Queens Boulevard

How NYCDOT Defeated the Boulevard of Death

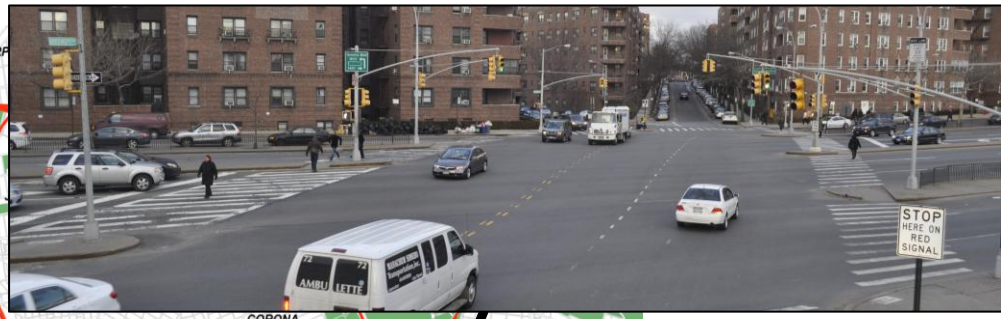
2016

PC: Queens Center Mall

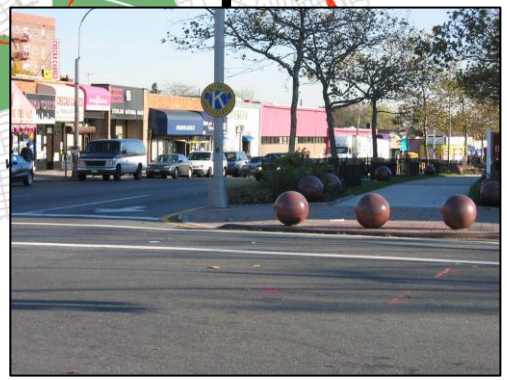
VISION ZERO

NEW YORK CITY DOT

Queens Boulevard Corridor



Approx. 7mi long



Highway conditions and citywide notoriety for fatalities

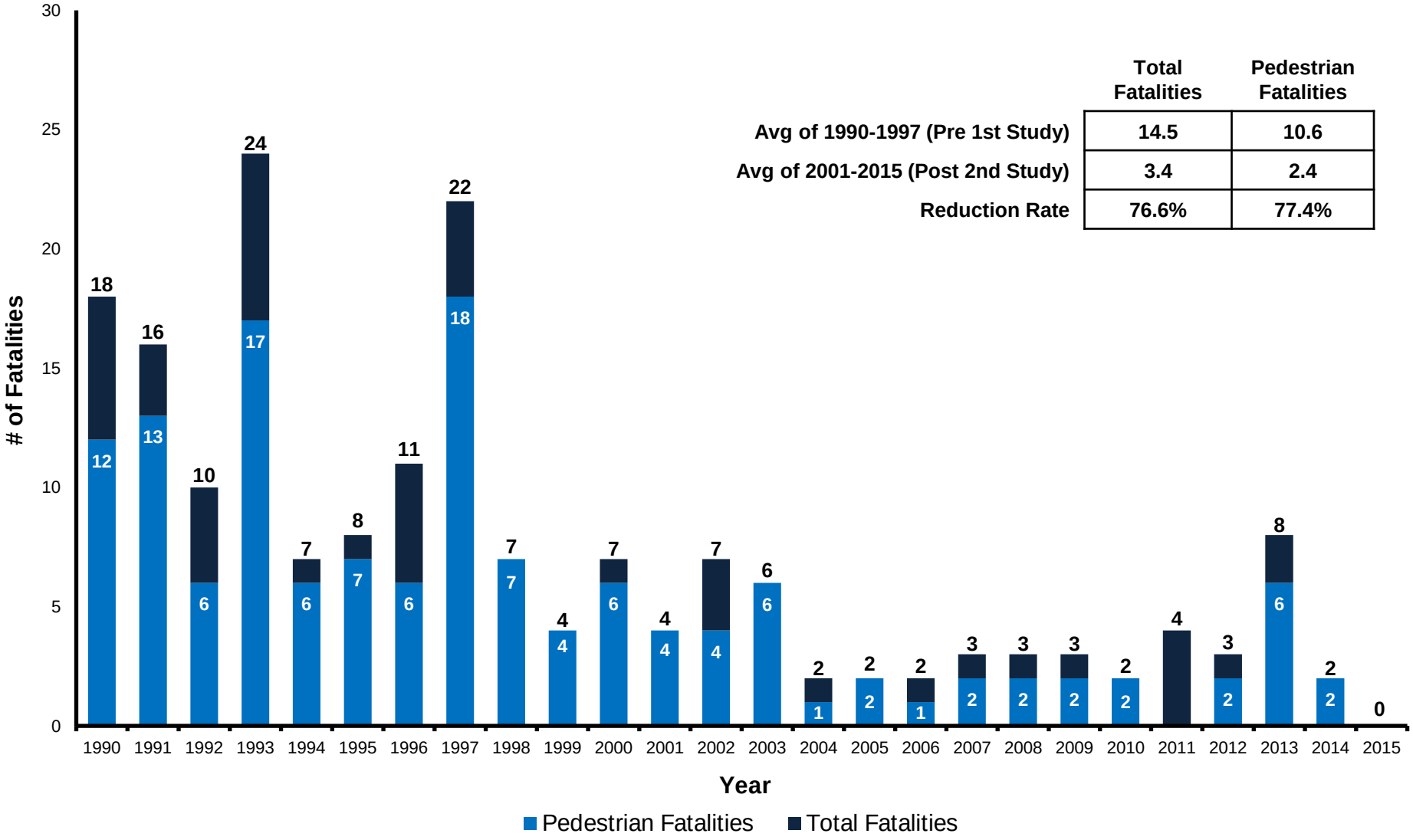

Queens Blvd & 90th St

Queens Blvd & Eliot Av


Queens Blvd & 65th Pl

Queens Boulevard Fatalities 1990 - 2015

	Total Fatalities	Pedestrian Fatalities
Avg of 1990-1997 (Pre 1st Study)	14.5	10.6
Avg of 2001-2015 (Post 2nd Study)	3.4	2.4
Reduction Rate	76.6%	77.4%

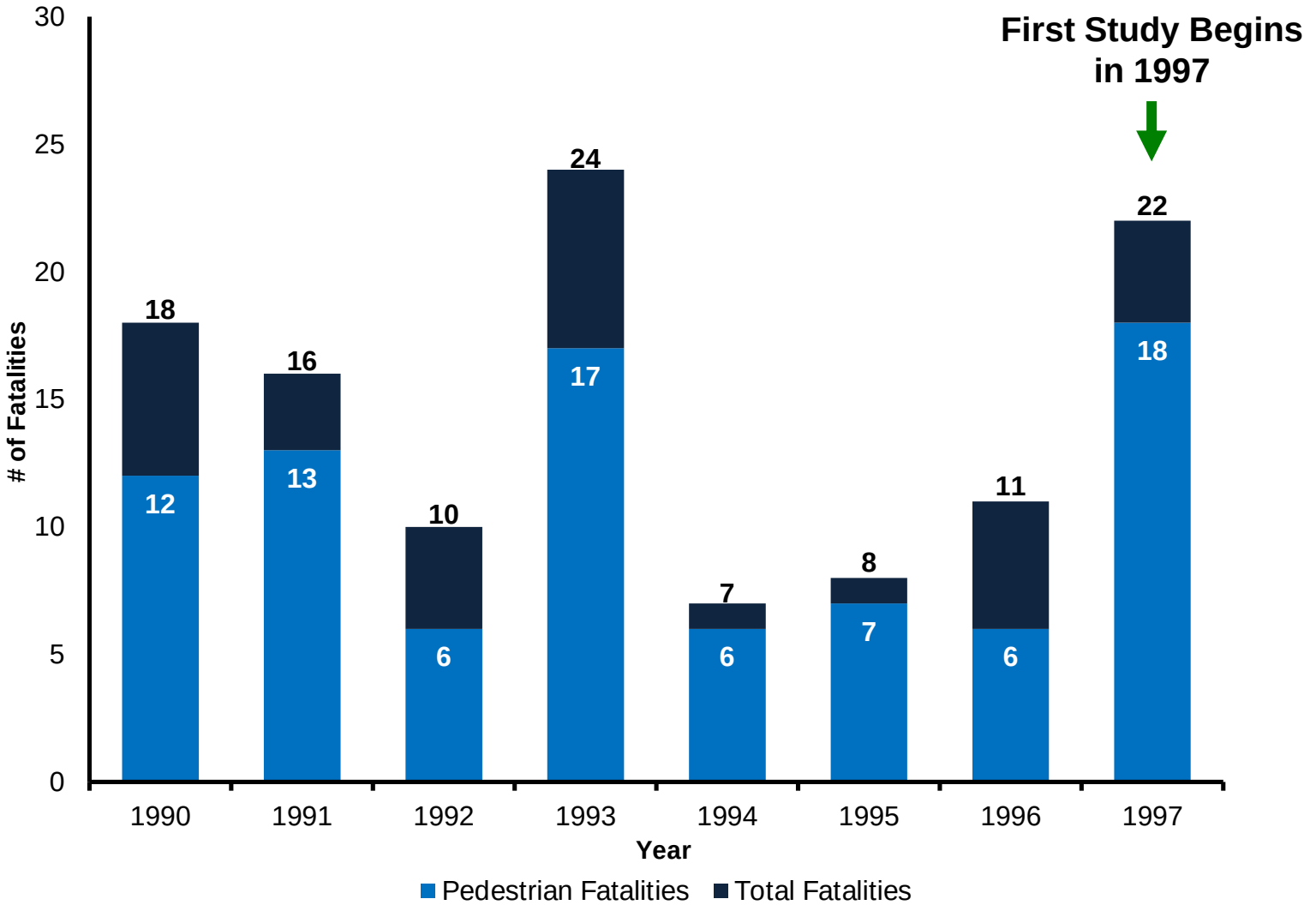


Data Source: NYPD/NYCDOT Fatality Database

Primary Challenges

- Wide roadway (up to 200 feet)
- Long crossing distances (longest over 330 feet)
- Skewed intersections
- Main line and service road (up to 12 lanes)
- High speeds
- High volume of vehicles and pedestrians
  - 4,000-5,000 (bidirectional) total vehicles in the peak hour
  - 1,200 pedestrians in the peak hour in one crosswalk
  - 2,000 pedestrians exiting/entering 33rd Street subway stop
- High density residential development
- Medium to high density commercial activity
- High-volume subway stations (E, F, M, R & 7 subway lines) and 33 bus lines
- High percentage of elderly residents

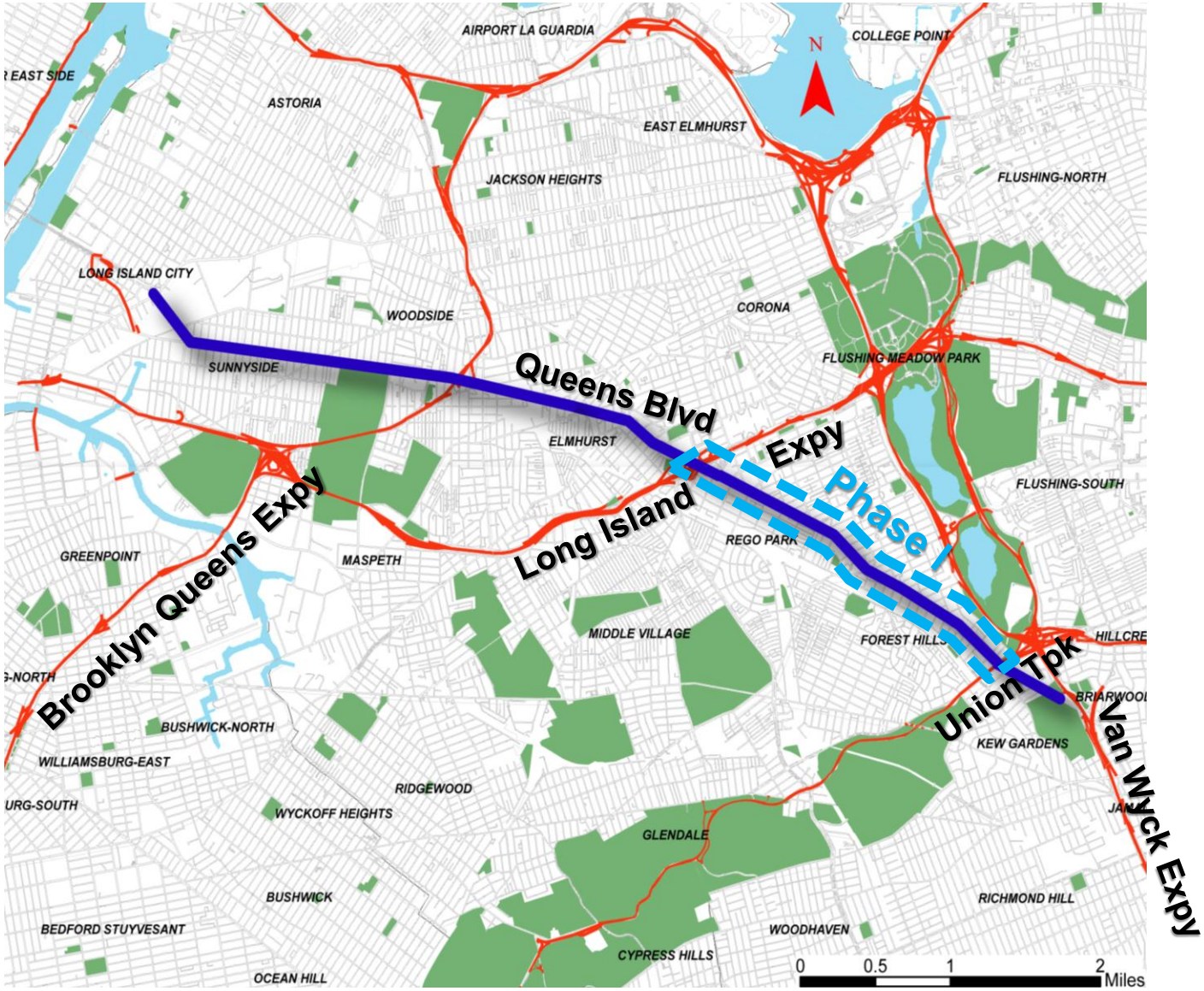
Queens Boulevard Fatalities 1990 - 1997



Data Source: NYPD/NYCDOT Fatality Database

Pedestrian Safety Study: Phase I

Queens Blvd (Long Island Expy to Union Tpk)



Pedestrian Safety Study: Phase I

In-House Implemented Improvements, 1999-2003

- Installed pedestrian fencing
- Narrowed service roads from 3 lanes to 1
- Installed high-visibility crosswalks
- Improved signal operation to reduce speed and increased crossing time
- Installed additional pedestrian signals on medians
- Installed unique pedestrian crossing signs and markings
- Upgraded traffic control devices
- Installed additional red light cameras
- Installed permanently mounted speed boards
- Deploy enforcement at high-crash locations

Pedestrian Safety Study: Phase I

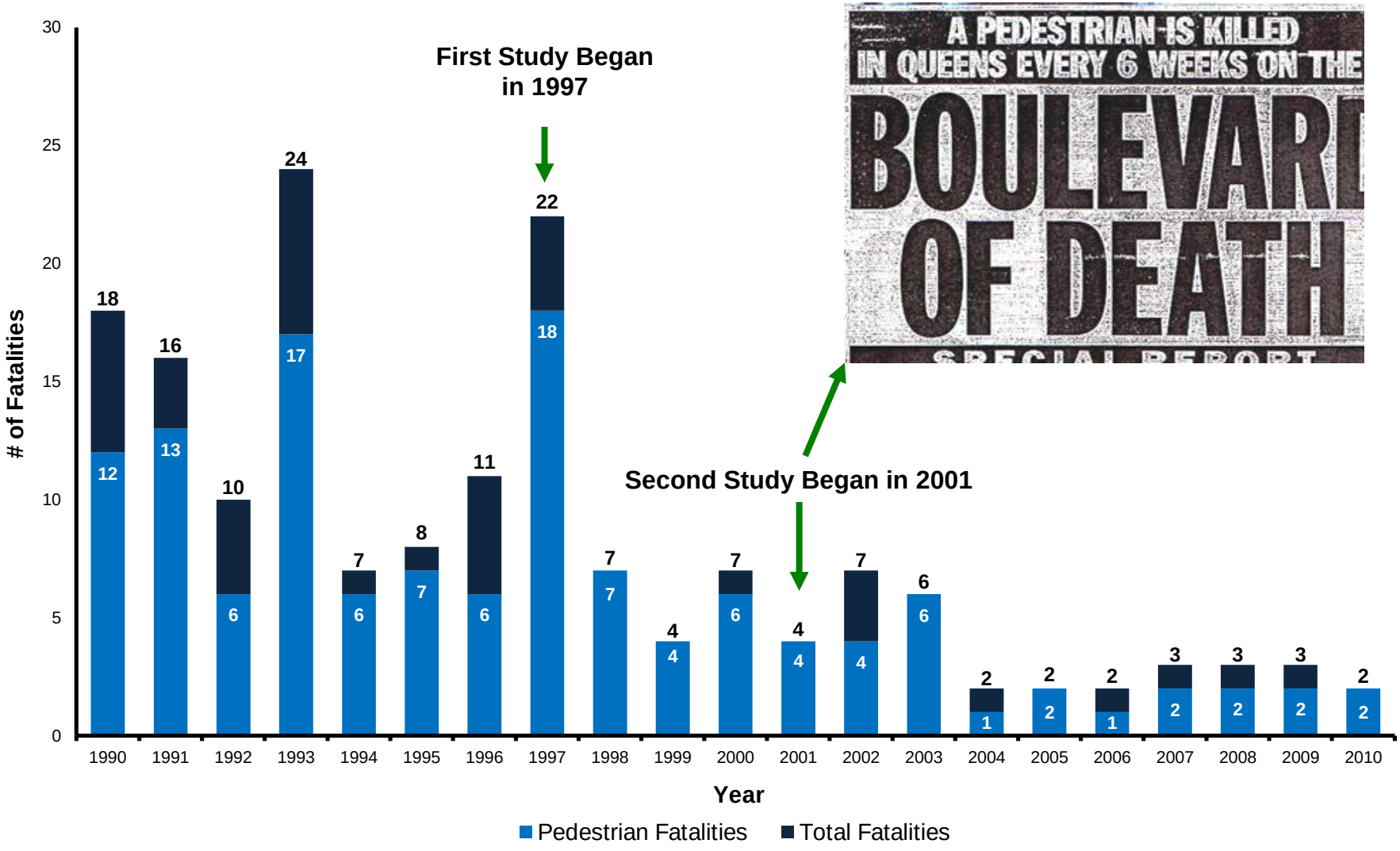
Capital Implemented Improvements, 1999-2003

- Installed signalized mid-block crossings
- Extended median tips into crosswalks with protection
- Widened medians
- Installed curb extensions

Queens Boulevard Speed Limit Changes

- 2001 – Speed limit changed from 35mph to 30 mph

Queens Boulevard Fatalities 1990 - 2010



Data Source: NYPD/NYCDOT Fatality Database

Pedestrian Safety Study: Phase II

Queens Blvd (Van Dam St to Long Island Expy)

Queens Blvd (Union Tpk to Hillside Ave)

Pedestrian Safety Study: Phase II

In-House Implemented Improvements, 2003-2004

- Installed leading pedestrian intervals (17 locations)
- Implemented 150-second signal cycle length at all intersections
- Installed full closure of the cross streets at select locations
- Closed parking area access at 2 locations under Elevated
- Continued installation of pedestrian fencing
  - Total of 46,000 linear feet of pedestrian fencing installed
- Banned NB and SB left turns onto Queens Boulevard at highly skewed intersection of 51st Ave

Pedestrian Safety Study: Phase II

Capital Implemented Improvements

- 2005
  - Permanent closure of cross streets and median extensions
- 2008
  - Additional permanent closures of cross streets and median extensions
- 2011
  - Union Turnpike punch through
- 2013-2014
  - Curb and median extensions

In-House Safety Improvements

Queens Boulevard at Broadway (2010)
Median tip extensions

- Total crashes increased by 4%
- Crashes with injuries increased by 32%
- Pedestrian injuries decreased by 36%

Before

After

3 years of after data

In-House Safety Improvements

Before

Queens Boulevard at 69th Street (2011)

Median tip extensions

- Total crashes increased by 25%
- Crashes with injuries increased by 33%
- MV crashes decreased by 6%

After

3 years of after data

In-House Safety Improvements

Queens Boulevard at Woodhaven Boulevard (2011)
Painted curb and median extensions

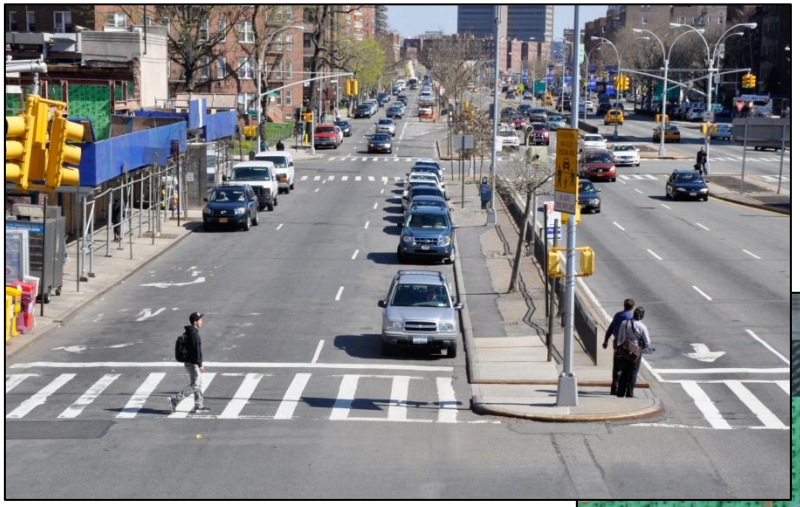
- Total crashes increased by 15%
- MV crashes decreased by 13%
- Total crashes with injuries decreased by 18%

3 years of after data

In-House Safety Improvements

Forest Hills Senior Pedestrian Focus Area:
Queens Boulevard at 71st Avenue (2012)
Median tip extensions

- Total injuries decreased by 50%
- Crashes with injuries decreased by 33%
- MV crashes decreased by 67%



Before

After

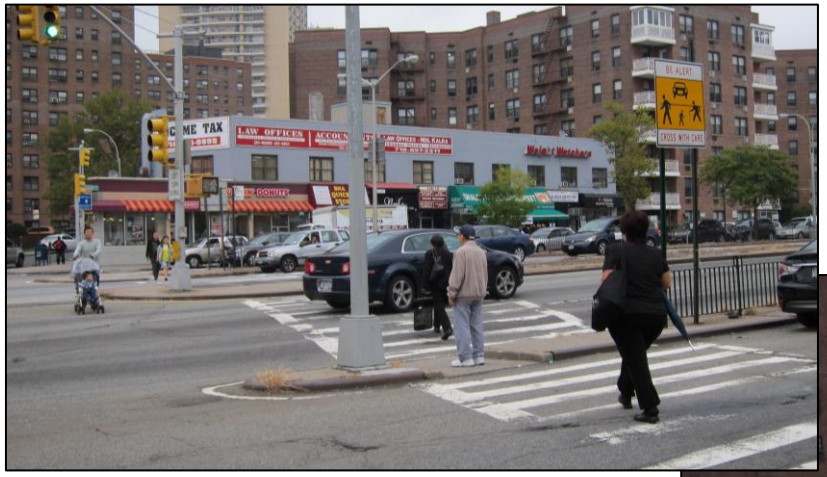
3 years of after data

In-House Safety Improvements

Rego Park Senior Pedestrian Focus Area:
Queens Boulevard at 62nd Drive and 67th Avenue (2014)

Curb extension and median tip extensions

- Total crashes decreased by 16%
- Crashes with injuries decreased by 35%
- Total injuries decreased by 42%

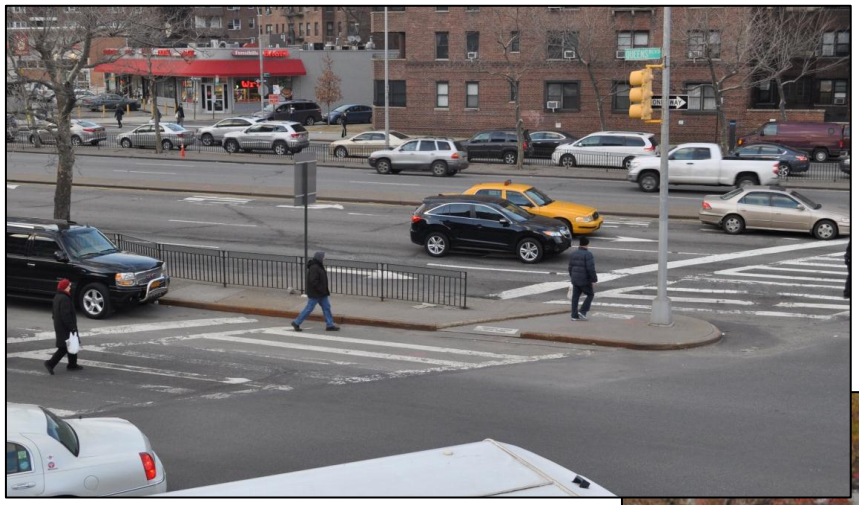


67th Ave: Before

67th Ave: After

1 year of after data

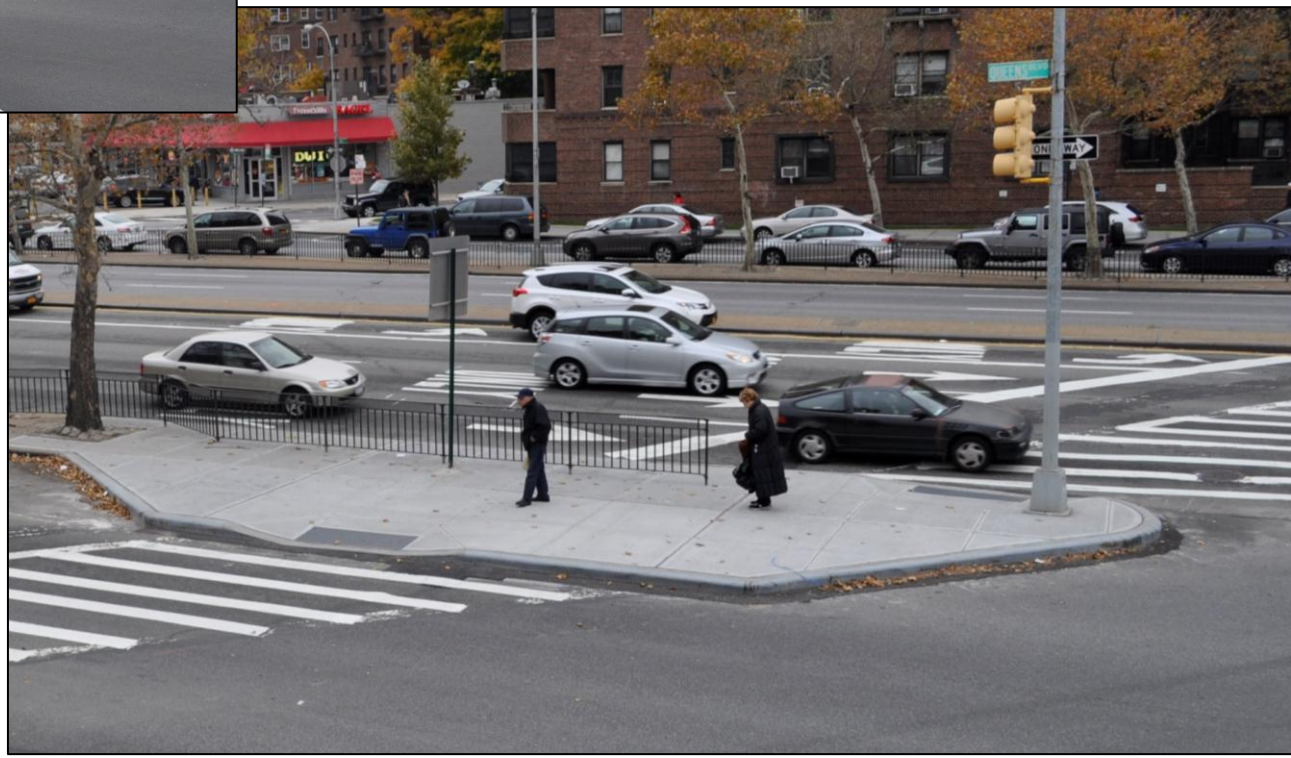
In-House Safety Improvements



Before

Forest Hills Senior Pedestrian Focus Area:
Queens Boulevard at Yellowstone Blvd (2014)
Pedestrian Island and median tip extensions

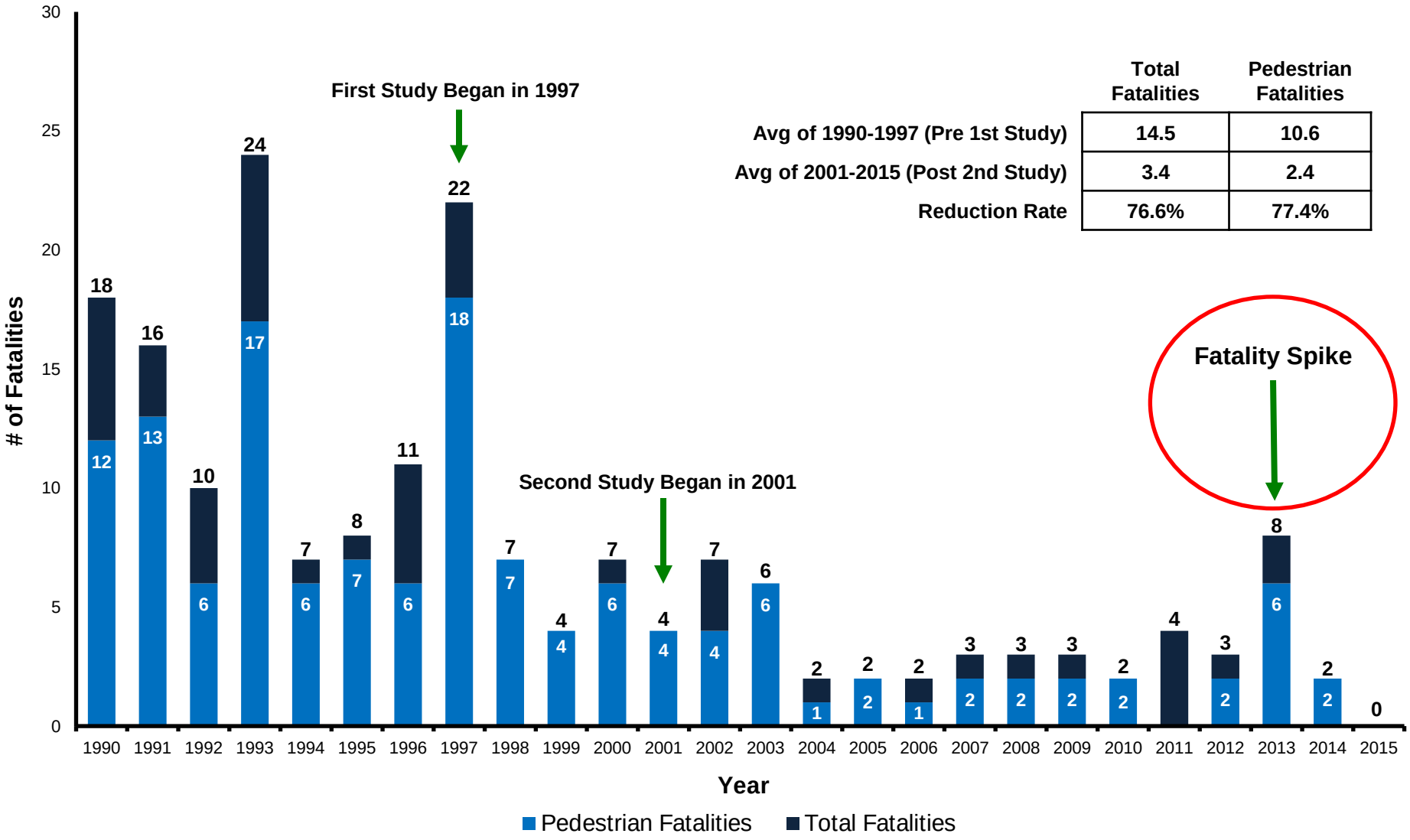
- Total crashes increased by 11%
- Crashes with injuries increased by 12%
- Pedestrian crashes decreased by 36%



After

1 year of after data

Queens Boulevard Fatalities 1990 - 2015



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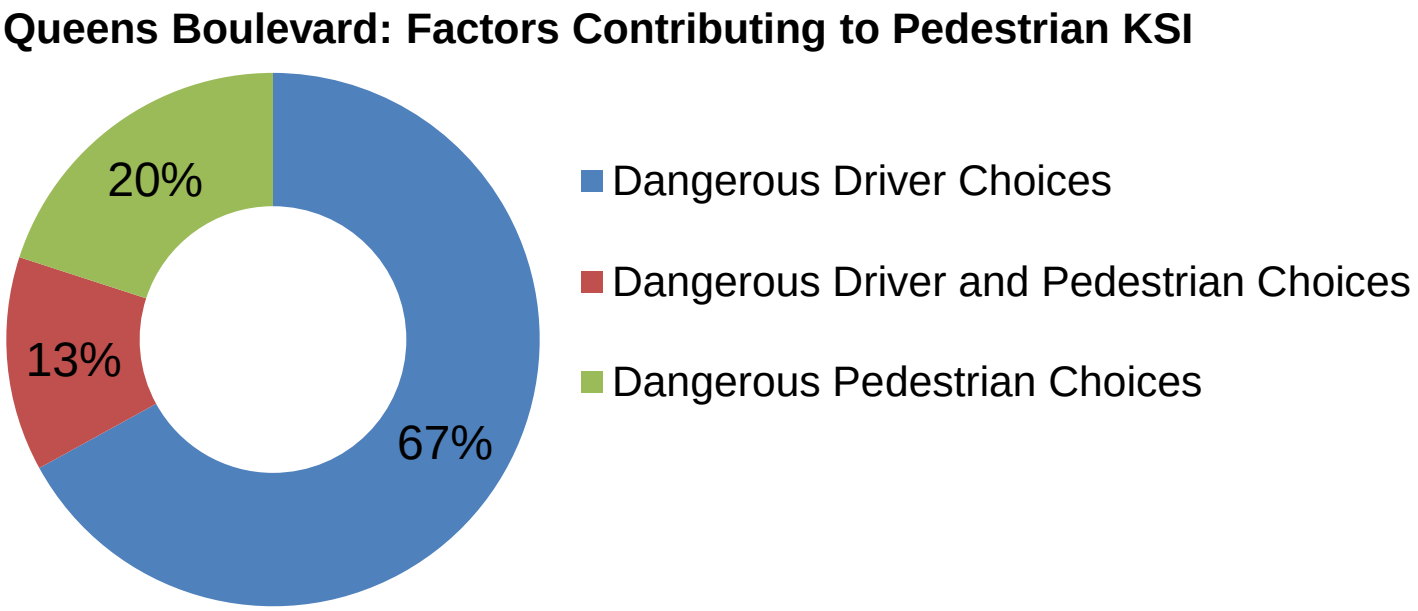
Data Source: NYPD/NYCDOT Fatality Database

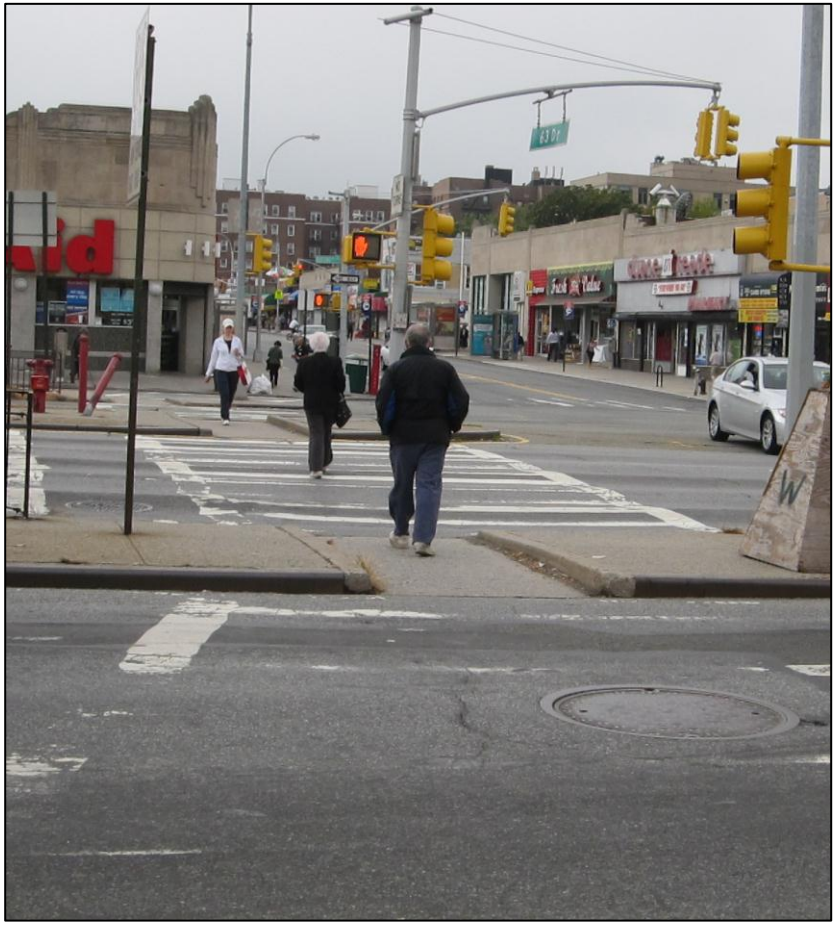
Queens Boulevard: Data Trends (2008-2013)

- Dangerous driver choices are a factor in 80% of pedestrian KSI on Queens Boulevard
- Speeding was a contributing factor in about 1/3 of pedestrian fatalities
- Driver inattention the most commonly cited contributing factor



Queens Boulevard: Data Trends (2008-2013)

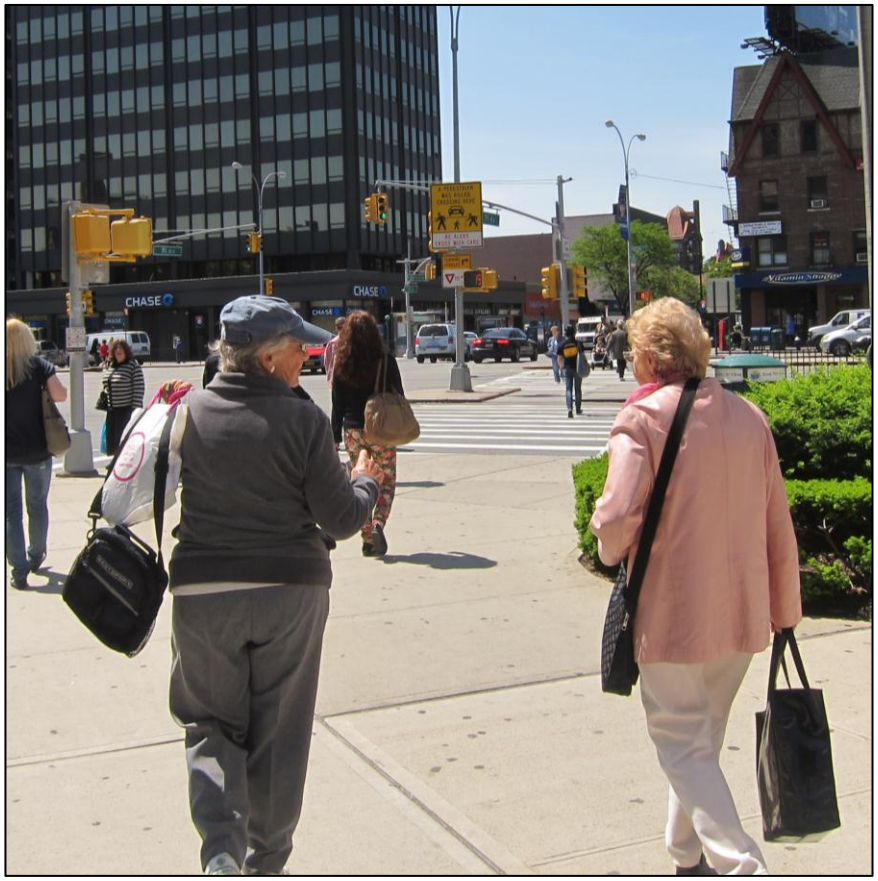
- Almost all pedestrian crashes on Queens Boulevard occur at intersections:
  - 86% of pedestrian fatalities
  - 100% of pedestrian severe injuries
- Crossing against the signal was a major factor in pedestrian fatalities



Queens Boulevard: Data Trends (2008-2013)

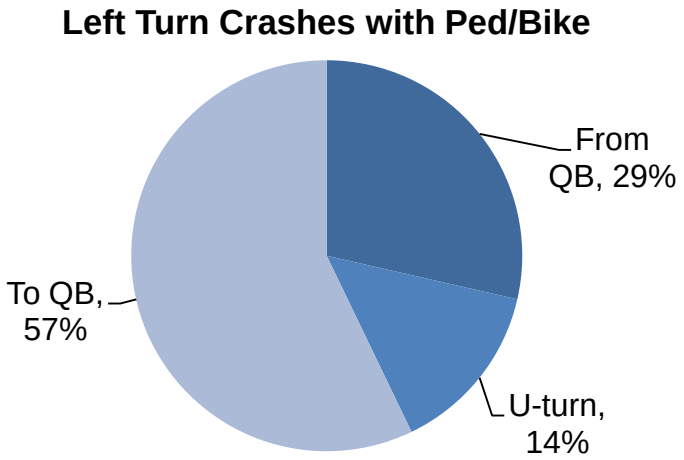
- Seniors (age 65+) represent 57% of pedestrian fatalities
  - Compared with 36% of pedestrian fatalities borough and citywide
  - Seniors represent only 12% of NYC population

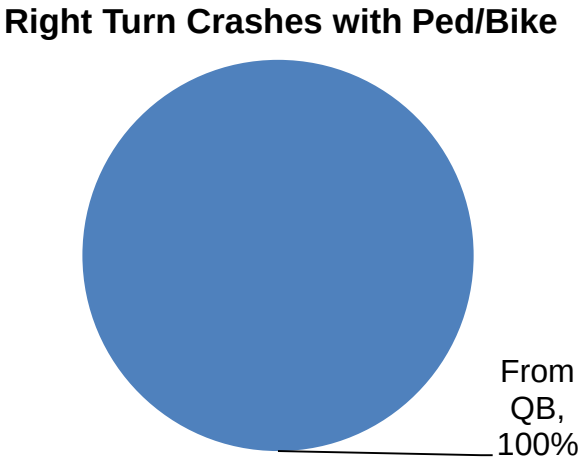
- Senior pedestrian crashes are more likely to result in a fatality
  - Seniors represent 17% of severe pedestrian injuries



Queens Boulevard: Data Trends (2008-2012)

- Failure to yield to pedestrians when turning accounts for over half of pedestrian severe injuries
  - 60% (Queens Boulevard) vs 41% (borough wide)
  - About evenly split between left (54%) and right turns (46%)
  - Left turns: majority turning onto Queens Boulevard
  - Right turns: all turning onto cross street



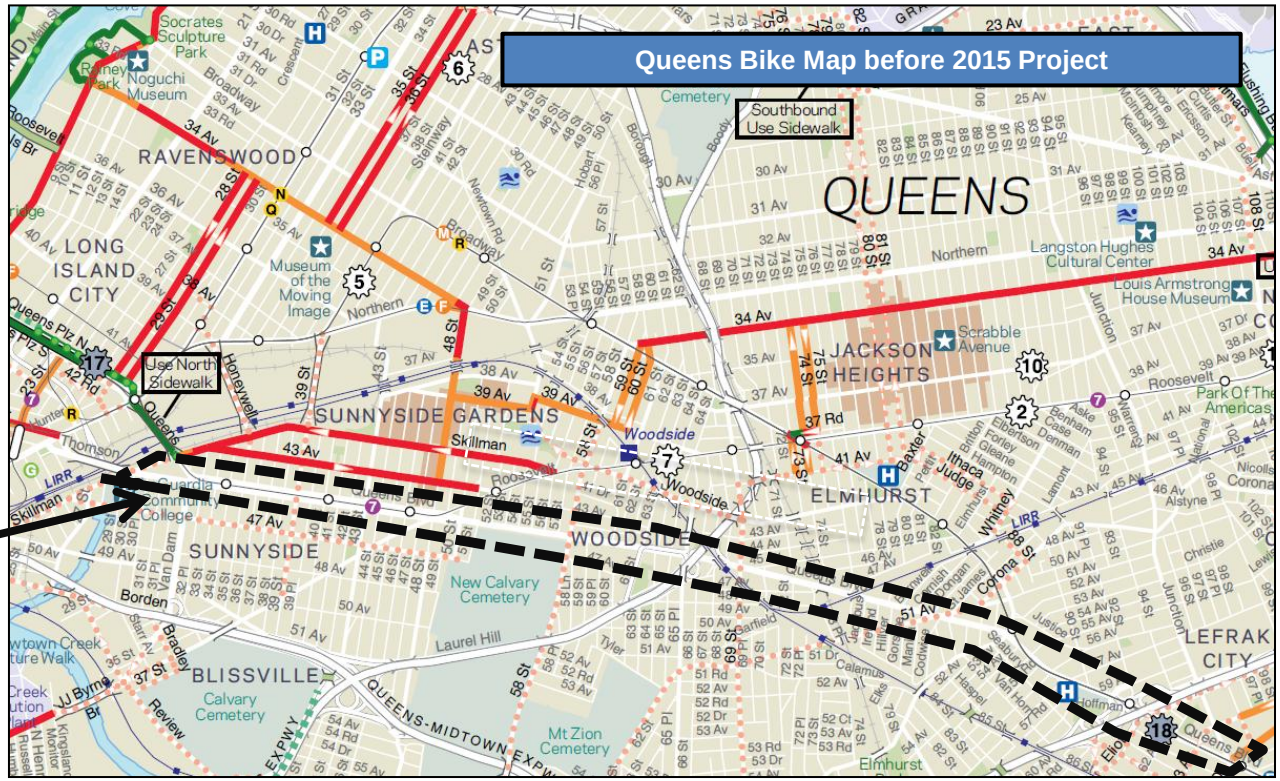


Queens Boulevard: Data Trends (2008-2012)

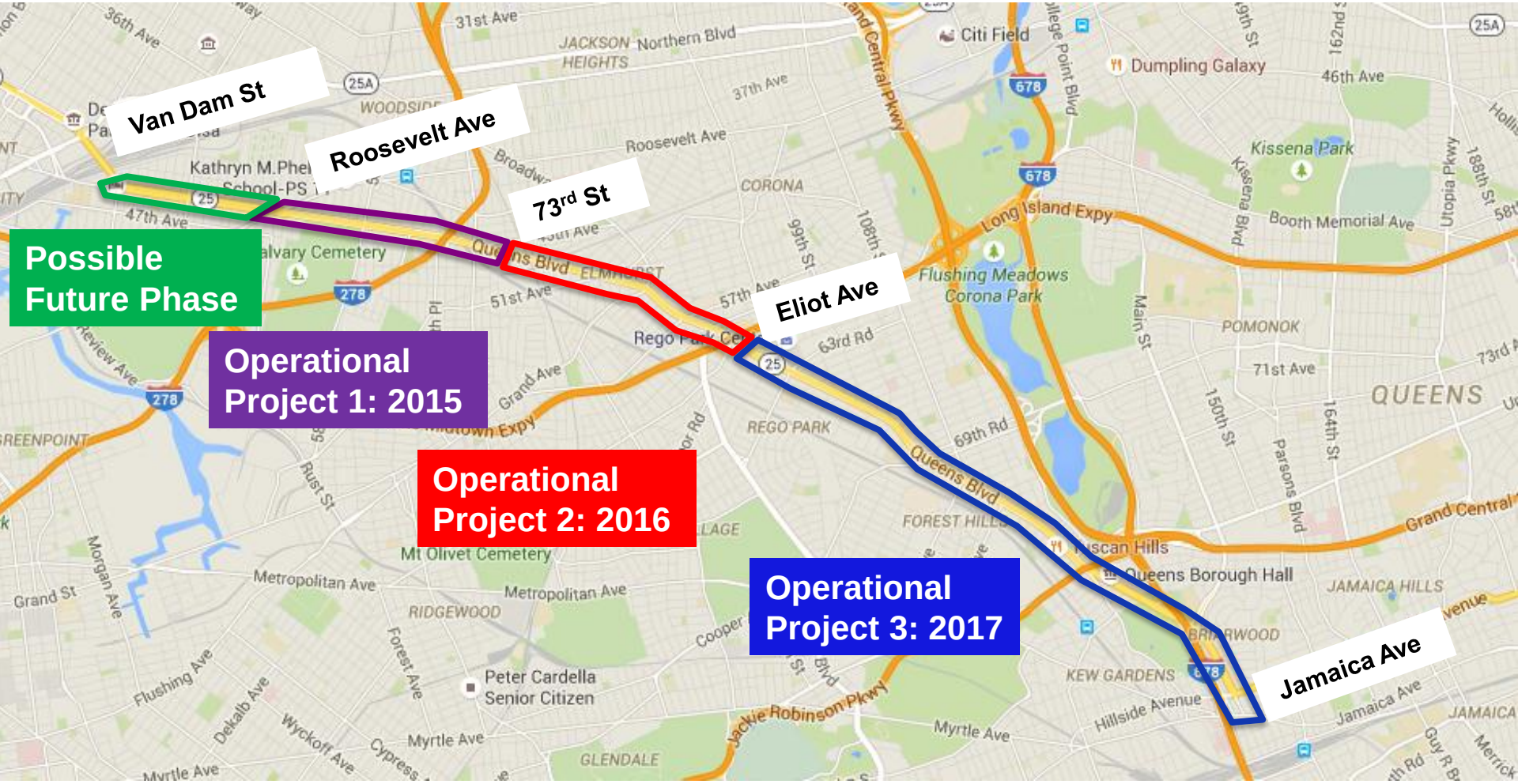
- Majority of pedestrian fatalities and severe injuries occurred outside of rush hour:
  - 79% of pedestrian fatalities
  - 69% of severe injuries
- Majority of pedestrian fatalities and severe injuries occurred in daylight conditions:
  - 64% of pedestrian fatalities
  - 52% of severe injuries
- Over representation of pedestrian fatalities and severe injuries during overnight hours (midnight to 6am):
  - 21% of pedestrian fatalities
  - 10% of pedestrian severe injuries

Why Queens Boulevard in 2014-2015?

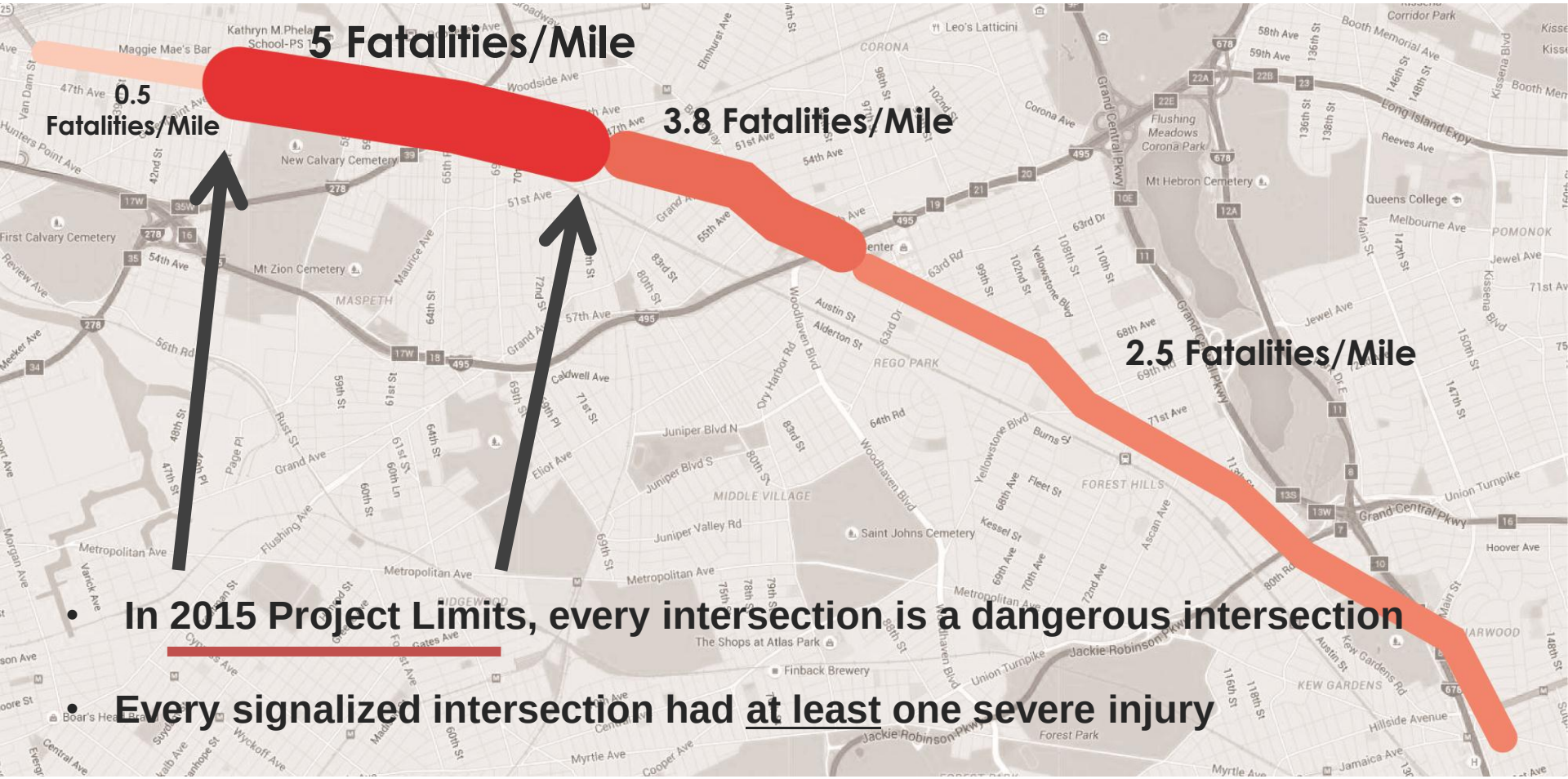
- Community requests for improvements on corridor
- Highway-like features
- Missing pedestrian and bicycle connections
- Operational project precedes Great Streets capital funding starting in 2018



Continued Efforts on Queens Blvd



Where to Start: Safety Need



- In 2015 Project Limits, every intersection is a dangerous intersection
- Every signalized intersection had at least one severe injury
- More than half the intersections had over 50 injuries
- Even the "safest" intersection had 20 injuries and 1 severe injury

Safety Data: 2009-2013

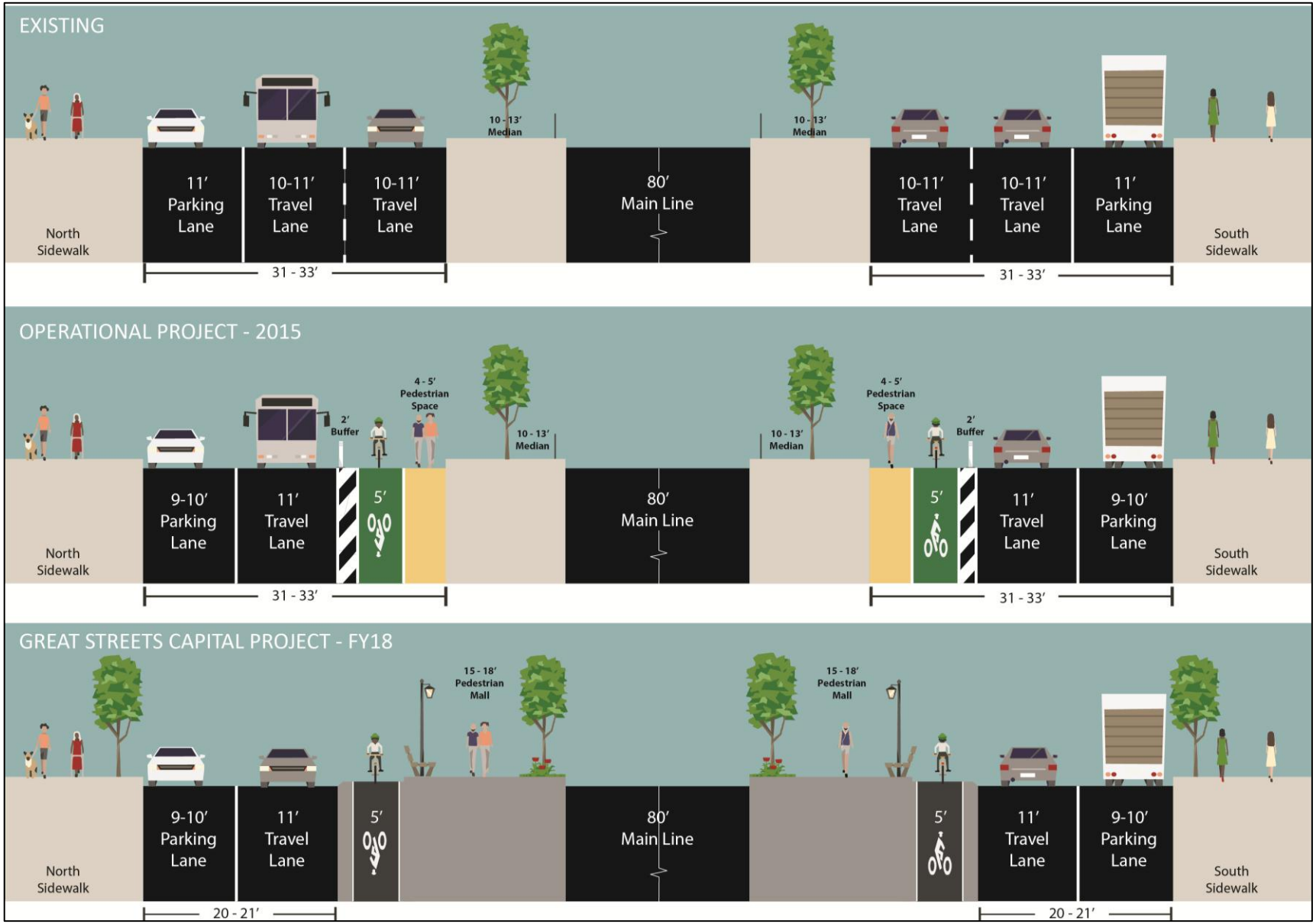
Queens Blvd Geometry

Design Principles / Project Goals

1. Calm the service road traffic (consistent 1 moving lane per direction)
2. Add east-west bicycle connection in Queens
3. Reduce roadway shopping and calm slip lanes
4. Create safe crossing opportunities for pedestrians
5. Keep main line moving (preserve moving lanes)
6. Eliminate highway-like design features
7. Enhance sense of place, connect neighborhoods

Queens Blvd North Service Rd at 68th St looking west

Key Design Features: Cross Section



Design Challenges & Solutions

<u>Heavy volumes</u>

- Challenges: Heavy volumes in peak hours on service roads
- Solutions: Restricted parking during rush hours to add curbside moving lane

<u>Highway access</u>

- Challenges: Service road & mainline merge into single highway tunnel lane
- Solutions: Restricted access from service road, added extra highway-only lane from mainline

Design Challenges & Solutions

Complex signal timing

- Challenges: Long signal cycle (150 seconds) make adjustments difficult
- Solutions: Added new signals (midblocks, ramps, slip) and coordinated timing

Railroad overpass supports

- Challenges: Supports change geometry of lanes on service road and mainline
- Solutions: Preserved capacity on service roads, extended concrete median to continue bike lane

Design Challenges & Solutions

Uncontrolled Slips

Challenge:

- Unique turn restriction: no turns between mainline and service road at intersections
- Result in high speed, uncontrolled slip lanes
- Function as on/off ramps, exacerbate highway-like quality of Queens Blvd

Before: Queens Blvd & 61st St

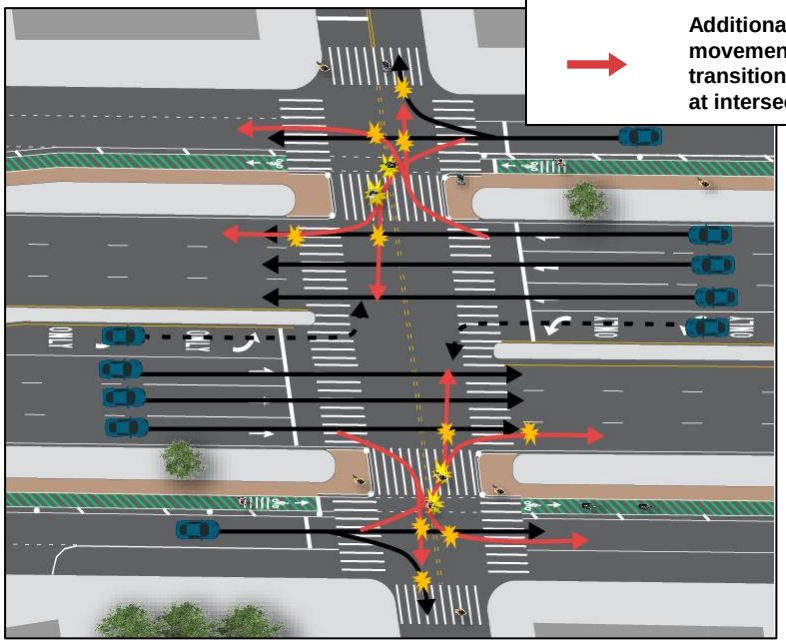
Queens Blvd & 50th St

Design Challenges & Solutions

Uncontrolled Slips

Solutions to mitigate conflicts at slips:

1. Close
   - Redundant, low-volume slips; used for 2 slips in 2015
2. Signalize
   - Unique, high-volume slips; used for 1 slip in 2015
3. Re-engineer/Stop-control
   - Create environment similar to intersections; required vehicles to make right turns; used for 4 slips in 2015 Project



Queens Boulevard Speed Limit Changes

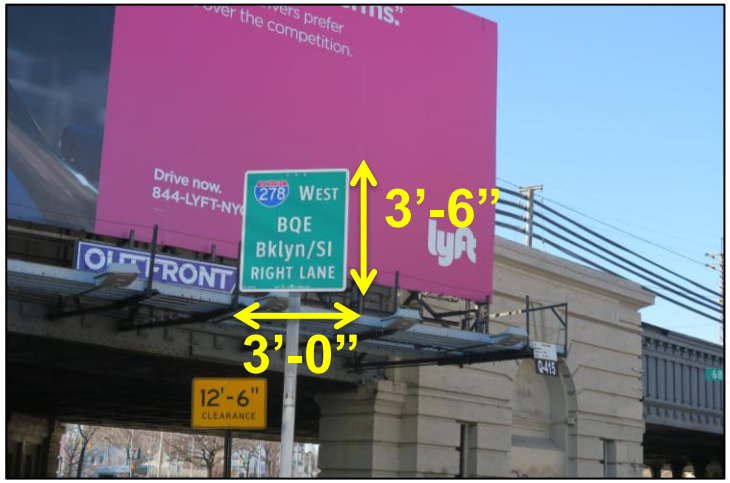
- May 2014 – Queens Blvd designated Arterial Slow Zone – Speed limit is 30mph
- December 2014 – Queens Blvd speed limit changed to 25mph by Mayor Bill de Blasio

Resizing Roadway Signage

Existing Conditions:

After 2015 Project:

Queens Blvd & 68th St



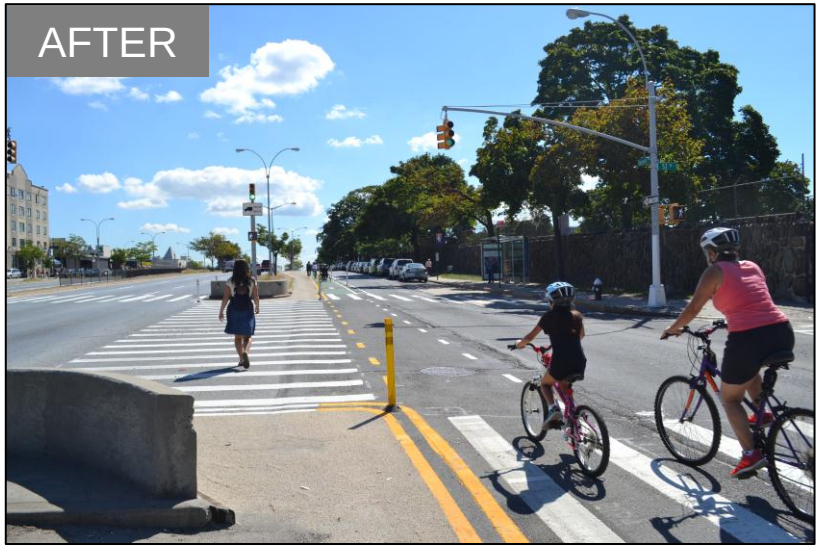
Queens Blvd & 45th Ave

New Pedestrian Crossing

Auto-oriented retailers stopped parking vehicles on medians after project implementation

Results: A Safer, Livable Queens Boulevard

- Protected Bicycle Lane
  - Allows for safe, convenient bicycle travel
  - Reduces speeding, calms traffic
  - Add 1.3 miles to bike network
- Pedestrian Path & Curb and Sidewalk Extensions
  - Extends pedestrian network and create shorter pedestrian crossings
  - Reduces speeding, calms traffic
  - Lays groundwork for capital project
- Mall-to-Mall Crossings
  - Accommodate pedestrian desire lines
  - Visually tighten intersections
- New Pedestrian Crossing
  - Creates new, safe crossing for pedestrians
  - Extends pedestrian network



Results: A Safer, Livable Queens Boulevard

- Re-Engineered Slips
  - Accommodate pedestrian and bicycle crossings
  - High speed merges become safer right turns
- Resize Road Signage & Upgrade Roadway Markings
  - Create urban boulevard
  - Encourages appropriate usage of service road and mainline
- Left Turn Ban
  - Reduces conflicts between vehicles, pedestrians, and cyclists
- Reconfigure Highway Entrance
  - Reduces conflicts between vehicles
  - Accommodates bicycle crossings

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Thank You