

Characterizing solid waste in New York State: 2022 sampling results

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In 2022, the Waste Data and Analysis Center (Stony Brook University) sorted approximately 30 tons of MSW and recyclables (approximately 240 samples) in 19 multi-day sampling events across New York State, typically using 38 separate waste categories. The municipalities represented in the sampling account for nearly 50% of the non-NYC population of the state. The sampling data are expected to guide planning in New York State to improve recovery processes.

To that end, the data sets will be presented in several ways. One is the typical representation of waste composition data on a parameter by parameter basis (e.g., percentages of paper, plastics, food, etc.) for mean data sets, using the parameter results to illustrate ways the location data are similar and different. Another approach is to use multi-variate distance measures for the data sets and then use those relationships to determine which data are the most similar. Advantages that can accrue from using multi-variate data analyses will be demonstrated.

2022 data have not yet been analyzed. However, similar data from a slightly smaller effort in 2021 have been analyzed. The data were presented in standard analyses such as in Table 1. In addition, multi-variate distance relations for the sample data were developed. These data were presented as in Figure 1 (a heat map) and Figure 2 (a principal component analysis). The 2022 data, when prepared for the conference, will include similar kinds of presentations. The data discussion will interpret the material in the Tables and Figures.

Table 1. Summary data for 2021 sampling and reference data

	OCC	Other recyc paper	Other paper	Recyc glass	Other glass	Ferr cont	Alum cont. foil	Other metal	#1/#2 plastic cont	Other plastic cont	Other plastics	Textiles	Food	Yard waste	Other orgs	Other inorgs
Mean of means	4.8%	7.3%	12.0%	2.5%	0.3%	0.5%	0.8%	2.1%	2.8%	1.2%	13.1%	5.6%	22.1%	5.2%	14.6%	5.1%
Sample mean	5.0%	7.7%	11.9%	2.4%	0.4%	0.6%	0.8%	2.3%	2.8%	1.3%	13.3%	5.3%	20.9%	6.0%	14.3%	5.2%
population-wtd. mean	4.8%	6.8%	11.1%	2.4%	0.2%	0.6%	0.7%	2.5%	2.8%	1.1%	12.9%	6.1%	20.5%	7.0%	14.0%	5.9%
mean minimum	2.4%	5.0%	8.7%	0.9%	0.0%	0.2%	0.3%	1.2%	1.7%	0.4%	9.9%	2.5%	13.5%	0.0%	7.7%	1.9%
mean maximum	7.5%	12.5%	16.8%	6.1%	1.4%	1.1%	1.3%	3.7%	6.0%	2.4%	17.3%	9.8%	34.7%	26.4%	20.1%	11.4%
NYC (2017)	1.4%	8.4%	11.2%	1.8%	0.3%	0.6%	1.0%	1.6%	1.4%	2.5%	10.4%	8.1%	25.1%	6.5%	15.4%	4.2%
OCCRA (2019)	5.0%	5.8%	10.1%	1.3%	1.1%	0.5%	0.5%	2.1%	2.0%	1.3%	13.8%	6.8%	21.0%	1.0%	18.3%	9.3%
USEPA (gen)	11.4%	7.8%	3.9%	3.3%	0.8%	0.5%	0.5%	7.7%	1.9%	0.1%	10.2%	5.8%	21.6%	12.1%	10.9%	3.0%
USEPA (disposed)	0.6%	1.0%	10.2%	3.7%	1.4%	0.3%	0.4%	8.7%	1.6%	0.9%	15.5%	8.0%	23.7%	7.2%	14.4%	4.2%
NYSDEC (rural)	9.7%	14.3%	7.0%	4.0%	0.5%	1.5%	0.8%	6.4%	1.9%	0.2%	11.9%	5.3%	13.0%	2.3%	9.5%	11.3%
NYSDEC (subn)	9.9%	14.4%	6.6%	3.9%	0.4%	1.0%	0.7%	6.3%	1.7%	0.2%	11.7%	5.4%	14.1%	10.3%	6.7%	6.9%
NYSDEC (urban)	9.8%	17.2%	7.1%	4.1%	0.4%	1.1%	0.7%	4.0%	2.0%	0.2%	12.2%	5.2%	20.6%	3.1%	4.9%	7.5%

Figure 1. Heat map of Euclidean distance relations for the 2021 data

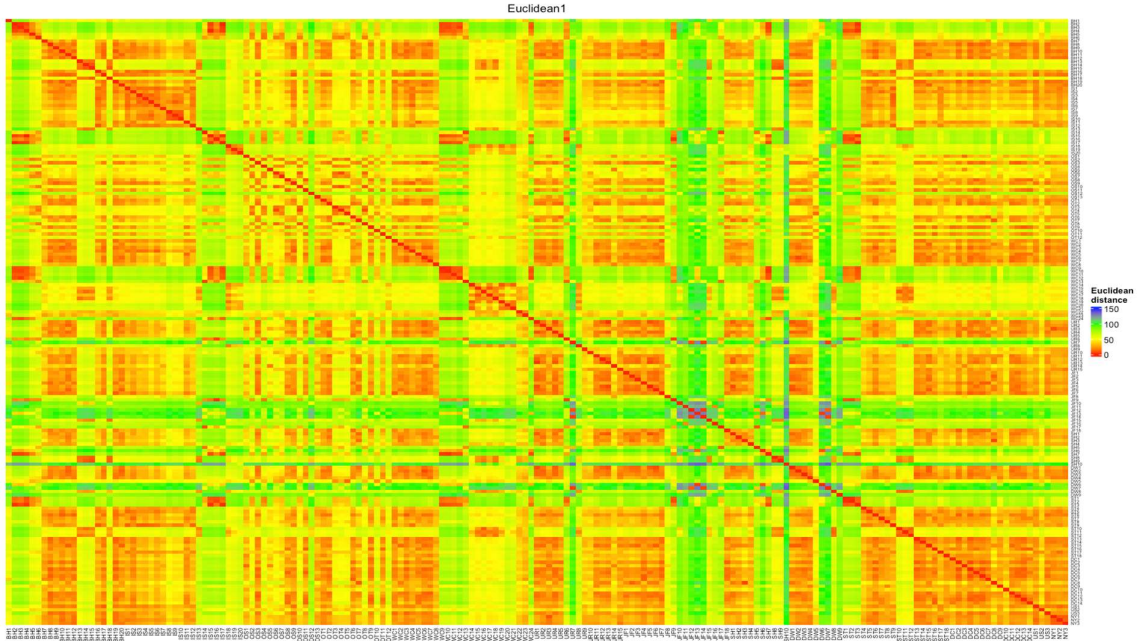


Figure 2. Principal component analysis of the 2021 mean and reference results

x = MSW data * = total waste data o = paper recyclables data □ = container recyclable data + = single stream recyclables data

