



BQE TRIPLE CANTILEVER

Importance to Regional Truck Activity

May 2019



Background



INTER-BOROUGH & REGIONAL TRUCK TRIPS

- **Between 2011 and 2018:**
 - Volumes of larger tractor-trailers on most regional bridges have either declined or remained stable, while single-unit trucks increased during this time.
 - Tolloed passenger car traffic on the George Washington Bridge increased 2.5% from 46.1 million to 47.3 million vehicles, and commercial traffic remained stable at 3.8 million vehicles per year.
 - Tolloed passenger car traffic on the Mario Cuomo Bridge (Tappan Zee) increased 9.7% from 22.6 million to 24.8 million vehicles, and commercial traffic increased 71.4% from 1.4 million to 2.4 million vehicles per year.
 - The increased regional presence of the Mario Cuomo Bridge for trucks has implications for truck travel on regional highways including the BQE.
- Trucks made up an average of 8.3% of all total inter-borough crossings
- 17,844 average daily trucks on BQE triple cantilever, which has bi-directional truck volumes comparable to the region's most important bridges



TOP TRUCK CROSSINGS INTO & OUT OF NYC:

1. 31,764: The George Washington Bridge (GWB)
2. 16,966: The Long Island Expressway (LIE)
3. 8,852: New England Thruway
4. 8,514: Goethals Bridge

TOP INTER-BOROUGH TRUCK CROSSINGS:






5. 37,078: Alexander Hamilton Bridge
6. 19,657: Kosciuszko Bridge
7. 13,929: Throgs Neck Bridge
8. 12,368: Verrazano-Narrows Bridge

GROWTH ON VERRAZANO-NARROWS BRIDGE

Truck Volumes

- The Verrazano-Narrows Bridge (VNB) is one of the major feeder crossings for BQE truck traffic.
- 6% (12,652) of the 202,523 vehicles using the VNB daily are trucks. Between 2015 and 2018, overall traffic volume on the VNB increased by 12%; truck traffic increased by 21% over the same period.
- 58% (7,372) of the total daily truck traffic is inbound (eastbound), and 42% (5,280) of it is outbound (westbound), with even greater directional imbalances during peak hours and for larger trucks.
 - Eastbound (inbound) truck peak: 9 – 10 AM
 - Westbound (outbound) truck peak: 10 – 11 AM
- This imbalance is at least partly caused by existing commercial tolls, which can range from \$34 for 2 axle trucks to \$132 for 7 axle trucks, are only administered for westbound traffic entering Staten Island.

Annual Truck Volume & Percent Change on VNB (2015-2018)

	Truck Type					Total Trucks
						
	2-axle	3-axle	4-axle	5-axle	6-axle	All Axles
2015	2,087,398	389,210	241,112	927,904	37,030	3,688,166
2016	2,185,946 +5%	473,208 +22%	266,786 +11%	908,806 -2%	34,926 -6%	3,877,960 +5%
2017	2,350,138 +8%	513,522 +9%	277,798 +4%	961,368 +6%	29,338 -16%	4,136,822 +7%
2018	2,467,832 +5%	587,946 +14%	332,444 +20%	1,015,512 +6%	34,356 +17%	4,444,342 +7%

Origin-Destination Analysis Methodology

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METHODOLOGY

Analysis of INRIX Commercial GPS sources with Streetlight Insights

- Origin-destination (OD) analysis was performed using commercial GPS sources from INRIX data and were analyzed through Streetlight Insights platform
- This analysis includes commercial GPS data from trips starting and ending within 25 miles of NYC (the limits of NYCDOT's subscription with Streetlight Insights); This analysis does not include trips starting or ending beyond the 25 miles limit
- The AM peak period reflects the hours of 8am-9am, while the PM peak period corresponds to the hours of 2pm-3pm; these reflect the periods when commercial vehicle activity is greatest on the triple cantilever section of the BQE
- Both Standard and Middle Filter OD analyses were conducted:
 - **Standard OD analysis** does not restrict the route trips take from beginning to the end of a trip (i.e. local streets, expressway, etc.) This analysis can be found in section 3.
 - **Middle filter OD analysis** restricts trips to a specified zone – they must pass through a certain zone to be included (i.e. a bridge, specific entrance ramp, etc.). In this case, the Verrazano Narrows Bridge was used as a filter zone. This analysis can be found in section 4.

Standard Origin-Destination Analysis of BQE Triple Cantilever Activity

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BQE TRUCK ORIGIN-DESTINATION

On BQE Triple-Cantilever (Atlantic Ave to Sands St)

- The BQE is a critical inter-borough connection for all commercial vehicles and trips that either originate or are destined for New Jersey or Long Island.
- Trucks represent 12% of the 155,071 daily vehicles passing through the BQE triple-cantilever section.
- Of the 17,844 daily trucks, 52% are inbound and 48% are outbound.

According to 2018 GPS data*:

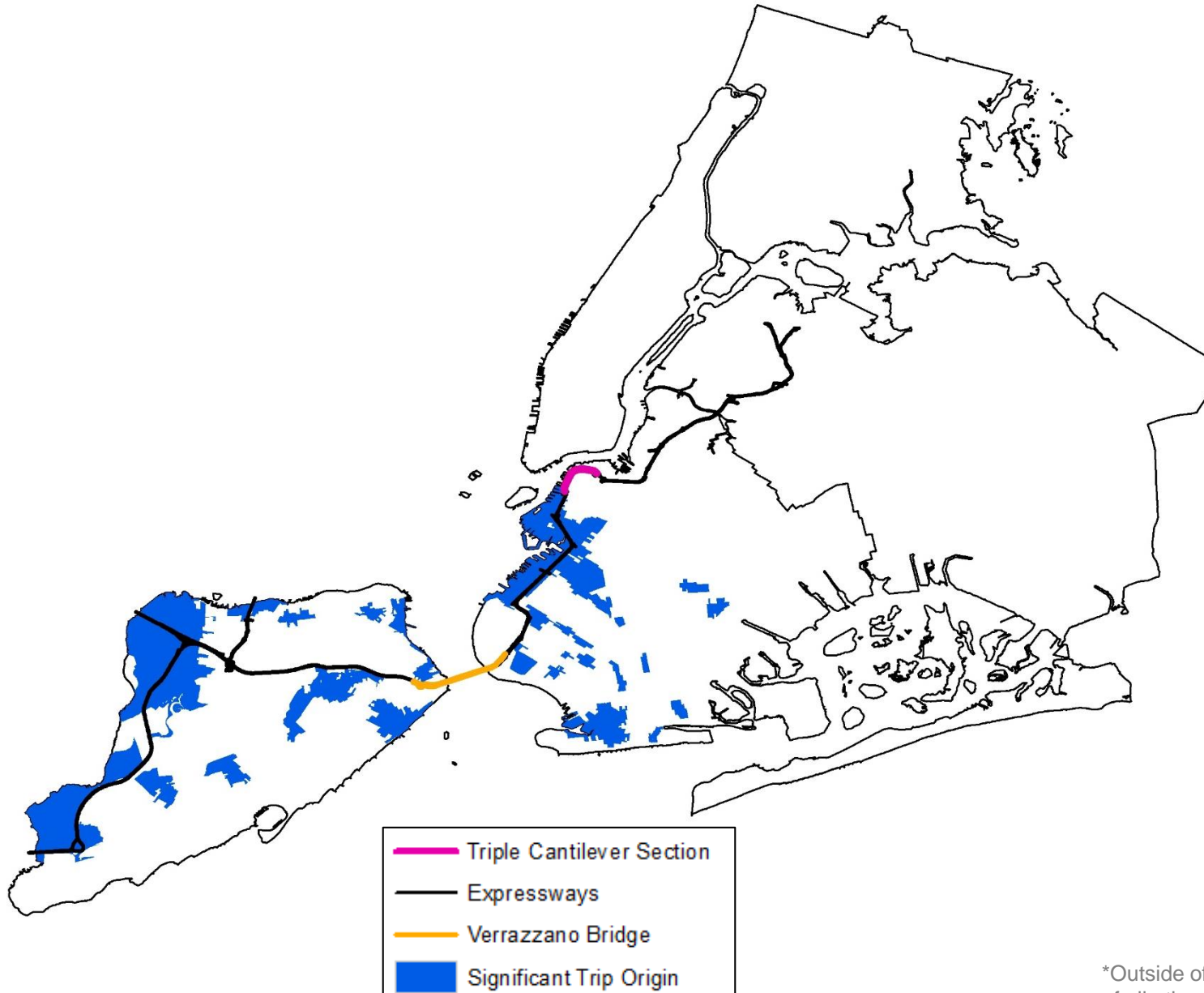
- 70% of AM inbound truck trips on the BQE (Atlantic to Sands) are coming from Staten Island and the Southwest Brooklyn IBZ (Sunset Park, Red Hook) destined primarily for Manhattan south of 59th, the Northern Brooklyn IBZ, the railyards in southern Queens, Hunts Point, and JFK Airport.
- 57% of PM outbound truck trips on this section are coming from the Northern Brooklyn IBZ, the railyards in southern Queens, Hunts Point, and JFK Airport destined primarily for the Southern Brooklyn IBZ and the west shore of Staten Island.

AM Peak – Trip Origins Bound for the BQE within NYC

- 89% of AM peak trips on the BQE Triple Cantilever (BQETC) start in Brooklyn and Staten Island
- Almost 50% of the peak trips using the BQE start in Sunset Park area alone

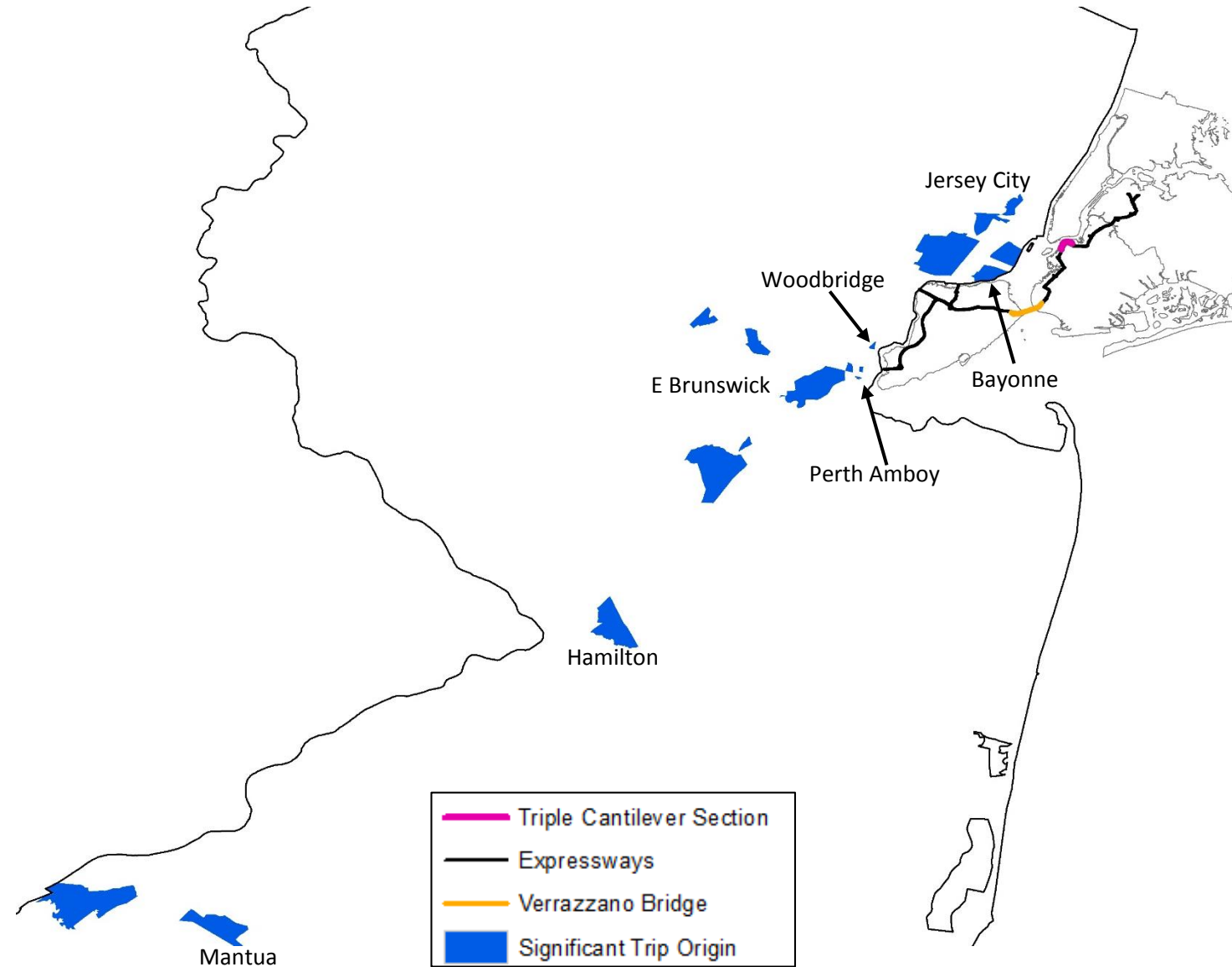
Top 5 Neighborhood Origin	% of Total Commercial Vehicle Activity
Sunset Park West (BK)	48.23%
Carroll Gardens-Columbia Street-Red Hook (BK)	15.54%
Borough Park (BK)	3.51%
Gravesend (BK)	2.38%
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI)	1.76%
Park Slope-Gowanus (BK)	1.76%

All Other Neighborhood Origins*	% of Total Commercial Vehicle Activity
New Jersey Neighborhoods (NJ)	11.59%
All Other Brooklyn Neighborhoods (BK)*	8.96%
All Other Staten Island Neighborhoods (SI)*	6.28%



*Outside of the top 5 destinations noted in the above table, and aggregate of all other neighborhoods are tabulated within 25 mile limit of NYC

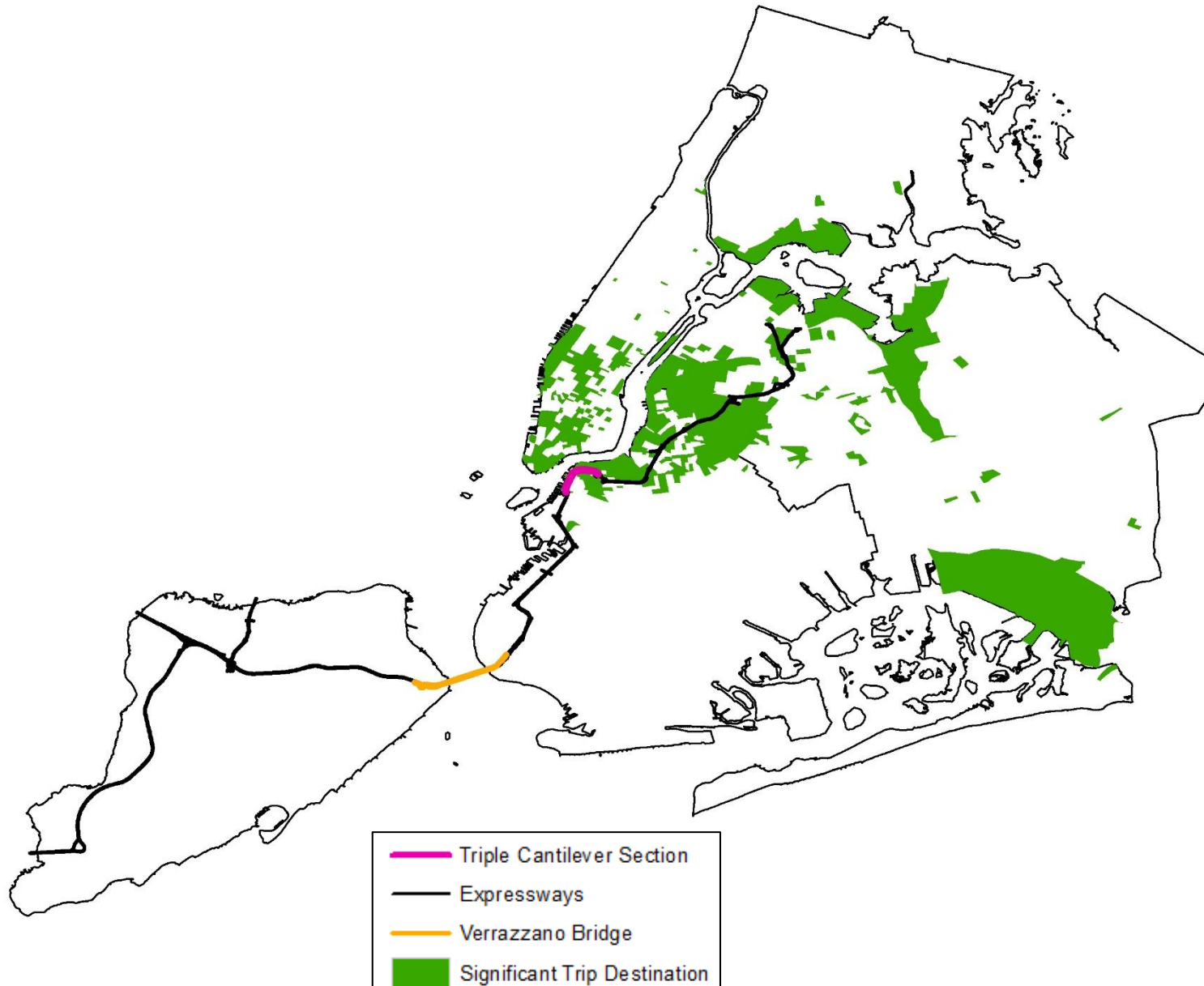
AM Peak – Trip Origins Bound for the BQE from New Jersey



- During the AM peak, NJ generates less commercial vehicle activity in comparison to Staten Island and Brooklyn along the (BQETC)
- For trips starting in NJ, the top 5 neighborhoods account for 9% of trips on the (BQETC)
- These trips originate primarily from heavy truck areas/industrial clusters (namely, manufacturing and freight distribution centers servicing NYC).

Top 5 Neighborhood Origins	% of Total Commercial Vehicle Activity
Jersey City	3.24%
East Brunswick	3.17%
Perth Amboy	1.17%
Bayonne	0.81%
Woodbridge	0.52%
Other New Jersey Neighborhoods	2.70%

AM Peak – Trip Destinations within NYC via the BQE

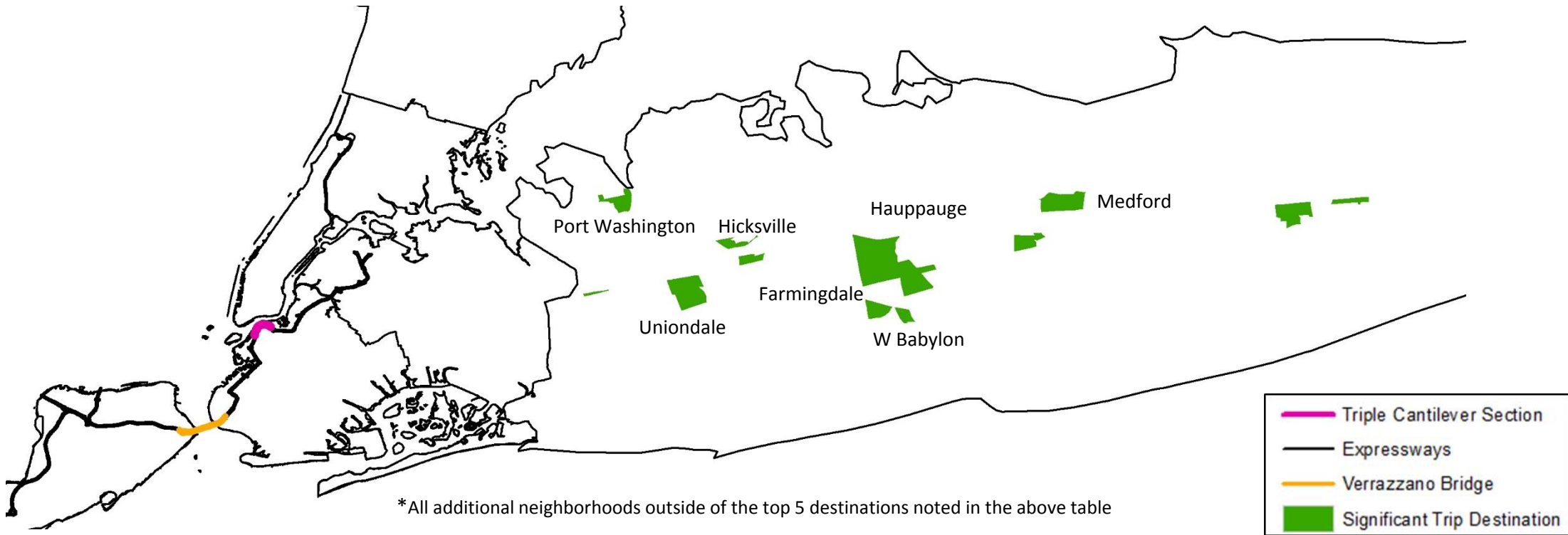


- Many commercial vehicle trips from the BQE are destined for IBZs (i.e. Maspeth and North Brooklyn, JFK), and Central Business Districts (CBDs)
- During the AM Peak, 32% of trips from the BQE end in top 5 neighborhood destinations listed below.

Top 5 Neighborhood Destinations	% of Total Commercial Vehicle Activity
Chinatown (MN)	8.02%
Bushwick South (BK)	7.76%
Greenpoint (BK)	6.47%
North Side-South Side (BK)	5.46%
Hunters Point-Sunnyside-West Maspeth (QN)	4.40%

All other Neighborhood Destinations	% of Total Commercial Vehicle Activity
Long Island Neighborhoods	4.38%
Bronx Neighborhoods	2.02%
Other Manhattan Neighborhoods	28.36%
Other Queens Neighborhoods	18.89%
Other Brooklyn Neighborhoods	14.24%

AM Peak – Trip Destinations Bound for Long Island via the BQE

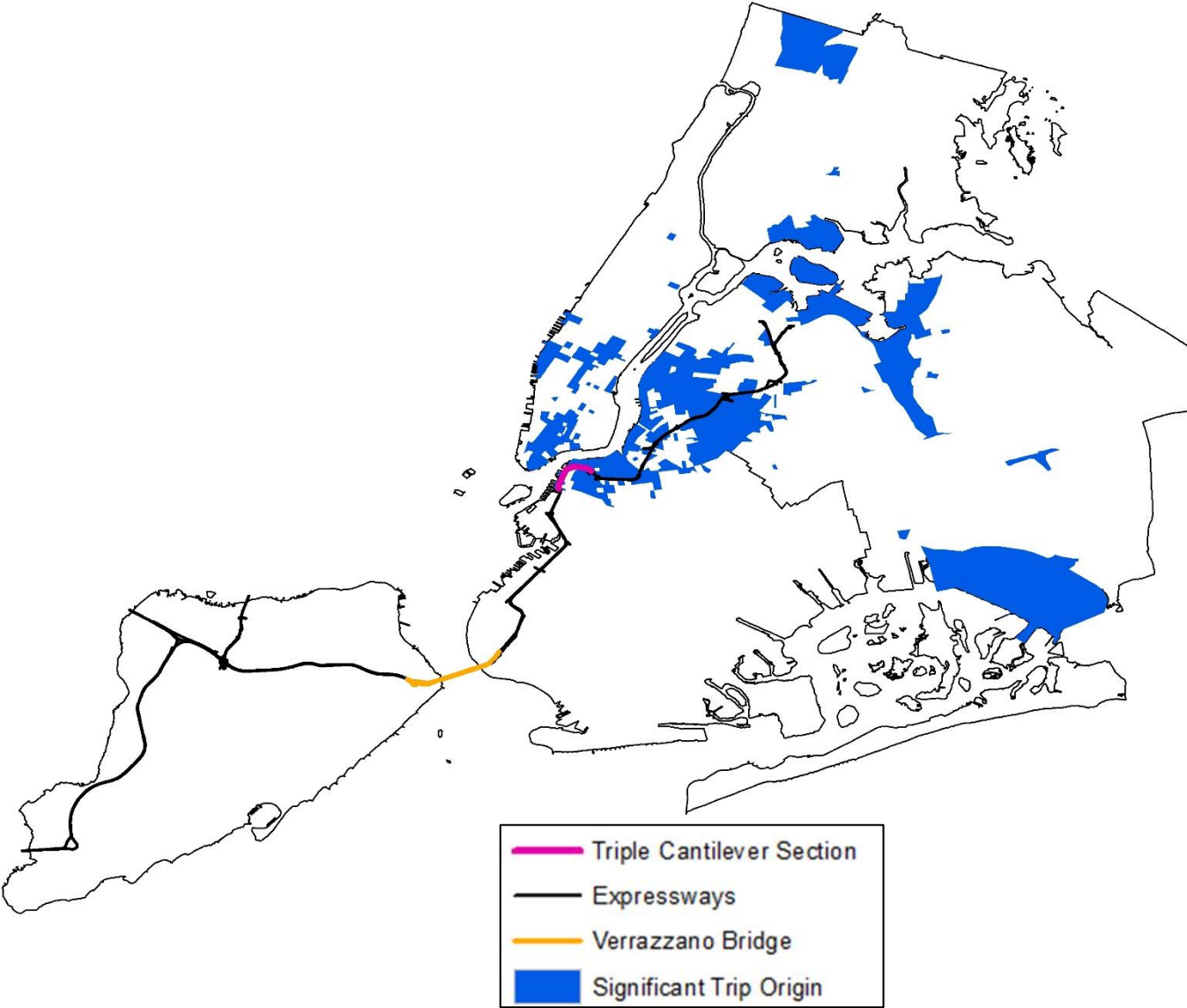


- During the AM peak, 4.4% of trips are destined for Long Island
- 44% of Long Island bound trips from the BQE were headed for the top 5 neighborhoods: Hauppauge, West Babylon, Farmingdale, Hicksville, Uniondale

Top 5 Neighborhood Destinations	% of Total Commercial Vehicle Activity
Hauppauge	0.53%
W Babylon	0.36%
Farmingdale	0.36%
Hicksville	0.34%
Uniondale	0.34%
Other Long Island Neighborhoods	2.45%

PM Peak – Trip Origins from NYC Bound for the BQE

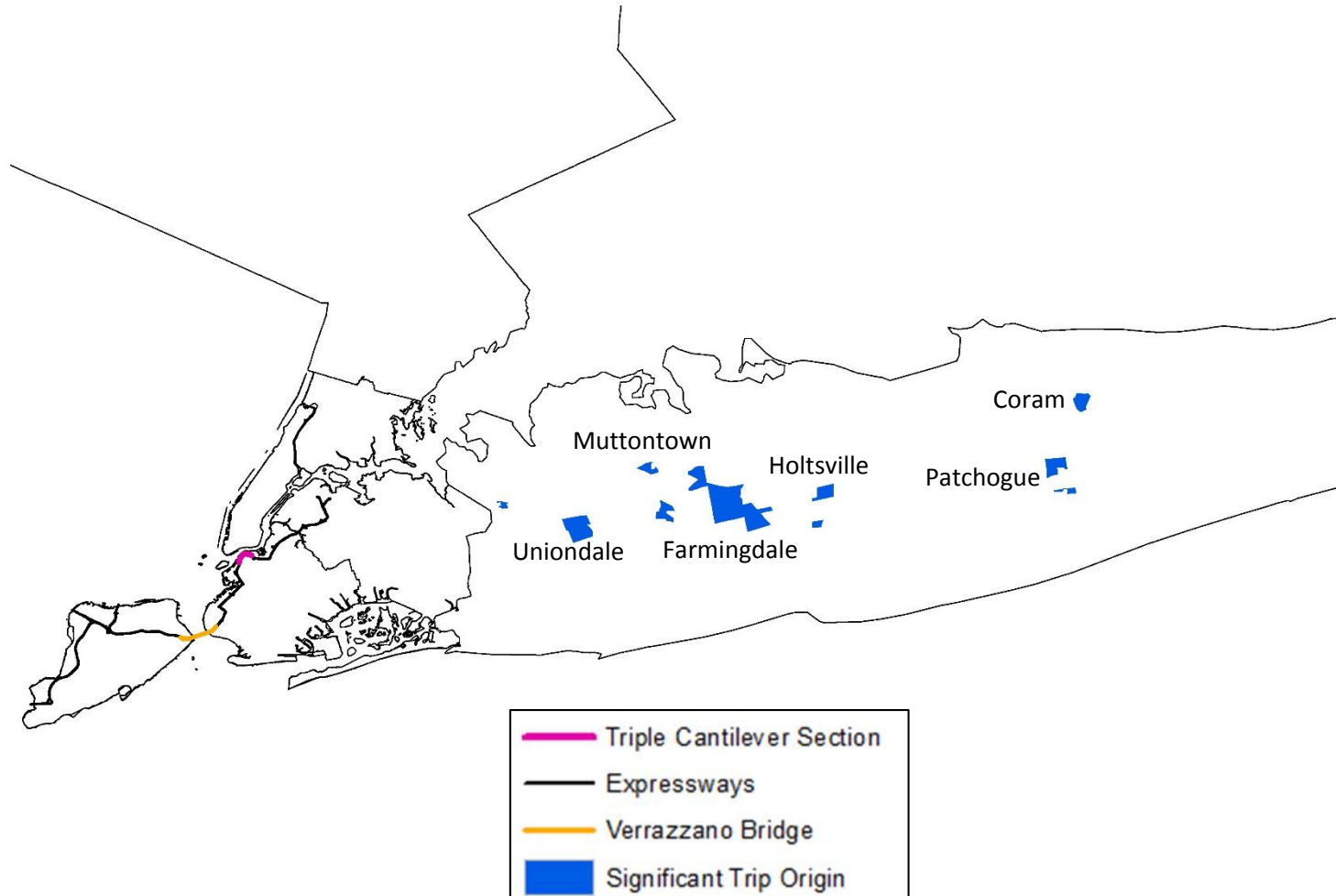
- Commercial vehicles traveling to the BQE during the PM peak largely originate from IBZ areas in Queens or Brooklyn (Maspeth, Long Island City, North Brooklyn, JFK, and CBDs)
- Many trips to the BQE during the PM peak period are return trips from locations that were destinations during the AM peak



Top 5 Neighborhood Origins	% of Total Commercial Vehicle Activity
Bushwick South (BK)	8.20%
Chinatown (MN)	6.79%
North Side-South Side (BK)	6.44%
Hunters Point-Sunnyside-West Maspeth (QN)	5.90%
Williamsburg (BK)	5.63%

All other Neighborhood Origins	% of Total Commercial Vehicle Activity
Bronx Neighborhoods	5.12%
Long Island Neighborhoods	3.70%
Other Manhattan Neighborhoods	22.31%
Other Brooklyn Neighborhoods	21.28%
Other Queens Neighborhoods	14.61%

PM Peak – Trip Origins from Long Island Bound for the BQE

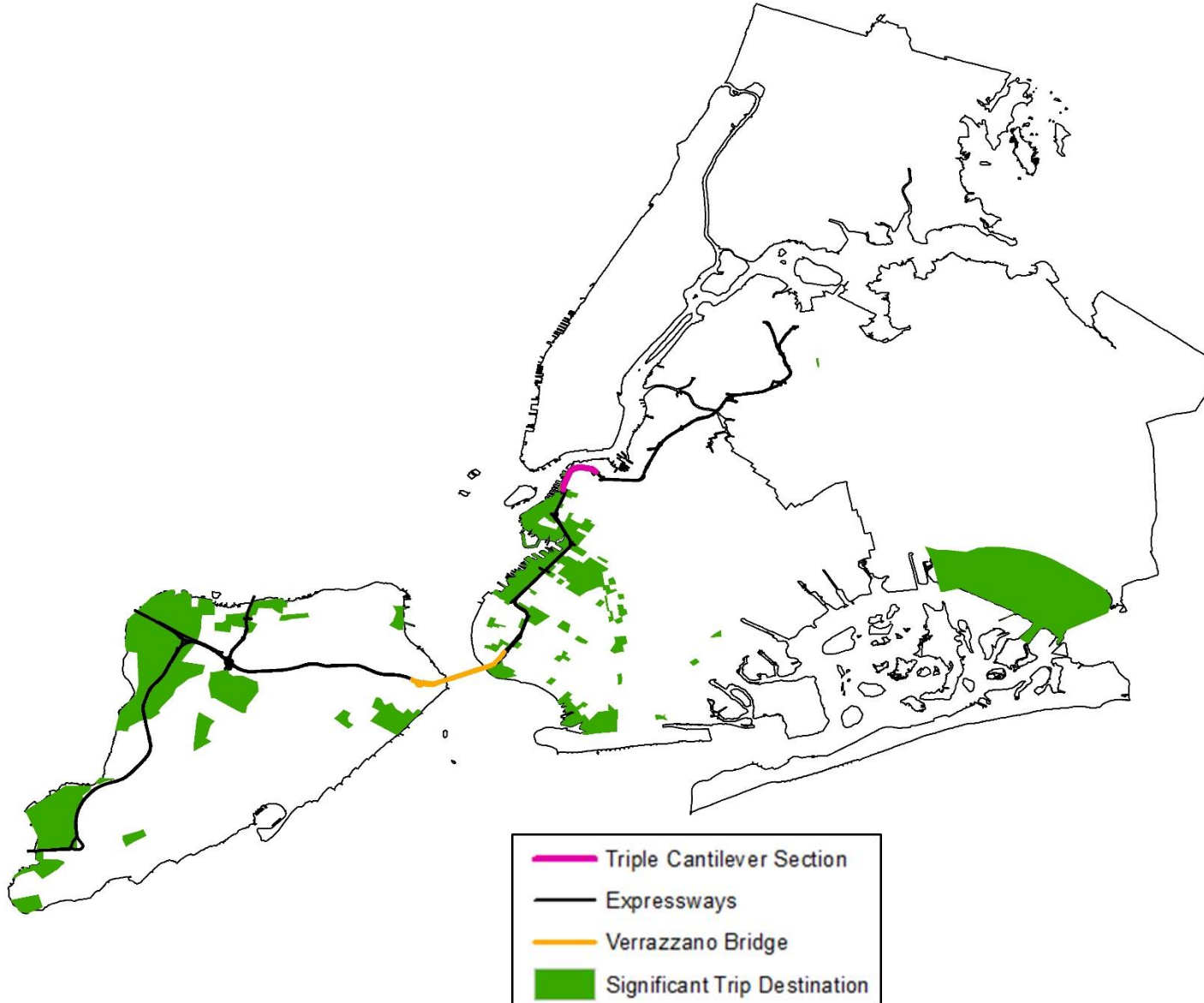


- Commercial vehicle trips from Long Island to the BQE are likely return trips (similar geographic destinations are observed in the AM peak)
- During the PM peak, Long Island neighborhoods account for 3.7% of trips on the BQE.
 - 60% of those trips originate from the top 5 LI neighborhoods listed below

Top 5 Neighborhoods Origins	% of Total Commercial Vehicle Activity
Coram	1.08%
Muttontown	0.37%
Farmingdale	0.27%
Uniondale	0.27%
Patchogue	0.25%
Other Long Island Neighborhoods	1.46%

PM Peak – Trip Destinations within NYC via the BQE

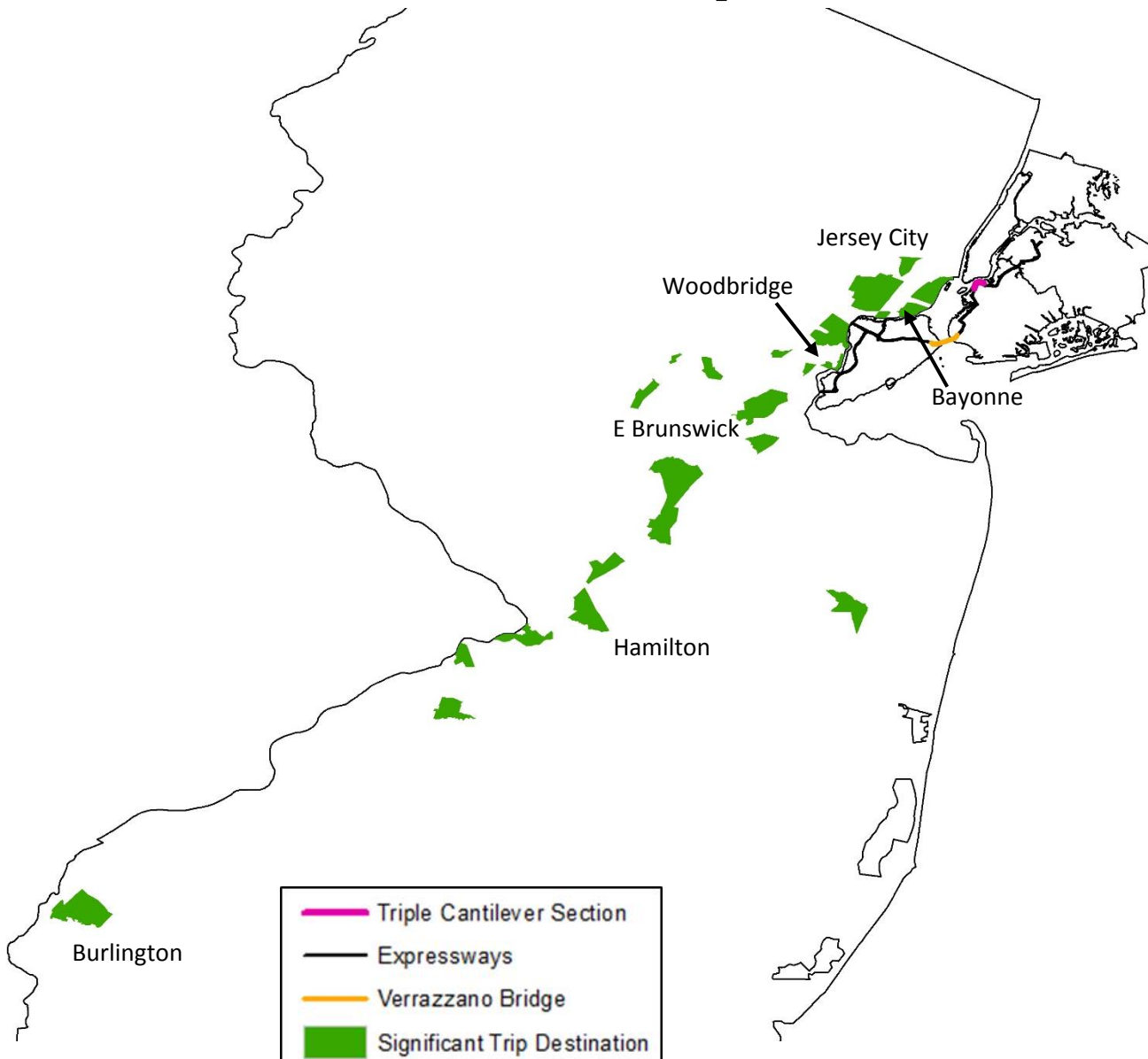
- During the PM peak, 66% of trips from the BQE are destined for the Southwest Brooklyn IBZ, JFK and the West Shore of Staten Island
 - 86% of those trips were destined for the industrial areas along the Southwest Brooklyn waterfront



Top 5 Neighborhood Destinations	% of Total Commercial Vehicle Activity
Sunset Park West (BK)	37.28%
Carroll Gardens-Columbia Street-Red Hook (BK)	16.33%
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI)	5.58%
Borough Park (BK)	3.87%
New Springville-Bloomfield-Travis (SI)	2.81%

All Other Neighborhood Destinations	% of Total Commercial Vehicle Activity
Manhattan Neighborhoods	1.66%
Queens Neighborhoods	0.48%
New Jersey Neighborhoods	15.25%
Other Brooklyn Neighborhoods	13.80%
Other Staten Island Neighborhoods	2.94%

PM Peak – Trip Destinations to NJ via the BQE



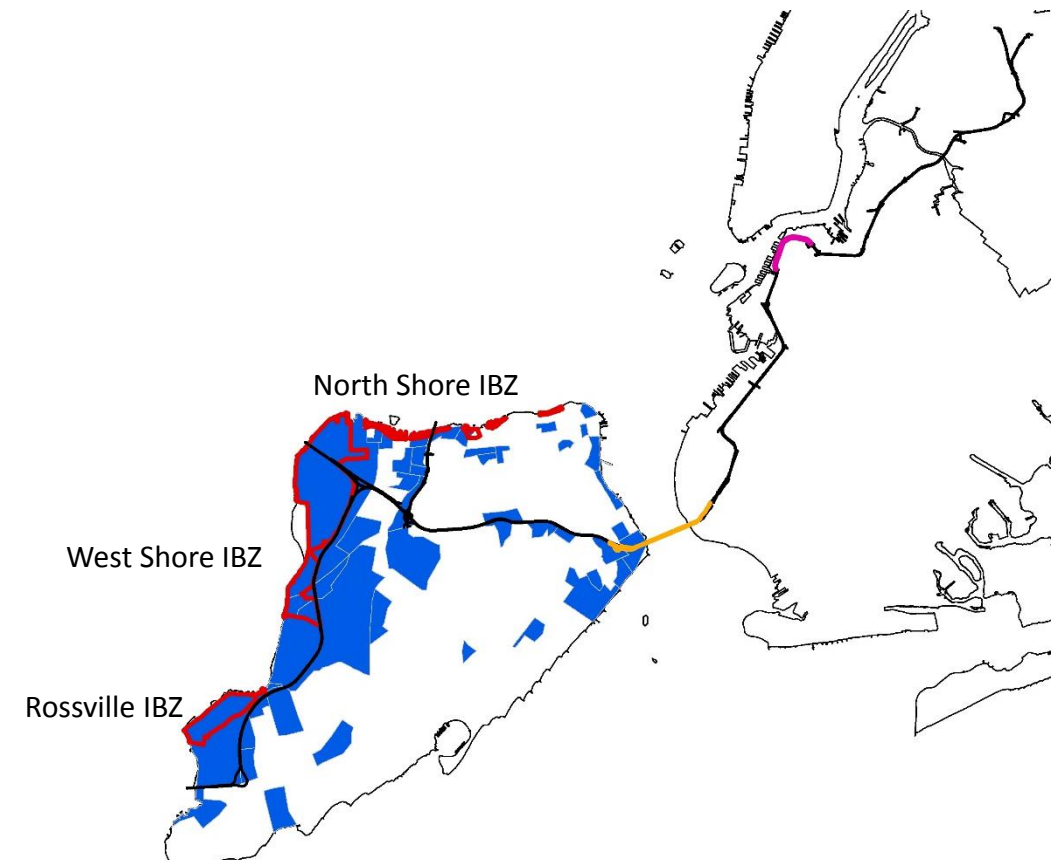
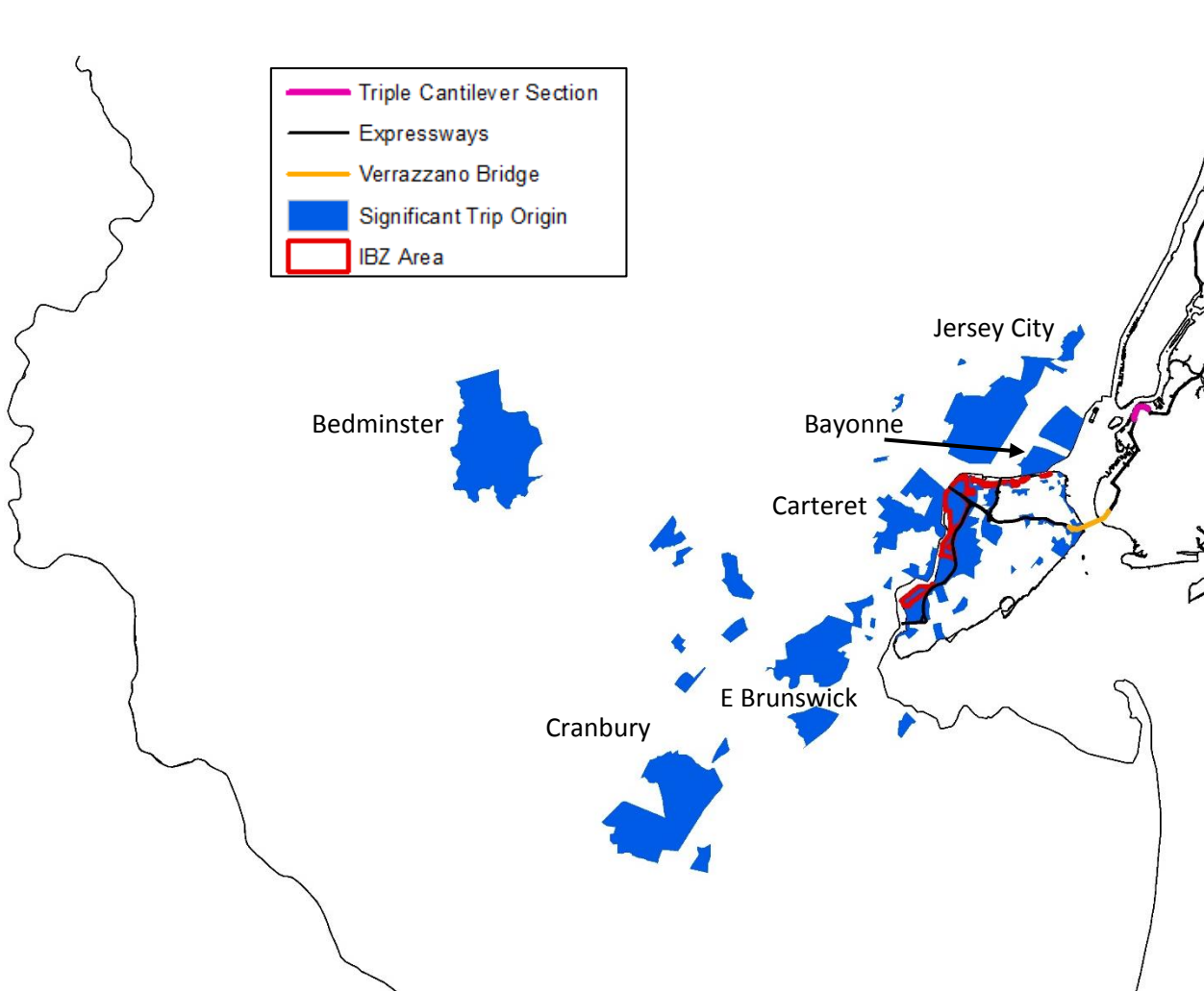
- During PM Peak, 15% of trips from the BQE are destined for NJ neighborhoods, most of which are similar origins during the AM peak period
- Top 5 NJ trip destinations account for more than 50% of all NJ trip destinations:
 - Burlington
 - Jersey City
 - Bayonne
 - Woodbridge
 - East Brunswick

Top 5 Neighborhood Destinations	% of Total Commercial Vehicle Activity
Burlington	2.16%
Jersey City	1.67%
Bayonne	1.64%
Woodbridge	1.59%
East Brunswick	1.48%
Other New Jersey Neighborhoods	6.71%

Origin-Destination Analysis: Commercial Trips that use the BQE and stay on the Verrazano Narrows Bridge

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AM Peak – Trip Origins Bound for the BQE via the Verrazzano



Top 5 Neighborhoods Origins	% of Total Commercial Vehicle Activity
East Brunswick (NJ)	17.57%
Jersey City (NJ)	14.87%
Charleston-Richmond Valley-Tottenville (SI)	9.63%
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI)	9.15%
New Springville-Bloomfield-Travis (SI)	7.09%

- During the AM peak, 5 neighborhood origins using the VNB and BQE account for 58% of the trips; more than half of those trips start in East Brunswick and Jersey City

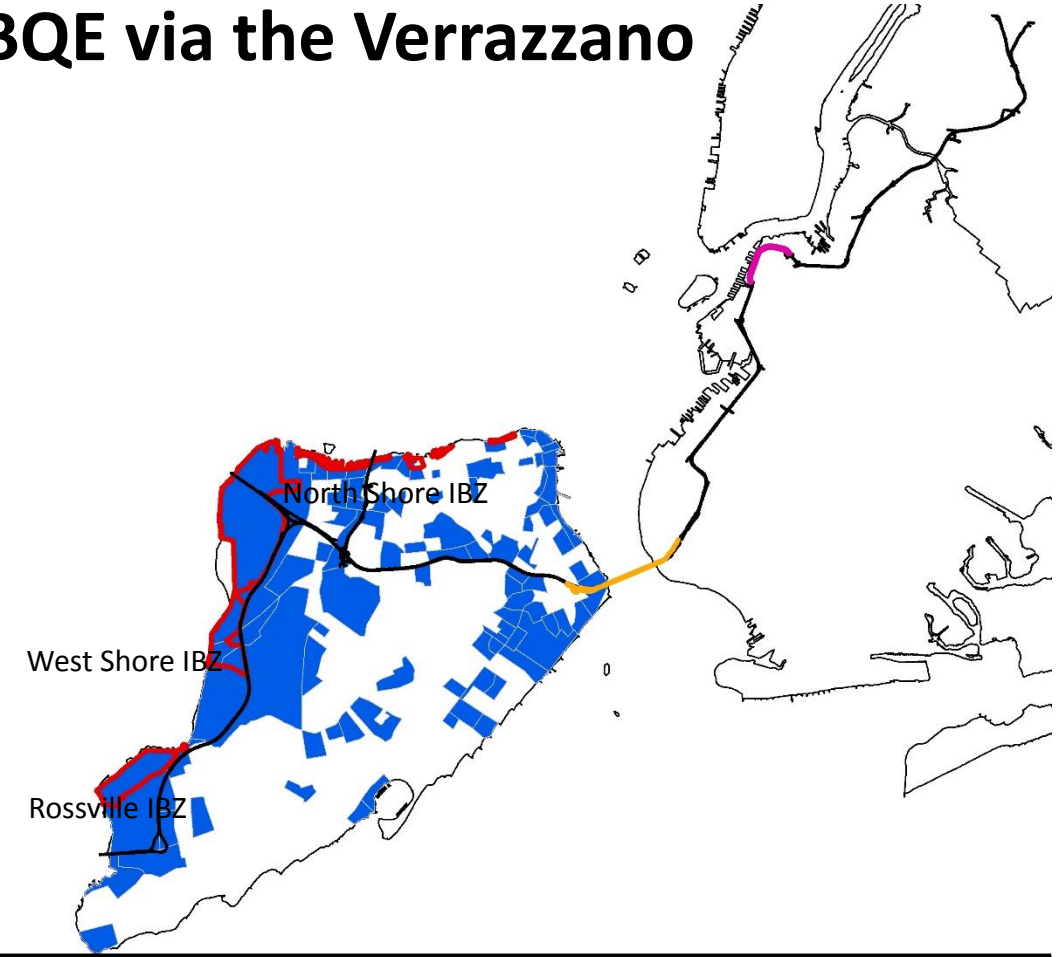
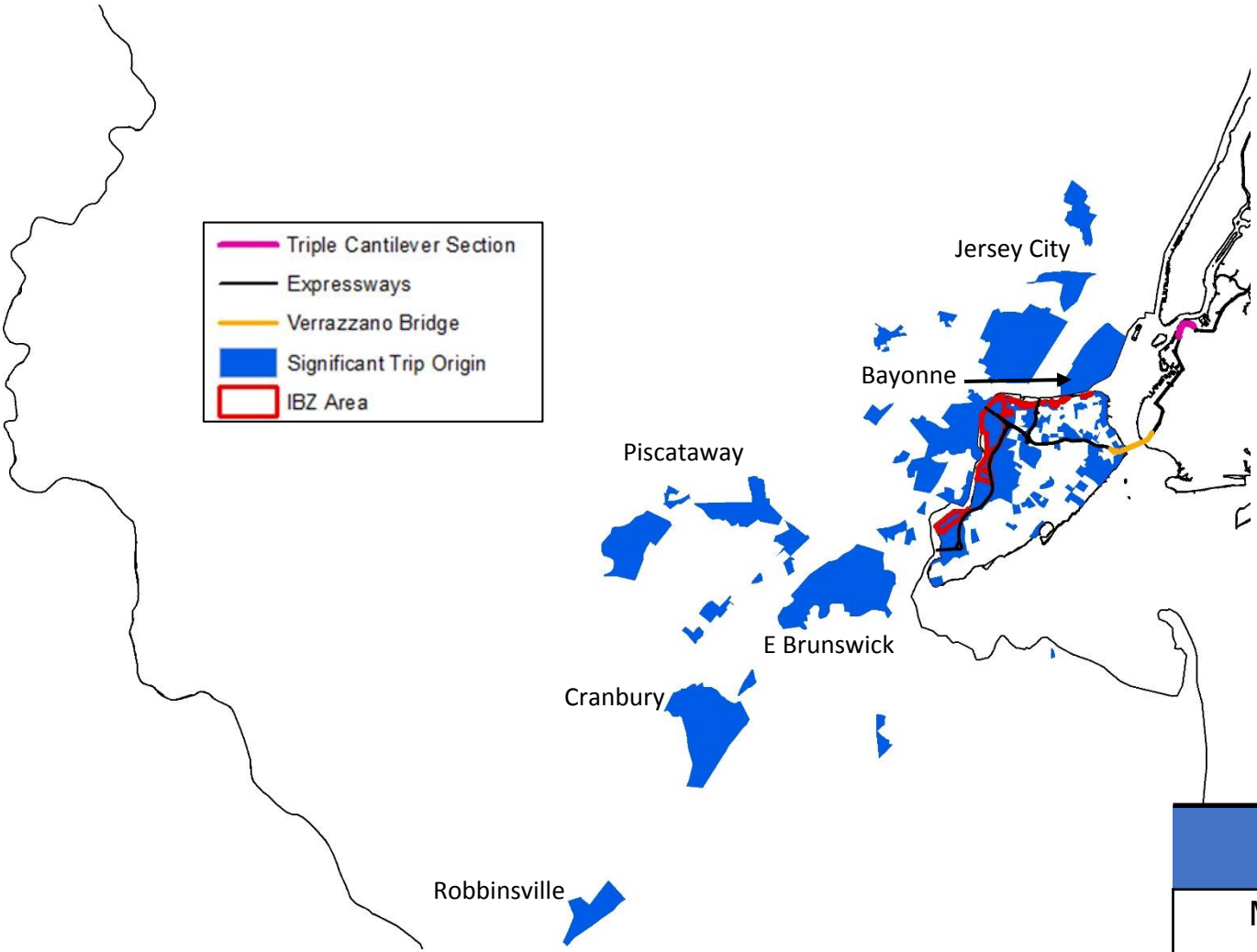
AM Peak – Trip Destinations from the BQE via the Verrazzano



- During the AM Peak, 41% of trips coming over the BQE and VNB are destined for Staten Island
- The spread of trips across Staten Island is greatest during this time

Top 5 Neighborhood Destinations	% of Total Commercial Vehicle Activity
New Springville-Bloomfield-Travis (SI)	10.74%
West New Brighton-New Brighton-St. George (SI)	10.14%
Todt Hill-Emerson Hill-Heartland Village-Lighthouse Hill (SI)	7.02%
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI)	6.42%
Westerleigh (SI)	6.34%

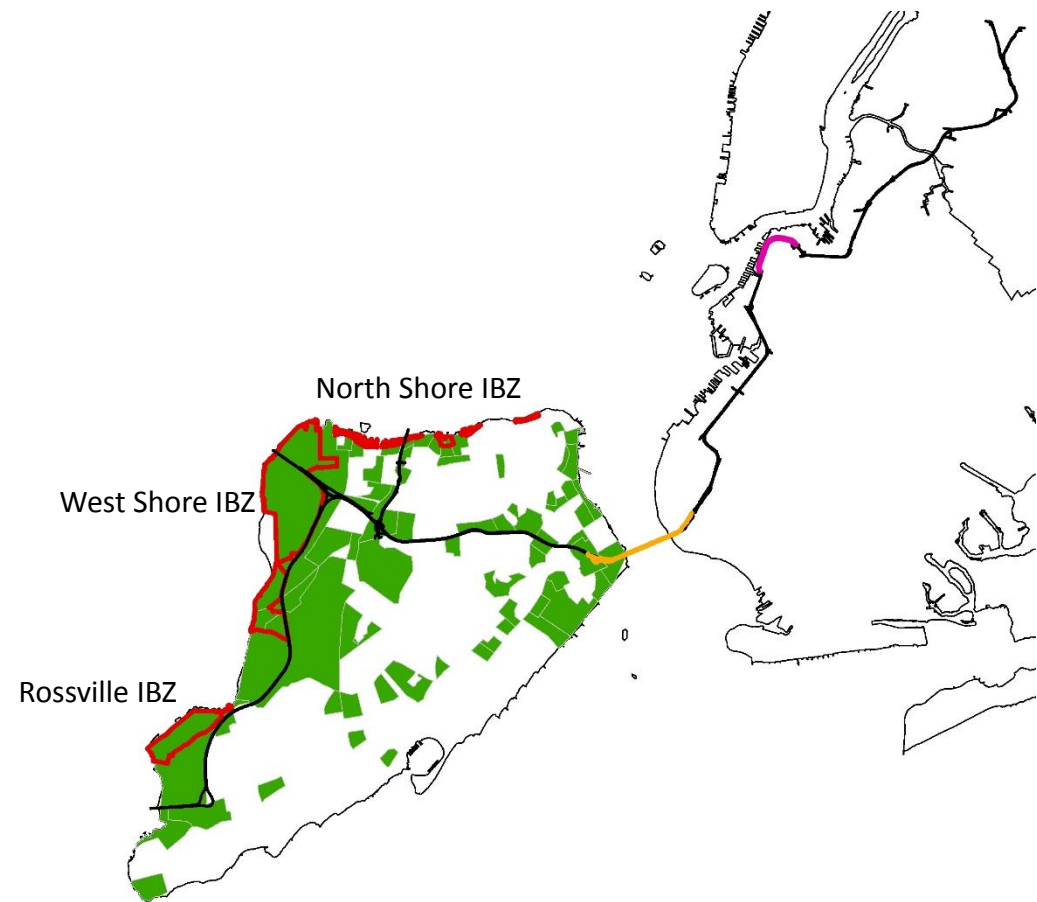
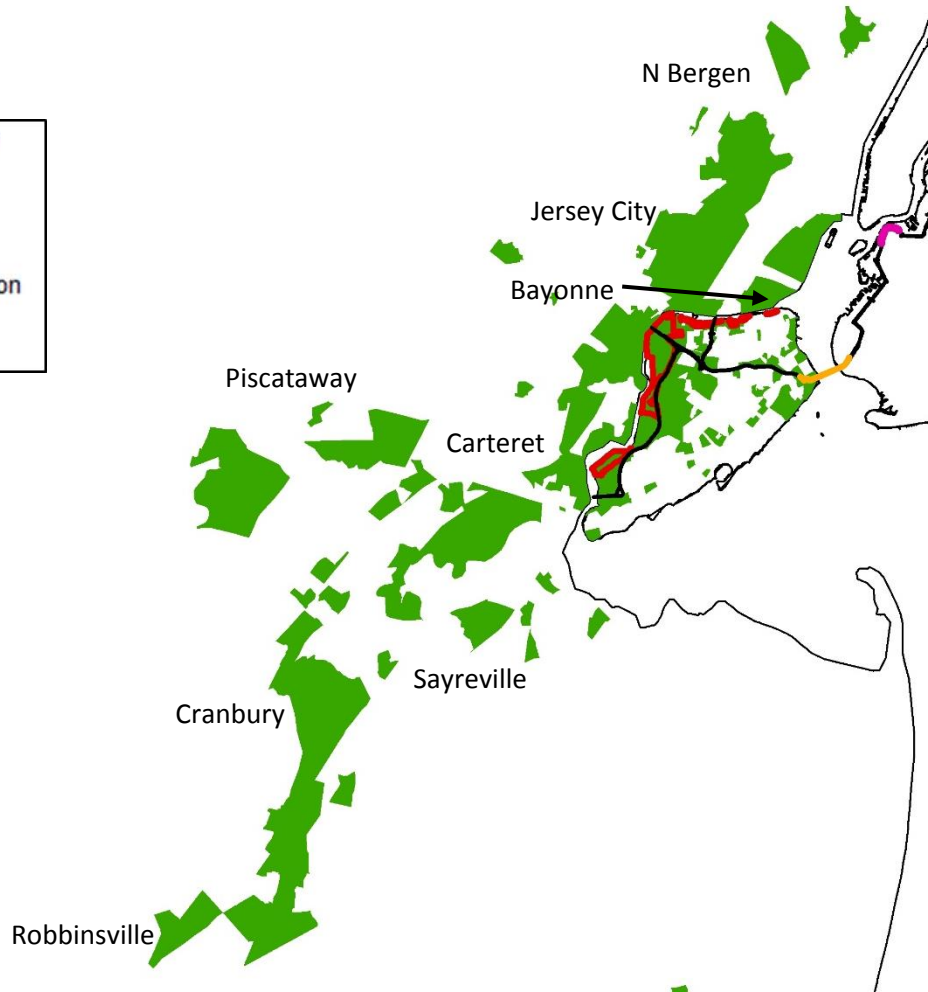
PM Peak – Trip Origins Bound for the BQE via the Verrazzano



- During the PM peak, the top 5 neighborhoods account for 44% of the trip origins using the BQE/VNB in Staten Island and NJ

Top 5 Neighborhood Origins	% of Total Commercial Vehicle Activity
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI)	11.71%
Jersey City (NJ)	9.75%
West New Brighton-New Brighton-St. George (SI)	7.86%
New Springville-Bloomfield-Travis (SI)	7.78%
East Brunswick (NJ)	6.53%

PM Peak – Trip Destinations from the BQE via the Verrazzano



- During the PM peak, 5 neighborhoods in Staten Island and NJ account for 38% of the trip destinations using the BQE/VNB.
- The spread of trips to NJ neighborhoods is greatest during this time period ranging as far North as North Bergen and south to Robbinsville

Top 5 Neighborhood Destinations	% of Total Commercial Vehicle Activity
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI)	17.20%
East Brunswick (NJ)	5.76%
Woodbridge (NJ)	5.41%
Carteret (NJ)	5.00%
Port Richmond (SI)	5.00%

ANALYSIS OF TRIPS VIA THE BQE & VNB

Findings

- The Verrazano Narrows Bridge is a critical connector for commercial vehicle intra-NYC trips as well as some neighboring NJ neighborhoods.
- During the AM peak, Staten Island receives more commercial vehicle activity than NJ from the BQE, but NJ generates more trips that travel to the BQE
- During the PM peak, there is a more even distribution of trips to/from the BQE from Staten Island and NJ
- When looking at trips that **ONLY** travel to/from the BQE via the Verrazano, it is evident that IBZ areas of Staten Island and highly urban areas of New Jersey generate significant commercial vehicle activity

QUESTIONS?

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