Waste Composition in New York State: 2022 Sampling Results

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Department of Technology and Society

Stony Brook University – College of Engineering and Applied Sciences Flagship of the State University of New York (64 campuses, 1.3 million students) Degrees:

Stony Brook

University

BS (Tech Systems Management) MS (Technological Systems Management) (Online and FTF) PhD (Technology, Policy & Innovation)





What do we do?

Sort Garbage into 40 different categories 3 samples per day for a week weighing up

to 1/2 metric tons



Major Category
Paper
Glass
Ferrous-bimetal
Aluminum
Other non-ferrous metal
Rubber & leather
Textiles
Wood
Food
Yard Waste
Other organics
Other inorganics
Electronic-containing wastes
HHW
Fines

Subcategories
ONP
OCC (not waxed, no pizza boxes, no egg cartons)
Waxed-pizza-egg carton OCC
Boxboard
Other recyclable paper
Other paper
Dep. glass containers
Other glass containers
Glass fragments
Other glass
Ferrous containers
Other ferrous (not recyclable)
Dep. alum. containers
Other alum. Containers
Aluminum foil
Other aluminum (not recyclable)
Dep. #1 containers
Other #1 containers
#2 containers natural
#2 containers colored
#5 plastic containers
Black plastic containers
Other plastic containers
Rigid plastic
Plastic film
Other plastics

Set up and Process





Examples



Other Plastic

Other Paper

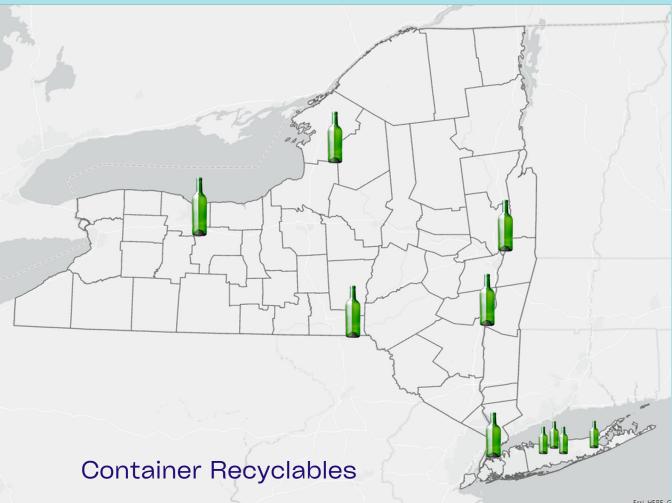




Locations of Sampling Events **Based on Sample** Type







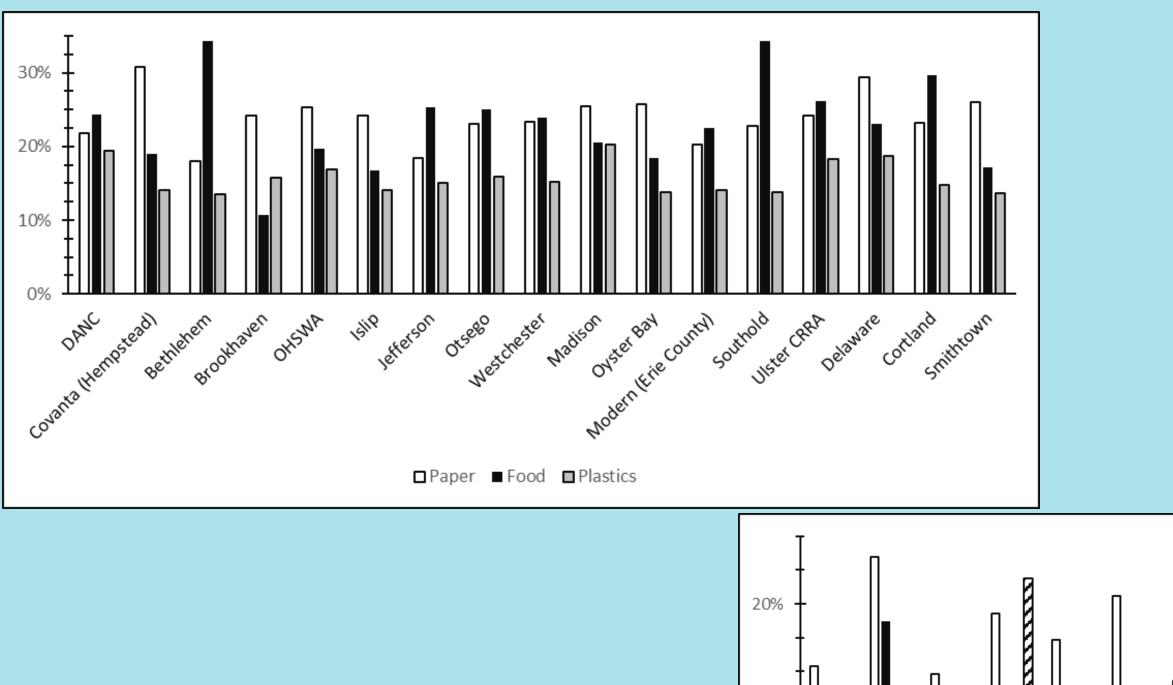
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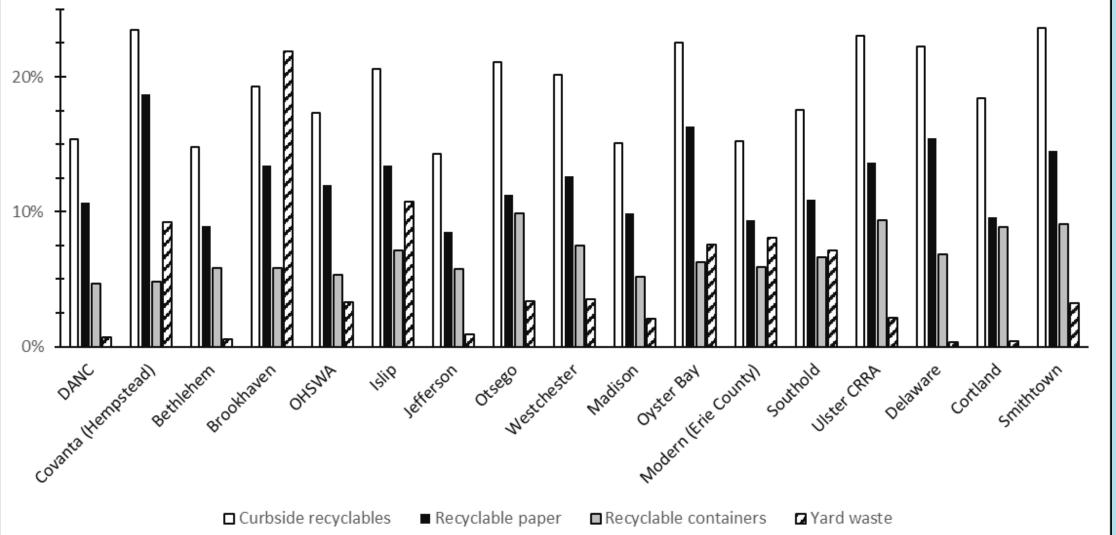
2022 NY Solid Waste Data

ltem	Weight (Kilograms)
MSW	21,527.5
Single Stream	4,140.3
Container Recyclables	2,815.4
Paper Recyclables	5,766.2
Special Product Sort	136.9
Total:	34,386.3







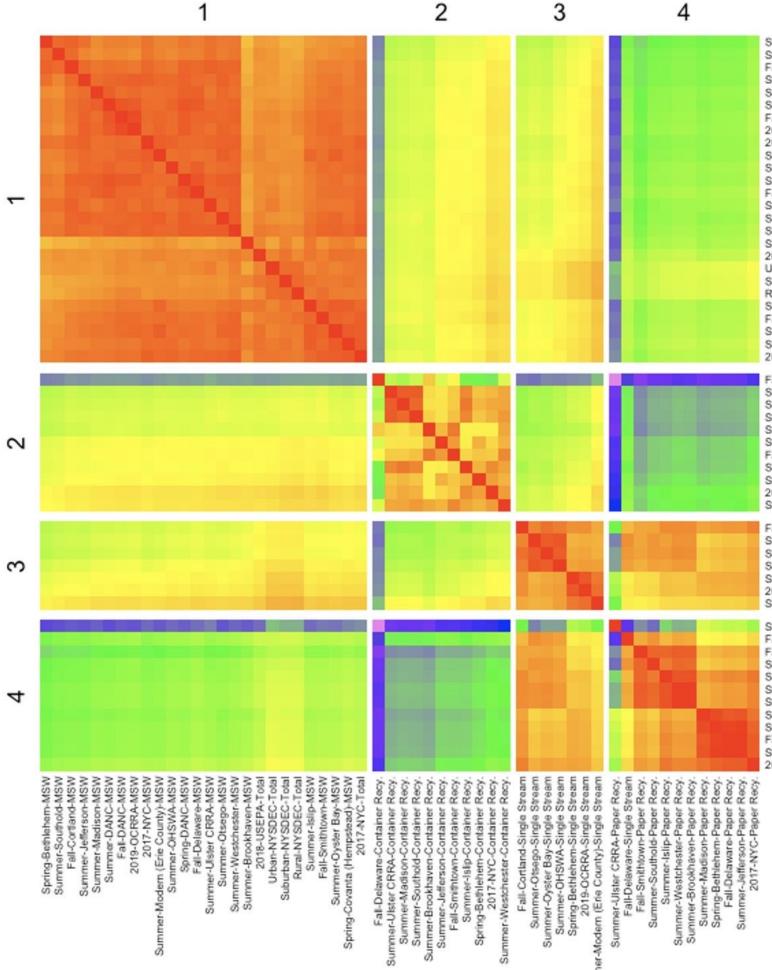




Multivariate Analysis: Heat Maps and Clustering

- Calculate means for each sampling location 1.
- 2. Reduce the variables from 40 to 16
- 3. Calculate Euclidean distances (16-D space)
- 4. Create heatmaps (red to blue)
- 5. Do other statistical analyses
- 6. Interpret patterns

New York State Solid Waste Clusters



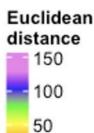
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Spring-Bethlehem-MSW Summer-Southold-MSW Fall-Cortland-MSW Summer-Jefferson-MSW Summer-Madison-MSW Summer-DANC-MSW Fall-DANC-MSW 2019-OCRRA-MSW 2017-NYC-MSW Summer-Modern (Erie County)-MSW Summer-OHSWA-MSW Spring-DANC-MSW Fall-Delaware-MSW Summer-Ulster CRRA-MSW Summer-Otsego-MSW Summer-Westchester-MSW Summer-Brookhaven-MSW 2018-USEPA-Total Urban-NYSDEC-Total Suburban-NYSDEC-Total Rural-NYSDEC-Total Summer-Islip-MSW Fall-Smithtown-MSW Summer-Oyster Bay-MSW Spring-Covanta (Hempstead)-MSW 2017-NYC-Total

Fall-Delaware-Container Recy. Summer-Ulster CRRA-Container Recy. Summer-Madison-Container Recy. Summer-Southold-Container Recy. Summer-Brookhaven-Container Recy. Summer-Jefferson-Container Recy. Fall-Smithtown-Container Recy. Summer-Islip-Container Recy. Spring-Bethlehem-Container Recy. 2017-NYC-Container Recy. Summer-Westchester-Container Recy.

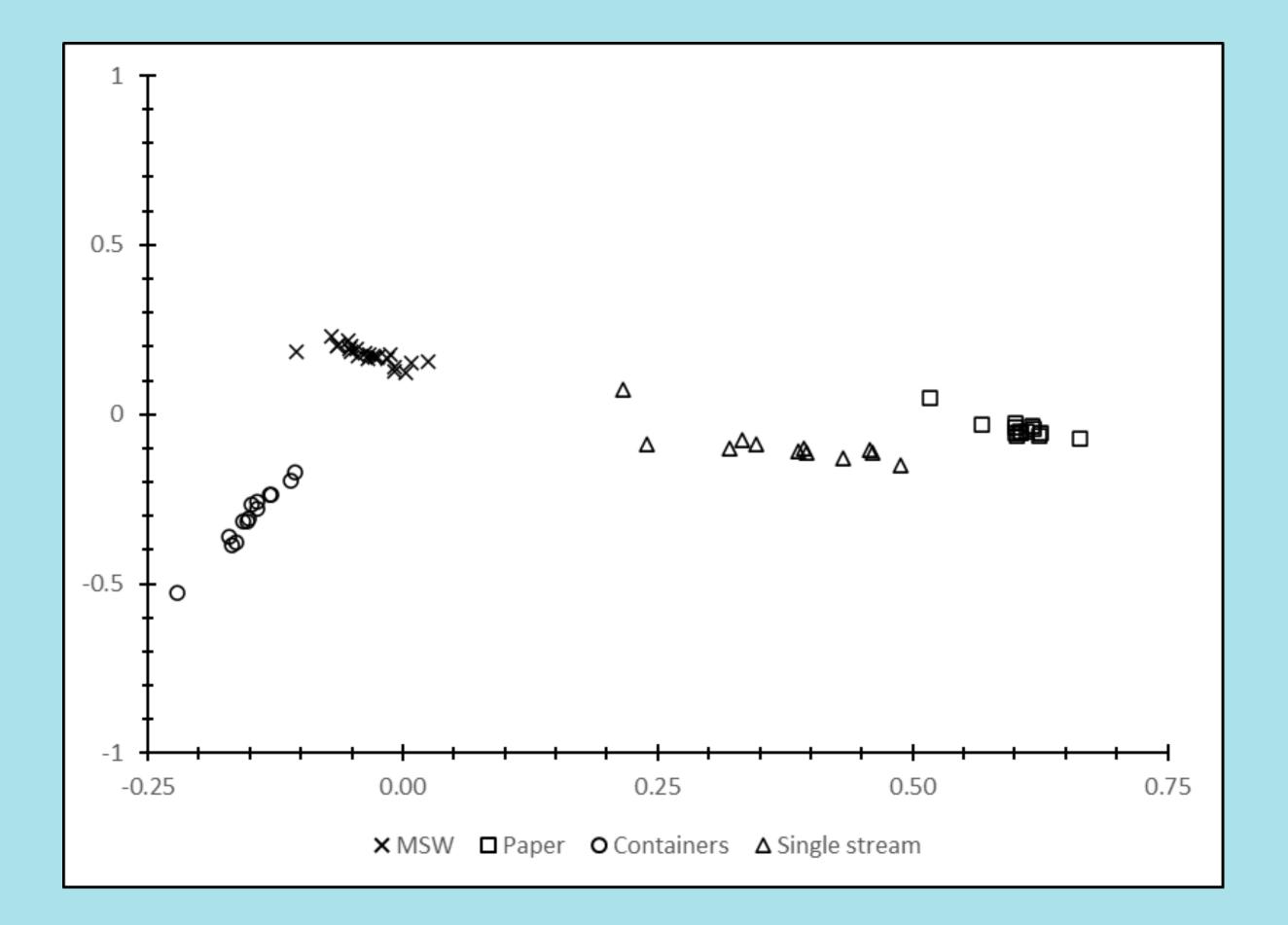
Fall-Cortland-Single Stream Summer-Otsego-Single Stream Summer-Oyster Bay-Single Stream Summer-OHSWA-Single Stream Spring-Bethlehem-Single Stream 2019-OCRRA-Single Stream Summer-Modern (Erie County)-Single Stream

Summer-Ulster CRRA-Paper Recy. Fall-Delaware-Single Stream Fall-Smithtown-Paper Recy. Summer-Southold-Paper Recy. Summer-Islip-Paper Recy. Summer-Westchester-Paper Recy. Summer-Brookhaven-Paper Recy. Summer-Madison-Paper Recy. Spring-Bethlehem-Paper Recy. Fall-Delaware-Paper Recy. Summer-Jefferson-Paper Recy. 2017-NYC-Paper Recy.



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PCA for New York State Solid Waste Stream Type



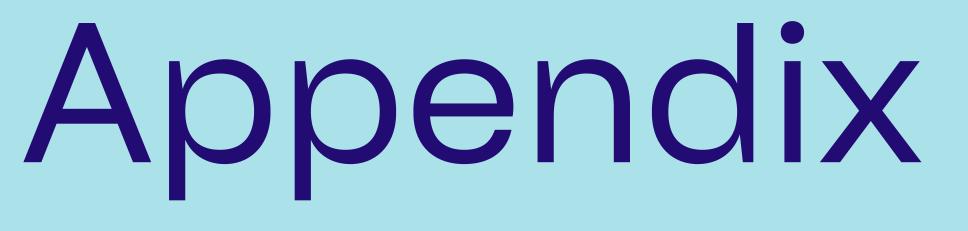
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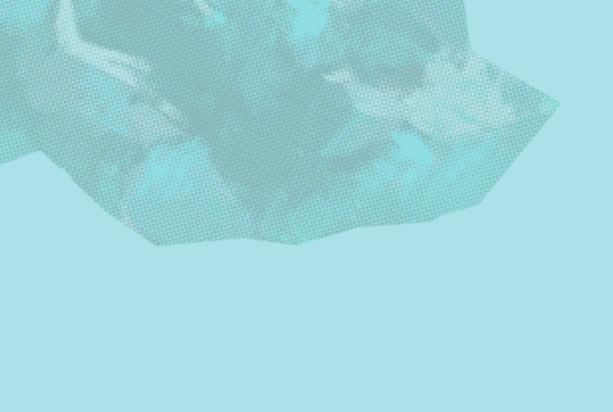
Thank You!

WASTE DATA & ANALYSIS CENTER

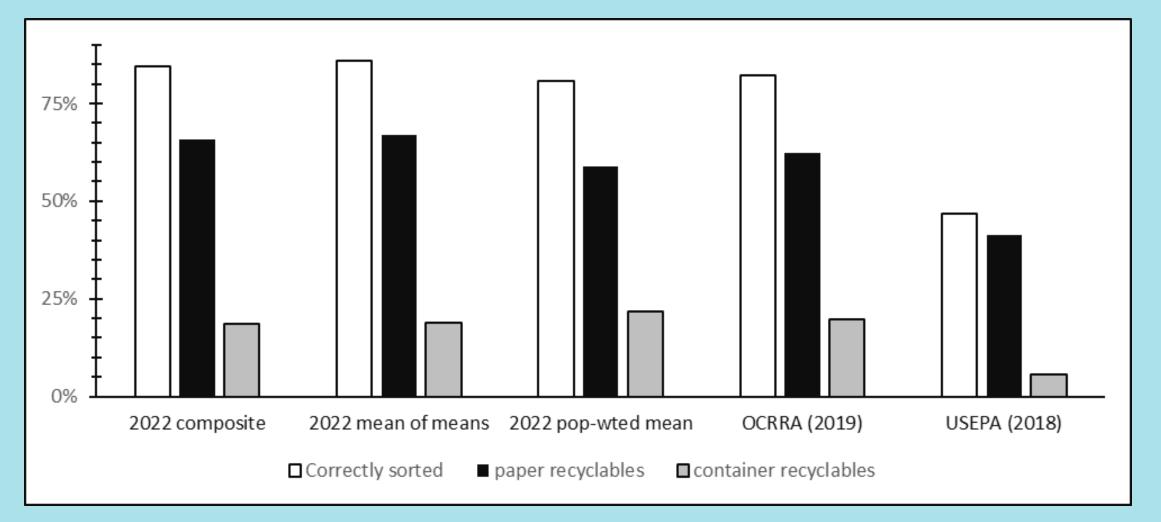


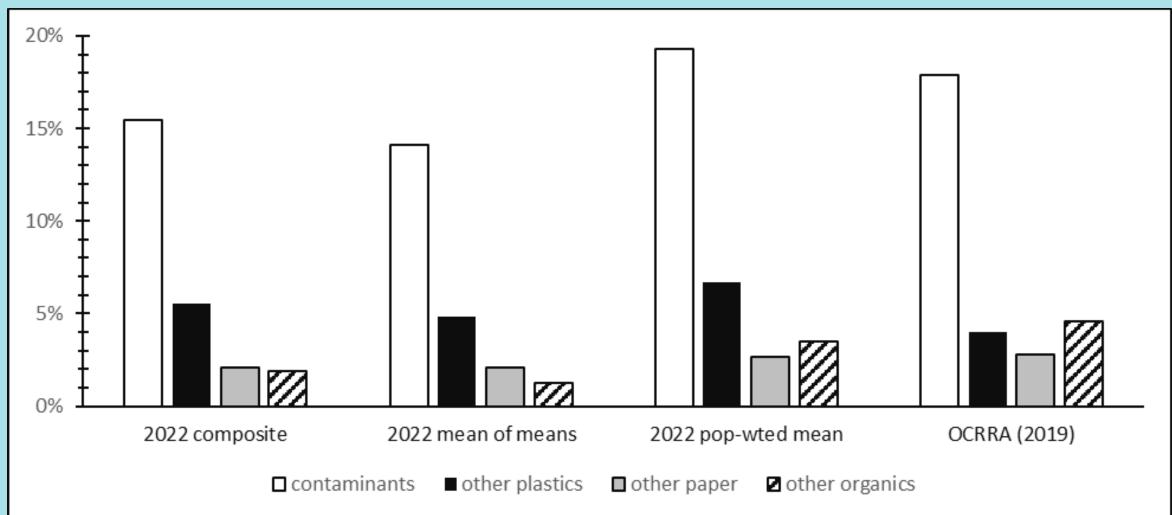




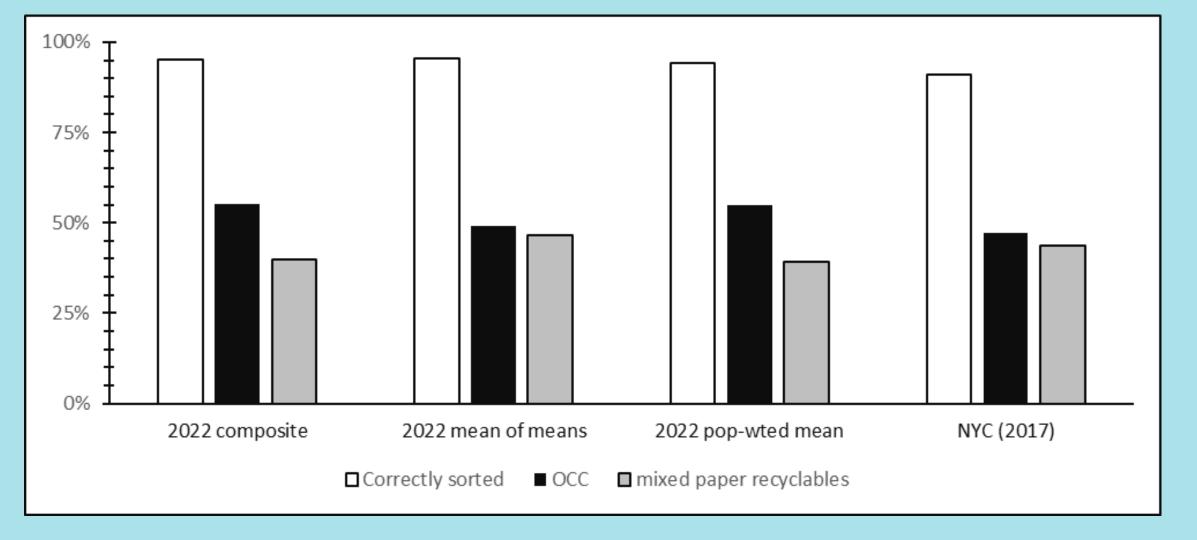


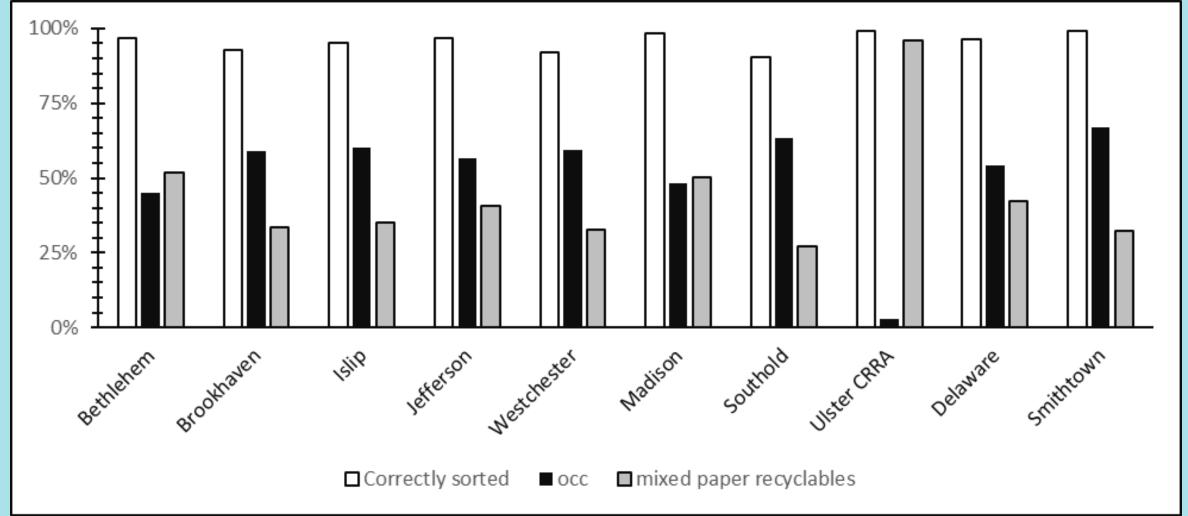




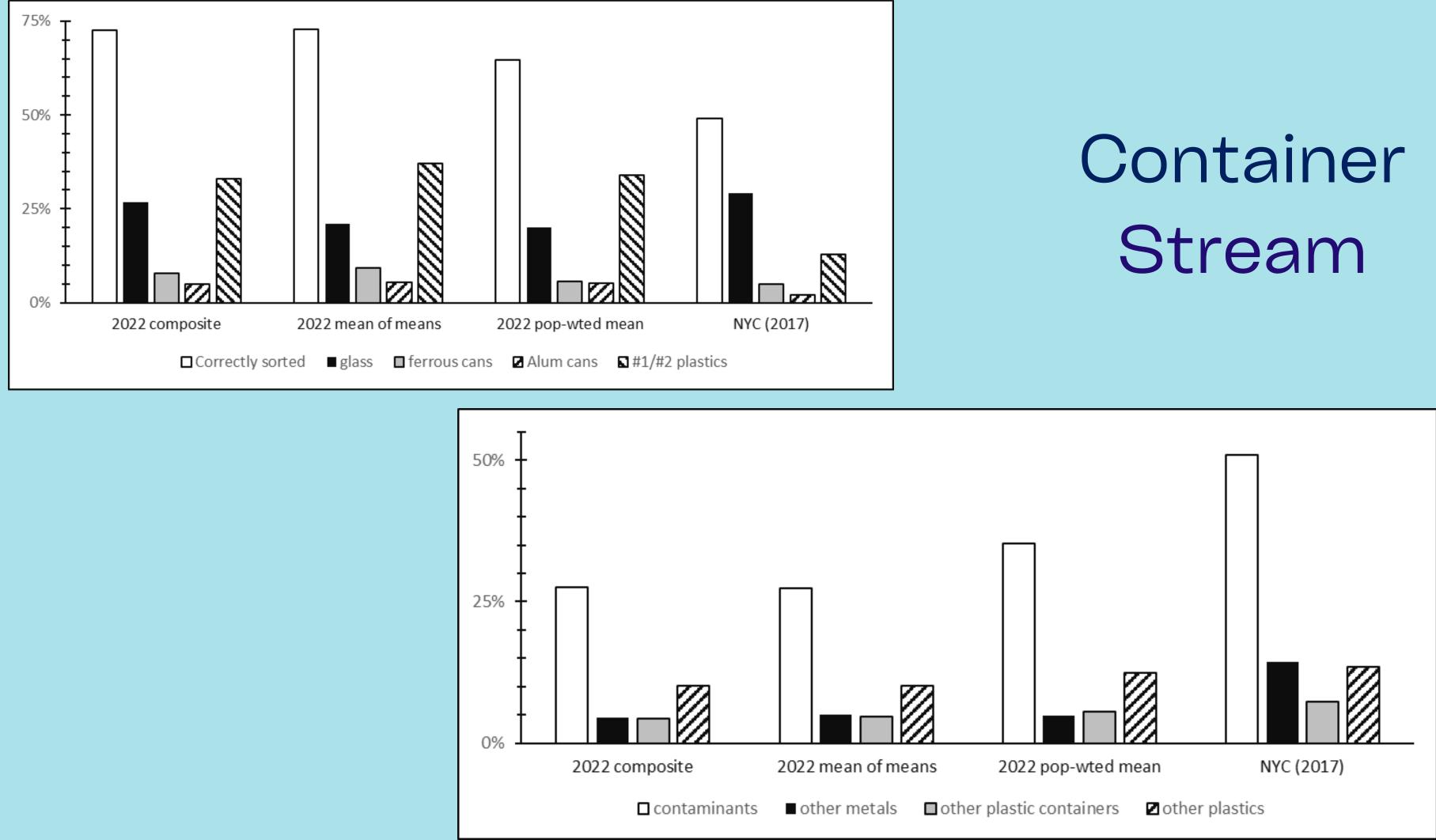


Single Stream





Paper Stream



40 Variable reduction to 16 Variables

OCC			
Other rec	yclable paper	 	
Other pap	per		
D 11	1 1	 	
Recyclab	le glass		
Other gla		 	
Ferrous c		 	
Alum. co			
Other me	tals		
#1/#2 coi	nt.		
Other pla	stic cont.		
Other pla	stics		
Textiles			
Food			
Yard was	tes		
Other org	ganics		
Other inc	organics		

1
Sort categories
 OCC
ONP, boxboard, brown paper, glossy paper, office paper, junk mail, other comm'l printing, shredded paper, other recyclable paper
 Compostable paper, non-compostable paper, other paper, gable- top cont.
 Dep. glass cont., wine-liquor bottles, other glass cont., glass fragments
 Other glass
 Ferrous cont.
 Alum. cont., dep. alum. cont., other alum. cont., alum. foil
Other ferrous, other alum., auto batteries, other non-alum., other non-ferrous
 #1 cont., #1 dep. cont., #1 wine-liquor cont., #1 other cont., #1 clamshells, #2 cont., #2 cont. natural, #2 cont. colored
(#2, #3, #4, ##6, #7 cont.) (#3-#7 cont.), (#4, #5 cont.), #5 cont., #5 cont. & lids, #6 cont., #7 cont., #3 lids, #4 lids, #5 lids, #6 lids, other lids, other plastic cont.
 Black plastics, rigid plastics, retail plastic bags, other plastic film, other plastics
Textiles
Food
Yard wastes
 Rubber-leather, wood, other organics, other (USEPA)
Other inorganics, rechargeable batteries, HHW, other (NYSDEC)