The State of Sustainable New York City

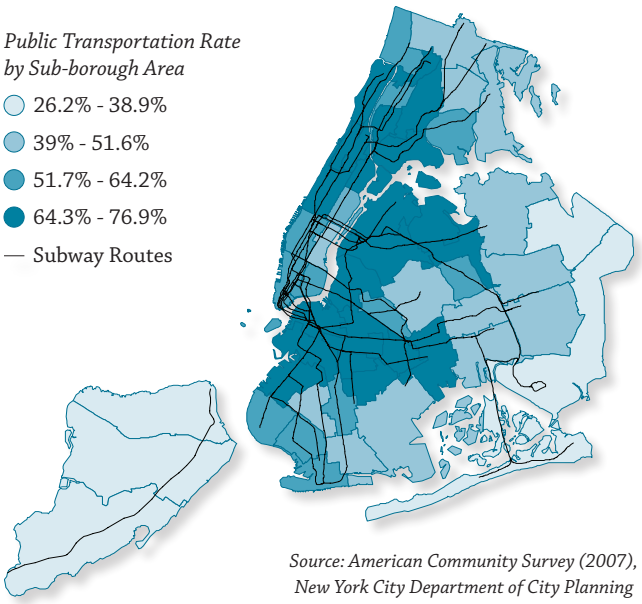
In the past few years, cities around the world have taken on the challenge of environmental sustainability in a more meaningful way. From the C40 Climate Leadership Group to New York City's *PlaNYC 2030*, urban leaders are recognizing the tremendous challenges ahead and responding with new strategies for reducing waste and increasing efficiency. To establish a baseline for how the City and its neighborhoods are performing on various environmental indicators, and to better identify areas where additional resources may be necessary, this year the *State of the City* includes a number of new environmental measures. Specifically, we find each neighborhood's proximity to important environmental amenities and disamenities; we evaluate each neighborhood's access to the subway and its rate of public transportation use; and we examine neighborhood recycling habits and residential waste production.

While this analysis is too brief to serve as an evaluation of the City's *PlaNYC 2030*, we hope these indicators are helpful as the City moves forward with its various new initiatives to "green" New York City.

Transit

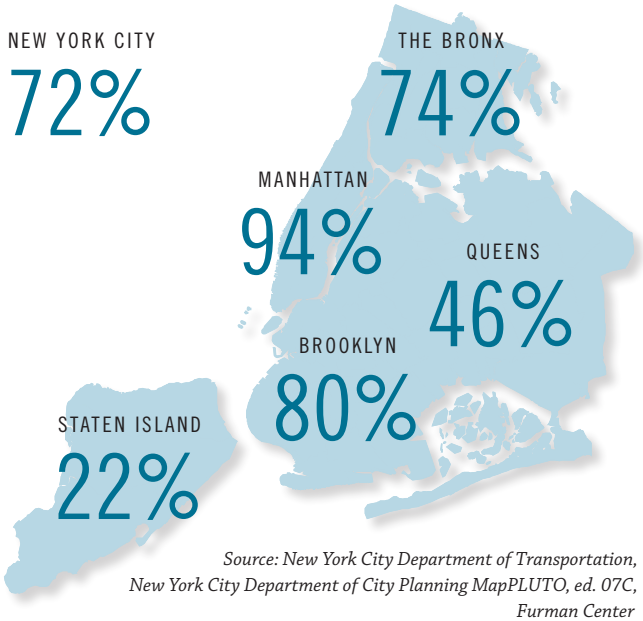
Adequate access to public transportation is vital to New York City's vibrancy, livability and environmental sustainability. Recognizing this, *PlaNYC 2030* articulates several initiatives to increase mass transit ridership by expanding transit infrastructure, extending coverage, and ensuring that 95% of new housing opportunities are within half a mile of a subway station. To assess each neighborhood's access to public transportation, we look at both the percentage of residential units in each neighborhood that are presently within a half-mile walk of an MTA subway station entrance and the share of commuters using public transportation.[1] In regard to the first measure, we find that 71.5 percent of citywide residential units are within this distance (including almost every unit in Manhattan). Our second measure, public transportation usage, shows that 56.7 percent of City commuters rely on public transportation for their daily commute. **FIGURE 1** shows the share of commuters who regularly get to work via public transportation as a percentage of total commuters in 2007.[2] In neighborhoods with easy access to subway stations, a majority of residents tend to rely on public transportation for their daily commute. Neighborhoods farther from Manhattan also tend to have fewer residences close to subway stations and are more likely to use private transportation. **FIGURE 2** shows the share of units within a half mile of a subway station entrance for each borough. The vast majority of *PlaNYC 2030*'s proposed 'areas of opportunity' for additional residential capacity are within half a mile of the City's existing subway stations—a good sign that public transportation use will continue to increase.

Figure 1: Share of Residents Using Public Transit to Commute to Work (2007) by Sub-borough Area



Source: American Community Survey (2007), New York City Department of City Planning

Figure 2: Share of Units Within 1/2 Mile of a Subway Entrance (2007)



Source: New York City Department of Transportation, New York City Department of City Planning MapPLUTO, ed. 07C, Furman Center

Open Space

PlaNYC 2030 tracks accessibility to green space and aims to have 99 percent of New Yorkers within half a mile of a park at least a quarter acre in size by 2030. The City recognizes that for some residents, such as parents with small children and seniors, a 1/4 mile walk is more reasonable. Therefore, the plan aims to have 85 percent of residents within this range by 2030.[3] Our calculations of neighborhood access show that the City has achieved those goals. While our methodology is slightly different from the City's, we find that almost 99 percent of residents are within a half mile of a park and 88.5 percent of residents are within a quarter mile of a park.[4] Perhaps most importantly, our estimates show striking disparities in open space accessibility across the City. In both the Bronx and Manhattan, eleven out of twelve community districts have over 85 percent of residential units near a park, while 13 of the 18 CDs with less than 85 percent accessibility are in Brooklyn and Queens. The neighborhoods with the lowest park accessibility are outlined in **TABLE 1**. The percentage of residential units within a quarter mile of a park is reported on every community district page throughout the *State of the City*.

Table 1: Community Districts with the Smallest Share of Residential Units Within 1/4 Mile of a Park

CD	*Neighborhood*	*Percentage of Units*	*Rank*
410	S. Ozone Park/Howard Bch (QN)	52.9%	59
211	Bensonhurst (BK)	56.4%	58
409	Kew Gardens/Woodhaven (QN)	62.1%	57
112	Williamsbridge/Baychester (BX)	66.4%	56
210	Bay Ridge/Dyker Heights (BK)	67.0%	55
217	East Flatbush (BK)	71.7%	54
214	Flatbush/Midwood (BK)	71.9%	53
503	Tottenville/Great Kills (SI)	74.1%	52
413	Queens Village (QN)	74.2%	51
212	Borough Park (BK)	77.4%	50

Source: New York City Department of Parks and Recreation, New York City Department of City Planning MapPLUTO, Furman Center

[1] A half mile is considered a ten minute walk for an able-bodied adult. We simulated this buffer around every subway station entrance using maps of the New York City street grid and GIS techniques. By taking into account actual street geography, our mapping improves on the traditional "as the crow flies" method and calculates a more accurate estimate of walking distance. We use the New York City Department of City Planning's MapPLUTO database to count residential units. We use data provided by the MTA-New York City Transit for 2005 to locate subway entrances for all the boroughs except Staten Island. Staten Island subway entrances were interpolated by the Furman Center.

[2] Subway, commuter rail, bus, and ferry data come from American Community Survey (2007).

[3] The City goals are set out here: http://www.nyc.gov/html/planyc2030/downloads/pdf/report_open_space.pdf.

[4] We do not have data on the location of the entrances to parks, and therefore must use "as the crow flies" measurements from each residence to a park's perimeter. As a result, our estimates are likely overstating accessibility.

Air

Reliable information on local air quality is difficult to obtain, but several existing indicators provide a rough measure of the differences in air quality and exposure to pollutants throughout the City's neighborhoods. We report the ten community districts that have the highest and lowest percentages of residential units within a quarter mile of an EPA-registered major discharger of hazardous air pollutants (HAPs) and/or a large quantity generator (LQG) of hazardous waste.[5] Eight of the community districts with the highest percentage of units within a quarter mile of a major discharger of HAPs or an LQG are in Manhattan (**TABLE 2**). The majority of polluting facilities in Manhattan are LQG sites in midtown and downtown and are located in large institutional buildings such as universities, hospitals and Con Edison facilities. In addition, one quarter of Manhattan's residential units—twice the City average—are within a quarter mile of a major discharger of HAPs. The Bronx has the second highest proportion of residential units close to these facilities, while Staten Island has the lowest.

Proximity to sources of pollutants is an imperfect measure of exposure because not all pollutants are equally problematic, and wind patterns and other factors determine whether the pollution stays in a neighborhood or disperses over other areas. We expect that the local air quality study planned by the City as part of *PlaNYC 2030* will provide a more direct measure of variations in air quality across neighborhoods and over time. Such data would enable the City to better track the impact of developments and infrastructure improvements on communities.

[5] A site is considered a major discharger of HAPs if actual or potential emissions are above the applicable major source thresholds, actual or potential controlled emissions are greater than 100 tons/year, or unregulated pollutant actual or potential controlled emissions are greater than 100 tons/year. An LQG is a site that "generate[s] 1,000 kilograms per month or more of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste." For more see: http://epa.gov/osw/hazard/generation/lqg.htm

Table 2: Community Districts with the Greatest Share of Residential Units within a Quarter Mile of a Major Discharger of HAPs or an LQG (2008)

CD	*Neighborhood*	*Percentage of Units*	*Rank*
311	East Harlem (MN)	91.1%	1
304	Clinton/Chelsea (MN)	87.0%	2
306	Stuyvesant Town/Turtle Bay (MN)	82.7%	3
305	Midtown (MN)	72.3%	4
303	Lower East Side/Chinatown (MN)	66.5%	5
301	Financial District (MN)	65.3%	6
201	Greenpoint/Williamsburg (BK)	61.7%	7
309	Morningside Hts/Hamilton Hts (MN)	59.6%	8
302	Greenwich Village/Soho (MN)	59.3%	9
202	Fort Greene/Brooklyn Heights (BK)	56.2%	10

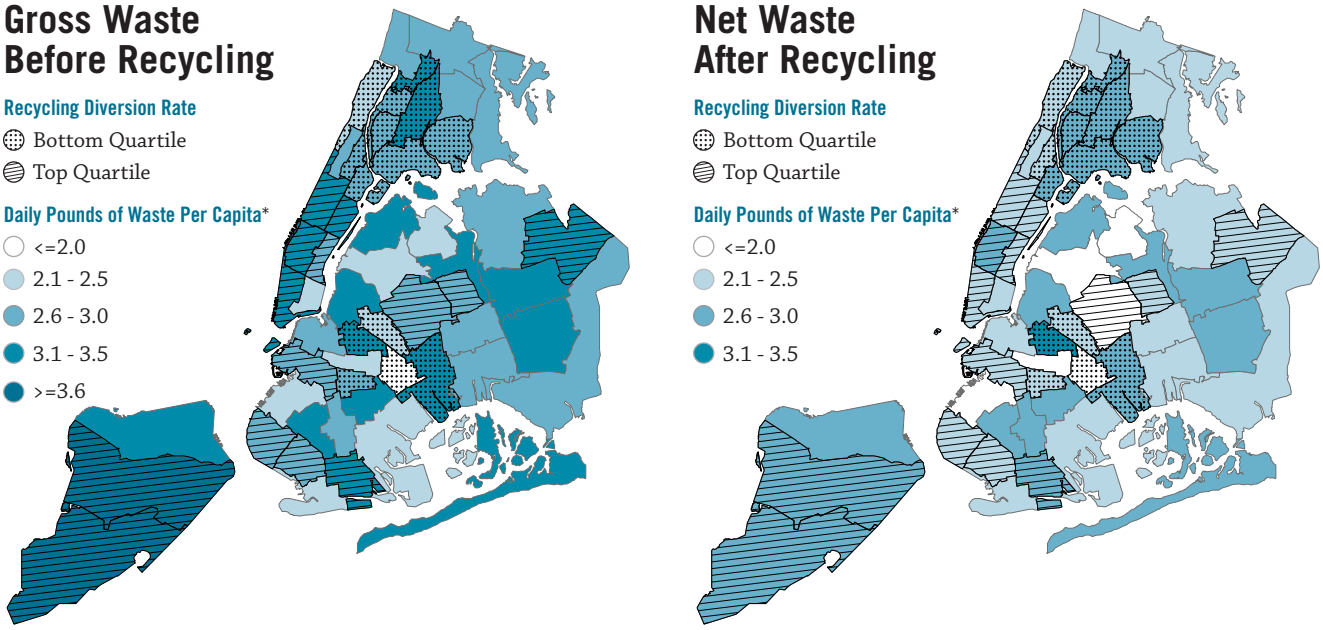
Source: U.S. Environmental Protection Agency Regulated Facility Data, New York City Department of City Planning, Furman Center

Table 3: Community Districts with the Smallest Share of Residential Units within a Quarter Mile of a Major Discharger of HAPs or an LQG (2008)

CD	*Neighborhood*	*Percentage of Units*	*Rank*
209	S. Crown Hts/Lefferts Gardens (BK)	7.4%	50
502	South Beach/Willowbrook (SI)	7.3%	51
411	Bayside/Little Neck (QN)	6.6%	52
409	Kew Gardens/Woodhaven (QN)	6.4%	53
405	Ridgewood/Maspeth (QN)	5.2%	54
403	Jackson Heights (QN)	3.9%	55
410	S. Ozone Park/Howard Bch (QN)	2.1%	56
210	Bay Ridge/Dyker Heights (BK)	0.3%	57
503	Tottenville/Great Kills (SI)	0.3%	58
211	Bensonhurst (BK)	0.0%	59

Source: U.S. Environmental Protection Agency Regulated Facility Data, New York City Department of City Planning, Furman Center

Figure 3: Recycling and Waste in New York City (FY 2008) by Sub-borough Area



**Curbside and containerized residential waste stream.*
Source: New York City Department of Sanitation, American Community Survey (2007), New York City Department of City Planning

Waste

Perhaps one of the most widely recognized environmental sustainability activities is household-level recycling and waste reduction. Despite this, *PlaNYC 2030* does not explicitly address residential waste or recycling patterns. In order to better track New Yorkers' progress in reducing the residential waste stream, we have added a new indicator to each community district page: the net daily residential waste per capita after accounting for waste diverted to recycling. **FIGURE 3** compares these post-diversion totals with the gross amount of waste collected daily in each neighborhood. On average, each City resident disposes of 2.9 pounds of waste per day. After recycling, this drops to 2.4 pounds net waste per capita. Residents in Staten Island dispose of the most residential waste per capita, but they also recycle a greater proportion of waste (20.5 percent compared to the 16.5 percent City average). While the Bronx has a typical rate of waste per capita, it has a below-average recycling rate (only 10 percent), so net waste disposal rates are above average. In contrast, although Manhattan residents dispose of more waste per capita than residents of either Brooklyn or Queens, their high recycling rate results in the lowest net disposal rate in the City.