Recycling in Minority Communities in New York City

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Introduction

New York City's recycling program began in 1988 with pilot programs deployed in different parts of the city collecting different recyclables. In 1993 the City unified its program, collecting metals, glass, plastic jugs and bottles, newspaper, magazines and corrugated cardboard. In 1996 mixed paper, bulk metal, grey cardboard, and wax paper cartons were added. In 1998 the City Council passed a local law to force DOS to collect recyclables on a weekly basis citywide. By June, 2002, the City's diversion rate was about 21% and its capture rate averaged 46%.

But in July, 2002 the City's recycling program began to go backwards. Using what is now considered to be faulty economic data, the City decided it would be cheaper to stop collecting metal, glass and plastic. In an attempt to save the program, the City Council worked out an arrangement with the Mayor to keep metal recycling in place, reinstating plastics in July, 2003, and glass in July, 2004. Immediately after plastic and glass stopped being collected, data showed that paper collections went down by over 10%. A few weeks after plastics were restored to the program in July, 2003, in the name of improving the economics of the recycling program, the City changed the program from collecting weekly to once every two weeks, angering residents and building superintendents who were now forced to store recyclables for an additional week. Meanwhile, in many parts of the City, garbage collections continued at three times per week, with twice a week in the rest of the City.

Special Programs Directed to Non-English speakers

New York City's population includes speakers from hundreds of nationalities, with 25 major languages spoken. Incomes vary with 20% of residents living below the poverty level, with a majority (60%) with incomes between $15,000 and $75,000. Only about 9% of homes are single-family detached and over 30% are apartment buildings with 50 or more units.

The DOS has, since the beginning of its recycling programs in the late 1980s, issued recycling information in both English and Spanish. The agency has, over the years, expanded this to include several other languages DOS placed ads in Spanish papers, as it is required by local law (19 of 1989) to reach every person in the city with recycling education.

At its heyday in the late 1990s, prior to recent cuts in service, recycling information was distributed in many languages, including Hebrew, Yiddish, Chinese, Korean, Russian, Polish as well as Spanish in an attempt to get to the populations in which these languages are exclusively spoken. Materials were sent to every part of the city including apartments.

Educate and Verify Understanding

Some might think that these are the first and last steps needed to design and implement successful recycling programs that divert large percentages of recyclables from the waste stream. The truth is, this is only the first step, since as we all know, just understanding what the right thing to do does not always translate to changed behavior. (Look at cigarette smoking.)

Surveys that DOS conducted since 1998 show that "Majorities correctly identify the major recyclables, most at very high rates (over 90%). High knowledgeability is seen regardless of where residents live, what type of housing they reside in, or whether English or Spanish is their primary language".[1] However, DOS notes that "these self-assessed compliance rates do not match the measured diversion rate of 20% and capture of 50% for NYC." [2] This is the first clue that there is a disconnect between DOS' education efforts and actual diversion rates. After a person has full understanding of a new behavior, several additional steps are required before the behavior is actually put into practice:

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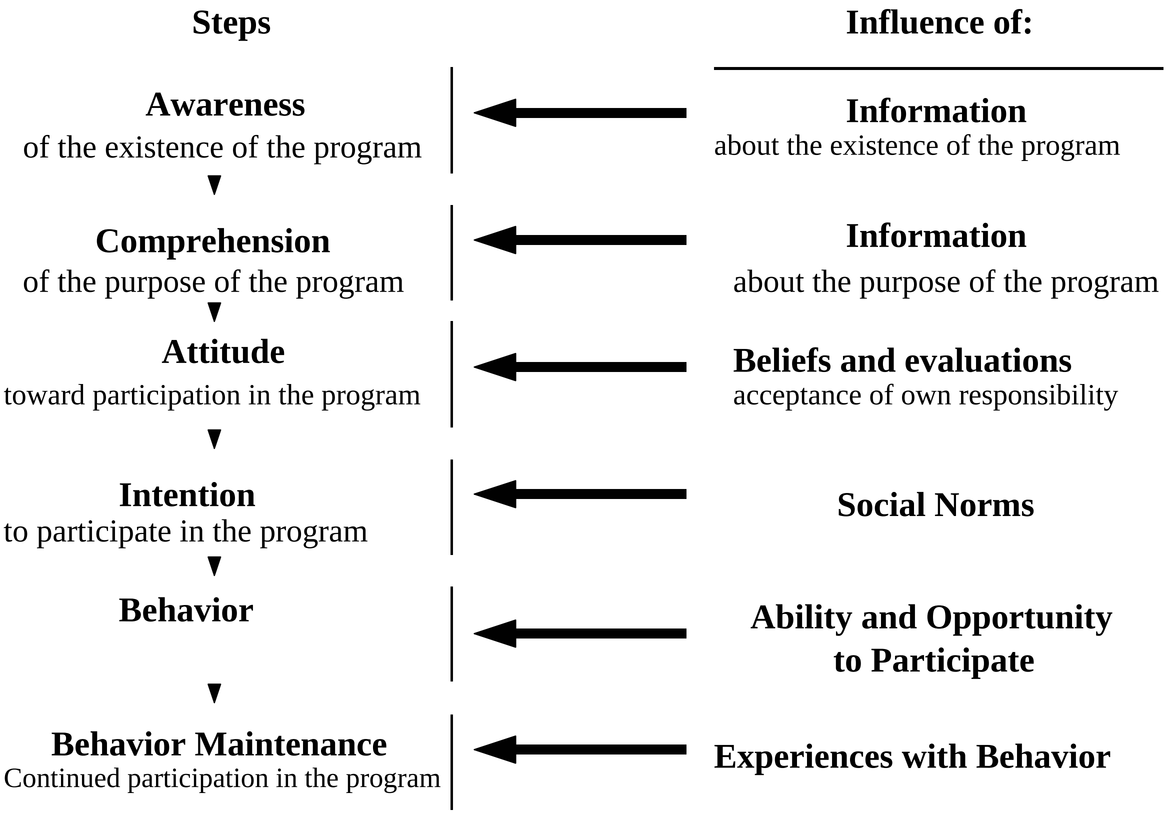
[1] "New York City Recycling – In Context – A Comprehensive Analysis of Recycling in Major U.S. Cities", NYC DOS, August, 2001, P. 41 http://www.nyc.gov/html/dos/html/recywprpts.html#1

[2] "New York City Recycling – In Context – A Comprehensive Analysis of Recycling in Major U.S. Cities", NYC DOS, August, 2001, P. 41

Figure 1. Model of attitude change and behavior change through communication [3]


Steps
Influence of:
Awareness
of the existence of the program
Information
about the existence of the program
Comprehension
of the purpose of the program
Information
about the purpose of the program
Attitude
toward participation in the program
Beliefs and evaluations
acceptance of own responsibility
Intention
to participate in the program
Social Norms
Behavior
Ability and Opportunity to Participate
Behavior Maintenance
Continued participation in the program
Experiences with Behavior

In its market research report [4] DOS recognizes there is a disparity and points to its Mixed Waste Processing pilot [5] that suggested there is a difference in waste composition between the low-diversion and high-diversion neighborhoods (paper was calculated to be about 8% less in low-diversion neighborhoods, but this was tenuous in that disparate data from 1990 and 1997 waste composition studies had to be normalized, taking into account differing paper recycling categories; the passage of time could also have been a confounding variable).

Diversion Rates

If the people in all NYC's neighborhoods did understand what to recycle, one might logically expect for all neighborhoods to have similar recycling (diversion) rates. But of the total 59 community board / sanitation districts, the 12 districts with the lowest diversion rates are in the South and Central Bronx (7 districts), Harlem (2 districts), and neighborhoods like the minority communities of Bedford-Styvesant, Crown Heights, Bushwick, and Brownsville in Brooklyn. On the other end of the spectrum, the 12 districts with the highest diversion rates are places like Manhattan’s downtown, Greenwich Village, Chelsea, Gramercy Park, Murray Hill, the upper east side, and upper west side, Brooklyn’s Park Slope, upscale – much like the upper west side of Manhattan, posh residential areas of outer Queens (Bayside, Douglaston, Little Neck, Forest Hills), eastern Bronx (Pelham Bay) and Italian neighborhoods of Bay Ridge and Middle Village. Clearly there is a relationship between diversion rate and certain demographic factors such as income and/or ethnicity that DOS’ self-reported survey results do not reveal.

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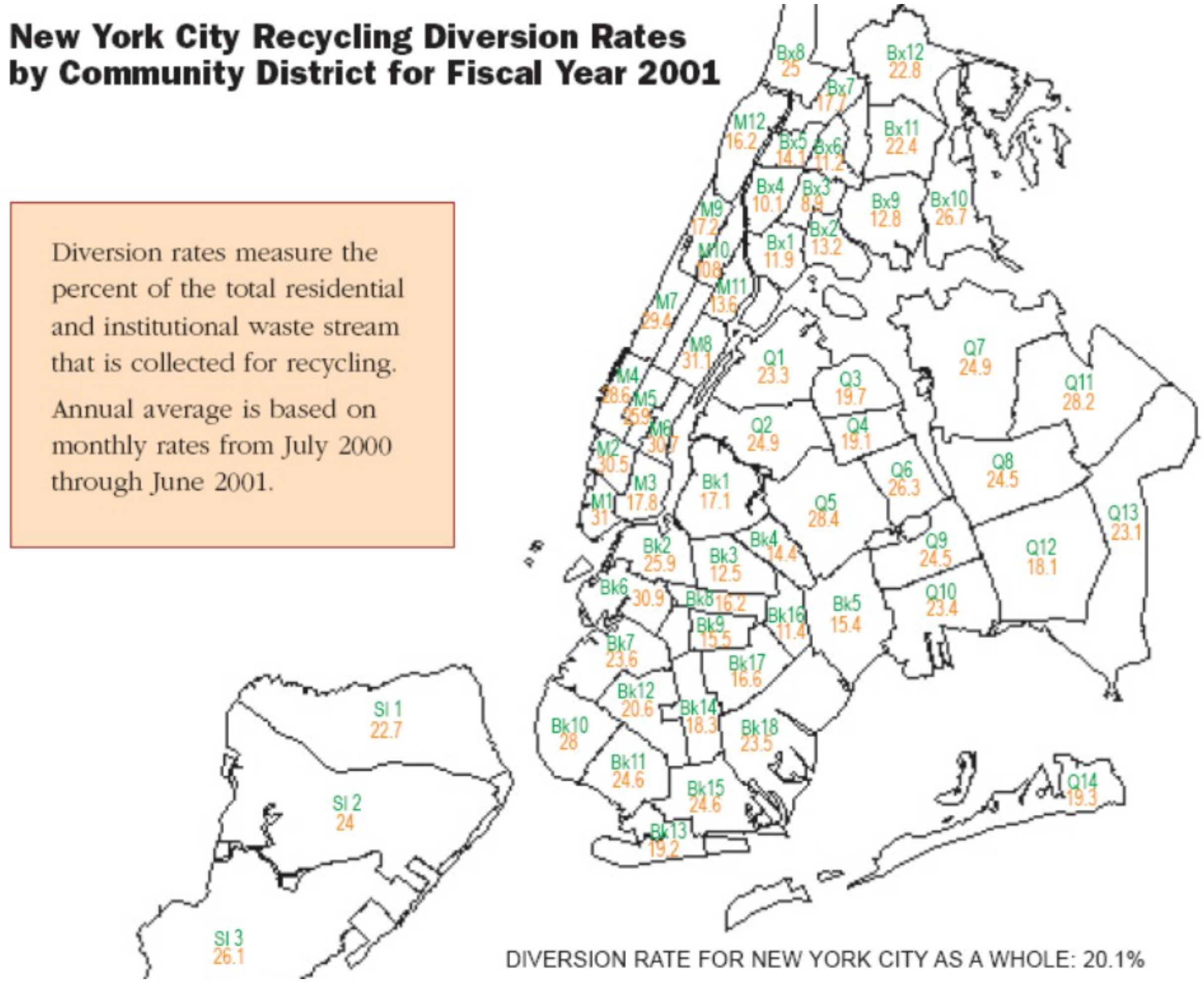
[3] Kok, Gerjo and Sjef Siero, "Tin Recycling: Awareness, Comprehension, Attitude, Intention, and Behavior", Journal of Economic Psychology, 6 (1985) 157-173. Elsevier Science Publishers B.V. (North Holland).

[4] "Recycling: What Do New Yorkers Think", NYCDOS, Fall, 1999. http://www.nyc.gov/html/dos/pdf/pubnrpts/recyrpts/nyc_recycles.pdf

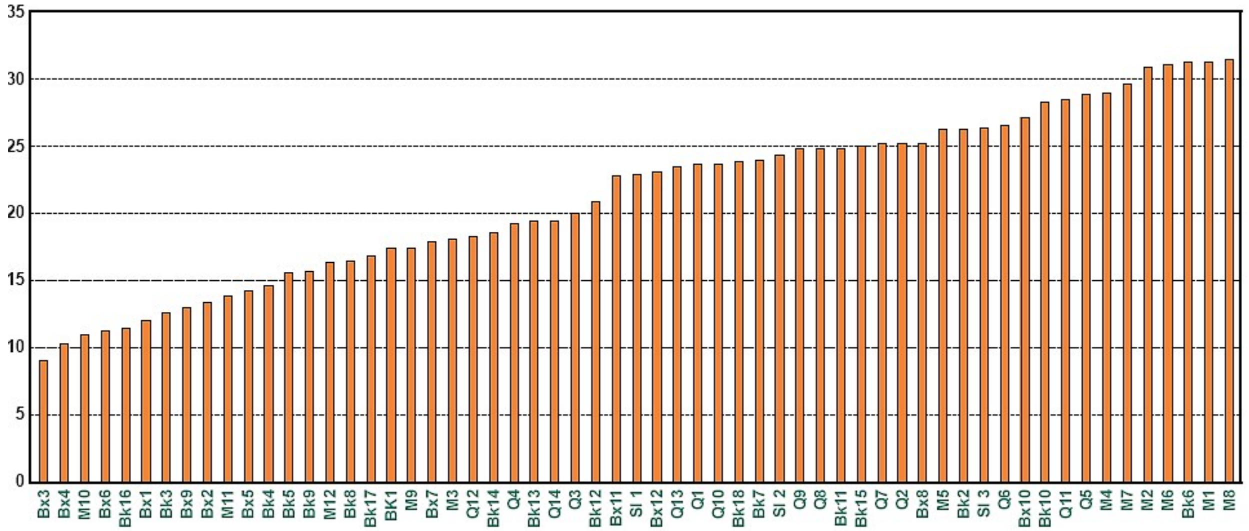
[5] Mixed Waste Processing in New York City – A Pilot Test Evaluation, NYC DOS, October, 1999. http://www.nyc.gov/html/dos/pdf/pubnrpts/recyrpts/mixed_waste.pdf

How to Handle the Disconnect

This disconnect between education and diversion rate begs for a multivariate Geographical Information Systems (GIS) analysis to offer possible factors or explanations. Census maps showing distribution of income, or ethnicity, or race, or other variables could be helpful at least in showing association or lack of same with diversion rate.

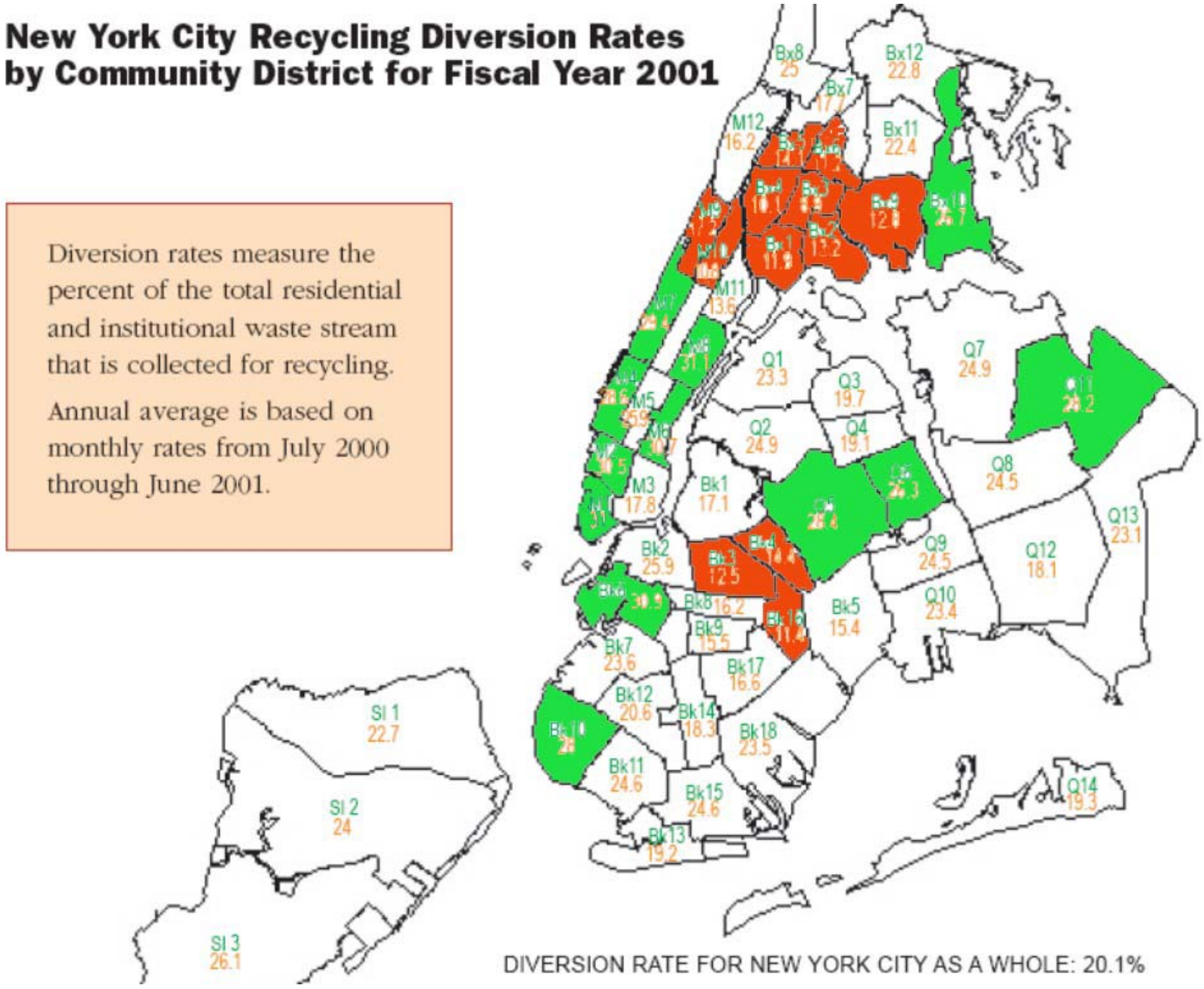

New York City Recycling Diversion Rates by Community District for Fiscal Year 2001
Diversion rates measure the percent of the total residential and institutional waste stream that is collected for recycling.
Annual average is based on monthly rates from July 2000 through June 2001.
Bx8 25
Bx12 22.8
Bx7 17.7
M12 16.2
Bx5 14.1
Bx6 11.2
Bx11 22.4
Bx4 10.1
Bx3 8.9
Bx9 12.8
Bx10 26.7
M9 17.2
M10 10.8
Bx1 11.9
Bx2 13.2
M11 13.6
M7 29.4
M8 31.1
Q1 23.3
Q7 24.9
M4 28.6
M5 25.9
Q3 19.7
Q11 28.2
M6 30.7
Q2 24.9
Q4 19.1
M2 30.5
M3 17.8
Bk1 17.1
Q6 26.3
Q8 24.5
M1 31
Q5 28.4
Q13 23.1
Bk2 25.9
Bk3 12.5
Bk4 14.4
Q9 24.5
Q12 18.1
Bk6 30.9
Bk8 16.2
Bk5 15.4
Q10 23.4
Bk9 15.5
Bk16 11.4
Bk7 23.6
Bk17 16.6
SI 1 22.7
Bk12 20.6
Bk14 18.3
Bk10 28
Bk18 23.5
Bk11 24.6
Q14 19.3
SI 2 24
Bk15 24.6
Bk13 19.2
SI 3 26.1
DIVERSION RATE FOR NEW YORK CITY AS A WHOLE: 20.1%

This map and the chart below are from DOS’ New York City Recycling – In Context – A Comprehensive Analysis of Recycling in Major U.S. Cities. August, 2001, prior to the July, 2002 citywide reduction in recycling service after which time only papers and metals were collected until July, 2003.



DIVERSION RATES BY DISTRICT (in %)

The map below shows, in green, the top 12 districts for recycling diversion, and in red, the worst 12.



New York City Recycling Diversion Rates by Community District for Fiscal Year 2001

Diversion rates measure the percent of the total residential and institutional waste stream that is collected for recycling.

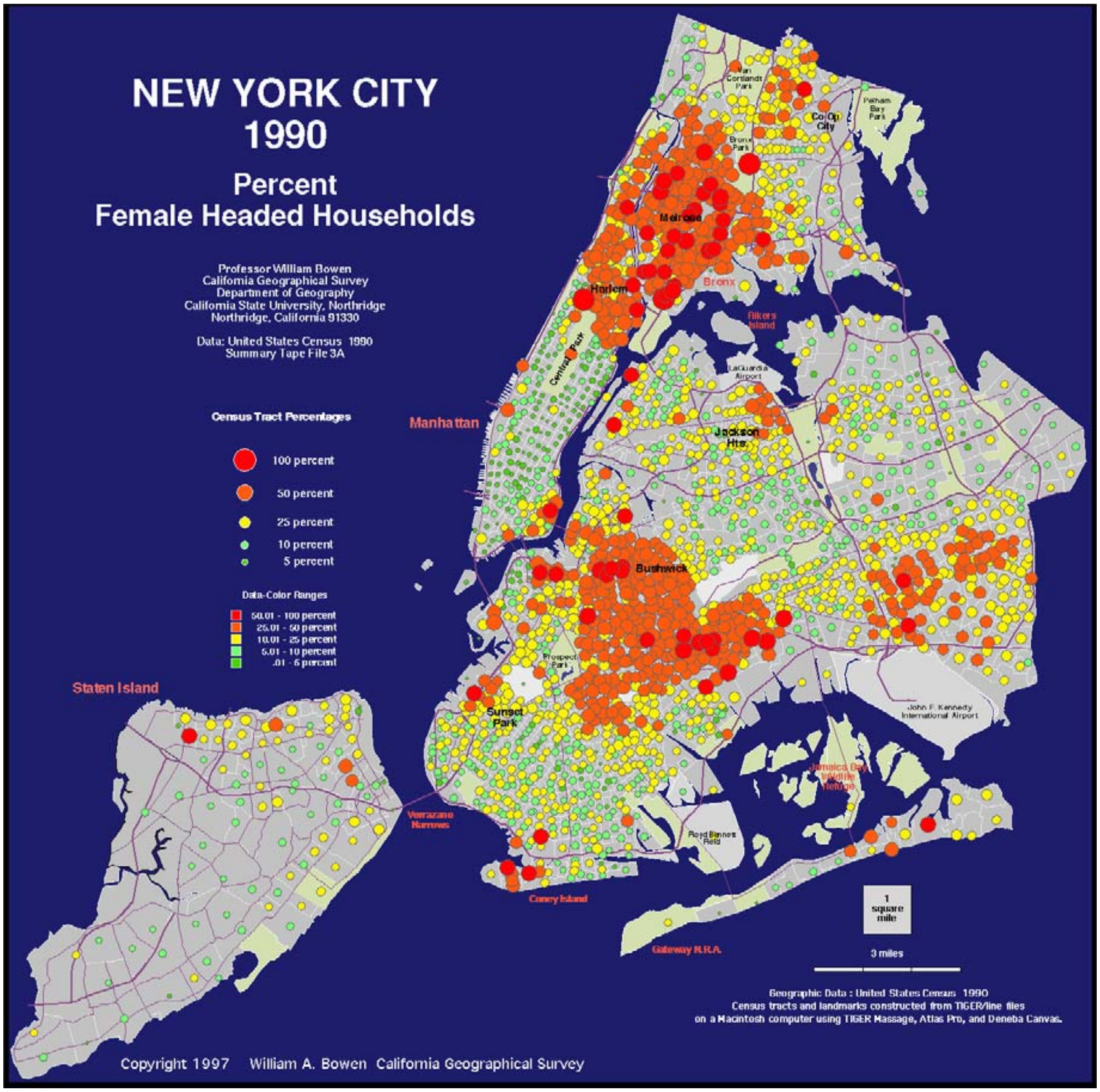
Annual average is based on monthly rates from July 2000 through June 2001.

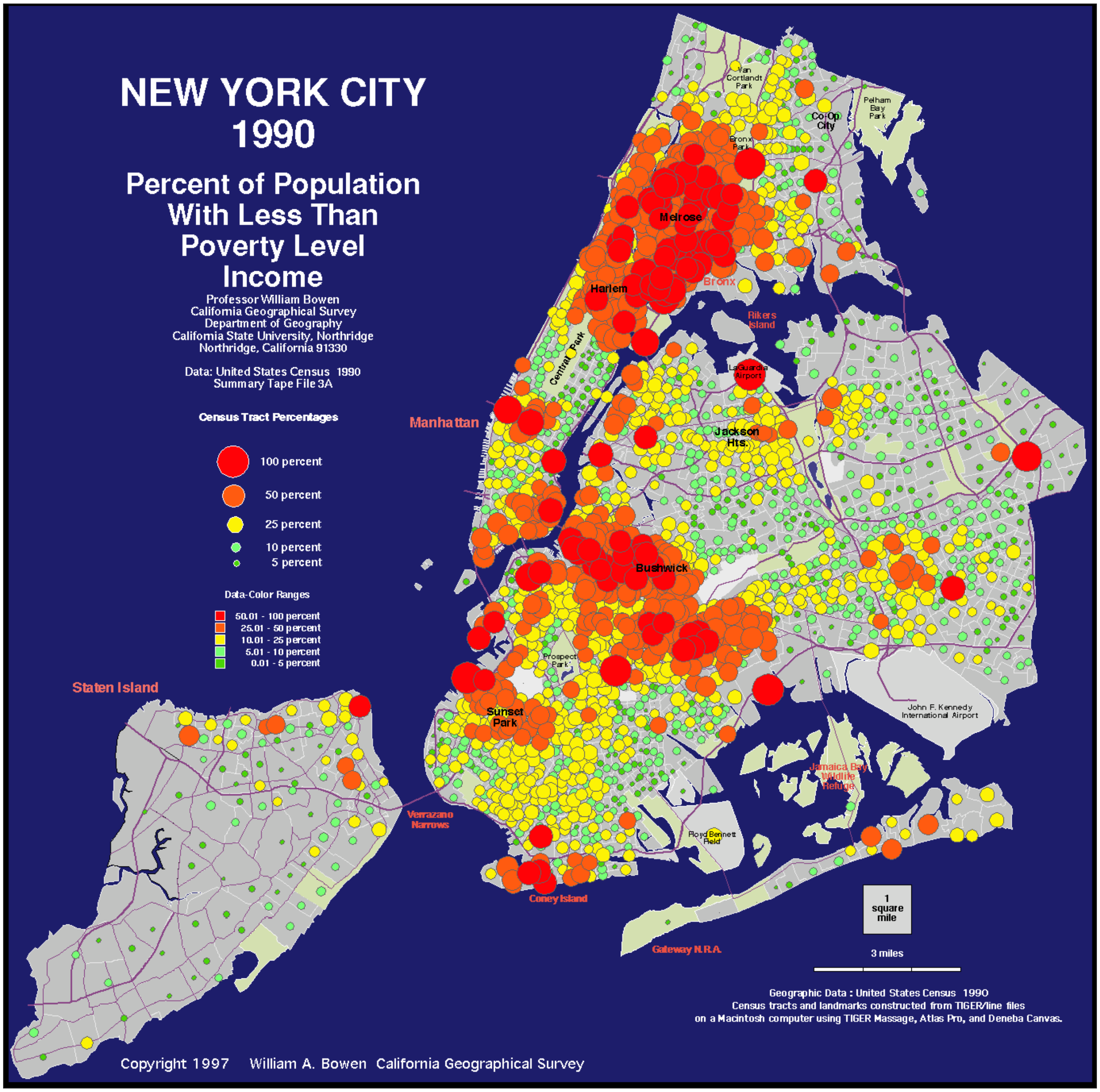
Bx8
25
Bx12
22.8
Bx7
17.7
M12
16.2
Bx11
22.4
Bx9
12.8
Bx2
13.2
Bx1
11.9
M11
13.6
Q1
23.3
Q7
24.9
Q3
19.7
M5
25.9
Q2
24.9
Q4
19.1
Q8
24.5
M3
17.8
Bk1
17.1
Q13
23.1
Bk2
25.9
Q9
24.5
Q12
18.1
Bk3
12.5
Bk6
30.9
Bk8
16.2
Bk5
15.4
Q10
23.4
Bk9
15.5
Bk7
23.6
Bk17
16.6
Bk12
20.6
Bk14
18.3
SI 1
22.7
Bk10
28
Bk18
23.5
Bk11
24.6
SI 2
24
Bk15
24.6
Q14
19.3
Bk13
19.2
SI 3
26.1

DIVERSION RATE FOR NEW YORK CITY AS A WHOLE: 20.1%

Associations (Explanations?)

Though what is presented here is not a thorough GIS analysis, it is instructive to look at maps of NYC that show demographic factors to see if there are some noticeable relationships. First let's examine maps that appear to show a relationship with those sanitation districts with poor diversion rates. The maps were downloaded from William Brown, California Geographical Survey: 1997, 2001. http://geogdata.csun.edu/NYpage1.html


NEW YORK CITY
1990
Percent
Female Headed Households
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 1990
Summary Tape File 3A
Census Tract Percentages
100 percent
50 percent
25 percent
10 percent
5 percent
Data-Color Ranges
50.01 - 100 percent
25.01 - 50 percent
10.01 - 25 percent
5.01 - 10 percent
.01 - 5 percent
Manhattan
Staten Island
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Melrose
Bronx
Harlem
Central Park
Rikers Island
LaGuardia Airport
Jackson Hts.
Bushwick
Prospect Park
Sunset Park
John F. Kennedy International Airport
Jamaica Bay Wildlife Refuge
Floyd Bennett Field
Verrazano Narrows
Coney Island
Gateway N.R.A.
1 square mile
3 miles
Geographic Data : United States Census 1990
Census tracts and landmarks constructed from TIGER/line files
on a Macintosh computer using TIGER Massage, Atlas Pro, and Deneba Canvas.
Copyright 1997 William A. Bowen California Geographical Survey


NEW YORK CITY
1990
Percent of Population With Less Than Poverty Level Income
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 1990
Summary Tape File 3A
Census Tract Percentages
100 percent
50 percent
25 percent
10 percent
5 percent
Data-Color Ranges
50.01 - 100 percent
25.01 - 50 percent
10.01 - 25 percent
5.01 - 10 percent
0.01 - 5 percent
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Melrose
Harlem
Bronx
Rikers Island
Central Park
LaGuardia Airport
Manhattan
Jackson Hts.
Bushwick
Prospect Park
Sunset Park
Staten Island
John F. Kennedy International Airport
Jamaica Bay Wildlife Refuge
Verrazano Narrows
Floyd Bennett Field
Coney Island
Gateway N.R.A.
1 square mile
3 miles
Geographic Data : United States Census 1990
Census tracts and landmarks constructed from TIGER/line files
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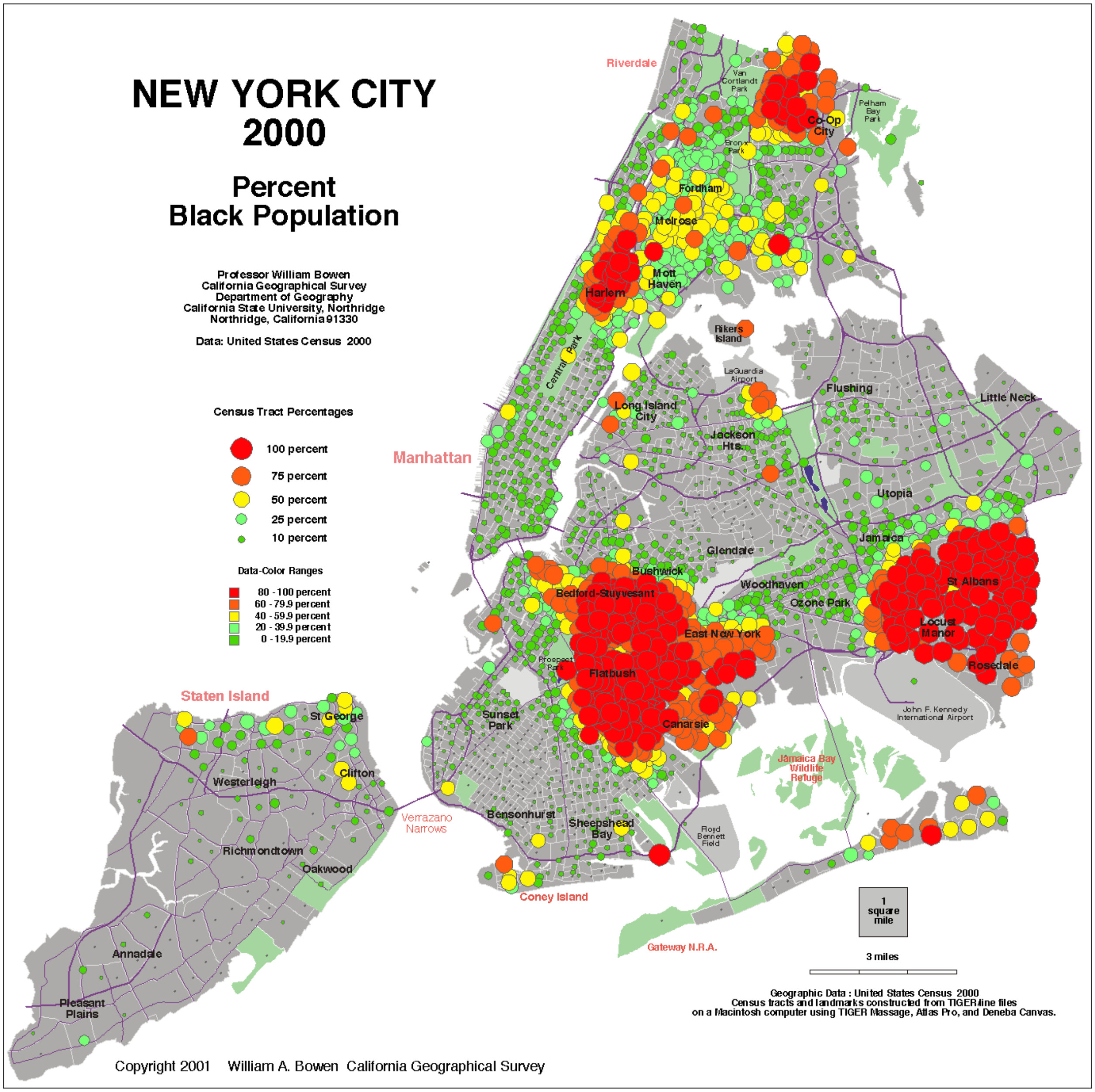
NEW YORK CITY
2000
Percent
Black Population
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 2000
Census Tract Percentages
100 percent
75 percent
50 percent
25 percent
10 percent
Data-Color Ranges
80 - 100 percent
60 - 79.9 percent
40 - 59.9 percent
20 - 39.9 percent
0 - 19.9 percent
Riverdale
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Fordham
Melrose
Mott Haven
Harlem
Central Park
Rikers Island
LaGuardia Airport
Flushing
Little Neck
Long Island City
Jackson Hts.
Manhattan
Utopia
Jamaica
Glendale
Bushwick
Woodhaven
Bedford-Stuyvesant
Ozone Park
St Albans
East New York
Locust Manor
Prospect Park
Flatbush
Rosedale
Staten Island
St George
Sunset Park
Canarsie
John F. Kennedy International Airport
Jamaica Bay Wildlife Refuge
Clifton
Westerleigh
Verrazano Narrows
Bensonhurst
Sheepshead Bay
Floyd Bennett Field
Richmondtown
Oakwood
Coney Island
1 square mile
Gateway N.R.A.
3 miles
Annadale
Pleasant Plains
Geographic Data : United States Census 2000
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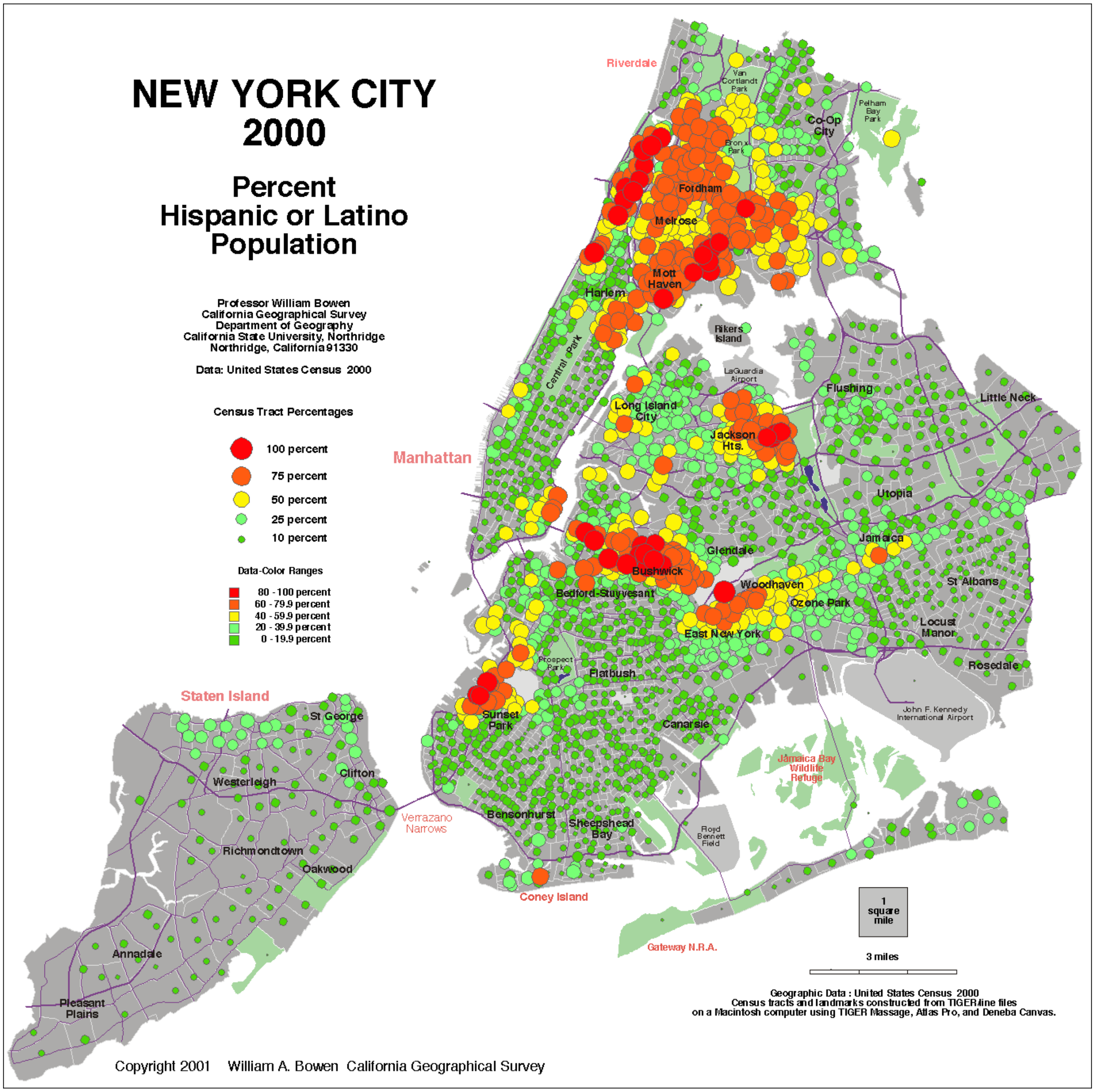
NEW YORK CITY
2000
Percent
Hispanic or Latino
Population
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 2000
Census Tract Percentages
100 percent
75 percent
50 percent
25 percent
10 percent
Data-Color Ranges
80 - 100 percent
60 - 79.9 percent
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0 - 19.9 percent
Riverdale
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Fordham
Melrose
Mott Haven
Harlem
Central Park
Rikers Island
LaGuardia Airport
Flushing
Little Neck
Long Island City
Jackson Hts.
Manhattan
Utopia
Jamaica
Glendale
Bushwick
Woodhaven
St Albans
Bedford-Stuyvesant
Ozone Park
Locust Manor
East New York
Prospect Park
Flatbush
Rosedale
Staten Island
St George
Sunset Park
Canarsie
John F. Kennedy International Airport
Jamaica Bay Wildlife Refuge
Clifton
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Bensonhurst
Sheepshead Bay
Floyd Bennett Field
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Gateway N.R.A.
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Pleasant Plains
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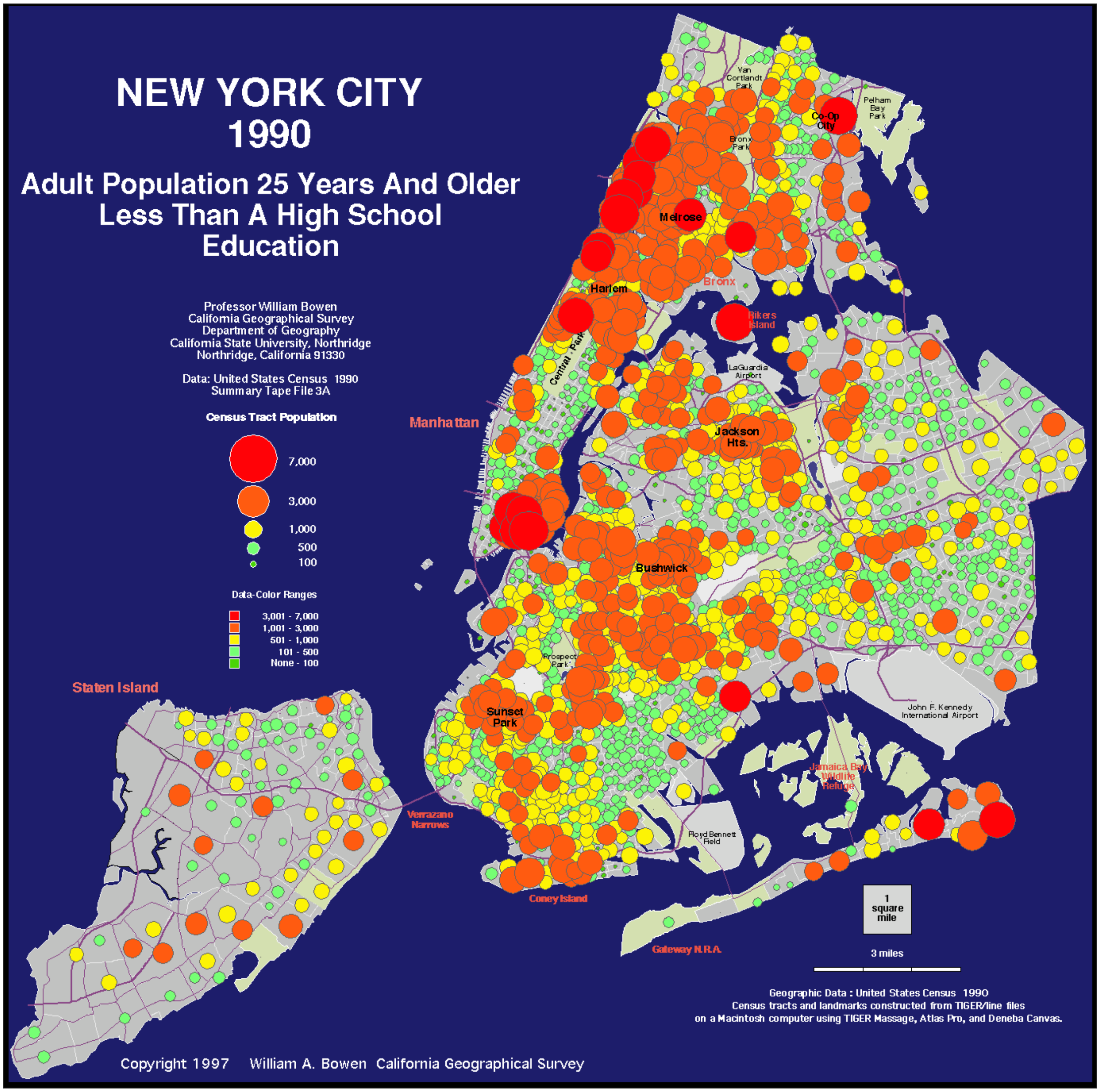
NEW YORK CITY
1990
Adult Population 25 Years And Older Less Than A High School Education
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 1990
Summary Tape File 3A
Census Tract Population
7,000
3,000
1,000
500
100
Data-Color Ranges
3,001 - 7,000
1,001 - 3,000
501 - 1,000
101 - 500
None - 100
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Melrose
Harlem
Bronx
Rikers Island
Central Park
LaGuardia Airport
Manhattan
Jackson Hts.
Bushwick
Prospect Park
Staten Island
Sunset Park
John F. Kennedy International Airport
Jamaica Bay Wildlife Refuge
Verrazano Narrows
Floyd Bennett Field
Coney Island
Gateway N.R.A.
1 square mile
3 miles
Geographic Data : United States Census 1990
Census tracts and landmarks constructed from TIGER/line files
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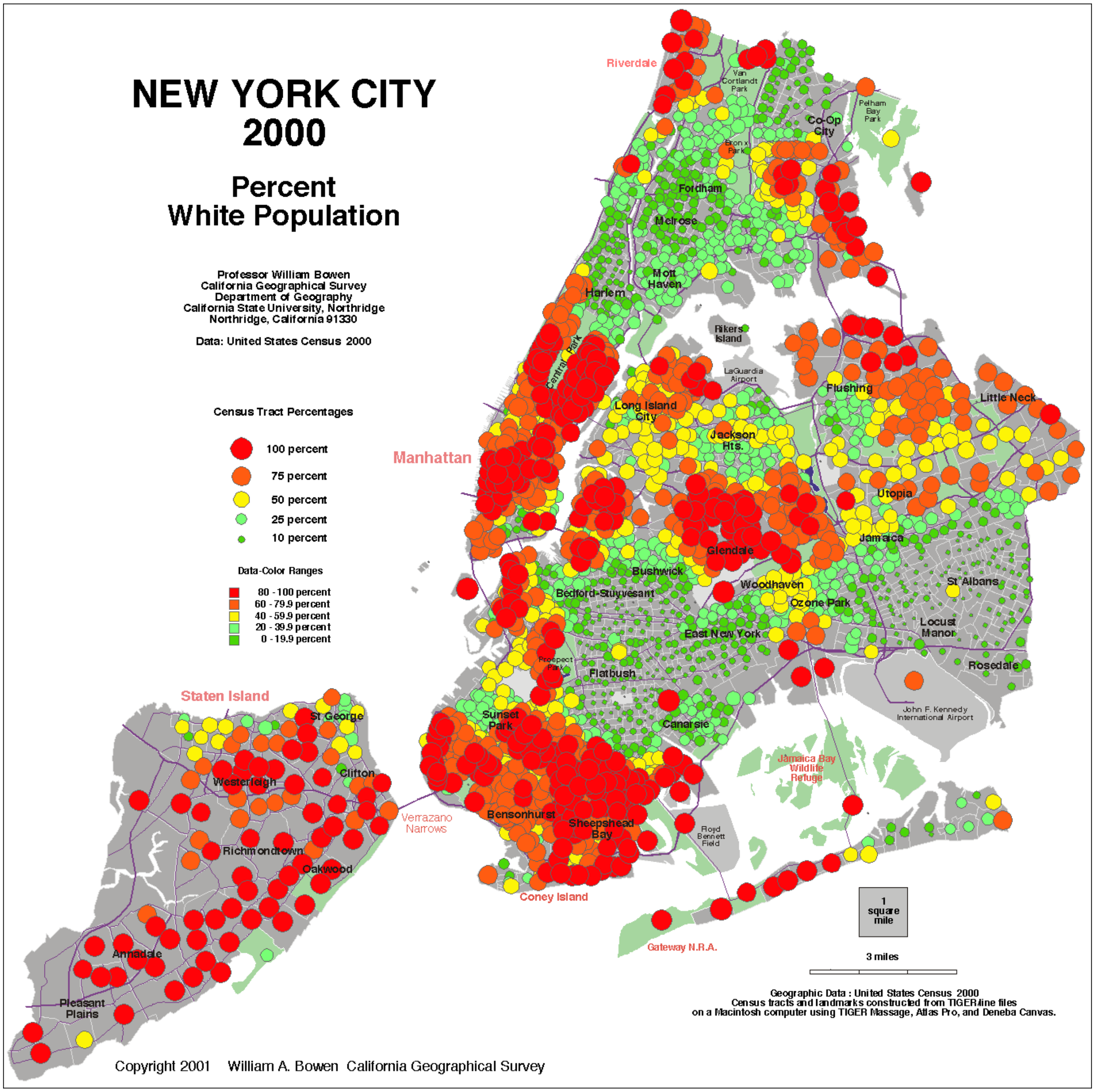
Though none of the maps of race, ethnicity, income level, educational level, and household characteristic provide a perfect match on an individual basis for the map of the worst 12 recycling districts, there are enough similarities between these maps and the poor recycling districts that a multivariate analysis using these variables would probably yield useful results.

The following are some maps of race, income level and educational level that appear to show similarities to the best recycling districts in the NYC recycling diversion rate map.


NEW YORK CITY
2000
Percent
White Population
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 2000
Census Tract Percentages
100 percent
75 percent
50 percent
25 percent
10 percent
Data-Color Ranges
80 - 100 percent
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Staten Island
St George
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Richmondtown
Oakwood
Annadale
Pleasant Plains
1 square mile
3 miles
Geographic Data : United States Census 2000
Census tracts and landmarks constructed from TIGER/line files
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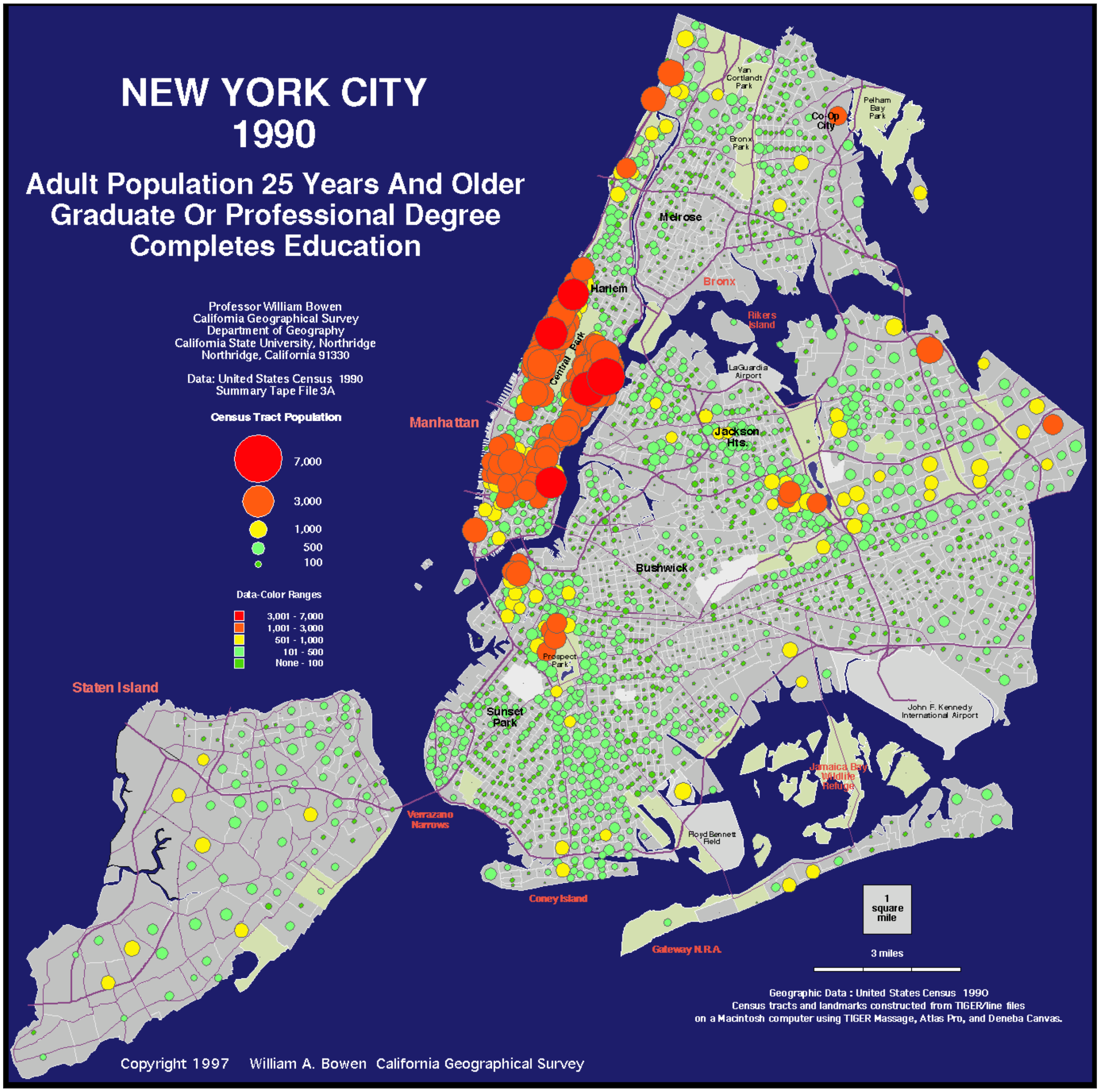
NEW YORK CITY
1990
Adult Population 25 Years And Older
Graduate Or Professional Degree
Completes Education
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 1990
Summary Tape File 3A
Census Tract Population
7,000
3,000
1,000
500
100
Data-Color Ranges
3,001 - 7,000
1,001 - 3,000
501 - 1,000
101 - 500
None - 100
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Melrose
Harlem
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Rikers Island
Central Park
LaGuardia Airport
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Census tracts and landmarks constructed from TIGER/line files
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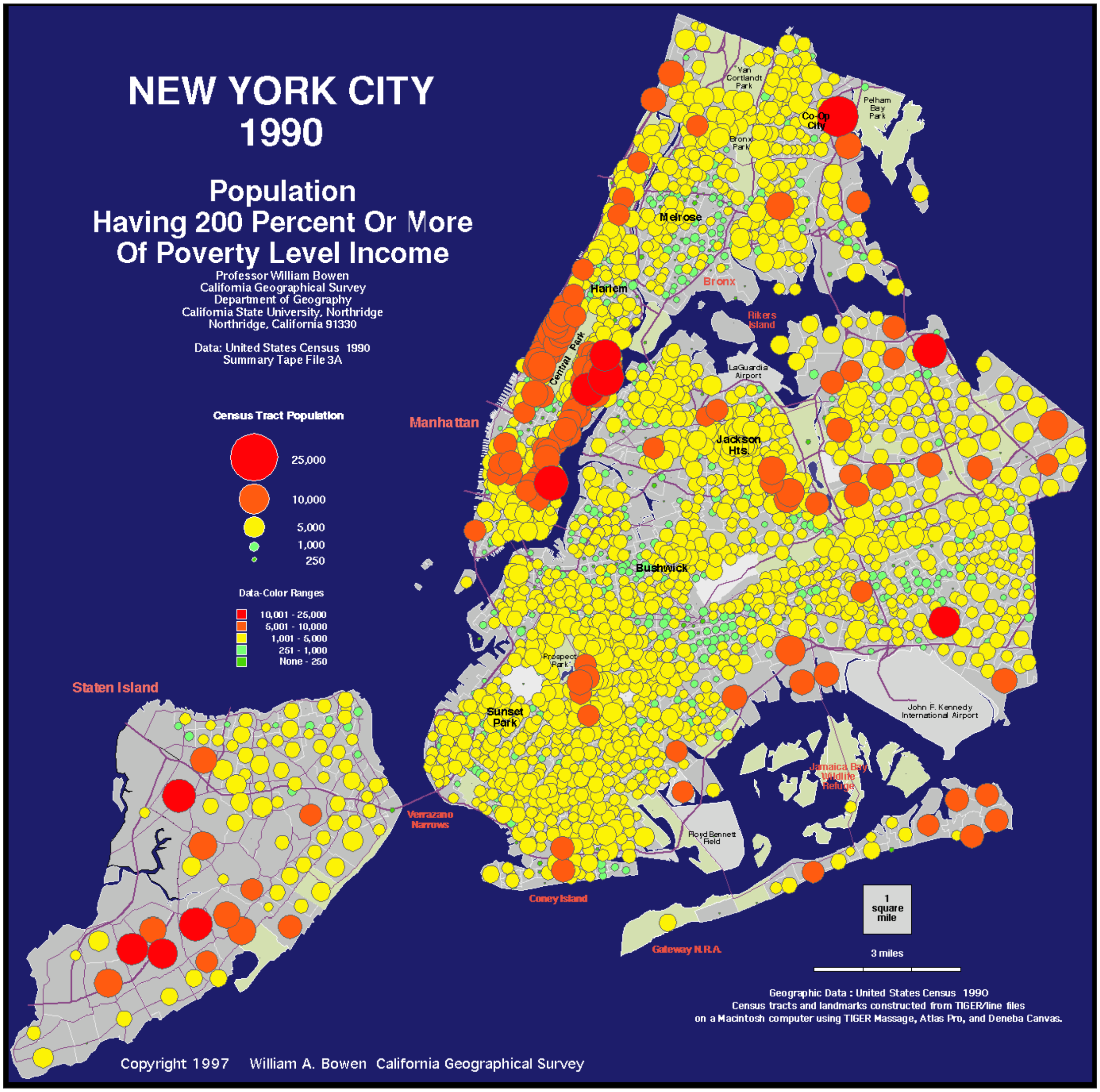
NEW YORK CITY
1990
Population
Having 200 Percent Or More
Of Poverty Level Income
Professor William Bowen
California Geographical Survey
Department of Geography
California State University, Northridge
Northridge, California 91330
Data: United States Census 1990
Summary Tape File 3A
Census Tract Population
25,000
10,000
5,000
1,000
250
Data-Color Ranges
10,001 - 25,000
5,001 - 10,000
1,001 - 5,000
251 - 1,000
None - 250
Van Cortlandt Park
Pelham Bay Park
Co-Op City
Bronx Park
Melrose
Harlem
Bronx
Rikers Island
Central Park
LaGuardia Airport
Manhattan
Jackson Hts.
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DOS' Study of Low Diversion Districts in Bronx and Brooklyn

In 1997 DOS conducted a study of low-diversion districts[6] for the purpose of analyzing the efficacy of abandoning source separation in those areas and replacing it with automated, centralized mixed waste processing facilities (dirty MRFs). Some of the same Bronx and Brooklyn districts were chosen as in the 2001 twelve worst recycling districts, and similar information on education, income, ethnicity, as well as language and housing variables are given.

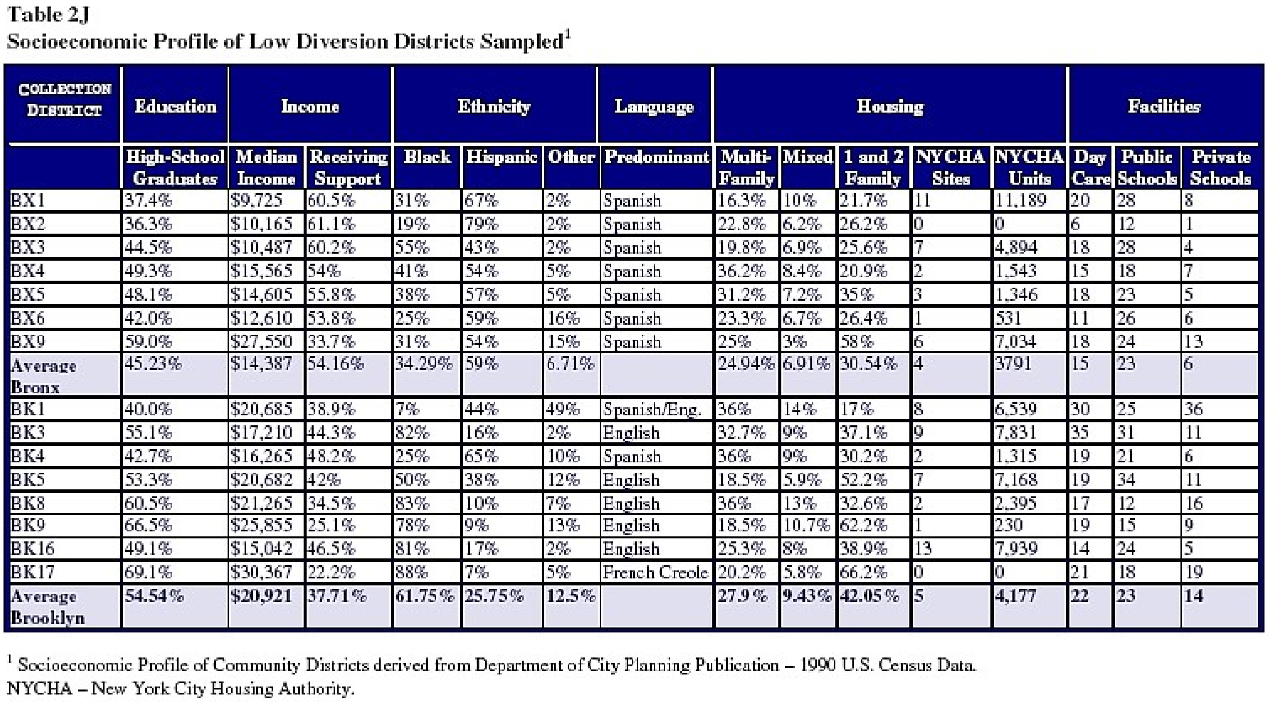

Table 2J
Socioeconomic Profile of Low Diversion Districts Sampled[1]

COLLECTION DISTRICT	Education	Income		Ethnicity			Language	Housing					Facilities		
	High-School Graduates	Median Income	Receiving Support	Black	Hispanic	Other	Predominant	Multi-Family	Mixed	1 and 2 Family	NYCHA Sites	NYCHA Units	Day Care	Public Schools	Private Schools
BX1	37.4%	$9,725	60.5%	31%	67%	2%	Spanish	16.3%	10%	21.7%	11	11,189	20	28	8
BX2	36.3%	$10,165	61.1%	19%	79%	2%	Spanish	22.8%	6.2%	26.2%	0	0	6	12	1
BX3	44.5%	$10,487	60.2%	55%	43%	2%	Spanish	19.8%	6.9%	25.6%	7	4,894	18	28	4
BX4	49.3%	$15,565	54%	41%	54%	5%	Spanish	36.2%	8.4%	20.9%	2	1,543	15	18	7
BX5	48.1%	$14,605	55.8%	38%	57%	5%	Spanish	31.2%	7.2%	35%	3	1,346	18	23	5
BX6	42.0%	$12,610	53.8%	25%	59%	16%	Spanish	23.3%	6.7%	26.4%	1	531	11	26	6
BX9	59.0%	$27,550	33.7%	31%	54%	15%	Spanish	25%	3%	58%	6	7,034	18	24	13
Average Bronx	45.23%	$14,387	54.16%	34.29%	59%	6.71%		24.94%	6.91%	30.54%	4	3791	15	23	6
BK1	40.0%	$20,685	38.9%	7%	44%	49%	Spanish/Eng.	36%	14%	17%	8	6,539	30	25	36
BK3	55.1%	$17,210	44.3%	82%	16%	2%	English	32.7%	9%	37.1%	9	7,831	35	31	11
BK4	42.7%	$16,265	48.2%	25%	65%	10%	Spanish	36%	9%	30.2%	2	1,315	19	21	6
BK5	53.3%	$20,682	42%	50%	38%	12%	English	18.5%	5.9%	52.2%	7	7,168	19	34	11
BK8	60.5%	$21,265	34.5%	83%	10%	7%	English	36%	13%	32.6%	2	2,395	17	12	16
BK9	66.5%	$25,855	25.1%	78%	9%	13%	English	18.5%	10.7%	62.2%	1	230	19	15	9
BK16	49.1%	$15,042	46.5%	81%	17%	2%	English	25.3%	8%	38.9%	13	7,939	14	24	5
BK17	69.1%	$30,367	22.2%	88%	7%	5%	French Creole	20.2%	5.8%	66.2%	0	0	21	18	19
Average Brooklyn	**54.54%**	**$20,921**	**37.71%**	**61.75%**	**25.75%**	**12.5%**		**27.9%**	**9.43%**	**42.05%**	**5**	**4,177**	**22**	**23**	**14**

[1] Socioeconomic Profile of Community Districts derived from Department of City Planning Publication – 1990 U.S. Census Data.
NYCHA – New York City Housing Authority.

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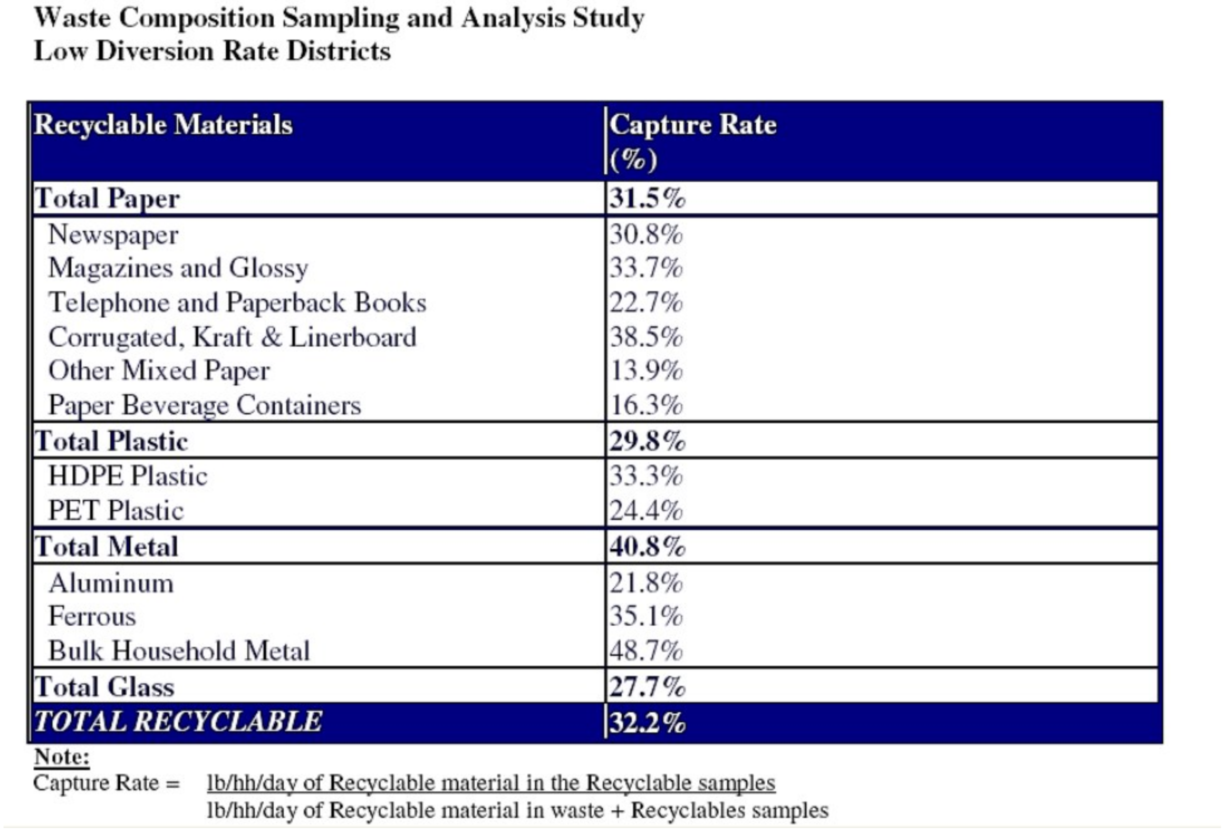
[6] Mixed Waste Processing in New York City – A Pilot Test Evaluation, NYC DOS, October, 1999. http://www.nyc.gov/html/dos/pdf/pubnrpts/recyrpts/mixed_waste.pdf

The following table shows capture rate for these low-diversion districts in 1997.



Waste Composition Sampling and Analysis Study
Low Diversion Rate Districts

Recyclable Materials	Capture Rate (%)
Total Paper	**31.5%**
Newspaper	30.8%
Magazines and Glossy	33.7%
Telephone and Paperback Books	22.7%
Corrugated, Kraft & Linerboard	38.5%
Other Mixed Paper	13.9%
Paper Beverage Containers	16.3%
Total Plastic	**29.8%**
HDPE Plastic	33.3%
PET Plastic	24.4%
Total Metal	**40.8%**
Aluminum	21.8%
Ferrous	35.1%
Bulk Household Metal	48.7%
Total Glass	**27.7%**
TOTAL RECYCLABLE	**32.2%**

Note:

Capture Rate = lb/hh/day of Recyclable material in the Recyclable samples / lb/hh/day of Recyclable material in waste + Recyclables samples

By comparison, capture rates in the most recent DOS Residential Recycling Diversion Report for June 2003 [7] shows the following (note capture rate dropped precipitously from June 2002 to June 2003 probably due to the decision to stop collecting plastic, glass, and wax paper containers in July 2002). This change was shown to have caused a drop of 10-12% in paper diversion even though paper recycling was unaffected by the change in policy.

Worst 12 Diversion districts in June 2003	Total Diversion June 2003	Total Diversion June 2002	Capture Rate June 2003	Capture Rate June 2002
Bx6	5.0%	11.8%	15.3%	27.2%
Bx3	5.0%	9.2%	15.4%	21.3%
Bx2	5.4%	12.5%	16.3%	29.0%
Bx4	5.4%	10.0%	16.6%	23.2%
Bk16	5.5%	10.5%	17.3%	26.1%
Bx1	5.5%	11.1%	16.9%	25.9%
Bk4	5.8%	13.7%	18.0%	34.1%
Bk3	6.2%	12.3%	19.3%	30.5%
Bx9	6.3%	11.8%	17.0%	25.1%
Bx5	6.4%	14.7%	19.6%	34.1%
M10	6.6%	10.5%	20.3%	24.4%
Bk5	6.7%	14.2%	20.8%	34.6%

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[7] "Residential Recycling Diversion Report for June 2003", from Larry Cipollina, September 8, 2003.

The best 12 diversion districts also suffered a drop in diversion and capture rates after plastic and glass recycling was dropped, but not to the degree suffered in the low-diversion districts:

Best 12 Diversion districts in June 2003	**Total Diversion June 2003**	**Total Diversion June 2002**	**Capture Rate June 2003**	**Capture Rate June 2002**
M1	24.0%	32.9%	59.3%	66.8%
M8	20.7%	30.8%	50.4%	61.9%
M6	20.5%	30.1%	49.7%	50.5%
M7	20.3%	28.9%	49.0%	57.8%
Bk6	19.7%	30.4%	55.1%	67.6%
M2	19.6%	30.2%	48.7%	61.6%
M4	19.3%	30.0%	45.7%	59.0%
Q11	17.5%	25.6%	55.0%	66.5%
Bk10	17.0%	26.3%	49.0%	62.9%
Q6	16.8%	25.2%	46.7%	59.2%
Q5	16.4%	26.6%	49.9%	66.3%
M5	16.2%	24.6%	39.3%	49.4%

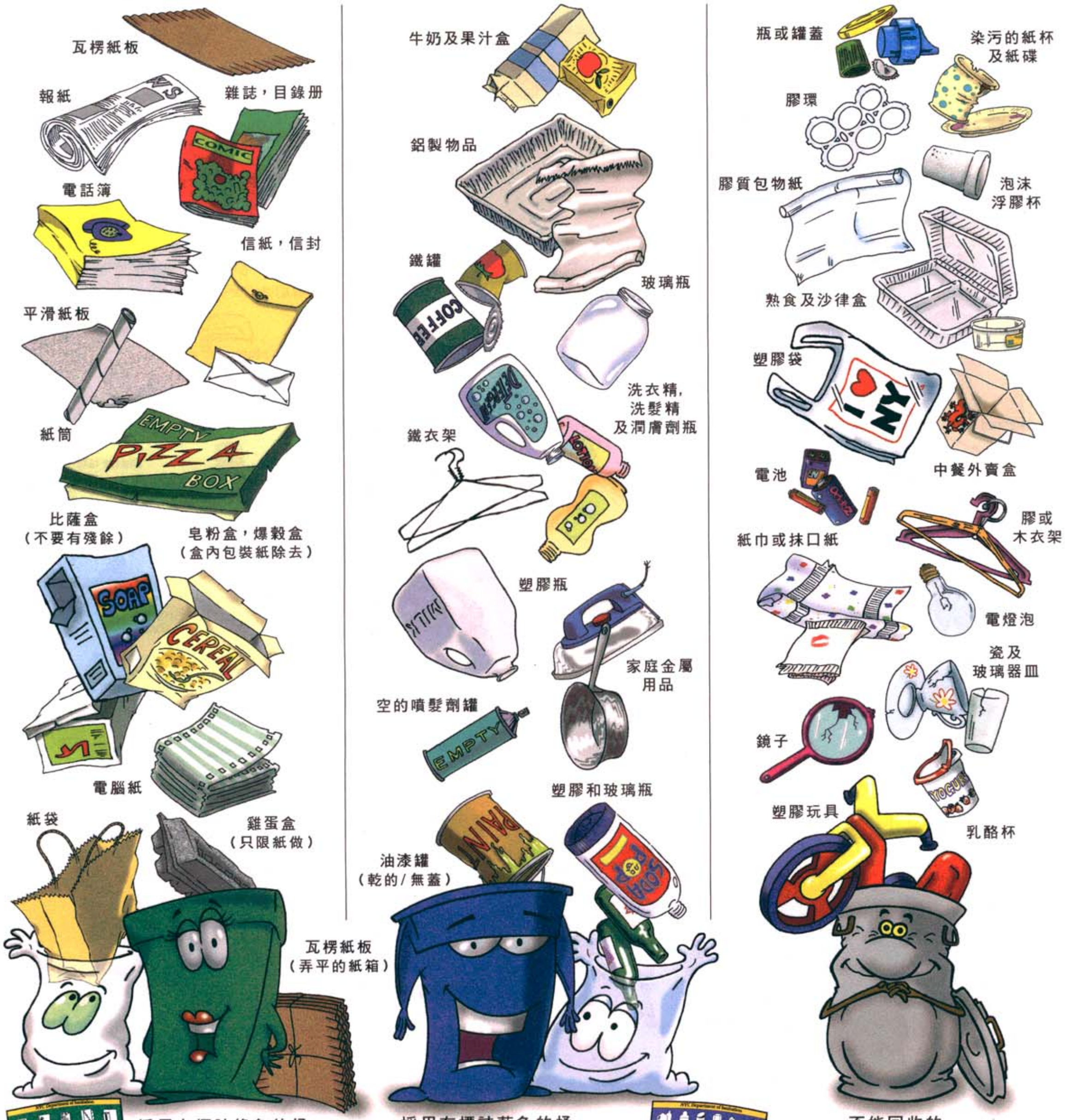
Analysis

The questions are, why is there so much difference in capture and diversion between the best and worst districts in New York City, and how can the low-diversion districts be brought up to the same level of capture and diversion rates as the best performing districts? This would involve doubling the capture rate and tripling the diversion rate. If DOS' survey of residents' understanding of the recycling program requirements is accurate, and everyone in the city has the same understanding of what items are recyclable, regardless of demographic factors, then what causes some people not to perform the recycling behavior? Barriers to recycling could be one answer. Such barriers can include differences in building design that makes it more difficult to recycle (e.g., tenants must bring recyclables downstairs, outside, or further away in a housing complex vs. leaving recyclables in a recycling / chute room on their floor), or uncooperative building management / superintendent that provides insufficient space / cleanliness of recycling area that is poorly labeled. But cultural norms and educational levels could be other important factors influencing how a community responds to changes in government programs, as indicated by the associations shown on the demographic maps.

Conclusions

Providing recycling educational literature in many languages is only the first step in achieving high capture and diversion rates in all areas of a culturally diverse city. It makes sense for DOS to explore the steps between understanding and implementation of behaviors to see where there is a problem. DOS should do its best to identify and reduce any barriers to recycling (e.g., require building managers to provide sufficient bins and servicing for them) and to tailor educational signage to different types of building layout (e.g., "Bring your recyclables to the Basement – or Vestibule – or Sidewalk – or Courtyard, etc"). Clearly the City needs to reduce the number of changes in its recycling program, as those confuse and anger many residents and building supers. DOS would be well advised to explore whether differences in cultural values could be addressed by tailoring their educational devices.

有你的協助，
每樣東西都能落在適當的位置


瓦楞紙板
報紙
雜誌，目錄冊
電話簿
信紙，信封
平滑紙板
紙筒
比薩盒
（不要有殘餘）
皂粉盒，爆穀盒
（盒內包裝紙除去）
電腦紙
紙袋
雞蛋盒
（只限紙做）
瓦楞紙板
（弄平的紙箱）
牛奶及果汁盒
鋁製物品
鐵罐
玻璃瓶
洗衣精，
洗髮精
及潤膚劑瓶
鐵衣架
塑膠瓶
家庭金屬
用品
空的噴髮劑罐
塑膠和玻璃瓶
油漆罐
（乾的/無蓋）
瓶或罐蓋
染污的紙杯
及紙碟
膠環
膠質包物紙
泡沫
浮膠杯
熟食及沙律盒
塑膠袋
中餐外賣盒
電池
膠或
木衣架
紙巾或抹口紙
電燈泡
瓷及
玻璃器皿
鏡子
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紐約市市長 Rudolph W. Giuliani
清潔局局長 Kevin P. Farrell

10/99

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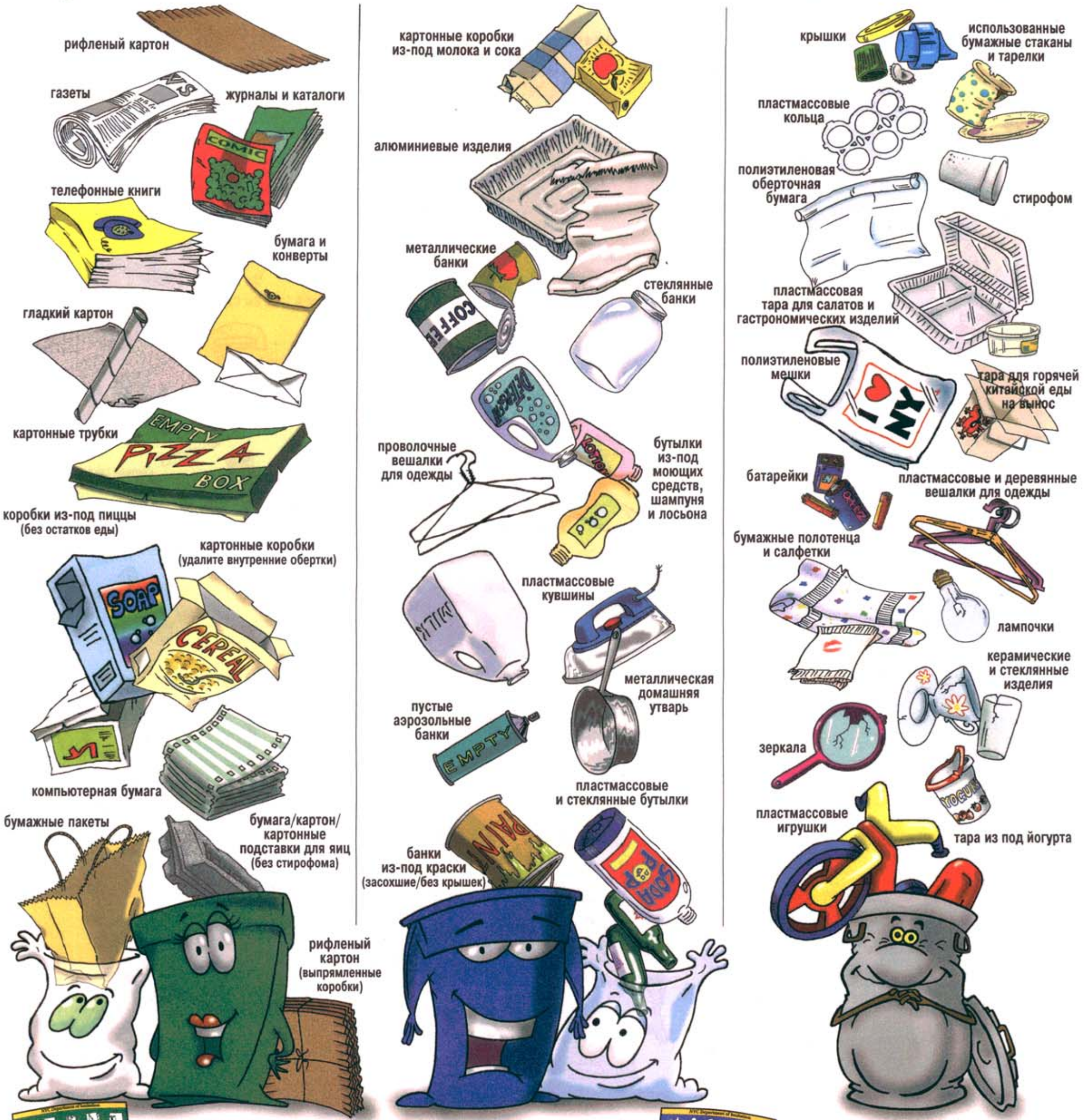
рифленый картон
газеты
журналы и каталоги
телефонные книги
бумага и конверты
гладкий картон
картонные трубки
коробки из-под пиццы (без остатков еды)
картонные коробки (удалите внутренние обертки)
компьютерная бумага
бумажные пакеты
бумага/картон/картонные подставки для яиц (без стирофома)
рифленый картон (выпрямленные коробки)
картонные коробки из-под молока и сока
алюминиевые изделия
металлические банки
стеклянные банки
проволочные вешалки для одежды
бутылки из-под моющих средств, шампуня и лосьона
пластмассовые кувшины
металлическая домашняя утварь
пустые аэрозольные банки
пластмассовые и стеклянные бутылки
банки из-под краски (засохшие/без крышек)
крышки
использованные бумажные стаканы и тарелки
пластмассовые кольца
полиэтиленовая оберточная бумага
стирофом
пластмассовая тара для салатов и гастрономических изделий
полиэтиленовые мешки
тара для горячей китайской еды на вынос
батарейки
пластмассовые и деревянные вешалки для одежды
бумажные полотенца и салфетки
лампочки
керамические и стеклянные изделия
зеркала
пластмассовые игрушки
тара из под йогурта
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г. Нью-Йорк, мэр Rudolph W. Giuliani
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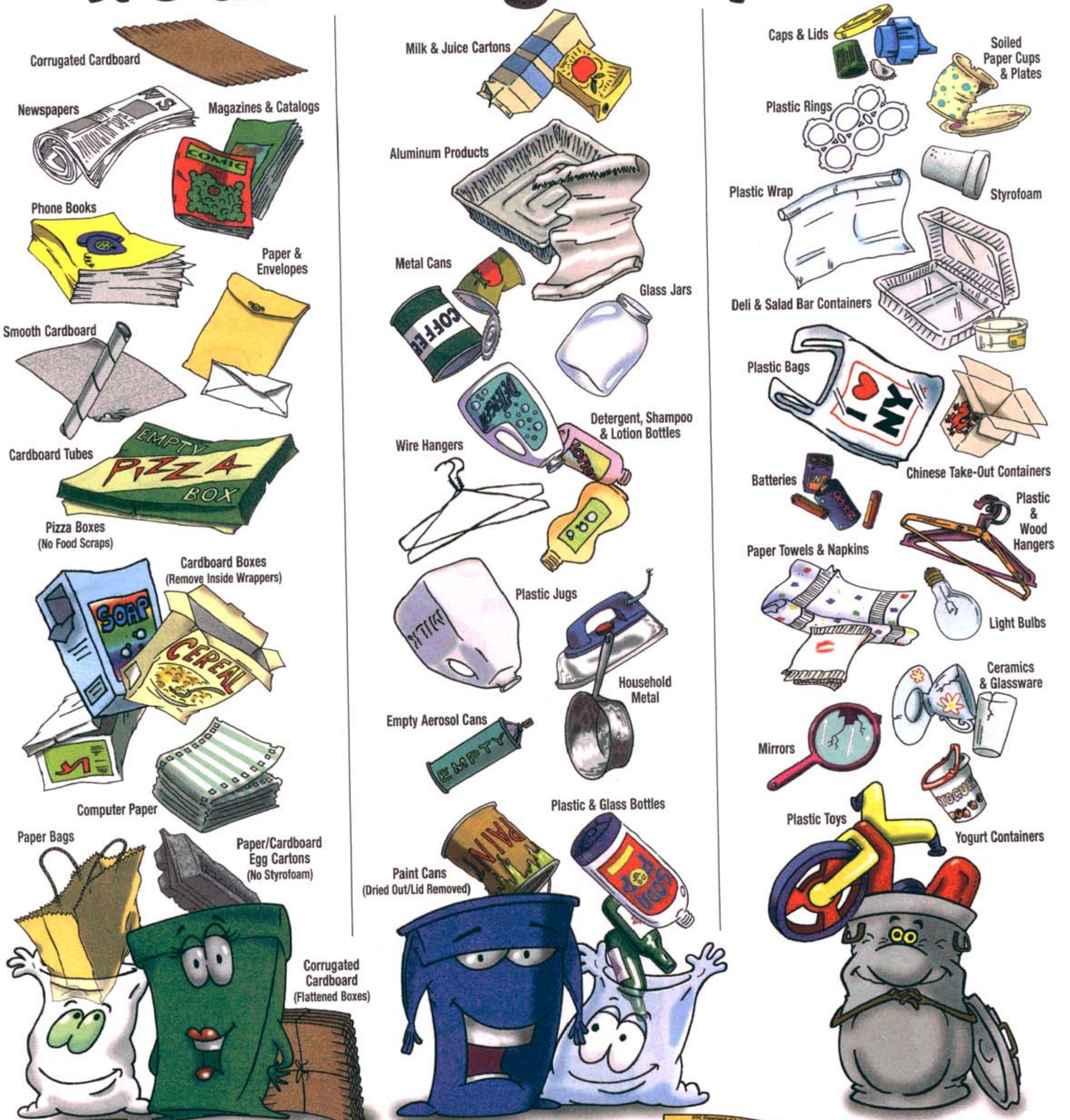
Corrugated Cardboard
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Smooth Cardboard
Cardboard Tubes
Pizza Boxes (No Food Scraps)
Cardboard Boxes (Remove Inside Wrappers)
Computer Paper
Paper Bags
Paper/Cardboard Egg Cartons (No Styrofoam)
Corrugated Cardboard (Flattened Boxes)
Milk & Juice Cartons
Aluminum Products
Metal Cans
Glass Jars
Detergent, Shampoo & Lotion Bottles
Wire Hangers
Plastic Jugs
Household Metal
Empty Aerosol Cans
Plastic & Glass Bottles
Paint Cans (Dried Out/Lid Removed)
Caps & Lids
Soiled Paper Cups & Plates
Plastic Rings
Plastic Wrap
Styrofoam
Deli & Salad Bar Containers
Plastic Bags
Chinese Take-Out Containers
Batteries
Plastic & Wood Hangers
Paper Towels & Napkins
Light Bulbs
Ceramics & Glassware
Mirrors
Plastic Toys
Yogurt Containers

Use labeled bins (preferably Green), clear bags or any bin with this Green decal.

Use labeled bins (preferably Blue), Blue translucent bags or any bin with this Blue decal.

Non-recyclables

Empty and rinse all containers; remove caps and lids. Labels are OK.

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Department of Sanitation, Kevin P. Farrell, Commissioner
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