CalRecycle

California Department of Resources Recycling and Recovery

2021 Commercial Generator-Based Edible Food Waste Characterization Study

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CASCADIA CONSULTING GROUP

2019 Study Produced Under Contract By: Cascadia Consulting Group

TETRA TECH

2021 Study Produced Under Contract By: Tetra Tech, Inc

State of California

Gavin Newsom
Governor

California Environmental Protection Agency

Yana Garcia
Secretary

Department of Resources Recycling and Recovery (CalRecycle)

Zoe Heller
Director

Public Affairs Office
1001 I Street (MS 22-B)
P.O. Box 4025
Sacramento, CA 95812-4025
www.calrecycle.ca.gov/Publications/
1-800-RECYCLE (California only) or (916) 341-6300

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Acknowledgments

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The 2019 Commercial Generator-Based Edible Food Waste Characterization Study was conducted under contract by Cascadia Consulting Group.

The 2021 Commercial Generator-Based Edible Food Waste Characterization Study was conducted under contract by Tetra Tech, Inc.

Executive Summary

This report summarizes the methods and findings of the 2021 Generator-Based Waste Characterization Study conducted by CalRecycle. The purpose of the study was to assess the types and quantities of waste from industry groups likely to generate relatively high levels of food waste. Samples were collected from the disposal and/or organic diversion streams of generators from these industry groups who agreed to participate in this study. These 200-pound samples were then divided into eight food and three non-food categories to determine the percentage of each material type in the stream. The eight food categories included five categories of potentially donatable food. The 12 sampled industry groups included restaurants, supermarkets, K-12 schools, food distributors, correctional facilities, health facilities, and other businesses in the Bay Area, Central Valley, and Southern California.

A survey was also administered to all participants gathering information on operational characteristics and relevant practices. The survey included how participating facilities manage their food waste with strategies and programs such as edible food recovery and organic materials collection. When possible, information collected through the survey was used to extrapolate the findings from sampling to estimate annual tons of various materials generated by each participant. Survey data was also tested for correlation to material composition results and is detailed in Appendix 5.

For potentially donatable food across all generators the median percentage was higher in the disposal stream at 12 percent, than in the organic diversion stream at 6 percent. This varied by industry group which were found to have a statistically significant correlation with the amount of potentially donatable food in these streams. This is shown in Tables 6 and 7.

For all food categories across all generators the median percentage was 98 percent in the organic diversion stream and 46 percent in the disposal stream. As with potentially donatable food, these percentages varied by industry group, and industry group was found to have a statistically significant correlation with the amount of food in these streams. This is shown in Tables 8 and 9. The average generator in this data set was estimated to annually produce a total median of 28 tons of organic diversion and 53 tons of disposal.

The results section of the report provides more detailed findings on the types and amounts of food waste from both organic diversion and disposal streams for generators within the sampled industry groups, as well as data on the composition of the non-food components of the waste streams. Also included are a summary of all responses from the survey. The full description of the statistical analysis is included in Appendix 5.

The previously unpublished methodology and results from the 2019 Generator-Based Waste Characterization Study are included as an appendix to this report. There was substantial overlap in the methodologies between these studies, including that both

reports focused primarily on food waste. Table 5 provides a high-level comparison between the two studies. The full methodology of the 2021 study is provided within this report, while the full methodology of the 2019 study is provided in Appendix 6. The results are formatted to allow for comparison among industry groups between these two studies.

Introduction

CalRecycle conducts periodic waste and material characterization studies to better understand the types and amounts of materials disposed in, and diverted from, California's waste stream. The generator-based waste characterization studies aim to characterize material disposed of and diverted from specific commercial business types and other large generators. This type of data is used to better understand materials in the waste streams of specific generator types in California.

In 2019 and 2021, CalRecycle conducted generator-based waste characterization studies, which characterized and measured the amount of food disposed and/or diverted by various commercial and institutional generators. The 2019 Generator-Based Waste Characterization Study (2019 study) was a small sub-study of the 2018 Disposal Facility-Based Waste Characterization Study (see Appendix 6). The results of the 2021 Generator-Based Waste Characterization Study (2021 study) are the primary focus of this report.

The 2019 Commercial Generator-Based Food Waste Study

CalRecycle's first Generator-Based Waste Characterization Study that focused primarily on the measurement of disposed edible food was conducted in 2019. These data are not representative of food waste disposal at the sampled industry groups across the state of California. However, these data do provide measurements of the composition of the disposal stream for generators within certain industry groups as well as estimates of the annual tons disposed for those industry groups. These data have not been previously published and are provided in Appendix 6.

The 2021 Commercial Generator-Based Food Waste Study

In 2021, CalRecycle conducted a more extensive Generator-Based Waste Characterization Study, the primary focus of this report. This study measured the amount of organic diversion and disposal by commercial generators. The key aim of this study was to provide scientifically sound data to inform policy on food waste, including SB 1383 (Lara, Chapter 395, Statutes of 2016), which set a statewide goal that not less than 20 percent of edible food that is currently disposed of is recovered for human consumption by 2025.

This study characterized waste materials and collected survey data from 133 generators of food waste, spanning 12 industry groups. Material was separately sampled from the disposal and/or organic diversion streams at each site, as available, and sorted into 11 material categories. Generators within this study are sampled from three major regions of the state: Bay Area, Central Valley, and Southern California. These data are not representative of food waste disposal at the sampled industry groups across the state of California.

Participation was voluntary and generators were recruited from industry groups identified by CalRecycle as potential large generators of food waste.

Methodology for the 2021 Study

This section describes the methodology of the 2021 Generator-Based Waste Characterization Study. The methodology of the 2019 study is presented in Appendix 6. The two methodologies are briefly contrasted at the end of this section.

The goal of this study was to collect information on the food waste diversion and disposal patterns among industry groups in regions of the state accounting for the highest percentage of the population.

Throughout this report, the term “generator” refers to a single location of a single business or entity. The term “sample” refers to 200 pounds or more of material collected at a generator, either from their disposal stream or organics diversion stream.

Data collected from the 133 generators were evaluated for inclusion in the analysis based on the following factors: (1) Samples were required to meet a minimum weight of 200 pounds, and (2) Samples required a complete data set to include information needed to estimate the annual tons disposed or diverted.

Throughout the report, median is used to communicate the average of the summarized quantities. The median is the point in the data at which half of the results are greater and half of the results are less than. The median, as a measure of averages, is less subject to outliers than the mean, which results in the average being less influenced by outliers. The median is accompanied by the first and third quartiles, which are similar measurements to the median. The first quartile indicates the value that one quarter of the results fall below, and the third quartile indicates the value that three quarters of the results fall below. Additionally minimum and maximum values are reported for each data set. Where appropriate, the count of zero percent results is noted, that is cases where a material category was not observed in the sample for one or more generators in that industry group.

Survey results are presented following the sampling data. As responses to individual questions were optional, the response rates for each question are reported. The summarization of the answers is then provided in a manner appropriate to that question, such as those allowing multiple responses.

Statistical analyses were used to investigate correlation between variables, such as number of employees or industry group, against material categories or grouped material categories as defined below. Factorial ANOVA (ANalysis Of VAriance) was used to identify descriptive factors for waste that met key statistical assumptions such as the data being compared consisting of nearly normally distributed data, visualized as a bell curve (see Appendix 5 for details). Kruskal-Wallis tests were used to analyze waste data that did not meet these assumptions (i.e., those consisting of data not resembling a

bell curve distribution). Both methods were selected as they are among the more commonly used methods of analysis. An additional factor in the selection of Kruskal-Wallis was being suitable for data consisting of smaller sample sizes. This is presented in the results section of this report and fully detailed in Appendix 5.

Industry Groups

CalRecycle subject matter experts identified 17 industry groups for inclusion in the study (see Table 1). Some of the industry groups were also sampled in the 2019 study, and all were selected because generators within those industry groups were hypothesized to generate relatively high amounts of food waste.

North American Industry Classification System (NAICS) codes associated with each industry group are listed in Table 1. The NAICS codes are used by federal statistical agencies to classify businesses. They were used in this study to define industry groups more accurately and in a manner consistent with other data sets. The definitions provided by NAICS for each industry group included in this study are provided in Appendix 1. More information on NAICS can be found at https://www.census.gov/naics/.

Table 1 - Industry groups and the NAICS code most closely aligned to that group.

Industry Group	NAICS Code
Assisted Living Facilities for the Elderly	623312
Cafeterias, Grill Buffets, and Buffets	722514
Caterers	72232
Commercial Bakeries	311812
Correctional Institutions	922140
Food Distributors	4244
Fruit, Vegetable & Specialty Foods Manufacturing	3114
Full-Service Restaurants	722511
Hospitals	6221
Hotels (except Casino Hotels) and Motels	72111
K-12 Schools	611110
Limited-Service Restaurants	722513
Other Grocery and Related Product Merchant Wholesalers	4244
Performing Arts, Spectator Sports, and Related Industries (include Large Venues and Large Events)	711
Perishable Prepared Food Manufacturing	311991
Supermarkets & Other Grocery Stores (except Convenience Stores)	44511
Warehouse Clubs and Supercenters	452311

Number of Generators Sampled, and Samples Collected per Industry Group

Samples were collected from 12 of the 17 identified industry groups. The contractor was unable to recruit generators from the remaining five industry groups. The highest number of samples for any industry group were from K-12 Schools, with 48 samples representing 42 generators. Next were Supermarkets & Grocery Stores (46 samples from 29 generators), followed by the Cafeterias, Grill Buffets, and Buffets (31 samples from 19 generators). The remaining industry groups were more sparsely sampled (1 to 23 sample(s) from 1 to 14 generator(s)). This is shown in Table 2.

Table 2 – Generators sampled, and samples collected by industry group.

Industry Group	Count of Generators	Percent of Total Generators	Count of Samples	Percent of Total Samples
Cafeterias, Grill Buffets, and Buffets	19	14%	31	16%
Caterers (Food Production Facility) and Food Service Contractors	3	2%	4	2%
Commercial Bakeries	1	1%	1	1%
Correctional Institutions	14	11%	23	12%
Food Distributors	4	3%	8	4%
Full-service restaurants	4	3%	7	4%
Hospitals	3	2%	4	2%
Hotels (except Casino Hotels) and Motels	5	4%	6	3%
K-12 schools	42	32%	48	25%
Limited-Service Restaurants	5	4%	7	4%
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	4	3%	7	4%
Supermarkets and Other Grocery (except Convenience) Stores	29	22%	46	24%
Total	**133**	**100%**	**192**	**100%**

Recruitment

The contractor conducted the recruitment of generators. For all generators participation was voluntary. The recruitment process involved contact with potential generators to

assess their suitability for inclusion in the study as well as explain the scope of the study, the impact to their operations, and the logistics of scheduling, sampling, and sorting with participants. CalRecycle assisted throughout the recruitment process by providing lists of contacts within selected organizations (such as a list of Food Distributors sourced through the California Department of Public Health), corporate-level contacts for recruitment of multiple generators, and conducting meetings with CalRecycle, contractor staff, and representatives from the potential generator.

The contractor contacted 4,886 generators between April 2021 and March 2022. Of these, 4 percent (174) were willing to participate, while 10 percent (473) of generators declined to participate, including 22 that were initially willing but later declined. An additional 11 percent (532) were found to be ineligible, and the remaining 75 percent (3,707) did not complete the recruitment process.

Key parameters for inclusion in the study were that a generator: (1) fit within an industry group identified by CalRecycle for inclusion in this study; (2) was in the Central Valley, Southern California, or Bay Area regions; and (3) generated enough disposed material to allow for the collection of a 200-pound sample. CalRecycle limited the number of participants from any single business chain to 10 participants to avoid overrepresentation within any industry group; this only affected the Supermarkets and Grocery Stores industry group.

Sampling and Sorting

Obtaining Samples from Material Streams

Fieldwork sorting teams consisted of one field supervisor experienced in waste characterization studies and three to four sorters. Supervisors were responsible for overseeing operations to ensure that all health and safety guidelines were followed, and data quality met quality assurance standards. Three teams were formed with one assigned to each region (Bay Area, Central Valley, and Southern California). For the first three sorting days of the project, a supervisor and one sorter from each team trained and performed sorts together to ensure that fieldwork was consistent with each team. After the initial training period, the additional sorters from each team were provided field training the following week.

For each sampled generator, the contractor attempted to collect a 200-pound sample from both the organic diversion and disposal streams. If only one of the streams was present at the generator (e.g., they only had a disposal bin), a 200-pound sample was collected for only the available stream. This 200-pound threshold, per stream, could be reached through the aggregation of samples from multiple visits over multiple days. There were eight samples for which two visits were required to aggregate up to the 200-pound threshold. These return visits followed the initial sampling date at each generator by between 1 and 42 days, with an average of 11 days between visits.

Any samples, including aggregated samples, weighing less than 200 pounds were excluded from further analysis in this report.

When multiple receptacles were present for a single stream, the contractor collected subsamples from each receptacle to obtain a sample representative of that stream by volume. The types of receptacles from which samples were collected included roll-off containers, dumpsters, compactors, and rolling bins.

When a generator used a compactor, the contractor arranged for the material to be temporarily collected in other bins (non-compacted) prior to sample collection of the stream.

When the generator had more than one organic diversion stream (e.g., a food waste and a yard waste stream), the food waste stream was sampled and hand-sorted, while the other stream was visually assessed for the presence of food material, in which case a “yes” or “no” was reported.

Additionally, the recycling bins present at a generator were visually assessed for food waste contamination. The contractor reported the percentage of contamination in recycling receptacles. These visual assessments of the recycling stream are not included as “samples.”

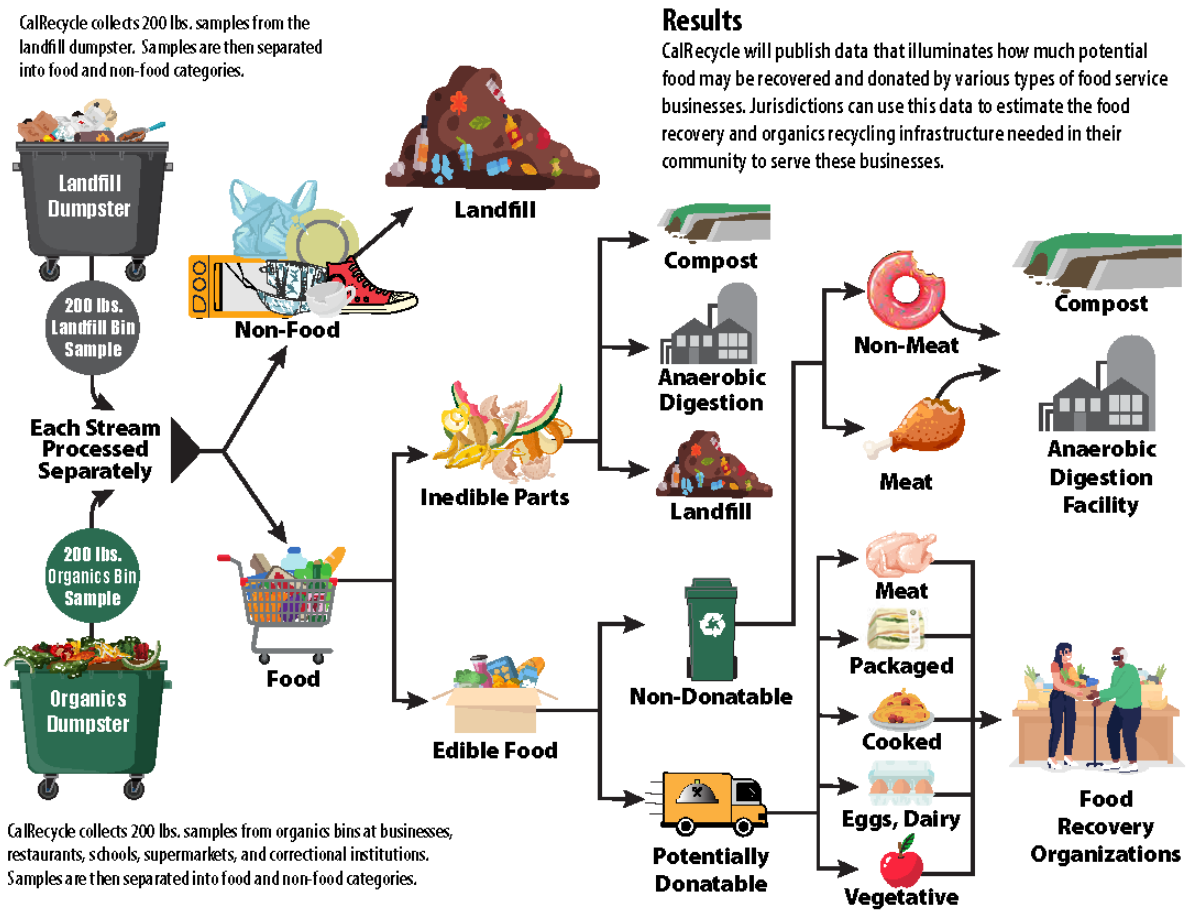
For each sample, additional information about the generator and material sampled was recorded, including the volume of material sampled, the number of receptacles present for each stream along with the volumes for those receptacles, which were reported in either cubic yards or gallons, and the percentage of receptacle capacity used. Other information gathered at the time of sampling included the time elapsed since the last collection of material by the hauler and the normal hours of operation of the generator. The information collected was used to extrapolate findings from sampled material to annual estimates. Volumes were converted to cubic yards to serve as uniform units.

Material Categories

Samples were sorted into eleven different material categories. The material categories branch from larger, broad categories such as food and non-food then further branch to ultimately reach the eleven specific material subcategories. These branching categories are conceptual and used to cluster similar categories (such as all potentially donatable foods) together rather than reflecting the physical process of sorting the material.

Likewise, the ultimate destinations of each material type indicate where they should go, rather than where they did go. This is shown in Figure 1.

Figure 1 - Material categorization by conceptual branching of categories and sub-categories.



CATEGORIZATION OF FOOD MATERIALS

Food was divided into either edible (seven categories) or inedible parts (one category). The term “edible food” refers to food intended for human consumption, regardless of whether it was safe to eat at the time of discard (e.g., half eaten burrito, whole apple). "Inedible parts” is a single category containing items that are not generally considered in California to be intended for human consumption such as shells, banana peels, and bones.

Edible food was further divided into potentially donatable food (five categories) and non-donatable food (two categories). “Potentially donatable” is a categorization for food

waste that was likely to have been safely recoverable for human consumption prior to discard or could have been captured as part of an edible food recovery program. “Not donatable” refers to food discarded in opened packaging or partially eaten. The purpose of this distinction is to evaluate the amount of food that could have been safely recovered for human consumption prior to discard in both the disposal and organic diversion streams.

The ability to identify the donatability of food (i.e., whether the food would have been safely recoverable for human consumption) was limited by the fact that samples were being collected at the point of disposal. This meant that items had been in contact with contaminated surfaces and away from any form of temperature control. As such, a primary driver in the identification of donatability for a given item was whether it had been disposed of in a whole or intact state (i.e., unopened packaging, or not partially eaten), a proxy for donatability at the point of disposal.

Potentially donatable food was divided into five final categories. These were (1) vegetative, (2) eggs, dairy, and dairy alternatives, (3) meat, (4) cooked/baked/prepared perishable items, and (5) packaged non-perishable items. Non-donatable food was divided into two final categories, based on whether the food was primarily (1) meat or (2) non-meat material.

CATEGORIZATION OF NON-FOOD MATERIALS

Non-food was further divided into three final categories. These were (1) non-food organic material (“compostable”), (2) non-food non-organic recyclable material (“recyclable”), and (3) non-food non-organic non-recyclable material (“disposal”).

The full definitions of each material category, with examples, are presented in Appendix 2.

Sorting of Sampled Material

Samples were hand-sorted by the contractor into the eleven material categories described in the next section. The contractor sorted the material either on-site, in a truck, or at a sample sorting node within 30 miles of the generator. A sample sorting node was a transfer station or landfill. Most sorting occurred on-site (125 of 133 generators) with three occurring in a truck, and five occurring at a sampling node. A field manager monitored sorting and proper classification of materials.

During the sorting process all materials greater than 2 inches in diameter, as well as easily recognized items smaller than 2 inches in diameter (such as cherries), were classified. Any material remaining after this classification was included in the disposal material category. The material was weighed using pre-tared scales accurate to 0.01

pounds and recorded via a direct link to a computer. The list of equipment used by the contractor during the sorting process is shown in Table 3.

Table 3 - Contractor Equipment List for Field Work.

Sorting and Collecting	Visual Assessments	PPE and Safety Supplies
Box cutters	Back-up paper data collection forms;	Additional drinking water
Box trucks	List and map of sample addresses	Certified steel-toed footwear
Brooms	Measuring stick with “Percent Full” level markers	Copy of the Tetra Tech Health and Safety Plan
Clipboards	Pens, pencils, and markers	First aid kit
Digital scale	Safety equipment	Folding safety cone
Duct tape	Sharpies and clipboards	Hand wipes and sanitizer
Heavy plastic drop film	Tablets with the Fulcrum application and Google Maps	High visibility vests
iPads		Kevlar (outer) gloves
List of material definitions		Kevlar sleeves
List of sample addresses		N95 mask
Pens, pencils, and markers		Nitrile (inner) gloves
Replacement batteries		Safety glasses
Safety equipment		Sunblock
Sample ID tags		Whistle
Sharpies		
Shovels		
Sort tables		
Tally sheets		
Tarps		

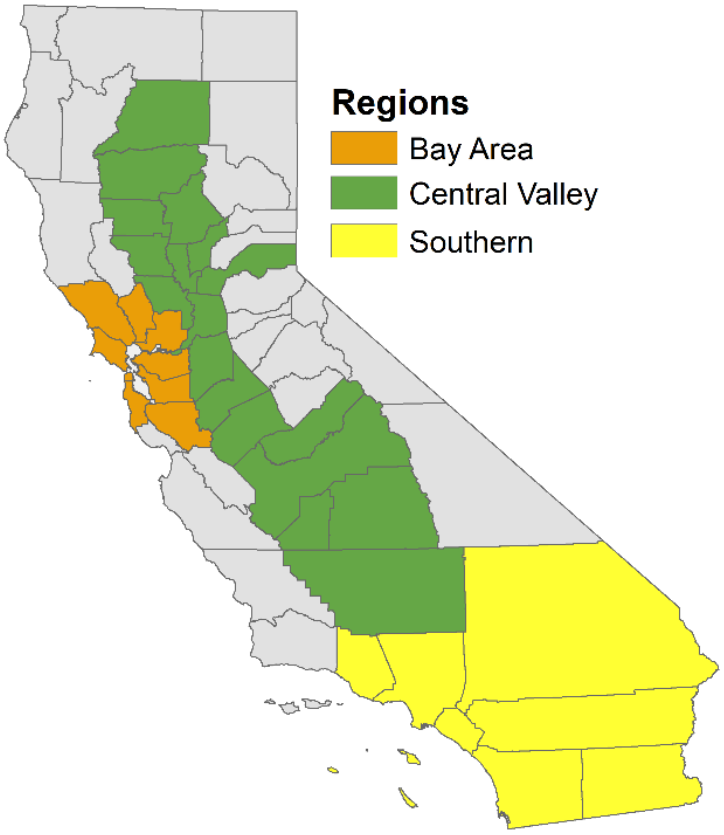
Regions

Sampling for the 2021 Generator-Based Waste Characterization Study occurred in three regions of the state: Bay Area, Central Valley, and Southern California. These three regions account for 94 percent of the California population based on the 2020 United States census. The regions are shown in Figure 2.

Within the three regions, the contractor identified and recruited transfer stations and landfills as sample sorting nodes. These nodes encompassed a 30-mile radius around

the disposal site. The contractor identified and recruited generators who were within the 30-mile radius of a sorting node.

Figure 2 - Map of California counties divided by region.



Industry Groups and Region

CalRecycle performed a cross-comparison of the sampling occurring for each industry group within each region. The Southern California region accounted for 59 percent of the total samples collected and this was reflected across nine of the twelve sampled industry groups where it was the largest contributor. Of those nine industry groups, Southern California was the sole contributor for three industry groups. Only one commercial bakery was, ultimately, included in this study, located in the Central Valley. Additionally, most of the correctional institutions sampled were in the Central Valley. Slightly over half of the hotels samples in this study were in the Bay Area. This geographic breakdown is shown in Table 4.

Table 4 - Number of generators in each industry group broken down by region.

Industry Group	Central Valley	Southern CA	Bay Area	Total
Cafeterias, Grill Buffets, and Buffets	2	13	4	19
Caterers (food production facility) and food service contractors	-	3	-	3
Commercial Bakeries	1	-	-	1
Correctional Institutions	9	4	1	14
Food Distributors	-	3	1	4
Full-service restaurants	-	3	1	4
Hospitals	-	3	-	3
Hotels (except Casino Hotels) and Motels	1	1	3	5
K-12 Schools	13	26	3	42
Limited-Service Restaurants	-	3	2	5
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	-	4	-	4
Supermarkets and Other Grocery (except Convenience) Stores	7	16	6	29
Total	33	79	21	133

Timing of Study

Samples were collected between October 14, 2021, and April 1, 2022, with the highest number of samples per month being collected in March 2022. During this period, many of the targeted industry groups had changed operations, closed locations, or made other changes in response to the ongoing COVID-19 pandemic. Survey questions for

generators were included to investigate impacts of the pandemic upon each generator's operations. Additional information relating to pandemic impacts can be found in the survey methodology and survey results report sections.

Surveys

The contractor administered a 21-question survey to all sampled generators. Responses to the questions were voluntary, though some basic facility information needed to complete a generator's data set was also collected as part of the survey. The full survey document, containing the questions and multiple-choice answers, is included in Appendix 2.

The survey included multiple questions to allow for classification of generators by region, size, and industry group. The contractor also collected information on existing food recovery measures, strategies being used for waste prevention, and current waste management procedures. Multiple questions asked about conditions that may contribute to differences in disposal or diversion patterns between otherwise similar generators. This included the respondent's estimation of the top two reasons food is discarded at that site, the number of employees, and the types of food disposed of at that site. Questions were also included in the survey to gauge the impact of the COVID-19 pandemic and the resultant state of emergency on the operations at each generator's facility.

Surveys were conducted during the recruitment process for all participating generators and were intended to be administered shortly prior to sampling and sorting, within operational and logistical constraints.

Reporting and Quality Control of Data

The contractor provided raw data to CalRecycle. Samples were screened via a quality control procedure to identify cases where data was missing, potentially contradictory, or outside of expected ranges. As part of the quality control procedure, photography of samples both prior to and during the sorting process were used by CalRecycle for verification of reported values such as material volumes and material weights.

Items requiring correction or clarification were returned to the contractor for correction or confirmation. Most data resubmitted by the contractor was found to be complete and accurate such that it was included in the study. There were 89 of 281 samples rejected from consideration for reasons including not reaching the 200-pound threshold, uncorrected issues in required data, and missing or obscured photographs required for verification. Overlap of more than one disqualifying issues for a single sample was common among rejected samples. This resulted in 192 samples being included in this report.

Generators were allowed to remain anonymous in which case the identity of the generator was not shared with CalRecycle. In these cases, the generator was given an identification code and de-identified data was provided (i.e., the name and specific

location of the generator were not provided, but information on the industry group and region of the generator was provided to CalRecycle). Findings are aggregated by industry group and facility-specific information is not provided in this report.

Calculation of Data in this Report

There were two primary types of calculations used to estimate the amount and type of food and other materials in the waste streams of each generator, based on the results of sampling and sorting. The first was an estimate of the percent composition of each material category for each waste stream. The second type was an extrapolation of the weight of each material category, and combined material categories, at the time of sampling to annual amounts, represented as tons per generator per year.

Material Composition

As noted above, each 200-pound sample was sorted into 11 material categories and the weight of each material category was reported. For each material type, proportions were calculated by taking the ratio of the weight of the material of interest divided by the total weight of the sample.

Throughout this report, the figures are shown using box plots. Box plots show the median as the vertical line in the middle of the box, with the edges of the box representing the first and third quartile of the data, and lines and dots representing data reaching to the minimum and maximum values of that range. A more thorough explanation of how to interpret box plots is provided in Appendix 1 as well as the data tables associated with each figure.

Annual Tons per Generator

The annual generation amount of a given material category in a stream is also estimated for each generator (annual tons per generator) and presented in a summarized format for each industry group.

Like the Material Composition section described above, the estimates are aggregated into larger groups representing all material in that stream for that generator as well as all food (eight categories), and all potentially donatable food (five categories).

Five factors were multiplied to estimate the annual tons of all material in a stream for an individual generator which are listed below and shown in Equation 1:

1. The sample weight (200 pounds or more).
2. The ratio of the volume of material present at the time of sampling against the volume of the sampled material. This is used to extrapolate the sample to a representative snapshot of material on site at the time of sampling.
3. The ratio of the normal hours of operation in a typical week against the hours of accumulation of the sample (i.e., the number of hours between the last pick up by

the hauler and the collection of the sample). This is used to extrapolate the sample to represent a week of generator at that site.

4. The number of assumed weeks of operation for the generator. All industries were assumed to operate year-round except for schools which were assumed to operate for nine months of the year. This is used to extrapolate the weekly figure to a yearly figure.
5. Dividing by 2,000 to convert pounds to tons.

Equation 1 – Factors used to estimate annual tons of diversion or disposal.

$$\text{Sample Weight (in Pounds)} \times \frac{\text{Volume of Material Present during Sampling}}{\text{Volume of Material in 200-pound Sample}} \times \frac{\text{Hours of Operation per Week}}{\text{Hours Elapsed for Sample to Accumulate}} \times \frac{\text{Number of Weeks Operating Per Year}}{\text{52 Weeks}} \times \frac{\text{1 ton}}{\text{2000 lbs}} = \text{Annual Tons per Generator}$$

From the annual tons of all material in a stream for an individual generator the proportion described above for the material(s) of interest is applied to get the annual tons of that material category or group of material categories.

These weights have been summarized, along with their proportions, for each group of material categories. As previously noted for proportions in the figures throughout this report, these are shown using box plots. In addition to the data tables containing this information, an explanation of how to interpret these box plots is provided in Appendix 1.

Methodology Summary Table

The methodologies of the 2019 and 2021 study are contrasted in Table 55. For a more detailed description of the methodology for the 2019 study, see Appendix 6.

Table 5 - Table summarizing differences in 2019 and 2021 Generator-Based Waste Characterization Study methodologies.

Parameter	2019 Study	2021 Study
Survey	Responses Voluntary, Insufficient Response Rate for Inclusion in Report.	Responses Voluntary, Response Rates Reported.
Generators Included in this Report	93	133
Material Streams Sampled	Disposal Only	Disposal and Organic Diversion

Parameter	2019 Study	2021 Study
Samples Collected	95	192
Industry Groups Sampled	5	12
Regions Sampled	Bay Area, Central Valley, Coastal, and Southern California	Bay Area, Central Valley, and Southern California

Data Limitations

Both the 2019 and the 2021 studies have multiple data limitations to consider when interpreting the results. One limitation for both studies was that the number of samples collected per industry group was limited. While there were a higher number of samples from some industry groups, estimates are not representative of any industry group statewide.

For the 2021 study, another limitation was that the contractor could not collect samples from both the organic diversion and disposal streams for many generators. This occurred at sites for which receptacles for an organic diversion or disposal stream were present, but not enough material was present to meet the minimum 200-pound sample threshold. This prevented CalRecycle from calculating an estimation of annual tons of disposal or diversion from that generator's stream.

For both studies, sampling of each site was generally limited to a single day of the year in most cases, although there were 8 samples which were aggregated between two visits. These samples have been used to extrapolate annual disposal or diversion in general terms but are limiting in that they are a representation of a snapshot in time.

Another limitation of both studies is the ability to identify food that would have been safe to be recovered for human consumption at the time of discard. The potentially donatable material categories were designed to provide estimates of the amount that would have been recovered through proxies, including the item being discarded in original, unopened packaging and being discarded in a whole state.

Lastly, participation of generators, for both studies, was voluntary and thus non-random. This introduces the effects of selection bias to the data. Further, while the use of survey questions allows for assessment of correlation, causation cannot be assessed using a survey paired with observational data.

Results

The results included in this section are based on the analysis of 192 samples collected from 133 generators. Seventy-two (72) samples were collected from the organic diversion stream and 120 samples were collected from the disposal stream. The distributions of these samples are presented below as well as in Appendix 3. Additional

analysis of the results by individual industry group are presented in Appendix 4. These 192 samples are those that passed the quality control process previously described.

Visual Assessment of Yard Waste and Recycling Streams

The contractor did not report any observed food waste contamination of yard waste receptacles.

Additionally, the contractor reported contamination of the recycling stream as negligible for 130 of the 133 generators sampled. Of those remaining three generators, one was estimated as having contamination of five percent with the other two reported as at or near 100 percent contamination due to recycling designated bins being used for municipal solid waste.

Material Composition of Hand-Sorted Streams

Results for potentially donatable food are presented first, followed by results for all food categories, and finally results for all material categories. The data for each of those results is divided into the organic diversion and disposal streams.

Potentially Donatable Food

Potentially donatable food, the sum of five individual material categories, was found in varying percentages in both the organic diversion and disposal streams from one generator to another. The median percentage across all industry groups of potentially donatable food in the organic diversion stream was 6 percent and was lower than the 12 percent observed in the disposal stream. However, this varied by industry group with five having a higher percentage in disposal, five having a higher percentage in organic diversion, one tie, and no comparison possible for Commercial Bakeries. The largest difference was observed in Supermarkets & Grocery Stores, where 59 percent of the organic diversion stream and 14 percent of the disposal stream was potentially donatable food. Cafeterias, Grills, and Grill Buffets, Caterers, and Full-Service Restaurants were found to have median percentages of potentially donatable food in both streams at or below one percent.

The median estimated tons of potentially donatable food in the organic diversion stream was lower than that of the disposal stream, with 1 and 6 tons, respectively. The highest estimated median annual tons of diverted potentially donatable food was 30 tons at Food Distributors followed by 17 tons at Supermarkets & Grocery Stores. The highest estimated median annual tons of disposed potentially donatable food was 26 tons followed by 16 tons at Events/Venues.

Table 6 and Table 7 show the medians of both the percentage of potentially donatable food reported for each stream as well as the extrapolated tons per generator per year for each industry group.

Statistical testing using Kruskal-Wallis revealed that type of industry group sampled has a significant effect on the percentage of potentially donatable food disposed or diverted,

with post hoc testing revealing twenty significant pairings which are fully detailed in Appendix 5. These included seven other industry groups paired with Supermarkets & Grocery Stores, and five other industry groups paired with K-12 Schools.

Table 6 - Median Percentage of Potentially Donatable Food in the Organic Diversion Stream and Extrapolated Median Tons per Year for Each Generator Group.

Industry Group	Median Percentage of Potentially Donatable Food in Organic Diversion Stream	Median Tons of Potentially Donatable Food in Organic Diversion Stream	Count of Organic Diversion Samples
Cafeterias, Grill Buffets, and Buffets	1%	< 1	13
Caterers (food production facility) and food service contractors	< 1%	< 1	1
Commercial Bakeries	-	-	-
Correctional Institutions	< 1%	< 1	10
Food Distributors	94%	30	4
Full-service restaurants	< 1%	< 1	3
Hospitals	9%	2	2
Hotels (except Casino Hotels) and Motels	4%	1	2
K-12 schools	9%	< 1	7
Limited-Service Restaurants	3%	1	2
Performing arts, spectator sports and related industries (includes large venues and large events)	10%	3	3
Supermarkets and Other Grocery (except Convenience) Stores	59%	17	25
Overall	**6%**	**1**	**72**

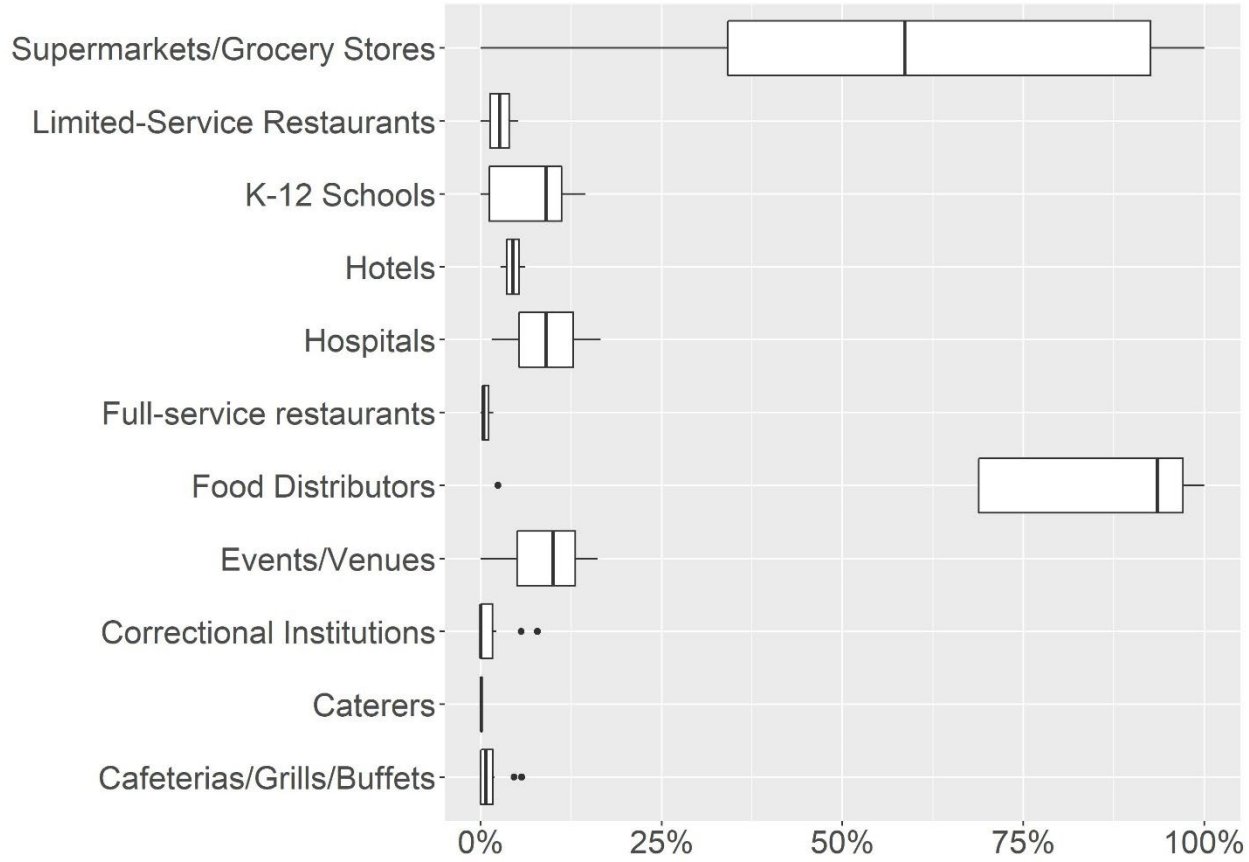
Table 7 - Median Percentage of Potentially Donatable Food in the Disposal Stream and Extrapolated Median Tons per Year for Each Generator Group.

Industry Group	Median Percentage of Potentially Donatable Food in Disposal Stream	Median Tons of Potentially Donatable Food in Disposal Stream	Count of Disposal Samples
Cafeterias, Grill Buffets, and Buffets	1%	1	18
Caterers (food production facility) and food service contractors	1%	1	3
Commercial Bakeries	0%	0	1
Correctional Institutions	14%	8	13
Food Distributors	53%	26	4
Full-service restaurants	1%	< 1	4
Hospitals	6%	4	2
Hotels (except Casino Hotels) and Motels	6%	7	4
K-12 schools	30%	11	41
Limited-Service Restaurants	2%	1	5
Performing arts, spectator sports and related industries (includes large venues and large events)	4%	16	4
Supermarkets and Other Grocery (except Convenience) Stores	14%	7	21
Overall	**12%**	**6**	**120**

POTENTIALLY DONATABLE FOOD IN THE ORGANIC DIVERSION STREAM

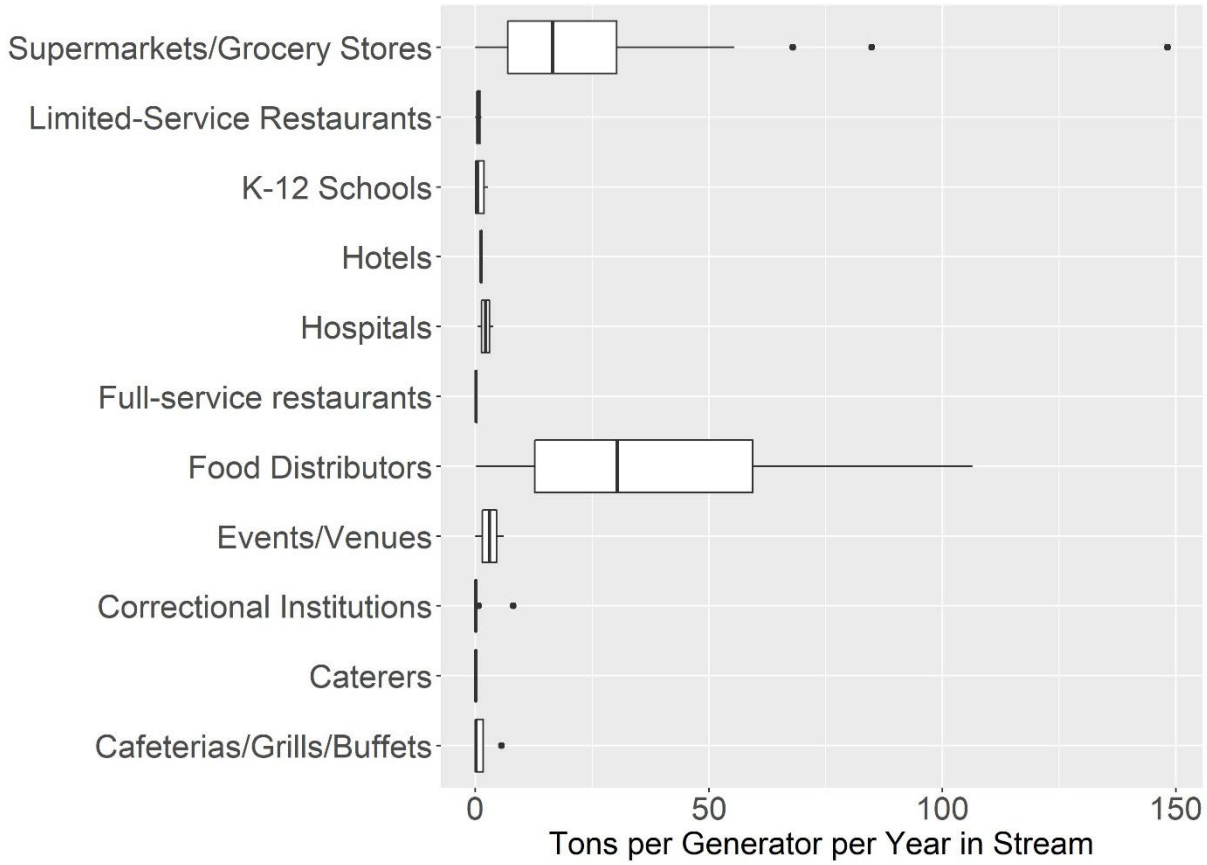
The percentage of potentially donatable food in the organic diversion stream was found to have a significant relationship to industry group. This is shown in Figure 3 which illustrates a higher median percentage of potentially donatable food in the organic diversion stream for Food Distributors and Supermarkets & Grocery Stores, which had medians of 59 percent and 94 percent, respectively. All other industry groups have a percentage of potentially donatable food in their organics stream of 10 percent or less. Additionally, Figure 3 depicts the wide distribution among the 25 Supermarkets/Grocery Stores, ranging from a minimum of 0 percent to 100 percent.

Figure 3 - Distribution of the percentage of potentially donatable food observed in the organic diversion stream sample for each generator by industry group.



CalRecycle also extrapolated the estimated tons of potentially donatable food in the organic diversion stream per generator per year. Figure 4 shows the distribution of tons per generator per year. As seen in the percentages, Food Distributors and Supermarkets/Grocery Stores continue to have larger contributions of potentially donatable food to the organic diversion stream with 30 and 17 tons, respectively. All other industry groups have median extrapolated annual tons of potentially donatable food in their organic diversion streams of three or less tons, with five of those industry groups having one ton or less.

Figure 4 - Distribution of the weight (in tons) of potentially donatable food observed in the organic diversion stream sample for each generator by industry group.

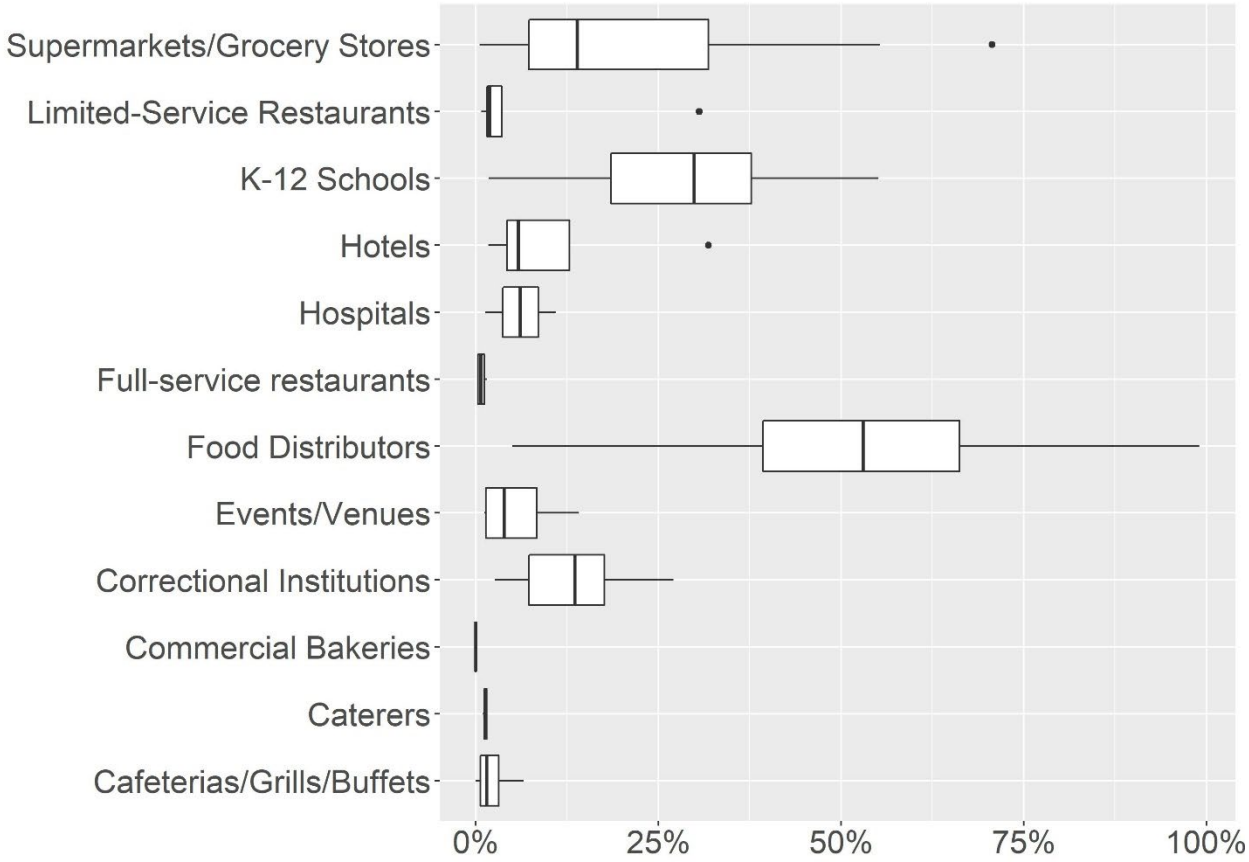


POTENTIALLY DONATABLE FOOD IN THE DISPOSAL STREAM

The percentage of potentially donatable food in disposal stream was found to have a significant relationship to industry group. At the descriptive level, Figure 5 reveals a higher median percentage of potentially donatable food in the disposal stream for Food Distributors and K-12 Schools, with 53 percent and 30 percent, respectively. All other industry groups had a median percentage of potentially donatable food in the disposal stream below 15 percent. Additionally, certain industry groups had a wide distribution of potentially donatable food, such as Food Distributors, ranging from 5 percent to 99 percent, and Supermarkets/Grocery Stores ranging from 1 percent to 71 percent as show in Figure 5.

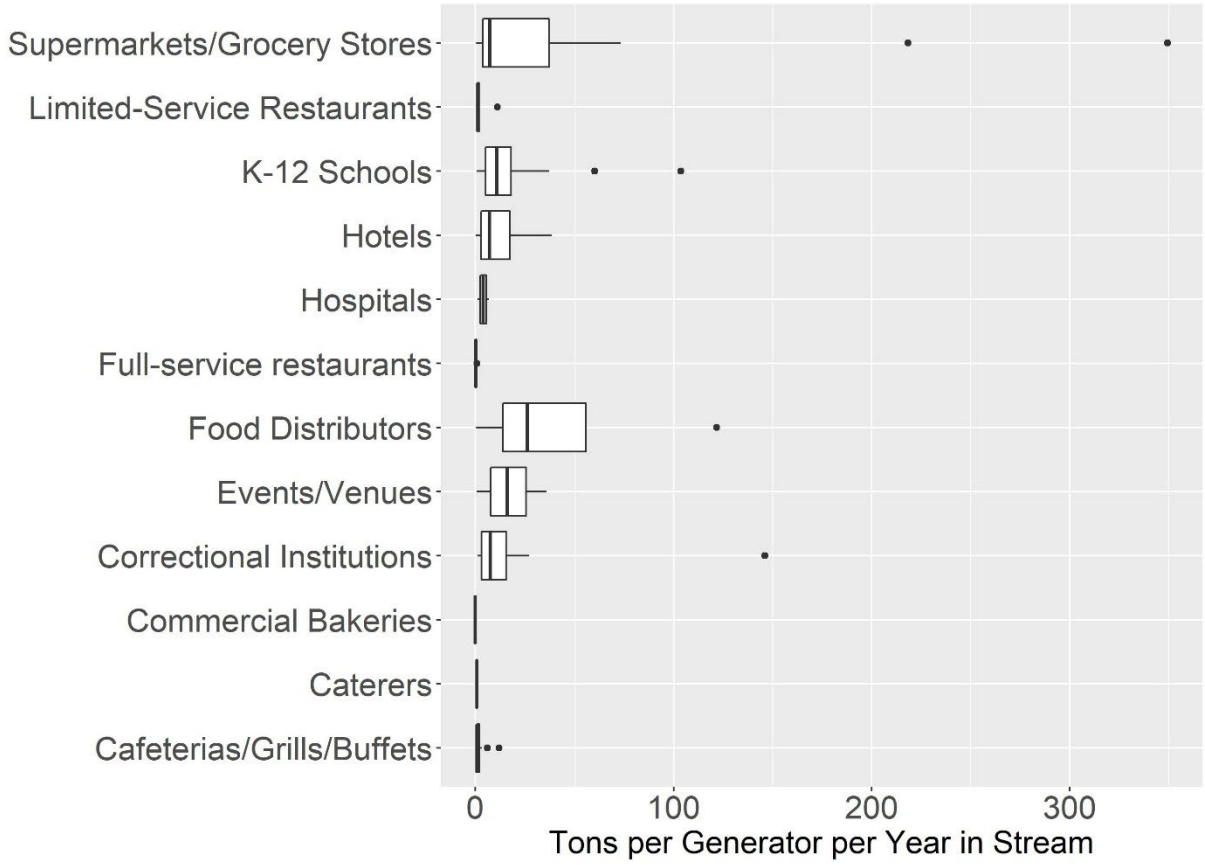
Statistically significant pairings of industry groups as they relate to the percentage of potentially donatable food were identified during the statistical process and are further detailed in Appendix 5.

Figure 5 - Distribution of the percentage of potentially donatable food observed in the disposal stream sample for each generator by industry group.



CalRecycle also extrapolated the estimated tons of potentially donatable food in the disposal stream per generator per year. This is shown in Figure 6. While the effects of many outliers become apparent as seen with the previously reported percentages, Supermarkets/Grocery Stores ranged from less than 1 ton to 349 tons of potentially donatable food in the disposal stream, followed by Correctional Institutions which ranged from 1 ton to 146 tons, and Food Distributors which ranged from less than 1 ton to 122 tons,

Figure 6 - Distribution of the weight (in tons) of potentially donatable food observed in the disposal stream sample for each generator by industry group.



All Food Categories

CalRecycle included eight food material categories in this study. The figures in this section reflect the percentage of all material in these categories within the samples taken at each generator. In addition to the five potentially donatable categories, this section provides the sums of two non-donatable food types and inedible parts.

Table 8 and Table 9 show the medians of both the percentage of food from all eight food material categories reported for each stream as well as the extrapolated tons per generator per year for each industry group. Across all industry groups, the median percentage of any food material in the organic diversion stream was 98 percent. Only five industry groups had a median below 90 percent; the lowest being 56 percent. In the disposal stream, across all industry groups the median percentage of food was less than half that of the organic stream, at 46 percent. This varied more by industry group than that of the organic diversion stream with a high of 76 percent for Food Distributors and a low of 11 percent for Commercial Bakeries.

Across all industry groups a similar amount of food measured in tons per year was estimated for organic diversion and disposal streams, at 23 and 22 tons, respectively. The highest estimated annual tons of food in the organic diversion stream for any industry group was for Full-Service Restaurants at 54 tons, followed by Cafeterias, Grill Buffets, and Buffets at 31 tons. The highest estimated annual tons of food in the disposal stream for any industry group was for Hotels at 18 tons, followed by Events/Venues at 43 tons.

Comparison of the industry groups with the highest outputs of food versus potentially donatable food reveal some differences. A key driver in the identification of donatability for a given item was whether it had been disposed of in a whole or intact state. In general terms, industry groups handling pre-consumer food were found to have higher percentages of potentially donatable food. The inclusion of both non-donatable food and inedible parts brings the percentages higher for many industry groups at the meal preparation for the end consumer stage. While limited by a low response rate, the answers to the survey question, “What type(s) of food do you donate?” shown in Table 12 show that Cafeterias, Grill Buffets, and Buffets tend to donate prepared foods over packaged, while the opposite appears to be true for Supermarkets & Grocery Stores.

Statistical testing using Kruskal-Wallis as described in Appendix 5 revealed that industry group has a significant effect on the percentage of all food (combined eight material categories) disposed or diverted, with post hoc testing revealing one significant pair.

Table 8 - Median Percentage of All Food Categories in the Disposal Stream and Extrapolated Median Tons per Year for Each Generator Group.

Industry Group	Median Percentage of Food in Organic Diversion Stream	Median Tons of Food in Organic Diversion Stream	Count of Organic Diversion Samples
Cafeterias, Grill Buffets, and Buffets	95%	31	13
Caterers (food production facility) and food service contractors	89%	9	1
Commercial Bakeries	-	-	-
Correctional Institutions	100%	23	10
Food Distributors	99%	32	4
Full-service restaurants	65%	54	3
Hospitals	56%	15	2
Hotels (except Casino Hotels) and Motels	69%	20	2
K-12 schools	97%	6	7
Limited-Service Restaurants	83%	13	2

Industry Group	Median Percentage of Food in Organic Diversion Stream	Median Tons of Food in Organic Diversion Stream	Count of Organic Diversion Samples
Performing arts, spectator sports and related industries (includes large venues and large events)	100%	30	3
Supermarkets and Other Grocery (except Convenience) Stores	99%	30	25
Overall	**98%**	**23**	**72**

Table 9 - Median Percentage of All Food Categories in the Organic Diversion Stream and Extrapolated Median Tons per Year for Each Generator Group.

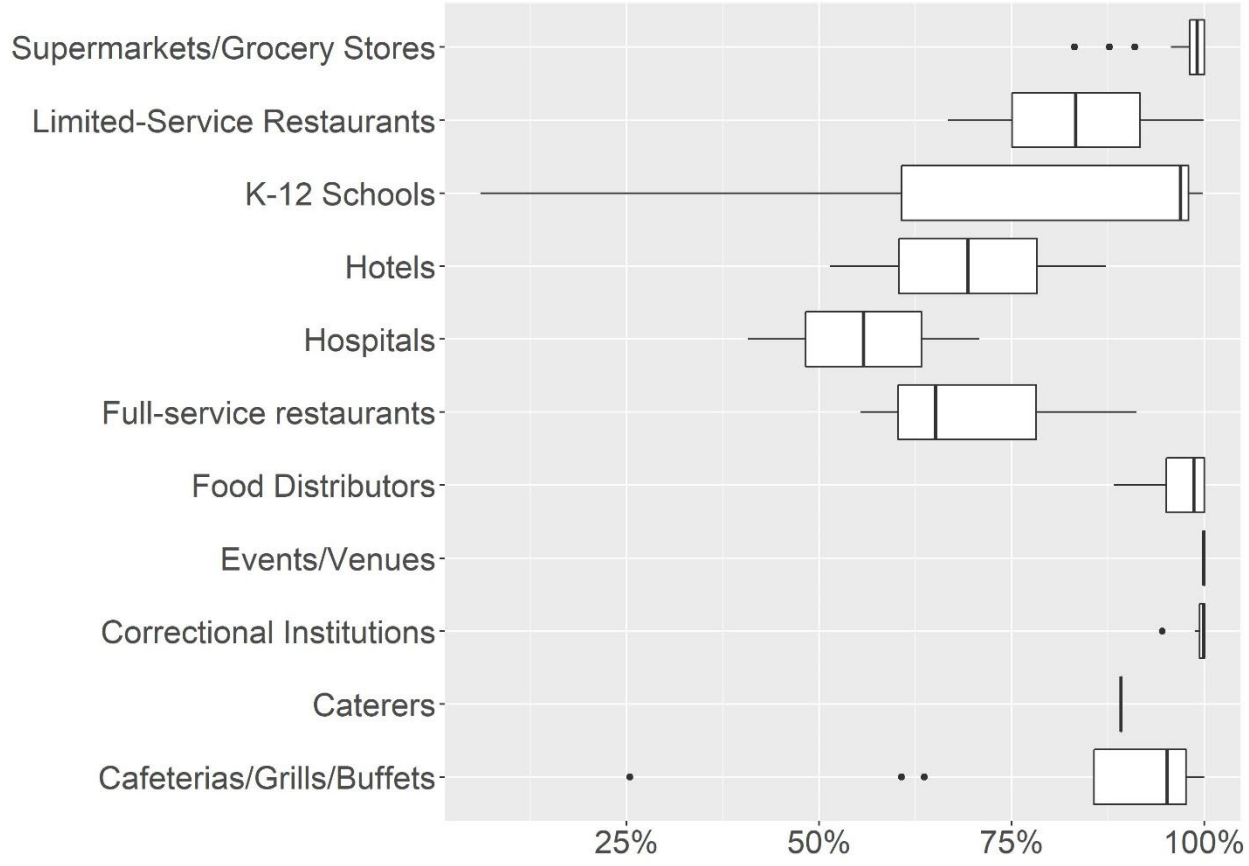
Industry Group	Median Percentage of Food in Disposal Stream	Median Tons of Food in Disposal Stream	Count of Disposal Samples
Cafeterias, Grill Buffets, and Buffets	25%	17	18
Caterers (food production facility) and food service contractors	28%	5	3
Commercial Bakeries	11%	10	1
Correctional Institutions	49%	31	13
Food Distributors	76%	36	4
Full-service restaurants	34%	8	4
Hospitals	23%	16	2
Hotels (except Casino Hotels) and Motels	39%	48	4
K-12 schools	63%	24	41
Limited-Service Restaurants	48%	30	5
Performing arts, spectator sports and related industries (includes large venues and large events)	27%	43	4
Supermarkets and Other Grocery (except Convenience) Stores	44%	27	21
Overall	**46%**	**22**	**120**

All Food Categories in the Organic Diversion Stream

As noted above, the percentage of food in the organic diversion stream was found to have a significant relationship to industry group. Most of the material in the organic stream for most generators is of one of the eight food categories. This is shown in Figure 7. Within the organic diversion stream, the lowest median percentage of food for any industry group was 56 percent at Hospitals, while six industry groups had a median of 90 percent or higher. Distributions for the percentage of food in the organic diversion stream industry groups, such as the range of K-12 schools being 6 percent to 100 percent are also depicted in Figure 7.

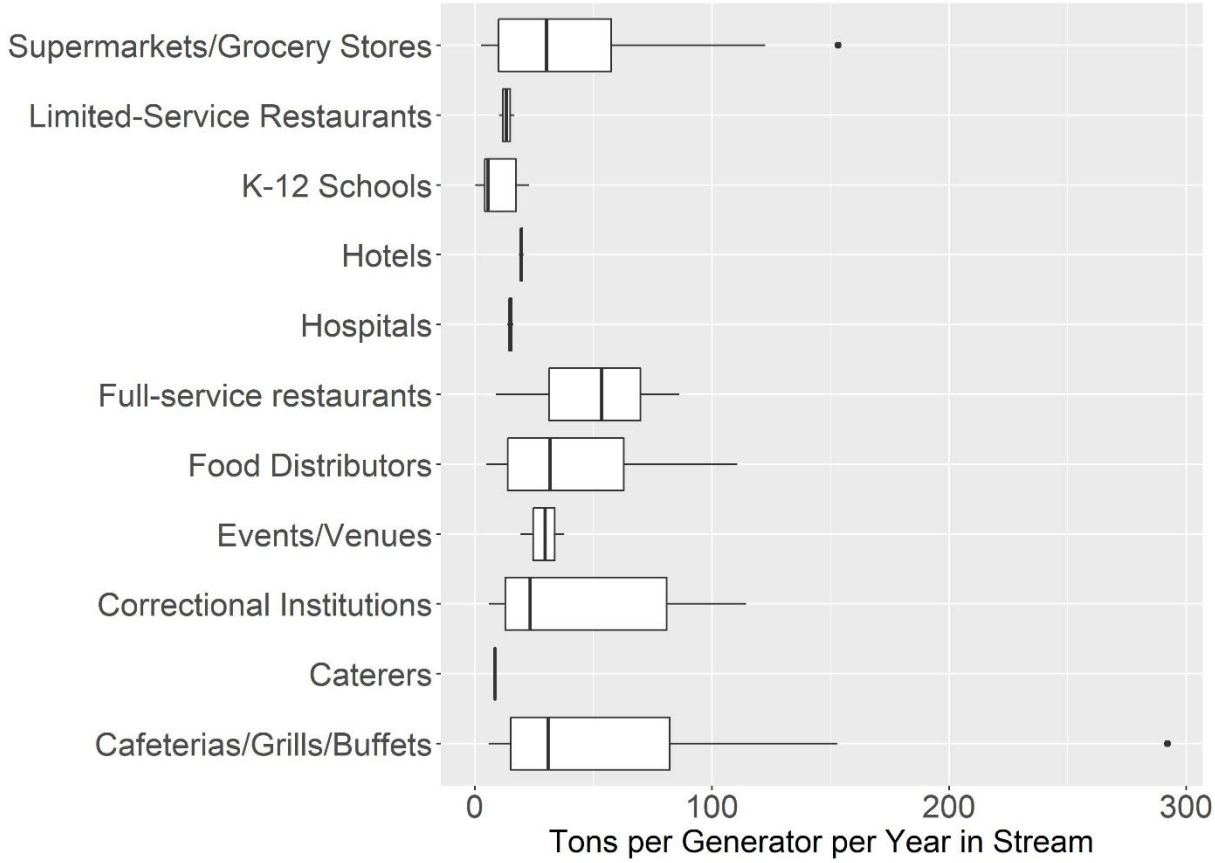
Details of contributions of the remaining three non-food material types are provided as part of the summary for each industry group in Appendix 4. Statistically significant pairings of industry groups as they relate to the percentage of food were identified during the statistical process are further detailed in Appendix 5.

Figure 7 - Distribution of the percentage of all categories of food observed in the organic diversion stream sample for each generator by industry group.



CalRecycle also extrapolated the estimated tons of food in the organic diversion stream per generator per year. This is shown in Figure 8. The median contribution of Full-Service Restaurants is the highest among this category with 54 tons. A large outlier is shown for Cafeterias, Grill Buffets, and Buffets at 292 tons, while the median for that industry group is 31 tons.

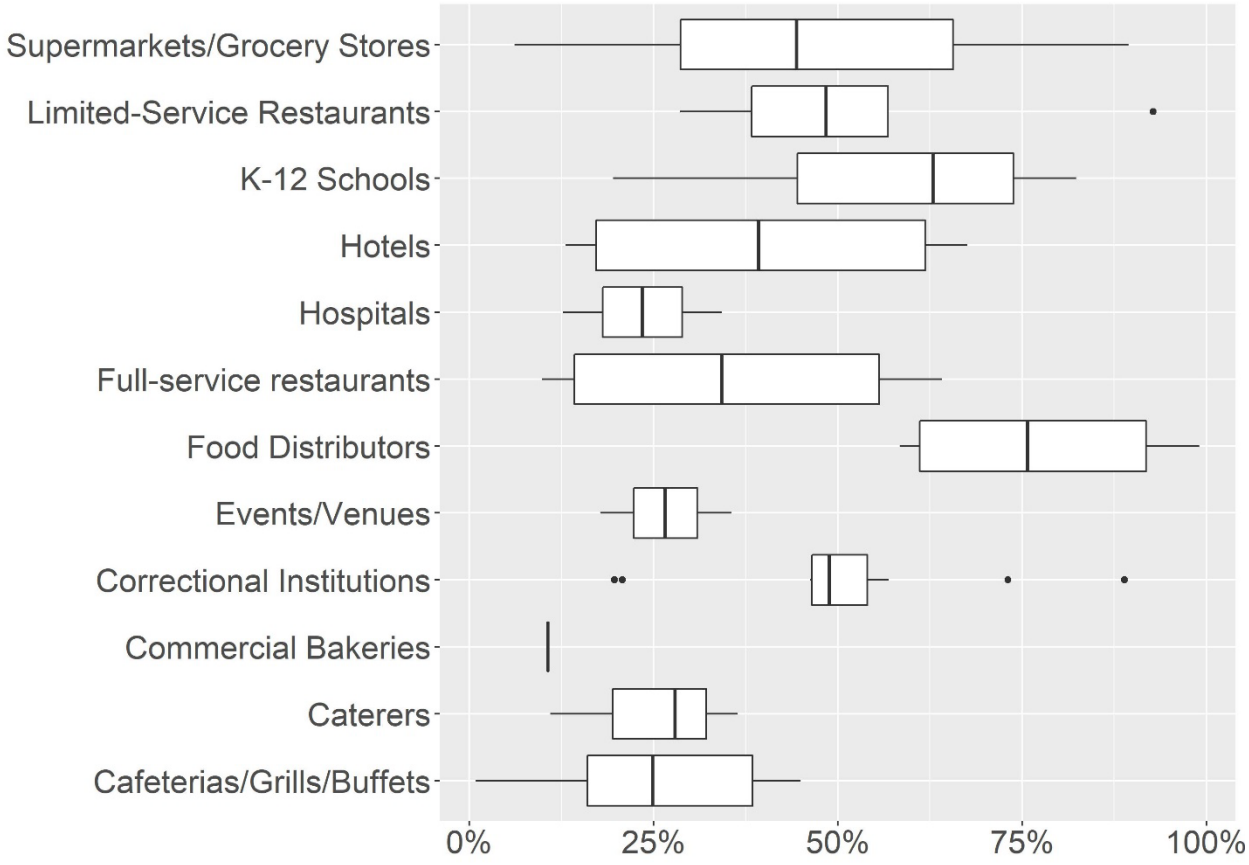
Figure 8 - Distribution of the weight (in tons) of all categories of food observed in the organic diversion stream sample for each generator by industry group.



ALL FOOD CATEGORIES IN THE DISPOSAL STREAM

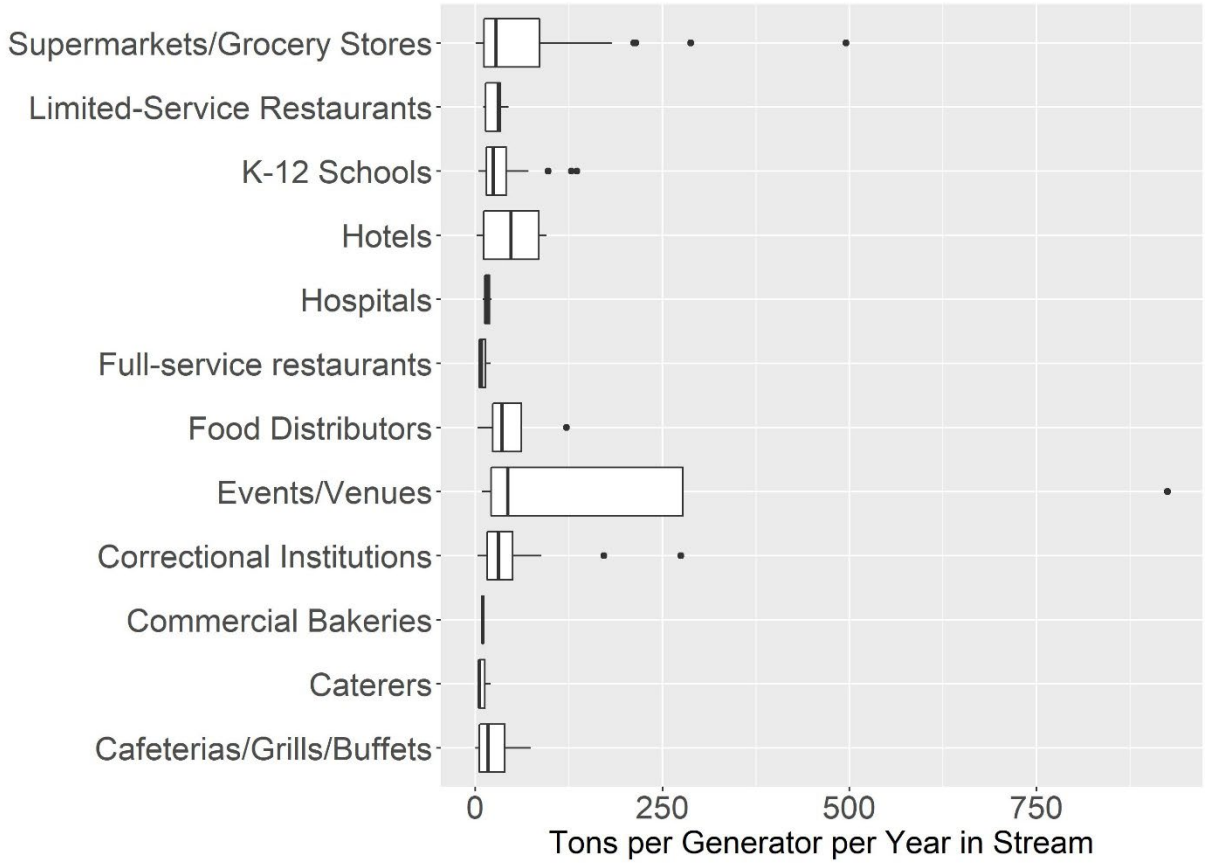
The median percentage of food in the disposal stream varied widely between industry groups. Within many of the industry groups, the distribution of these percentages is also observed to vary considerably. This is shown in Figure 9. The medians of the percentage of food found in the disposal stream was more widely dispersed among industry groups that that of the organic stream with three industry groups having a median below 25 percent, seven industry groups between 25 and 50 percent, and one industry group between 50 and 75 percent, with only Food Distributors having above 75 percent.

Figure 9 - Distribution of the percentage of all categories of food observed in the disposal stream sample for each generator by industry group.



CalRecycle also estimated the tons of food in the disposal stream per generator per year. The median tons for all industry groups fall below 50 tons per year. This is shown in Figure 10. When the annual tons of food in the disposal stream is evaluated, there are a few outliers, specifically an extrapolated tonnage of 926 tons for an Event/Venue. Median values across all industry groups range from 5 to 48 tons.

Figure 10 - Distribution of the weight (in tons) of all categories of food observed in the disposal stream sample for each generator by industry group.



Total Material in Each Stream

CalRecycle extrapolated the estimated annual tons of total material in each stream per generator. The limitations of the assumptions used to arrive at these figures are described in the data limitations section of this report. The estimated median annual tons for a generator in each industry group are shown in Table 108. Among all generators sampled, the extrapolated median annual tons were 28 tons of organic diversion and 53 tons of disposal. Full-Service Restaurants was the only industry group for which estimated annual diversion was greater than that of estimated annual disposal. The highest estimated annual disposal is that of Events/Venues at 209 tons, followed by Hotels at 98 tons. The highest estimated annual organic diversion was that of Full-Service Restaurants at 82 tons followed by Cafeterias, Grill Buffets, and Buffets at 45 tons.

Previous CalRecycle reports have used tons (or pounds) per employee per year as a metric for assessment of material being generated by facilities. CalRecycle's statistical analysis found poor descriptive power of the correlation between the number of

employees and weight of material generated. Due to that finding, that metric is not applied to the results of this study. The methods and results of this statistical analysis are presented in full in Appendix 5.

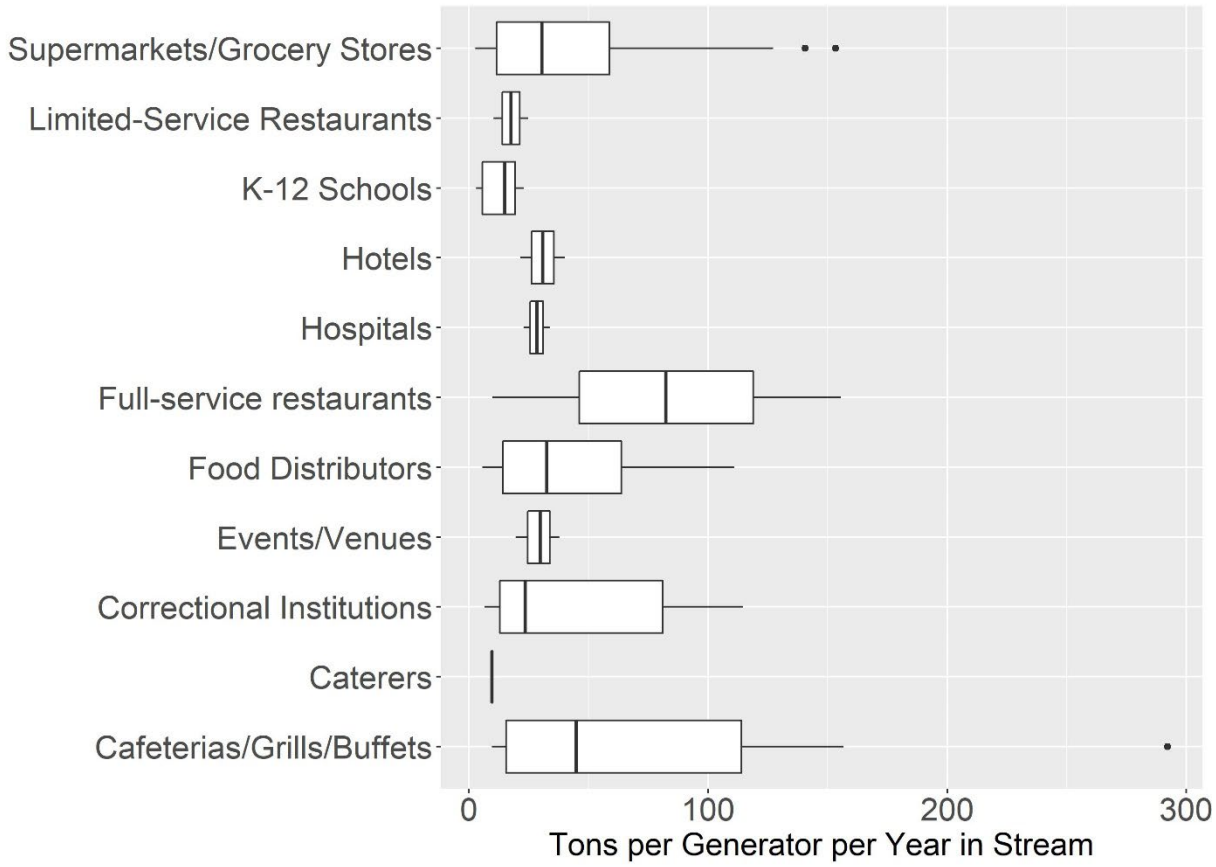
Table 10 – Median Extrapolated Tons per Year Per Generator for All Industry Groups for Total Material in the Organic Diversion and Disposal Streams.

Industry Group	Disposal Median (tons/yr)	Diversion Median (tons/yr)
Cafeterias, Grill Buffets, and Buffets	60	45
Caterers (Food Production Facility) and Food Service Contractors	42	10
Commercial Bakeries	95	-
Correctional Institutions	57	24
Food Distributors	50	32
Full-service restaurants	33	82
Hospitals	70	28
Hotels (except Casino Hotels) and Motels	98	31
K-12 schools	44	15
Limited-Service Restaurants	37	18
Performing arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	209	30
Supermarkets and Other Grocery (except Convenience) Stores	71	31
Overall	**53**	**28**

ORGANIC DIVERSION STREAM

The calculated distributions of the estimated annual tons per generator per year in the organic diversion stream are shown in Figure 11. Full-Service Restaurants had the highest estimated median tons of organic diversion at 82 tons, with a distribution spread from a minimum of 10 to a maximum of 155 tons. The distribution was such that three quarters of Full-Service Restaurants had annual organic diversion above the median value of any other industry group.

Figure 11 - Distribution of total annual organic diversion by weight for all sampled industry groups.



DISPOSAL STREAM

The calculated distributions of total annual material weights in the disposal stream were more widely spread between industry groups and have been split into two figures for greater clarity. The five industry groups requiring a scale extending above 160 annual tons are shown in Figure 12. The remaining seven industry groups are shown in Figure 13. The Events/Venues was shown in Table 10, above, to have the largest estimated annual disposal of 209 tons, and the distribution includes a maximum estimation of 3,157 annual tons.

Figure 12 - Distribution of total annual disposal by weight for industry groups with the five highest disposal rates.

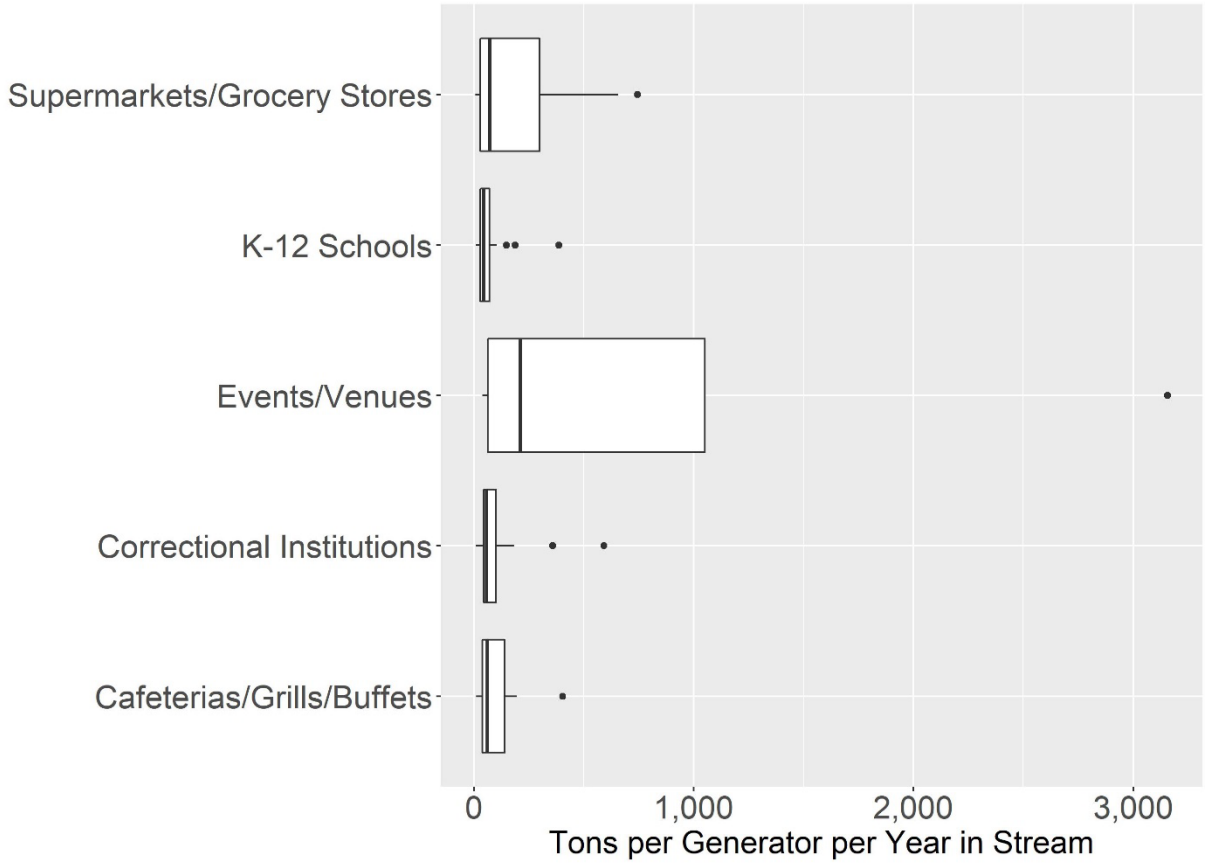


Figure 13 - Distribution of total annual disposal by weight for remaining seven industry groups.

Surveys

The contractor collected responses to a survey consisting of 21 general questions as well as questions specific to each industry group. The general questions were grouped into the following categories: General Information, Food Recovery, Waste Prevention, Waste Management, Context, and COVID-related Impacts. Responses were voluntary for most questions and the response rates are noted for each question.

The statistical analyses detailed in Appendix 5 examined correlation between applicable survey questions and the material compositions measured and reported above.

Food Recovery

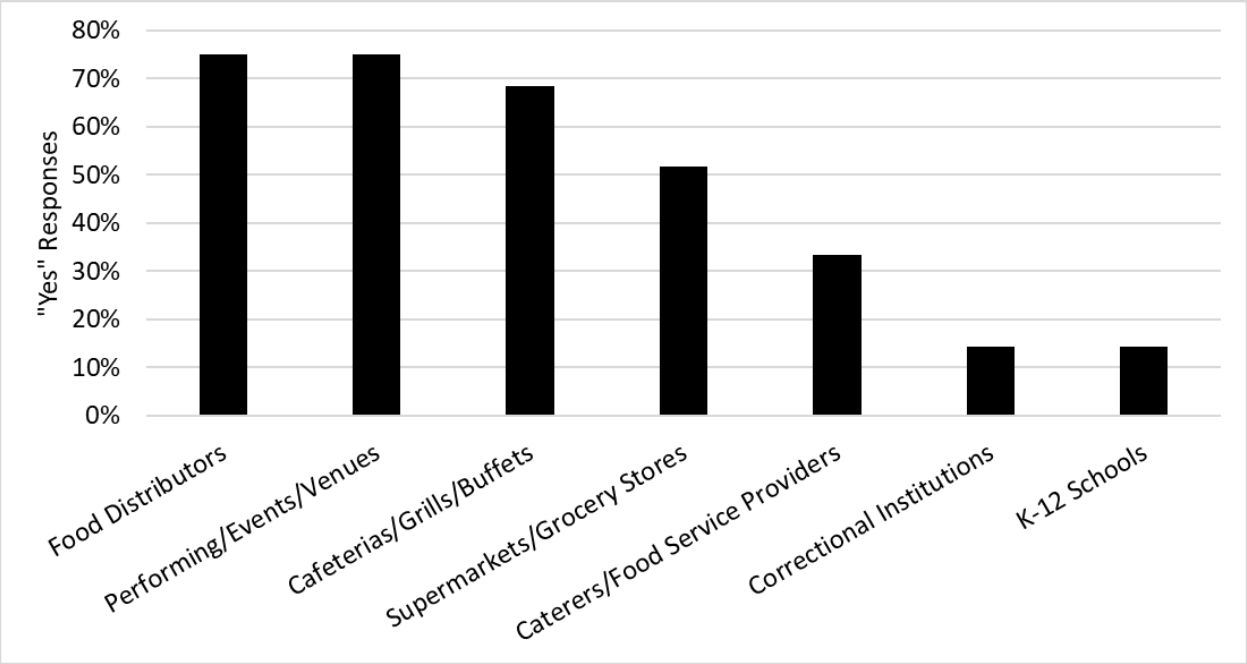
DO YOU CURRENTLY WORK WITH A FOOD RECOVERY ORGANIZATION OR SERVICE TO RECOVER/DONATE SURPLUS FOOD?

Among the 133 generators from which samples were collected, 32 percent reported that they did currently work with a food recovery organization or service and 50 percent

reported that they did not. The remaining respondents were unsure or did not provide an answer.

Although both industry groups were limited to 4 respondents each, the highest percentage of “yes” responses to this question were from Events/Venues and Food Distributors at 75 percent each. This was followed by Cafeterias, Grills, and Buffets with 68 percent (13 of 19) of respondents indicating that they were working with a food recovery organization or service. The percentages of generators replying “yes” are shown in Figure 14.

Figure 14 - Percentage of generators within each industry group reporting that they work with a food recovery service.



IF YOUR FACILITY DONATED SURPLUS FOOD, HOW FREQUENTLY IS THE FOOD COLLECTED BY OR SENT TO FOOD RECOVERY ORGANIZATIONS?

There were 40 responses to this question. Of those, 9 reported daily collection, 19 were multiple times per week, 4 were weekly, and 8 were less-than-weekly. This information is detailed as percentages among industry groups in Table 11.

Table 11 - Frequency of food donation to food recovery organizations among industry groups.

Industry Group	Response Count	Daily	Multiple per Week	Weekly	Less than Weekly
Cafeterias, Grill Buffets, and Buffets	10	30%	50%	20%	0%
Caterers (food production facility) and food service contractors	1	0%	0%	0%	100%
Correctional Institutions	2	0%	100%	0%	0%
Food Distributors	3	67%	33%	0%	0%
K-12 schools	6	0%	17%	17%	67%
Performing arts, spectator sports and related industries (includes large venues and large events)	3	33%	0%	33%	33%
Supermarkets and Other Grocery (except Convenience) Stores	15	20%	67%	0%	13%

WHAT TYPE(S) OF FOOD DO YOU DONATE?

There were 40 responses to this question. One of these was provided as a narrative rather than selection of categories and has been excluded from these counts. Of those, most respondents reported donating from multiple categories with 15 reporting four categories, 3 reporting three categories, 13 reporting two categories, and 8 reporting one category. The most commonly donated category was packaged items (29), followed by prepared cold items (26), uncooked items (25), and prepared hot items (23). The breakdown of the 39 responses within these categories are detailed in Table 1210.

The remaining narrative answer stated that leftovers were minimal and donated when an item that would not be used was approaching its expiration date.

Table 12 - Food types donated by category by responding generators by industry group.

Industry Group	Response Count	Packaged	Prepared Cold	Uncooked	Prepared Hot
Cafeterias, Grill Buffets, and Buffets	11	45%	91%	36%	82%
Caterers (Food Production Facility)	1	100%	100%	0%	100%

Industry Group	Response Count	Packaged	Prepared Cold	Uncooked	Prepared Hot
and Food Service Contractors					
Correctional Institutions	1	100%	100%	0%	0%
Food Distributors	3	67%	33%	100%	33%
K-12 schools	5	60%	20%	40%	20%
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	3	67%	67%	100%	67%
Supermarkets and Other Grocery (except Convenience) Stores	15	100%	67%	87%	60%

Waste Prevention

DOES THIS FACILITY USE ANY PARTICULAR STRATEGIES TO PREVENT FOOD FROM BEING WASTED?

There were 74 responses to this question. The question allowed for explanatory/narrative/long-form answers, but responses indicate that many respondents were employing multiple methods toward food waste prevention. The most common response referred to use of a tracking system (30 responses) followed by use of an education campaign (29), additional care in the ordering of items (27), and the repurposing of items (22).

Waste Management

WHAT ARE ANY OTHER WAYS THAT YOUR FACILITY CURRENTLY MANAGES THE WASTE OF FOOD OTHER THAN COLLECTION FOR LANDFILL, COMPOSTING, OR ANAEROBIC DIGESTION?

There were 18 responses to this question communicating that at least one of these strategies was employed by the generator. This question allowed for the selection of multiple methods. However, most generators reported only one method. The most commonly reported method was rendering (5 responses), followed by use of a third-party composter (4 responses), then feeding to animals and via the sewage system (each with 3 responses).

Context

To the best of your knowledge, what are the top two reasons why food is discarded at this site?

There were 113 responses to this question. The most common answer was plate waste, which was included in 74 responses. Other responses included purchasing more than is used (39 responses), followed by disposal of inedible parts (28 responses), and preparing more than is ordered (27 responses).

Is this business part of a chain?

All generators provided a response to this question with 72 percent reporting being part of a chain. However, this was irrelevant for certain industry groups such as Correctional Institutions or K-12 Schools.

Number of Employees

Across all industry groups the minimum number of reported employees was 6 and the maximum was 7,000 with an average (mean) of 281. For those industry groups with over 10 participating generators: Cafeteria/Grill/Buffet had an average of 127 employees, Correctional Institutions an average of 1,014, K-12 schools an average of 75, and Supermarkets & Grocery Stores an average of 110.

Facility Size

Generators were asked to select the square footage of their facility from one of four ranges. Responses were provided by all 133 generators. Of these 133 generators, 80 percent (106) of the generators reported a facility size more than 10,000 square feet. Another 5 percent (7) reported a facility between 5,000 and 10,000 square feet. Further, 14 percent (19) reported a facility between 1,000 and 5,000 square feet. One generator reported a facility of less than 1,000 square feet.

What type of food gets thrown away from this business?

This question received a response from 126 generators. Generators were allowed to make multiple selections. Of these 126 generators, 87 percent (110) reported throwing away customer leftovers and front-of-house waste, 67 percent (84) reported prepared hot items, 67 percent (84) reported food prep waste/trim (inedible), 61 percent (77) reported prepared cold items, 59 percent (74) reported uncooked/expiring food items (dairy/meat produce), 30 percent (38) reported packaged/canned foods, and 2 percent (2) reported other materials.

Most generators reported multiple classes of materials disposed. Of the 126 responses, 24 percent (30) reported six categories, 21 percent (27) reported five categories, 11 percent (14) reported four categories, 9 percent (11) reported three categories, 19 percent (24) reported two categories, and 16 percent (20) reported one category.

IS FOOD PREPARED ON SITE OR PRE-PACKAGED?

Of the 125 generators that provided responses to this question, 72 percent (90) responded that both categories applied to their facility, 14 percent (18) responded that food was prepared on site, 13 percent (16) dealt exclusively with pre-packaged food items, and 1 percent (1) responding the question with no.

COVID-related Impacts

IS THE CURRENT AMOUNT OF MATERIAL YOU DISPOSE DIFFERENT FROM PRE-COVID OPERATIONS? IF YES, HOW?

Of 88 yes or no responses, 40 percent (35) responded that there had not been a change in operations due to COVID. Some generators reported a decrease in disposal due to COVID, with 20 percent (18) reporting a decrease of less than 50 percent, and 5 percent (4) reporting a decrease of greater than 50 percent. Other generators reported an increase in disposal with 25 percent (22) reporting an increase of less than 50 percent and 1 percent (1) reporting an increase greater than 50 percent. The remaining 9 percent (8) reported that there was a change in disposal but were unable, or declined, to provide an estimate.

Among industry groups for which more than one generator in that industry group provided a response, the highest percentage of generators reporting no change were 75 percent (12) of Supermarkets & Grocery Stores, 46 percent (6) of Correctional Institutions, and 39 percent (12) of K-12 Schools. The highest percentage of generators reporting an increase were 100 percent (2) of Hospitals, 50 percent (2) of Events/Venues, and 46 percent (6) of Correctional Institutions. The highest percentage of generators reporting a decrease were 100 percent (3) of Hotels, 67 percent (2) of Limited-service Restaurants, and 50 percent (2) of Events/Venues. The breakdown of these responses by industry group is shown in Table 13.

Table 13 - Responses to survey question regarding COVID impact to operations with "Yes" responses further divided among the direction of the impact.

Industry Group	No	Yes, Increase	Yes, Decrease	Yes, Unsure	Total Responses
Cafeterias, Grill Buffets, and Buffets	3	1	5	1	10
Caterers (food production facility) and food service contractors	-	-	1	-	1
Commercial Bakeries	1	-	-	-	1
Correctional Institutions	6	6	1	-	13
Food Distributors	1	1	1	-	3
Full-service restaurants	-	-	1	-	1

Industry Group	No	Yes, Increase	Yes, Decrease	Yes, Unsure	Total Responses
Hospitals	-	2	-	-	2
Hotels (except Casino Hotels) and Motels	-	-	3	-	3
K-12 schools	12	10	5	4	31
Limited-Service Restaurants	-	-	2	1	3
Performing arts, spectator sports and related industries (includes large venues and large events)	-	2	2	-	4
Supermarkets and Other Grocery (except Convenience) Stores	12	1	1	2	16
Total	**35**	**23**	**22**	**8**	**88**

WHAT INFORMATION PRIMARILY GUIDED THE ESTIMATION PROVIDED IN QUESTION ONE (REFERRING TO THE PREVIOUS QUESTION)?

Eighty of 88 generators provided a response to this question, 83 percent (66) stated that this was through general observation of day-to-day operations, 15 percent (12) stated that this was through sales figures, 1 percent (1) through disposal records, and 1 percent (1) through other unspecified means.

IS YOUR FACILITY CURRENTLY OPERATING DIFFERENTLY THAN IT DID PRIOR TO COVID? IF YES, SELECT ALL THAT APPLY.

Of 45 responses, 36 percent (16) included that more food items were being sold or given out as pre-packaged items than previously, 18 percent (8) reported that they were operating with a lower number of employees, 9 percent (4) reported an increase in takeout/delivery, 7 percent (3) reported a decrease in customer capacity, 7 percent (3) reported areas of the facility had been closed, and 24 percent (11) reported other factors affecting their operations. Among these other reported factors were primarily changes to operations specific to schools providing lunches.

ARE THERE ANY OTHER SHIFTS IN DISPOSAL TRENDS THAT YOU BELIEVE MAY BE HELPFUL INFORMATION IN THE ANALYSIS OF THIS DATA? (THIS MAY BE SPECIFIC TO FOOD WASTE, PACKAGING, OR DISPOSAL IN GENERAL.)

This question allowed for free-form narratives from the respondents. Due to this, each reply was unique, but common themes have been identified and paraphrased. Of 24 answers received:

- Eight referenced an increase in disposal due to movement from bulk systems to systems tailored to individualized delivery/providing of a service.
- Four reported an increase or change in packaging.
- Three reported a change in the types of items being purchased.
- Two reported that they will soon begin working with a food donation service.
- Two reported that they were attempting to transition to compostable packaging, but their hauler was currently unable to process that material.

Appendix 1 – Explanation and Data Tables for Figures in Report

Reading of Box and Whisker Plots

Box and whisker plots are used throughout the report to show the distribution of both material weights and percentages by category (such as industry group or material category). This allows for a quick depiction of the center and spread of the results. Throughout the report these are presented on a horizontal alignment. For a given plot the vertical line near the center of the box is the median value. The median is a measure of average that takes all the results in order from highest to lowest and picks the center result. This allows for minimizing the effect of a small number of very high or very low results.

The box itself spans from the first quartile to the third quartile of the results. This means that area covered by the box contains the “middle-half” of all results in that category. The width of the box is the interquartile range. Whiskers are horizontal lines extending from both sides of the box to reach any results within one-and-a-half times the interquartile range from the edge of the box. Values that fall outside of that one-and-a-half times the interquartile range are outliers. When present, these are depicted as dots outside the reach of the whiskers of that plot.

Within this report, box and whisker plots are typically grouped to allow for quick comparisons of distributions. The individual plots remain horizontally oriented and are stacked vertically to share the scale shown by the x-axis at the bottom of the figure. This allows for comparison among different categories. It is important to note that values on these plots such as median will not add up to 100 percent among consecutive plots as it is unlikely that the median generator for one category was also the median generator for any other category.

Data Tables for All Figures Presented in the Report

Figure 1 Data Table. Material categorization by tiers of categories and sub-categories.

Tier 0	Tier 1	Tier 2	Tier 3	Tier 4
Sample	Food	Edible	Potentially Donatable	Vegetative
Sample	Food	Edible	Potentially Donatable	Eggs, Dairy, Dairy Alternatives

Tier 0	Tier 1	Tier 2	Tier 3	Tier 4
Sample	Food	Edible	Potentially Donatable	Meat
Sample	Food	Edible	Potentially Donatable	Cooked/Baked/Prepared Perishable Items
Sample	Food	Edible	Potentially Donatable	Packaged Non-perishable Items
Sample	Food	Edible	Non-Donatable	Meat
Sample	Food	Edible	Non-Donatable	Non-Meat
Sample	Food	Inedible Parts	Inedible Parts	Inedible Parts
Sample	Non-Food	Compostable	Compostable	Compostable
Sample	Non-Food	Recyclable	Recyclable	Recyclable
Sample	Non-Food	Disposal	Disposal	Disposal

Figure 2 Data Table. Map of California counties divided by region.

Bay Area	Central Valley	Southern
Napa	Colusa	Imperial
Marin	Glenn	Ventura
Solano	Tehama	San Bernardino
Sonoma	Yuba	Riverside
San Mateo	Sutter	Orange
San Francisco	Kings	San Diego
Contra Costa	Madera	Los Angeles
Alameda	Shasta	
Santa Clara	Butte	
	Yolo	
	Merced	
	Placer	
	Tulare	
	Stanislaus	
	San Joaquin	
	Kern	
	Fresno	
	Sacramento	

Figure 3 Data Table. Distribution of the percentage of potentially donatable food observed in the organic diversion stream sample for each generator by industry group.

Industry Group	Samples Collected	Min	Q1*	Median	Q3*	Max
Cafeterias, Grill Buffets, and Buffets	13	0%	< 1%	1%	2%	6%
Caterers (Food Production Facility) and Food Service Contractors	1	< 1%	< 1%	< 1%	< 1%	< 1%
Correctional Institutions	10	0%	0%	< 1%	2%	8%
Food Distributors	4	2%	69%	94%	97%	100%
Full-Service Restaurants	3	< 1%	< 1%	< 1%	1%	2%
Hospitals	2	2%	5%	9%	13%	17%
Hotels (except Casino Hotels) and Motels	2	3%	4%	4%	5%	6%
K-12 Schools	7	0%	1%	9%	11%	14%
Limited-Service Restaurants	2	0%	1%	3%	4%	5%
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	3	0%	5%	10%	13%	16%
Supermarkets and Other Grocery (except Convenience) Stores	25	0%	34%	59%	93%	100%

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 4 Data Table. Distribution of the weight (in tons) of potentially donatable food observed in the organic diversion stream sample for each generator by industry group.

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Cafeterias, Grill Buffets, and Buffets	13	-	< 1	< 1	2	6
Caterers (Food Production Facility) and Food Service Contractors	1	< 1	< 1	< 1	< 1	< 1
Correctional Institutions	10	-	-	< 1	< 1	8

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Food Distributors	4	< 1	13	30	59	106
Full-Service Restaurants	3	< 1	< 1	< 1	< 1	< 1
Hospitals	2	1	1	2	3	4
Hotels (except Casino Hotels) and Motels	2	1	1	1	1	1
K-12 Schools	7	-	< 1	< 1	2	3
Limited-Service Restaurants	2	-	< 1	1	1	1
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	3	-	1	3	5	6
Supermarkets and Other Grocery (except Convenience) Stores	25	-	7	17	30	148

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 5 Data Table. Distribution of the percentage of potentially donatable food observed in the disposal stream sample for each generator by industry group.

Industry Group	Samples Collected	Min	Q1*	Median	Q3*	Max
Cafeterias, Grill Buffets, and Buffets	18	0%	1%	1%	3%	7%
Caterers (Food Production Facility) and Food Service Contractors	3	1%	1%	1%	1%	2%
Commercial Bakeries	1	0%	0%	0%	0%	0%
Correctional Institutions	13	3%	7%	14%	18%	27%
Food Distributors	4	5%	39%	53%	66%	99%
Full-Service Restaurants	4	< 1%	< 1%	1%	1%	2%
Hospitals	2	1%	4%	6%	9%	11%
Hotels (except Casino Hotels) and Motels	4	2%	4%	6%	13%	32%
K-12 Schools	41	2%	19%	30%	38%	55%
Limited-Service Restaurants	5	1%	2%	2%	4%	31%
Performing Arts, Spectator Sports, and Related Industries	4	1%	1%	4%	8%	14%

Industry Group	Samples Collected	Min	Q1*	Median	Q3*	Max
(includes Large Venues and Large Events)						
Supermarkets and Other Grocery (except Convenience) Stores	21	1%	7%	14%	32%	71%

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 6 Data Table. Distribution of the weight (in tons) of potentially donatable food observed in the disposal stream sample for each generator by industry group.

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Cafeterias, Grill Buffets, and Buffets	18	-	< 1	1	2	12
Caterers (Food Production Facility) and Food Service Contractors	3	< 1	< 1	1	1	1
Commercial Bakeries	1	-	-	-	-	-
Correctional Institutions	13	1	3	8	15	146
Food Distributors	4	< 1	14	26	56	122
Full-Service Restaurants	4	< 1	< 1	< 1	< 1	1
Hospitals	2	1	2	4	5	7
Hotels (except Casino Hotels) and Motels	4	< 1	3	7	17	38
K-12 Schools	41	< 1	5	11	18	104
Limited-Service Restaurants	5	< 1	1	1	2	11
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	4	1	8	16	26	36
Supermarkets and Other Grocery (except Convenience) Stores	21	< 1	4	7	37	349

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 7 Data Table. Distribution of the percentage of all categories of food observed in the organic diversion stream sample for each generator by industry group.

Industry Group	Samples Collected	Min	Q1*	Median	Q3*	Max
Cafeterias, Grill Buffets, and Buffets	13	25%	86%	95%	98%	100%
Caterers (Food Production Facility) and Food Service Contractors	1	89%	89%	89%	89%	89%
Correctional Institutions	10	95%	99%	100%	100%	100%
Food Distributors	4	88%	95%	99%	100%	100%
Full-Service Restaurants	3	55%	60%	65%	78%	91%
Hospitals	2	41%	48%	56%	63%	71%
Hotels (except Casino Hotels) and Motels	2	51%	60%	69%	78%	87%
K-12 Schools	7	6%	61%	97%	98%	100%
Limited-Service Restaurants	2	67%	75%	83%	92%	100%
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	3	100%	100 %	100%	100%	100%
Supermarkets and Other Grocery (except Convenience) Stores	25	83%	98%	99%	100%	100%

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 8 Data Table. Distribution of the weight (in tons) of all categories of food observed in the organic diversion stream sample for each generator by industry group.

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Cafeterias, Grill Buffets, and Buffets	13	6	15	31	82	292
Caterers (Food Production Facility) and Food Service Contractors	1	9	9	9	9	9
Correctional Institutions	10	6	13	23	81	114

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Food Distributors	4	5	14	32	63	111
Full-Service Restaurants	3	9	31	54	70	86
Hospitals	2	14	14	15	16	16
Hotels (except Casino Hotels) And Motels	2	19	19	20	20	21
K-12 Schools	7	< 1	4	6	17	23
Limited-Service Restaurants	2	10	12	13	15	17
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	3	19	25	30	34	38
Supermarkets and Other Grocery (except Convenience) Stores	25	3	10	30	58	153

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 9 Data Table. Distribution of the percentage of all categories of food observed in the disposal stream sample for each generator by industry group.

Industry Group	Samples Collected	Min	Q1*	Median	Q3*	Max
Cafeterias, Grill Buffets, and Buffets	18	1%	16%	25%	38%	45%
Caterers (Food Production Facility) and Food Service Contractors	3	11%	19%	28%	32%	36%
Commercial Bakeries	1	11%	11%	11%	11%	11%
Correctional Institutions	13	20%	46%	49%	54%	89%
Food Distributors	4	58%	61%	76%	92%	99%
Full-Service Restaurants	4	10%	14%	34%	56%	64%
Hospitals	2	13%	18%	23%	29%	34%
Hotels (except Casino Hotels) And Motels	4	13%	17%	39%	62%	68%
K-12 Schools	41	20%	44%	63%	74%	82%
Limited-Service Restaurants	5	29%	38%	48%	57%	93%
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	4	18%	22%	27%	31%	36%

Industry Group	Samples Collected	Min	Q1*	Median	Q3*	Max
Supermarkets And Other Grocery (except Convenience) Stores	21	6%	29%	44%	66%	89%

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 10 Data Table. Distribution of the weight (in tons) of all categories of food observed in the disposal stream sample for each generator by industry group.

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Cafeterias, Grill Buffets, and Buffets	18	< 1	5	17	39	74
Caterers (Food Production Facility) and Food Service Contractors	3	5	5	5	13	20
Commercial Bakeries	1	10	10	10	10	10
Correctional Institutions	13	3	16	31	50	275
Food Distributors	4	3	23	36	61	122
Full-Service Restaurants	4	5	5	8	13	20
Hospitals	2	10	13	16	19	21
Hotels (except Casino Hotels) and Motels	4	1	11	48	85	95
K-12 Schools	41	3	15	24	41	135
Limited-Service Restaurants	5	10	14	30	33	44
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	4	9	21	43	278	926
Supermarkets and Other Grocery (except Convenience) Stores	21	1	11	27	85	496

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 11 Data Table. Distribution of total annual organic diversion by weight for all sampled industry groups.

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Cafeterias, Grill Buffets, and Buffets	13	10	15	45	114	292
Caterers (Food Production Facility) and Food Service Contractors	1	10	10	10	10	10
Correctional Institutions	10	6.5	13	24	81	114
Food Distributors	4	5.5	14	32	64	111
Full-Service Restaurants	3	10	46	82	119	155
Hospitals	2	23	26	28	31	34
Hotels (except Casino Hotels) and Motels	2	21	26	31	35	40
K-12 Schools	7	3.0	5.5	15	19	23
Limited-Service Restaurants	2	10	14	18	21	25
Performing Arts, Spectator Sports, and Related Industries (Includes Large Venues and Large Events)	3	19	25	30	34	38
Supermarkets and Other Grocery (except Convenience) Stores	25	2.7	11	31	59	153

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Combined Figure 12 and Figure 13 Data Table. Distribution of total annual disposal by weight by industry groups.

Industry Group	Samples Collected	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Cafeterias, Grill Buffets, and Buffets	18	10	37	60	138	404
Caterers (Food Production Facility) and Food Service Contractors	3	15	28	42	57	72
Commercial Bakeries	1	95	95	95	95	95
Correctional Institutions	13	6.4	44	57	100	591
Food Distributors	4	5.7	26	50	81	123
Full-Service Restaurants	4	21	29	33	37	50
Hospitals	2	62	66	70	74	78
Hotels (except Casino Hotels) and Motels	4	10	58	98	130	158
K-12 Schools	41	6.5	28	44	69	385
Limited-Service Restaurants	5	35	36	37	53	92
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	4	38	62	209	1,050	3,157
Supermarkets and Other Grocery (except Convenience) Stores	21	6.1	27	71	298	744

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Figure 14 Data Table. Percentage of generators within each industry group reporting that they work with a food recovery service.

Industry Group	Response Count	Yes	No	Other
Cafeterias, Grill Buffets, and Buffets	19	68%	26%	5%
Caterers (Food Production Facility) and Food Service Contractors	3	33%	67%	-
Commercial Bakeries	1	-	100%	-
Correctional Institutions	14	14%	86%	-
Food Distributors	4	75%	-	25%

Industry Group	Response Count	Yes	No	Other
Full-Service Restaurants	4	-	50%	50%
Hospitals	3	-	100%	0%
Hotels (except Casino Hotels) and Motels	5	-	40%	60%
K-12 Schools	42	14%	64%	21%
Limited-Service Restaurants	5	-	40%	60%
Performing Arts, Spectator Sports, and Related Industries (includes Large Venues and Large Events)	4	75%	25%	-
Supermarkets and Other Grocery (except Convenience) Stores	29	52%	34%	14%

Appendix 2 – Additional Details of 2021 Study Methodology

Industry Group Definitions from NAICS

Assisted Living Facilities for the Elderly [623312]*

This U.S. industry comprises establishments primarily engaged in providing residential and personal care services without nursing care for (1) the elderly or other persons who are unable to fully care for themselves and/or (2) the elderly or other persons who do not desire to live independently. The care typically includes room, board, supervision, and assistance in daily living, such as housekeeping services.

Illustrative Examples:

- Assisted living facilities for the elderly without nursing care.
- Rest homes without nursing care

Cafeterias, Grill Buffets, and Buffets [722514]†

This U.S. industry comprises establishments, known as cafeterias, grill buffets, or buffets, primarily engaged in preparing and serving meals for immediate consumption using cafeteria-style or buffet serving equipment, such as steam tables, refrigerated areas, display grills, and self-service nonalcoholic beverage dispensing equipment. Patrons select from food and drink items on display in a continuous cafeteria line or from buffet stations.

Cross-References. Establishments primarily engaged in –

- Providing food services to patrons who order and are served while seated and pay after eating--are classified in U.S. Industry 722511, Full-Service Restaurants.
- Providing food services where patrons generally order or select items and pay before eating, other than mobile food services, cafeterias, grill buffets, buffets, and snack and nonalcoholic beverage bars--are classified in U.S. Industry 722513, Limited-Service Restaurants; and

* Assisted Living Facilities for the Elderly Source:

https://www.census.gov/naics/?input=623312&year=2017&details=623312

† Cafeterias, Grill Buffets, and Buffets Source:

https://www.census.gov/naics/?input=722514&year=2017&details=722514

- Selling a specialty snack (e.g., ice cream, frozen yogurt, cookies, popcorn) or nonalcoholic beverage, except from mobile vehicles, for consumption on or near the premises--are classified in U.S. Industry 722515, Snack and Nonalcoholic Beverage Bars.

Caterers [72232]‡

This industry comprises establishments primarily engaged in providing single event-based food services. These establishments generally have equipment and vehicles to transport meals and snacks to events and/or prepare food at an off-premises site. Banquet halls with catering staff are included in this industry. Examples of events catered by establishments in this industry are graduation parties, wedding receptions, business or retirement luncheons, and trade shows.

Cross-References. Establishments primarily engaged in--

- Preparing and serving meals and snacks for immediate consumption from motorized vehicles or nonmotorized carts--are classified in Industry 722330, Mobile Food Services;
- Providing food services at institutional, governmental, commercial, or industrial locations of others (e.g., airline contractors, industrial caterers) based on contractual arrangements for a specified period of time--are classified in Industry 722310, Food Service Contractors; and
- Renting out facilities without providing catering staff--are classified in Industry 531120, Lessors of Nonresidential Buildings (except Mini warehouses).

Commercial Bakeries [311812]§

This U.S. industry comprises establishments primarily engaged in manufacturing fresh and frozen bread and bread-type rolls and other fresh bakery (except cookies and crackers) products.

Cross-References. Establishments primarily engaged in--

- Retailing bread and other bakery products not for immediate consumption made on the premises from flour, not from prepared dough--are classified in U.S. Industry 311811, Retail Bakeries;

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‡ Caterers Source:

https://www.census.gov/naics/?input=72232&year=2017&details=722320

§ Commercial Bakeries Source:

https://www.census.gov/naics/?input=311812&year=2017&details=311812

- Manufacturing frozen bakery products (except bread) --are classified in U.S. Industry 311813, Frozen Cakes, Pies, and Other Pastries Manufacturing;
- Preparing and selling bakery products (e.g., cookies, pretzels) for immediate consumption--are classified in U.S. Industry 722515, Snack and Nonalcoholic Beverage Bars;
- Retailing bakery products not for immediate consumption made elsewhere--are classified in U.S. Industry 445291, Baked Goods Retailers;
- Manufacturing cookies and crackers--are classified in U.S. Industry 311821, Cookie and Cracker Manufacturing; and
- Manufacturing pretzels (except soft) --are classified in U.S. Industry 311919, Other Snack Food Manufacturing.

Correctional Institutions [922140]**

This industry comprises government establishments primarily engaged in managing and operating correctional institutions. The facility is generally designed for the confinement, correction, and rehabilitation of adult and/or juvenile offenders sentenced by a court.

Illustrative Examples:

- Correctional institutions, public administration
- Penitentiaries, public administration
- Detention centers, public administration
- Prisons, public administration
- Jails, public administration

Cross-References.

- Government establishments primarily engaged in operating halfway houses for ex-criminal offenders and delinquent youths are classified in Industry 623990, Other Residential Care Facilities; and
- Establishments primarily engaged in managing or operating correctional facilities on a contract or fee basis are classified in Industry 561210, Facilities Support Services.

** Correctional Institutions Source:

https://www.census.gov/naics/?input=922140&year=2017&details=922140

Food Distributors [4244]††

This industry group comprises establishments primarily engaged in the merchant wholesale distribution of (1) a general line of groceries; (2) packaged frozen food; (3) dairy products; (4) poultry and poultry products; (5) confectioneries; (6) fish and seafood; (7) meats and meat products; (8) fresh fruits and vegetables; and (9) other grocery and related products.

Fruit, Vegetable & Specialty Foods Manufacturing [3114]‡‡

This industry group includes (1) establishments that freeze food and (2) establishments that use preservation processes, such as pickling, canning, and dehydrating. Both types begin their production process with inputs of vegetable or animal origin.

Full-Service Restaurants [722511]§§

This U.S. industry comprises establishments primarily engaged in providing food services to patrons who order and are served while seated (i.e., waiter/waitress service) and pay after eating. These establishments may provide this type of food service to patrons in combination with selling alcoholic beverages, providing carryout services, or presenting live nontheatrical entertainment.

Cross-References. Establishments primarily engaged in--

- Providing food services where patrons generally order or select items and pay before eating, other than mobile food services, cafeterias, grill buffets, buffets, and snack and nonalcoholic beverage bars--are classified in U.S. Industry 722513, Limited-Service Restaurants;
- Preparing and serving meals for immediate consumption using cafeteria-style or buffet serving equipment, known as cafeterias, grill buffets, or buffets--are classified in U.S. Industry 722514, Cafeterias, Grill Buffets, and Buffets;
- Selling a specialty snack (e.g., ice cream, frozen yogurt, cookies, popcorn) or nonalcoholic beverage, except from mobile vehicles, for consumption on or near the premises--are classified in U.S. Industry 722515, Snack and Nonalcoholic Beverage Bars;

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†† Food Distributors Source:

https://www.census.gov/naics/?input=4244&year=2017&details=4244

‡‡ Fruit, Vegetable & Specialty Foods Manufacturing Source:

https://www.census.gov/naics/?input=3114&year=2017&details=3114

§§ Full-service Restaurants Source:

https://www.census.gov/naics/?input=722511&year=2017&details=722511

- Preparing and serving alcoholic beverages and known as bars, taverns, or nightclubs--are classified in Industry 722410, Drinking Places (Alcoholic Beverages);
- Operating a civic or social association with a restaurant for their members--are classified in Industry 813410, Civic and Social Organizations;
- Presenting live theatrical productions and providing food and beverages for consumption on the premises--are classified in Industry 711110, Theater Companies and Dinner Theaters; and
- Restaurant meals order and delivery services (i.e., independent order and delivery services) --are classified in Industry 492210, Local Messengers, and Local Delivery.

Hospitals [6221]***

This industry comprises establishments known and licensed as general medical and surgical hospitals primarily engaged in providing diagnostic and medical treatment (both surgical and nonsurgical) to inpatients with any of a wide variety of medical conditions. These establishments maintain inpatient beds and provide patients with food services that meet their nutritional requirements. These hospitals have an organized staff of physicians and other medical staff to provide patient care services. These establishments usually provide other services, such as outpatient services, anatomical pathology services, diagnostic X-ray services, clinical laboratory services, operating room services for a variety of procedures, and pharmacy services.

Hotels (except Casino Hotels) and Motels [72111]†††

This industry comprises establishments primarily engaged in providing short-term lodging in facilities known as hotels, motor hotels, resort hotels, and motels. The establishments in this industry may offer food and beverage services, recreational services, conference rooms, convention services, laundry services, parking, and other services.

Cross-References. Establishments primarily engaged in--

- Providing short-term lodging with a casino on the premises--are classified in Industry 721120, Casino Hotels; and

*** Hospitals Source:

https://www.census.gov/naics/?input=6221&year=2017&details=622110

††† Hotels Source:

https://www.census.gov/naics/?input=72111&year=2017&details=721110

- Providing short-term lodging in facilities known as bed-and-breakfast inns, youth hostels, housekeeping cabins and cottages, and tourist homes--are classified in Industry 72119, Other Traveler Accommodation.

K-12 Schools [611110][‡‡‡]

This industry comprises establishments primarily engaged in furnishing academic courses and associated course work that comprise a basic preparatory education. A basic preparatory education ordinarily constitutes kindergarten through 12th grade. This industry includes school boards and school districts.

Illustrative Examples:

- Elementary schools
- Parochial schools, elementary or secondary
- High schools
- Primary schools
- Charter schools
- Kindergartens
- Military academies, elementary or secondary
- Schools for the physically disabled, elementary, or secondary

Cross-References.

- Establishments primarily engaged in providing care and early learning opportunities for infants and children and offering pre-kindergarten, kindergarten, and/or before- or after-school educational programs are classified in Industry 624410, Child Care Services; and
- College-level military academies are classified in Industry 611310, Colleges, Universities, and Professional Schools.

Limited-Service Restaurants [722513][§§§]

This U.S. industry comprises establishments primarily engaged in providing food services (except snack and nonalcoholic beverage bars) where patrons generally order or select items and pay before eating. Food and drink may be consumed on premises,

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‡‡‡ K-12 Schools Source:

https://www.census.gov/naics/?input=611110&year=2017&details=611110

§§§ Limited-service Restaurants Source:

https://www.census.gov/naics/?input=722513&year=2017&details=722513

taken out, or delivered to the customer's location. Some establishments in this industry may provide these food services in combination with selling alcoholic beverages.

Illustrative Examples:

- Delicatessen restaurants
- Pizza delivery shops
- Family restaurants, limited-service
- Takeout eating places
- Fast-food restaurants
- Fast casual restaurants
- Takeout sandwich shops
- Limited-service pizza parlors

Cross-References. Establishments primarily engaged in--

- Preparing and serving meals for immediate consumption using cafeteria-style serving equipment, known as cafeterias--are classified in U.S. Industry 722514, Cafeterias, Grill Buffets, and Buffets;
- Providing food services to patrons who order and are served while seated and pay after eating--are classified in U.S. Industry 722511, Full-Service Restaurants;
- Selling a specialty snack (e.g., ice cream, frozen yogurt, candy, cookies) or nonalcoholic beverage, except from mobile vehicles, for consumption on or near the premises--are classified in U.S. Industry 722515, Snack and Nonalcoholic Beverage Bars;
- Retailing confectionery goods and nuts not packaged for immediate consumption--are classified in U.S. Industry 445292, Confectionery and Nut Retailers;
- Retailing baked goods (e.g., pretzels, doughnuts, cookies, and bagels) not baked on the premises and not for immediate consumption--are classified in U.S. Industry 445291, Baked Goods Retailers;
- Preparing and serving alcoholic beverages, known as bars, taverns, or nightclubs--are classified in Industry 722410, Drinking Places (Alcoholic Beverages); and
- Restaurant meals order and delivery services (i.e., independent order and delivery services) --are classified in Industry 492210, Local Messengers, and Local Delivery.

Other Grocery and Related Product Merchant Wholesalers [4244]****

This industry group comprises establishments primarily engaged in the merchant wholesale distribution of (1) a general line of groceries; (2) packaged frozen food; (3) dairy products; (4) poultry and poultry products; (5) confectioneries; (6) fish and seafood; (7) meats and meat products; (8) fresh fruits and vegetables; and (9) other grocery and related products.

Performing Arts, Spectator Sports, and Related Industries (include Large Venues and Large Events) [711]††††

Industries in the Performing Arts, Spectator Sports, and Related Industries subsector group establishments that produce or organize and promote live presentations involving the performances of actors and actresses, singers, dancers, musical groups and artists, athletes, and other entertainers, including independent (i.e., freelance) entertainers and the establishments that manage their careers. The classification recognizes four basic processes: (1) producing (i.e., presenting) events; (2) organizing, managing, and/or promoting events; (3) managing and representing entertainers; and (4) providing the artistic, creative, and technical skills necessary to the production of these live events. Also, this subsector contains four industries for performing arts companies. Each is defined based on the skills of the entertainers involved in the presentations.

The industry structure for this subsector makes a clear distinction between performing arts companies and performing artists (i.e., independent or freelance). Although not unique to arts and entertainment, freelancing is a particularly important phenomenon in this Performing Arts, Spectator Sports, and Related Industries subsector. Distinguishing this activity from the production activity is a meaningful process differentiation. This approach, however, is difficult to implement in the case of musical groups (i.e., companies) and artists. These establishments tend to be more loosely organized and it can be difficult to distinguish companies from freelancers. For this reason, NAICS includes one industry that covers both musical groups and musical artists.

This subsector contains two industries for Industry Group 7113, Promoters of Performing Arts, Sports, and Similar Events, one for those that operate facilities and another for those that do not. This is because there are significant differences in cost

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**** Other Grocery and Related Product Merchant Wholesalers Source:

https://www.census.gov/naics/?input=4244&year=2017&details=4244

†††† Performing Arts, Spectator Sports and Related Industries (include Large Venues and Large Events) Source:

https://www.census.gov/naics/?input=711&year=2017&details=711

structures between those promoters that manage and provide the staff to operate facilities and those that do not. In addition to promoters without facilities, other industries in this subsector include establishments that may operate without permanent facilities. These types of establishments include performing arts companies; musical groups and artists; spectator sports; and independent (i.e., freelance) artists, writers, and performers.

Excluded from this subsector are nightclubs. Some nightclubs promote live entertainment on a regular basis, and it can be argued that they could be classified in Industry Group 7113, Promoters of Performing Arts, Sports, and Similar Events. However, since most of these establishment's function as any other drinking place when they do not promote entertainment and because most of their revenue is derived from sale of food and beverages, they are classified in Subsector 722, Food Services and Drinking Places.

Perishable Prepared Food Manufacturing [311991][‡‡‡‡]

This U.S. industry comprises establishments primarily engaged in manufacturing perishable prepared foods, such as salads, sandwiches, prepared meals, fresh pizza, fresh pasta, and peeled or cut vegetables.

Cross-References.

- Establishments primarily engaged in preparing and selling food for immediate consumption are classified in Industry 72251, Restaurants and Other Eating Places.

Supermarkets & Other Grocery Stores (except Convenience Stores) [44511][§§§§]

This industry comprises establishments generally known as supermarkets and other grocery retailers (except convenience retailers) primarily engaged in retailing a general line of food, such as canned and frozen foods; fresh fruits and vegetables; and fresh and prepared meats, fish, and poultry. Included in this industry are delicatessen-type establishments primarily engaged in retailing a general line of food.

Cross-References. Establishments primarily engaged in--

[‡‡‡‡] Perishable Prepared Food Manufacturing Source:

https://www.census.gov/naics/?input=311991&year=2017&details=311991

[§§§§] Supermarkets & Other Grocery Stores (except Convenience Stores) Source:

https://www.census.gov/naics/?input=44511&year=2017&details=445110

- Retailing automotive fuels in combination with a convenience store or food mart--are classified in Industry 457110, Gasoline Stations with Convenience Stores;
- Retailing a limited line of groceries, such as convenience stores or food marts (except those operating fuel pumps) --are classified in U.S. Industry 445131, Convenience Retailers;
- Providing food services in delicatessen-type establishments--are classified in U.S. Industry 722513, Limited-Service Restaurants;
- Retailing fresh meat in delicatessen-type establishments--are classified in Industry 445240, Meat Retailers; and
- Grocery order and delivery services on behalf of grocery retailers--are classified in Industry 492210, Local Messengers, and Local Delivery.

Warehouse Clubs and Supercenters [452311]*****

This U.S. industry comprises establishments known as warehouse clubs, superstores, or supercenters, primarily engaged in retailing a general line of groceries, including a significant amount and variety of fresh fruits, vegetables, dairy products, meats, and other perishable groceries, in combination with a general line of new merchandise, such as apparel, furniture, and appliances.

Cross-References. Establishments primarily engaged in--

- Retailing a general line of merchandise via electronic home shopping, mail-order, or direct sale--are classified in Subsector 454, Non-store Retailers;
- Retailing a general line of food, known as supermarkets and grocery stores--are classified in Industry 445110, Supermarkets and Other Grocery (except Convenience) Stores;
- Retailing a general line of new merchandise, known as department stores--are classified in Industry 452210, Department Stores;
- Retailing a general line of new merchandise, except department stores, warehouse clubs, superstores, and supercenters--are classified in U.S. Industry 452319, All Other General Merchandise Stores; and
- Retailing used merchandise--are classified in Industry 453310, Used Merchandise Stores.

***** Warehouse Clubs and Supercenters Source:

https://www.census.gov/naics/?input=452311&year=2017&details=452311

Material Categories

Table 14 - Full descriptions of material categories.

Material Type	Definition
1) Food - Potentially Donatable - Vegetative	Food - Potentially Donatable - Vegetative means cooked or uncooked fresh vegetables, fruits, and fungi that are in a whole state (i.e., not partially consumed) and are unmixed with non-vegetative food types. Examples of "fresh vegetative" include but are not limited to: mixed fruit salad, whole apple, sliced fruits, sliced vegetables, entire head of lettuce, unopened package of mushrooms, etc. Items that are excluded from this category include condiments, non-perishable packaged fruits, and vegetables such as: packaged dried fruits and vegetables, packaged dried legumes/lentils, canned fruits and vegetables, and nuts. Unpackaged vegetables fruits, and fungi found in a whole state in commercial loads are included in this category.
2) Food - Potentially Donatable - Eggs, Dairy, and Dairy Alternatives	Food - Potentially Donatable - Eggs, Dairy, and Dairy Alternatives means egg or dairy products and dairy alternatives that are in a whole state, unmixed with other food types, and in the original unopened package. Examples of "eggs, dairy, and dairy alternatives" include but are not limited to: milk, cheese – whole or sliced, eggs, yogurt, soy and nut yogurts, soy and nut cheeses, soy/nut/rice/coconut milks – whether shelf stable or not). Obvious meat alternatives, such as tofu and seitan, should be included within this category.
3) Food - Potentially Donatable – Meat	Food - Potentially Donatable - Meat means any uncooked or cooked meat (beef, poultry, pork, lamb) or fish product that is in a whole state, is unmixed with other food types, and is in the original unopened package. Examples of meat include but are not limited to: a whole rotisserie chicken in original unopened package, raw steak in original unopened package, raw fish in original unopened package, sliced deli meat in original unopened package, prepared meats in original unopened package such as chicken nuggets, jerky, and canned meat and fish. Any product that looks like meat (e.g., meat alternatives) goes into this category as it is likely not be possible to distinguish in the field.
4) Food - Potentially Donatable -	Food - Potentially Donatable - Cooked/Baked/Prepared Perishable Items means items that are in a whole state but could have multiple food types mixed together as a part of

Material Type	Definition
Cooked/Baked/Prepared Perishable Items	cooking or preparation and are still in their original unopened package. Examples of “cooked/baked/prepared perishable items” include but are not limited to: a whole egg sandwich in original unopened package, whole tray of lasagna, whole tray of chow mein, whole frozen pizza in original unopened package, whole baked goods such as whole loaves of breads, whole pastries, whole bag of tortillas in original unopened package, also includes unopened perishable beverages such as fresh fruit or vegetable juice.
5) Food - Potentially Donatable - Packaged Non-perishable	Food - Potentially Donatable - Packaged Non-perishable means shelf-stable foods that are in a whole state and are in the original unopened package. Examples of “packaged non-perishable” include but are not limited to: canned and bottled foods, rice, pasta, beans, lentils, nuts, nut butters, flour, sugar, spices, oils, condiments, and foods contained in aseptic or retort packages and other products that do not require refrigeration until after opening, also includes non-perishable beverages such as sodas. Items that are excluded from this category include shelf-stable meats, shelf-stable dairy products, and shelf-stable dairy alternatives.
6) Food - Not Donatable – Meat	Food - Not Donatable – Meat means any food that is predominantly meat or fish, but the product is not in a whole state (i.e., partially consumed), or the product’s packaging has been opened, or the product was not contained in any packaging at all. Examples of “not donatable – meat” include but are not limited to: a partially consumed rotisserie chicken, deli meat in opened package, unpackaged raw meats, a hamburger which is mostly meat by weight, meat, and fish trimmings.
7) Food - Not Donatable – Non-meat	Food - Not Donatable – Non-meat means any food that is not predominantly meat or fish, not in a whole state, or not in its original unopened package. Examples of “not donatable – nonmeat” include but are not limited to: any non-meat partially consumed foods, any non-meat foods in a package that has been opened – as best as can be determined, any non-meat foods that are not in their original packaging, half eaten burrito, partially consumed lasagna - even if the dish contains small amounts of meat. This category also includes fruit and vegetable peels and

Material Type	Definition
	skins (e.g., carrot peels, potato peels), trimmings (e.g., greens of root vegetables, broccoli, and cauliflower stalks), cores (e.g., apple and pear cores) and ends (cucumber ends). In addition, this category also includes any indistinguishable food. Excludes items that are generally not intended for human consumption (e.g., banana peels, watermelon rinds, citrus rinds, corn cobs, pineapple tops, peach pits).
8) Food – Inedible	Food - Inedible means items typically not consumed by people in the United States. Categories of inedible parts include bones, pits (e.g., peach, and avocado pits), shells (e.g., eggshells, nut shells), coffee grounds and tea leaves, rinds (e.g., citrus rinds and melon rinds), woody stems/tops and vines (e.g., pumpkin stems, pineapple tops, tomato vines), and corn cobs/husks. Note that small amounts of edible material associated with the inedible material are permitted to be included as "inedible." Excludes other fruit and vegetable peels, skins, trimmings, cores, and ends included in the previous categories (e.g., potato peels, carrot tops, apple cores, broccoli stalks, cucumber ends).
9) Non-food organic material	Non-food organic material refers to all other organic materials, excluding food items, such as paper-related, yard-waste and wood waste. Includes materials that are typically recycled, composted, and disposed but are made primarily of organic materials (e.g., cardboard, green waste).
10) Non-food non-organic recyclable material	Non-food non-organic recyclable material refers materials that are primarily made of non-organic materials and are generally considered recyclable within the traditional recycling stream, such as plastic, glass, and metal beverage containers. This category excludes traditional recyclables that are made from organic materials (e.g., cardboard) and special or hazardous wastes (e.g., paint, electronics, bulky items).
11) Non-food non-organic non-recyclable material	Non-food non-organic non-recyclable material refers to all other materials that are not included in the above categories. These materials are primarily comprised of non-organic materials and are generally not considered recyclable or is managed as hazardous or special waste (e.g., paint, electronics). Note: This category would contain personal protective equipment (PPE).

Sorting Clarification

During the first day of field sampling CalRecycle staff provided oversight of the field crew and addressed some questions requiring clarification of specifics of some specific situations that were encountered or anticipated. The following clarification was provided to the contractor to be shared with the field crew following that event.

Overarching Clarifications

1) **Liquids in containers (**e.g., soda bottles, juice bottles) – no liquids need to be emptied, but
    a. If container is **less than 25% full** (or there is less liquid weight than the weight of the bottle/packaging), then categorize as whatever the packaging type is – usually, “non-food, non-organic, recyclable” or “non-food, non-organic, non-recyclable.”
    b. If the container is **completely sealed** (i.e., hasn’t been opened), it should go into potentially donatable category for whatever food item is inside – usually “edible, potentially donatable, packaged non-perishable.”
    c. If the container is opened but **more than 25% full** (or there is more liquid weight than the weight of the bottle/packaging), then categorize as whatever the food type is – usually “edible - non-donatable - non-meat.”
2) **Potentially Donatable** as an Overarching Category
    a. When defining potentially donatable, if it is sold to a customer in the store without packaging, it can still be characterized as potentially donatable (i.e., whole baguette or pastry)
    b. If an item or its packaging is damaged, it should be considered non-donatable unless the damage can be directly attributed to removing the material from the bin or other sampling related damage.
    c. For items from catering-type events (e.g., lasagna in a metal tray), they should be considered non-donatable if its packaging has been damaged or opened, unless the damage/opening is directly attributable to sampling or removing the material from the bin. If the item is still in closed or sealed packaging and no food has been obviously removed, it should be considered potentially donatable.
3) **Photos of samples (Task 3.E.3.b.)**
    a. Task 3.E.3.b. requires at least two digital images of each sample prior to sorting, with bags broken open to ensure the entire sample can be visualized
    b. This can be accomplished through multiple digital images of the material laid out on the table before sorting it or the entire sample laid out on a tarp.
    c. Make sure the placard with the sample ID is in each digital image is visible and readable.

d. Liquid materials (e.g., juices, melted ice cream) can be displayed in a bin or other container if it is either visually obvious that the material in the bin is liquid or a note is associated with the digital image identifying that the liquids are in the bin. Other materials in digital images should not be in bins as that inhibits the visualization of the entire sample.

Clarifications by Material Type

- **Food – Potentially Donatable – Packaged Non-perishable**
  a. This includes sealed beverages such as soda and juice.
- **Food – Not Donatable – Meat**
  a. If there is a piece of bone with meat still on it and the weight is primarily attributable to meat, it should be placed in this category.
  b. Chicken and fish skins as well as animal offal/innards should be placed in this category.
- **Food – Not Donatable – Non-meat**
  a. This is where indistinguishable food should be placed (e.g., juice pulps or chicken/food juice).
- **Non-Food – Organic Material**
  a. This category contains organic materials that are not food materials, including paper/fiber-based materials (e.g., cardboard boxes,
  b. If a material is primarily organic (e.g., a wax coated box or an envelope with a plastic window), it should go in this category.
  c. Not all material in this category will be "compostable."
  d. Both untreated wood and treated/painted wood are included in this category.
  e. This category also includes compostable plastics.
- **Non-Food – Non-Organic – Recyclable Material**
  a. This category contains materials with clear markets in California, including glass, metal, and some plastic.
  b. Plastic includes narrow-neck plastic beverage containers and milk jugs; it does not include aseptic packaging, gable top beverage containers, tubs and jugs, or plastics other than 1 and 2.
  c. All glass would fall in this category, besides Pyrex or other specialty glass.
  d. Metal includes aluminum and tin cans, aluminum foils, and metal trays.
- **Non-Food – Non-Organic – Non-Recyclable Material**
  a. Most plastics belong in this category (other than narrow-necked beverage containers and milk jugs), including films, thermoforms, and tubs.

Full Survey Questions and Answer Prompts

General Information

1) Date
2) Business Name (Potentially Confidential) or Generator ID #
3) Name of person completing survey
4) Contact Information (Potentially Confidential)
    a) Phone Number
    b) Email Address
    c) Physical Address
    d) Mailing Address (if different from physical address)
5) Region
6) Southern
7) Bay
8) Valley
9) Industry Group Type
    a) Assisted living facilities for the elderly [623312]
    b) Cafeterias, grill buffets, and buffets [722514]
    c) Caterers (food production facility) [72232]
    d) Commercial bakeries [311812]
    e) Correctional institutions [922140]
    f) Food distributors [4244]
    g) Fruit, vegetable, & specialty foods manufacturing [3114]
    h) Full-service restaurants [722511]
    i) Grocery and related product merchant wholesalers [4244]
    j) Hospitals [6221]
    k) Hotels (except casino hotels) and motels [72111]
    l) K-12 schools [611110]
    m) Limited-service restaurants [722513]
    n) Performing arts, spectator sports and related industries (large venues and large events) [711]
    o) Perishable prepared food manufacturing [311991]
    p) Supermarkets & other grocery stores (except convenience stores) [44511]
    q) Warehouse clubs and supercenters [452311]

Note: Generator Specific Information

Assisted living facilities for the elderly [623312]

A) What is the number of beds at your facility?

B) Is there an on-site food facility (see Section 113789 of the CA Health and Safety Code)?
    1) Yes
    2) No
    3) Not sure
C) Is food pre-prepared or prepared on site?
    1) Pre-Prepared
    2) Prepared on-site
    3) Both
D) Which meals does your facility regularly serve? (Select all that apply)
    1) Breakfast
    2) Lunch
    3) Dinner
    4) Food served all day
    5) Other

Cafeterias, grill buffets, and buffets [722514]

A) What is the number of seats at your facility?
B) Is there an on-site food facility (see Section 113789 of the CA Health and Safety Code)?
    1) Yes
    2) No
    3) Not sure
C) Is food pre-prepared or prepared on site?
    1) Pre-Prepared
    2) Prepared on-site
    3) Both
D) Which meals does your facility regularly serve? (Select all that apply)
    1) Breakfast
    2) Lunch
    3) Dinner
    4) Food served all day
    5) Other

Caterers (food production facility) [72232]

A) How often do they prepare food at their own facility vs customer's facility? (Response should be a percentage)

Correctional institutions [922140]

A) What is the average number of inmates you serve at each meal?

B) Is food pre-prepared or prepared on site?
    1) Pre-Prepared
    2) Prepared on-site
    3) Both
C) Which meals does your facility regularly serve? (Select all that apply)
    1) Breakfast
    2) Lunch
    3) Dinner
    4) Food served all day
    5) Other

Full-service restaurants [722511]

A) What is the number of seats?
B) Is food pre-prepared or prepared on site?
    1) Pre-Prepared
    2) Prepared on-site
    3) Both
C) Which meals does your facility regularly serve? (Select all that apply)
    1) Breakfast
    2) Lunch
    3) Dinner
    4) Food served all day
    5) Other

Hospitals [6221]

A) What is the number of beds?
B) Is there an on-site food facility (see Section 113789 of the CA Health and Safety Code)?
    1) Yes
    2) No
    3) Not sure
C) Is food pre-prepared or prepared on site?
    1) Pre-Prepared
    2) Prepared on-site
    3) Both
D) Which meals does your facility regularly serve? (Select all that apply)
    1) Breakfast
    2) Lunch
    3) Dinner
    4) Food served all day

5) Other

Hotels (except casino hotels) and motels [72111]

A) What is the number of rooms at your hotel/motel?
B) Is there an on-site food facility (see Section 113789 of the CA Health and Safety Code)?
   1) Yes
   2) No
   3) Not sure
C) Is food pre-prepared or prepared on site?
   1) Pre-Prepared
   2) Prepared on-site
   3) Both
D) Which meals does your facility regularly serve? (Select all that apply)
   1) Breakfast
   2) Lunch
   3) Dinner
   4) Food served all day
   5) Other

K-12 schools [611110]

A) What is the grade range of the school?
B) What is the total number of students on site?
C) What percentage of the students participate in the free and reduced lunch program?
D) Is there an on-site food facility (see Section 113789 of the CA Health and Safety Code)?
   1) Yes
   2) No
   3) Not sure
E) Is food pre-prepared or prepared on site?
   1) Pre-Prepared
   2) Prepared on-site
   3) Both
F) Which meals does your facility regularly serve? (Select all that apply)
   1) Breakfast
   2) Lunch
   3) Dinner
   4) Food served all day
   5) Other

Limited-service restaurants [722513]

A) What is the number of seats at your restaurant?
B) Which meals does your facility regularly serve? (Select all that apply)
    1) Breakfast
    2) Lunch
    3) Dinner
    4) Food served all day
    5) Other

Performing arts, spectator sports and related industries (large venues and large events) [711]

A) What is the average number of visitors per day of operation?
B) Approximately how many days a year does your facility or event operate?

Supermarkets & other grocery stores (except convenience stores) [44511]

A) What are gross annual sales for this location? (in dollars)

Warehouse clubs and supercenters [452311]

A) What are gross annual sales for this location? (in dollars)

Note: Questions #10-24 below are for all generators

Food Recovery

10) Do you currently work with a food recovery organization or service to recover/donate surplus food?
    a) Yes
    b) No
    c) Not sure
11) If your facility donated surplus food, how frequently is the food collected by or sent to food recovery organizations?
    a) Daily
    b) Multiple times a week
    c) Weekly
    d) Less than Weekly
12) What type(s) of food do you donate? (Check all that apply)
    a) Uncooked/unprepared perishable food items (for example, expiring dairy, meat, or produce)
    b) Prepared hot items
    c) Prepared cold items
    d) Packaged/canned foods

e) Other

Waste Prevention

13) Does this facility use any particular strategies to prevent food from being wasted? (check all that apply)
   a) Use of system for tracking the waste of food
   b) System/program for efficient ordering to prevent over-ordering
   c) Recipes that use the entre plant or animal to reduce food preparation waste
   d) Repurposing excess food (e.g. using excess bread for croutons)
   e) Educating employees about the importance of reducing the waste of food
   f) Allowing employees to take surplus food that would otherwise be discarded
   g) Discount food items that are close to date on label or close to discard.
   h) Other (please specify)

Waste Management

14) What are any other ways that your facility currently manages the waste of food other than collection for landfill, composting, or anaerobic digestion?
   a) Feeding animals
   b) Rendering
   c) Garbage Disposal/Sewer
   d) On-site composting or other on-site treatment
   e) Other (please specify)

Context

15) To the best of your knowledge, what are the top two reasons why food is discarded at this site?
   a) Purchasing more than is used (back of house)
   b) Preparing more than is ordered (back of house)
   c) Plate waste
   d) Accidents, including improper cooking or dropping food on floor
   e) Inedible parts
   f) Other (please specify)

16) Is this business part of a chain?
   a) Yes
   b) No

17) Number of Employees

18) Facility Size
   a) Less than 1,000 sq ft
   b) 1,001 to 5,000 sq ft
   c) 5,001 to 10,000 sq ft

d) More than 10,000 sq ft

19) What type of food gets thrown away from this business? (Check all that apply)
   a) Uncooked/expiring food items (dairy/meat produce)
   b) Prepared hot items
   c) Prepared cold items
   d) Packaged/canned foods
   e) Customer Leftovers and Front of House Waste
   f) Food prep waste/ trim (inedible)
   g) Other

20) Is food prepared on site or pre-packaged?
   a) Full preparation on site
   b) Pre-packaged/made to order
   c) Both
   d) Other

Covid-related Impacts

21) Is the current amount of material you dispose different from pre-COVID operations? If yes, how?
   a) No
   b) Yes
      i) increased by 100% (doubled) or more
      ii) increased between 50% to 100%
      iii) increased by 50% to 1%
      iv) unchanged
      v) decreased by 1% to 50%
      vi) decreased between 50% to 100%
      vii) unable to provide estimate

22) What information primarily guided the estimation provided in question one?
   a) General observation of day-to-day operations
   b) Specific sales figures
   c) Specific disposal records
   d) Other

23) Is your facility currently operating differently than it did prior to COVID? If yes, select all that apply.
   a) Operating at lower capacity of customers
      i) If selected, what is allowed capacity?
   b) Operating at lower capacity of employees
      i) If selected, what is allowed capacity?
   c) More customers/food are getting/buying food for takeaway or delivery
   d) More food items are sold or given out as pre-packaged items than previously

e) Certain parts of the facility (e.g. cafeteria) are currently closed
    i) If selected, what is currently closed?
f) Other changes, please explain.

24) Are there any other shifts in disposal trends that you believe may be helpful information in the analysis of this data? (This may be specific to food waste, packaging, or disposal in general.)

Appendix 3 – Additional Details of 2021 Study Results, for Overall Results

Regions and Timing

The first samples from generators located in the **Central Valley** region were collected on January 24, 2022, and the last samples from this region were collected on April 1, 2022. The rate of sampling in this region was consistent across the first quarter of 2022. The number of generators sampled per month for this region is shown in Table 15.

In the **Bay Area** sampling began on December 15, 2021, and concluded on March 31, 2022. One generator was sampled in 2021 and this number increased through the first quarter 2022. The number of generators sampled per month for this region is shown in Table 15.

In the **Southern California** region, sampling began on October 14, 2021, and concluded on March 30, 2022. Sampling in this region occurred throughout the sampling window but peaked in March 2022. The number of generators sampled per month for this region is shown in Table 15.

Table 15 – Generators sampled per month by region.

Month	Southern CA	Bay Area	Central Valley
Oct, 2021	6	-	-
Nov, 2021	7	-	-
Dec, 2021	12	1	-
Jan, 2022	8	3	9
Feb, 2022	11	8	12
Mar, 2022	35	9	11
Apr, 2022	-	-	1

Industry Groups and Timing

While sampling occurred from October 14, 2021, through April 1, 2022, not all industry groups were sampled throughout the course of the study. For example, caterers were generally sampled earlier in the study, with all samples occurring in the first half of the study, while all but one of the hotels sampled occurred in March 2022. This is shown in Table 16.

Table 16 - Generators sampled per month by industry group.

Industry Group	Oct, 2021	Nov, 2021	Dec, 2021	Jan, 2022	Feb, 2022	Mar, 2022	Apr, 2022
Cafeterias, Grill Buffets, and Buffets	-	2	3	1	3	1-	-
Caterers (food production facility) and food service contractors	-	1	2	-	-	-	-
Commercial Bakeries	-	-	-	-	1	-	-
Correctional Institutions	-	-	-	12	1	1	-
Food Distributors	3	-	-	-	1	-	-
Full-service restaurants	-	2	1	-	1	-	-
Hospitals	-	1	-	-	-	2	-
Hotels (except Casino Hotels) and Motels	-	-	1	-	-	4	-
K-12 schools	-	-	2	3	6	30	1
Limited-Service Restaurants	-	-	1	-	2	2	-
Performing arts, spectator sports and related industries (includes large venues and large events)	-	1	1	1	1	-	-
Supermarkets and Other Grocery (except Convenience) Stores	3	-	2	3	15	6	-

Appendix 4 - Additional Details of 2021 Study Results, for Individual Industry Groups

This section presents the organic diversion and disposal streams for individual industry groups. In this appendix material groups such as potentially donatable food are broken into the five sort subcategories, non-donatable into its two sort subcategories, and non-food into its three sort subcategories. Inedible parts was a category unto itself, with no further sort subcategories.

As with the figures and tables noting percent composition in the main body of the report each row was calculated individually as a measure of the percent composition for all samples in that stream for that industry group. Because values such as minimums, maximums, medians, and quartiles are likely to represent a different generator for each of those metrics. Due to this, those metrics are useful for comparison across the entirety of the stream and industry group but are not representative of a single entity.

Cafeterias, Grill Buffets, and Buffets

Table 17 - Distribution of annual tons of material calculated for each stream for cafeterias, grill buffets, and buffets.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	13	9.7	15	45	114	292
Disposal	18	9.8	37	60	138	404

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 15 – Boxplot showing the distribution of material categories found in the organic stream for cafeterias, grill buffets, and buffets.

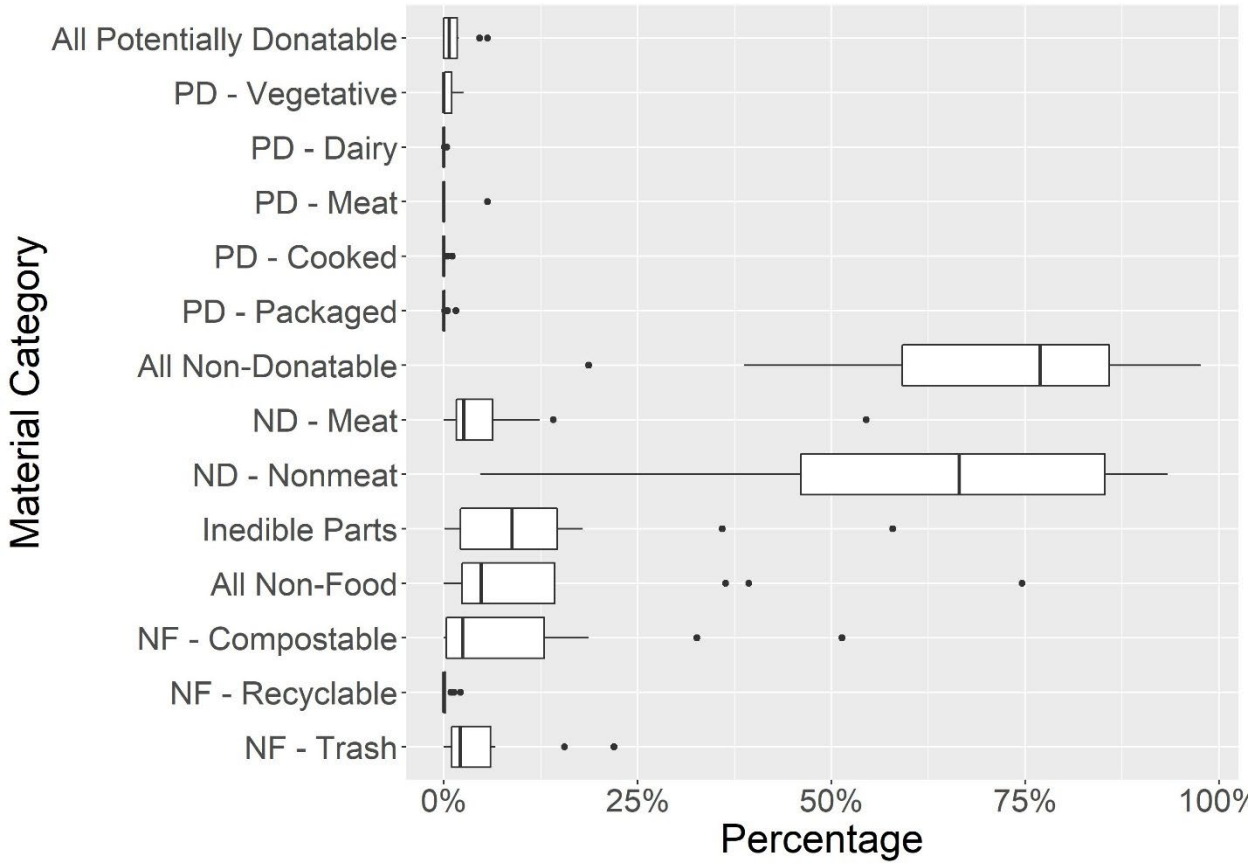


Table 18 – Data table for Figure 15 - Distribution of material categories found in the organic stream for cafeterias, grill buffets, and buffets.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**0%**	**1%**	**2%**	**6%**	**3**
PD – Vegetative	0%	0%	0%	1%	3%	7
PD – Dairy	0%	0%	0%	0%	0%	10
PD – Meat	0%	0%	0%	0%	6%	12
PD – Cooked	0%	0%	0%	0%	1%	10
PD – Packaged	0%	0%	0%	0%	2%	8
All Non-Donatable	**19%**	**59%**	**77%**	**86%**	**98%**	**-**
ND – Meat	0%	2%	3%	6%	55%	1

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
ND – Nonmeat	5%	46%	66%	85%	93%	-
Inedible Parts	**0%**	**2%**	**9%**	**15%**	**58%**	**-**
All Non-Food	**0%**	**2%**	**5%**	**14%**	**75%**	**1**
NF – Compostable	0%	0%	2%	13%	51%	1
NF – Recyclable	0%	0%	0%	0%	2%	7
NF – Disposal	0%	1%	2%	6%	22%	1

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 16 – Boxplot showing the distribution of material categories found in the disposal stream for cafeterias, grill buffets, and buffets.

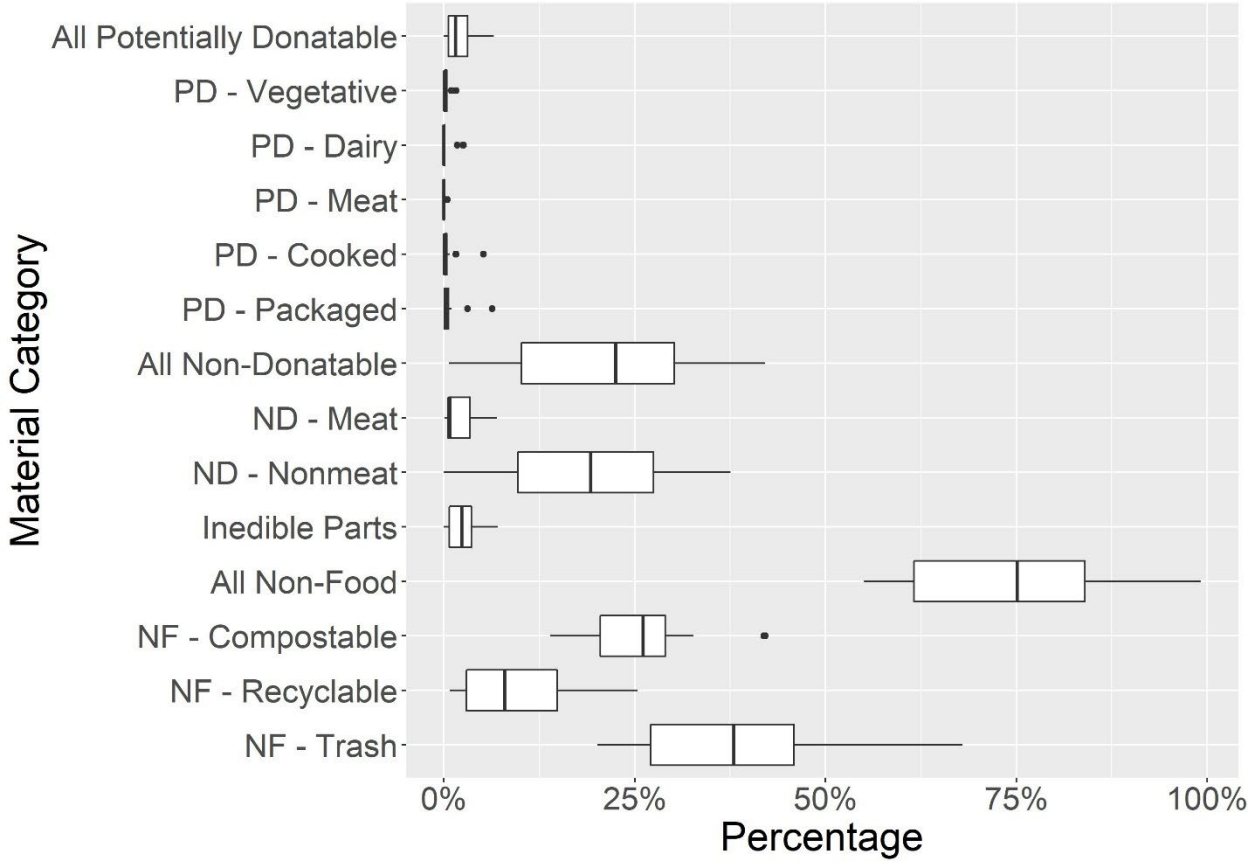


Table 19 – Data table for Figure 16 - Distribution of material categories found in the disposal stream for cafeterias, grill buffets, and buffets.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**1%**	**1%**	**3%**	**7%**	**1**
PD – Vegetative	0%	0%	0%	0%	2%	7
PD – Dairy	0%	0%	0%	0%	3%	11
PD – Meat	0%	0%	0%	0%	0%	17
PD – Cooked	0%	0%	0%	0%	5%	9
PD – Packaged	0%	0%	0%	1%	6%	2
All Non-Donatable	**1%**	**10%**	**22%**	**30%**	**42%**	**-**
ND – Meat	0%	1%	1%	3%	7%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
ND – Nonmeat	0%	10%	19%	27%	38%	1
Inedible Parts	**0%**	**1%**	**2%**	**4%**	**7%**	**1**
All Non-Food	**55%**	**62%**	**75%**	**84%**	**99%**	**-**
NF – Compostable	14%	20%	26%	29%	42%	-
NF – Recyclable	1%	3%	8%	15%	25%	-
NF – Disposal	20%	27%	38%	46%	68%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

For this industry group, 12 of the disposal samples were received for generators from which an organic diversion and disposal sample were collected, and 6 were collected from generators where only the disposal stream could be sampled. We can examine the difference in the distributions among these types of generators within the industry group at a general level. In general, the distributions of the material types divided this into these clusters were similar. This is shown in Figure 17 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 17 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for cafeterias, grill buffets, and buffets.

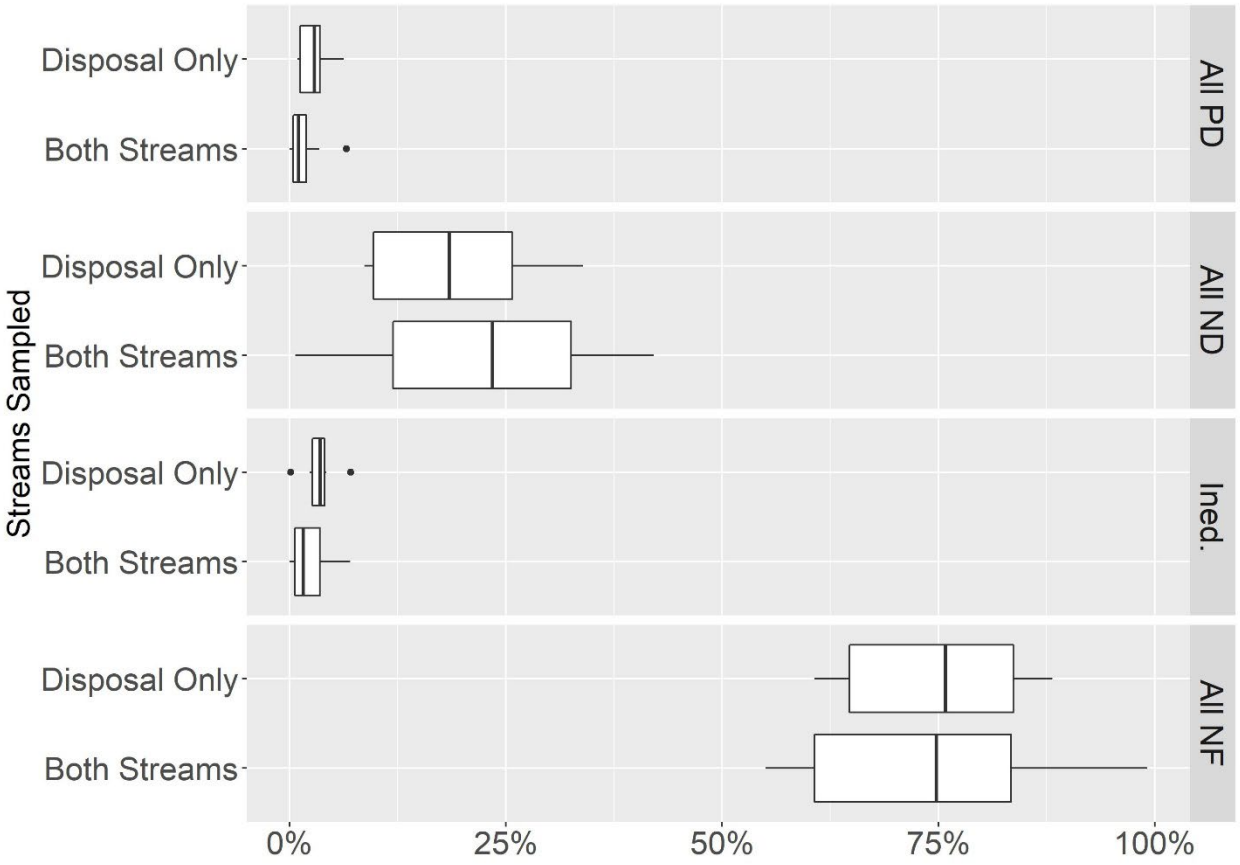


Table 20 – Data Table for Figure 17 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for cafeterias, grill buffets, and buffets.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	0%	< 1%	1%	2%	7%	1
All Potentially Donatable	Disposal Only	1%	1%	3%	3%	6%	-
All Non-Donatable	Both	1%	12%	23%	33%	42%	-
All Non-Donatable	Disposal Only	9%	10%	18%	26%	34%	-
Inedible Parts	Both	0%	1%	2%	4%	7%	1

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	Disposal Only	< 1%	3%	4%	4%	7%	-
All Non-Food	Both	55%	61%	75%	83%	99%	-
All Non-Food	Disposal Only	61%	65%	76%	84%	88%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Caterers (food production facilities)

Table 21 - Distribution of annual tons of material calculated for each stream for caterers (food production facility).

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	1	9.6	9.6	9.6	9.6	9.6
Disposal	3	15	28	42	57	72

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Steam

Figure 18 - Boxplot showing the distribution of material categories found in the organic stream for caterers (food production facilities).

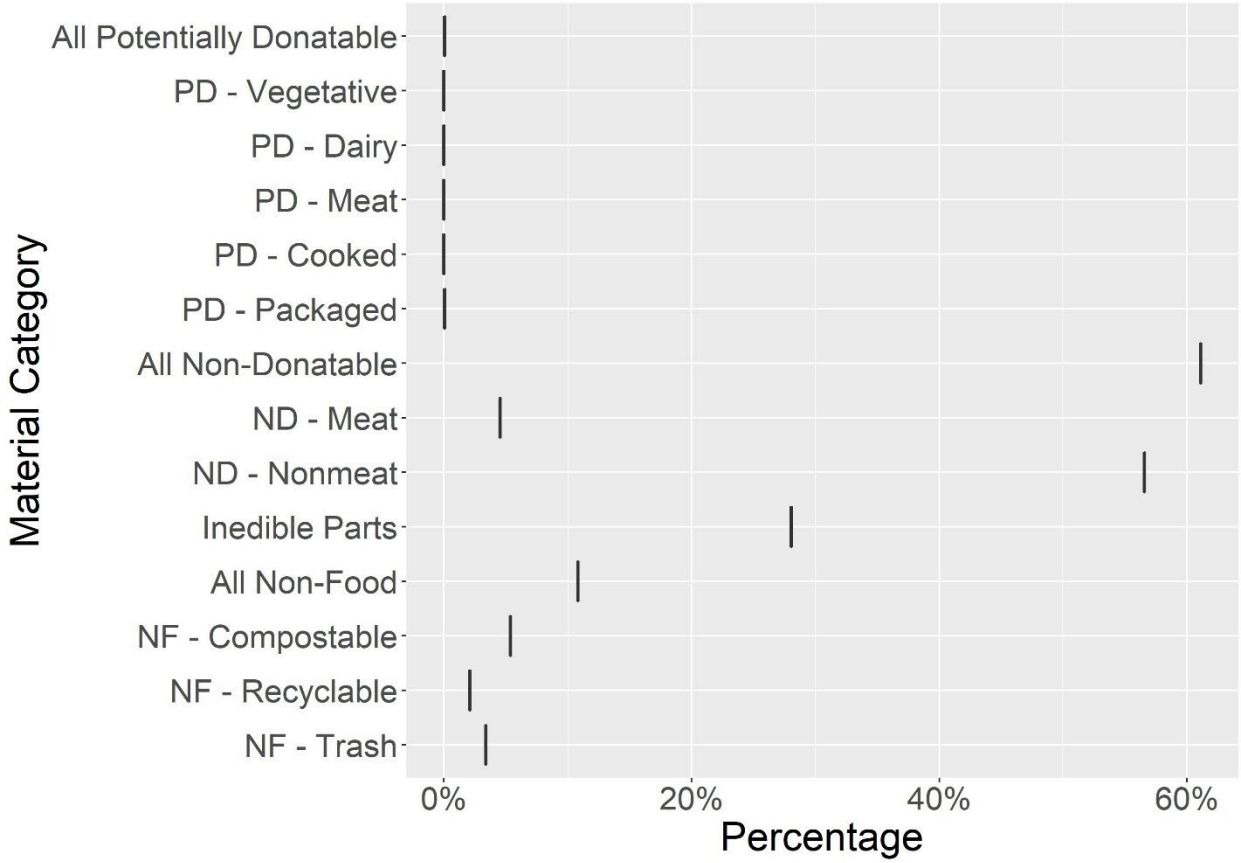


Table 22 – Data table for Figure 18 - Distribution of material categories found in the organic stream for caterers (food production facilities).

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**0%**	**0%**	**0%**	**0%**	**-**
PD – Vegetative	0%	0%	0%	0%	0%	1
PD – Dairy	0%	0%	0%	0%	0%	1
PD – Meat	0%	0%	0%	0%	0%	1
PD – Cooked	0%	0%	0%	0%	0%	1
PD – Packaged	0%	0%	0%	0%	0%	-
All Non-Donatable	**61%**	**61%**	**61%**	**61%**	**61%**	**-**
ND – Meat	5%	5%	5%	5%	5%	-
ND – Nonmeat	57%	57%	57%	57%	57%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**28%**	**28%**	**28%**	**28%**	**28%**	**-**
All Non-Food	**11%**	**11%**	**11%**	**11%**	**11%**	**-**
NF – Compostable	5%	5%	5%	5%	5%	-
NF – Recyclable	2%	2%	2%	2%	2%	-
NF – Disposal	3%	3%	3%	3%	3%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 19 - Boxplot showing the distribution of material categories found in the disposal stream for caterers (food production facilities).

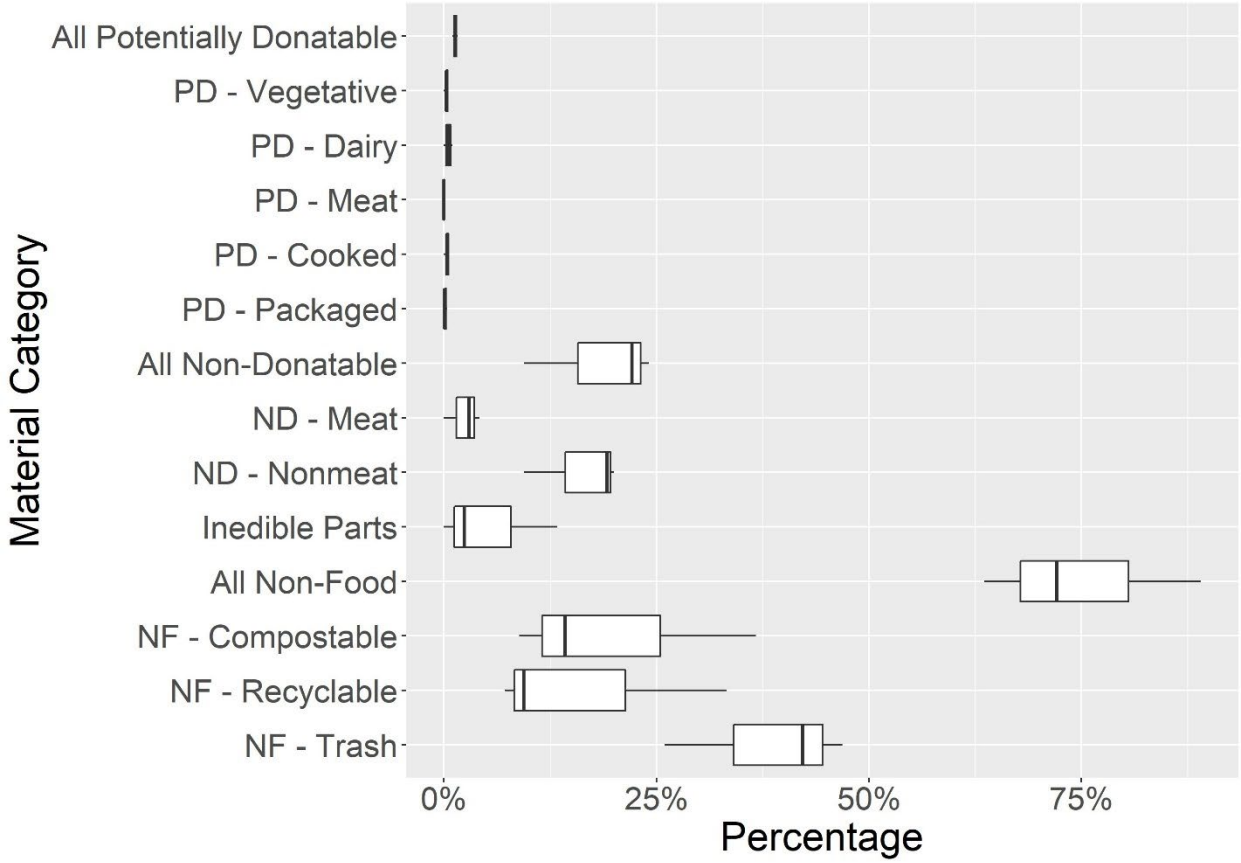


Table 23 – Data table for Figure 19 - Distribution of material categories found in the disposal stream for caterers (food production facilities).

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**1%**	**1%**	**1%**	**1%**	**2%**	**-**
PD – Vegetative	0%	0%	0%	0%	1%	1
PD – Dairy	0%	0%	1%	1%	1%	1
PD – Meat	0%	0%	0%	0%	0%	3
PD – Cooked	0%	0%	0%	1%	1%	1
PD – Packaged	0%	0%	0%	0%	0%	-
All Non-Donatable	**9%**	**16%**	**22%**	**23%**	**24%**	**-**
ND – Meat	0%	1%	3%	4%	4%	1
ND – Nonmeat	9%	14%	19%	20%	20%	-
Inedible Parts	**0%**	**1%**	**2%**	**8%**	**13%**	**1**
All Non-Food	**64%**	**68%**	**72%**	**81%**	**89%**	**-**
NF – Compostable	9%	12%	14%	25%	37%	-
NF – Recyclable	7%	8%	9%	21%	33%	-
NF – Disposal	26%	34%	42%	45%	47%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from one generator that was from both streams and from two generators with a disposal sample only. While the comparison is limited to one sample versus two samples, this is presented in Figure 20 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 20 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for caterers (food production facility).

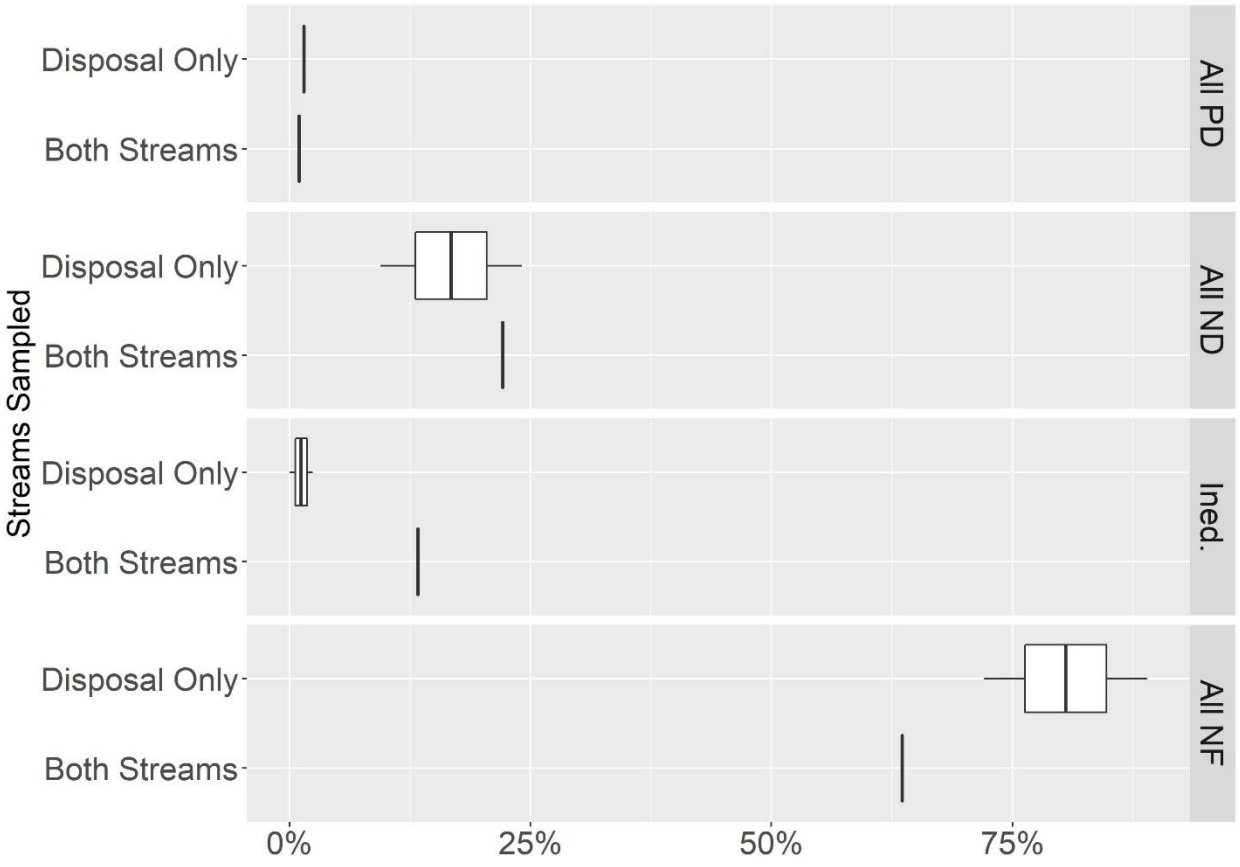


Table 24 – Data Table for Figure 20 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for caterers (food production facility).

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	1%	1%	1%	1%	1%	-
All Potentially Donatable	Disposal Only	1%	1%	1%	2%	2%	-
All Non-Donatable	Both	22%	22%	22%	22%	22%	-

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Non-Donatable	Disposal Only	9%	13%	17%	20%	24%	-
Inedible Parts	Both	13%	13%	13%	13%	13%	-
Inedible Parts	Disposal Only	0%	1%	1%	2%	2%	1
All Non-Food	Both	64%	64%	64%	64%	64%	-
All Non-Food	Disposal Only	72%	76%	81%	85%	89%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Commercial Bakeries

Organic Stream

No results to report for this stream from this industry group.

Disposal Stream

Figure 21 - Boxplot showing the distribution of material categories found in the disposal stream for commercial bakeries.

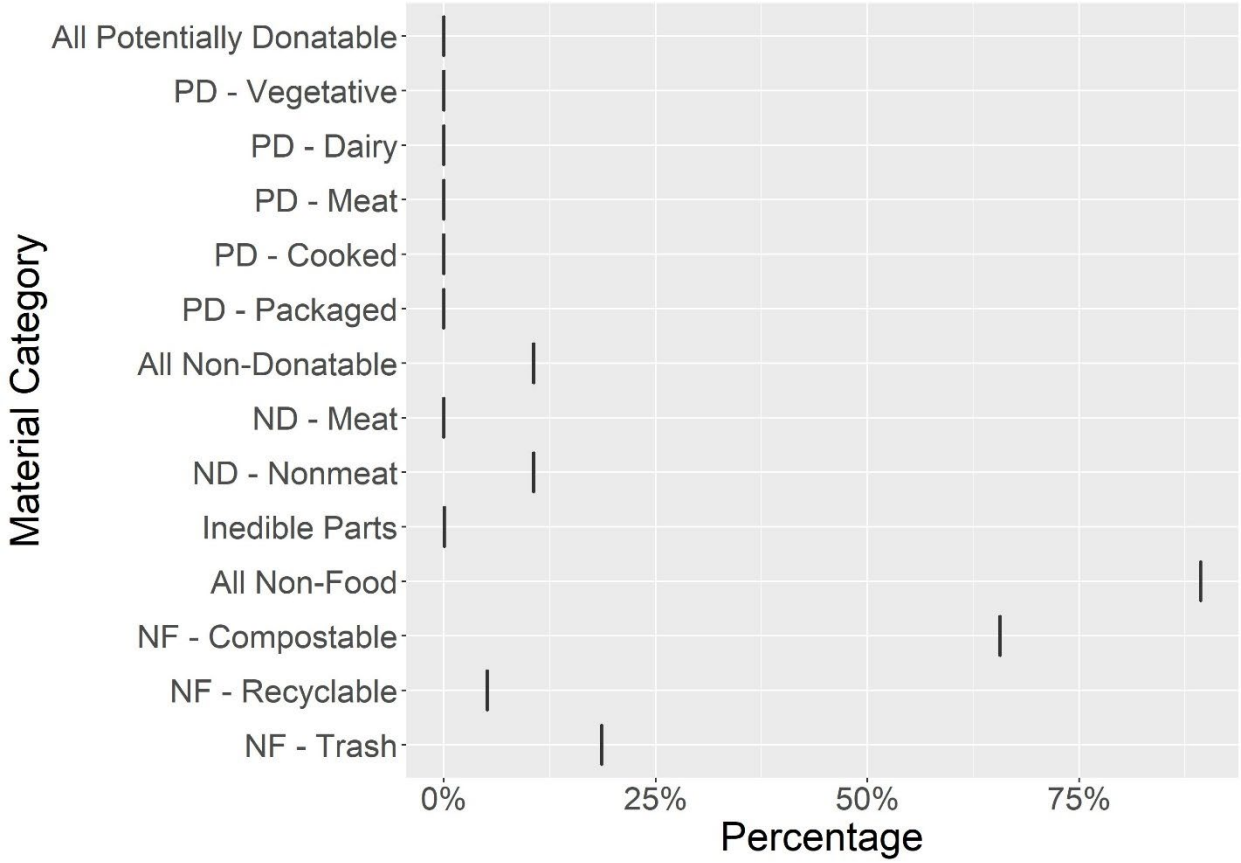


Table 25 – Data table for Figure 21 - Distribution of material categories found in the disposal stream for commercial bakeries.

Material Category	Result	Count of 0%
All Potentially Donatable	**0%**	**1**
PD – Vegetative	0%	1
PD – Dairy	0%	1
PD – Meat	0%	1
PD – Cooked	0%	1
PD – Packaged	0%	1
All Non-Donatable	**11%**	**-**
ND – Meat	0%	1
ND – Nonmeat	11%	-

Material Category	Result	Count of 0%
Inedible Parts	**0%**	**-**
All Non-Food	**89%**	**-**
NF – Compostable	66%	-
NF – Recyclable	5%	-
NF – Disposal	19%	-

Correctional Institutions

Table 26 - Distribution of annual tons of material calculated for each stream for correctional institutions.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	10	6.5	13	24	81	114
Disposal	13	6.4	44	57	100	591

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Steam

Figure 22 - Boxplot showing the distribution of material categories found in the organic stream for correctional institutions.

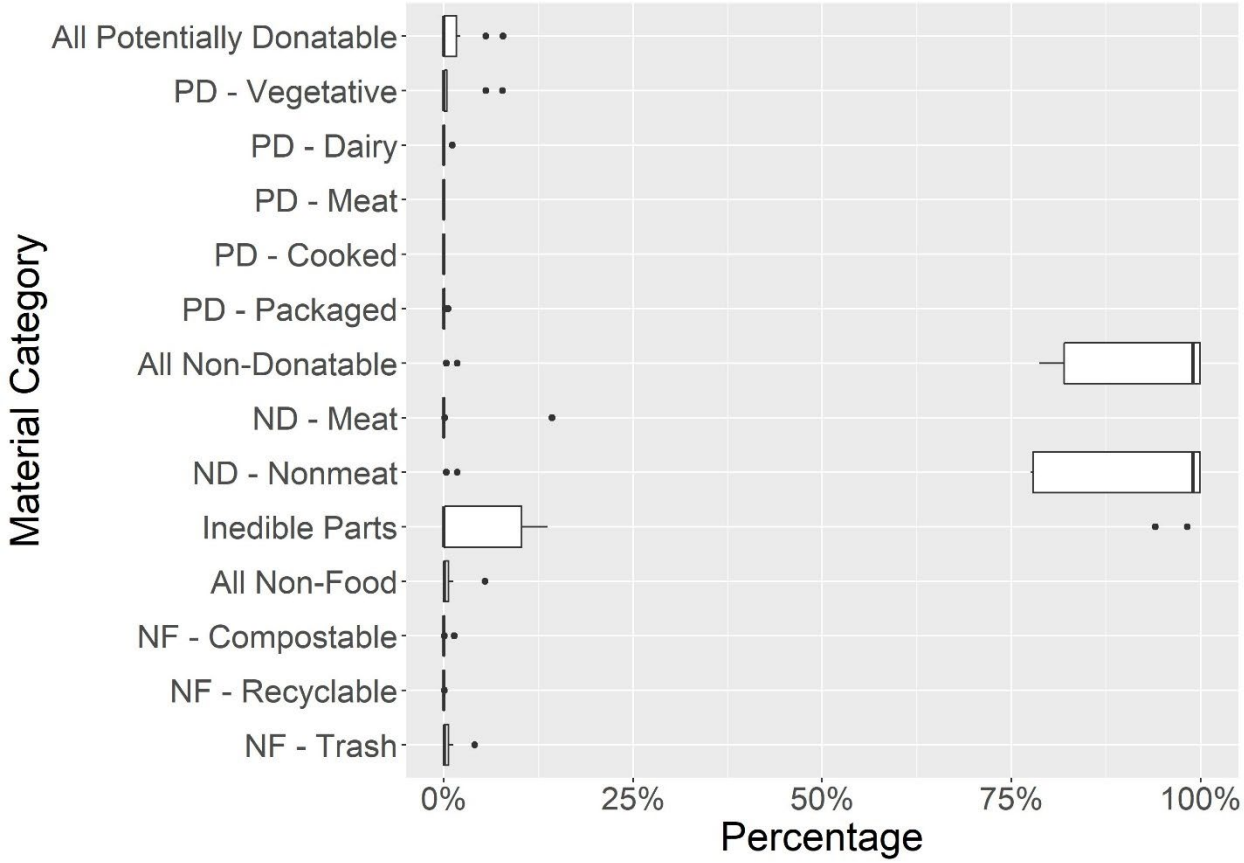


Table 27 – Data table for Figure 22 - Distribution of material categories found in the organic stream for correctional institutions.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**0%**	**0%**	**2%**	**8%**	**5**
PD – Vegetative	0%	0%	0%	0%	8%	7
PD – Dairy	0%	0%	0%	0%	1%	9
PD – Meat	0%	0%	0%	0%	0%	10
PD – Cooked	0%	0%	0%	0%	0%	10
PD – Packaged	0%	0%	0%	0%	1%	6
All Non-Donatable	**0%**	**82%**	**99%**	**100%**	**100%**	**-**
ND – Meat	0%	0%	0%	0%	14%	8
ND – Nonmeat	0%	78%	99%	100%	100%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**0%**	**0%**	**0%**	**10%**	**98%**	**7**
All Non-Food	**0%**	**0%**	**0%**	**1%**	**5%**	**5**
NF – Compostable	0%	0%	0%	0%	1%	8
NF – Recyclable	0%	0%	0%	0%	0%	9
NF – Disposal	0%	0%	0%	1%	4%	5

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 23 - Boxplot showing the distribution of material categories found in the disposal stream for correctional institutions.

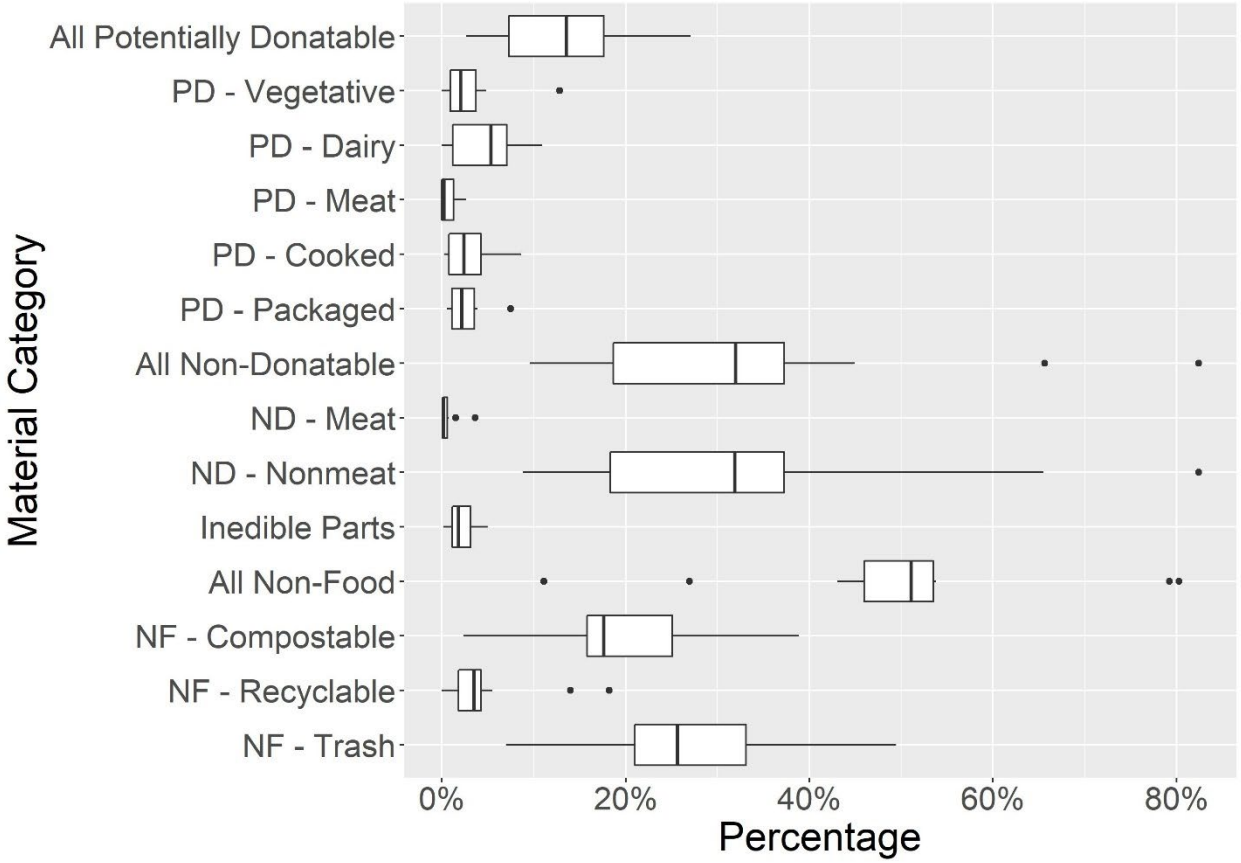


Table 28 – Data table for Figure 23 - Distribution of material categories found in the disposal stream for correctional institutions.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**3%**	**7%**	**14%**	**18%**	**27%**	**-**
PD – Vegetative	0%	1%	2%	4%	13%	1
PD – Dairy	0%	1%	5%	7%	11%	1
PD – Meat	0%	0%	0%	1%	3%	6
PD – Cooked	0%	1%	2%	4%	9%	-
PD – Packaged	1%	1%	2%	4%	7%	-
All Non-Donatable	**10%**	**19%**	**32%**	**37%**	**82%**	**-**
ND – Meat	0%	0%	0%	1%	4%	2
ND – Nonmeat	9%	18%	32%	37%	82%	-
Inedible Parts	**0%**	**1%**	**2%**	**3%**	**5%**	**-**
All Non-Food	**11%**	**46%**	**51%**	**54%**	**80%**	**-**
NF – Compostable	2%	16%	18%	25%	39%	-
NF – Recyclable	0%	2%	3%	4%	18%	-
NF – Disposal	7%	21%	26%	33%	49%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from nine generators that were from both streams and from four generators with a disposal sample only. In general terms the percentages of material types present were similar between these two clusters. This is shown in Figure 24 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 24 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for correctional institutions.

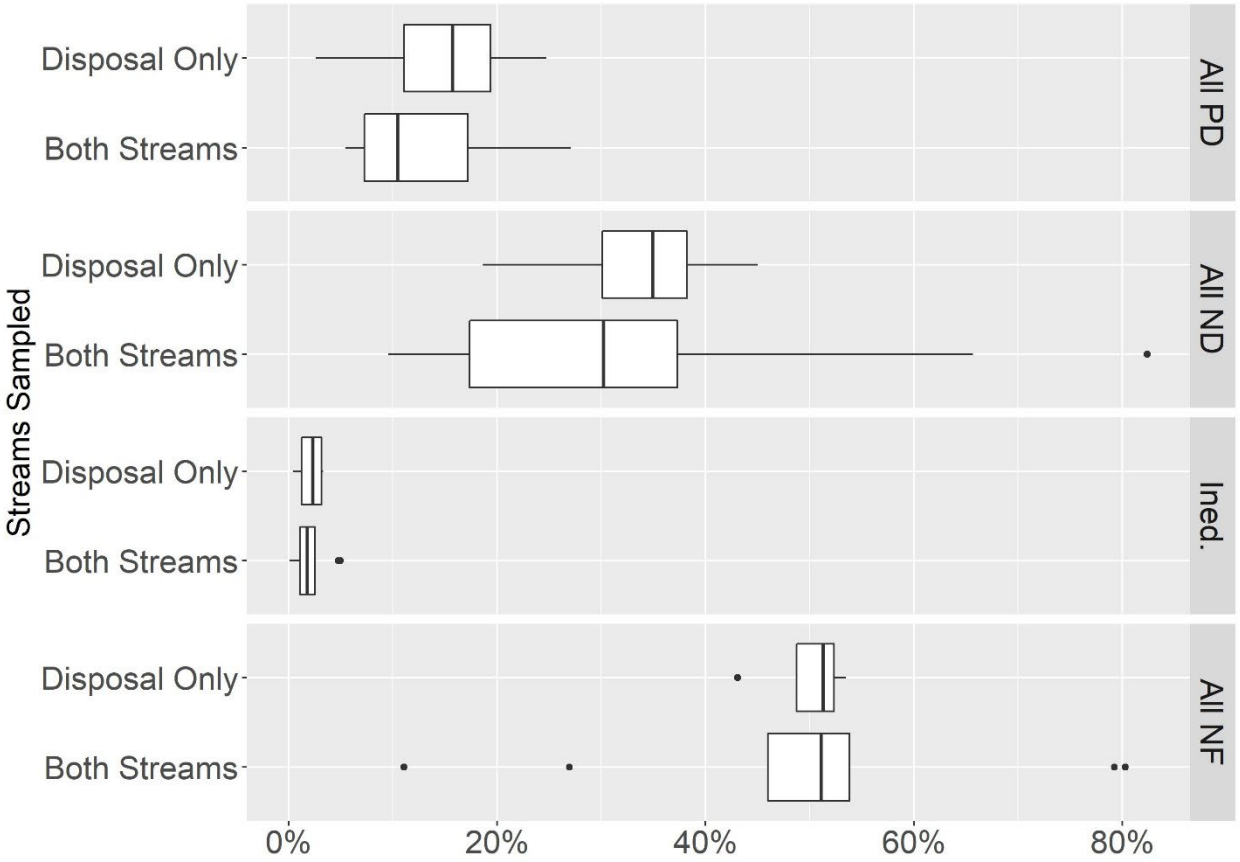


Table 29 – Data table for Figure 24 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for correctional institutions.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	5%	7%	10%	17%	27%	-
All Potentially Donatable	Disposal Only	3%	11%	16%	19%	25%	-
All Non-Donatable	Both	10%	17%	30%	37%	82%	-
All Non-Donatable	Disposal Only	19%	30%	35%	38%	45%	-

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	Both	< 1%	1%	2%	3%	5%	-
Inedible Parts	Disposal Only	< 1%	1%	2%	3%	3%	-
All Non-Food	Both	11%	46%	51%	54%	80%	-
All Non-Food	Disposal Only	43%	49%	51%	52%	54%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Food Distributors

Table 30 - Distribution of annual tons of material calculated for each stream for food distributors.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	4	5.5	14	32	64	111
Disposal	4	5.7	26	50	81	123

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 25 - Boxplot showing the distribution of material categories found in the organic stream for food distributors.

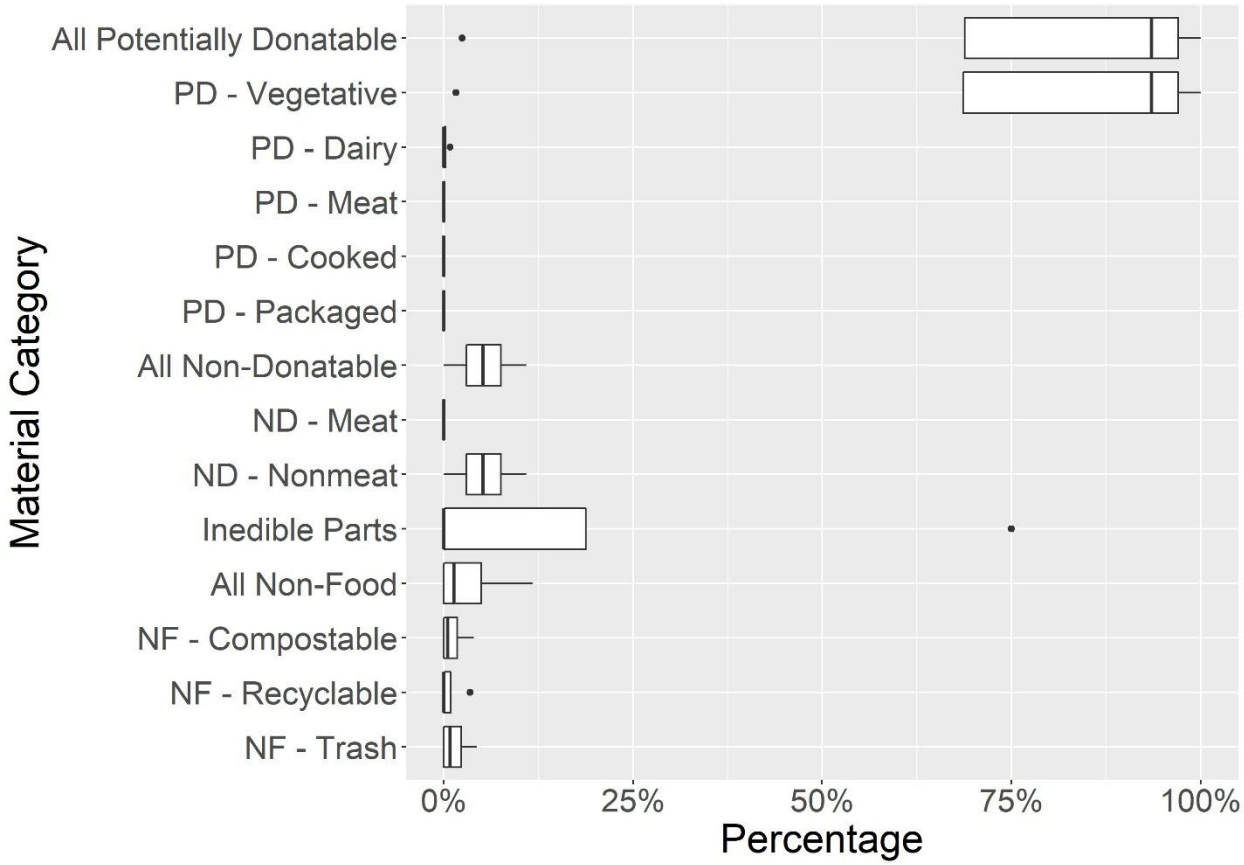


Table 31 – Data table for Figure 25 - Distribution of material categories found in the organic stream for food distributors.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**2%**	**69%**	**94%**	**97%**	**100%**	**-**
PD – Vegetative	2%	69%	94%	97%	100%	-
PD – Dairy	0%	0%	0%	0%	1%	3
PD – Meat	0%	0%	0%	0%	0%	4
PD – Cooked	0%	0%	0%	0%	0%	4
PD – Packaged	0%	0%	0%	0%	0%	4
All Non-Donatable	**0%**	**3%**	**5%**	**8%**	**11%**	**1**
ND – Meat	0%	0%	0%	0%	0%	4
ND – Nonmeat	0%	3%	5%	8%	11%	1

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**0%**	**0%**	**0%**	**19%**	**75%**	**3**
All Non-Food	**0%**	**0%**	**1%**	**5%**	**12%**	**1**
NF – Compostable	0%	0%	1%	2%	4%	1
NF – Recyclable	0%	0%	0%	1%	3%	3
NF – Disposal	0%	0%	1%	2%	4%	2

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 26 - Boxplot showing the distribution of material categories found in the disposal stream for food distributors.

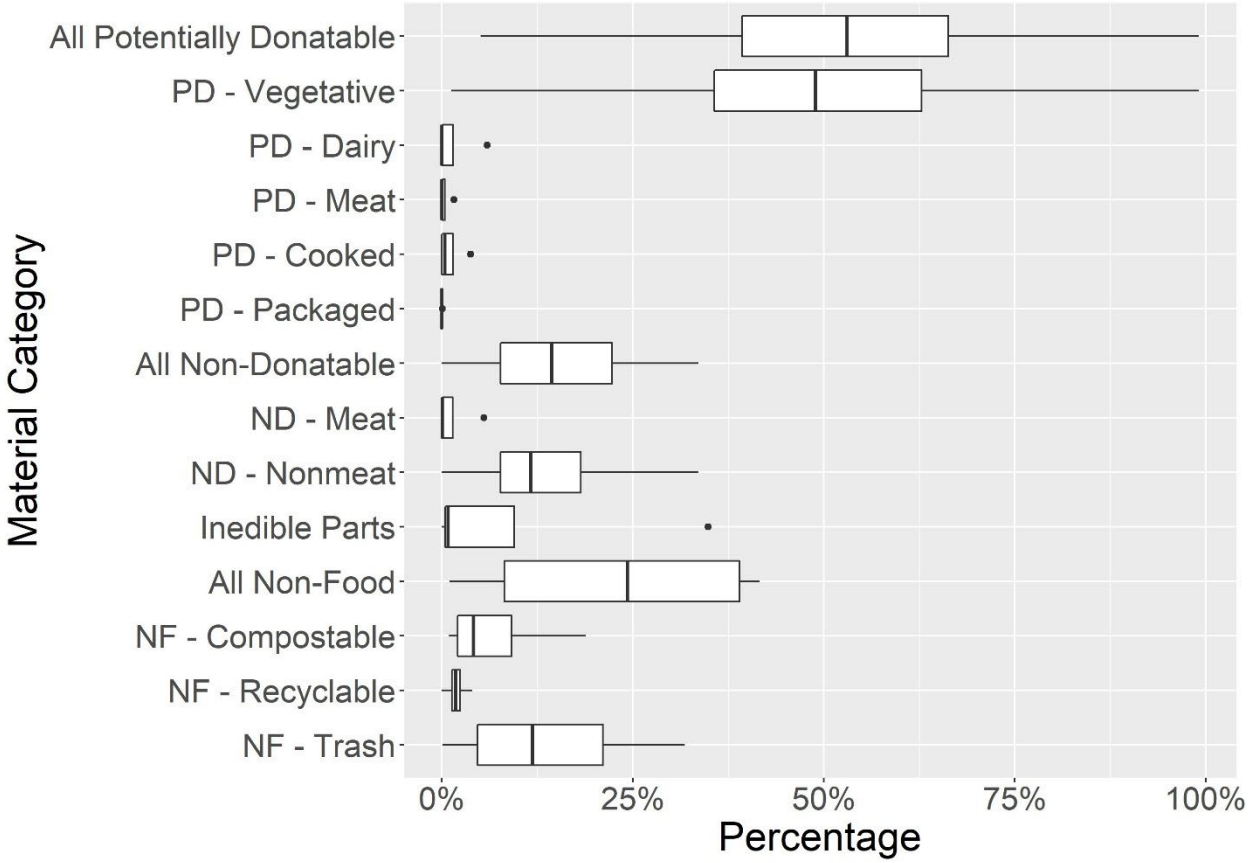


Table 32 – Data table for Figure 26 - Distribution of material categories found in the disposal stream for food distributors.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**5%**	**39%**	**53%**	**66%**	**99%**	**-**
PD – Vegetative	1%	36%	49%	63%	99%	-
PD – Dairy	0%	0%	0%	1%	6%	3
PD – Meat	0%	0%	0%	0%	2%	3
PD – Cooked	0%	0%	0%	1%	4%	2
PD – Packaged	0%	0%	0%	0%	0%	3
All Non-Donatable	**0%**	**8%**	**14%**	**22%**	**34%**	**1**
ND – Meat	0%	0%	0%	1%	6%	2
ND – Nonmeat	0%	8%	12%	18%	34%	1
Inedible Parts	**0%**	**0%**	**1%**	**9%**	**35%**	**1**
All Non-Food	**1%**	**8%**	**24%**	**39%**	**42%**	**-**
NF – Compostable	1%	2%	4%	9%	19%	-
NF – Recyclable	0%	1%	2%	2%	4%	1
NF – Disposal	0%	5%	12%	21%	32%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Full-Service Restaurants

Table 33 – Distribution of annual tons of material calculated for each stream for full-service restaurants.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	3	9.8	46	82	119	155
Disposal	4	21	29	33	37	50

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 27 - Boxplot showing the distribution of material categories found in the organic stream for full-service restaurants.

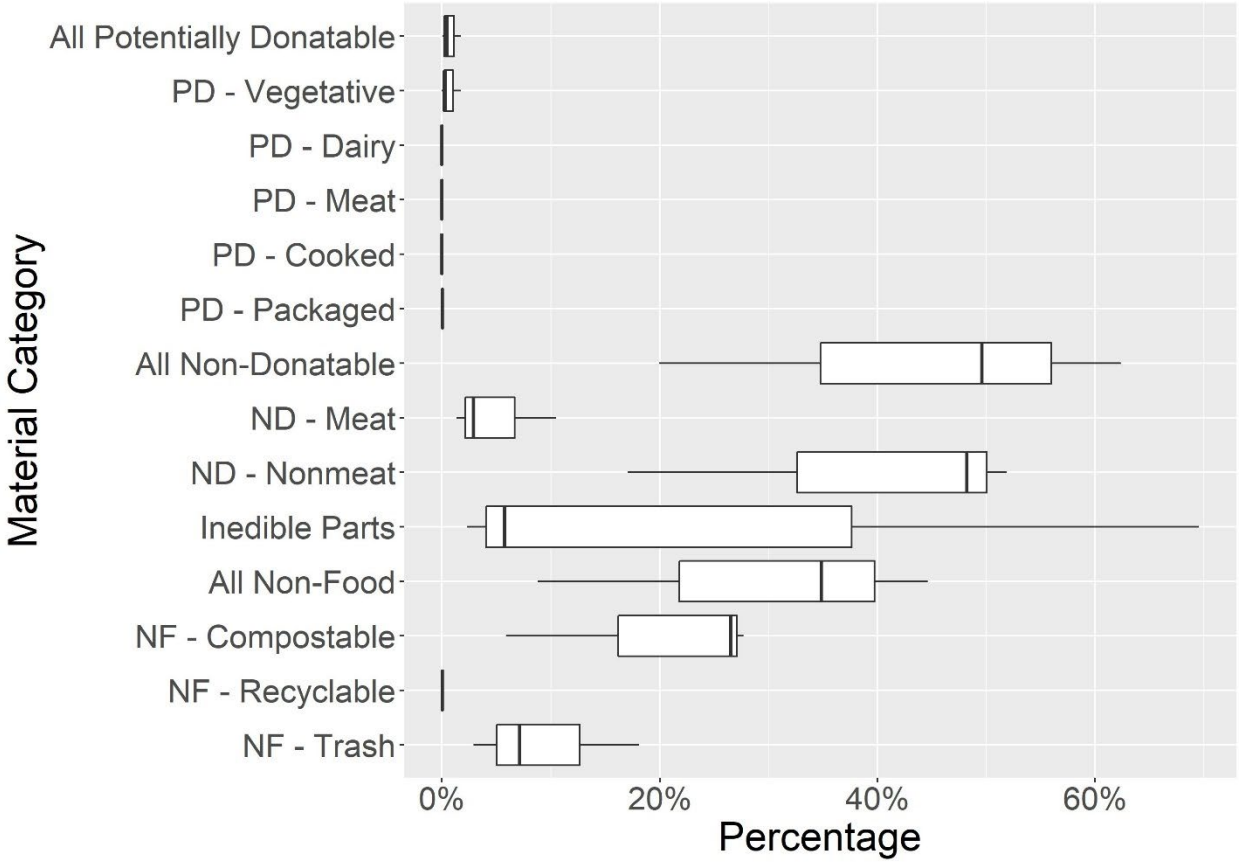


Table 34 – Data table for Figure 27 - Distribution of material categories found in the organic stream for full-service restaurants.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**0%**	**0%**	**1%**	**2%**	**-**
PD – Vegetative	0%	0%	0%	1%	2%	1
PD – Dairy	0%	0%	0%	0%	0%	3
PD – Meat	0%	0%	0%	0%	0%	3
PD – Cooked	0%	0%	0%	0%	0%	3
PD – Packaged	0%	0%	0%	0%	0%	1
All Non-Donatable	**20%**	**35%**	**50%**	**56%**	**62%**	**-**
ND – Meat	1%	2%	3%	7%	10%	-
ND – Nonmeat	17%	33%	48%	50%	52%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**2%**	**4%**	**6%**	**38%**	**70%**	**-**
All Non-Food	**9%**	**22%**	**35%**	**40%**	**45%**	**-**
NF – Compostable	6%	16%	26%	27%	28%	-
NF – Recyclable	0%	0%	0%	0%	0%	1
NF – Disposal	3%	5%	7%	13%	18%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 28 - Boxplot showing the distribution of material categories found in the disposal stream for full-service restaurants.

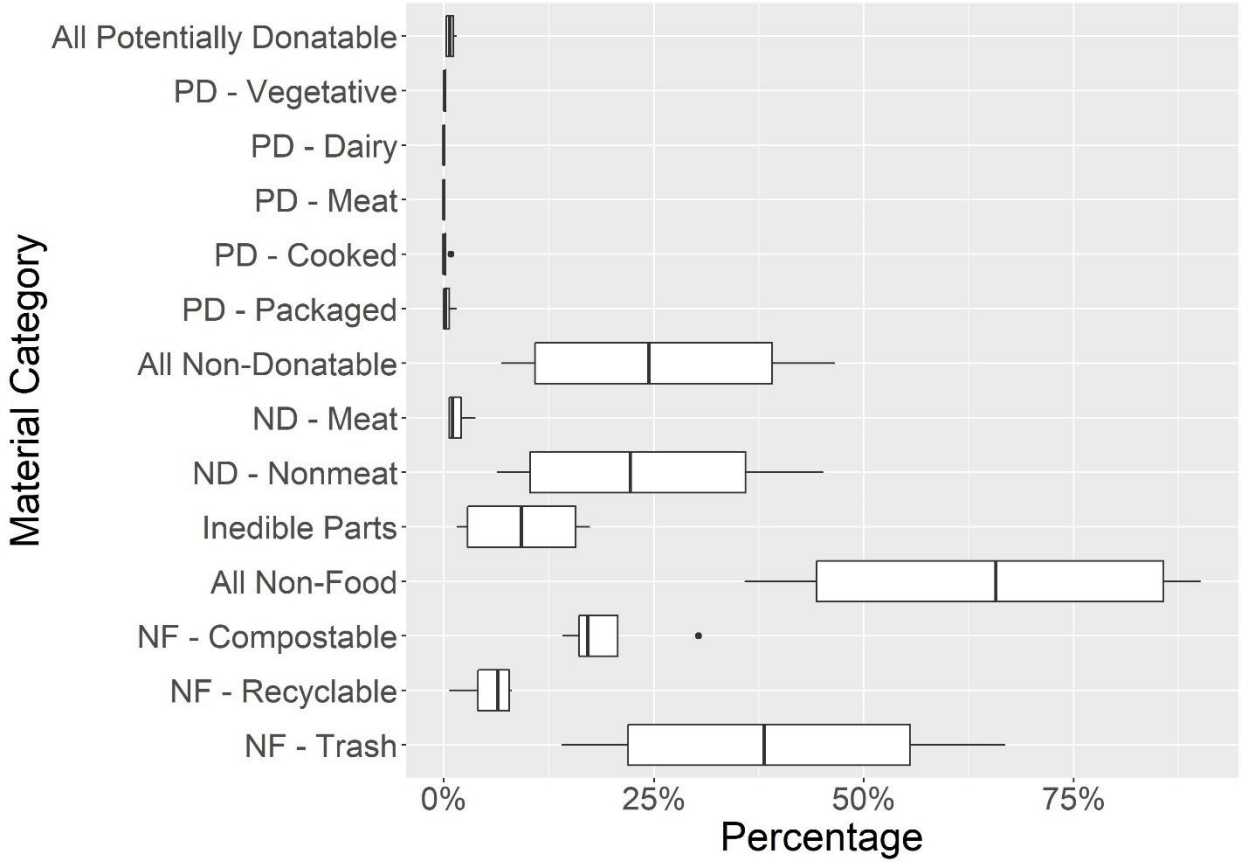


Table 35 – Data table for Figure 28 - Distribution of material categories found in the disposal stream for full-service restaurants.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**0%**	**1%**	**1%**	**2%**	**-**
PD – Vegetative	0%	0%	0%	0%	0%	2
PD – Dairy	0%	0%	0%	0%	0%	4
PD – Meat	0%	0%	0%	0%	0%	4
PD – Cooked	0%	0%	0%	0%	1%	3
PD – Packaged	0%	0%	0%	1%	2%	1
All Non-Donatable	**7%**	**11%**	**24%**	**39%**	**47%**	**-**
ND – Meat	1%	1%	1%	2%	4%	-
ND – Nonmeat	6%	10%	22%	36%	45%	-
Inedible Parts	**2%**	**3%**	**9%**	**16%**	**17%**	**-**
All Non-Food	**36%**	**44%**	**66%**	**86%**	**90%**	**-**
NF – Compostable	14%	16%	17%	21%	30%	-
NF – Recyclable	1%	4%	6%	8%	8%	-
NF – Disposal	14%	22%	38%	55%	67%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from three generators that were from both streams and from one generator with a disposal sample only. This limited dataset shows the single disposal stream sample having a higher proportion of non-donatable material and lower proportion of non-food material than the generators for which both streams were sampled, but this is not sufficient data from which to draw an inference. This is shown in Figure 29 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 29 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for full-service restaurants.

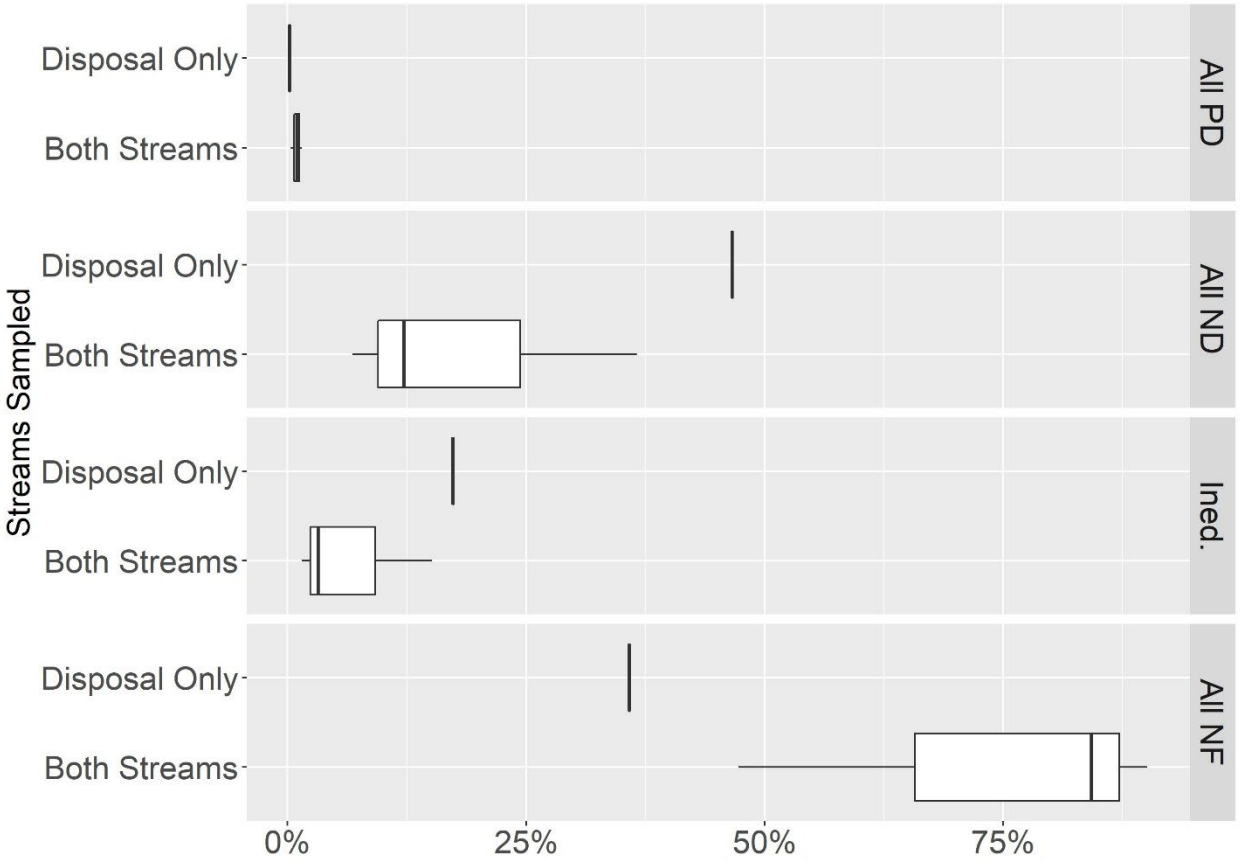


Table 36 – Data table for Figure 29 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for full-service restaurants.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	< 1%	1%	1%	1%	2%	-
All Potentially Donatable	Disposal Only	< 1%	< 1%	< 1%	< 1%	< 1%	-
All Non-Donatable	Both	7%	10%	12%	24%	37%	-
All Non-Donatable	Disposal Only	47%	47%	47%	47%	47%	-
Inedible Parts	Both	2%	2%	3%	9%	15%	-
Inedible Parts	Disposal Only	17%	17%	17%	17%	17%	-

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Non-Food	Both	47%	66%	84%	87%	90%	-
All Non-Food	Disposal Only	36%	36%	36%	36%	36%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Hospitals

Table 37 - Distribution of annual tons of material calculated for each stream for hospitals.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	2	23	26	28	31	34
Disposal	2	62	66	70	74	78

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 30 - Boxplot showing the distribution of material categories found in the organic stream for hospitals.

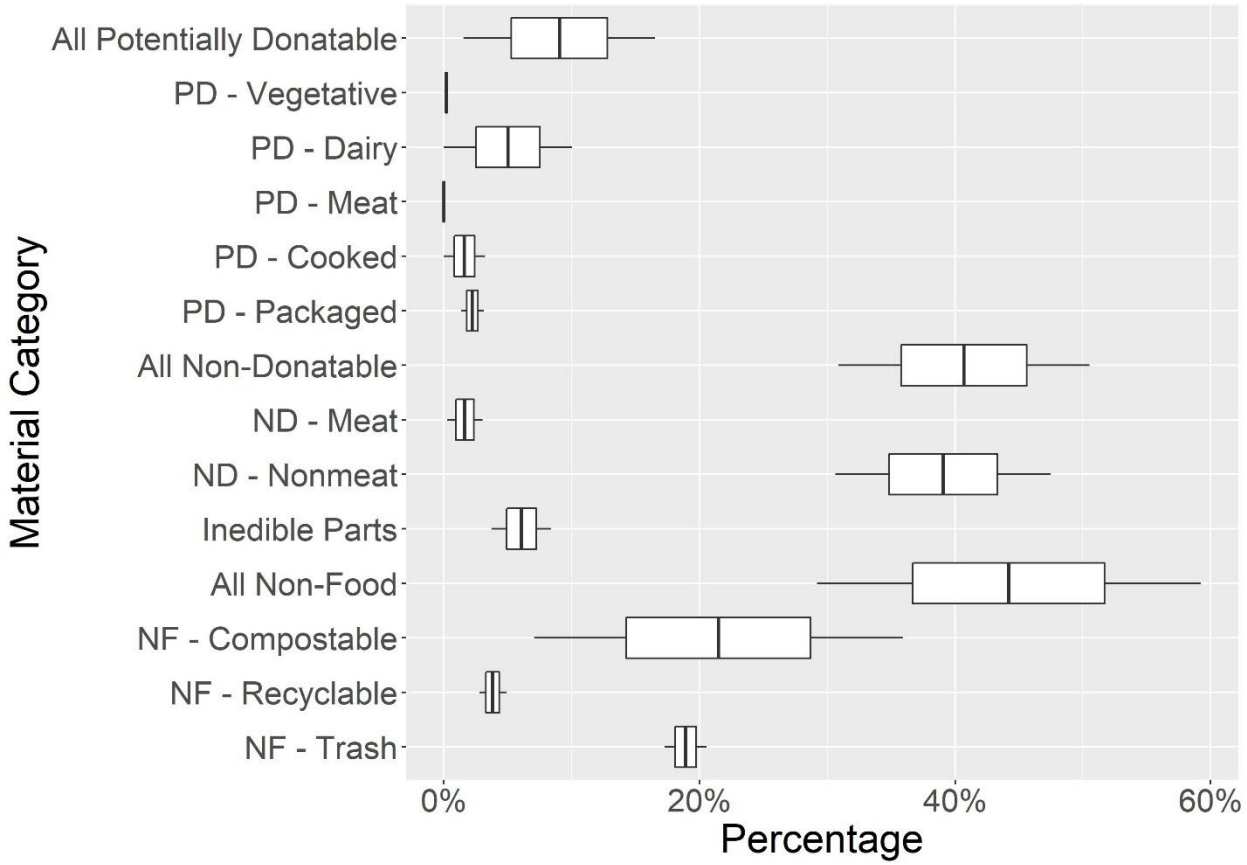


Table 38 – Data table for Figure 30 - Distribution of material categories found in the organic stream for hospitals.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**2%**	**5%**	**9%**	**13%**	**17%**	**-**
PD – Vegetative	0%	0%	0%	0%	0%	-
PD – Dairy	0%	3%	5%	8%	10%	1
PD – Meat	0%	0%	0%	0%	0%	2
PD – Cooked	0%	1%	2%	2%	3%	1
PD – Packaged	1%	2%	2%	3%	3%	-
All Non-Donatable	**31%**	**36%**	**41%**	**46%**	**51%**	**-**
ND – Meat	0%	1%	2%	2%	3%	-
ND – Nonmeat	31%	35%	39%	43%	48%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**4%**	**5%**	**6%**	**7%**	**8%**	**-**
All Non-Food	**29%**	**37%**	**44%**	**52%**	**59%**	**-**
NF - Compostable	7%	14%	21%	29%	36%	-
NF - Recyclable	3%	3%	4%	4%	5%	-
NF – Disposal	17%	18%	19%	20%	21%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 31 - Boxplot showing the distribution of material categories found in the disposal stream for hospitals.

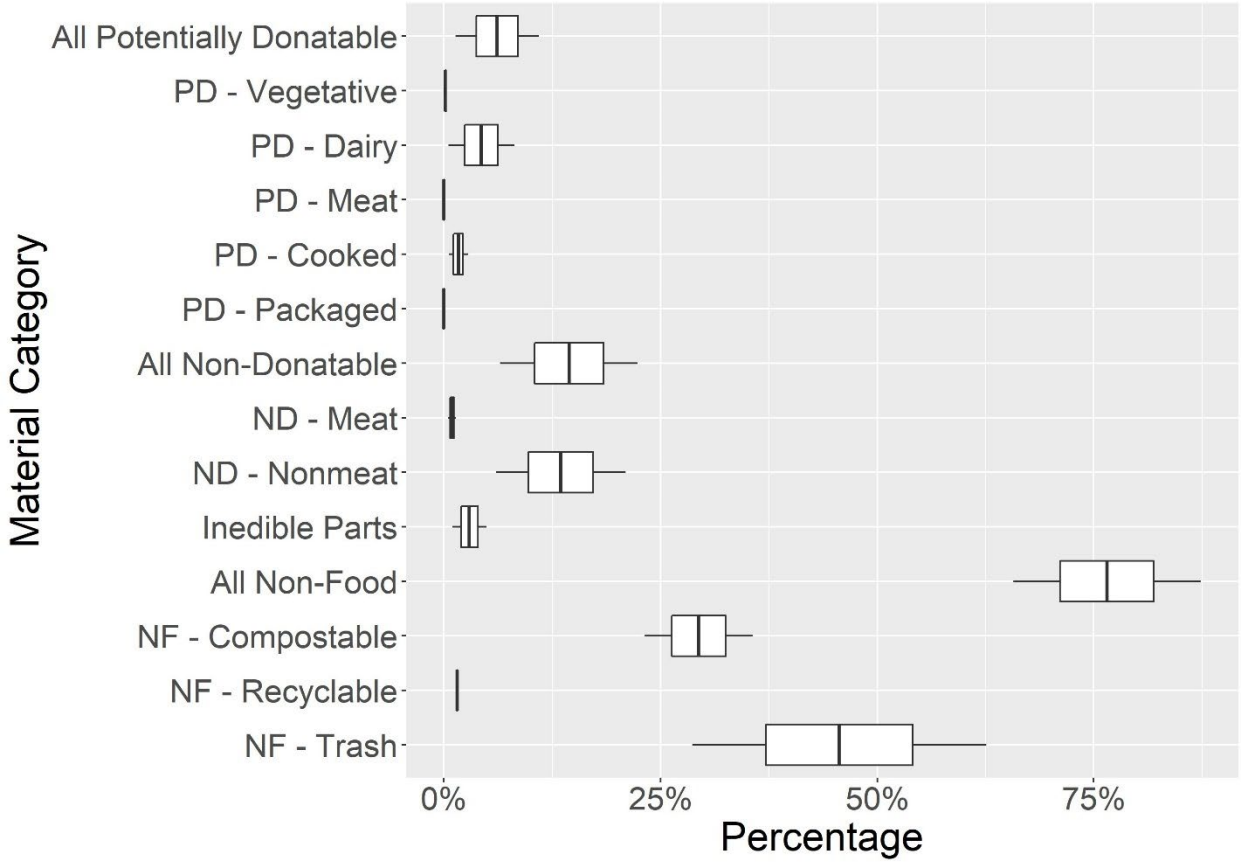


Table 39 – Data table for Figure 31 - Distribution of material categories found in the disposal stream for hospitals.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**1%**	**4%**	**6%**	**9%**	**11%**	**-**
PD - Vegetative	0%	0%	0%	0%	0%	1
PD - Dairy	1%	2%	4%	6%	8%	-
PD - Meat	0%	0%	0%	0%	0%	2
PD - Cooked	1%	1%	2%	2%	3%	-
PD - Packaged	0%	0%	0%	0%	0%	1
All Non-Donatable	**6%**	**10%**	**14%**	**18%**	**22%**	**-**
ND - Meat	0%	1%	1%	1%	1%	-
ND - Nonmeat	6%	10%	13%	17%	21%	-
Inedible Parts	**1%**	**2%**	**3%**	**4%**	**5%**	**-**
All Non-Food	**66%**	**71%**	**77%**	**82%**	**87%**	**-**
NF - Compostable	23%	26%	29%	32%	36%	-
NF - Recyclable	1%	1%	2%	2%	2%	-
NF - Disposal	29%	37%	46%	54%	63%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from one generator that was from both streams and from one generator with a disposal sample only. The results of these two samples are shown side-by-side in Figure 32 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 32 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for hospitals.

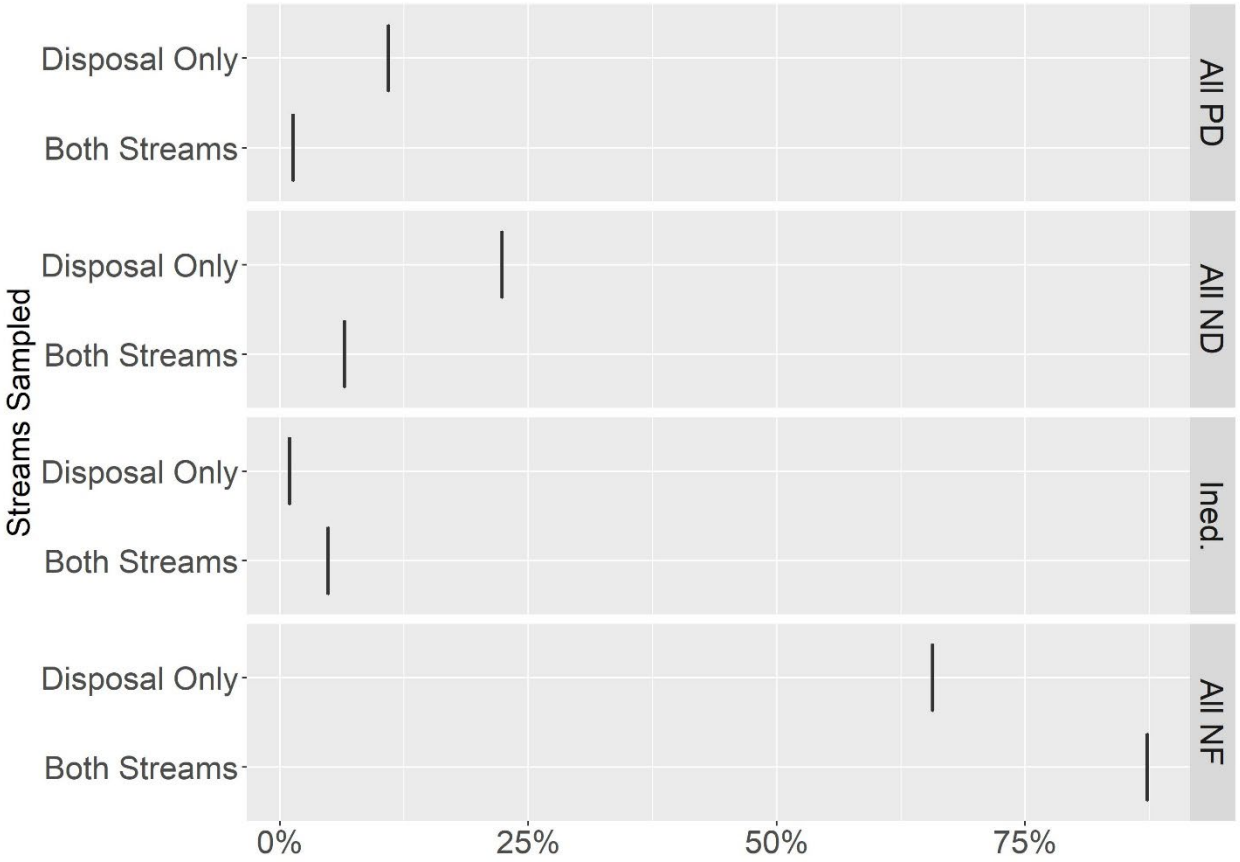


Table 40 – Data table for Figure 32 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for hospitals.

Material Category	Streams Sampled	Result
All Potentially Donatable	Both	1%
All Potentially Donatable	Disposal Only	11%
All Non-Donatable	Both	6%
All Non-Donatable	Disposal Only	22%
Inedible Parts	Both	5%
Inedible Parts	Disposal Only	1%
All Non-Food	Both	87%
All Non-Food	Disposal Only	66%

Hotels

Table 41 - Distribution of annual tons of material calculated for each stream for hotels.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	2	21	26	31	35	40
Disposal	4	9.7	58	98	130	158

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 33 - Boxplot showing the distribution of material categories found in the organic stream for hotels.

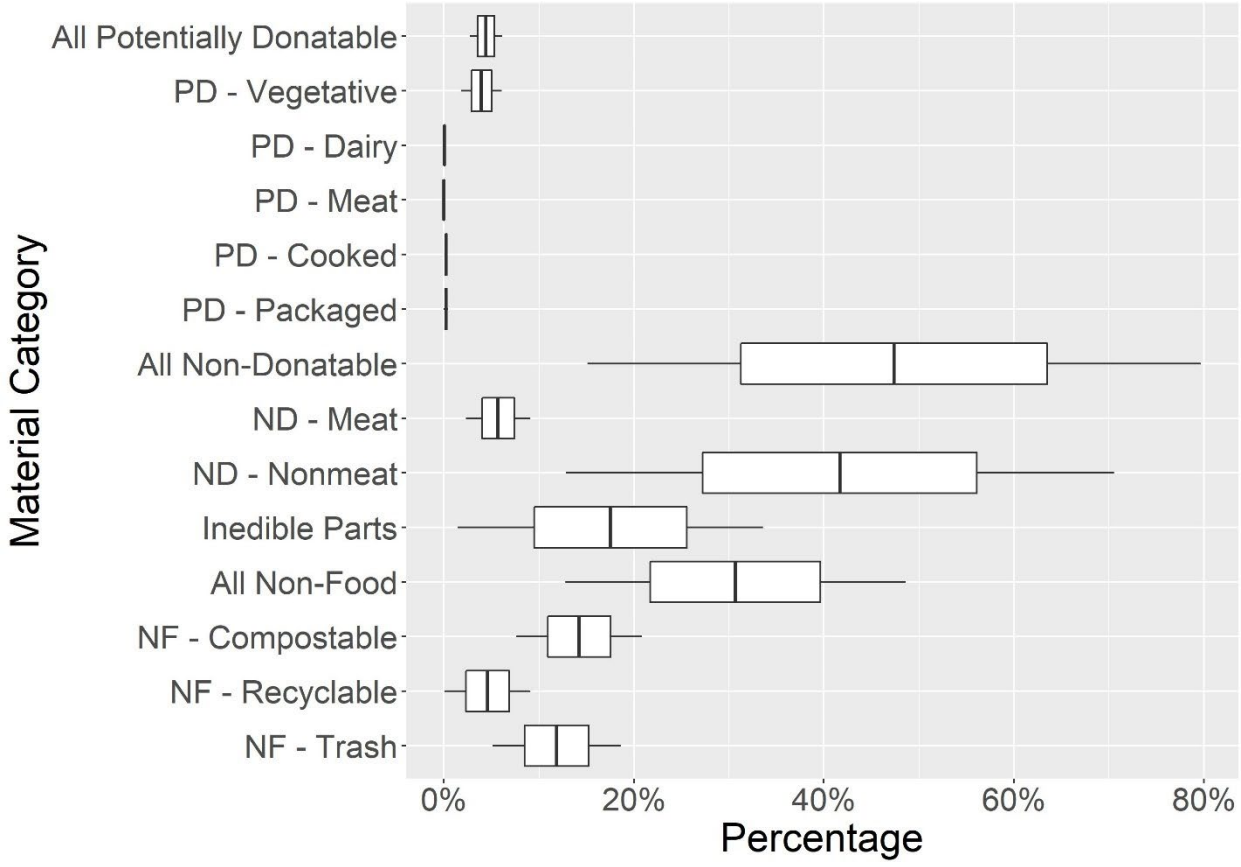


Table 42 – Data table for Figure 33 - Distribution of material categories found in the organic stream for hotels.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**3%**	**4%**	**4%**	**5%**	**6%**	**-**
PD - Vegetative	2%	3%	4%	5%	6%	-
PD – Dairy	0%	0%	0%	0%	0%	1
PD – Meat	0%	0%	0%	0%	0%	2
PD – Cooked	0%	0%	0%	0%	0%	-
PD - Packaged	0%	0%	0%	0%	0%	1
All Non-Donatable	**15%**	**31%**	**47%**	**64%**	**80%**	**-**
ND – Meat	2%	4%	6%	7%	9%	-
ND - Nonmeat	13%	27%	42%	56%	71%	-
Inedible Parts	**1%**	**9%**	**18%**	**26%**	**34%**	**-**
All Non-Food	**13%**	**22%**	**31%**	**40%**	**49%**	**-**
NF - Compostable	8%	11%	14%	18%	21%	-
NF - Recyclable	0%	2%	5%	7%	9%	-
NF – Disposal	5%	8%	12%	15%	19%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 34 - Boxplot showing the distribution of material categories found in the disposal stream for hotels.

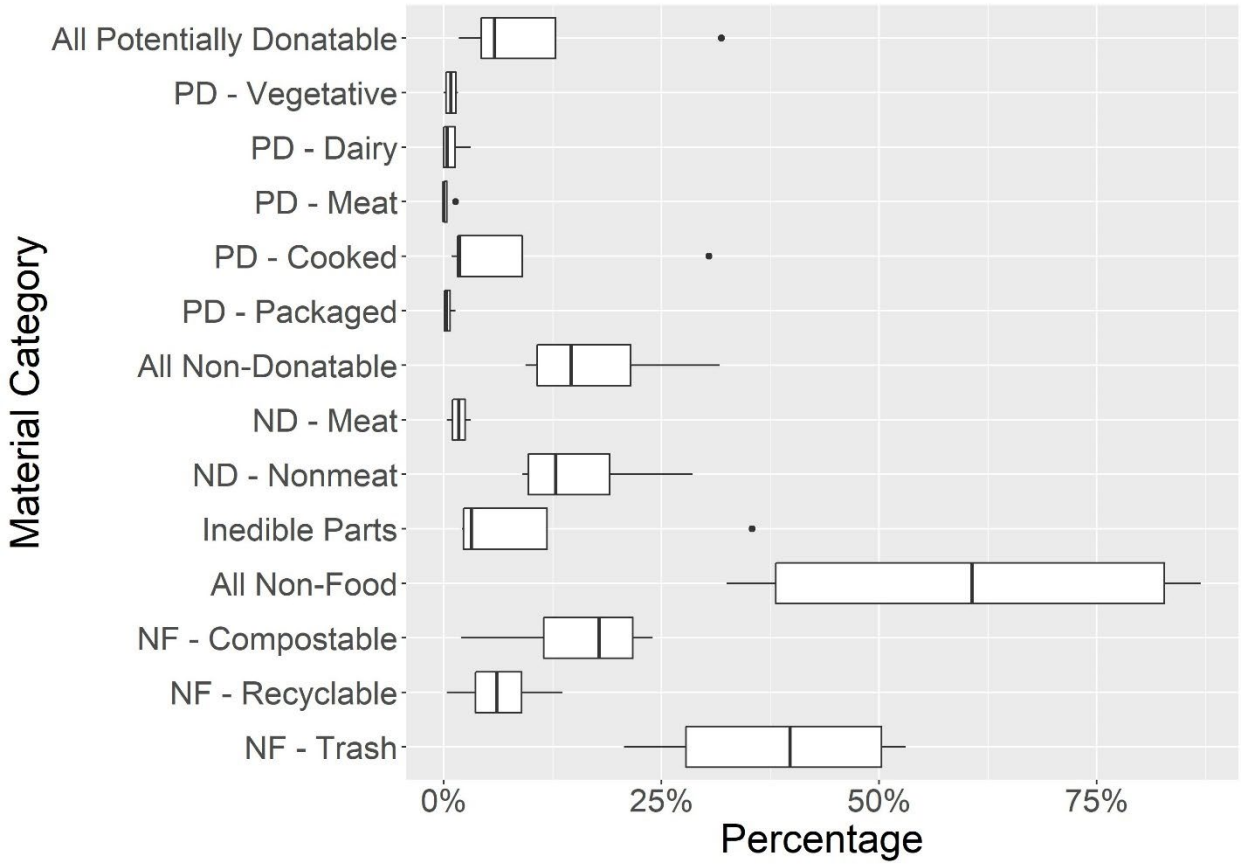


Table 43 – Data table for Figure 34 - Distribution of material categories found in the disposal stream for hotels.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**2%**	**4%**	**6%**	**13%**	**32%**	**-**
PD - Vegetative	0%	0%	1%	1%	2%	1
PD - Dairy	0%	0%	0%	1%	3%	2
PD - Meat	0%	0%	0%	0%	1%	3
PD - Cooked	1%	2%	2%	9%	30%	-
PD - Packaged	0%	0%	0%	1%	1%	-
All Non-Donatable	**9%**	**11%**	**15%**	**21%**	**32%**	**-**
ND - Meat	0%	1%	2%	2%	3%	-
ND - Nonmeat	9%	10%	13%	19%	29%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**2%**	**2%**	**3%**	**12%**	**35%**	**-**
All Non-Food	**32%**	**38%**	**61%**	**83%**	**87%**	**-**
NF - Compostable	2%	11%	18%	22%	24%	-
NF - Recyclable	0%	4%	6%	9%	14%	-
NF - Disposal	21%	28%	40%	50%	53%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from one generator that was from both streams and from three generators with a disposal sample only. These are compared in Figure 35 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 35 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for hotels.

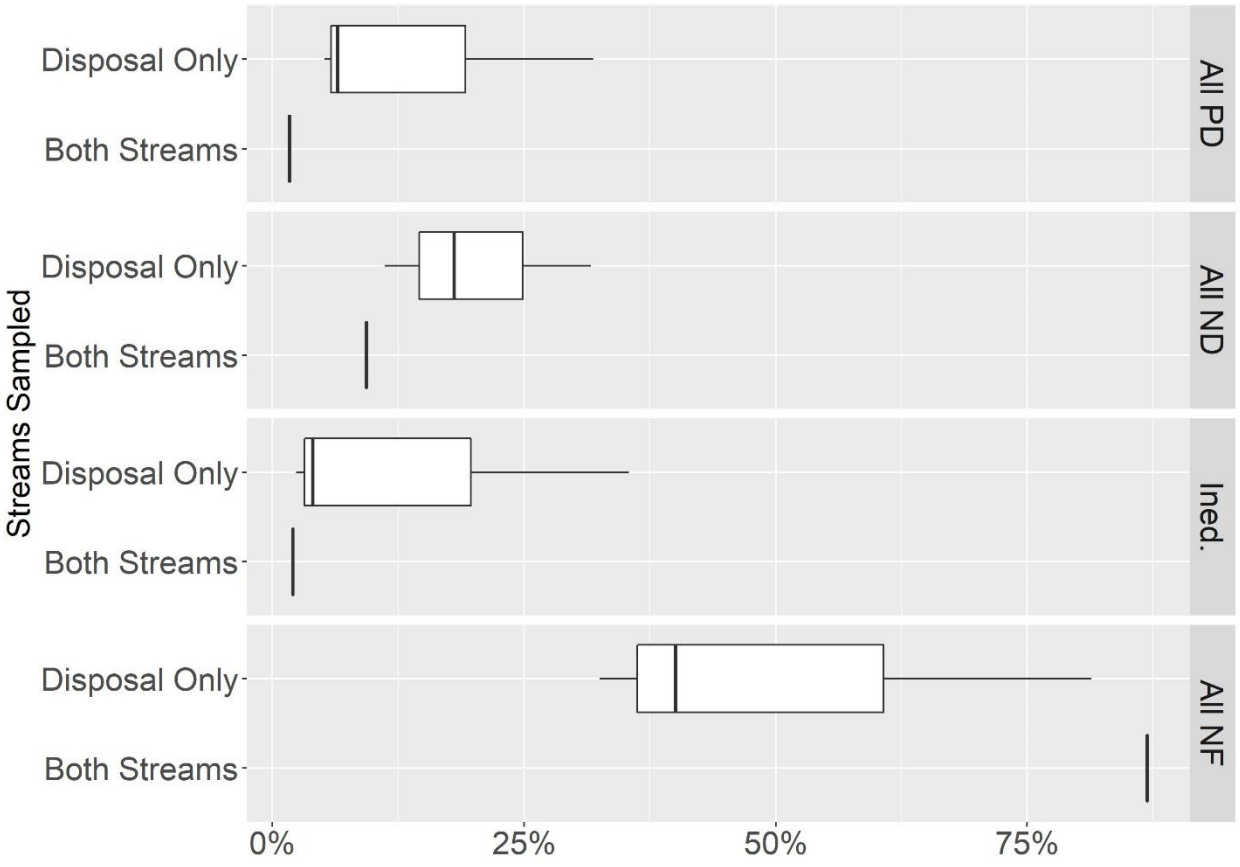


Table 44 – Data table for Figure 35 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for hotels.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	2%	2%	2%	2%	2%	-
All Potentially Donatable	Disposal Only	5%	6%	6%	19%	32%	-
All Non-Donatable	Both	9%	9%	9%	9%	9%	-
All Non-Donatable	Disposal Only	11%	15%	18%	25%	32%	-
Inedible Parts	Both	2%	2%	2%	2%	2%	-
Inedible Parts	Disposal Only	2%	3%	4%	20%	35%	-
All Non-Food	Both	87%	87%	87%	87%	87%	-
All Non-Food	Disposal Only	32%	36%	40%	61%	81%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

K-12 Schools

Table 45 - Distribution of annual tons of material calculated for each stream for K-12 schools.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	7	3.0	5.5	15	19	23
Disposal	41	6.5	28	44	69	385

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 36 - Boxplot showing the distribution of material categories found in the organic stream for K-12 schools.

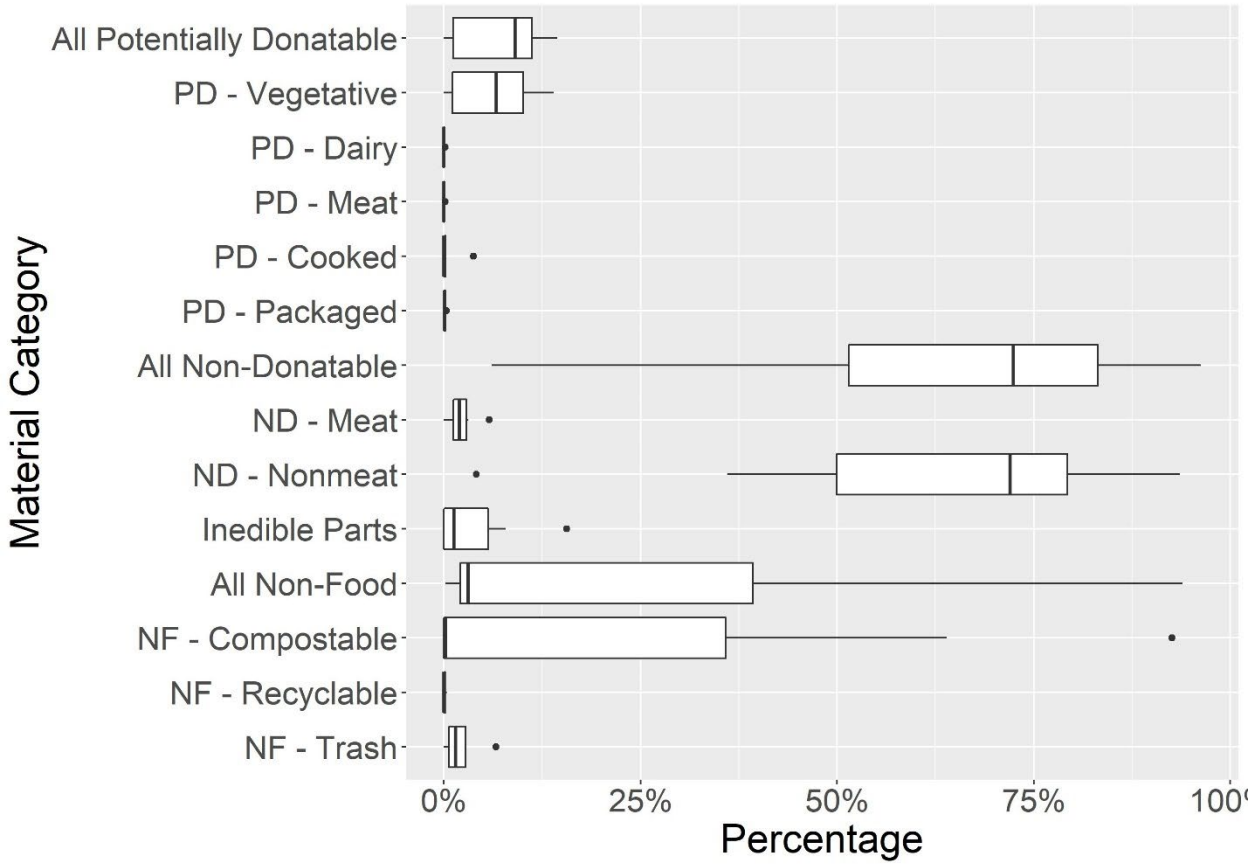


Table 46 – Data table for Figure 36 - Distribution of material categories found in the organic stream for K-12 schools.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**1%**	**9%**	**11%**	**14%**	**2**
PD - Vegetative	0%	1%	7%	10%	14%	2
PD – Dairy	0%	0%	0%	0%	0%	5
PD – Meat	0%	0%	0%	0%	0%	6
PD – Cooked	0%	0%	0%	0%	4%	4
PD - Packaged	0%	0%	0%	0%	0%	2
All Non-Donatable	**6%**	**51%**	**72%**	**83%**	**96%**	**-**
ND – Meat	0%	1%	2%	3%	6%	1
ND - Nonmeat	4%	50%	72%	79%	94%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**0%**	**0%**	**1%**	**6%**	**16%**	**1**
All Non-Food	**0%**	**2%**	**3%**	**39%**	**94%**	**-**
NF - Compostable	0%	0%	0%	36%	93%	3
NF - Recyclable	0%	0%	0%	0%	0%	5
NF – Disposal	0%	1%	1%	3%	7%	1

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 37 - Boxplot showing the distribution of material categories found in the disposal stream for K-12 schools.

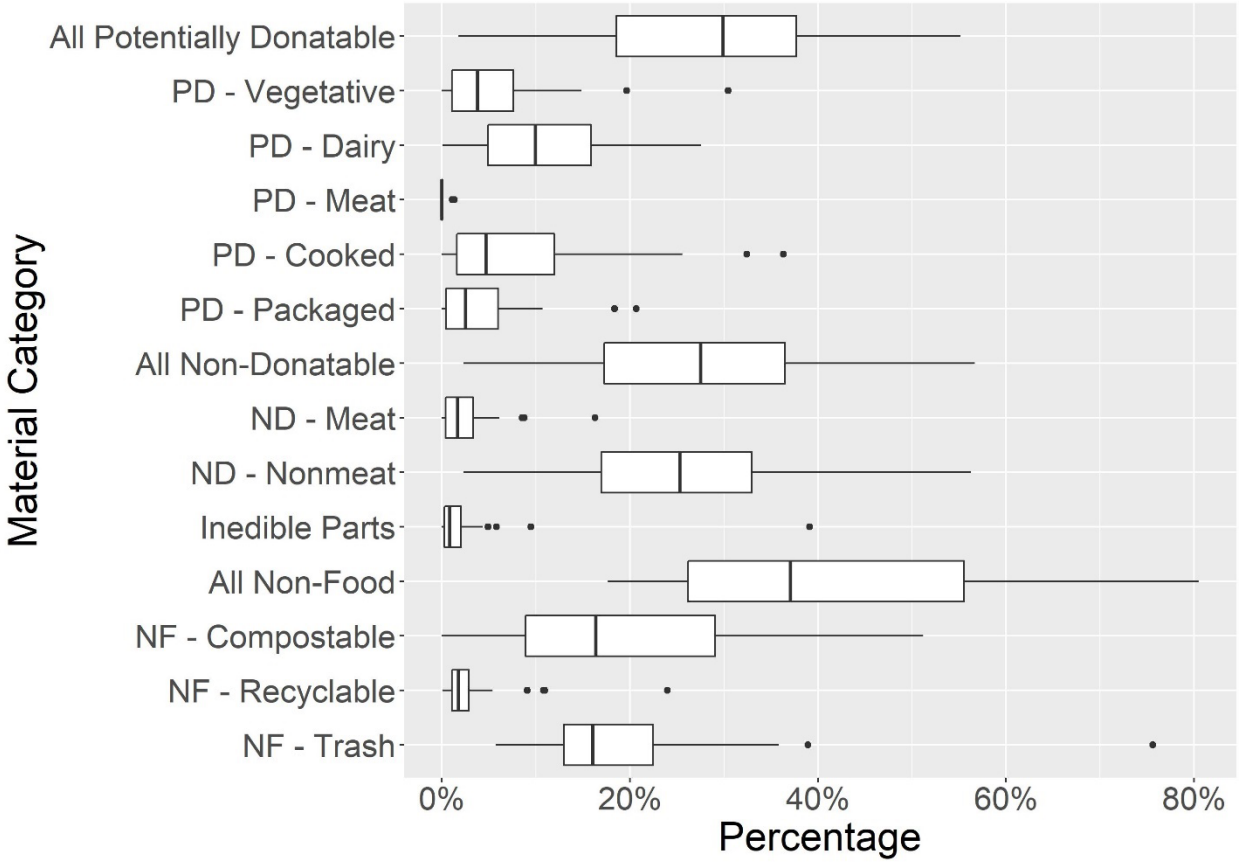


Table 47 – Data table for Figure 37 - Distribution of material categories found in the disposal stream for K-12 schools.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**2%**	**19%**	**30%**	**38%**	**55%**	**-**
PD - Vegetative	0%	1%	4%	8%	30%	2
PD - Dairy	0%	5%	10%	16%	28%	-
PD - Meat	0%	0%	0%	0%	1%	39
PD - Cooked	0%	2%	5%	12%	36%	3
PD - Packaged	0%	0%	2%	6%	21%	3
All Non-Donatable	**2%**	**17%**	**28%**	**36%**	**57%**	**-**
ND - Meat	0%	0%	2%	3%	16%	5
ND - Nonmeat	2%	17%	25%	33%	56%	-
Inedible Parts	**0%**	**0%**	**1%**	**2%**	**39%**	**5**
All Non-Food	**18%**	**26%**	**37%**	**56%**	**80%**	**-**
NF - Compostable	0%	9%	16%	29%	51%	1
NF - Recyclable	0%	1%	2%	3%	24%	-
NF - Disposal	6%	13%	16%	22%	76%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from six generators that were from both streams and from thirty-five generators with a disposal sample only. These are compared in Figure 38 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 38 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for K-12 schools.

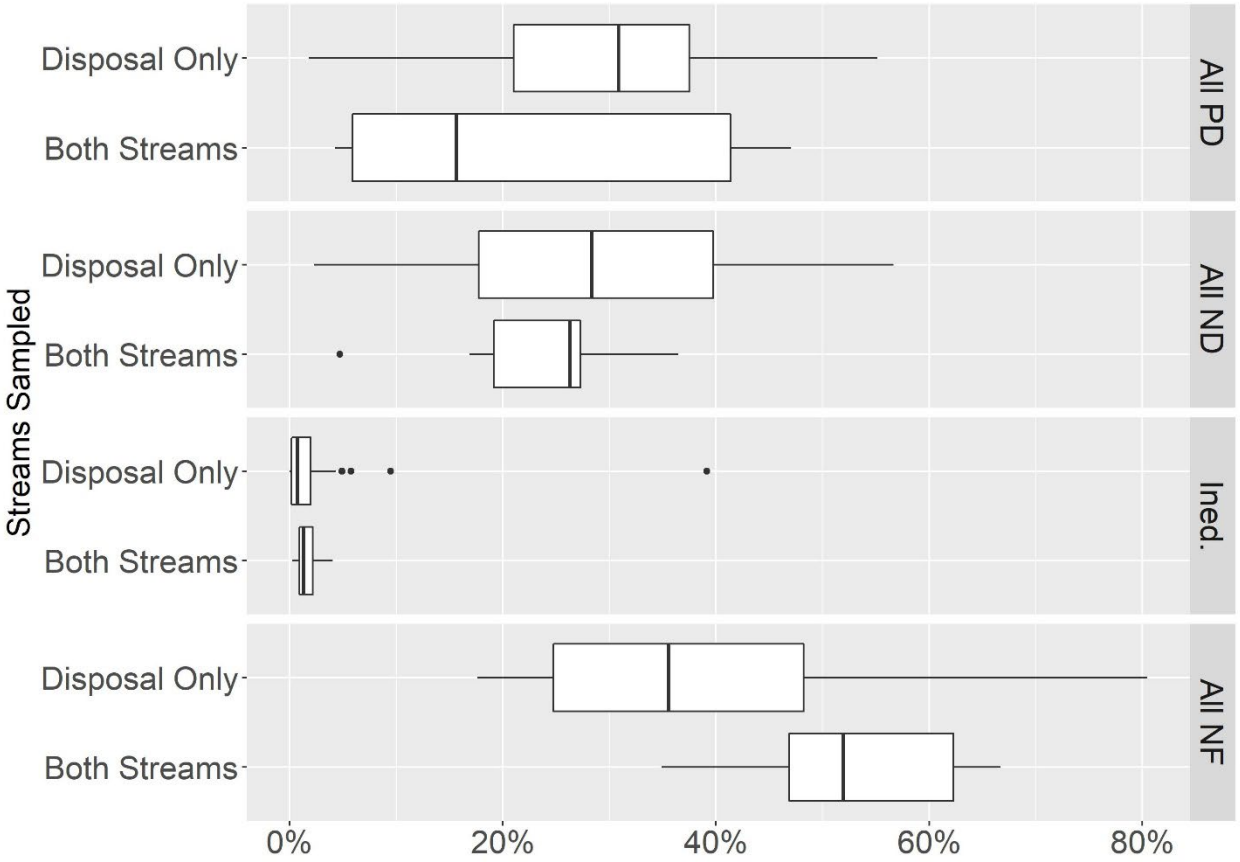


Table 48 – Data table for Figure 38 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for K-12 schools.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	4%	6%	16%	41%	47%	-
All Potentially Donatable	Disposal Only	2%	21%	31%	37%	55%	-
All Non-Donatable	Both	5%	19%	26%	27%	36%	-
All Non-Donatable	Disposal Only	2%	18%	28%	40%	57%	-
Inedible Parts	Both	< 1%	1%	1%	2%	4%	-

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	Disposal Only	0%	< 1%	1%	2%	39%	5
All Non-Food	Both	35%	47%	52%	62%	67%	-
All Non-Food	Disposal Only	18%	25%	36%	48%	80%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Limited-Service Restaurants

Table 49 - Distribution of annual tons of material calculated for each stream for limited-service restaurants.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	2	10	14	18	21	25
Disposal	5	35	36	37	53	92

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 39 - Boxplot showing the distribution of material categories found in the organic stream for limited-service restaurants.

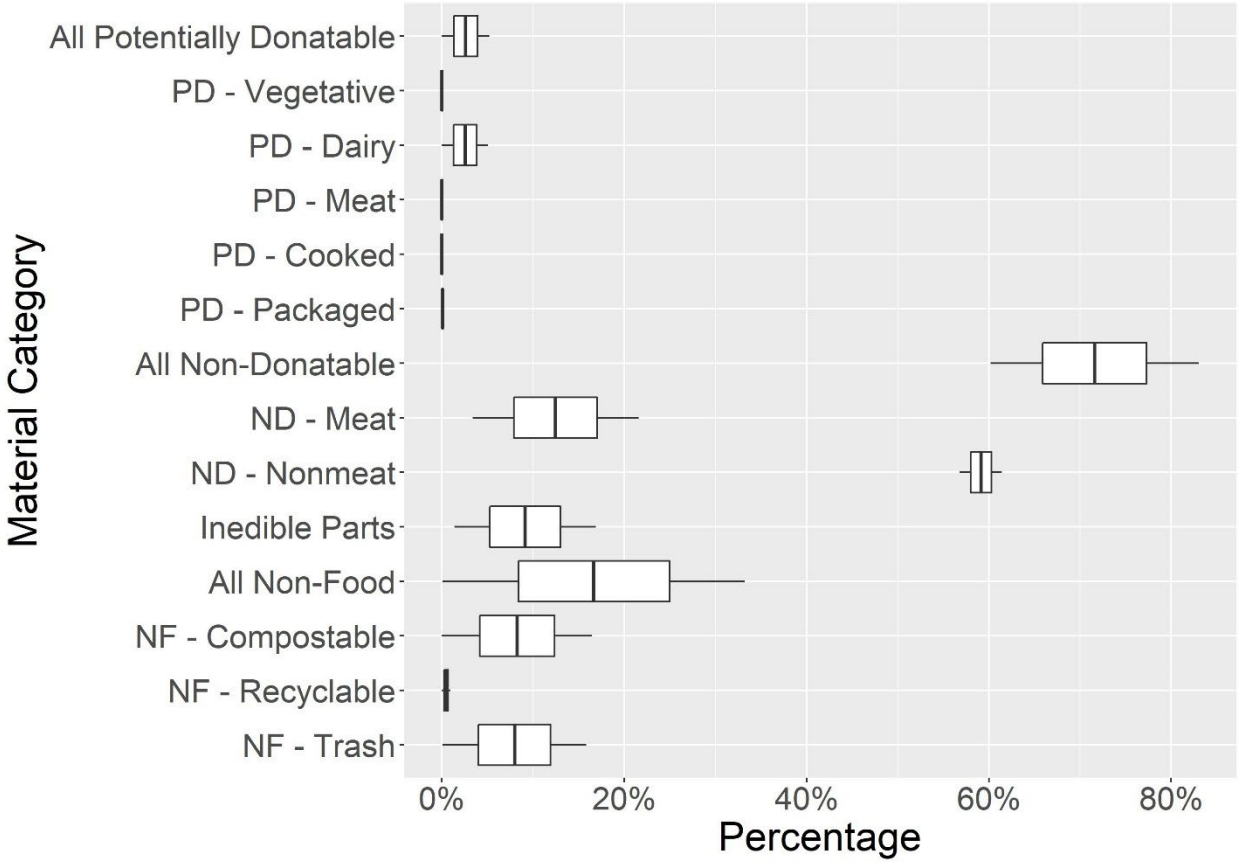


Table 50 – Data table for Figure 39 - Distribution of material categories found in the organic stream for limited-service restaurants.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**1%**	**3%**	**4%**	**5%**	**1**
PD – Vegetative	0%	0%	0%	0%	0%	2
PD – Dairy	0%	1%	3%	4%	5%	1
PD – Meat	0%	0%	0%	0%	0%	2
PD – Cooked	0%	0%	0%	0%	0%	2
PD – Packaged	0%	0%	0%	0%	0%	1
All Non-Donatable	**60%**	**66%**	**72%**	**77%**	**83%**	**-**
ND – Meat	3%	8%	12%	17%	22%	-
ND – Nonmeat	57%	58%	59%	60%	61%	-

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**1%**	**5%**	**9%**	**13%**	**17%**	**-**
All Non-Food	**0%**	**8%**	**17%**	**25%**	**33%**	**-**
NF – Compostable	0%	4%	8%	12%	16%	1
NF – Recyclable	0%	0%	0%	1%	1%	1
NF – Disposal	0%	4%	8%	12%	16%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 40 - Boxplot showing the distribution of material categories found in the disposal stream for limited-service restaurants.

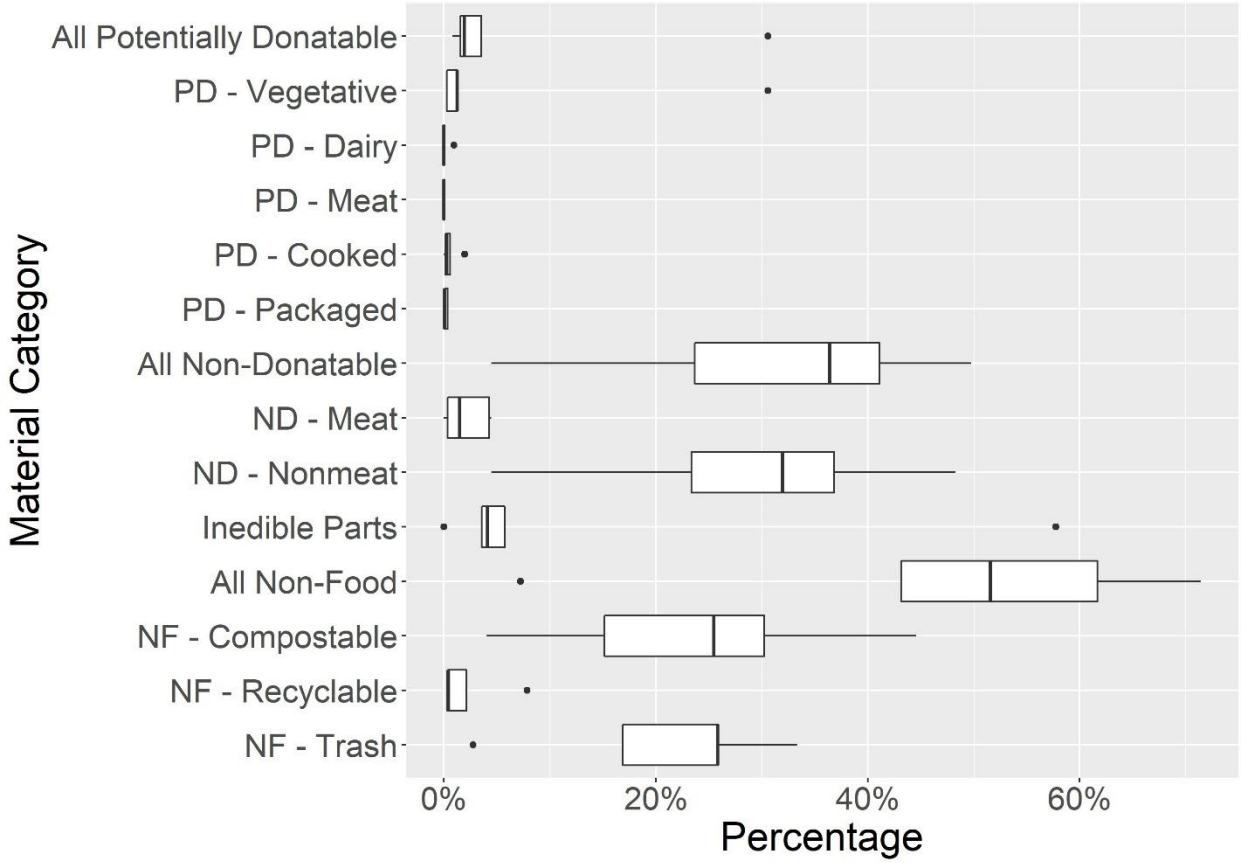


Table 51 – Data table for Figure 40 - Distribution of material categories found in the disposal stream for limited-service restaurants.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**1%**	**2%**	**2%**	**4%**	**31%**	**-**
PD – Vegetative	0%	0%	1%	1%	31%	-
PD – Dairy	0%	0%	0%	0%	1%	4
PD – Meat	0%	0%	0%	0%	0%	5
PD – Cooked	0%	0%	0%	1%	2%	1
PD – Packaged	0%	0%	0%	0%	0%	1
All Non-Donatable	**4%**	**24%**	**36%**	**41%**	**50%**	**-**
ND – Meat	0%	0%	1%	4%	4%	1
ND – Nonmeat	4%	23%	32%	37%	48%	-
Inedible Parts	**0%**	**4%**	**4%**	**6%**	**58%**	**1**
All Non-Food	**7%**	**43%**	**52%**	**62%**	**71%**	**-**
NF – Compostable	4%	15%	25%	30%	45%	-
NF – Recyclable	0%	0%	0%	2%	8%	-
NF – Disposal	3%	17%	26%	26%	33%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from two generators that were from both streams and from three generators with a disposal sample only. These are compared in Figure 41 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 41 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for limited-service restaurants.

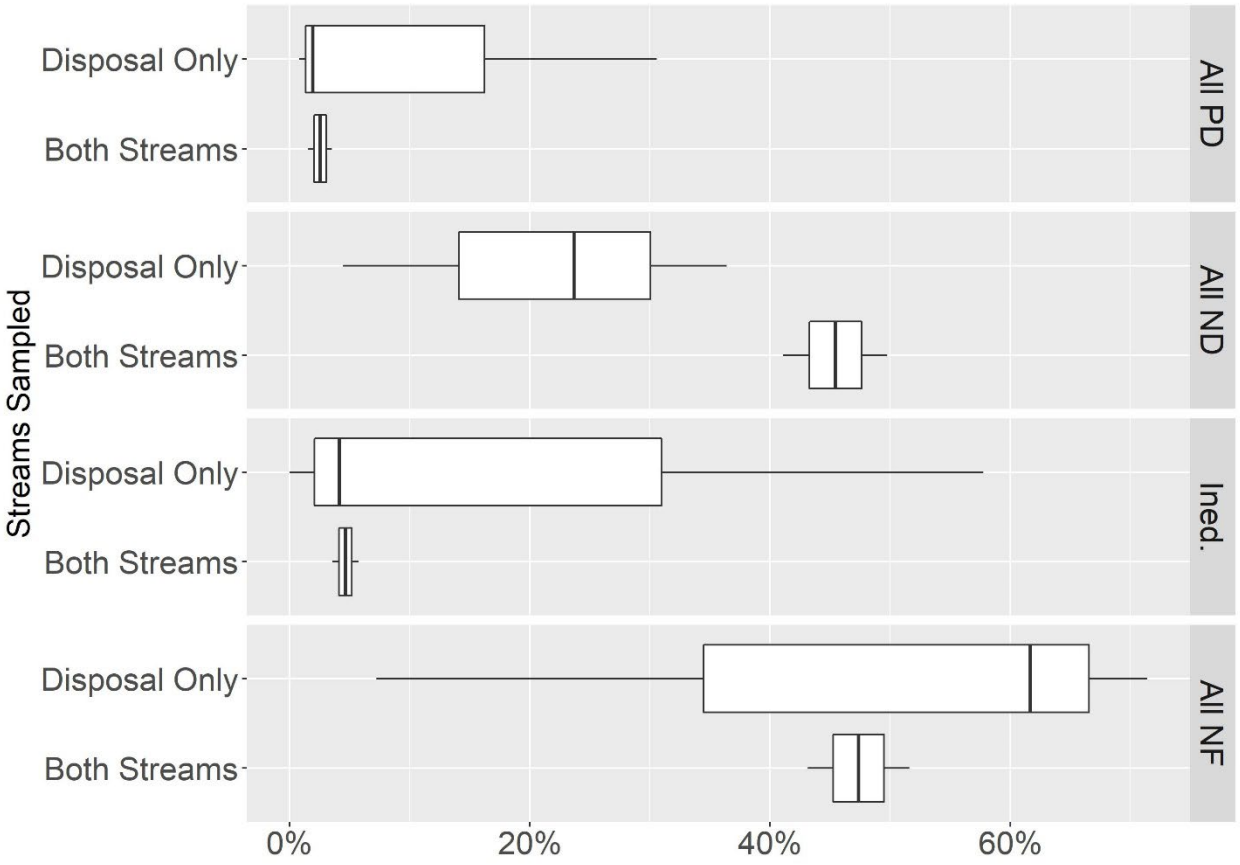


Table 52 – Data Table for Figure 41 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for limited-service restaurants.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	2%	2%	3%	3%	4%	-
All Potentially Donatable	Disposal Only	1%	1%	2%	16%	31%	-
All Non-Donatable	Both	41%	43%	45%	48%	50%	-
All Non-Donatable	Disposal Only	4%	14%	24%	30%	36%	-
Inedible Parts	Both	4%	4%	5%	5%	6%	-

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	Disposal Only	0%	2%	4%	31%	58%	1
All Non-Food	Both	43%	45%	47%	49%	52%	-
All Non-Food	Disposal Only	7%	34%	62%	67%	71%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Performing arts, spectator sports and related industries (includes large venues and large events)

Table 53 - Distribution of annual tons of material calculated for each stream for performing arts, spectator sports and related industries (includes large venues and large events).

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	3	19	25	30	34	38
Disposal	4	38	62	209	1,050	3,157

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 42 - Boxplot showing the distribution of material categories found in the organic stream for performing arts, spectator sports and related industries (includes large venues and large events).

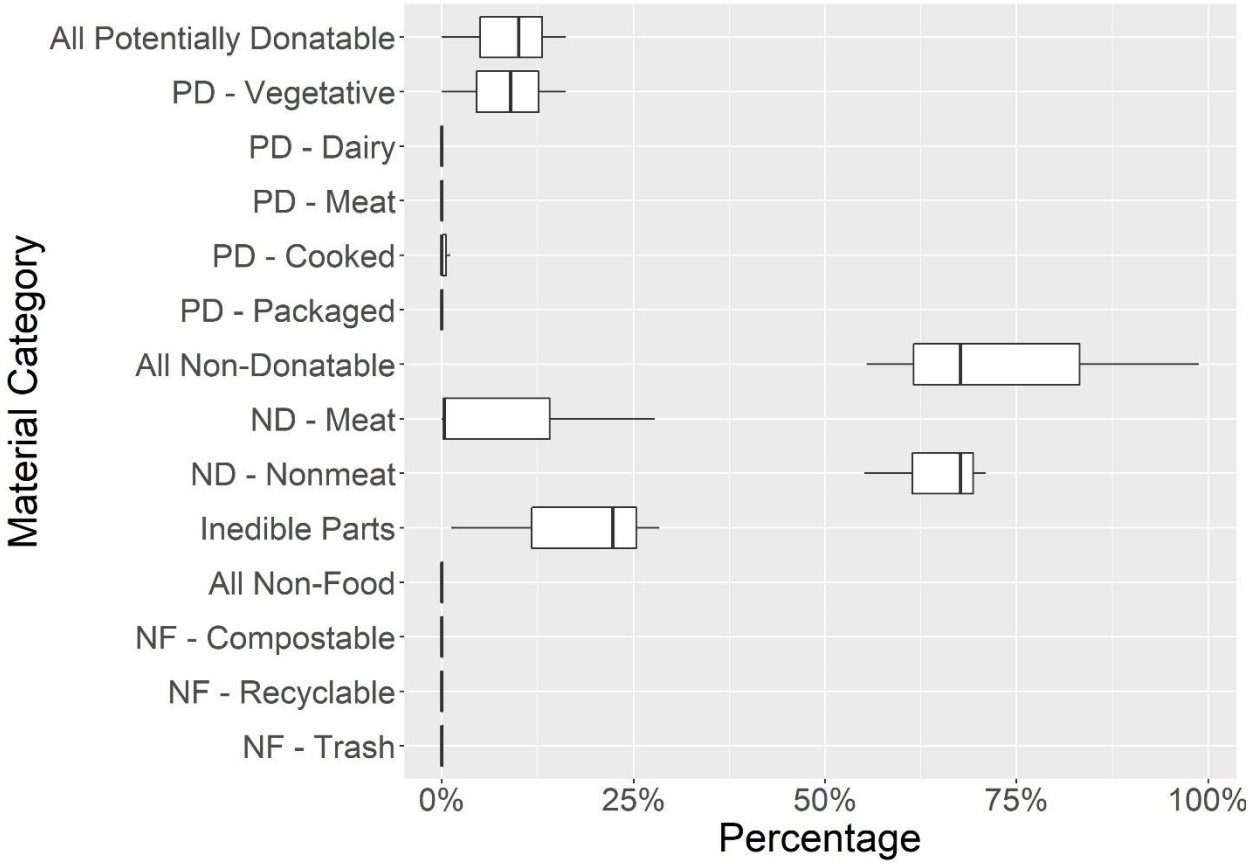


Table 54 – Data table for Figure 42 - Distribution of material categories found in the organic stream for performing arts, spectator sports and related industries (includes large venues and large events).

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**5%**	**10%**	**13%**	**16%**	**1**
PD – Vegetative	0%	4%	9%	13%	16%	1
PD – Dairy	0%	0%	0%	0%	0%	3
PD – Meat	0%	0%	0%	0%	0%	3
PD – Cooked	0%	0%	0%	1%	1%	2
PD – Packaged	0%	0%	0%	0%	0%	3
All Non-Donatable	**55%**	**62%**	**68%**	**83%**	**99%**	**-**

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
ND – Meat	0%	0%	0%	14%	28%	1
ND – Nonmeat	55%	61%	68%	69%	71%	-
Inedible Parts	**1%**	**12%**	**22%**	**25%**	**28%**	**-**
All Non-Food	**0%**	**0%**	**0%**	**0%**	**0%**	**1**
NF – Compostable	0%	0%	0%	0%	0%	3
NF – Recyclable	0%	0%	0%	0%	0%	3
NF – Disposal	0%	0%	0%	0%	0%	1

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 43 - Boxplot showing the distribution of material categories found in the disposal stream for performing arts, spectator sports and related industries (includes large venues and large events).

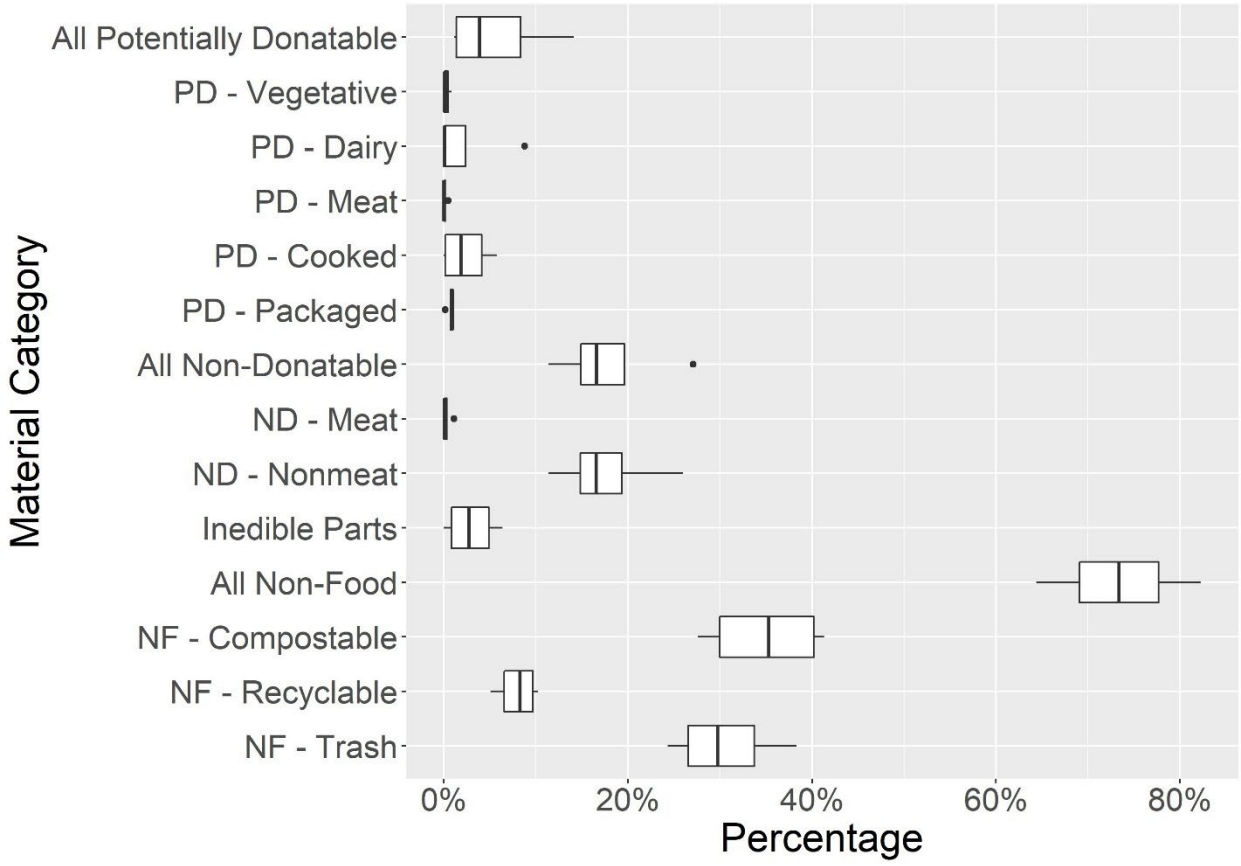


Table 55 – Data table for Figure 43 - Distribution of material categories found in the disposal stream for performing arts, spectator sports and related industries (includes large venues and large events).

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**1%**	**1%**	**4%**	**8%**	**14%**	**-**
PD – Vegetative	0%	0%	0%	0%	1%	2
PD – Dairy	0%	0%	0%	2%	9%	2
PD – Meat	0%	0%	0%	0%	0%	3
PD – Cooked	0%	0%	2%	4%	6%	1
PD – Packaged	0%	1%	1%	1%	1%	-
All Non-Donatable	**11%**	**15%**	**17%**	**20%**	**27%**	**-**
ND – Meat	0%	0%	0%	0%	1%	2
ND – Nonmeat	11%	15%	17%	19%	26%	-
Inedible Parts	**0%**	**1%**	**3%**	**5%**	**6%**	**1**
All Non-Food	**64%**	**69%**	**73%**	**78%**	**82%**	**-**
NF – Compostable	28%	30%	35%	40%	41%	-
NF – Recyclable	5%	7%	8%	10%	10%	-
NF – Disposal	24%	27%	30%	34%	38%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from three generators that were from both streams and from one generator with a disposal sample only. These are compared in Figure 44 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 44 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for performing arts, spectator sports and related industries (includes large venues and large events).

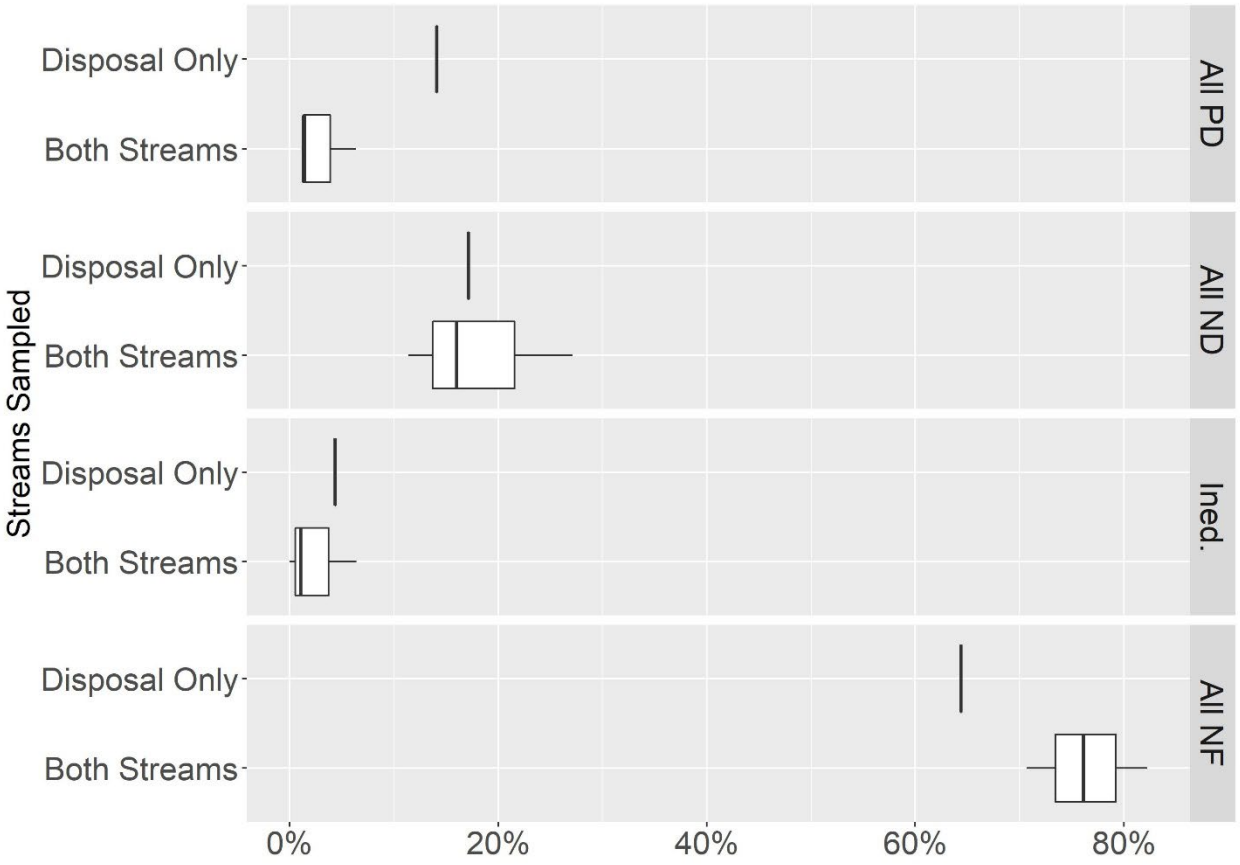


Table 56 – Data Table for Figure 44 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for performing arts, spectator sports and related industries (includes large venues and large events).

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	1%	1%	1%	4%	6%	-
All Potentially Donatable	Disposal Only	14%	14%	14%	14%	14%	-
All Non-Donatable	Both	11%	14%	16%	22%	27%	-
All Non-Donatable	Disposal Only	17%	17%	17%	17%	17%	-

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	Both	0%	1%	1%	4%	6%	1
Inedible Parts	Disposal Only	4%	4%	4%	4%	4%	-
All Non-Food	Both	71%	73%	76%	79%	82%	-
All Non-Food	Disposal Only	64%	64%	64%	64%	64%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Supermarkets and Grocery Stores

Table 57 - Distribution of annual tons of material calculated for each stream for supermarkets and grocery stores.

Stream	Samples	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Organic	25	2.7	11	31	59	153
Disposal	21	6.1	27	71	298	744

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Organic Stream

Figure 45 - Boxplot showing the distribution of material categories found in the organic stream for supermarkets and grocery stores.

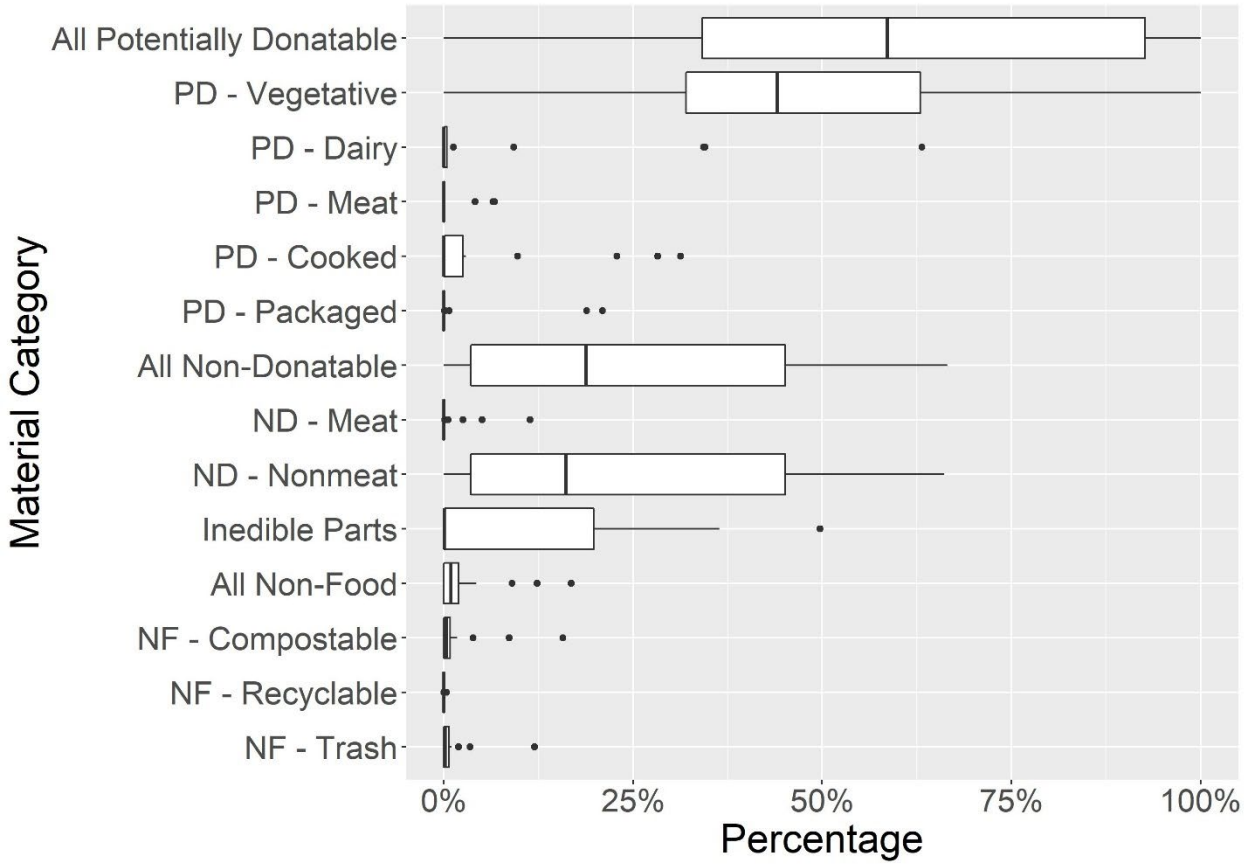


Table 58 – Data table for Figure 45 - Distribution of material categories found in the organic stream for supermarkets and grocery stores.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**0%**	**34%**	**59%**	**93%**	**100%**	**1**
PD – Vegetative	0%	32%	44%	63%	100%	1
PD – Dairy	0%	0%	0%	0%	63%	18
PD – Meat	0%	0%	0%	0%	7%	22
PD – Cooked	0%	0%	0%	3%	31%	16
PD – Packaged	0%	0%	0%	0%	21%	20
All Non-Donatable	**0%**	**4%**	**19%**	**45%**	**67%**	**4**
ND – Meat	0%	0%	0%	0%	11%	20
ND – Nonmeat	0%	4%	16%	45%	66%	4

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	**0%**	**0%**	**0%**	**20%**	**50%**	**12**
All Non-Food	**0%**	**0%**	**1%**	**2%**	**17%**	**7**
NF – Compostable	0%	0%	0%	1%	16%	9
NF – Recyclable	0%	0%	0%	0%	0%	20
NF – Disposal	0%	0%	0%	1%	12%	8

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Disposal Stream

Figure 46 - Boxplot showing the distribution of material categories found in the disposal stream for supermarkets and grocery stores.

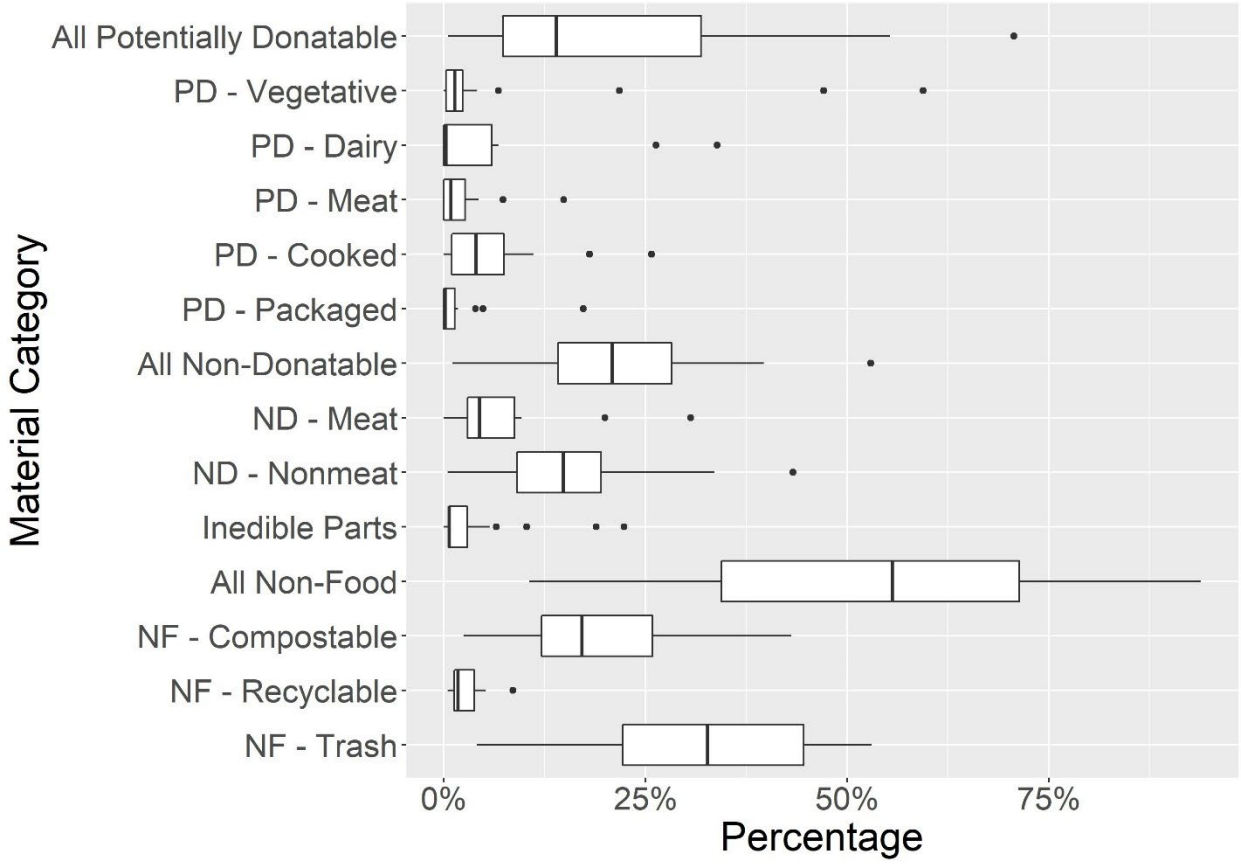


Table 59 – Data table for Figure 46 - Distribution of material categories found in the disposal stream for supermarkets and grocery stores.

Material Category	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	**1%**	**7%**	**14%**	**32%**	**71%**	**-**
PD - Vegetative	0%	0%	1%	2%	59%	3
PD – Dairy	0%	0%	0%	6%	34%	1-
PD – Meat	0%	0%	1%	3%	15%	9
PD – Cooked	0%	1%	4%	7%	26%	3
PD - Packaged	0%	0%	0%	1%	17%	7
All Non-Donatable	**1%**	**14%**	**21%**	**28%**	**53%**	**-**
ND – Meat	0%	3%	4%	9%	31%	1
ND - Nonmeat	0%	9%	15%	19%	43%	-
Inedible Parts	**0%**	**1%**	**1%**	**3%**	**22%**	**3**
All Non-Food	**11%**	**34%**	**56%**	**71%**	**94%**	**-**
NF - Compostable	2%	12%	17%	26%	43%	-
NF - Recyclable	0%	1%	2%	4%	9%	-
NF – Disposal	4%	22%	33%	45%	53%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

The contractor collected samples from seventeen generators that were from both streams and from four generators with a disposal sample only. These are compared in Figure 47 where all potentially donatable food is abbreviated as “All PD”, all non-donatable food as “All ND”, inedible parts as “Ined” and all non-food as “All NF.”

Figure 47 - Comparison of material types found in generators with both streams sampled, or only a disposal stream sample provided for supermarkets and grocery stores.

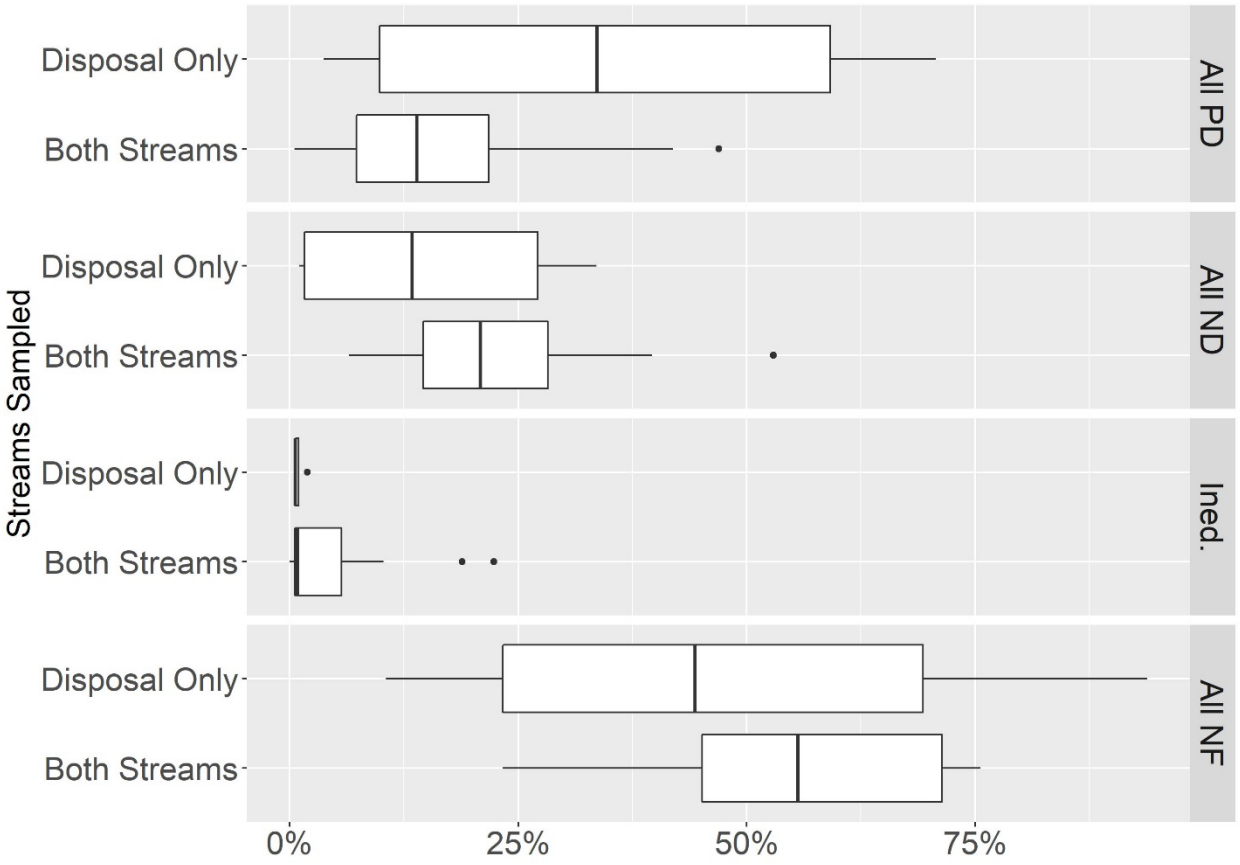


Table 60 – Data table for Figure 47 - Material types found in generators with both streams sampled, or only a disposal stream sample provided for supermarkets and grocery stores.

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
All Potentially Donatable	Both	1%	7%	14%	22%	47%	-
All Potentially Donatable	Disposal Only	4%	10%	34%	59%	71%	-
All Non-Donatable	Both	6%	15%	21%	28%	53%	-
All Non-Donatable	Disposal Only	1%	2%	13%	27%	34%	-
Inedible Parts	Both	0%	1%	1%	6%	22%	3

Material Category	Streams Sampled	Min	Q1*	Median	Q3*	Max	Count of 0%
Inedible Parts	Disposal Only	1%	1%	1%	1%	2%	-
All Non-Food	Both	23%	45%	56%	71%	76%	-
All Non-Food	Disposal Only	11%	23%	44%	69%	94%	-

* Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.

Appendix 5 – Summary of Statistical Methods and Findings

Statistical Methods

All analysis in this section was conducted using the R statistical environment. Packages used included car, MASS, dplyr.

Prior to conducting statistical analysis, any extreme outliers were removed, the assumption of normally distributed data for each dependent variable was tested. A single high outlier was removed from the variable containing the pounds per generator per year in each stream for each generator ("annual pounds"), zero outliers were removed from either the variable containing the aggregated proportion of all potentially donatable food categories in each sample ("all PD") or the variable containing the aggregated proportion of all food categories ("all food"). "Annual pounds" was found to be not normally distributed. Box-cox identified lambda = 0 as the transformation with the highest log-likelihood, so the data set was then log-transformed. After transformation, and removal of the top outlier residual, "annual pounds" met the normality assumption (Shapiro-Wilk normality test, W=0.99, p = 0.28). "All PD" and "all food" also did not meet assumptions of normality. Using box-cox, a suitable transformation for either variable could not be identified, even after removal of outlier residuals.

A factorial ANOVA model for "annual pounds" was built. Of primary interest was the connection between employee count, industry group, stream type (disposal or organics), and "annual pounds" as a measure of generation at a given facility, so particular attention was paid to these terms in the analysis. The initial model is large (13 independent variables), so model selection was performed, removing the term with the smallest sum of squares and high p-value at each sequential selection step. For our initial reduced model, the Employee Count term was retained due to research interest, despite low evidence for effect on annual waste generation (Table 61).

Model for Table 61: pounds_per_generator_per_year_stream.t ~ kk_sample_type + ig + region + foodprep + context_size + context_employees + context_foodprep + sampling_date

From this model it was determined that Employee Count is not a useful explanatory factor, and additional model selection continued. The final reduced model retains the terms Stream Type, Region, Facility Size (Industry-Specific), Date, with statistical significance (Table 62).

Model for Table 62: pounds_per_generator_per_year_stream.t ~ kk_sample_type + region + context_size * sampling_date + region:context_size + region:sampling_date

All interactions of these terms were then tested and retained the statistically significant interactions (Table 62). Tukey Honest Significant Differences for pairwise comparisons

was then computed across the Waste Type and Region categories, with confidence level of 0.95.

Analysis of (propn_pd_sum) and (propn_food_sum) required non-parametric methods. Common non-parametric methods examine one independent variable at a time, in contrast to factorial ANOVA. As such, these analyses were focused on two factors of interest: Industry Group and Stream Type. Industry Group has 12 levels, so Kruskal-Wallis, the non-parametric equivalent to one-way ANOVA, was used. A significant result can be followed by non-parametric pairwise comparisons, for which the Wilcoxon rank sum test with continuity correction was used, with Benjamini-Hochberg control of the false discovery rate (Table 64). Waste Type has two levels, so the Wilcox Test, a non-parametric equivalent to a t-test, was used. There was a strong hypothesis that the organic stream would contain a higher proportion of potentially donatable food than disposal, so for “all PD” a one-sided test was used. For “all food” a two-sided test was used.

Throughout this section CalRecycle has abbreviated some industry names for simplicity. Naming as follows: Cafeterias, Grill Buffets, and Buffets as Buffets; Caterers (food production facility) and food service contractors as Caterers; Commercial Bakeries as Bakeries; Correctional Institutions as Correctional; Food Distributors as Distributors; Full-Service Restaurants as FS Restaurants; Hospitals as Hospitals; Hotels (except Casino Hotels) and Motels as Hotels; K-12 Schools as Schools; Limited-Service Restaurants as LS Restaurants; Performing arts, spectator sports and related industries (includes large venues and large events) as Venues; Supermarkets and Other Grocery (except Convenience) Stores as Grocery.

Statistical Results

“Annual pounds”

The connection of number of employees, industry group, material stream (organic diversion or disposal) to a given generators annual generation of material was of particular interest. In the ANOVA model selection process, the initial model selection found several significant terms, except for employee count and food preparation (Table 61). This reveals that number of employees at a generator has less explanatory power than many of the other factors considered in this study. As such, while it has been used in previous studies using tons (or pounds) per employee per year is not a good fit as a metric for this data set. Going forward, the number of employees will not be used as a scaling factor for waste generation at a place of business.

Additionally, no evidence was found for major impacts of which waste streams a generator produced in total, facility size, which meals are prepared at the facility, whether food is prepared onsite, and whether the business is part of a chain (model selection process, results not shown).

Upon further model selection retaining only statistically significant terms and interactions, significant effects were found of which waste stream a sample originated from, the region in which the facility was located, industry-specific estimates of facility size, the date of sample collection (Table 62). Significant interactions were also found between region with industry-specific estimates of facility size, indicating that the connection between facility size and waste production may depend on which region the facility is located within. A significant interaction of region with date of sampling was also observed. This is expected as sampling of different regions was non-uniform across the course of the study.

Under post-hoc testing, differentiation of certain sample groups from one another was possible (Table 63). Facilities with 5,001 to 10,000 square feet tend to produce more waste than either larger or smaller facilities. Facilities in Southern California tend to produce more waste than facilities in the Bay Area. Local policy, availability of waste processing options, and business practices may contribute to regional differences. Organic waste streams tend to be lower total weight than conventionally disposed waste streams. While this analysis did not quantify total organic waste within the disposed waste stream, there may be opportunity for further waste diversion to composting or other organic disposal.

”All food”

Industry group had a significant effect on “all food” (Kruskal-Wallis $X^2 = 30.42$, 11 df, $p = 0.0014$). Post-hoc testing revealed one significant pairing, between Grocery and Buffets (Table 65). This indicates that grocery stores and buffets are expected to differ in proportion of food waste. Total food waste generated tends to be greater at grocery stores than at buffets. This indicates that grocery stores, supermarkets, and similar generators are likely the most fruitful ground for additional edible food reclamation and diversion. Stream type had a significant effect on “all food” (Two-sided Wilcox test, $V = 104$, $p = 3.8 \times 10^{-9}$). The organic diversion contained a larger proportion of food than the disposal stream. This is a promising indicator, that many of the sampled facilities are already performing relatively consistent food waste diversion to organic disposal and composting.

“All PD”

Industry group had a significant effect on “all PD” (Kruskal Wallis $X^2 = 100.57$, 11 df, $p < 2.2 \times 10^{-16}$). Post-hoc testing revealed several significant interactions (Table 64). These industries produce different quantities of potentially donatable food waste. Stream type had a marginally significant effect on “all PD” (Directional Wilcox test, $V=621$, $p = 0.075$). Potentially donatable food is disposed of more in the organic diversion stream compared to the disposal stream. This highlights organic destined material as the most potentially fruitful ground for edible food reclamation and diversion.

Figures and Tables

Table 61 - Initial ANOVA table of annual pounds generated per facility, identified by model selection. Analysis is based on log-transformed data. Food preparation and Employee number terms were retained due to study interest. Subsequent model selection removed these terms (Table 62).

Term	DF	Sum of Squares	F-value	p-value
Stream Type	1	8.76	15.234	0.0003 ***
Industry Group	5	7.26	2.525	0.040 *
Region	2	2.78	2.417	0.099 .
Food Preparation	2	1.73	1.506	0.23 N.S.
Facility Size (Industry-Specific)	2	5.91	5.134	0.009 **
Employee Count	1	0.12	0.204	0.65 N.S.
Food Preparation (Industry-Specific)	3	4.56	2.643	0.058 .
Date	38	53.77	2.460	0.001 **
Residuals	55	31.64		

Significance codes: 0 to 0.001: ***, 0.001 to 0.01: **, 0.01 to 0.05: *, 0.05 to 0.1: ., 0.1 to 1: N.S.

Table 62 - Reduced ANOVA table of annual pounds waste generated per facility per year, identified by model selection. Analysis is based on log-transformed

data. All interaction terms were tested, and significant interaction terms were retained.

Term	DF	Sum of Squares	F-value	p-value
Sample Type	1	20.07	30.629	2×10^{-7} ***
Region	2	5.57	4.248	0.017 *
Facility Size (Industry-specific)	3	12.30	6.258	0.0006 ***
Date	56	73.54	2.005	0.001 **
Size x Date	10	35.65	5.443	2×10^{-6} ***
Region x Date	10	12.61	1.925	0.049 *
Residuals	108	70.75		

Significance codes: 0 to 0.001: ***, 0.001 to 0.01: **, 0.01 to 0.05: *, 0.05 to 0.1: ., 0.1 to 1: N.S.

Results of Tukey HSD computation on the reduced ANOVA model (Table 62) for annual pounds of generated per facility:

Table 63 - Pairwise comparison of stream type.

Category Pair	Difference	Lower Bound	Upper Bound	Adjusted p-value
Organic vs. Disposal	-0.6688	-0.9083	-0.4293	2×10^{-7} ***

Table 64 - Pairwise comparison of region.

Category Pair	Difference	Lower Bound	Upper Bound	Adjusted p-value
Los Angeles vs. Central Valley	0.2167	-0.1151	0.5485	0.27

Category Pair	Difference	Lower Bound	Upper Bound	Adjusted p-value
San Francisco vs. Central Valley	-0.2386	-0.6817	0.2046	0.41
San Francisco vs. Los Angeles	-0.4552	-0.8456	-0.0649	0.018 *

Table 65 - Pairwise comparison of Facility Size.

Category Pair	Difference	Lower Bound	Upper Bound	Adjusted p-value
5001 to 10,000 vs. 1001 to 5000	0.9792	0.2742	1.684	0.0025 **
Less than 1000 vs. 1001 to 5000	-1.064	-2.608	0.4798	0.28
More than 10,000 vs. 1001 to 5000	0.2435	-0.1857	0.6726	0.45
Less than 1000 vs. 5001 to 10,000	-2.044	-3.648	-0.4393	0.007 **
More than 10,000 vs. 5001 to 10,000	-0.7357	-1.347	-0.1246	0.012 *
More than 10,000 vs. less than 1000	1.308	-0.1958	2.811	0.11

Table 66 - Results of Wilcoxon rank sum test computation for proportion of total food waste. Value in each cell is the p-value of the pairwise test, after correction. P < 0.05 means that the pair of industry groups can be differentiated in terms of total food waste generated.

Industry Group	Buffets	Caterers	Bakeries	Correctional	Distributors	FS Restaurants	Hospitals	Hotels	Schools	LS Restaurants	Venues
Caterers	0.57										
Bakeries	0.46	0.57									
Correctional	0.23	0.34	0.42								
Distributors	0.27	0.34	0.41	0.60							
FS Restaurants	0.75	0.96	0.66	0.34	0.28						
Hospitals	0.81	0.81	0.87	0.34	0.38	0.96					
Hotels	0.66	1.00	0.49	0.34	0.34	0.96	0.96				
Schools	0.24	0.28	0.34	0.80	0.34	0.23	0.35	0.34			
LS Restaurants	0.57	0.40	0.46	0.46	0.42	0.46	0.49	0.49	0.49		
Venues	0.84	0.49	0.46	0.46	0.46	0.63	0.87	0.49	0.66	0.81	
Grocery	0.05	0.23	0.34	0.75	0.70	0.23	0.34	0.23	0.34	0.34	0.34

Table 67 - Results of Wilcoxon rank sum test computation for proportion of potentially donatable food waste. Value in each cell is the p-value of the pairwise test, after correction. P < 0.05 means that the pair of industry groups can be differentiated in terms of total food waste generated.

Industry Group	Buffets	Caterers	Bakeries	Correctional	Distributors	FS Restaurants	Hospitals	Hotels	Schools	LS Restaurants	Venues
Caterers	0.90										
Bakeries	0.35	0.49									
Correctional	0.03	0.33	0.36								
Distributors	0.0064	0.03	0.38	0.09							
FS Restaurants	0.40	0.78	0.37	0.18	0.01						
Hospitals	0.18	0.33	0.49	0.95	0.21	0.14					
Hotels	0.02	0.03	0.38	0.95	0.31	0.01	0.82				
Schools	2.70E-09	0.01	0.21	0.0003	0.23	0.001	0.09	0.052			
LS Restaurants	0.35	0.40	0.37	0.55	0.07	0.19	0.78	0.31	0.01		
Venues	0.13	0.37	0.37	1.00	0.17	0.18	0.74	0.89	0.02	0.74	
Grocery	4.70E-09	0.02	0.21	0.0002	0.63	0.001	0.09	0.03	0.15	0.01	0.02

Figure 48 - Pairwise comparison of the log of annual pounds per generator per stream by stream.

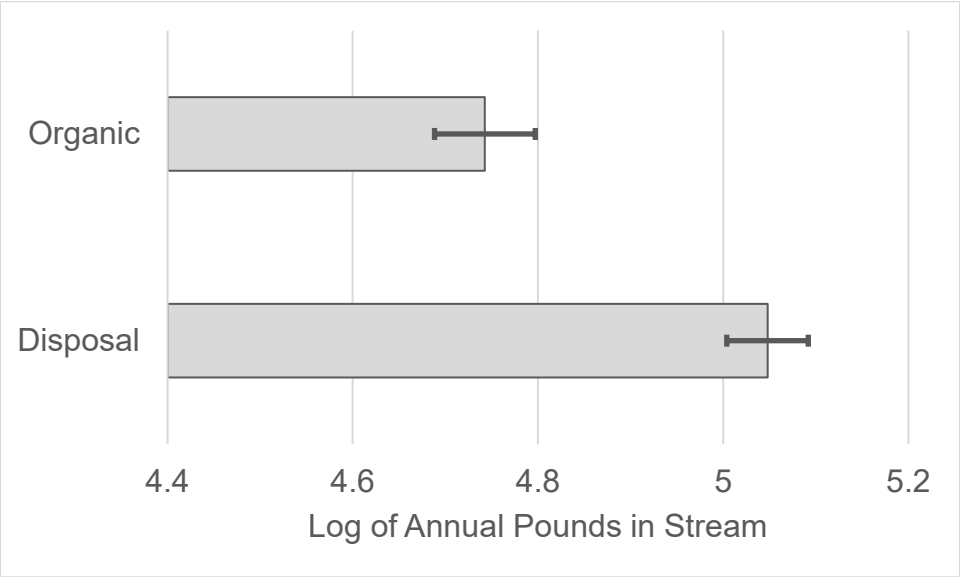
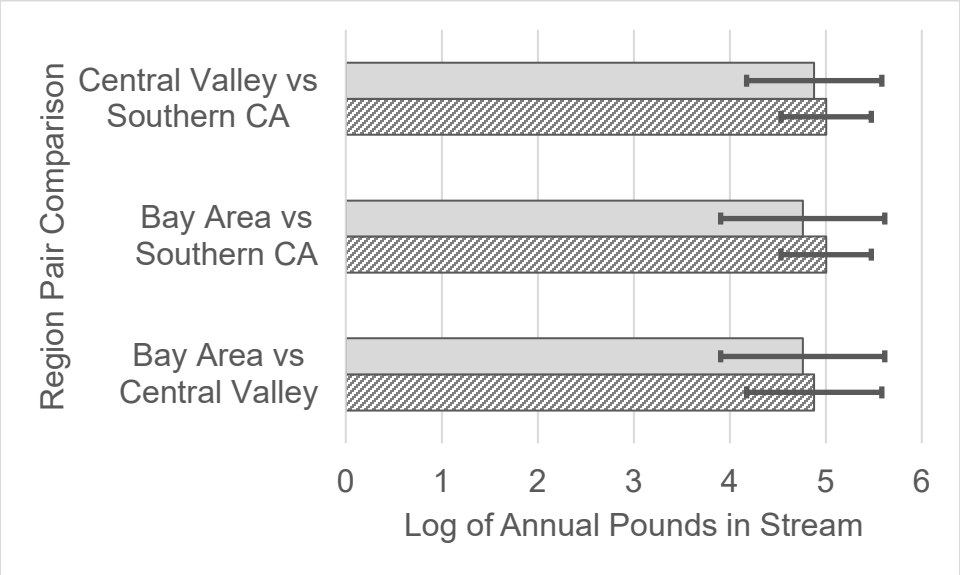


Figure 49 - Pairwise comparison of the log of annual pounds per generator per stream by region.



Appendix 6 – 2019 Generator-Based Study for Disposed Food Waste

Study Design

This section details the sample allocation for the 2019 study design. The next sections detail the approach to recruitment, field work, data entry, and reporting.

This section includes the following elements:

- Number and identification of industry groups that were included.
- Geographic regions included in the study.
- A description of the reasoning used to develop the allocations.
- Number and allocation of generators to be sampled.

Number and Identification of Included Industry Groups

The industry groups used for the "2018 Generator-Based Study for Disposed Food Waste" and associated NAICS codes are shown in Table 68.

Table 68 - Industry groups with NAICS codes included in the 2018 study.

Industry Groups	NAICS Code
Merchant Wholesalers**	4244XX
Supermarkets and Other Grocery	445110
Full-service Restaurants	722511
Limited-Service Restaurants	722513
Warehouse Clubs and Supercenters	452311

***The industry group "Merchant Wholesalers (NAICS 4244XX) is a broad category that includes various specific types of "Wholesalers". Table 69 further beaks down the industry groups included in NAICS 4244XX*

Merchant wholesalers, represented by NAICS code 4244XX, represent a wide array of specific food types and generators. To attain more representative data, "Merchant Wholesalers" were further broken down to the industry groups represented in Table 45.

Table 69 - Breakdown of merchant wholesalers NAICS 4244XX.

Industry Group	Cluster	NAICS Code
Poultry and Poultry Product Merchant Wholesalers	Meat Related Industry Groups	424440

Industry Group	Cluster	NAICS Code
Fish and Seafood Merchant Wholesalers	Meat Related Industry Groups	424460
Meat and Meat Product Merchant Wholesalers	Meat Related Industry Groups	424470
General Line Grocery Merchant Wholesalers	General Grocery Industry Groups	424410
Packaged Frozen Food Merchant Wholesalers	General Grocery Industry Groups	424420
Other Grocery and Related Products Merchant Wholesalers	General Grocery Industry Groups	424490
Fresh Fruit and Vegetable Merchant Wholesalers	Produce	424480
Confectionary Merchant Wholesalers	Confectionery	424450

Geographic Regions Included in the Study

The Contractor used 2013 employment data provided by the California Employment Development Department (EDD) to determine that more than 90 percent of employment in each of the industry groups used in the study was in the Bay Area, Southern and Central Valley regions. The coastal region was included in the study to ensure that enough generators could be recruited from the industry groups. Table 70 lists the counties within each region which are also mapped in Figure 50:

- Bay Area—includes the counties in the San Francisco Bay Area, which are more metropolitan and have strong industrial components. The counties in the Bay Area generally have well-developed commercial sector organics diversion infrastructure and, in many places, robust outreach and technical assistance programs.
- Southern—includes counties that are strongly industrial with large populations and some agricultural influences. The commercial sector organics diversion infrastructure, outreach, and technical assistance programs in the Southern region are frequently newly developed and less mature.
- Central Valley—includes counties between the Sierra Nevada Mountains and the Coast Range that have a major agricultural base with important population centers and some manufacturing. Some urban areas in the Central Valley have developed commercial sector organics diversion

programs, but AB 1826 was less fully implemented here than in other regions.

- Coastal – includes the counties on or near the coast that were not in either the Bay Area or Southern Region. The Coastal Region is more populated than the rural Mountain Region and has a large agricultural sector like the Central Valley.

Table 70 - Division of the state's counties into four sampling regions.

Bay Area	Southern	Central Valley	Central Valley	Coastal
Alameda	Imperial	Butte	Sacramento	Del Norte
Contra Costa	Los Angeles	Colusa	San Joaquin	Humboldt
Marin	Orange	Fresno	Shasta	Lake
Napa	Riverside	Glenn	Stanislaus	Mendocino
San Francisco	San Bernardino	Kern	Sutter	Monterey
San Mateo	San Diego	Kings	Tehama	San Benito
Santa Clara	Ventura	Madera	Tulare	San Luis Obispo
Solano		Merced	Yolo	Santa Barbara
Sonoma		Placer	Yuba	Santa Cruz

Figure 50 - Map of Study regions.

Sample Allocations

The total number of samples allocated to each industry group was based on an analysis of the statistical variability of samples collected in the "2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California" and additional supporting data gathered by the Contractor, such as regional employment in that industry group (provided by the California EDD). All sample collection and characterizations were completed in 2019. A single season was selected due to the low seasonal variability in the disposal of edible food. Sampling allocation focused on the following criteria:

- To provide robust data on edible food disposed by generators in California.
- Was based on a detailed analysis of the disposal habits of each industry group.
- Considered the statistical variability of the disposed waste for each industry group.
- Considered regional variations in employment.
- Considered project logistics and budget constraints.

The final sample allocation and number of generators sampled for each industry group per region is presented in Table 71.

Table 71 - Number of generators samples from each industry group per region.

Industry Groups	NAICS Code	Bay Area	Valley	Southern	Coastal
Merchant Wholesalers**	4244XX	5	1	12	5
Supermarkets and Other Grocery	445110	6	4	17	4
Warehouse Clubs and Supercenters	452311	4	3	0	0
Full-service Restaurants	722511	7	3	16	5
Limited-Service Restaurants	722513	5	5	16	4
Total Generators Sampled in each Region		**27**	**16**	**61**	**18**

Recruit Sampling Sites, Coordinate with Sampling Sites, and Determine Field Schedule

Once the regions and industry groups were selected, the Contractor identified facilities for sample sorting and disposal (nodes). The Contractor attempted to keep the sampling area with in a 30-mile radius of the nodes. After waste samples were collected from generators, they were taken to the appropriate node for sorting and disposal. The nodes used in the study are presented in Table 72.

Table 72 - Sorting facilities (nodes).

Region	SWIS Number	Facility Name	County
Bay Area	07-AA-0056	Golden Bear Transfer Station	Contra Costa
Southern	19-AA-0056	Calabasas Sanitary Landfill	Los Angeles
Valley	39-AA-0045	Recology Stockton	San Joaquin

To identify generators, the Contractor reviewed the list of generators used in the “2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California” and filtered the list to include only the sites that met the Contractor’s regional and industry group criteria. The list was then randomized before the start of recruitment. Additional generators were recruited as needed through the study to ensure that the required number of generators were included in the study. To recruit generators, the Contractor compiled lists of eligible generators for each industry group with a physical address within the selected zip codes. Generators with fewer than five employees were excluded because they did not generate enough material weekly to meet the minimum

sample weights. The list was then randomized prior to recruitment by the Contractor's staff. Recruitment was conducted with special considerations to:

1. Geographic location, size, or misclassification in the source list.
2. Willingness of the generator to participate in a telephone interview and allow for up to two site visits to measure disposed waste and obtain a sample of the site's waste.
3. Ensuring that the generator belonged to the targeted industry group.
4. There were no logistical barriers to sampling and data collection at the generator.
5. That the generator's waste stream was collected separately from that of other neighboring generators

The Contractor's recruiting staff (recruiters) assured each recruited generator that findings would be recorded anonymously and that generator identities would not be divulged to any parties outside of the core project team without their authorization.

If the recruiter needed to discard a potential site for any reason, the next generator on the list for that industry group was contacted. A recruiter followed up with a generator up to three times before rejecting them from the study. Recruitment for each industry group continued until recruitment goals were met. Contingency generators were recruited within each industry group to provide alternate sites in case a generator decides it did not want to participate or logistical issues arose around the site visit.

After each generator was confirmed as eligible and willing to participate, the recruiter collected additional information that was used in (1) determining how to arrange and conduct visits for data collection purposes, (2) quantifying and characterizing disposal, and (3) correlating disposal information with other information about the generator (such as number of employees, participation in recycling programs, etc.).

When recruitment was completed and participating generator sites were confirmed, the Contractor constructed a day- by-day schedule for data collection. Data collection consisted of a site visit to quantify disposed waste and to obtain a sample of disposed waste to be sorted and characterized.

Perform Field Work

The Contractor's field crew (field crew) visited each selected generator to quantify disposal and to collect one or more samples of disposed waste for transportation to a node, where the field crew sorted then disposed the sample.

Coordination with Generators

Recruiters considered several factors when suggesting an optimal time for a sampling visit by the field crew: waste collection schedules, when the generator took the waste to the container(s), the hours of waste generation at the site, and the times when the

container was accessible. The field crew scheduled site visits after an adequate time had passed since the last waste collection, but not so close to the next collection as to risk arriving just after a pick-up. The field crew scheduled a specific day and time for each visit if requested by the site. Otherwise, site visits and sample collection were completed on a schedule that maximized both efficiency and the quantity of waste at the site.

The Contractor called each generator the week before sampling in their region began to remind the generator that they had agreed to participate and to schedule a specific day and time for each visit if requested by the site.

Coordination with Haulers & Facilities

Once all generators were recruited, a list of haulers that serve those generators were provided to CalRecycle staff, and CalRecycle staff sent an informational letter to each hauler. The Contractor called affected haulers the week before the sampling began to remind the haulers of the upcoming sampling activities.

Prior to initiating sorting activities at selected nodes in each region, the Contractor contacted the nodes to explain the details of the study and ensure that adequate space and support were available to facilitate safe sampling. Additionally, the Contractor contacted the appropriate node the week before and the day prior to each sorting event and asked facility representatives to notify their staff of each sorting event.

Upon arrival and prior to departing the node, the field crew checked in with the designated facility contact. The crew remained in communication with facility staff throughout their time at each site.

In-Field Data Collection and Sampling

Prior to the start of sampling and sorting activities, the field crew underwent training to learn the material types and sorting protocols. This training also covered the Contractor's team's Health and Safety Plan.

The field crew completed up to two site visits per generator (a second site visit could be necessary to collect a full-weight sample if the generator had a low waste generation rate). During the site visits, the field crew collected information to quantify the amount of waste that the generator disposed and obtained a sample from the generators disposed waste stream.

Collecting Information to Quantify Disposed Waste

While onsite, the field crew recorded the amount of waste present in collection containers onsite shortly before scheduled collection by the hauler. The procedure for measuring waste during the site visit and calculating disposal per employee is described below.

- Disposed Waste Volume Measurements: The field crew recorded the length, width, and height to the nearest inch for all disposed waste in dumpsters at each site. The volume of the disposed waste at each generator was the sum of all volumes for each waste container (if there was more than one container onsite), in cubic inches.
- Disposed Waste Accumulation Time: Recruiters asked the responsible party at the site for information to determine waste accumulation time, including: the operating hours, the time the waste containers were last collected by the hauler (or regular collection schedule), and when trash was regularly taken outside to dumpsters.
- Density of Disposed Waste: The field crew measured the density of disposed materials by measuring the volume and weight of each collected sample. After collecting a sample, the field crew remeasured the volume of waste in the dumpsters. The difference between the initial measurement and the post sample measurement was the sample volume. The weight of the sample was the sum of all its sorted material types (the sorting process is described in detail in Characterizing Samples of Disposed Waste). The resulting weight was the density of disposed materials at the site (presented in pounds per cubic yard).
- Annual Waste Disposal Rate per Site: Using the density of disposed waste for each site, CalRecycle converted annual disposed waste volume measurements for each site into annual disposed waste tons. After this step, there was a common unit of measurement in tons per year for the annual waste disposal rate at each site.
- For sites with multiple disposed waste substreams, the calculation for each substream was performed separately and then added together to obtain a total annual waste disposal rate for each site.
- Tons per Employee per Year: Recruiters collected information from each site during initial phone screening regarding the number of employees at the site, expressed as Full Time Equivalents (FTEs). Dividing the annual waste disposal rate for each site by the FTE figure for that site yields the tons per employee per year (TPEPY) figure for each site.

For generators that used a compactor or an open roll-off for its disposed waste, recruiters determined the annual tonnage at a site during initial screening calls by (1) asking the person responsible for the data at the site or (2) using hauler records. In these cases, the Contractor provided to CalRecycle the actual tonnage data instead of the volume estimates described in the preceding steps.

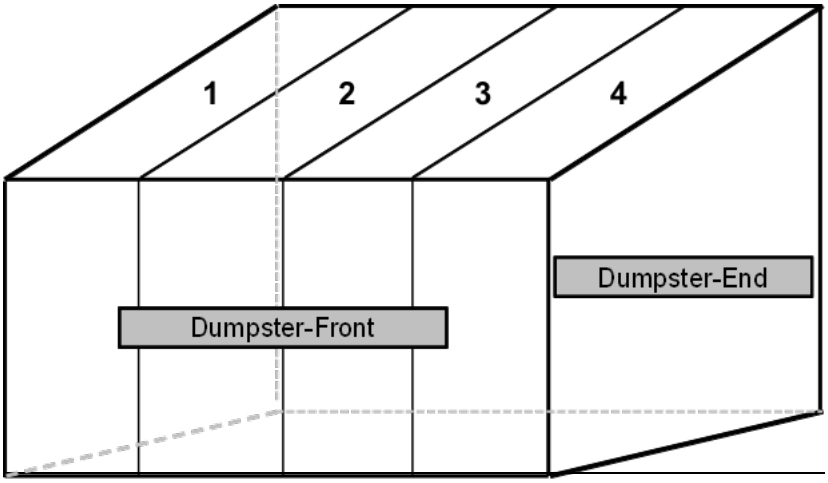
Obtaining Samples of Disposed Waste

In addition to collecting information to quantify waste generation at each site, during each site visit, the field crew obtained one or more waste samples to sort and characterize. The procedure for selecting samples is described below.

At participating generator sites with multiple containers from the same stream, the field crew randomly selected a single waste container for sampling to represent the generators disposed waste stream. In cases where there were two or more distinct waste streams at a site, field crew randomly selected one waste container to sample for each waste stream.

The field crew randomly chose a section of each selected container to sample. Each sample consisted of a vertical cross section, or "slice," of the waste in the chosen section of the waste. This slice included waste from the top to the bottom of the container. An illustration of the slices is shown in Figure 40. The field crew ensured that each sample weighed at least 200 pounds. In cases where all the material in the dumpster was less than 200 pounds, the field crew collected waste from other containers in the same waste stream until they met the 200-pound sample requirement. In cases where a generator had less than 200 pounds available at the time of the visit, the field crew collected all material available and returned for a second sample collection to collect the quantity of material needed to reach the 200-pound target.

Figure 51 - Example dumpster with slices illustrated.



In some cases, where the disposal bin was inaccessible, unique arrangements were required for the sample collection to proceed. For example, if the generator used a compactor, the Contractor provided rolling carts for the generator to deposit waste into for one or more days, instead of into the compactor. The field crew then took material that accumulated in the rolling containers as the waste sample.

After field crew extracted each sample, they wrapped the sample securely in a tarp and affixed an identifying label to the tarp. Then, the sample was transported to the node for sorting and disposal.

Characterizing Samples of Disposed Waste

After each sample arrived at the node, the field crew sorted each sample using the following procedure.

- Photograph the sample. Using a digital camera, the field crew took a photograph of the sample and, if needed, broke open plastic garbage bags to obtain an adequate picture of the materials in the sample.
- Sort the sample. The field crew sorted samples by material types into plastic laundry baskets.
- Weigh and record data. After each sample was completely sorted, the material was weighed, and the data recorded. The sample weight was the sum of the weights of all the sorted components.

List of Equipment

The Contractor provided the resources in Table 53 to the field crew to carry out the necessary sampling and sorting.

Table 73 - The field crew was equipped with the following gear.

Set-up	Safety Gear	Tools
Cargo van or trailer	Tyvek Suits (1 Per Person/Day)	Shovels
Sort tables	Hard Hats (1 Per Person)	Brooms
18-gallon sort bins	Safety Vests (1 Per Person)	Digital Cameras
Digital Scales (weighs to 0.05 pound)	Safety Glasses (1 Per Person)	Toughbook computer
Tarps	Dust Masks (1 Per Person/Day)	Clipboards
	Puncture Resistant Gloves (1 Per Person)	Replacement Batteries
	Glove Liners (1 Per Person/Day)	Marking Paint
	Steel Toed Boots	Stapler
	Safety/Medical Kit	Duct Tape
	Hand wipes / sanitizer	
	Sunblock	
	Cooler with drinks	

Contingency Measures

The Contractor over-recruited generators, where possible, to accommodate for any recruited generators that dropped out of the study after agreeing to participate. Over-recruitment also provided an additional contingency for sites where data for waste composition or quantity were not adequately obtained.

The Contractor attempted to gather complete and high-quality data for both composition and waste quantity for each site visited. This was not always the case. During the study, data from each generator was tracked and assessed for completeness and quality. In some cases, the composition data for a generator may have been good but the quantity data may have been incomplete (i.e., a representative sample meeting minimum weight requirements was collected and sorted, but the overall quantity of materials could not be estimated with confidence). In such case, the generator was counted towards the recruitment goal, the composition data was included in the composition calculations, and the quantity data was used. If the quantity data was good but the composition data was incomplete (i.e., the quantity of materials in the desired stream may be estimated with confidence but a representative composition sample cannot be obtained and sorted), the generator was not counted toward the recruitment goal, the quantity data was included in the quantity calculations, the composition data was not used, and an additional generator was recruited to make up for the missing composition data. This process was repeated until the recruitment goals were met.

If the field crew arrived to collect a sample and there was not enough material on-site to meet the minimum garbage sample weight of 200 pounds, they collected the garbage material available that day and planned to make an additional visit to complete the sample up to a maximum of two total visits.

Reporting and Quality Control of Data

The sections below highlight the Contractor's data entry process, and Quality Assurance/Quality Control (QA/QC) measures.

Data Entry

For each sample, the field crew recorded the following information.

- sample ID number,
- region,
- date,
- generator type,
- NAICS code,
- total disposal sample weight,
- weight of each disposal component in the sample by material type,
- data used to calculate waste amounts, and

- any notes on special circumstance or other information, as applicable, and photo.

Field data entry for each sample was downloaded and shared with CalRecycle staff in an electronic format.

Generator Site Recruitment QA/QC

After a generator was initially recruited to participate in the study, the Contractor conducted QA/QC of the recruited site through follow-up calls to confirm the generator information that was previously collected during recruitment.

For all on-site data collection, including the quantification of disposal, if necessary, the field crew contacted the generator to ask any questions or clarify inconsistent information. Furthermore, if the generator did not have information available on-site, the recruiter followed up with a phone call to obtain the data.

Quality Control of Data

The Contractor used internal QA/QC procedures while sorting waste, collecting samples, entering data, and confirming data.

CalRecycle have calculated the reported data in the same sequence used for the data in the 2021 report to maximize comparability between the two studies. There were 129 samples in the initial data set. Ten samples were excluded from this report for sample weights under 200-pounds. An additional 24 samples were excluded from this report for insufficient data needed to estimate an annual tons of disposal figure from that sample. Two samples were removed due to extreme outliers for calculated annual tons disposed. The exclusion of these 36 samples for those reasons left 93 samples suitable for inclusion in this report.

Results of the 2018 Generator-Based Study for Disposed Food Waste

The contractor collected a total of 93 samples from the disposal streams of 92 generators. The distributions of these samples are presented in the following subsections. All samples were collected in the second quarter of 2019; 26 samples were collected in April, 54 in May, and 13 in June. The 2019 study included generators from four regions, as described in the methodology section of this report. The most samples collected by region were in Southern California with 54, followed by the Bay Area with 17, Coastal with 13, and the Central Valley with 9. Except for two generators from the Other Grocery and related product merchant wholesalers' industry group, one sample was collected per generator in the 2019 study.

2019 Industry Groups

As described in the Data QA/QC section of the methodology for the 2019 Generator-Based Waste Characterization Study, CalRecycle is including 95 samples in this report.

These 95 samples are divided among 52 samples from Full-Service Restaurants, 1 from Limited-Service Restaurant, 15 from Other Grocery and related product merchant wholesalers, and 25 Supermarkets and Grocery Stores. This information is detailed by both the number of generators and the number of samples per industry group in Table 74.

Table 74 - The number of generators sampled, and number of samples collected by industry group in the 2019 study.

Industry Group	Count of Generators	Count of Samples
Full-Service Restaurants	52	52
Limited-Service Restaurants	1	1
Other Grocery and related product merchant wholesalers	13	15
Supermarkets & other grocery stores (except convenience stores)	25	25
Total	**91**	**93**

Potentially Donatable Food

Potentially donatable food, the sum of five individual material sorting categories, was found in varying percentages in disposal stream from one industry group to another. The highest median percentage of potentially donatable food in the disposal stream for any industry group was 8 percent at Other Grocery and related product merchant wholesalers, followed by 7 percent at Supermarkets and Grocery Stores, and less than one percent for both Restaurant types sampled. Within industry groups with multiple samples collected (i.e., all but Limited-Service Restaurants) comparison of the third quartile values to the maximum values shows three-quarters of generators to have relatively low variability within that industry group and a few generators with higher percentages, referred to as “right-skewed.” The highest variability for any industry group was that of Other Grocery and related product merchant wholesalers which ranged from 0 percent to 92 percent. Of the 52 samples from Full-Service Restaurants, ten had no potentially donatable food in their disposal stream. This is shown in Table 75.

Table 75 - Distribution of the percentage of potentially donatable food observed in the disposal stream sample for each generator by industry group in the 2019 study.

Industry Group	Min	Q1*	Median	Q3*	Max	Count of 0%
Full-Service Restaurants	0%	< 1%	< 1%	2%	54%	10
Limited-Service Restaurants	< 1%	< 1%	< 1%	< 1%	< 1%	-
Other Grocery and related product merchant wholesalers	0%	< 1%	8%	28%	92%	3

Industry Group	Min	Q1*	Median	Q3*	Max	Count of 0%
Supermarkets and other Grocery (except Convenience) Stores	0%	3%	7%	17%	80%	1

** Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.*

CalRecycle also extrapolated the results at estimated tons of potentially donatable food in the disposal stream per generator per year. The median annual tons of potentially donatable food in the disposal stream was estimated to be from a high of 4 tons from Supermarkets and Grocery Stores to less than 0.1 tons for both Full-Service and Limited-Service Restaurants. As with assessment of the percentages above, the data is right-skewed with third quartile values well below maximum values for all but Limited-Service Restaurants which had a sample size of one. This is shown in Table 76.

Table 76 - Distribution of the weight (in tons) of potentially donatable food observed in the disposal stream sample for each generator by industry group in the 2019 study.

Industry Group	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Full-Service Restaurants	-	< 0.1	0.1	0.6	13
Limited-Service Restaurants	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Other Grocery and related product merchant wholesalers	-	0.1	3	5	256
Supermarkets and other Grocery (except Convenience) Stores	-	0.7	4	7	25

** Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.*

All Food Categories

CalRecycle included eight food material categories in this study. The figures in this section reflect the percent of all material in these categories within the samples taken at each generator. In addition to the five potentially donatable categories, this section provides the sums of two non-donatable food type and inedible parts. The median percentage of food in the organic diversion stream was highest at restaurants, with 53 percent at Full-Service Restaurants and 54 percent at the Limited-Service Restaurant. This was followed by 44 percent at Supermarkets and Grocery Stores, then 26 percent at Other Grocery and related product merchant wholesalers. Data was less right skewed for the combination of all food categories than potentially donatable food alone

for Grocery Stores and Supermarkets and Other Grocery and related product merchant wholesalers. The distribution of the percentage of food in the disposal stream was more centrally distributed. All samples among all industry groups contained some material belonging to one of the eight food categories in the disposal stream. This is shown in Table 77.

Table 77 - Distribution of the percentage of all categories of food observed in the disposal stream sample for each generator by industry group in the 2019 study.

Industry Group	Min	Q1*	Median	Q3*	Max
Full-Service Restaurants	11%	37%	53%	60%	88%
Limited-Service Restaurants	54%	54%	54%	54%	54%
Other Grocery and related product merchant wholesalers	< 1%	8%	26%	47%	96%
Supermarkets and other Grocery (except Convenience) Stores	< 1%	23%	44%	58%	91%

** Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.*

CalRecycle also extrapolated the estimated tons of food in the disposal stream per generator per year. The estimated median annual tons of food in the disposal stream varied from 14 tons for Supermarkets and Grocery Stores to 3 tons for Other Grocery and related product merchant wholesalers. The estimated annual tons were right skewed for all industry groups with multiple samples collected, with maximum tons significantly higher than those of three-quarters of the estimations within that industry group.

Table 78 - Distribution of the weight (in tons) of all categories of food observed in the disposal stream sample for each generator by industry group in the 2019 study.

Industry Group	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Full-Service Restaurants	1	6	11	22	171
Limited-Service Restaurants	5	5	5	5	5
Other Grocery and related product merchant wholesalers	< 0.1	1	3	11	268
Supermarkets and other Grocery (except Convenience) Stores	< 0.1	9	14	27	92

** Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.*

Total Material in Disposal Stream

CalRecycle extrapolated the estimated the annual tons of total material in the disposal stream for each generator. The estimated median annual tons of disposal ranged from a high of 41 tons for Supermarkets and Grocery Stores to 10 tons for Limited-Service Restaurants. Full-Service Restaurants and Other Grocery and related product merchant wholesalers were both estimated to have median annual disposal of 24 tons. For all industry groups with more than one sample, the estimated annual tons were right skewed, with maximums much higher than the third quartile values.

Table 79 - Distribution of total annual disposal by weight for industry groups in the 2019 study.

Industry Group	Min (tons)	Q1* (tons)	Median (tons)	Q3* (tons)	Max (tons)
Full-Service Restaurants	4	14	24	44	234
Limited-Service Restaurants	10	10	10	10	10
Other Grocery and related product merchant wholesalers	6	9	24	41	279
Supermarkets and other Grocery (except Convenience) Stores	9	28	41	55	191

** Q1 refers to the first quartile, the value for which 25% of results in that category are below and 75% of results in that category are above. Q3 refers to the third quartile, the value for which 75% of the results in that category are below and 25% are above.*