

Social Impact Project

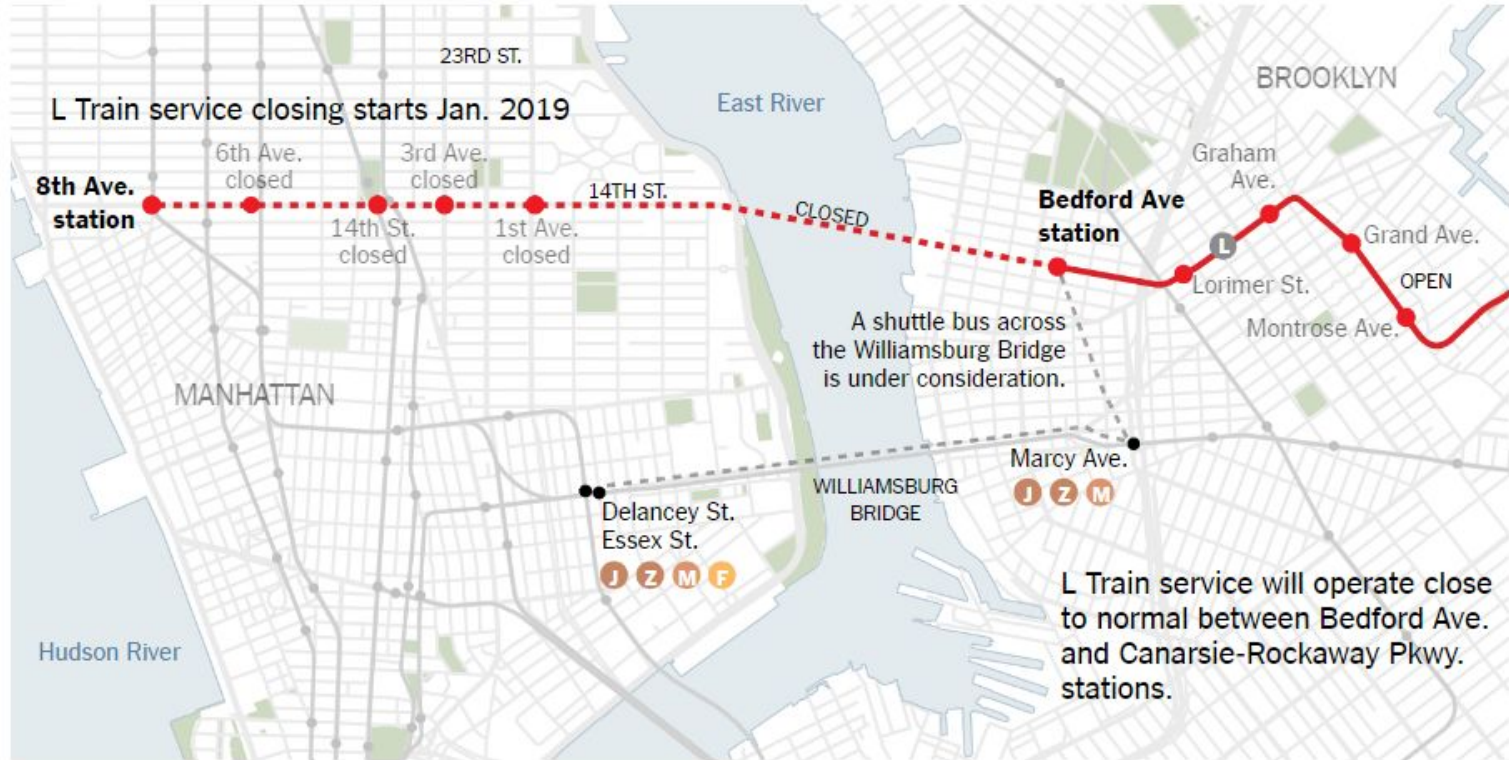
Planning for the L-train Closure in Brooklyn

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Overview

- Project Objective
- Data and Methodology
- Analysis and Results
 - Affected area
 - Commuter origins and destinations
 - Alternate route time differences
- Conclusions and recommendations



By The New York Times

Project Objectives

1. Identify Brooklyn census tracts most impacted by the L-train closure
2. Characterize affected tracts using socioeconomic indicators
3. Quantify the impact for commuters in terms of travel time
4. Attempt to predict alternate transit routes that will see the most significant load increases*

Client

MTA

Data Sources

- LODES (worker origin-destination data)
- Census blocks and tracts
- American Community Survey
- Mapzen turn-by-turn API (includes travelshed / isochrone generator)
- Station/stop points and routes
- Subway turnstile data

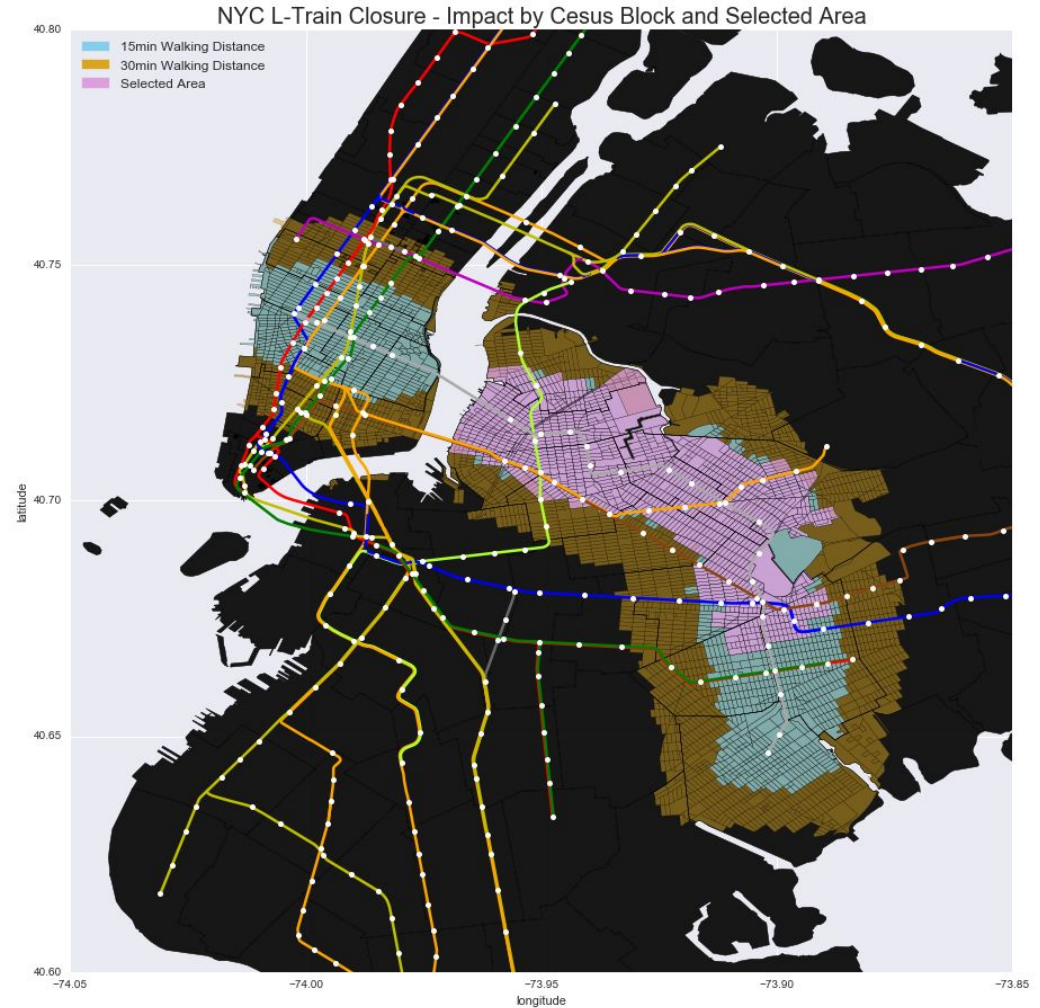
Methodology

1. Define the study area using geospatial analysis
2. Characterize the study area using
 - a. Census data
 - b. Turnstile data
 - c. LODES data
3. Generate alternate routes using other public transportation alternatives
4. Identify the most affected census blocks based on commute times

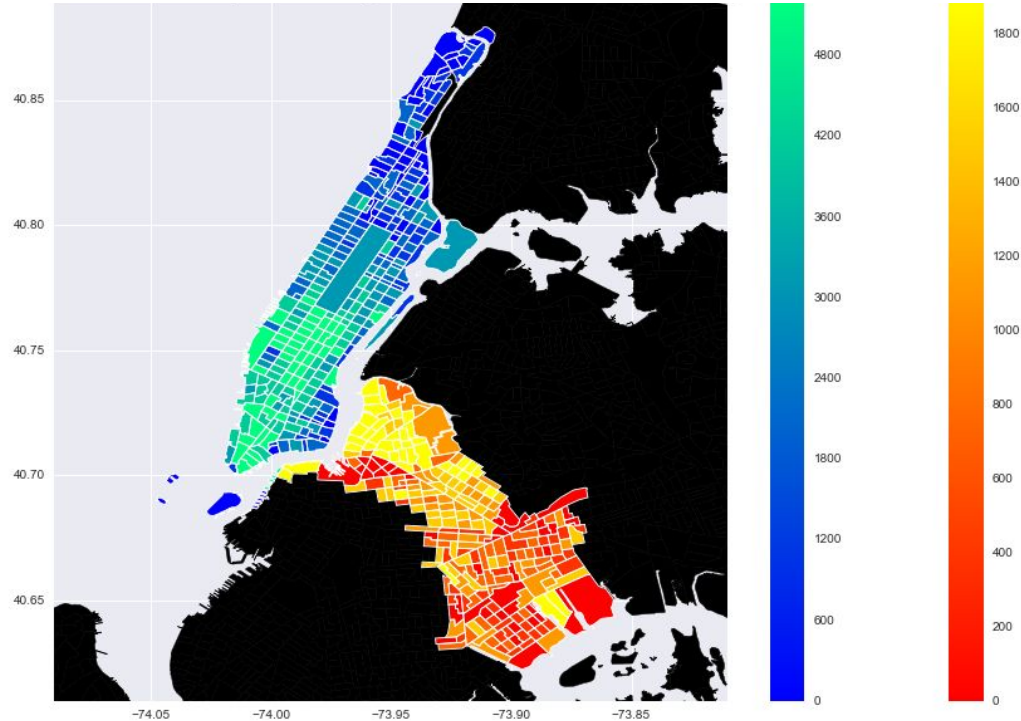
Affected Area

Isolated L line and stops (and merged with L turnstile data)

Census tract centroids within 15 and 30 minute walking distance from L train stops



Where commuters come from, and where they go

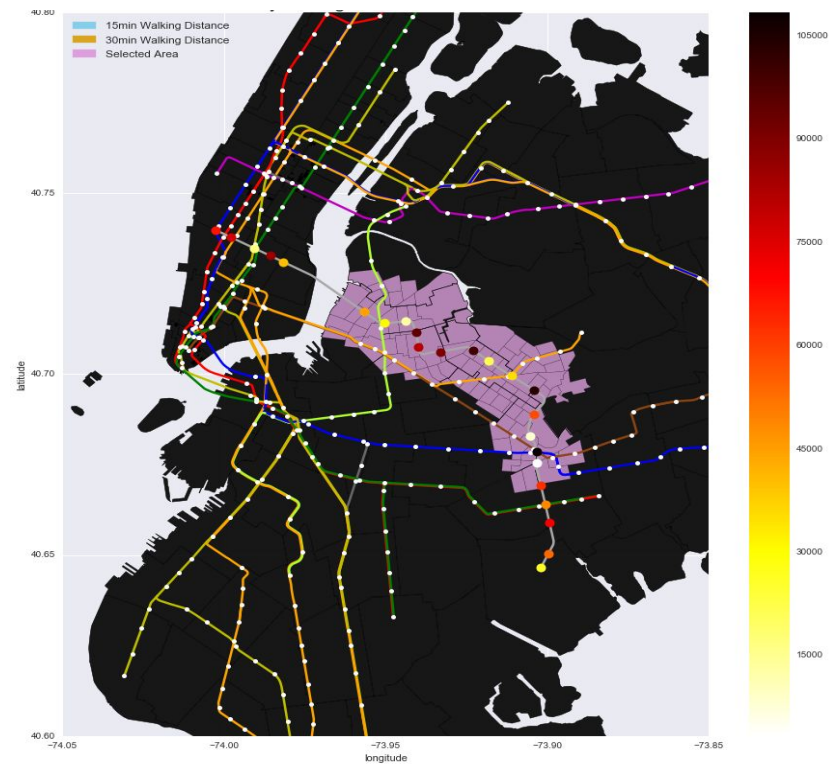


**Brooklyn Census Tracts:
Worker Origin Census
Tract**

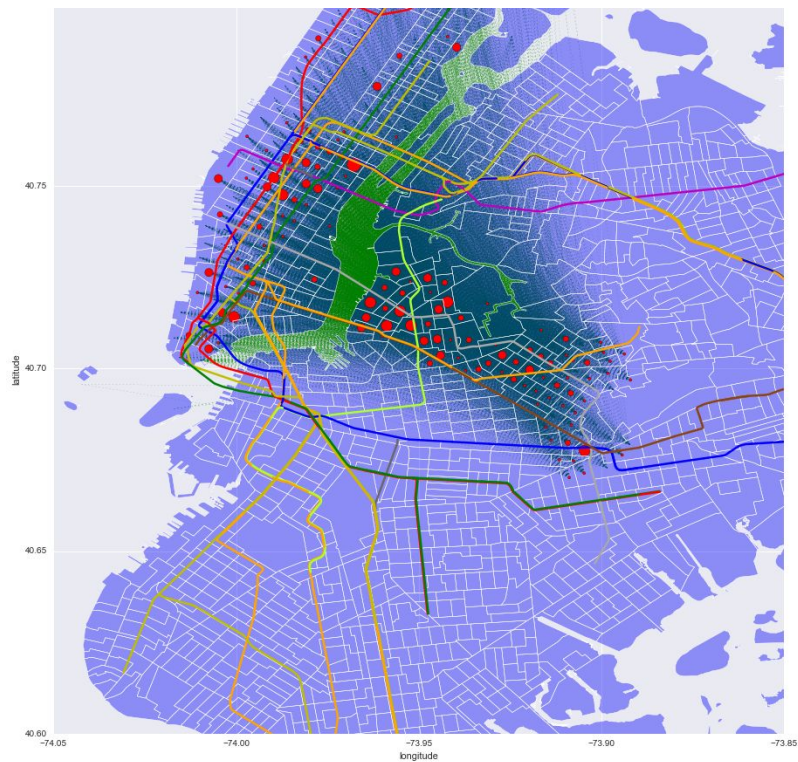


**Manhattan Census Tracts:
Worker Destination
Census Tract**

2015 Weekly average load for each station



Census Tract Network Analysis

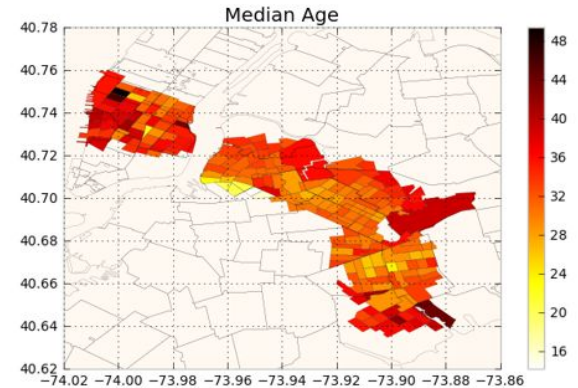
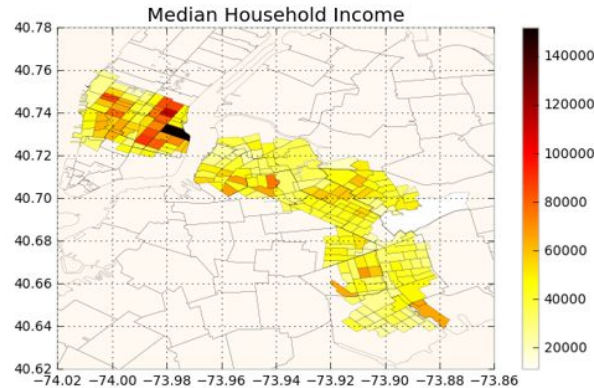
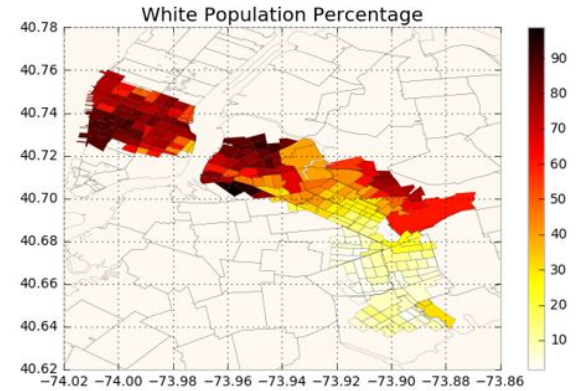
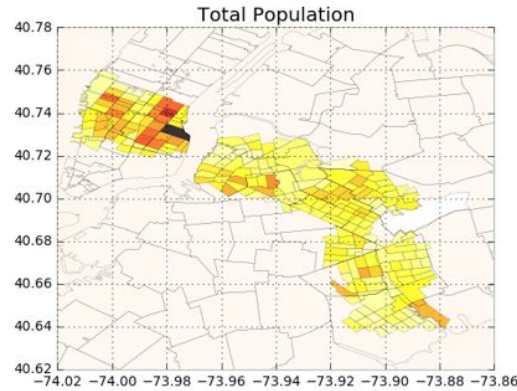


Affected Area : Socioeconomic characteristics

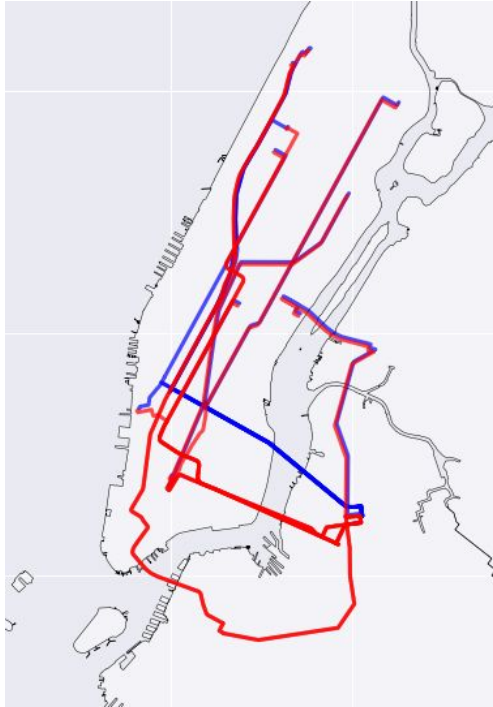
Based on the 2010
Census

Brooklyn affected areas:
similar characteristics
with the exception of %
of white population in
last stops

Limitations: data is not
current



Alternate Route Generation



boro_code	boro_ct_2010	boro_name	cdeligibil	ct_2010	ctlabel	ntacode	ntaname	puma	times
1	1009800	Manhattan	I	9800	98	MN19	Turtle Bay-East Midtown	3808	55
1	1010000	Manhattan	I	10000	100	MN19	Turtle Bay-East Midtown	3808	53
1	1010200	Manhattan	I	10200	102	MN17	Midtown-Midtown South	3807	52
1	1010400	Manhattan	I	10400	104	MN17	Midtown-Midtown South	3807	51
1	1011300	Manhattan	I	11300	113	MN17	Midtown-Midtown South	3807	40

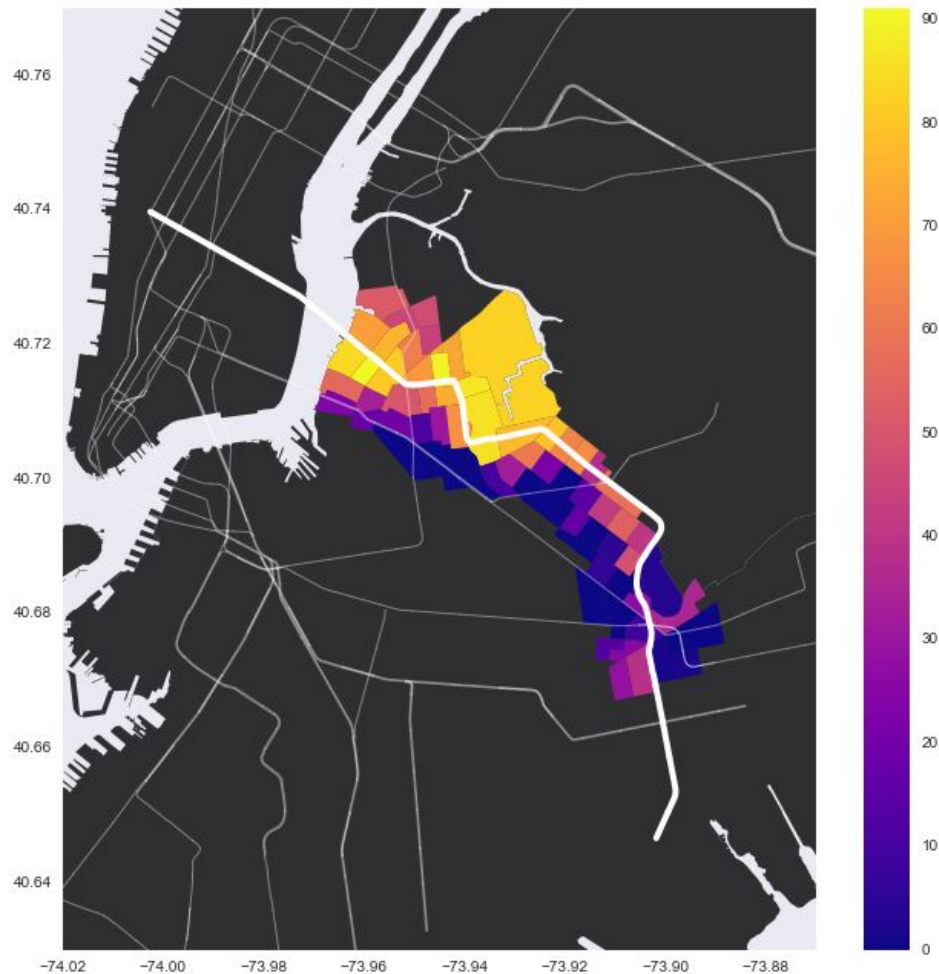
For each of the affected Brooklyn tracts, alternate routes to the most common Manhattan destinations were generated, and travel times returned

Blue Lines - Including L train

Red Lines - Excluding the L train

Percent change in travel time

With and without L-train



Preliminary Conclusions

1. 91 census tracts are part of the affected area we identified
2. Some census tracts could see commute time increases of close to 100%
3. Affected tracts are relatively homogeneous in terms of socio-economic characteristics, except % of white population
4. The analysis produced new data, using travel times and alternate routes, that can be used for further exploration of train closure impacts

Future Work

1. **Estimate new loads on alternate routes**
2. **Update with more recent census data**
3. **Economic impact analysis: How does adding more transit mode changes affect the more vulnerable members of society**

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