2021 Open Space Profiles Methodology & Data Sources

BY NEW YORKERS FOR PARKS

This document details the methodologies used to calculate the various statistics portrayed in the 2021 Open Space Profiles.

Compiled by: Caitlyn Linehan, Research and Planning Intern
Edited by: Lucy Robson, Director of Research and Policy

Table of Contents

PARKLAND 2

ACCESS 3

AMENITIES & INFRASTRUCTURE 4

STEWARDSHIP 5

DEMOGRAPHICS 6

HEALTH & ENVIRONMENT 7

Appendix A: Parkland Acreage Methodology 9

Appendix B: Walk to a Park Methodology 20

PARKLAND

Total District Land (acres)

NYC Dept of City Planning Community Districts
https://data.cityofnewyork.us/City-Government/Community-Districts/yfnk-k7r4

City, State, & Federal Parkland (acres)

NYC Parks Functional Parkland
https://data.cityofnewyork.us/Recreation/Functional-Parkland-Map/r2ng-2bhg

NYS Dept of Parks, Recreation and Historic Preservation NYS Historic Sites and Park Boundary
https://gis.ny.gov/gisdata/inventories/details.cfm?DSID=430

National Park Service NPS Boundary
https://public-nps.opendata.arcgis.com/datasets/nps-boundary-1

See Appendix A for a thorough methodology of parkland calculations.

Percent Parkland

Calculated using the data points [City, State, & Federal Parkland (acres), Adjacent "Nondistrict" Parkland {see Appendix A} and Total District Land] using the following equation:

$$\text{Percentage of City, State, \& Federal Parkland} = \frac{\text{Sum of the City, State, \& Federal Parkland and Adjacent "Nondistrict" Parkland (acres)}}{\text{Total District Land (acres)}} \times 100$$

City Parks in District (acres)

NYC Dept of Information Technology & Telecommunications Open Space (Parks)
https://data.cityofnewyork.us/Recreation/Open-Space-Parks-/g84h-jbjm

A figure that shows the acres of NYC Parks properties for the Community District that are publicly usable and visitable. Calculated using the following steps:

1. Classify NYC Parks properties by "land use" categories.
2. Remove the following land use categories:
    a. Cemetery
    b. Lot
    c. Parkway
    d. Retired N/A
    e. Strip
    f. Undeveloped
3. Apportion parkland to Community Districts following the apportioning method outlined in Appendix A.
4. Sum City parkland acres for each district.

Percent City Parks in District

NYC Dept of Information Technology & Telecommunications Open Space (Parks)
https://data.cityofnewyork.us/Recreation/Open-Space-Parks-/g84h-jbjm

The proportion of each Community District that is NYC Parks properties publicly usable and visitable. Calculated using the following equation:

$$\text{Percentage of City Parks in District} = \frac{\text{Sum of the NYC Parks properties publicly usable and visitable (acres)}}{\text{Total District Land (acres)}} \times 100$$

ACCESS

City Parks in District per 1,000 residents (acres)

NYC Parks Park Properties
American Community Survey (ACS) 2014-2018
https://data.census.gov/cedsci/

Residents within a 5-minute walk of a park

NYC Dept of City Planning LION Single Line Street Base Map
https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-lion.page
NYC Dept of City Planning PLUTO tax lot data
https://www1.nyc.gov/site/planning/data-maps/open-data.page#pluto
NYC Dept of City Planning Borough Boundaries
https://www1.nyc.gov/site/planning/data-maps/open-data.page#district_political
NYC Parks Entrance Points from Walk-to-a-Park Service Area
https://data.cityofnewyork.us/Recreation/Walk-to-a-Park-Service-area/5vb5-y6cv

Calculated using a methodology adapted from the Municipal Art Society as outlined in Appendix B. Below is a brief overview of the steps:

1. Use Network Analysis with park entrances and pedestrian routes within ArcMap to calculate walkability (defined as within ¼ of a mile) for residents. This was displayed as polygons where walkability to a park was accessible for residents within the polygon.
2. The polygons were then clipped to the community board level.
3. These polygons were then intercepted with the census tracts of each community board.
4. The proportion of each census tract within the community board that has walkability was calculated.
5. Next percentage of residents within 5 minutes' walk of a park was calculated using the following equations:

$$\text{Residents with Park Walkability at a Community Board Level} = \text{Sum of (Proportion of Census tracts with Walkablity} \times \text{Population of Census Tracts)}$$

$$\text{Percentage of residents within 5 minutes' walk of a park} = \frac{\text{Residents with Park Walkabillity at a Community Board Level}}{\text{Total Population within community board}}$$

City Parks in District per 1,000 children (acres)

NYC Parks Park Properties
American Community Survey (ACS) 2014-2018 Child Population

Calculated using the data points previously calculated: City Parks in District (acres) and Child Population using the following equation:

$$\text{Total City Parks in District per 1,000 children (acres)} = \frac{\text{Total Acres of City Parks in District}}{\text{Population under 18 of Community Board}} \times 1000$$

City Parks in District per 1,000 seniors (acres)

NYC Parks Park Properties
American Community Survey (ACS) 2014-2018 Senior Population

Calculated using the data points previously calculated: City Parks in District (acres) and Senior Population using the following equation:

$$\text{Total City Parks in District per 1,000 seniors (acres)} = \frac{\text{Total Acres of City Parks in District}}{\text{Population over 65 of Community Board}} \times 1000$$

AMENITIES & INFRASTRUCTURE

Community Gardens
NYC Parks GreenThumb

Recreation Centers
NYC Parks Directory of Recreation Centers
https://data.cityofnewyork.us/Housing-Development/Directory-of-Recreation-Centers/ydj7-rk56
Description: "Indoor recreation facilities in New York City Department of Parks and Recreation Properties."

1. Import the point data into ArcMap.
2. Compute counts for recreation centers for each Community District.

Playgrounds
NYC Parks Parks Properties
https://data.cityofnewyork.us/Recreation/Parks-Properties/enfh-gkve
NYC Parks Schoolyards to Playgrounds
https://data.cityofnewyork.us/City-Government/Schoolyards-To-Playgrounds/urxm-vzzk

1. Import the shapefile data into ArcMap.
2. Identify non-overlapping shapefiles and apportion to each Community District.
3. Analyze overlapping shapefiles to eliminate the possibility of double-counting playground properties. Apportion reconciled shapefiles to each Community District.
4. Compute counts for playgrounds for each Community District.

Swimming Pools
NYC Dept. of Information Technology & Telecommunications Swimming Pools
https://data.cityofnewyork.us/City-Government/Swimming-Pools/j7ww-5ipv

1. Import the point data into ArcMap.
2. Compute counts for swimming pools for each Community District.

Dog Runs
NYC Parks Dog Runs
https://data.cityofnewyork.us/Recreation/NYC-Parks-Dog-Runs/8nac-uner
Description: "Dog runs are large, fenced-in areas for dogs to exercise unleashed during park hours."

1. Import the shapefile data into ArcMap.
2. Compute counts for dog runs for each Community District.

Sprayshowers
NYC Parks Sprayshowers
https://data.cityofnewyork.us/City-Government/Spray-Showers/im58-6hb9

1. Import the point data into ArcMap.
2. Compute counts for spray showers for each Community District.

Public Schools
NYC Dept of City Planning Facilities Database
https://data.cityofnewyork.us/City-Government/Facilities-Database-Shapefile/2fpa-bnsx
Description: "The City Planning Facilities Database (FacDB) aggregates information about 35,000+ public and private facilities and program sites that are owned, operated, funded, licensed or certified by a City,

State, or Federal agency in the City of New York. It captures facilities that generally help to shape quality of life in the city's neighborhoods, including schools, day cares, parks, libraries, public safety services, youth programs, community centers, health clinics, workforce development programs, transitional housing, and solid waste and transportation infrastructure sites."

1. Import the point data into ArcMap.
2. Extract point data for Public Schools and create a new layer.
3. Compute counts for public schools for each Community District.

Parks "Acceptable" for Condition

NYC Parks Parks Inspection Program
https://data.cityofnewyork.us/dataset/Parks-Inspection-Program-Inspections/yg3y-7juh

Description: "The Parks Inspection Program (PIP) is a comprehensive, outcome-based performance measurement system that generates frequent, random, and detailed inspections of our parks and playgrounds. Administered by the Operations and Management Planning (OMP) division, this program provides Parks & Recreation management, elected officials, and the public with a broad indicator of the condition of NYC parks. The program has been designed to reflect conditions encountered by the public when using Parks facilities."

1. Download ratings covering a two-year period from December 2017 till December 2019.
2. Classify the park properties and ratings by Community District.
3. Use the following equation to calculate the percentage of parks deemed "Acceptable" for Condition:

$$\text{Parks Acceptable} = \frac{\text{Parks Deemed Acceptable for Condition by Community Board}}{\text{Total Count of Parks Assessed by Community Board}} \times 100$$

Parks "Acceptable" for Cleanliness

NYC Parks Parks Inspection Program
https://data.cityofnewyork.us/dataset/Parks-Inspection-Program-Inspections/yg3y-7juh

Description: "The Parks Inspection Program (PIP) is a comprehensive, outcome-based performance measurement system that generates frequent, random, and detailed inspections of our parks and playgrounds. Administered by the Operations and Management Planning (OMP) division, this program provides Parks & Recreation management, elected officials, and the public with a broad indicator of the condition of NYC parks. The program has been designed to reflect conditions encountered by the public when using Parks facilities."

1. Download ratings covering a two-year period from December 2017 till December 2019.
2. Classify the park properties and ratings by Community District.
3. Use the following equation to calculate the percentage of parks deemed "Acceptable" for Cleanliness:

$$\text{Parks Acceptable} = \frac{\text{Parks Deemed Acceptable for Cleanliness by Community Board}}{\text{Total Count of Parks Assessed by Community Board}} \times 100$$

STEWARDSHIP

Park-Related 311 calls per 1,000 residents

NYC DOITT and 311 311 Service Requests, 1/01/2019 – 12/31/2019
https://data.cityofnewyork.us/Social-Services/311-Service-Requests-from-2010-to-Present/erm2-nwe9/data

Description: "All 311 service requests from 2010 to present."

1. Choose 311 records between the dates 01/01/2019 and 12/31/2019.
2. Filter by agency, selecting records attached to NYC Dept. of Parks and Recreation.
3. Export records to Excel.
4. Filter out records without a specified community board.
5. Aggregate remaining records by community board.
6. Use the following equation to derive calls per 1,000 residents:

$$\text{Park– related 311 calls per 1,000 residents} = \frac{\text{Count per Community Board}}{\text{Total Population}} \times 1000$$

Park Volunteer Groups

NYC Parks – Partnerships for Parks Active Community Partner Groups database
Proprietary data from Partnerships for Parks, 2020

1. Receive data for Park Volunteer Groups from Partnerships for Parks.
2. Classify data by Community District.
3. Sum data to achieve a final count.

DEMOGRAPHICS

Resident Population

ACS 2014-2018 Table DP05, Column DP05_0001E

1. Download data from the U.S. Census Bureau at the Census Tract Level for the Counties of New York City, The Bronx, Kings, Queens, and Richmond county.
2. Aggregate the census tract resident population data to the Community District level. (See Appendix B for more information on this methodology.)

Residents under 18

ACS 2014-2018 Table DP05, Column DP05_0019E

1. Download data from the U.S. Census Bureau at the Census Tract Level for the Counties of New York City, The Bronx, Kings, Queens, and Richmond.
2. Aggregate the census tract "resident population under 18" data to the Community District level. (See Appendix B. for more information on this methodology.)
3. Use the following equation to calculate the final percentage:

$$\text{Residents under 18 (Percent)} = \frac{\text{Population under 18 of Community Board}}{\text{Resident Population of Community Board}} \times 100$$

Residents over 65

ACS 2014-2018 Table DP05, Column DP05_0063E

1. Download data from the U.S. Census Bureau at the Census Tract Level for the Counties of New York City, The Bronx, Kings, Queens, and Richmond.
2. Aggregate the census tract "resident population over 65" data to the Community District level. (See Appendix B for more information on this methodology.)
3. Use the following equation to calculate the final percentage:

$$\text{Residents over 65 (Percent)} = \frac{\text{Population over 65 of Community Board}}{\text{Resident Population of Community Board}} \times 100$$

Average Median Household Income

ACS 2014-2018 Table DP03, Column DP03_0062E

1. Download data from the U.S. Census Bureau at the Census Tract Level for the Counties of New York City, The Bronx, Kings, Queens, and Richmond county.
2. Aggregate the census tract "Average Median Income" data to the Community District level using the following equation:

$$\text{Average Median Income} = \frac{\text{SumProduct (Median Income by the areal weighted population per Census Tract)}}{\text{Sum (Population per Census Tract)}} \times 100$$

Population in Poverty

ACS 2014-2018 Table B17001, Columns B17001_001E and B17001_002E

1. Download data from the U.S. Census Bureau at the Census Tract Level for the Counties of New York City, The Bronx, Kings, Queens, and Richmond county.
2. Aggregate the census tract "population in poverty" data to the Community District level using the following equation (see Appendix B for more information on this methodology):

$$\text{Percentage of Population in Poverty} = \frac{\text{Sum of the Population whose income in the Past 12 months is below the poverty line}}{\text{Total Population}} \times 100$$

Race and Ethnicity

ACS 2014-2018 Table DP05, Columns DP05_0064E, DP05_0065E, DP05_0066E, DP05_0067E, DP05_0068E, DP05_0069E, DP05_0070E

1. Download data from the U.S. Census Bureau at the Census Tract Level for the Counties of New York City, The Bronx, Kings, Queens, and Richmond county.
2. Aggregate the census tract race and ethnicity data to the Community Board level (See Appendix B for more information on this methodology). The calculation was performed for the Census Bureau's racial categories of American Indian or Alaska Native, Asian, Black, Two or More Races, Native Hawaiian or other Pacific Islander, Some Other Race, and White. The calculation was performed to determine the percentage of population in each Community Board claiming Hispanic or Latino ethnicity through the same calculation.

HEALTH & ENVIRONMENT

Child Asthma Incidences per 10,000

NYC Health New York Community Health Profiles 2018
https://www1.nyc.gov/site/doh/data/data-publications/profiles.page

Child Obesity Rate

NYC Health New York Community Health Profiles 2018
https://www1.nyc.gov/site/doh/data/data-publications/profiles.page

Life Expectancy (years)

NYC Health New York Community Health Profiles 2018
https://www1.nyc.gov/site/doh/data/data-publications/profiles.page

Adult Obesity Rate

NYC Health New York Community Health Profiles 2018
https://www1.nyc.gov/site/doh/data/data-publications/profiles.page

Adult Diabetes Rate

NYC Health New York Community Health Profiles 2018
https://www1.nyc.gov/site/doh/data/data-publications/profiles.page

Hospitals and Clinics

NYC Dept of City Planning Facilities Database
https://data.cityofnewyork.us/City-Government/Facilities-Database-Shapefile/2fpa-bnsx

Description: "The City Planning Facilities Database (FacDB) aggregates information about 35,000+ public and private facilities and program sites that are owned, operated, funded, licensed or certified by a City, State, or Federal agency in the City of New York. It captures facilities that generally help to shape quality of life in the city's neighborhoods, including schools, day cares, parks, libraries, public safety services, youth programs, community centers, health clinics, workforce development programs, transitional housing, and solid waste and transportation infrastructure sites."

1. Import the point data into ArcMap.
2. Extract point data for Hospitals and Clinics and create separate layers.
3. Compute counts for hospitals and clinics for each community board.

Air Pollution (micrograms per m^3)

NYC Health New York Community Health Profiles 2018
https://www1.nyc.gov/site/doh/data/data-publications/profiles.page

Description: Average Annual Particulate Matter 2.5 micrograms per square meter of air.

Tree Canopy Cover

NYC DOITT Tree Canopy Change 2010-2017
https://data.cityofnewyork.us/Environment/Tree-Canopy-Change-2010-2017-/by9k-vhck

Description: "A 6-in resolution tree canopy change (2010 - 2017) dataset derived from the 2017 Light Detection and Ranging (LiDAR) data capture. This dataset represents a "top-down" mapping perspective and all tree polygons are classed as: (1) No Change, (2) Gain, (3) Loss. No change indicates that this portion of the canopy has undergone no modifications during the time period. Gain indicates that new tree canopy has appeared during the time period. Loss indicates that this portion of the tree canopy was removed during the time period."

1. Download data and import to Arc Map
2. Dissolve polygons by type of change: No Change, Gain, and Loss.
3. Clip polygons to the community board layer.
4. Calculate total area of each change type for each Community District.
5. Use the following equation to determine what percent of the area is covered by tree canopy:

$$\text{Percent of Community Board covered by Tree Canopy} = \frac{\text{Area of Tree Canopy Gain} + \text{Area of Tree Canopy No Change}}{\text{Community Board Area}} \times 100$$

Appendix A: Parkland Acreage Methodology

NEW YORKERS FOR PARKS • 2021 OPEN SPACE PROFILES

This document details the methodologies used to calculate City, State, and Federal Parkland for each Community District.

Created by: Yining Lei, Research and Policy Intern
Edited by: Lucy Robson, Director of Research and Policy

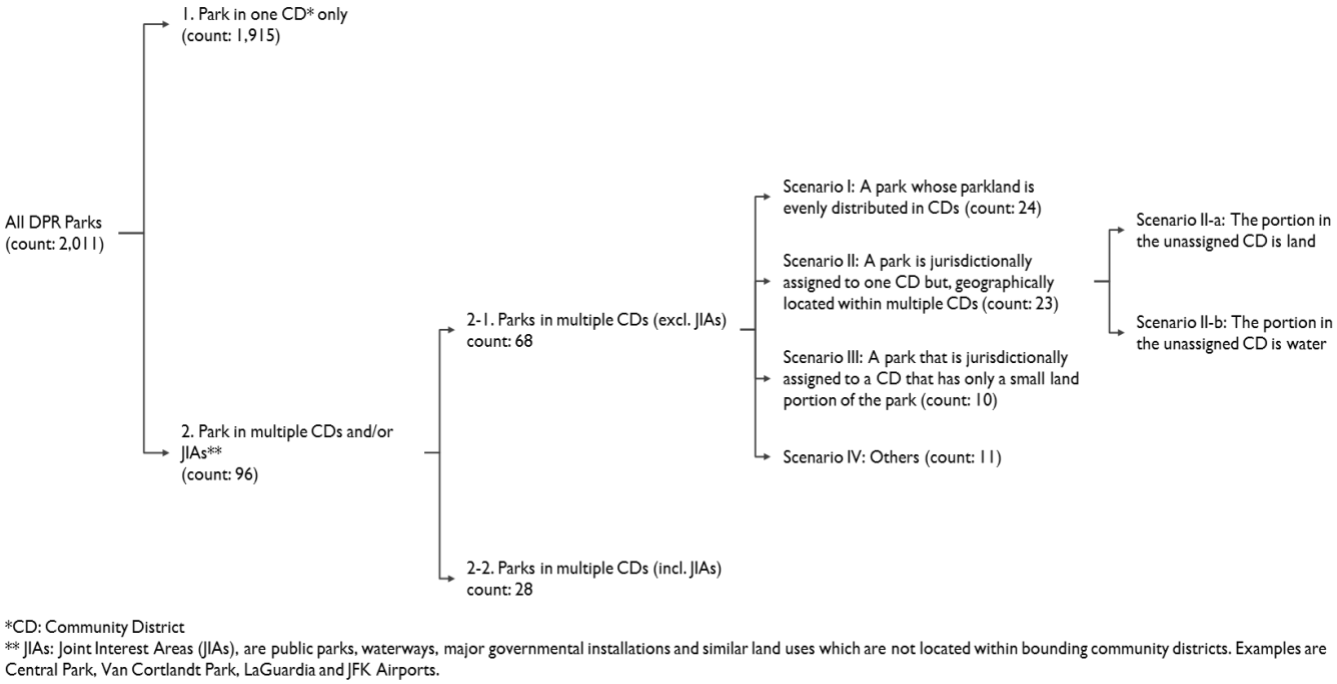


Figure 1 NYC Parks (DPR) Categories

A NOTE ON PARKLAND METHODOLOGY

Several methodologies outlined below entail apportioning land outside of a Community District to it in order to properly account for the location of parks. When calculating the percentage of a CD that is parkland, add the additional adjacent district area (referred to elsewhere in this methodological document as Adjacent "Nondistrict" Parkland) to the total district area, ensuring that the additional parkland does not skew calculations.

NYC PARKS PROPERTIES

Parks Solely in one Community District

There are 2,011 parks either partially or solely under the jurisdiction of NYC Parks, also known as the NYC Department of Parks and Recreation or DPR. Among them, 1,915 park properties lie completely within one Community District (CD), and are jurisdictionally assigned to only one district.

Calculation Method Assign the total parkland acreage to the CD noted.

Example Battery Park City (28.44 acres) is solely within Manhattan CD 1. Therefore 28.44 acres will be added to the total parkland acreage count for Manhattan CD 1.

Parks in Multiple Community Districts and/or Joint Interest Areas (JIAs)

96 out of 2,011 parks are located between multiple districts and/or Joint Interest Areas (JIAs). JIAs are not apportioned to any CD outright and contain large swathes of land within New York City such as large parks, cemeteries, or airport areas.

Parks in Multiple Community Districts

Scenario I: A park with acreage evenly distributed between CDs

Parks in Scenario 1 are assigned jurisdictionally to multiple CDs, with similarly-sized portions of the park assigned to each CD.

Calculation Method Assign the parkland acreage based on the actual acreage distribution in CDs.

Example Riverside Park is assigned jurisdictionally to Manhattan CD 7 and 9, with 69% of its area within the boundaries of Manhattan CD 7 and 31% within the boundaries of Manhattan CD 9. Therefore Manhattan CD 7 will have 69% of Riverside Park's acreage added to its total parkland acreage, and Manhattan CD 9 will have 31% of Riverside Park's acreage added to its total parkland acreage.

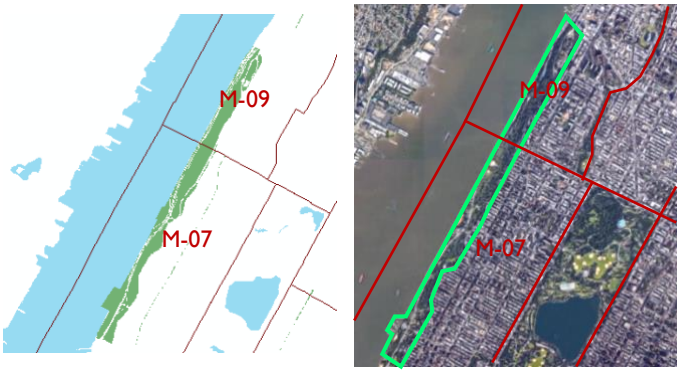


Figure 2 Riverside Park

Summary Table for Scenario 1

Assigned CDs	Name	Assigned Acreage to each CD	
107, 109	Riverside Park	109	66.699541
		107	148.224855
403, 404	Elmjack Mall	404	0.141238
		403	0.099982
108, 111	East River Esplanade	111	6.868569
		108	1.718155
203, 206	Park	206	0.284719
		203	0.231195
502, 503	Brookfield Park	503	153.624589
		502	105.104409

305, 318	Spring Creek Park	305 318	0.788644 1.415039
204, 205	Walton Slope	205 204	0.253371 0.283354
408, 411	Kissena Corridor Park	411 408	27.422919 19.378224
305, 405	Highland Park	405 305	3.536554 41.522767
108, 111	Stanley Isaacs Playground	111 108	0.591251 0.616261
203, 206	Park	206 203	0.470497 0.292358
307, 312, 313, 314, 315	Ocean Parkway Malls	313 312 315 314 307	6.073853 14.835404 9.610424 2.081511 1.278218
211, 212	Givan Square	212 211	0.426964 1.175057
203, 206	Park	206 203	0.659276 0.23833
110, 111, 112	Harlem River Park	110 111 112	4.461194 6.861586 35.334843
305, 405	Highland Park	405 305	100.962747 0.432275
316, 304	Eastern Parkway Extension	304 316	0.135386 0.960556
205, 207	Aqueduct Walk	205 207	5.753758 2.494635
410, 412, 413	Belt Parkway	412 410 413	4.088798 12.815338 14.355473
502, 503	Richmond Parkway	503 502	110.973203 131.522543
501, 502, 503	Willowbrook Parkway	501 503 502	18.240797 40.442383 83.556339
408, 411, 413	Grand Central Parkway	413 411 408	36.797139 44.504105 69.213989
102, 104	The High Line	104	4.28921

		102	1.173099
407, 411, 413	Cross Island Parkway	413 407 411	76.24593 75.316901 112.831622
Count: 24			

Scenario II-A: A park jurisdictionally assigned to one CD but located within multiple CDs

In overall, parks in accordance with the description of Scenario II have either small land acreage in the unassigned district (Figure 3 in Scenario II-a), or water area in the unassigned district (Figure 4 in Scenario II-b).

Calculation Method Assign the parkland acreage based on the actual acreage distribution in CDs.

Example University Woods is assigned to Bronx CD 5, but 1% of its acreage is located in Bronx CD 7. Therefore 99% of the acreage is assigned to Bronx CD 5 and 1% is assigned to Bronx CD 7.

Figure 3 University Woods

Summary Table for Scenario II-A

Assigned CD	**Name**	**Assigned Acreage to each CD**	
205	University Woods	205 207	3.226464 0.025049
408	Cunningham Park	411 408	10.04228 366.4741
411	Alley Pond Park	413 411	5.54515 606.7604
110, 112	Highbridge Park	204 110 112	0.381885 2.501058 124.7962
108	Andrew Haswell Green Park	108 106	1.927311 0.001977
305, 410	Spring Creek Park Addition	305 410	2.251323 55.66279
502	Old Place Creek Park	501 502	6.562396 39.27224
305, 410	Spring Creek Park	305 410	54.5128 0.105015
Count: 7			

Scenario II-B: The portion in the unassigned district is underwater parkland

Calculation Method Assign all parkland to the jurisdictionally assigned CD.

Example Grand Ferry Park is jurisdictionally assigned to Brooklyn CD 1, with 37% of its total acreage within Brooklyn CD 1. 63% of its acreage, all underwater land, lies within Manhattan CD 3. Assign the total acreage of the park to Brooklyn CD 1. Manhattan CD 3 will have no park acreage.

Figure 4 Grand Ferry Park

Summary Table for Scenario II-B

Assigned CD	Name	Assigned Acreage to the CD
202	South Brother Island	21.10937
301	Bushwick Inlet Park	35.70201
401	Rainey Park	9.717884
301	North 5th Street Pier and Park	1.655938
301	Grand Ferry Park	1.659812
301	WNYC Transmitter Park	6.443501
401	Whitey Ford Field	4.101274
401	Astoria Park	52.91623
108	Mill Rock Park	8.592679
401	Socrates Sculpture Park	6.286575
401	Hallets Cove Playground	5.844205
301	Newtown Barge Playground	6.235411
111	Randall's Island Park	244.6946
402	Hunter's Point South Park	22.78668
401	Ralph Demarco Park	5.826816
Count: 15		

Scenario III: A park jurisdictionally assigned to a CD that only has a small land portion of said park

Parks in Scenario III are jurisdictionally assigned to multiple CDs and have a very small proportion of their area in once CD. "Recreational Area" is jurisdictionally assigned to Manhattan CD 9 (99.9%) and Manhattan CD 12 (0.1%).

Calculation Method Assign the parkland acreage based on the actual acreage distribution in CDs.

Example For "Recreational Area," Manhattan CD 9 will have 99.9% of the park's acreage and Manhattan CD 12 will have the remaining 0.1%.

Figure 5 Recreational Area

Summary Table for Scenario III

Assigned CDs	Name	Located CDs	Acreage in each CD
313, 315	Coney Island Beach & Boardwalk	313 315	399.336812 0.138685
502, 503	Freshkills Park	503 502	23.380041 897.03383
203, 206	Crotona Parkway Malls	206 203	3.124041 0.46779
109, 110	Jackie Robinson Park	109 110	0.000204 12.989267
502, 503	LaTourette Park & Golf Course	503 502	12.993625 747.763481
109, 112	Broadway Malls	109 112	2.23124 0.107043
108, 111	Park Avenue Malls	111 108	0.237836 4.386052
502, 503	Meredith Woods	503 502	0.308208 32.68661
109, 112	Recreational Area	109 112	18.167883 0.018454
104, 107	Broadway Malls	104 107	0.039879 5.412772
Count: 10			

Scenario IV: Others

Calculation Method Case by case

Summary Table for Scenario IV

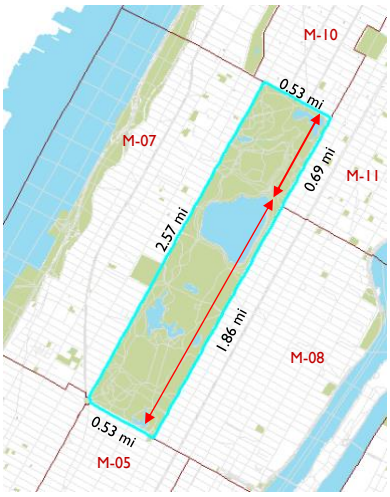
Name	Notes	Action Taken
Redfern Playground	Part in Inwood (land)	Only count the NYC part
Rockaway Beach and Boardwalk	Part in Long Beach (land)	Only count the NYC part
Hook Creek Park	Part in Inwood (land)	Only count the NYC part
Bridge Park	205 (36%); 204 (44%); 112 (20%, water)	Assign the water portion in 112 to 204 and 205 based on area percentage 205: 36% + 20%* 204: 44% + 20%*
Queensbridge Park	401 (80%); 402 (19%); 108 (1%, water)	Assign the water portion in 108 to 401 and 402 based on area percentage 401: 80% + 1%* 402: 19% + 1%*
Laurelton Parkway	Part in Valley Stream, Hempstead (land)	Only count the NYC part
Shooters Island	Part in New Jersey (land)	Only count the NYC part
Pralls Island	Part in New Jersey (water)	Only count the NYC part
Udall's Park Preserve	Part in Hempstead (land)	Only count the NYC part
Park	Unnamed strip in Bronx Assigned CD: 209 Actual distribution: 209 (45%); 210 (55%)	Assign the parkland acreage based on the actual acreage distribution in CDs 209: 45% 210: 55%
Brooklyn Bridge Park	One of the assigned CD (306) has no parkland Assigned CDs: 302, 306 Actual Distribution: 101 (9%; water), 103 (2%; water), 302 (89%; land)	Assign the total acreage to 302 302: 100%
Count: 11		

Parks in Multiple CDs, including JIAs

Scenario V: A park with a major part in JIAs

Calculation Method Measure the park boundary that is bounded on adjacent CDs. Assign the acreage based on the length of the bounded boundary.

Example For Central Park, the park boundary is coterminous with Manhattan CD 7's boundary for a length of 2.57 miles, accounting for 42% of the total boundary that Central Park shares with adjacent CDs. Therefore apportion 42% of Central Park's acreage to Manhattan CD 7, following suit for other boundary sections and CDs.

Central Park	CD	Length (mi)	%
	M-05	0.53	9%
	M-07	2.57	42%
	M-08	1.86	30%
	M-10	0.53	9%
	M-11	0.69	11%
	Total	**6.18**	**100%**

Summary Table for Scenario V

Name	Total Acreage	Adjacent CDs	Length (mi)	%	Assigned Acreage
Forest Park	502.443968	305	0.04	1%	3.34
		405	1.43	24%	119.35
		406	1.54	26%	128.53
		409	3.01	50%	251.22
Grand Army Plaza	14.142129	306	0.22	44%	6.26
		308	0.277	56%	7.88
Eastern Parkway	26.287276	308	2.47	57%	15.10
		309	1.83	43%	11.19
Van Cortlandt Park	1075.45887	207	0.7	15%	165.46
		208	2.41	53%	569.64
		212	1.44	32%	340.37
Idlewild Park (intersecting JFK)	194.784296	413	/	100%	194.78
Bartel-Pritchard Square	0.305949	306	/	50%	0.15
		307	/	50%	0.15
Central Park	839.481748	105	0.53	9%	71.99
		107	2.57	42%	349.10
		108	1.86	30%	252.66
		110	0.53	9%	71.99
		111	0.69	11%	93.73
Franklin D. Roosevelt Boardwalk and Beach (intersecting GTWY NTL AREA)	644.353138	502	/	100%	644.353138
Von Briesen Park	13.938098	501	/	100%	13.938098

Flushing Meadows Corona Park	897.798975	403	0.7	7%	63.99789027
		404	1.23	13%	112.4534358
		406	2.08	21%	190.1651597
		407	3.6	37%	329.1320071
		408	2.21	23%	202.0504822
Pelham Bay Park	2679.644452	210	14.5	90%	2405.872728
		212	1.65	10%	273.7717242
Rockaway Beach	167.300494	414	/	100%	167.300494
Brooklyn Botanic Garden	46.095942	308	0.05	14%	6.402214167
		309	0.31	86%	39.69372783
Machate Circle	0.890369	307	/	50%	0.4451845
		314	/	50%	0.4451845
Broad Channel Wetlands	37.949585	414	/	100%	37.949585
Brooklyn Museum	12.31239	308	0.11	41%	5.016158889
		309	0.16	59%	7.296231111
Bronx Park	651.877975	206	2.29	43%	282.192923
		207	0.54	10%	66.54330936
		211	2.09	40%	257.5472529
		212	0.37	7%	45.59448974
Jamaica Bay Park	142.416534	414	/	100%	142.416534
Mount Prospect Park	8.24335	308	/	50%	4.121675
		309	/	50%	4.121675
Prospect Park	478.657421	306	0.94	25%	120.6268031
		307	0.83	22%	106.5109007
		308	0.86	23%	110.3606922
		309	0.56	15%	71.86277634
		314	0.54	14%	69.29624862
Count: 20					

Scenario VI: A park with a smaller part in JIAs

Parks in Scenario VI have only a small part in JIAs. Most parks in this scenario are parkways that cross several CD and JIA boundaries.

Calculation Method Case by Case

Summary Table for Scenario VI

Assigned CDs	**Name**	**Actual Acreage of each CD/JIA**		**Adjusted Acreage of each CD**	**Action Taken**
315, 318	Marine Park	**315**	25.565351	**26.46110797**	assigning based on percentage
		318	808.807375	**837.146311**	
		356	29.234693	/	
503	Great Kills Park	**503**	84.651511	**144.4943061**	

		595 **502**	130.588938 100.075003	/ **170.8211459**	assigning based on percentage
210, 211	Hutchinson River Parkway	**228** **210** **211**	3.011056 83.59682 27.681019	/ **86.607876** **27.681019**	adding to 210
401, 403, 404, 406	Grand Central Parkway Extension	**404** **407** **403** **481** **406** **480** **401**	2.517106 80.669959 42.515 20.154255 29.816458 0.282372 3.112605	**3.194879807** **80.952331** **53.96289032** / **37.84504887** / **3.112605**	assigning to 403, 404, and 406 based on percentage adding to 407
305, 310, 311, 313, 315, 318, 410	Belt Parkway/Shore Parkway	**311** **313** **315** **305** **410** **310** **318** **356**	31.366341 28.14595 22.466802 16.587246 35.088001 21.29084 72.837181 94.916758	**31.366341** **28.14595** **22.466802** **34.19325889** **35.088001** **21.29084** **150.1479261** /	assigning to 305 and 318 based on percentage
211	Pelham Parkway	**211** **227**	64.620592 2.664946	**67.285538** /	adding to 211
304, 305, 405, 406	Jackie Robinson Parkway	**304** **405** **482** **305** **406**	1.718253 20.51606 17.763791 4.835404 0.57491	**1.718253** **20.51606** / **4.835404** **18.338701**	adding to 406
206, 209, 212	Bronx River Parkway	**212** **206** **209** **211** **227**	101.482523 2.283028 37.460906 0.639686 0.257347	**101.73987** **2.283028** **37.460906** **0.639686** /	adding to 212
Count: 8					

NEW YORK STATE PARKS

For New York State Office of Parks, Recreation, and Historic Preservation properties in New York City, the calculation is much simpler. State parks in one CD can be joined shapefile-to-shapefile in ESRI's ArcGIS, allowing a

seamless integration with the NYC Parks-in-one-CD calculation. For state parks in multiple CDs, assign the acreage to relevant CDs based on the geographic distribution of the park's acreage.

Summary Table for NYS Parks Properties in Multiple CDs

Name	Category	Description	Acreage	CD
Hudson River Park	State Park		75.56397	101
			98.97029	104
			131.2283	102
Gantry Plaza	State Park		0.000221	106
			1.718812	402
East River	State Park	formerly eastern district terminal state park	0.022878	103
			0.015904	106
			3.067257	301
East River	State Park		0.00148	103
			2.700586	301
Franklin D. Roosevelt Four Freedoms	State Park		4.200317	108
			0.374572	106
Roberto Clemente	State Park		22.22246	205
			0.053753	112
Gantry Plaza	State Park	Donald M. Kendall Plaza Park	0.970417	106
			5.463758	402
Roberto Clemente	State Park		1.593421	205
			0.059432	112

NATIONAL PARK SERVICE

Most National Park Service properties are solely within one CD boundary. Gateway National Recreation Area is the NPS property located within multiple districts. To apportion its acreage, follow the same apportioning methodology as outlined for Scenario V, determining the boundary shared with adjacent CDs.

Appendix B: Walk to a Park Methodology

NEW YORKERS FOR PARKS • 2021 OPEN SPACE PROFILES

Methodology developed by: Caroline Thompson and Veerle Arts, Municipal Art Society of New York
September 2019

Adding to the existing MapPLUTO dataset, this methodology will explain the steps taken and their rationale to determine the distance in miles to the closest park entrance. This highlights an important component in the redevelopment and real estate value potential of a parcel.

The datasets used include borough boundaries (clipped to shoreline) (version 19B), the land covered by each borough; LION (version 19B), the centerlines for all roadways; MapPLUTO (version 19v1), all tax lots and their attributes; and park entrances (points) from Walk-to-a-Park Service Area (last updated January 2019): https://data.cityofnewyork.us/Recreation/Walk-to-a-Park-Service-area/5vb5-y6cv

Preparing Datasets for Analysis

Before beginning analysis, ensure that the Network Analyst extension is turned on. The tools used will not work without this extension.

1. On the Standard toolbar, click Customize, then Extensions.
2. Check the box next to Network Analyst to turn it on.

Since the city's sidewalk layer does not include crosswalks or include streets that pedestrians could walk along to reach a park, isolate pedestrian accessible streets. From the street centerline shapefile's metadata, these streets do not include non-street features, vehicle access only streets, or ferries.

1. In the lion attribute table, open the Select by Attributes tool.
2. In the main window, paste the following code:
   ```
   TrafDir <> ' ' AND NonPed <> 'V' AND FeatureTyp <> 'F'
   ```
3. In the table of contents, right click the lion shapefile and export the selected features as a new shapefile named pednetwork_lion19.

These steps will require significant processing power. To speed up these processes, split the MapPLUTO dataset by borough.

1. In the MapPLUTO attribute table, open the Select by Attributes tool.
2. In the main window, paste the following code: `"Borough" = 'BK'`
3. In the table of contents, right click the MapPLUTO shapefile and export the selected features as a new shapefile named bk_pluto19.
4. Repeat Steps 1-3 accordingly for each remaining borough and name the shapefiles accordingly.

Borough boundary groupings will also be required. Since Brooklyn and Queens, as well as Manhattan and the Bronx, are connected by land and/or short bridges, their borough boundaries will need to be grouped. This dataset will be used as a way to further segment other files.

1. In the borough boundary attribute table, open the Select by Attributes tool.
   a. In the main window, paste the following code:
      ```
      "County" = 'Brooklyn' OR "County" = 'Queens'
      ```
   b. In the table of contents, right click the borough boundary shapefile and export the selected features as a new shapefile named borobounds_bk_qn.
2. In the borough boundary attribute table, open the Select by Attributes tool.

    a. Confirm "Create New Selection" is selected in the drop-down window.
    b. In the main window, paste the following code:
       `"County" = 'New York' OR "County" = 'Bronx'`
    c. In the table of contents, right click the borough boundary shapefile and export the selected features as a new shapefile named borobounds_mn_bx.
3. In the borough boundary attribute table, open the Select by Attributes tool.
    a. Confirm "Create New Selection" is selected in the drop-down window.
    b. In the main window, paste the following code:
       `"County" = 'Richmond'`
    c. In the table of contents, right click the borough boundary shapefile and export the selected features as a new shapefile named borobounds_si.

In addition, the park entrances must be split by borough to decrease needed processing power. Clip the park entrances layer by the respective borough boundary groupings.

1. Open the Clip tool.
2. Select the park entrances layer as the input features and borobounds_bk_qn as the clip features.
3. Name the output feature class parkentrances_bk_qn.
4. Repeat Steps 1-3 for the Manhattan and the Bronx borough grouping and name accordingly.
5. Repeat Steps 1-3 for Staten Island and name accordingly.

A network dataset is needed to run the walkability analysis. Unlike shapefiles, which can exist in folders, a network dataset needs to be in a file geodatabase, since this container can better manage complex datasets. The network dataset also needs to be created from a feature dataset, which is a collection of feature classes (like shapefiles).

1. Open ArcCatalog.
2. In the project folder, right click to create a new file geodatabase named networkanalysis.
3. Right click networkanalysis.gdb to create a new feature dataset named pednetwork.
    a. Following the prompts, keep the coordinate system as NY State Plane FIPS 3104 and click Next.
    b. Do not set a Z axis and click Next.
    c. Do not change tolerance levels and click Finish.
4. Right click the pednetwork feature dataset, and click Import (single class) to import the pednetwork_lion19 shapefile into the dataset, keeping the name pednetwork_lion19 (output).

From the feature dataset, a network dataset must be created. This will draw on the features within the feature dataset to create a network.

1. Right click the pednetwork feature dataset and create a new network dataset.
2. Following the prompts, keep the default name and click Next.
3. Confirm that the pednetwork_lion19 is selected as participating in the network and click Next.
4. Confirm that model turns using the default global turns is selected and click Next. This ensures that no restrictions are placed on a pedestrian's ability to turn.
5. Do not change the network connectivity and click Next.
6. Since no elevation data is available in this dataset, click None (to not model elevation) and click Next.
7. Since the only cost attribute will be the increasing length along a street network, and not including the RoadClass attribute (which would be used for road quality in driving service areas), click the RoadClass attribute and click Remove. Then click Next to proceed with the network setup wizard.
8. Since no modeling by travel mode is required, click Next.
9. Since no modeling of driving routes is required for pedestrian network analysis, click no, then click Next.

10. Select "Build Service Area" to index the service areas and make processing faster, and click Next.
11. After reading over the summary, click Finish.
12. After the wizard has created the dataset, click Yes in the popup window to build the network dataset.

Conduct Service Area Analysis

As discussed, the larger operation is roughly segmented into thirds by borough grouping to be able to run the analysis. The analysis will use service areas, which are also referred to as walksheds. These service areas are polygons that display the areas to which one could travel along a network within a specified distance or distances.

Since Brooklyn and Queens share borders and have areas connected by bridges, walkability to parks is analyzed for both boroughs together. Different segments will be created to identify varying distances to parks. Using Federal Highway Administration guidelines, which are used for planning transportation networks and crosswalk times, a five minute walk is defined as 1/4 mile distance; 10 min as 1/2 mile; 15 min as 3/4 mile; and 20 min as 1 mile. Assuming that a walk over 20 minutes to the park would not be considered as marketable access to a park, all other distances will be identified accordingly.

1. Open the Make Service Area Layer tool.
    a. Select the network dataset pednetwork_lion19_ND as the input analysis network.
    b. In the Travel From or To Facility field, select TRAVEL_TO.
    c. To create multiple service areas by distance from any station, paste the following list into the default break values field: `1320 2640 3960 5280`
    d. In the Polygon Generation Options drop-down field:
        i. Select the Polygon Type as DETAILED_POLYS.
        ii. Select Merge Polygons with Similar Ranges as MERGE.
        iii. Select the Polygon Nest Option as RINGS.
    e. Keep all other fields as their default values and run the tool.
2. Open the Add Locations tool.
    a. Select the service area as the input network analysis layer.
    b. Confirm that the sublayer is selected as Facilities.
    c. Input the locations as parkentrances_bk_qn and click ok.
3. When the tool is done running, in the table of contents, right click on the Service Area heading and click Solve.
4. After the tool has finished running, right click the Polygons subheading and export to a new shapefile named servicearea_quartmi_1mi_bk_qn.

Since Manhattan and the Bronx have a small shared land border and are otherwise connected by short bridges, walkability to parks is analyzed for both boroughs together.

Repeat Steps 1-4 above, naming the resulting files accordingly.

Since Staten Island is connected to other boroughs by ferry or by lengthy bridges, walkability to parks will be calculated within Staten Island alone.

Repeat Steps 1-4 above, naming the resulting files accordingly.

To prepare for upcoming analysis, create a key to rank distances from parks, from 5 as the closest distance to a park entrance to 2 as the furthest.

1. Open the attribute table for servicearea_quartmi_1mi_bk_qn.
2. Add a new field, select data type as short integer, and name the field dist_key.
3. Start an editing session.
4. In the dist_key field, type in the corresponding attributes:

Name	dist_key
0 – 1320	4
1320 – 2640	3
2640 – 3690	2
3690 – 5280	1

5. Save edits and stop editing.
6. Repeat Steps 1-5 for servicearea_quartmi_1mi_bk_qn and servicearea_quartmi_1mi_si, respectively.

To add the distance key attribute to the MapPLUTO dataset, use the identity tool to add the underlying walkshed information to the lot data.

1. Open the Identity tool.
2. Select the PLUTO dataset bk_pluto19 as the input features, and select servicearea_quartmi_1mi_bk_qn as the identity features.
3. Name the output feature class distance_bk_pluto.
4. Repeat Steps 1-3 for Queens, Manhattan, the Bronx, and Staten Island, respectively, and name accordingly.

To create a citywide dataset, merge the distance shapefiles together.

1. Open the Merge tool.
2. Input datasets distance_bk_pluto, distance_qn_pluto, distance_mn_pluto, distance_bx_pluto, and distance_si_pluto.
3. Name the output dataset merge_distbbl.
4. In the Field Map window, remove all fields except BBL and dist_key.

Some lots were identified as located within two different walksheds. For example, half of a lot may be characterized as within 1/4 mile to a park entrance, while the other half would fall within 1/2 mile. To merge these split lots back into one cohesive lot, use the BBL as a unique identifier and replace the lot's distance from the station attribute as the closest distance.

1. Open the Dissolve tool.
2. Select merge_distbbl as the input feature.
3. Name the output feature class nyc_pluto_distToPark.
4. In the Dissolve_Field(s) window, select the BBL field.
5. In the Statistics Field(s) drop-down field, select dist_key.
    a. In the window beneath the drop-down field, click the cell under Statistics Type and select MAX from the drop-down menu. Click ok.

To clarify the definition of the numerical distance key, create a new field with the corresponding text definitions.

1. Open the attribute table for nyc_pluto_distToPark.
2. Add a new field, select data type as text, and name the field distance.
3. Open the Field Calculator for the distance field.
4. Select the Python Parser.
5. Select Show Codeblock.
6. In the Pre-Logic Script window, paste the following code:

```
def totext(maxdistkey):
```

```
    if (maxdistkey == 4):
        return "Within 1/4 mile to a park"
    elif (maxdistkey == 3):
        return "Between 1/4 mile and 1/2 mile to a park"
    elif (maxdistkey == 2):
        return "Between 1/2 mile and 3/4 mile to a park"
    elif (maxdistkey == 1):
        return "Between 3/4 mile and 1 mile to a park"
    else:
        return "Outside of 1 mile to a park"
```

7. In the window below ("distance ="), paste:
   `totext(!MAX_dist_k!)`

To create the Boolean value fields, create five new fields to mark parcels that fall within distance walksheds.

1. Add a new field, select data type as short integer, and name the field bool_025mi.
2. Repeat Step 1, naming the fields bool_05mi, bool_075mi, bool_1mi, and bool_gtr1mi.

If a parcel falls within ¼ mile walk to a subway station, fill the field with 1 (True), and if not, fill with 0 (False).

1. Open the Field Calculator for the bool_025mi field.
2. Select the Python Parser.
3. Select Show Codeblock.
4. In the Pre-Logic Script window, paste the following code:

```
def boolean(maxdistkey):
  if (maxdistkey == 4):
      return 1
  else:
      return 0
```

5. In the window below ("distance ="), paste:
   `boolean(!MAX_dist_k!)`

If a parcel falls within ½ mile walk to a subway station, fill the field with 1 (True), and if not, fill with 0 (False).

1. Open the Field Calculator for the bool_05 field.
2. Select the Python Parser.
3. Select Show Codeblock.
4. In the Pre-Logic Script window, paste the following code:

```
def boolean(maxdistkey):
  if (maxdistkey > 3):
      return 1
  else:
      return 0
```

5. In the window below ("distance ="), paste:
   `boolean(!MAX_dist_k!)`

If a parcel falls within ¾ mile walk to a subway station, fill the field with 1 (True), and if not, fill with 0 (False).

1. Open the Field Calculator for the bool_075mi field.
2. Select the Python Parser.
3. Select Show Codeblock.
4. In the Pre-Logic Script window, paste the following code:

```
def boolean(maxdistkey):
```

```
    if (maxdistkey > 2):
        return 1
    else:
        return 0
```

5. In the window below ("distance ="), paste:

```
boolean(!MAX_dist_k!)
```

If a parcel falls within 1 mile walk to a subway station, fill the field with 1 (True), and if not, fill with 0 (False).

1. Open the Field Calculator for the bool_1mi field.
2. Select the Python Parser.
3. Select Show Codeblock.
4. In the Pre-Logic Script window, paste the following code:

```
def boolean(maxdistkey):
  if (maxdistkey > 1):
      return 1
  else:
      return 0
```

5. In the window below ("distance ="), paste:

```
boolean(!MAX_dist_k!)
```

If a parcel falls outside of 1 mile walk to a subway station, fill the field with 1 (True), and if not, fill with 0 (False).

1. Open the Field Calculator for the bool_gtr1mi field.
2. Select the Python Parser.
3. Select Show Codeblock.
4. In the Pre-Logic Script window, paste the following code:

```
def boolean(maxdistkey):
  if (maxdistkey == 0):
      return 1
  else:
      return 0
```

5. In the window below ("distance ="), paste:

```
boolean(!MAX_dist_k!)
```

Exporting Analysis

To include this analysis in a larger, BBL-based MapPLUTO, export the resulting dataset as both a database file (.dbf), a table format, and a shapefile (.shp). To do so, remove all extraneous fields, keeping the BBL field and other relevant fields.

1. Right click on the nyc_pluto_distToParks layer and select Properties.
    a. In the Fields tab, click the icon to turn off all fields.
    b. Select the BBL, MAX_dist_k, distance, bool_025mi, bool_05mi, bool_075mi, bool_1mi, and bool_gtr1mi fields to turn them back on.
2. Open the attribute table and click on Table Options to select Export.
    a. Export the attribute table as a new database file (.dbf), named distanceToParks_BBL_19v1.
3. Right click on the nyc_pluto_distToParks layer and select Data, then select Export Data.
    a. Export to a new shapefile (.shp), named distanceToParks_BBL_19v1.