

THE EFFECT OF HOUSING DENSITY AND INCOME ON RESIDENTIAL WASTE

As the Final Report explains in detail, the WCS was designed to examine eight separate categories, or strata, of NYC neighborhoods as illustrated in the table below.

	Abbreviation	Persons	Housing Units	Persons/ household	
1	High Density/High Income	HH	883,319	538,713	1.6
2	High Density/Medium Income	HM	710,418	304,316	2.3
3	High Density/Low Income	HL	1,753,021	643,449	2.7
4	Medium Density/High Income	MH	444,298	192,219	2.3
5	Medium Density/Medium Income	MM	1,442,180	546,971	2.6
6	Medium Density/Low Income	ML	1,129,673	402,202	2.8
7	Low Density/High Income	LH	1,171,081	412,754	2.8
8	Low Density/Medium Income	LM	471,531	159,269	3.0

The Final Report presents eight sets of results for each season and stream (Refuse, Paper, MGP) that detail the different material composition and generation rates by strata.

WHO THROWS OUT THE MOST?

It comes as no surprise that residents of low density areas generate more waste than residents of denser neighborhoods. More space means more consumption and more room for storage, which translates to more at the curb. In terms of refuse or waste (refuse + recycling), on a per capita or per household basis, residents of Low Density/High Income areas in Staten Island and eastern Queens generate the most waste.

Waste Generation by Density/Income Strata

Density/Income Strata <i>(in pounds/week/household)</i>	WCS Annual			
	Refuse	MGP	Paper	Waste
High Density/High Income	20.6	2.3	5.5	28.4
High Density/Medium Income	25.0	1.9	3.0	29.8
High Density/Low Income	32.2	1.8	1.4	35.4
Medium Density/High Income	20.8	2.6	6.4	29.9
Medium Density/Medium Income	32.5	3.4	5.0	40.9
Medium Density/Low Income	39.3	2.5	2.5	44.2
Low Density/High Income	48.1	4.8	8.1	61.0
Low Density/Medium Income	46.3	4.3	3.4	54.0
Total	32.6	2.8	4.3	39.7

Who generates the least? On a per household basis, residents of **High Density/High Income** areas, mostly in Manhattan, discard about half of what Low Density/High Income residents do.

The information herein has been compiled, analyzed, and reported by the DSNY Bureau of Waste Prevention, Reuse and Recycling, using data collected by its consultant R.W. Beck. These highlights do not substitute for a thorough review of R.W. Beck's Final Report, which contains more detailed data. Some percentages may not total exactly due to rounding.

WHO RECYCLES THE BEST?

The results are clear. The best recyclers in the City live in medium density areas, and have high incomes. Park Slope and many other Brooklyn neighborhoods fall into this stratum. These results are seen for both diversion rate (how much of all generated waste is recycled), and capture rates (how much of what should be recycled, is recycled). Using these same results, the worst recyclers in the City live in High Density/Low Income areas, primarily in Manhattan and the Bronx.

Density/Income Strata	DIVERSION RATES			CAPTURE RATES		
	WCS Annual			WCS Annual		
	MGP	Paper	Total Recycling	MGP	Paper	Total Recycling
High Density/High Income	8.1%	19.4%	27.5%	63.3%	50.2%	53.5%
High Density/Medium Income	6.3%	9.9%	16.3%	54.8%	41.2%	45.6%
High Density/Low Income	5.2%	4.0%	9.2%	38.4%	23.4%	30.0%
Medium Density/High Income	8.7%	21.5%	30.2%	67.8%	67.0%	67.2%
Medium Density/Medium Income	8.3%	12.3%	20.6%	66.3%	58.0%	61.1%
Medium Density/Low Income	5.7%	5.6%	11.2%	41.7%	31.1%	35.7%
Low Density/High Income	7.8%	13.3%	21.1%	68.6%	59.1%	62.3%
Low Density/Medium Income	8.0%	6.2%	14.3%	62.4%	38.2%	48.9%
Total	7.1%	10.8%	18.0%	56.6%	47.5%	50.8%

Again, this finding comes as no surprise, because of the great importance that building setup, maintenance, and service levels have in recycling compliance in NYC. In lower income areas, buildings do not enjoy the same level of service as in more affluent areas (although they are served with equal frequency by DSNY). The Multi-Unit Study component of the WCS focuses more closely on this question.

DIFFERENCES IN WASTE COMPOSITION BY STRATA

The composition of waste does not vary greatly by strata. Food waste, for instance, is the largest component of refuse in all eight strata. Household Hazardous waste is the smallest, across strata. However, a few notable differences are apparent, as shown in the table on the next page.

High Density/High Income groups generate substantially more paper (refuse + recycling) than others.

High Density residents of all incomes throw out more plastic film (bags, wraps, etc.) than other groups.

Lower or Medium Income groups tend to have a greater percentage of food in their waste than high income groups, regardless of density.

Yard trimmings are a much higher percentage of overall waste in Low Density areas than in Medium or High Density areas.

Low Density residents have more C&D in their waste than other groups.

High Density/Low Income residents have more textiles in their waste than other groups.

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2004-05 NYC Residential and Street Basket Waste Characterization Study

ANNUAL WASTE (REFUSE + RECYCLING) COMPOSITION, BY STRATA (All material groups, selected material categories)								
	High Density/ High Income	High Density/ Medium Income	High Density/ Low Income	Medium Density/ High Income	Medium Density/ Medium Income	Medium Density/ Low Income	Low Density/ High Income	Low Density/ Medium Income
Newspaper	13.43%	8.52%	5.28%	10.74%	6.67%	5.20%	8.08%	5.10%
Mixed Low Grade Paper	17.95%	10.62%	7.78%	14.86%	9.22%	8.03%	10.29%	7.73%
Other Recyclable Paper	7.83%	5.56%	4.61%	7.08%	5.81%	5.21%	4.50%	3.84%
Other Non-Recyclable Paper	7.48%	6.78%	6.40%	6.94%	7.03%	5.67%	7.04%	6.96%
Paper Total	46.69%	31.49%	24.06%	39.61%	28.74%	24.10%	29.91%	23.63%
PET Bottles	1.22%	1.13%	1.34%	0.97%	1.19%	1.42%	1.07%	1.13%
HDPE Bottles	0.73%	0.96%	1.11%	0.61%	1.04%	0.95%	0.90%	0.82%
Other 3-7 containers	2.41%	2.14%	1.98%	2.11%	1.90%	1.74%	1.75%	1.83%
Film	7.66%	8.96%	9.11%	6.23%	7.94%	7.88%	5.49%	6.44%
Other Plastics	1.71%	2.58%	2.45%	1.77%	2.19%	2.54%	2.71%	2.74%
Plastic Total	13.73%	15.77%	15.99%	11.70%	14.25%	14.53%	11.92%	12.96%
Glass Total	5.77%	3.83%	4.35%	5.85%	4.65%	4.72%	3.62%	4.04%
Metal Total	4.05%	4.48%	5.59%	4.28%	4.77%	5.22%	4.77%	5.92%
Food	11.20%	19.10%	23.01%	14.18%	20.12%	19.92%	14.00%	16.83%
Yard and Yard Wood	1.46%	2.53%	0.89%	2.94%	2.91%	2.59%	10.58%	7.99%
Textiles	4.02%	5.85%	7.26%	3.51%	5.83%	6.67%	5.33%	6.07%
Diapers/Hygiene	2.37%	2.99%	3.95%	2.87%	3.33%	3.55%	2.69%	3.66%
Other	6.32%	7.17%	8.29%	8.82%	7.63%	9.72%	7.62%	8.93%
Organics Total	25.38%	37.64%	43.40%	32.32%	39.83%	42.45%	40.22%	43.49%
Appliance/Electronic Total	1.18%	1.55%	1.53%	1.56%	1.62%	2.23%	1.72%	1.64%
C & D Debris Total	2.60%	4.45%	4.34%	3.83%	5.27%	5.93%	6.74%	7.38%
HHW/Misc Inorganics Total	0.61%	0.80%	0.77%	0.86%	0.88%	0.84%	1.14%	0.96%

As you read on:

The above analyses are just some, out of many, ways to look at how waste composition, generation, diversion, and capture vary by income. To learn more, look at the Housing Density and Income Details for each season, as well as diversion, capture, and generation rates by strata, by season.

It should be stressed that the WCS itself does not comment on *why* such differences exist, because such questions were not within its scope. In this sense, the WCS is like the U.S. Census. Its goal is to gather descriptive information for a wide range of uses. Theorizing the *causes* of differences in composition and generation requires research informed by the social sciences of economics, sociology, and psychology.

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