NYC MTA Subway & the L-Train Closure

Geographic Information Systems
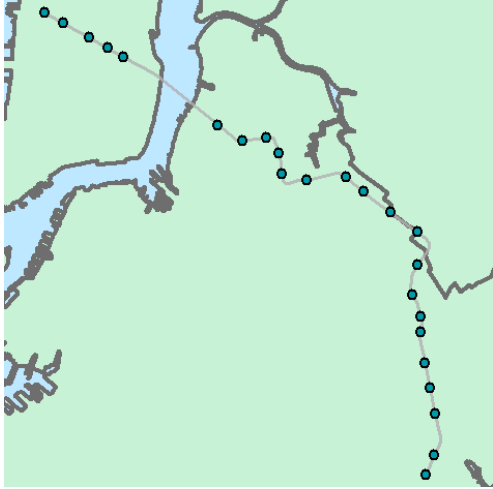
Fernando Melchor

Assessment of the Impact

Methodology:

- Define affected Area
- Usage of the subway in the affected area.
- Who uses the subway in the affected area?
- How many businesses are affected?
- How the subway system works now?
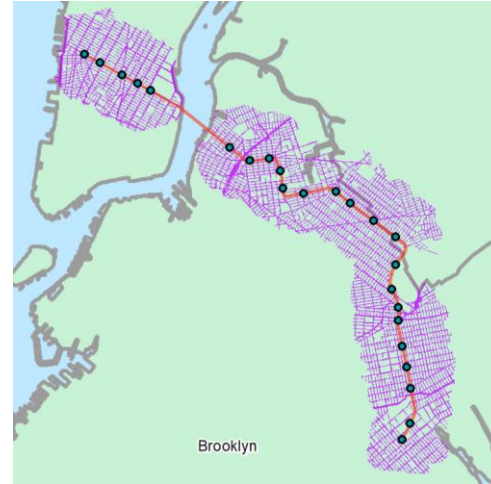- How it will work after the partial closure of the L-Train?

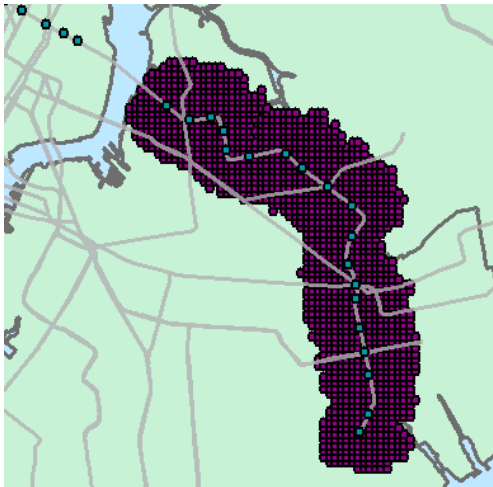# Process Methodology
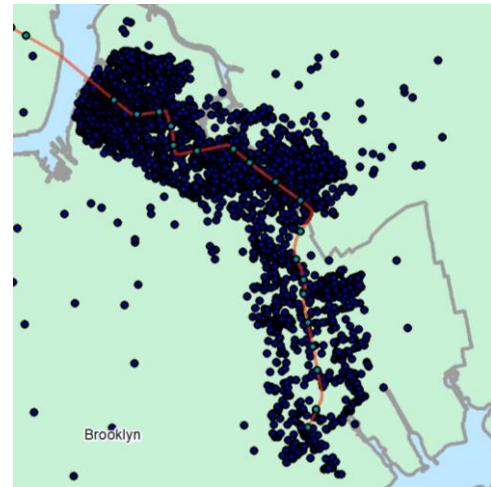
L-Train Stations

Deliver only points

Union of polygons

Mazpen API

Polygon
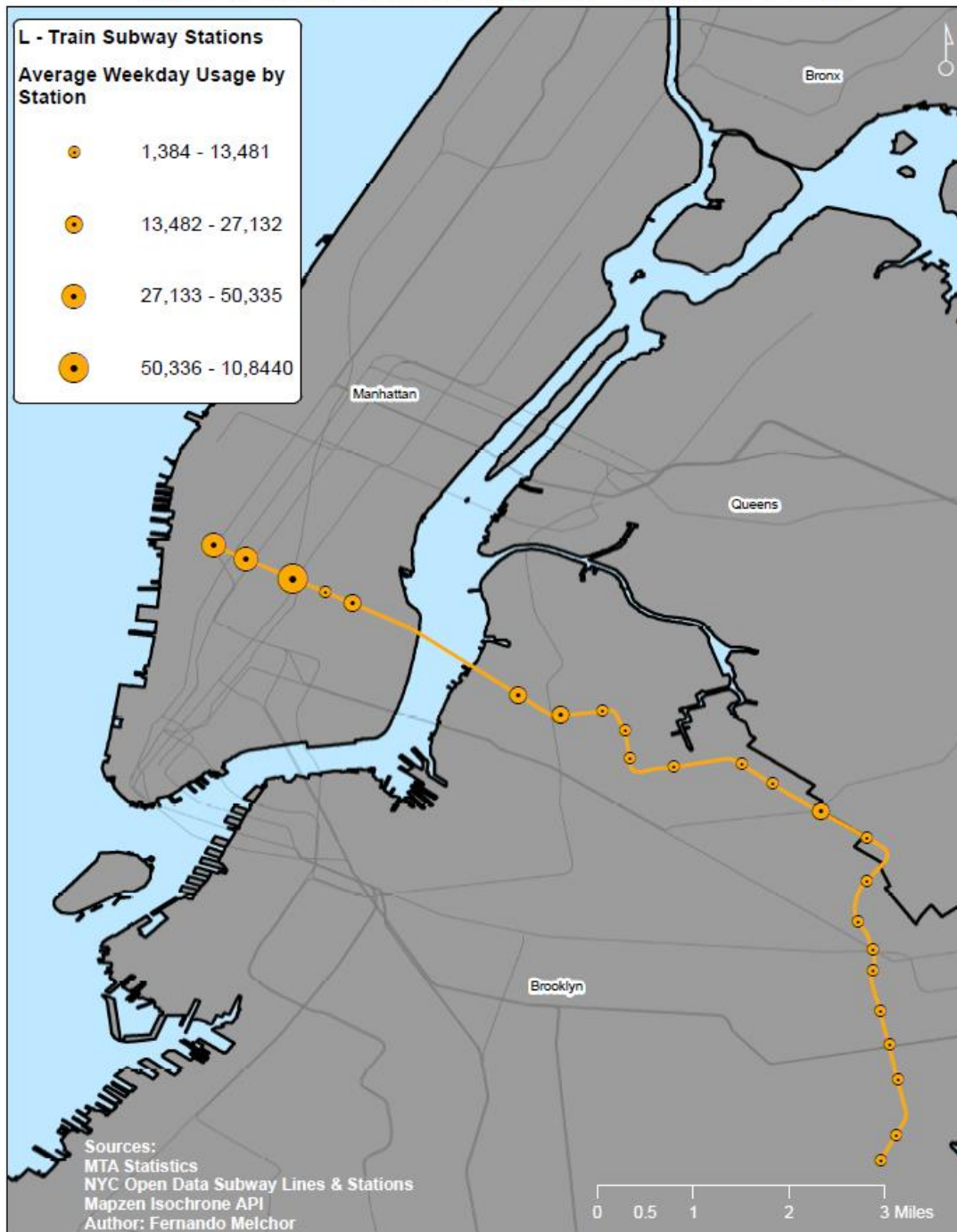
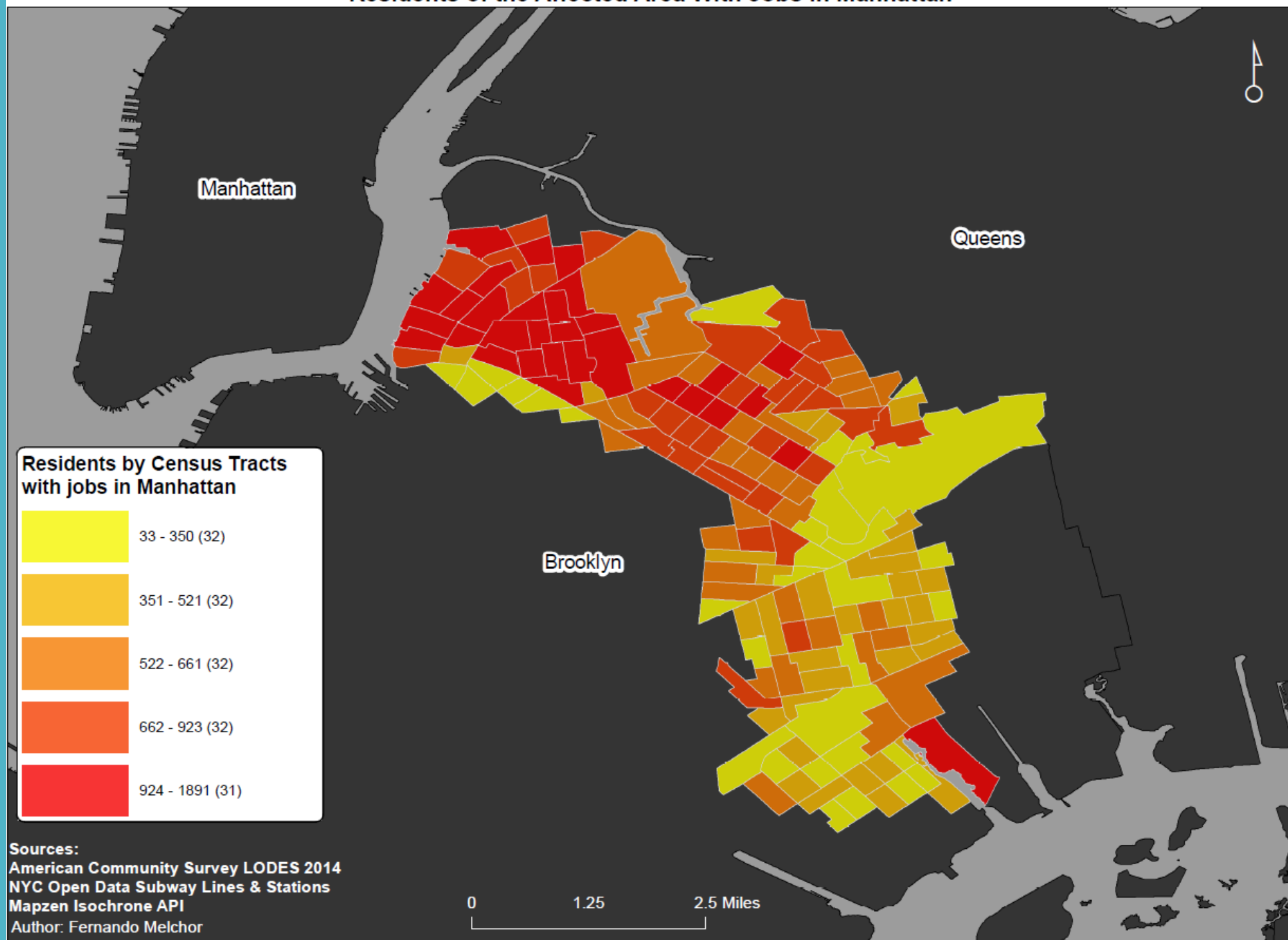Fishnet even dist. points

Businesses returned by Yelp

Kernel density of businesses

Yelp API

Density
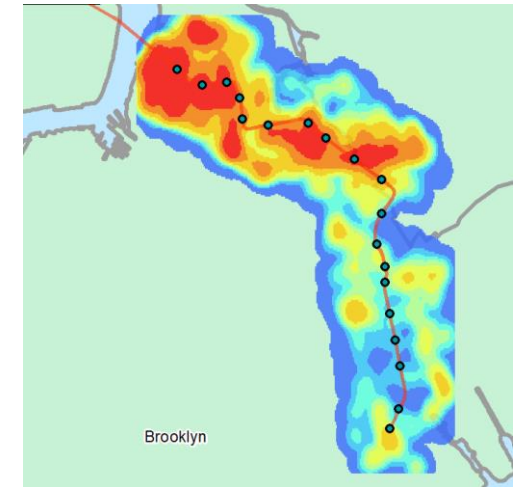
NYC L-Train Closure Impact - Stations Usage

L - Train Subway Stations

Average Weekday Usage by Station

- 1,384 - 13,481
- 13,482 - 27,132
- 27,133 - 50,335
- 50,336 - 10,8440

Bronx

Manhattan

Queens

Brooklyn

Sources:
MTA Statistics
NYC Open Data Subway Lines & Stations
Mapzen Isochrone API
Author: Fernando Melchor

0   0.5   1   2   3 Miles

Residents of the Affected Area With Jobs in Manhattan

Manhattan

Queens

Brooklyn

Residents by Census Tracts with jobs in Manhattan

	33 - 350 (32)
	351 - 521 (32)
	522 - 661 (32)
	662 - 923 (32)
	924 - 1891 (31)

0   1.25   2.5 Miles

Jobs in Manhattan Occupied by Residents of the Affected Area

Jobs by Census Tracts Occupied by residents of the affected area.

- 0 - 16 (60)
- 17 - 57 (58)
- 58 - 153 (57)
- 154 - 553 (57)
- 554 - 3333 (56)

Affected Area

Manhattan

Queens

Brooklyn

Manhattan

Bronx

Queens

Brooklyn
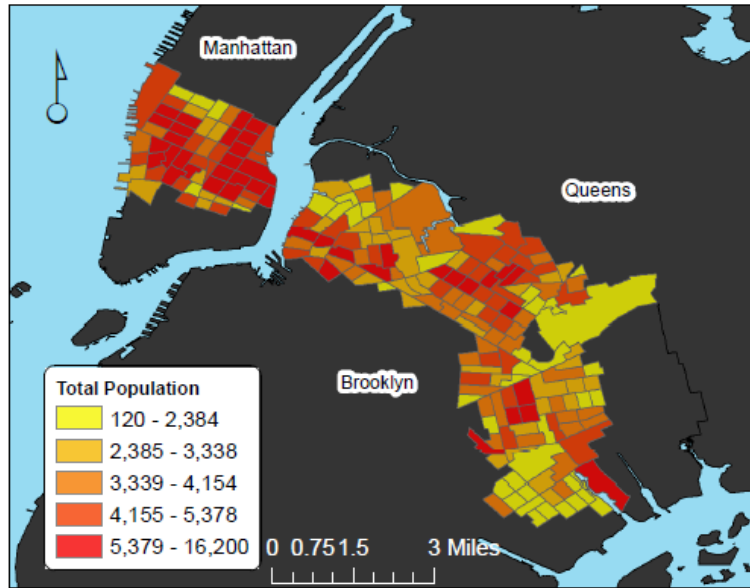
0   2   4 Miles

0   1.75   3.5 Miles
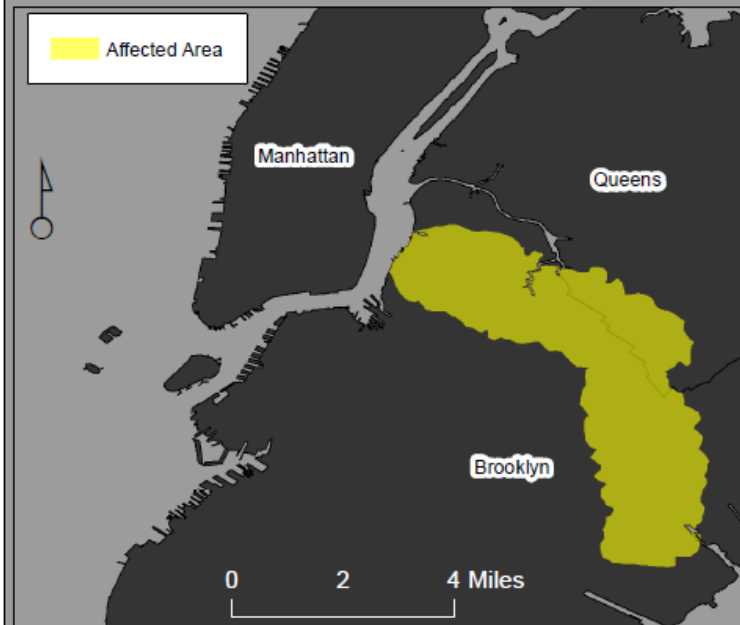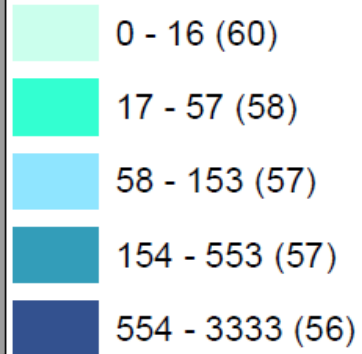
Sources:
American Community Survey LODES 2014
NYC Open Data Subway Lines & Stations
Mapzen Isochrone API
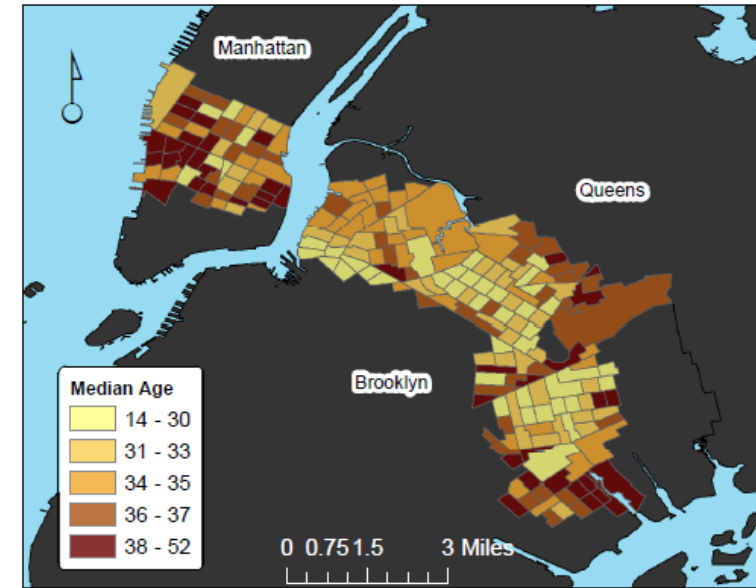Author: Fernando Melchor
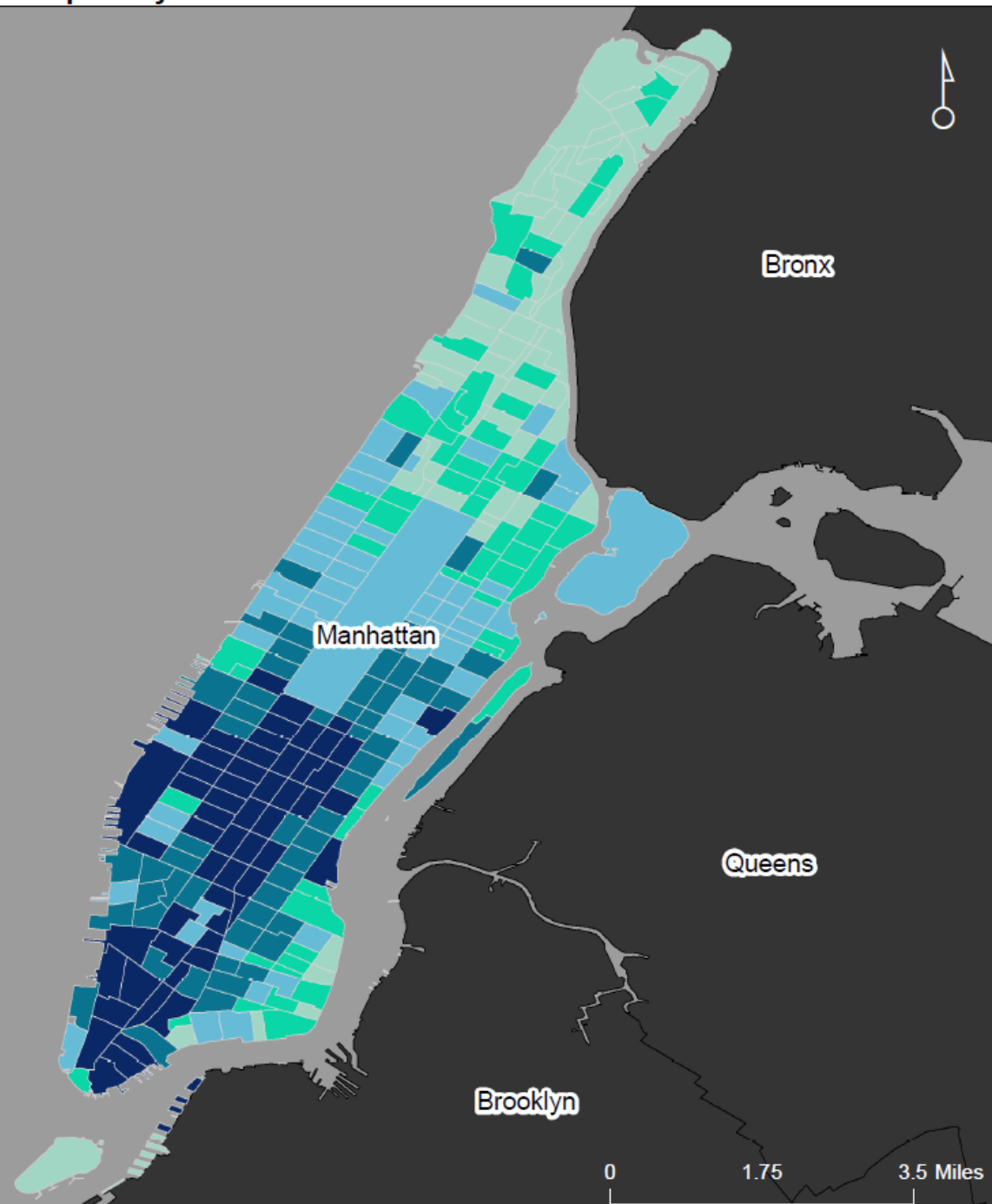
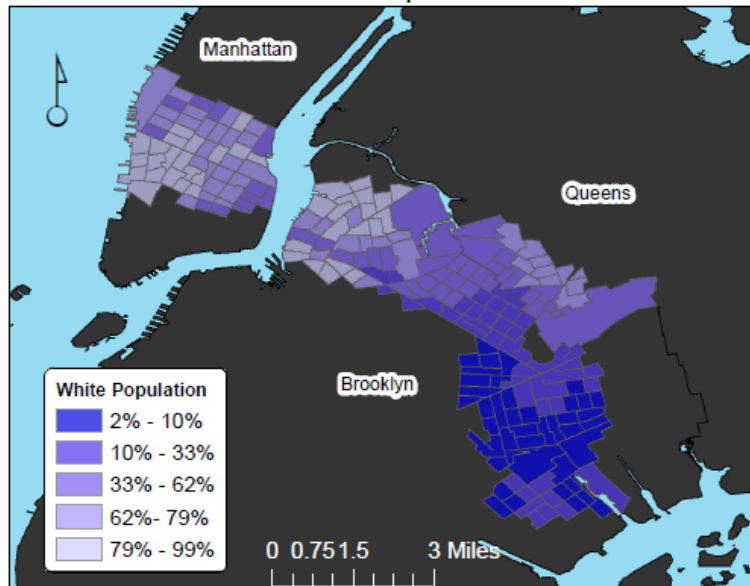NYC L-Train Closure Impact - Affected Area Characterization by Census Tracts
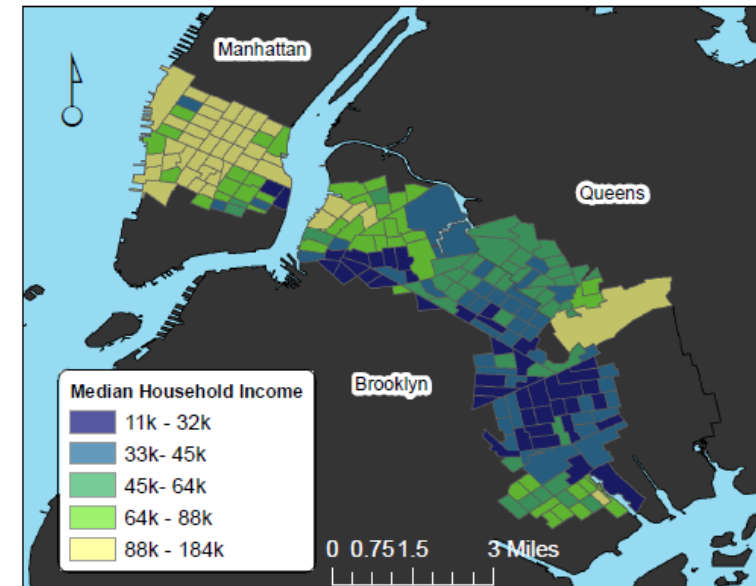
Total Population

Median Age

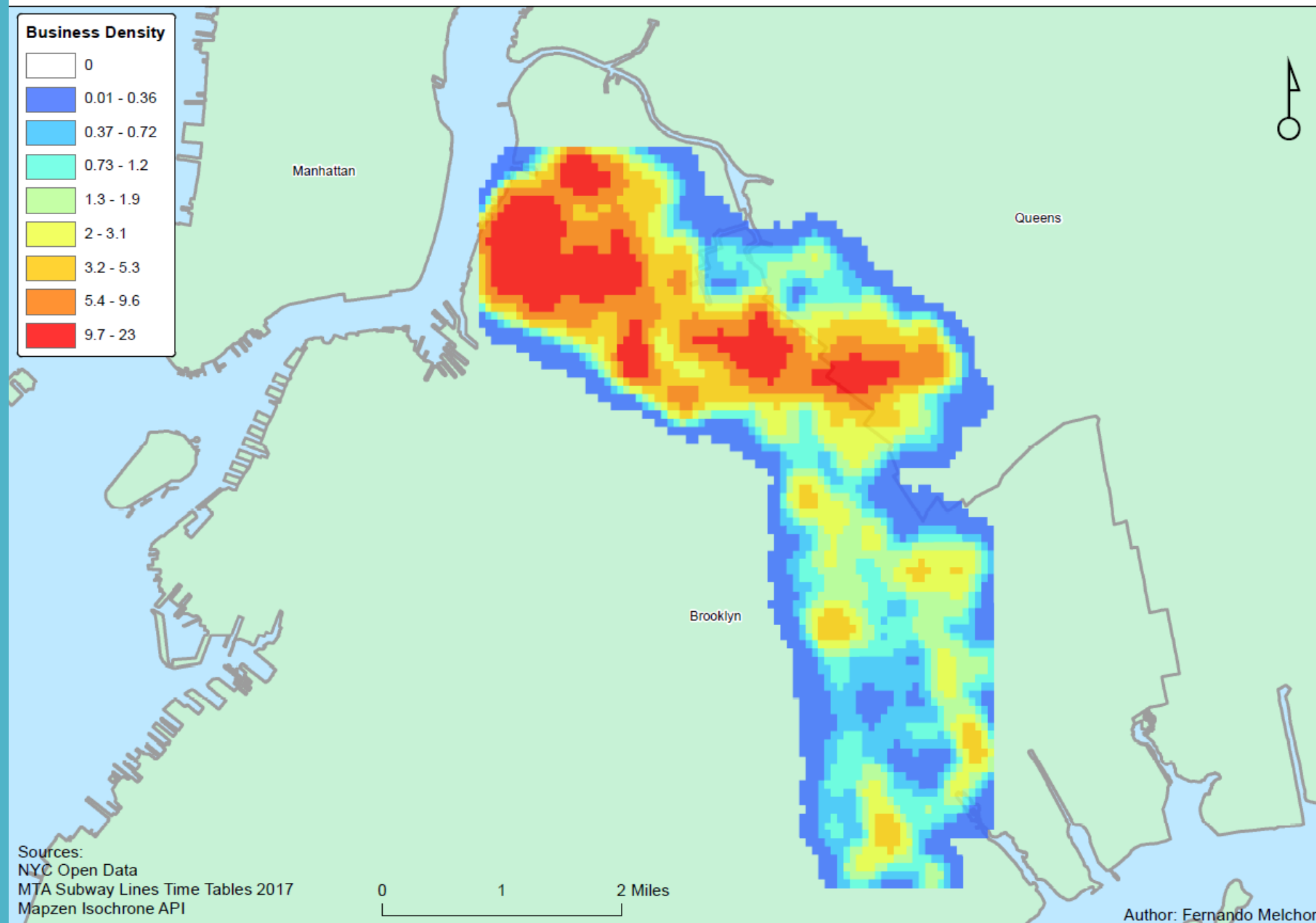White Population
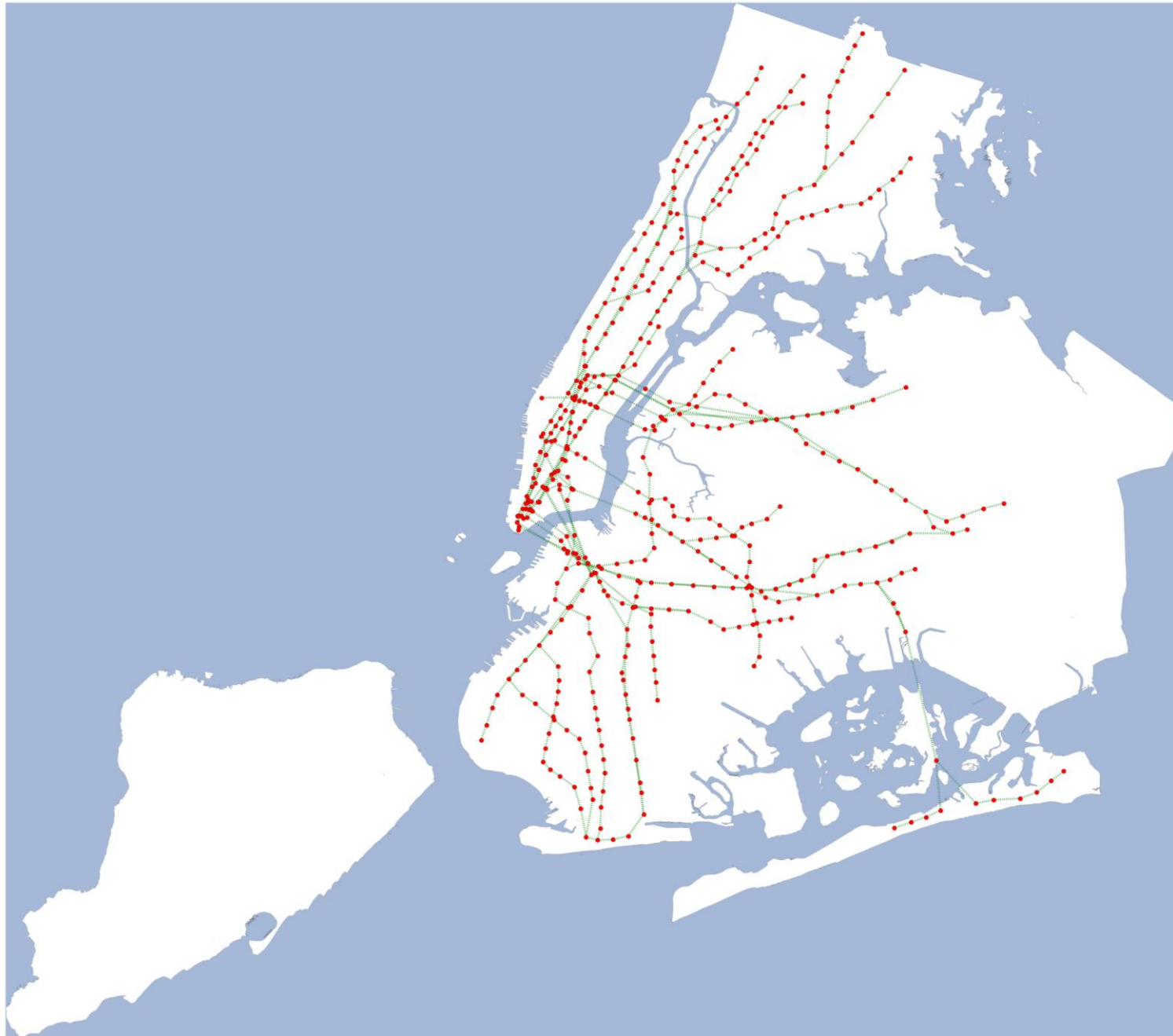
Median Household Income

Sources:
American Community Survey 2015
Census Bureau

Notes:
Total Population average error 8% - Median Household Income error 23%
Median age error 3.4 years - White population error 7%

Author: Fernando Melchor 2017

Density of Business in Affected Area

Business Density

- 0
- 0.01 - 0.36
- 0.37 - 0.72
- 0.73 - 1.2
- 1.3 - 1.9
- 2 - 3.1
- 3.2 - 5.3
- 5.4 - 9.6
- 9.7 - 23

Manhattan

Queens

Brooklyn

Sources:
NYC Open Data
MTA Subway Lines Time Tables 2017
Mapzen Isochrone API

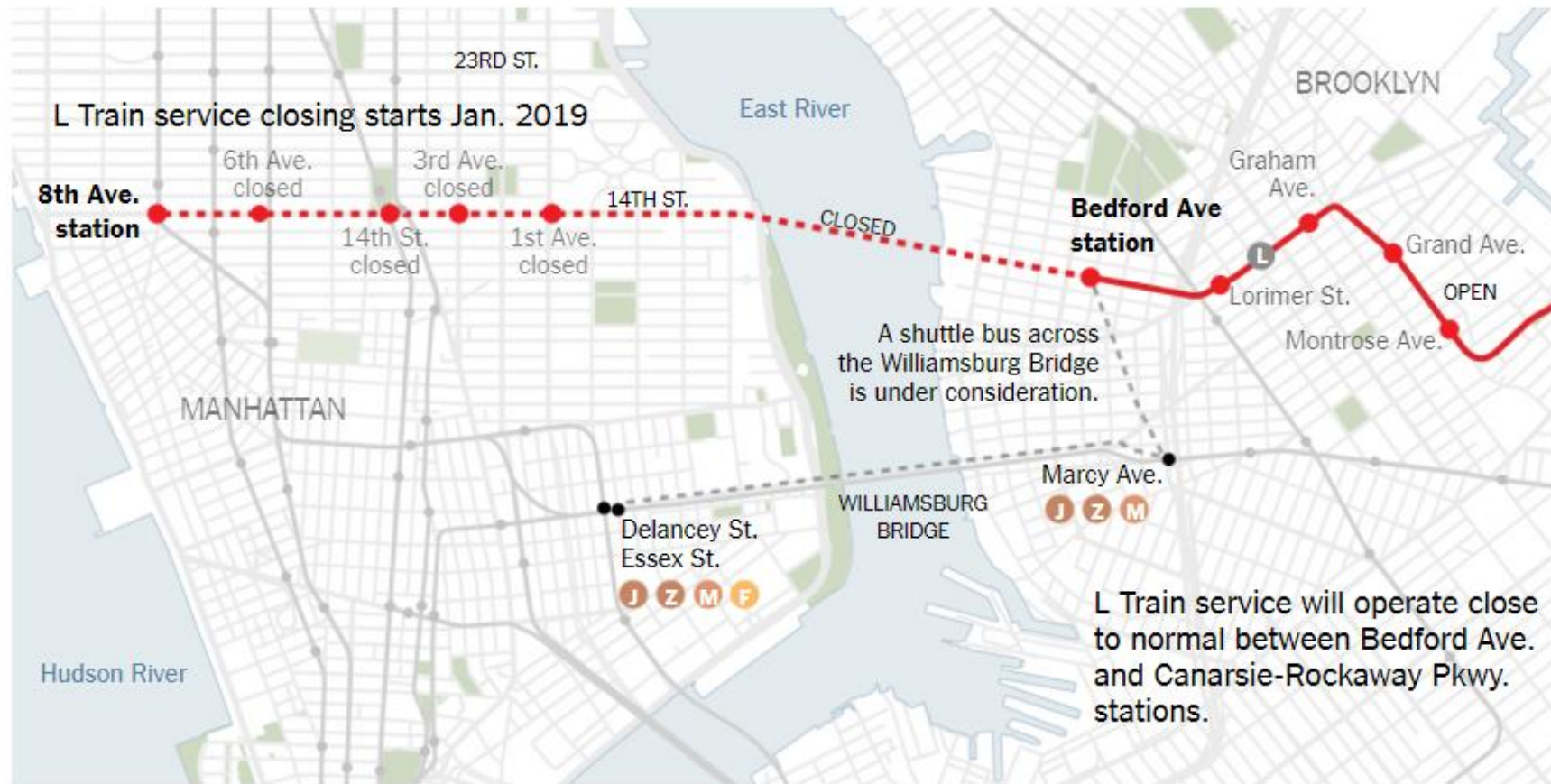0   1   2 Miles

Author: Fernando Melchor

The Subway System as a Network

Following the operation rules of the NYC Subway during morning rush-hours during a weekday.

The subway as a graph.

Choose the shortest path

Measures of connectivity, degree, centrality, and betweeness.

By The New York Times

How this will affect the network?

Let me introduce you to Sophie:

Q&A