCMR developed the Reuse Impact Calculator (RIC), a proprietary software tool that allows for data on items reused to be classified into specific product categories using the Global Product Classification (GPC) system and then to be broken down into material composition and average weight by item. The RIC then runs the weight and material composition data emission through the US EPA's Waste Reduction Model (WARM) to calculate the GHG emissions and energy consumption diverted from landfills through reuse practices.²⁹

Analyses presented in the supplement to the 2019 Reuse Sector Report are based on data provided by DSNY's donateNYC Partners for Fiscal Year 2018 (July 1, 2017 to June 30, 2018) as classified by the RIC. Data provided by the Partners includes the types of products reused and the quantity of products reused. In some cases, Partners also provided the mass of products reused. In the context of the analyses presented, reuse is defined as any item that is donated or sold by a Partner. All Partners report the quantity of products that are reused (i.e. the "output" of the Partner) but there is limited information on the initial quantity of products that are donated to the Partner (i.e. the "input" to the Partner).

In this study, any Partner data that did not include the mass of products was input into the RIC. The RIC yielded the mass of products based on the quantity data provided by the Partners and the unit weights of the products.

Unit weights of products that were not provided by the Partner or the RIC were determined as an average based on unit weight data collected from an online survey of databases and websites such as Amazon. The unit weight average of a product was calculated from a sample size of 60 items for a given product category. For example, to determine the average unit weight of a teakettle, 60 teakettle unit weights were recorded from an online survey and then averaged. The sample size to calculate average unit weight was determined based on statistical analyses. It was determined that beyond a sample size of 60 items, the average unit weight of a product did not fluctuate significantly.

The donateNYC Partnership currently consists of 72 partners, of which 36 provided complete data for the monitoring period. These Partners represent an accurate cross-section of the activity of all Partners. One Partner was able to provide both input and output data. The remaining 35 Partners provided only output data. All products reported in the Partner data set were categorized into 17 main groups, as listed in "Product Categories Assessed" in the previous section of the appendix.

Categories in the 2017 Municipal Solid Waste Characterization Study Potentially Containing Reusable Products

Group	Category	Description
Plastic	Appliances: Plastic	Small and large electric appliances made predominantly (> 50%) of plastic.
Plastic	Appliances: Plastic	Small and large electric appliances made predominantly (> 50%) of plastic.
Plastic	Bulks/Rigid Plastic	Bulky rigid plastic items larger in size than a breadbox. Includes plastic furniture, tools, toys, plastic crates and soda bottle carriers. Includes 5-gal buckets and large planters. Excludes plastic appliances.
Plastic	Other Plastic Materials Not Elsewhere Classified	Plastic items made entirely of plastic or predominantly of plastic not elsewhere classified. As a rule of thumb, smaller in size than a breadbox. Includes pens and markers, lighters, 3-ring binders, small toys and housewares, toothbrushes, razors, dental floss containers, CD/DVDs, VHS tapes.
Glass	Other Glass	Window glass, mirrors, light bulbs (except fluorescent tubes), decorative glassware (e.g. vases), decorative glass bottles (e.g. perfume bottles), drinking glasses, other noncontainer glass.
Metal	Appliances: Ferrous	Large and small electric appliances made predominantly of ferrous metal (steel). Includes large appliances such as washers, dryers, stoves, refrigerators, dishwashers, etc. Includes small appliances such as toasters, microwave ovens, power tools, curling irons, and light fixtures.
Metal	Appliances: Non-Ferrous	Small and large appliances made predominantly of stainless steel
Organic	Textiles: Non-Clothing	Non-clothing fabrics made of rag stock fabric materials including natural and synthetic textiles such as cotton, wool, silk, woven nylon, rayon, and polyester. Includes handbags, linens, draperies, tablecloths, nylon rope.
Organic	Textiles: Clothing	Clothing textiles
Organic	Carpet/Upholstery	General category of flooring applications and non-rag stock textiles consisting of various natural or synthetic fibers bonded to some type of backing material. Includes traditional mattresses made of a combination of foam and metal coil construction with upholstered exterior.
Organic	Shoes/Rubber/Leather	Finished products and scrap materials made of natural and synthetic rubber, such as bath mats, inner tubes, rubber hoses, foam rubber, tire pieces, latex gloves. Leather jackets, belts, bags, purses. Shoes, sneakers, sandals, and boots.
Electronics	Audio/Visual Equipment (TV Peripherals-Covered)	Electronic A/V equipment covered by the NYS Electronics Recycling Law. Includes VCRs, digital video recorders, DVD players, digital converter boxes, cable or satellite receivers, electronic or video game consoles. Includes any batteries that are still inside the devices.
Electronics	Audio/Visual Equipment (Non-Covered)	Electronic A/V equipment not covered by the NYS Electronics Recycling Law. Includes Radios, Stereos, Tap Decks, Cameras, GPS devices, Cell phones, Calculators. Includes any batteries that are still inside the devices.
Electronics	Computer Monitors	Items other than televisions containing a cathode ray tube (CRT) such as computer monitors and laptops. Also includes flat screen monitors.
Electronics	Televisions	Television sets containing a cathode ray tube (CRT) and flat screen TVs.
Electronics	Other Computer Equipment	Computer items not containing CRTs such as processors, mice and mouse pads, keyboards, and disk drives, cords and cables, portable devices (portable digital music player, tablet, e-readers etc.), printers, scanners, servers. Includes both computer cords and regular extension cords.

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Footnotes

¹ For the current sector assessment, product categories were updated to streamline data. As a result, some product classes addressed in Figure 1 were not included in Figure 2 in order to compare the current assessment with the 2017 assessment. The percentage breakdown presented in Figure 2 does not include the entities handling food or miscellaneous products. In addition, two categories included separately in the 2017 report, housewares and collectibles, have been combined into one category in the 2019 report and are presented as such in Figure 2.

² This mass balance analysis shows a relative distribution of the fate of input donations. The tonnage of items that went to reuse and recycling may be a mix of both items that were donated in FY18 as well as older items that were already in the warehouse. The purpose of the mass balance is to show the relative amounts that get donated and where they end up.

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