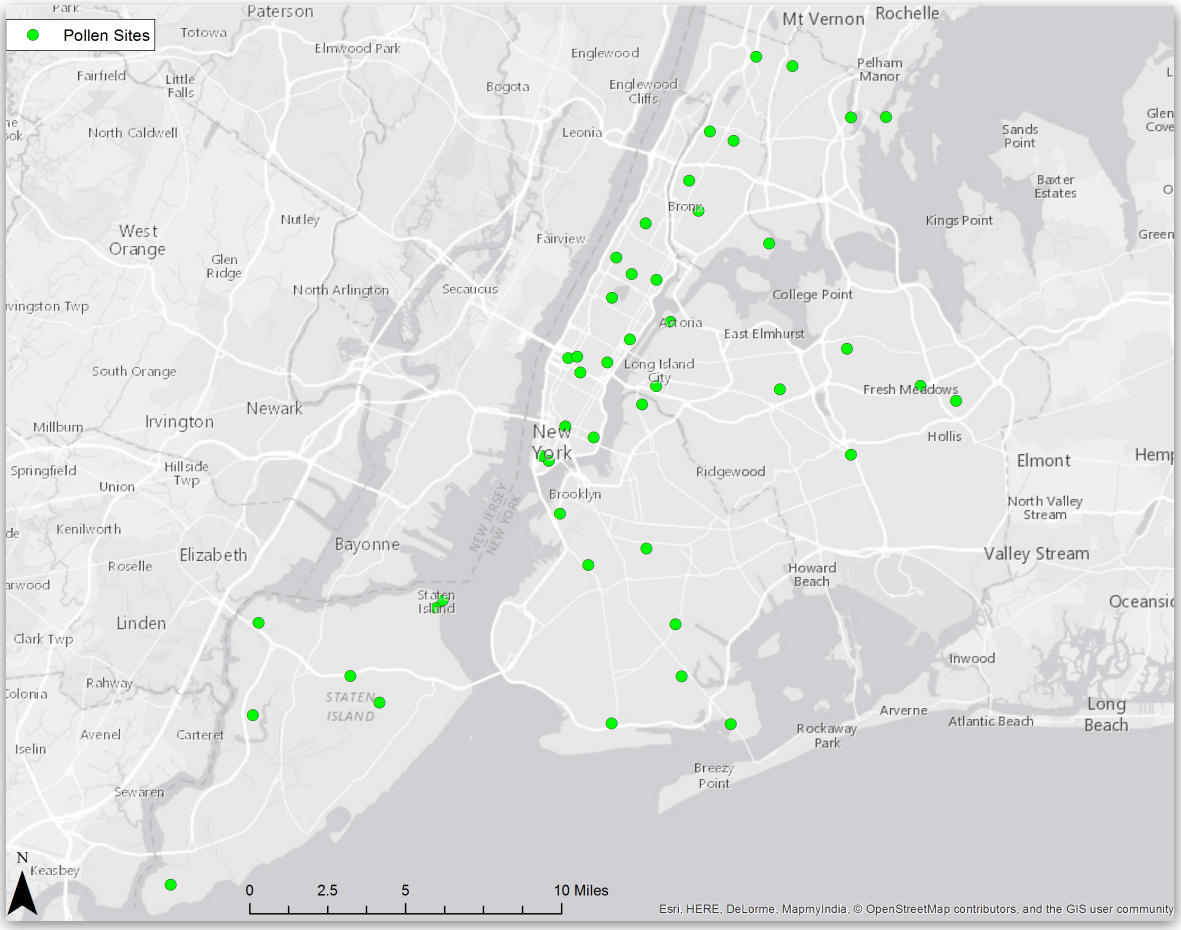

Tree Pollen Sites and Grid points (100 meter) Variables Data Dictionary for NAAS

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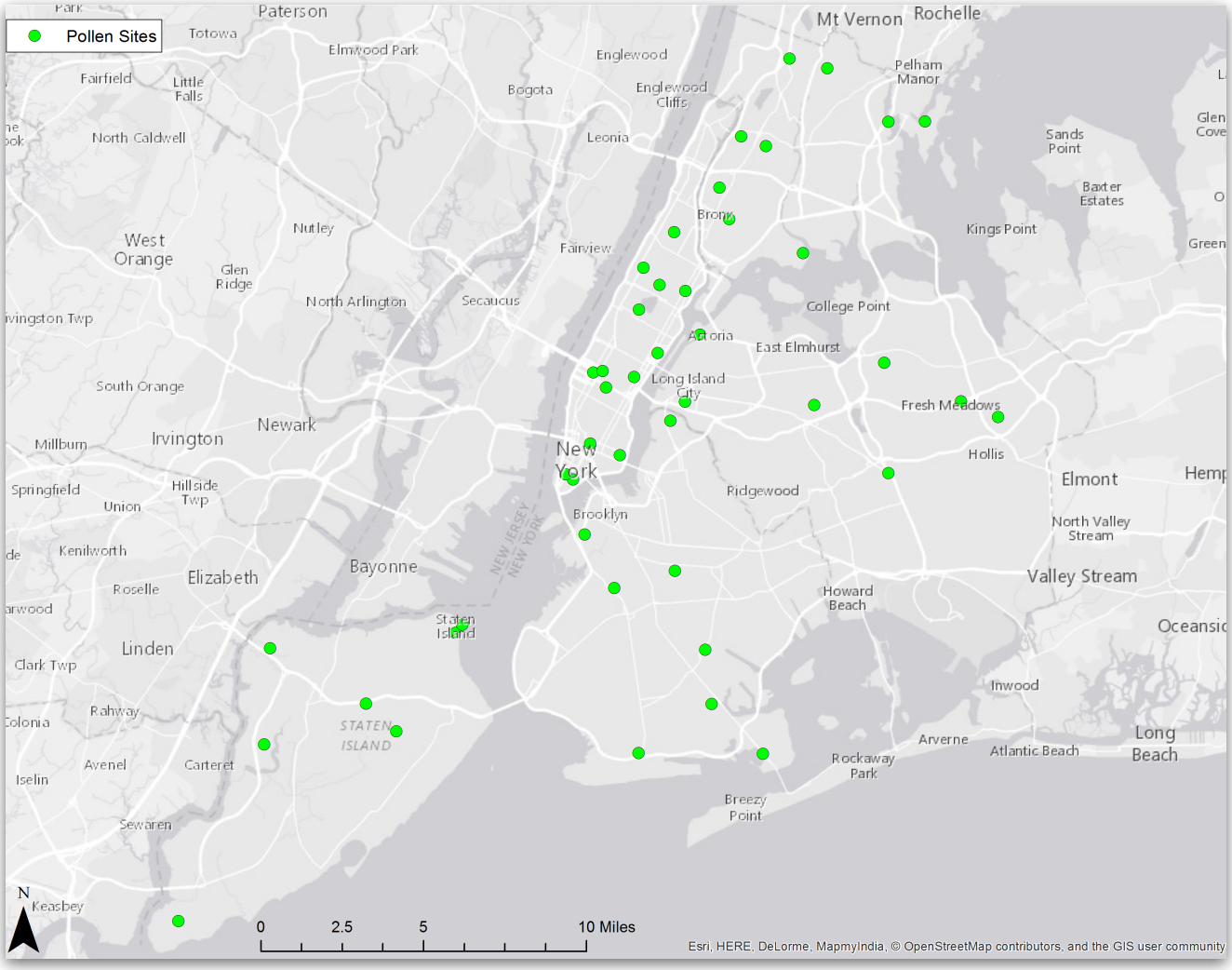
trafnysd-^^^^^^avg_YYYY 13

ABOUT

The following document is the data dictionary for variables pertaining to 45 locations that were used for pollen monitoring. Kate Weinberger (krw2114@columbia.edu), PhD Candidate, at the Department of Environmental Health Sciences at the Mailman School of Public Health at Columbia University administered the site selection and pollen sampling. This data dictionary's purpose is to aid in her analysis of the pollen sites' data. These pollen sites and future analysis are being performed along with the Neighborhood Asthma and Allergy Study (NYC NAAS) study.

Map of Pollen Sites



DATASETS

There are unique datasets for the following geographies:

Pollen Sites

Describe the pollen sites

Filename:

Grid Points

Describe the grid points

Filename:

Geography type	Geography Prefix
Pollen Sites	p
Grid Points	g

PROJECTED COORDINATE SYSTEM INFORMATION

This project study area is the entirety of New York City, NY. Thus, all of the data was converted to and processed in NAD 1983 StatePlane New York Long Island FIPS 3104 Feet.

NAD_1983_StatePlane_New_York_Long_Island_FIPS_3104_Feet
WKID: 2263 Authority: EPSG
Projection: Lambert_Conformal_Conic
False_Easting: 984250.0
False_Northing: 0.0
Central_Meridian: -74.0
Standard_Parallel_1: 40.66666666666666
Standard_Parallel_2: 41.03333333333333
Latitude_Of_Origin: 40.16666666666666
Linear Unit: Foot_US (0.3048006096012192)
Geographic Coordinate System: GCS_North_American_1983
Angular Unit: Degree (0.0174532925199433)
Prime Meridian: Greenwich (0.0)
Datum: D_North_American_1983
Spheroid: GRS_1980
Semimajor Axis: 6378137.0
Semiminor Axis: 6356752.314140356

Inverse Flattening: 298.257222101

VARIABLES

Following is a list of variables and their corresponding definitions.

Pollen Site IDs and coordinate information

siteid

The pollen site unique identification number. Provided by Kate Weinberger

longitude

The pollen site longitude value in decimal degrees.

latitude

The pollen site latitude value in decimal degrees.

xcoord

The pollen site x coordinate in NAD_1983_StatePlane_New_York_Long_Island_FIPS_3104_Feet WKID: 2263 Authority: EPSG (see Projected Coordinate System Information).

ycoord

The pollen site y coordinate in NAD_1983_StatePlane_New_York_Long_Island_FIPS_3104_Feet WKID: 2263 Authority: EPSG (see Projected Coordinate System Information).

Pollen Site Elevation Variables

Method for assigning elevation data to Pollen Sites

* Esri tool: Extract Values to Points (http://resources.arcgis.com/en/help/main/10.1/index.html#//009z0000002t000000)
    * Interpolate values at the point locations (optional)
        * Specifies whether or not interpolation will be used.
        * Checked—The value of the cell will be calculated from the adjacent cells with valid values using bilinear interpolation. NoData values will be ignored in the interpolation unless all adjacent cells are NoData.

p_point_elev10ft

Digital elevation of Pollen Site in feet for NYC DEM 10 foot grid.

About the NYC Digital Elevation Model (DEM) 10 foot (cell resolution).
The NYC Digital Elevation Model (DEM) 10 foot (cell resolution) data layer was created by [James Quinn](mailto:jq2145@columbia.edu?subject=10 Ft Elevation DEM") of the [Built Environment and Health Group](http://beh.columbia.edu/). James used the [Topo to Raster](http://resources.arcgis.com/en/help/main/10.1/index.html#//009z0000006s000000) ArcToolbox tool. All of the input data was from NYCMap (contours, elev pts, surface waters, shorelines). Which were available to the public back in the summer of 2006. James spent a lot of time cleaning up the shoreline layer. The data was received from Sarah Williams of [Columbia University's Spatial Information and Design Lab (SIDL)](http://www.spatialinformationdesignlab.org/)

p_point_elev01ft

Digital elevation of Pollen Site in feet for NYC DEM 1 foot grid.

About the NYC Digital Elevation Model (DEM) 1 foot (cell resolution).
The NYC Digital Elevation Model (DEM) 1 foot (cell resolution) data layer was created for NYC from a 2010 Light Detection And Ranging (LIDAR) mission. [NYC Open Data 1 foot LIDAR Derived Elevation Model](https://data.cityofnewyork.us/City-Government/1-foot-Digital-Elevation-Model-DEM-/dpc8-z3jc?category=City-Government&view_name=1-foot-Digital-Elevation-Model-DEM-)

Pollen Site Nearness to Water Bodies Variables

Method for assigning near water bodies to Pollen Sites
Esri Tool: Near Analysis (http://resources.arcgis.com/en/help/main/10.1/index.html#//00080000001q000000)

Specifies whether the near angle values in decimal degrees will be calculated and written to a new field, NEAR_ANGLE. A near angle measures from the x-axis (horizontal axis) to the direction of the line connecting an input feature to its nearest feature at their closest locations, and it is within the range of 0 to 180 or 0 to -180 decimal degrees - 0 to the east, 90 to the north, 180 (-180°) to the west, and -90 to the south.

Near Analysis Diagram

<!-- -->
![img/near.png](img/near.png)

p_pointwaternearangle

The angle to the nearest water body. 0 to the east, 90 to the north, 180 (-180°) to the west, and -90 to the south

p_pointwaternearfeet

The distance to the nearest water body in feet.

p_pointwaternearmeters

The distance to the nearest water body in meters.

###Neighborhood Geography Areas and Land Areas

For this project the following neighborhood geography buffers were created:

Radial Buffer Sizes List

* 0.05 km (50 meters)(164.042 feet) - r0050m
* 0.1 km (100 meters)(328.084 feet) - r0100m
* 0.25 km (250 meters)(820.210 feet) - r0250m
* 0.5 km (500 meters)(1640.420 feet) - r0500m
* 1   km (1000 meters)(3280.840 feet) - r1000m

Each of these buffers was then processed so that only land area of the point's residing borough was included. Buffers were allowed to cross boroughs if the borough boundaries were land based.

#####Neighborhood Geography Areas and Land Areas Diagram

####Geography prefix (anatomy of variable):

for - in geogsList = ['p'] #Pollen Sites

for ^^^^^^ in radbufListFn = ['r0050m','r0100m','r0250m','r0500m','r1000m'] #radial buffer - distance (meters)

For example pr0500mlandsqmtrs is the variable for the pollen sites (p) radial buffer of 500 meters (r0500m) the neighborhood geography land area in meters (landsqmtrs). p + r0500m + landsqmtrs

-^^^^^^origsqmtrs

The pollen site neighborhood geography original area (including areas over water) in square meters.

-^^^^^^landsqmtrs

The pollen site neighborhood geography land area (water areas removed) in square meters.

###Neighborhood Tree Canopy Area and Percentage Variables
#####Tree Canopy Diagram
![img/tree_canopy.png](img/tree_canopy.png)
####Geography prefix (anatomy of variable):

for - in geogsList = ['p'] #Pollen Sites

for ^^^^^^ in radbufListFn = ['r0050m','r0100m','r0250m','r0500m','r1000m'] #radial buffer - distance (meters)

For example pr0500mtreecpctland is the variable for the pollen sites (p) radial buffer of 500 meters (r0500m) percent of neighborhood geography land area that is tree canopy (treecpctland). p + r0500m + treecpctland

-^^^^^^treecsqmtrs

The amount of tree canopy area in the 50 meter buffer geography area in square meters.

-^^^^^^treecpctorig

The percent of neighorhood area of the neighborhood geography 50 meter buffer original area (including areas over water) covered by tree canopy.

-^^^^^^treecpctland

The percent of neighorhood area of the neighborhood geography 50 meter buffer land area (water areas removed) covered by tree canopy.

###Neighborhood Geography Elevation Variables
#####Elevation Diagram
![img/elevation.png](img/elevation.png)
#####Method for assigning near water bodies to Pollen Sites
[Zonal statistics as table](http://resources.arcgis.com/en/help/main/10.1/index.html#//009z000000w8000000) for land area.

All of the following variables are constructed with the following variable name prefix configuration:

####Geography prefix (anatomy of variable):

for - in geogsList = ['p'] #Pollen Sites

for ^^^^^^ in radbufListFn = ['r0050m','r0100m','r0250m','r0500m','r1000m'] #radial buffer - distance (meters)

For example pr0500melev10ftmean is the variable for the pollen sites (p) radial buffer of 500 meters (r0500m) the 10 foot DEM elevation mean (elev10ftmean). p + r0500m + elev10ftmean

####NYC DEM 10 FT Resolution Variables

The NYC Digital Elevation Model (DEM) 10 foot (cell resolution) data layer was created by [James Quinn](mailto:jq2145@columbia.edu?subject=10 Ft Elevation DEM") of the [Built Environment and Health Group](http://beh.columbia.edu/). James used the [Topo to Raster](http://resources.arcgis.com/en/help/main/10.1/index.html#//009z0000006s000000) ArcToolbox tool. All of the input data was from NYCMap (contours, elev pts, surface waters, shorelines). Which were available to the public back in the summer of 2006. James spent a lot of time cleaning up the shoreline layer. The data was received from Sarah Williams of [Columbia University's Spatial Information and Design Lab (SIDL)](http://www.spatialinformationdesignlab.org/)

-^^^^^^elev10ftcount

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) count of elevation raster grid cells contributing to the zonal statistics.

-^^^^^^elev10ftmin

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) minimum elevation raster grid cell contributing to the zonal statistics.

-^^^^^^elev10ftmax

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) maximum elevation raster grid cell contributing to the zonal statistics.

-^^^^^^elev10ftmean

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) mean elevation raster grid cell contributing to the zonal statistics.

-^^^^^^elev10ftstd

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) standard deviation of raster grid cells contributing to the zonal statistics.

####NYC DEM 1 FT Resolution Variables

The NYC Digital Elevation Model (DEM) 1 foot (cell resolution) data layer was created for NYC from a 2010 Light Detection And Ranging (LIDAR) mission. [NYC Open Data 1 foot LIDAR Derived Elevation Model](https://data.cityofnewyork.us/City-Government/1-foot-Digital-Elevation-Model-DEM-/dpc8-z3jc?category=City-Government&view_name=1-foot-Digital-Elevation-Model-DEM-)

-^^^^^^elev01ftcount

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) count of elevation raster grid cells contributing to the zonal statistics.

-^^^^^^elev01ftmin

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) minimum elevation raster grid cell contributing to the zonal statistics.

-^^^^^^elev01ftmax

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) maximum elevation raster grid cell contributing to the zonal statistics.

-^^^^^^elev01ftmean

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) mean elevation raster grid cell contributing to the zonal statistics.

-^^^^^^elev01ftstd

The pollen site neighborhood geography 50 meter buffer land area (water areas removed) standard deviation of raster grid cells contributing to the zonal statistics.

##Building Variables

All building data was converted to meters. Volume is in square meters.

###Building Volume

-^^^^^^bldgvol

The pollen site neighborhood geography (^^^^^^) buffer land area total building volume.

###Building Bulk

-^^^^^^bldgbulkorig

The pollen site neighborhood geography (^^^^^^) buffer land area total building volume/original area (including areas over water).

-^^^^^^bldgbulkland

The pollen site neighborhood geography (^^^^^^) buffer land area total building volume/land area (water areas removed).

###Google Earth screenshot

###Building and neighborhood geography

###Building Volume Spread over the entire neighborhood


##Traffic Variables
The earliest birth date for children in the study cohort we're going to be estimating exposures for is in 2001, so I'd use that as the cutoff.

for - in geogsList = ['p'] #Pollen Sites

for ^^^^^^ in radbufListFn = ['r0050m','r0100m','r0250m','r0500m','r1000m'] #radial buffer - distance (meters)

for YYYY in YearsRange = (2001-2012) #range of years for traffic obs. some missing due to no data intersected.

####Esri Traffic Count Variables
The Esri Traffic data was for Years: 2001 - 2012. All 0 or null Traffic Count data was removed. The data was a point file (point - see traffic.png below).

####Annual Average Daily Traffic - 2001-2012
trafesri-^^^^^^avg_20012012
The pollen site neighborhood geography (^^^^^^) buffer land area (water areas removed) average Esri data traffic count for years: 2001 - 2012.

####Annual Average Daily Traffic by Year - 2001-2012
trafesri-^^^^^^avg_YYYY
The pollen site neighborhood geography (^^^^^^) buffer land area (water areas removed) average Esri data traffic count by Year (YYYY). Years: 2001 - 2012.

####New York State (NYS) DOT (Department of Transportation) Traffic Count Variables
[NYS Traffic Data Viewer](http://gis.dot.ny.gov/tdv/)

I emailed the NYS DOT and they sent the shapefile. The Year used for this project was 2012. The data is for street segments (line - see traffic.png below).

trafnysd-^^^^^^avg_YYYY

The pollen site neighborhood geography (^^^^^^) buffer land area (water areas removed) average NYS DOT data traffic count by Year (YYYY).

!\[img/traffic.png\](img/traffic.png)