IMPLEMENTATION

With the goal of increasing safety for vulnerable users by improving roadway and intersection geometry as well as implementing traffic calming measures along corridors, the Pedestrian and Bicycle Safety Action Plan:

- Recommends the adoption of a Vision Zero policy
- Prioritizes locations where investments will be made on safety improvements for pedestrians and bicyclists
- Identifies locations in need of further evaluation and improvements
- Creates methods for identifying additional locations in the future that may be in need of safety improvements
- Proposes a bicycle master plan - **Bike Newark**
- Recommends education and enforcements strategies
- Identified potential funding opportunities

The first priority will be to address safety issues at the 10 highest, most severe crash intersections and corridors. This will be accomplished through various funding avenues and processes, which are detailed in this chapter.

The second priority will be to investigate additional intersections and corridors identified by the stakeholders and community through outreach.

The city will continue to screen for other high crash locations. The master plan includes a screening method to identify additional locations in the future.

The plan proposes an expansion of bike facilities in certain neighborhoods within in the city incorporating stakeholder and community input.

VISION ZERO

The concept of Vision Zero began in Sweden in 1994. The Swedes call it "an approach to road safety thinking" and they have a clear and simple message: "Any loss of life in traffic is unacceptable". Their data shows that while traffic volumes have steadily increased, traffic fatalities have significantly decreased. It is an approach and law where emphasis is placed on system design.

Several big cities in the U.S. have since adopted their own Vision Zero policies including New York City, San Francisco, Portland and Seattle. In 2014, New York City created a Vision Zero Action Plan outlining initiatives the city is taking to reduce traffic deaths and serious injuries including street design, outreach, enforcement, legislation and campaigns. In 2014, San Francisco adopted Vision Zero SF. Their policy commits to "build better and safer streets, educate the public on traffic safety, enforce traffic laws, and adopt policy changes that save lives." As part of Portland's Vision Zero safety strategy, the city is aiming for zero traffic-related fatalities and serious injuries in 10 years.

No single agency or department in Newark can implement these strategies alone. If the city is going to succeed in achieving a goal of zero traffic-related fatalities, Vision Zero will require partnerships. The city will create a Transportation Safety Committee that includes representatives from city government, community groups, the business community, colleges, Essex County, NJDOT and the NJTPA. The transportation safety committee will advocate, guide and recommend.

IMPLEMENTATION

RECOMMENDED ENGINEERING SAFETY IMPROVEMENTS FOR THE 10 HIGH CRASH INTERSECTIONS AND CORRIDORS

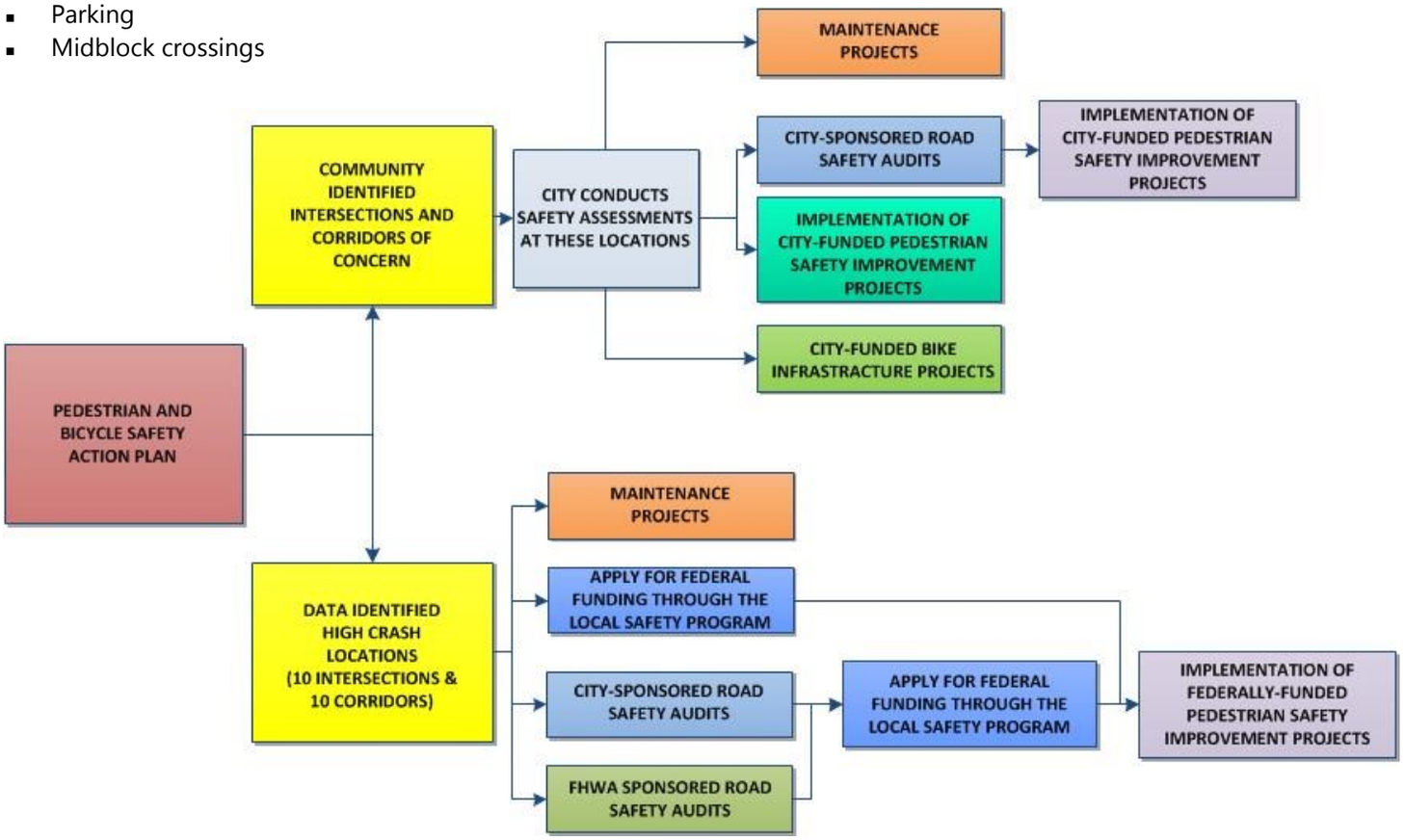
Using crash summary statistics, a.m./p.m. peak pedestrian and bicycle counts and field investigation of high-risk road attributes, engineering improvements from the toolbox have been recommended for each of the 10 high crash intersections and corridors. Field observations were made to confirm the presence the following:

- Pedestrian signals
- Pedestrian school flashers
- Pedestrian signage
- Median or pedestrian refuge island
- Curb extensions
- Sidewalks
- Crosswalks
- ADA compliant curb ramps
- Pedestrian scale street lighting
- Number of travel lanes
- Parking
- Midblock crossings

PATHWAY FOR IMPROVEMENTS

Recommended improvements from the action plan can be implemented through a number of paths as outlined below. Locations of concern identified during community outreach will be evaluated by the city's Division of Traffic and Signals in order to determine what improvements can be made or if further assessment is needed through city-sponsored Road Safety Audits. The appropriate track for funding such improvements will then be determined. Maintenance issues can be addressed promptly, while city-funded safety improvement projects will take more time to implement.

Improvements recommended for the 10 high crash intersections and corridors may be addressed as maintenance or city-funded safety improvement projects, but they are also eligible for federal funding through the Highway Safety Improvement Program or can be further evaluated through a federally-sponsored Road Safety Audit. This is a more lengthy process that can take several years for a project to be constructed.



IMPLEMENTATION

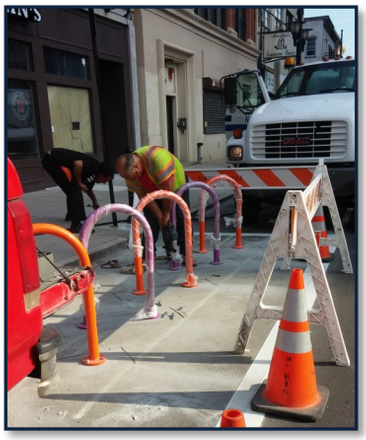
UPCOMING SAFETY PROJECTS

The following is a list of projects that are currently in conceptual planning, design or under construction:

Pedestrian Safety Improvements
Broad Street (South St. and Tichenor St./Lincoln Park)
Dr. MLK Jr. Blvd (7th Ave. and Crane St.)
Dr. MLK Jr. Blvd (7th Ave. from Clinton Ave. to State St.)
Bergen Street (near University Hospital)
Broad Street (between Emmet St. and Thomas St.)
Ferry Street (between Merchant St. and Lexington St.)
Safe Routes to School (eight schools)
Bike Lanes
Ironbound Bike Lanes (McWhorter St. and Ferry St.)

PEDESTRIAN SAFETY DURING CONSTRUCTION

Planning for pedestrian as well as vehicle travel within construction zones is an integral component of any construction project. During construction, access for pedestrians must be maintained to building entrances, bus or transit stops and crosswalks. Newark's dense urban land use pattern often presents constrained spaces and necessitates closing a sidewalk for the duration or a portion of a project. When closing a sidewalk, alternate safe and convenient routes are a requirement of any construction plan. Walkways must be clearly identified, ADA accessible and protected from vehicles and the roadway. A pedestrian detour should never begin mid-block as this can encourage unsafe pedestrian crossings. Clearly readable signage is necessary to direct pedestrians throughout the entirety of the detour. Depending on the type of construction work or the presence of active construction driveways, flaggers or security guards may be needed to guide both vehicle and pedestrian traffic into and past the site.



RECOMMENDING SAFETY IMPROVEMENTS THROUGH ROAD SAFETY AUDITS

A Road Safety Audit (RSA) is a formal safety performance examination of a roadway segment or intersection conducted by a multidisciplinary team of professionals including engineers, planners and law-enforcement. The goal of the RSA is to identify potential safety issues and opportunities for cost-effective safety improvements for all road users. According to FHWA, the RSA aims to answer the following questions:

- What elements of the road may present a safety concern: to what extent, to which road users and under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns?

RSAs are facilitated by Rutgers Transportation Safety Resource Center in partnership with the NJTPA with funding provided by FHWA and NJDOT. Locations are selected based on a network screening that identifies high crash locations. As part of the RSA, the following elements are analyzed:

- Crash diagrams
- Traffic volumes
- Transit service
- Area characteristics
- Corridor and intersection characteristics

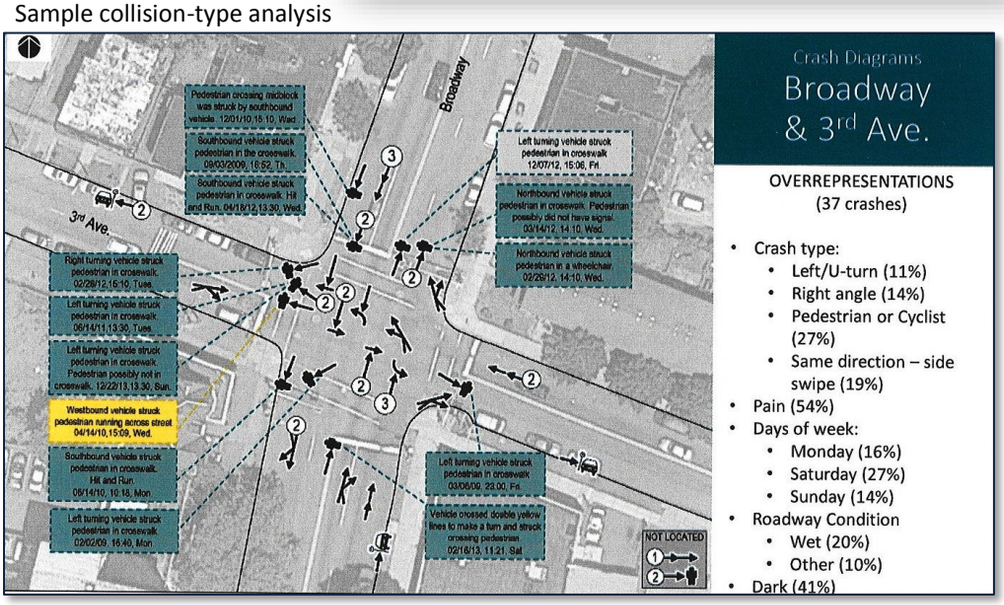
During the site visit, issues are documented and recommendations are made for the following:

- Maintenance
- Visibility & Navigability
- Operations
- Pedestrians
- Bicycles

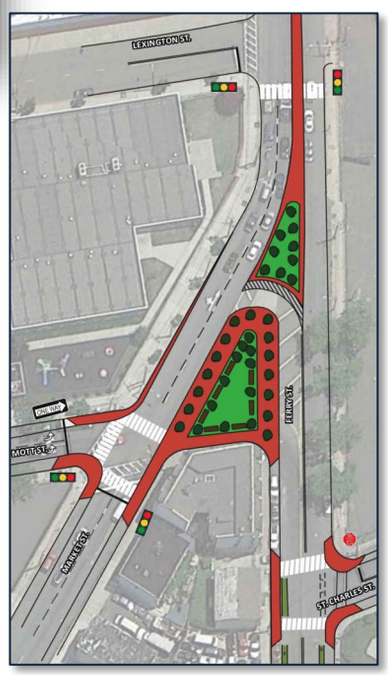
Crash Type—Emmet St. and Broad St.	Count in RSA Area	% in Intersec-tion*	% Essex County*
Same-Direction—Rear-End	3	27%	23%
Same-Direction—Sideswipe	4	36%	15%
Right-Angle	3	27%	13%
Opposite-Direction—Head-On/Angular	1	9%	1%
Opposite-Direction—Sideswipe	—	—	1%
Struck Parked Vehicle	—	—	18%
Left-Turn/U-Turn	—	—	4%
Backing	—	—	8%
Fixed Object	—	—	10%
Animal	—	—	1%
Pedestrian	—	—	4%
Other	—	—	2%
TOTAL	11	100%	100%

*Percentages are rounded

Sample collision-type analysis



Sample crash diagram

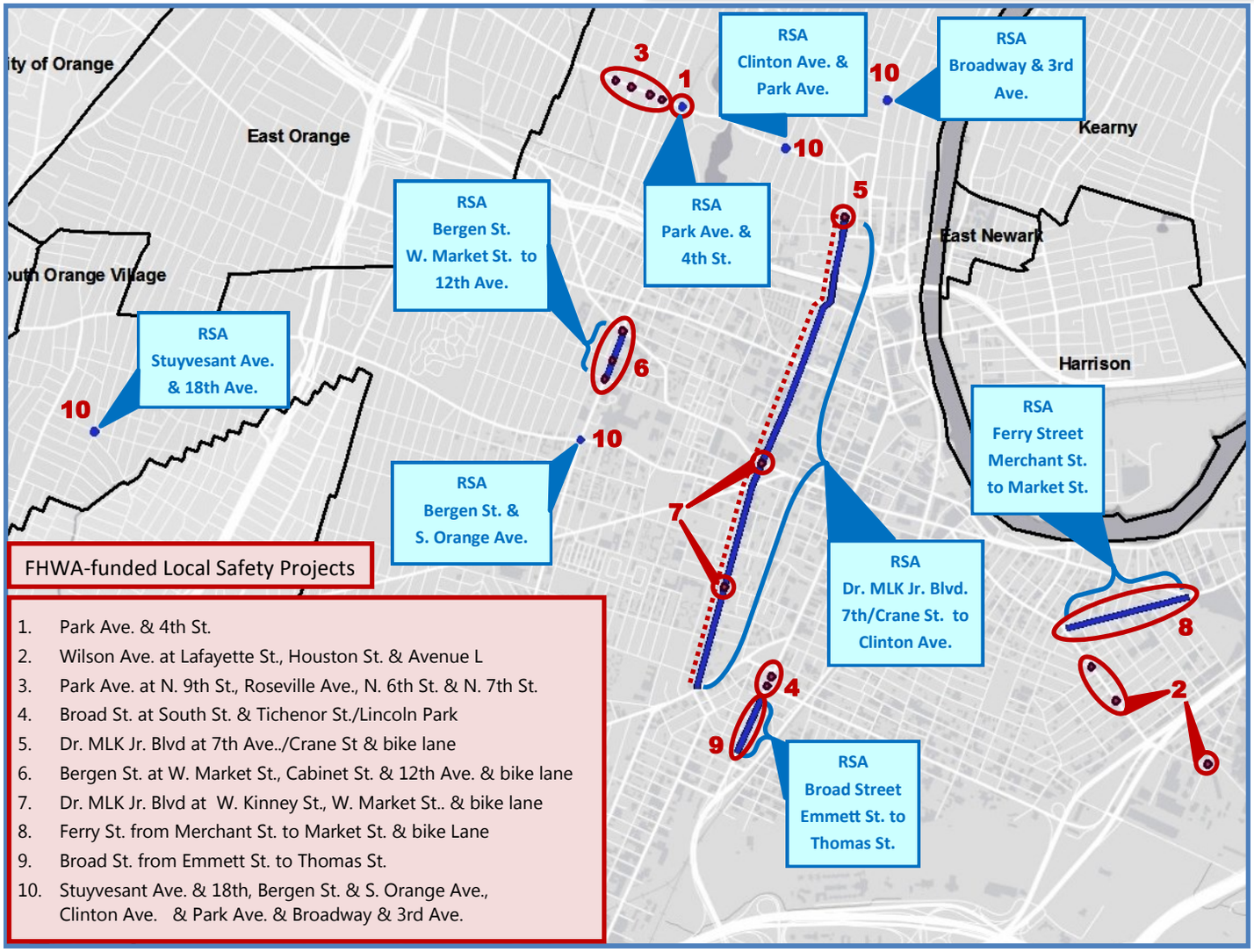


Sample recommendation

IMPLEMENTATION

Since 2011, six RSAs have been conducted in the city. The map below depicts the locations. Recommendations from these RSAs are often used as the basis for federally -funded Local Safety Program projects through the NJTPA's annual program solicitation. The following RSAs have resulted in Local Safety Program projects:

- Park & 4th St. and Wilson Avenue projects were completed in 2014.
- Dr. MLK Jr. Blvd. at 7th Ave./Crane Street will begin construction in Spring 2016.
- Broad Street at South St. and Tichenor St./Lincoln Park will begin construction in Summer/Fall 2016.
- Bergen St. at W. Market St., Cabinet St. and 12th Ave. and Dr. MLK Jr. Blvd. at W. Kinney and W. Market St. began engineering design in the fall of 2015 and will begin construction in Summer 2017.
- Stuyvesant & 18th Ave., Bergen St. & S. Orange Ave., Clinton Ave. & Park Ave., Broadway & 3rd Ave. will begin construction in Spring 2017.
- Ferry Street from Merchant St. to Market St. and Broad Street from Emmett St. to Thomas St. will begin engineering design in the fall of 2016 and construction in Spring 2018.



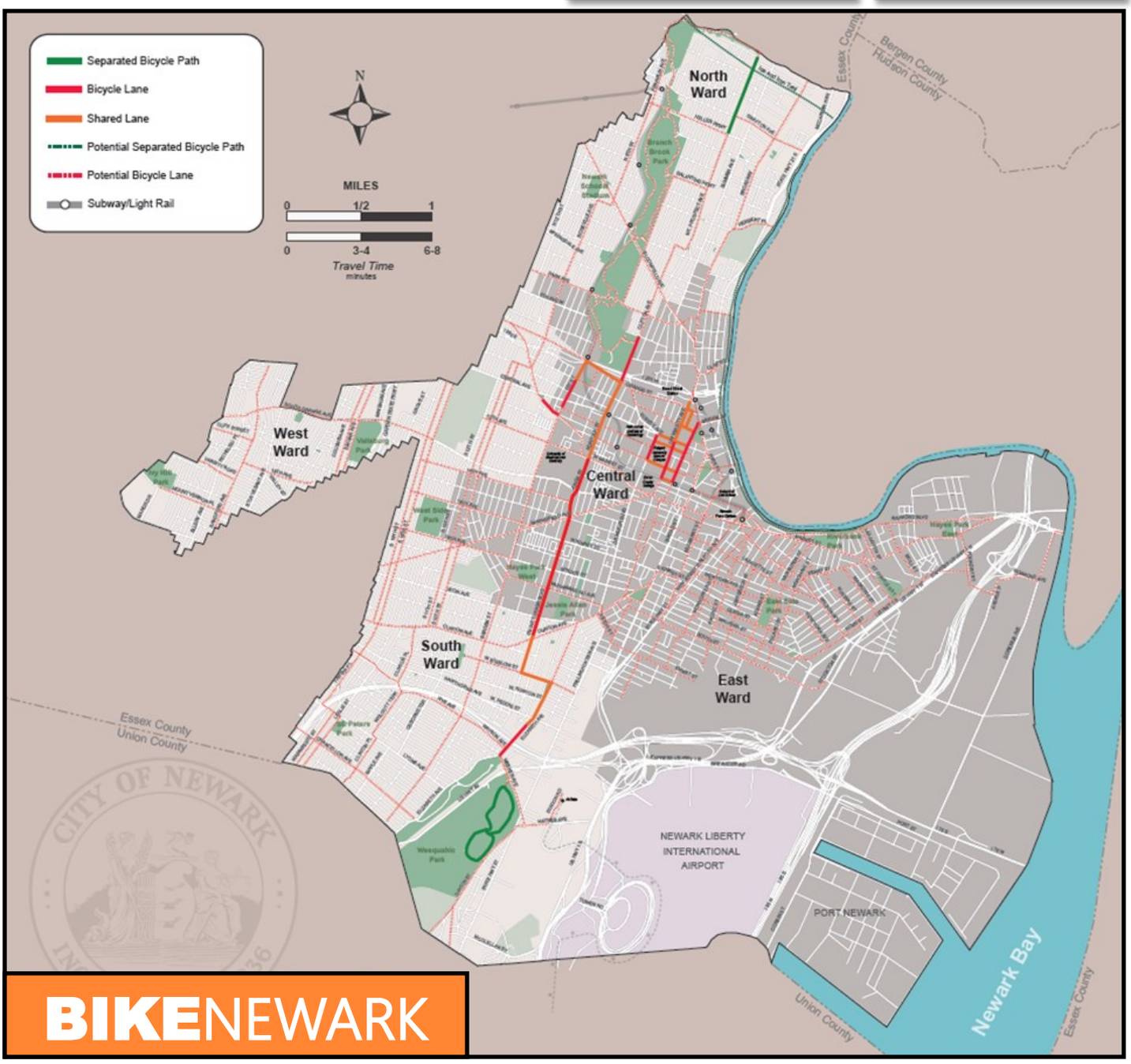
FHWA-funded Local Safety Projects

1. Park Ave. & 4th St.
2. Wilson Ave. at Lafayette St., Houston St. & Avenue L
3. Park Ave. at N. 9th St., Roseville Ave., N. 6th St. & N. 7th St.
4. Broad St. at South St. & Tichenor St./Lincoln Park
5. Dr. MLK Jr. Blvd at 7th Ave../Crane St & bike lane
6. Bergen St. at W. Market St., Cabinet St. & 12th Ave. & bike lane
7. Dr. MLK Jr. Blvd at W. Kinney St., W. Market St.. & bike lane
8. Ferry St. from Merchant St. to Market St. & bike Lane
9. Broad St. from Emmett St. to Thomas St.
10. Stuyvesant Ave. & 18th, Bergen St. & S. Orange Ave., Clinton Ave. & Park Ave. & Broadway & 3rd Ave.

IMPLEMENTATION

BICYCLE MASTER PLAN

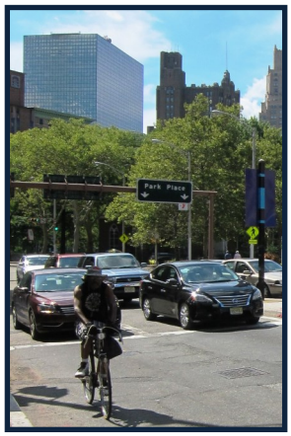
The map below shows the existing, planned and potential bike routes as part of the Bike Newark Initiative. The Central Ward and East Ward have been shaded because initial efforts will focus on bicycle facility improvements in this area based on presence of high crash locations.



RECOMMENDATIONS FOR BIKE FACILITIES

As shown in the Bike Newark Plan, bike routes are planned throughout the city. However, implementation will initially focus on:

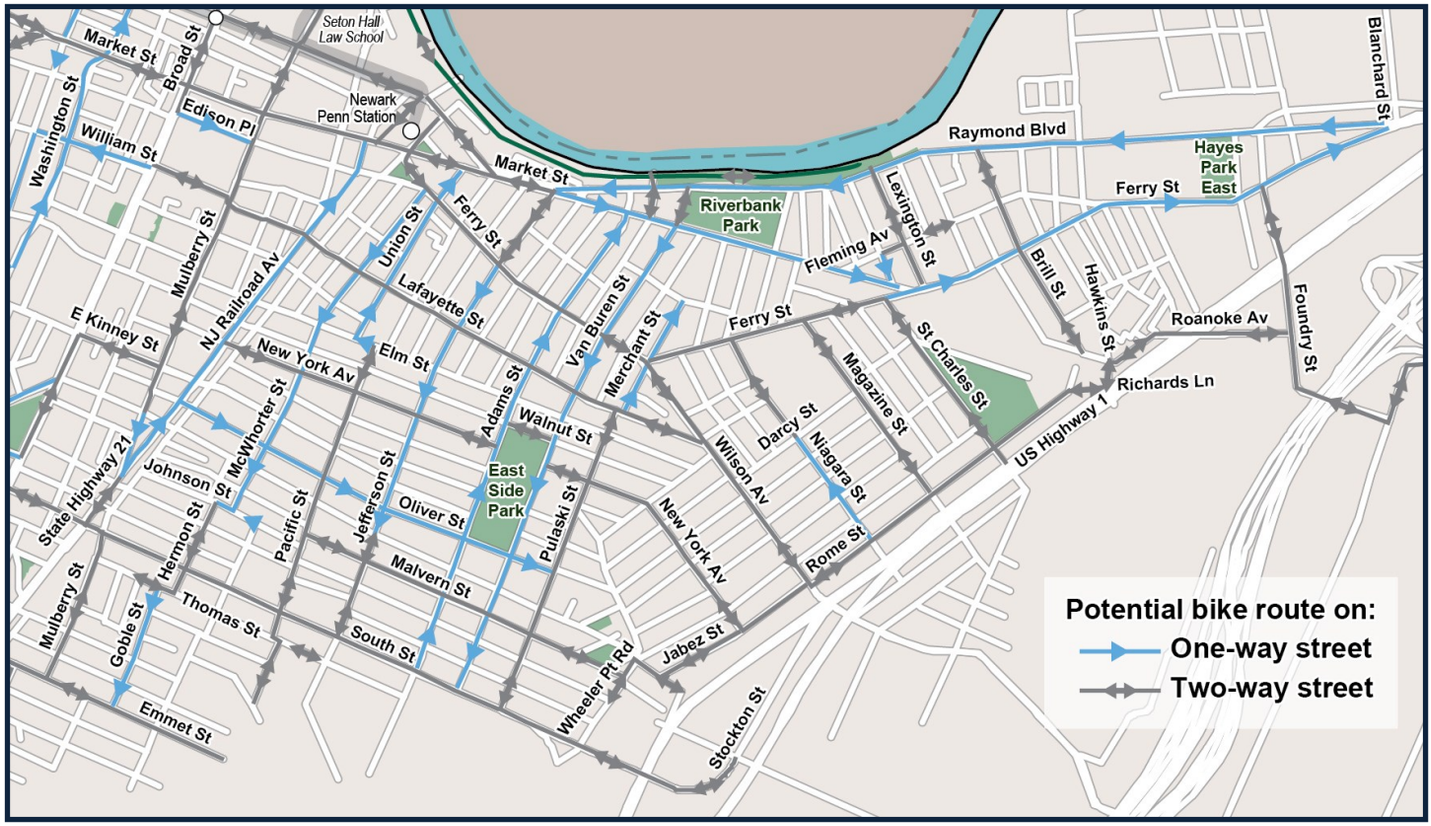
- Central Business District (CBD)/Downtown
- Ironbound neighborhood
- Connectivity to train stations
- High density locations
- High residential growth areas



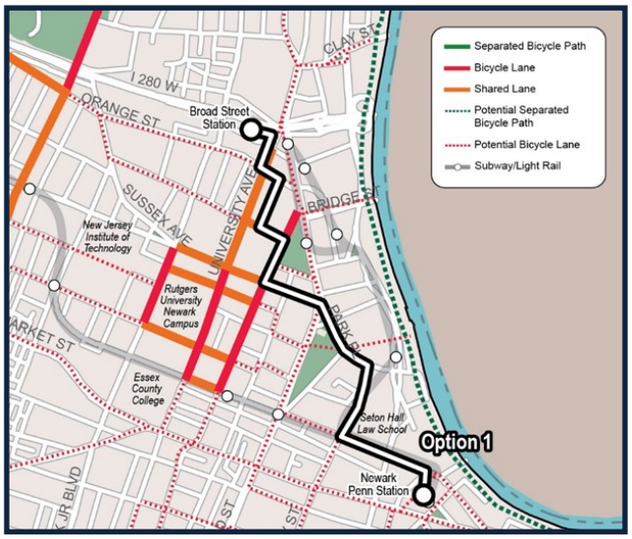
Ironbound

There are several proposed bike routes in the Ironbound neighborhood. The street directions and widths are the main determining factors in whether bike facilities should be striped as shared routes or with dedicated bike lanes. The potential bike routes for implementation in the Ironbound can be determined using the map shown below, as well as field measurements of street widths and the presence or absence of on-street parking.

Ironbound Neighborhood Potential Bike Routes

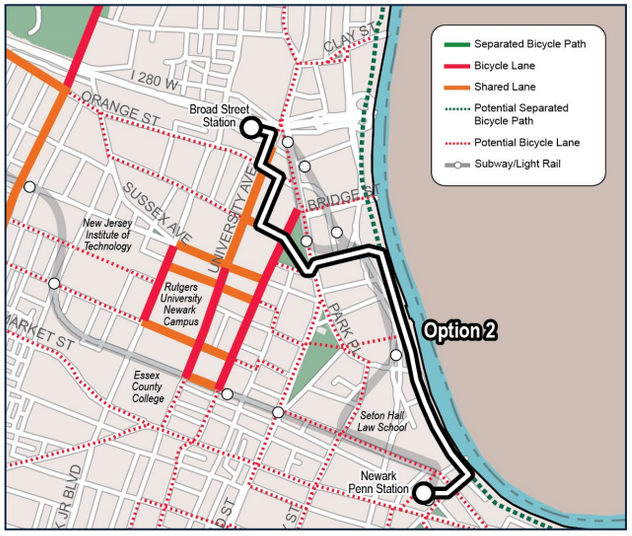


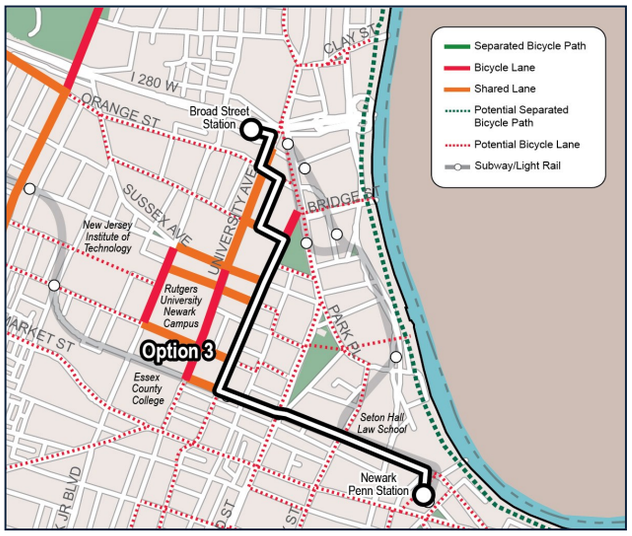
IMPLEMENTATION



CBD/Downtown Area

A crucial bicycle network link is the connection between Newark's Penn and Broad Street stations. In partnership with NJ Transit and NJ DOT, with funding from 2015 bikeways program, the city is currently in the planning and design stages of making this connection a reality. The route will not only serve as an important connect between two major train stations but will also connect to Rutgers University, the Central Business District and the Four Corners Shopping District. This connection will serve as the backbone of Newark's greater bicycle network facilitating safe bicycle travel to all areas of the city. There are three options for the bike route that will connect the two stations which also include connections to the existing/proposed bike facilities along the way using separated bike lanes.

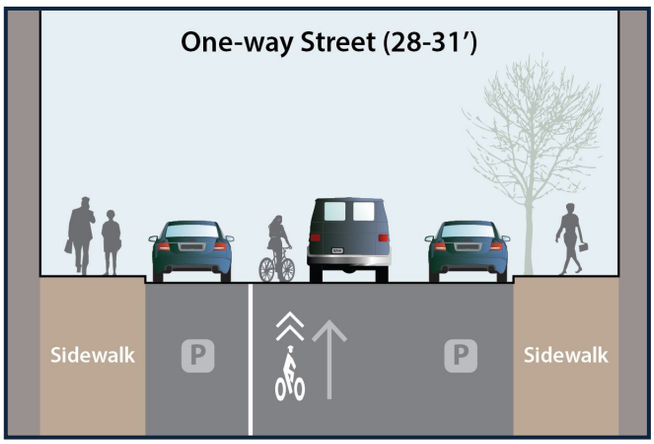




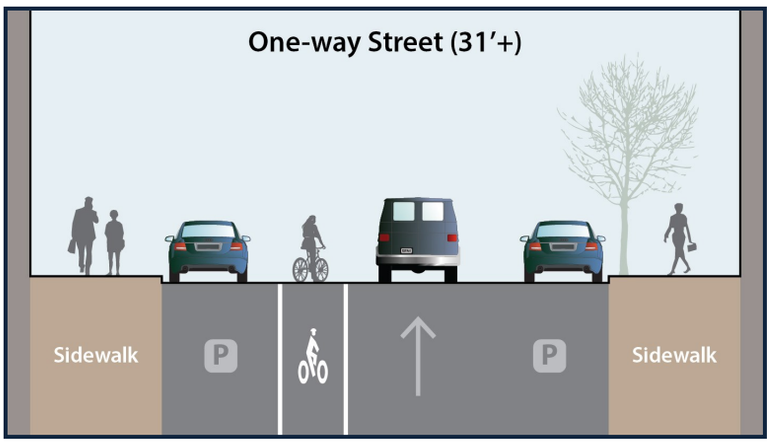
Central Business District Bike Routes

Bike Route Configurations

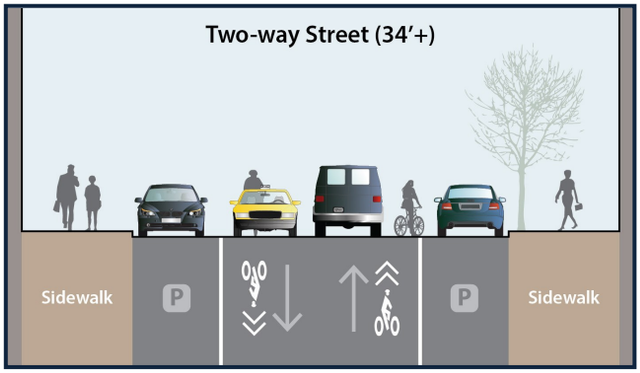
To implement any potential bike route, the roadway cross-section must be considered including roadway width, the travel direction, number of lanes and presence or absence of on-street parking. This will determine if the roadway is best–suited for shared lane markings, bicycle lanes or a separated bike lanes. Potential roadway cross-section configurations are illustrated below and on the next page.



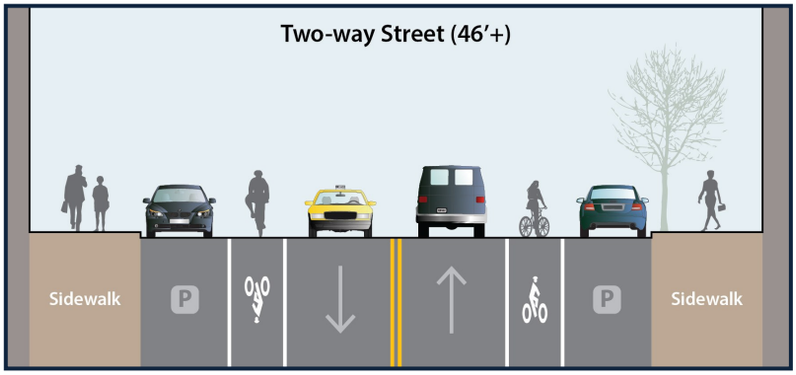
One-way street with shared lane markings (sharrows)



One-way street with bike lane

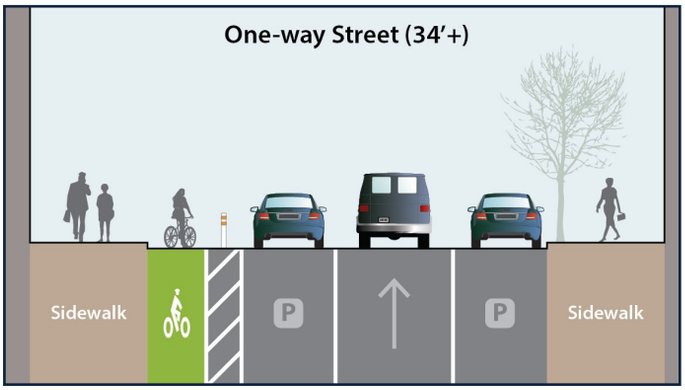


Two-way street with shared lane markings (sharrows)

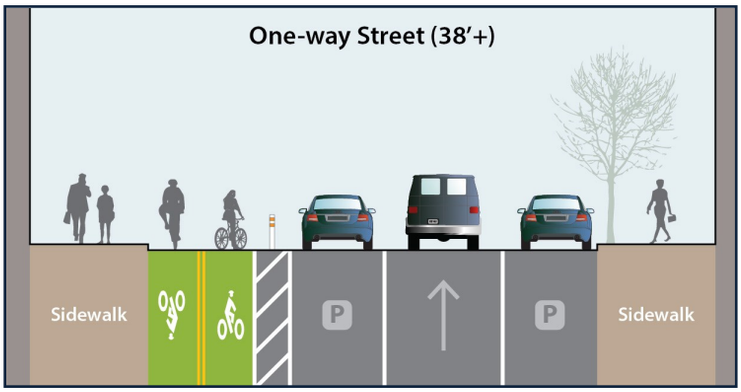


Two-way street with bike lanes

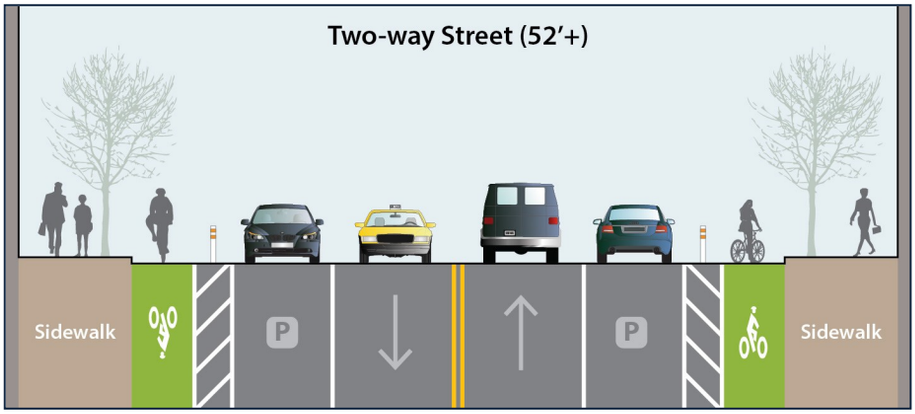
IMPLEMENTATION



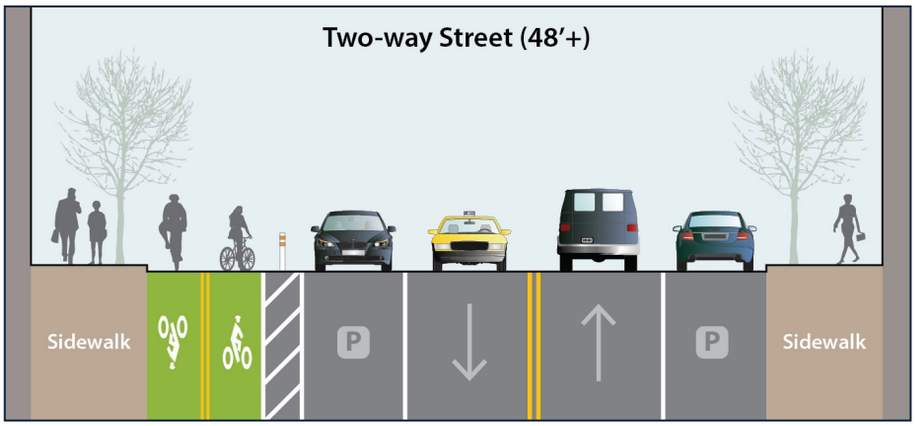
One-way street with separated bike lane



One-way street with separated two-way bike lanes



Two-way street with separated bike lanes



Two-way street with separated two-way bike lanes

SCREENING METHODS FOR IDENTIFYING FUTURE LOCATIONS

Identifying future potential pedestrian and bicycle improvement locations will be accomplished through various screening methods developed as part of this plan. Pedestrian and bike crashes occurring at intersections were queried using Plan4Safety and used to identify and rank the 10 high crash pedestrian and bike intersections that involve two or more streets under the city's jurisdiction. Going forward on an annual basis, The city will re-evaluate top ranked high crash intersections and corridors to monitor progress and identify new locations in need of further investigation.

A comparison was made between the volumes at the 10 high crash intersections and five control no-crash intersections which shows, on average:

- Pedestrian volumes were **six** times higher at high crash intersections than no-crash intersections
- Bike volumes were **two and a half** times higher at high crash intersections than no-crash intersections.

A similar comparison was made between the volumes along 10 high crash corridors pedestrian and five no-crash control corridors which shows, on average:

- Pedestrian volumes were **two and a half** times higher at high crash intersections than no-crash intersections
- Bike volumes were **four** times higher at high crash intersections than no-crash intersections.

Two ways of screening locations have been developed through this Action Plan and will be used in the future to identify new locations.

These results are summarized in a table in Appendix A-3.

In 2015, the city conducted a bike count at four intersections in the Ironbound Neighborhood. The average volume during peak a.m./p.m. hours was 4.6 cyclists per 15 minute intervals.

BASED ON VOLUMES

Intersections

If the pedestrian volumes are below 500 pedestrians per hour for all crossings at the intersection in the a.m. or p.m. peak, screen out. Otherwise, consider for inclusion as a high-crash intersection based on pedestrian volume exposure. If the bike volumes are below four per hour (total of all approaches) in the a.m. or p.m. peak, screen out. Otherwise, consider for inclusion as a high-crash intersection based on bike volume exposure.

Corridors

If pedestrian volumes are below 100 pedestrians per hour (both sides of street) in the a.m. or p.m. peak, screen out. Otherwise, consider for inclusion as a severe crash corridor based on pedestrian volume exposure. If bike volumes are below two per hour (both directions) in the a.m. or p.m. peak, screen out. Otherwise, consider for inclusion as a severe crash corridor based on bike volume exposure.

BASED ON CRASH RATES

Intersections

If the pedestrian crash rate is below 8.0 pedestrian crashes per million pedestrians entering the intersection per year, screen out. Otherwise, consider for inclusion as a high-crash intersection based on the pedestrian crash history combined with the average hourly pedestrian volume. If the bike crash rate is less than 50.0 bike crashes per million bikes entering the intersection per year, screen out. Otherwise, consider for inclusion as a high-crash intersection based on the bicycle crash history combined with the average hourly bicycle volumes.

Corridors

If the pedestrian crash rate is below 14.0 pedestrian crashes per million pedestrians per mile per year, screen out. Otherwise, consider for inclusion as a high-crash corridor based on the pedestrian crash history combined with the average hourly pedestrian volume.

A bike crash rate could not be computed for the high-crash corridors because of the lack of bike crashes involving incapacitating injuries or fatalities. Therefore, there is not a screening method based on the bicycle crash history combined with the average hourly bicycle volumes for the corridors.

STREET SMART NJ PEDESTRIAN SAFETY EDUCATION AND ENFORCEMENT CAMPAIGN

Pilot Phase

Street Smart NJ is a public education, awareness and behavioral change campaign managed by the NJTPA and funded by FHWA. It was developed in response to New Jersey's designation by FHWA as a pedestrian "focus" state and Newark as a pedestrian "focus" city. The campaign has three main goals:

- Change pedestrian and motorist behavior to reduce the incidence of pedestrian injuries and fatalities on New Jersey's roadways.
- Educate motorists and pedestrians about their roles and responsibilities for safely sharing the road.
- Increase enforcement of pedestrian safety laws and roadway users' awareness of that effort.

In November 2013, the campaign was piloted in several New Jersey communities for four weeks, including the City of Newark.

The campaign used a three-pronged approach to educate and engage motorists and pedestrians:

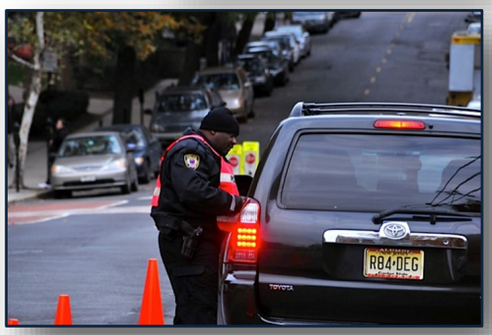
- Media
- Public Outreach
- High visibility enforcement

The campaign also included an evaluation component. A pre– and post–campaign observational analysis was conducted at pedestrian crash hot spots, which showed a statistically significant reduction in non-compliant risky behaviors among the pilot locations (see the table below). Newark also had a 58 percent increase in awareness of the campaign.

Phase II

Phase II will build upon what was learned during the pilot and evaluation of the Phase I Street Smart NJ campaign. Emphasis will be given to combining engineering with education and build upon what was learned in Phase I to educate and engage more pedestrians and motorists. This phase will begin in the spring of 2016.

	Pre-Campaign % of Non-Compliance	Post-Campaign % of Non-Compliance
Pedestrian jaywalking and crossing against the signal	**16%**	**13%**
Failure of turning motorist to yield to pedestrian crossing parallel to their vehicle's approach	**6%**	**2%**
Failure of motorists turning right on red to properly yield to pedestrians	**14%**	**2%**



FUNDING OPPORTUNITIES AND PARTNERSHIPS

To implement any of the improvements recommended in the Pedestrian and Bicycle Safety Action Plan, there must be funding and partners to undertake the studies, permitting, approvals, design and construction of projects. The City of Newark can use its own resources and can apply for additional funding with its partner NJTPA under several programs including the Local Safety, Safe Routes to School, Transportation Alternatives, Municipal Aid, Safe Routes to Transit, Bikeways and Congestion Mitigation and Air Quality Improvement. Where locations shown in the master plan overlap with county and state routes, Essex County and NJDOT can partner with the city to implement improvements. Alternative funding sources may include business improvement districts, large corporations or institutions, or community groups interested in increasing the safety of pedestrians and bicyclists within their neighborhoods. It is recommended that studies showing the economic benefit to businesses along streets where there have been investments in pedestrian, bicycle and complete street improvements be shared with business improvement districts. FHWA offers technical assistance and training to Pedestrian Focus Cities, and the city can request assistance through the FHWA New Jersey Division Office.

Funding and partners are also needed to implement education outreach and enforcement strategies, beyond the Street Smart NJ Campaign. One potential funding source for enforcement is NJ Division of Highway Traffic Safety grants. Potential partners for public safety education may include universities, hospitals and non-profits, who may already have programs in place to increase the awareness of pedestrian and bicycle safety, such as University Medical Center, who already have pedestrian safety and Safe Kids programs.

Pedestrian Injury Prevention Partnership (PIPP) is a broad-based community coalition of over 40 members that includes public health professionals, law enforcement, school representatives, local government, advocacy and community-based agencies that support each other's applications for grant funding and collaborate on local programming for safety programs. Integral to the PIPP, is the New Jersey Trauma Center's (TJTC) school based pedestrian safety education program. Over the past eight years, NJTC has been partnering with the Newark Public Schools to provide pedestrian safety education programs to Newark students with the goal of reducing the incidence of traumatic injuries due to pedestrian related motor vehicle crashes.

Art installations in public places to beautify neighborhoods and draw attention to walking and biking can be undertaken by local artists. Bike rodeos and bike helmet fittings and giveaways are other methods to reach out to the public and these activities can be funded by Safe Routes to School. Citing the health benefits of pedestrian and bicycle improvements will help form partnerships with education, medical care and department of health stakeholders. For instance, the Institute of Transportation Engineers and the Robert Wood Johnson Foundation have researched transportation's role in reducing childhood obesity.


TRANSIT
Bus Stop
Board Here For
mybus
BANK HAPPY
The loans you need at the rates you w
TRANSIT
OWNED BY: NEW JERSEY TRANSIT CORPORATION
OPERATED BY: NJ TRANSIT BUS OPERATIONS, INC.
US DOT - 074293
NJMVC 58455

IMPLEMENTATION

CORRIDOR 1

LINCOLN PARK

FROM
CLINTON AVENUE/
LINCOLN PARK
TO
BROAD STREET

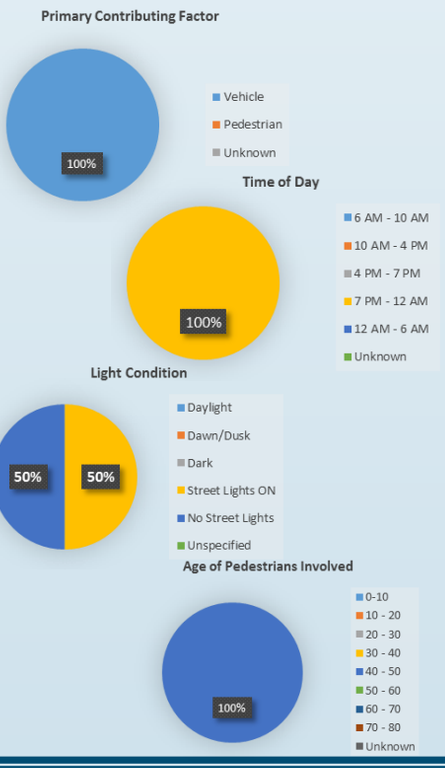
Pedestrians killed or seriously injured between 2009-2013: 1

Vehicular Crashes: 4

KSI/Mile: 8.0

Volumes:

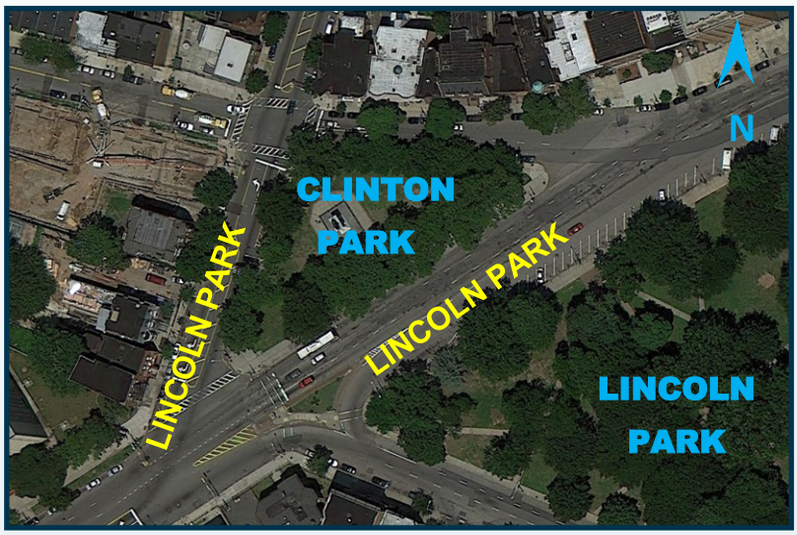
AM Pedestrian	119
AM Bicyclists	-
PM Pedestrian	267
PM Bicyclists	12



Existing Conditions:

- *Residential, Commercial, Park*
- *3 Lanes, One Way*
- *70 ft wide roadway*
- *Parking stripes*
- *Sidewalks*
- *Pedestrian countdown signals present at Clinton Ave/Lincoln Park*
- *NJ Transit bus stop route*

IMPLEMENTATION



CORRIDOR 1

LINCOLN PARK

FROM

CLINTON AVENUE/ LINCOLN PARK TO BROAD STREET

Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Install a median or pedestrian island***
- ***Install curb extensions to reduce crossing distance***
- ***Add additional crosswalks for a mid-block crossings***
- ***Install a HAWK or RRFB at the proposed mid-block crossing***
- ***Improve the existing pedestrian refuge island ("pork chop" island)***
- ***Road diet study***
- ***Install bike lanes***
- ***Add pedestrian scale lighting***

IMPLEMENTATION

CORRIDOR 2

DAYTON STREET

FROM FRELINGHUYSEN AVENUE TO LOWELL PLACE

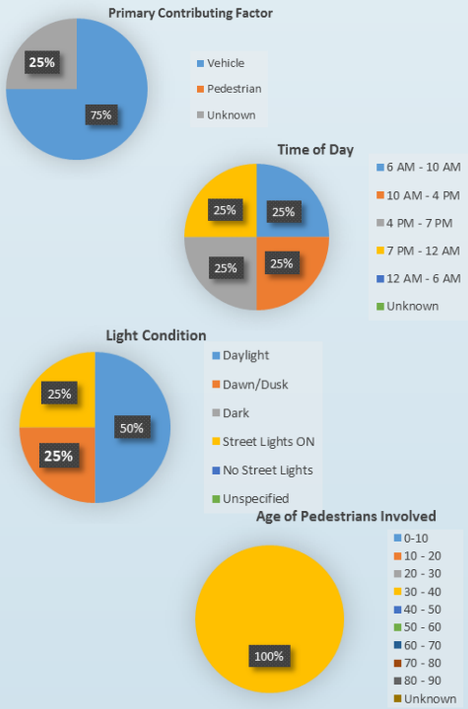
Pedestrians killed or seriously injured between 2009-2013: 1

Vehicular Crashes: 3

KSI/Mile: 5.0

Volumes:

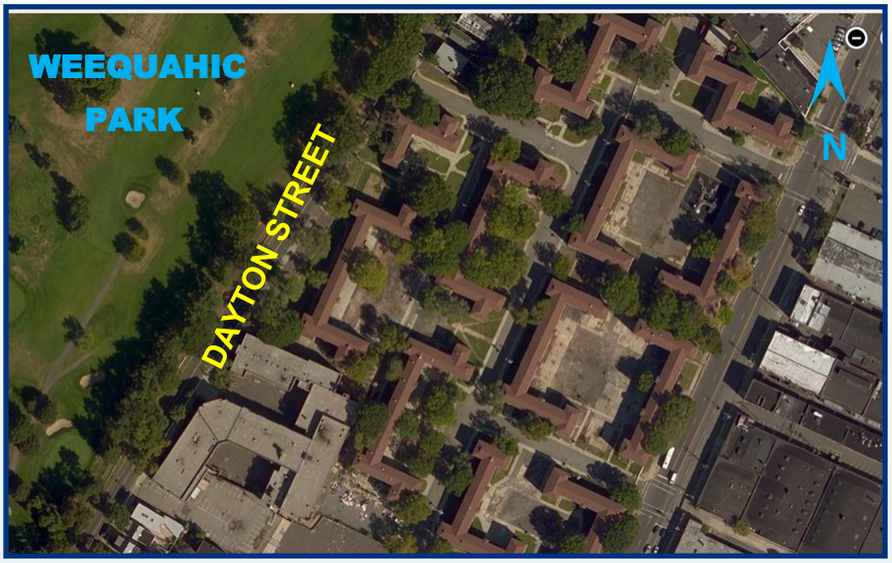
AM Pedestrian	41
AM Bicyclists	-
PM Pedestrian	39
PM Bicyclists	3



Existing Conditions:

- *Residential, Cemetery, Golf Course*
- *2 Lanes*
- *30 ft wide roadway*
- *Sidewalk on one side only*
- *School present*
- *School signage*
- *Speed humps*

IMPLEMENTATION



CORRIDOR 2

DAYTON STREET

FROM FRELINGHUYSEN AVENUE TO LOWELL PLACE

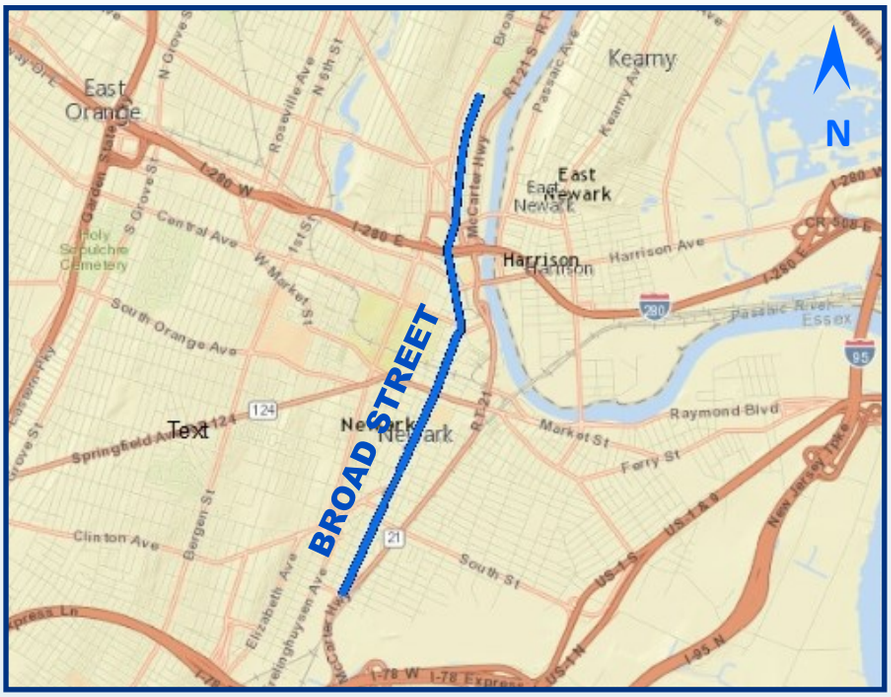
Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Restripe crosswalks***
- ***Add parking striping***
- ***Install HAWK or RRFB beacon at school (mid-block crossing)***
- ***Install additional speed hump or speed table***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Investigate street lighting***
- ***Create pedestrian plaza at intersection with Evergreen Avenue***
- ***Add sidewalks to west side of Dayton Street***

IMPLEMENTATION



Existing Conditions:

- ***Residential, Commercial, Office***
- ***Southern end is gateway to downtown***
- ***4 Lanes***
- ***55 ft wide roadway***
- ***Sidewalks***
- ***Crosswalks***
- ***NJ Transit bus stops route***

CORRIDOR 3

BROAD STREET

FROM POINIER STREET TO NORTH OF ORIENTAL STREET

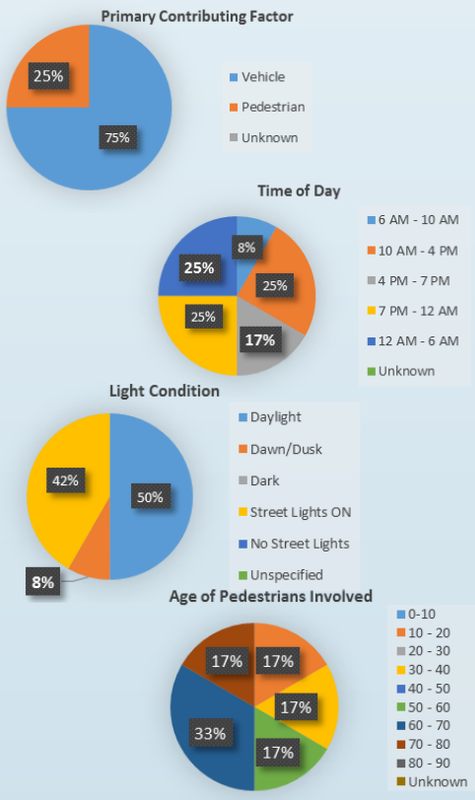
Pedestrians killed or seriously injured between 2009-2013: 6

Vehicular Crashes: 6

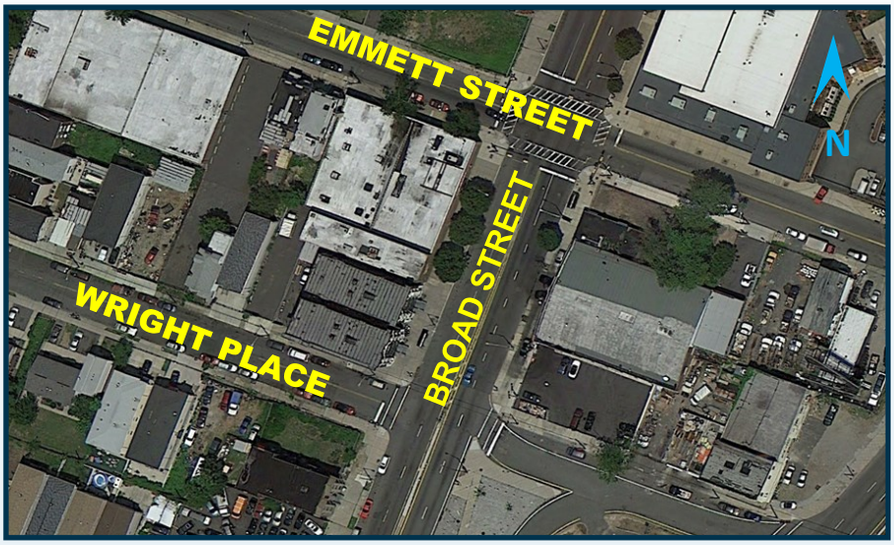
KSI/Mile: 4.5

Volumes:

AM Pedestrian	5
AM Bicyclists	1
PM Pedestrian	17
PM Bicyclists	1



IMPLEMENTATION



CORRIDOR 3
BROAD STREET
FROM
POINIER STREET
TO
NORTH OF ORIENTAL STREET

Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Install a median or pedestrian island***
- ***Create curb extensions to reduce crossing distance***
- ***Install pedestrian signage***
- ***Install a HAWK or RRFB at uncontrolled intersections***
- ***Install pedestrian-scale lighting***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Upgrade traffic signals at intersections near the northern and southern ends of the corridor***

IMPLEMENTATION

Existing Conditions:

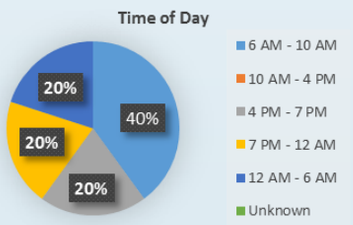
- ***Residential, Commercial, Industrial, School***
- ***2 Lanes***
- ***40 ft wide roadway***
- ***Sidewalks***
- ***Pedestrian signage***
- ***Parking stripes***
- ***School flashers present***
- ***NJ Transit bus stop route***
- ***Truck route***

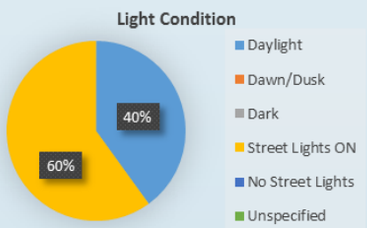
CORRIDOR 4
SOUTH STREET

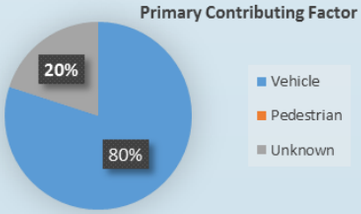
FROM PENNSYLVANIA AVENUE TO DELANCY STREET

Pedestrians killed or seriously injured between 2009-2013: 0
Vehicular Crashes: 5
KSI/Mile: 4.4
Volumes:

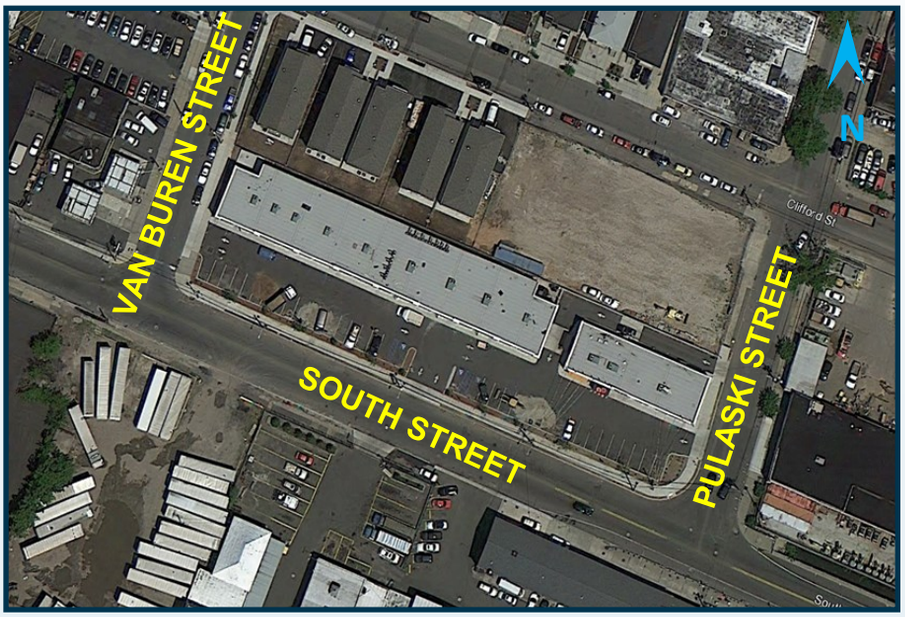
AM Pedestrian	269
AM Bicyclists	6
PM Pedestrian	235
PM Bicyclists	7







IMPLEMENTATION



CORRIDOR 4

SOUTH STREET

FROM PENNSYLVANIA AVENUE TO DELANCY STREET

STREET

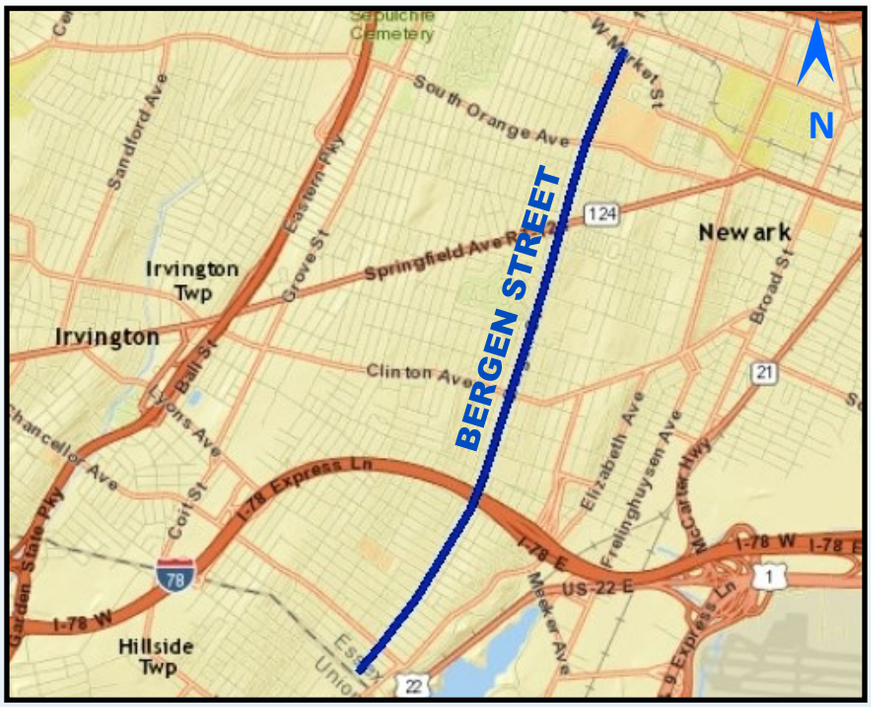
Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Restripe crosswalks***
- ***Install bus stop striping***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Install curb extensions to reduce crossing distance***
- ***Upgrade traffic signals including pedestrian countdown signals***
- ***Install bike lanes***
- ***Lighting study***

IMPLEMENTATION



Existing Conditions:

- ***Residential, Commercial, Industrial, Hospital, Retail, School***
- ***4 Lanes, undivided***
- ***65 ft wide roadway***
- ***Sidewalks***
- ***Pedestrian signage***
- ***Parking stripes***
- ***NJ Transit bus stop route***

CORRIDOR 5 BERGEN STREET

FROM GRUMMAN AVENUE TO WEST MARKET STREET

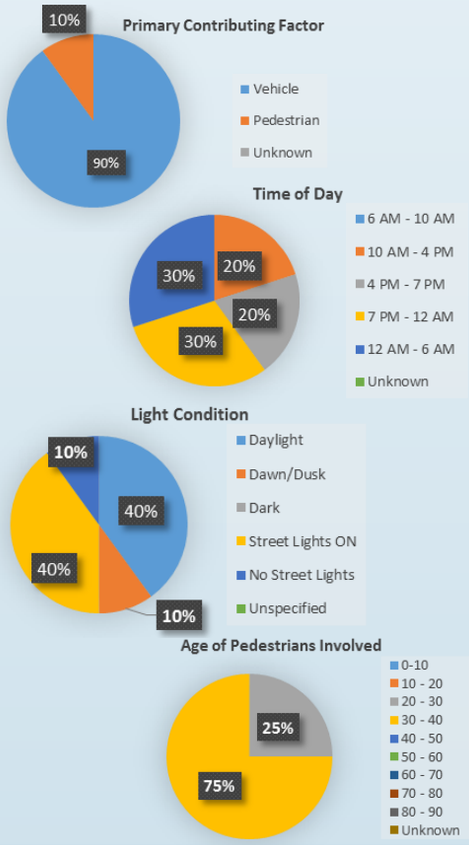
Pedestrians killed or seriously injured between 2009-2013: 4

Vehicular Crashes: 6

KSI/Mile: 4.2

Volumes:

AM Pedestrian	303
AM Bicyclists	1
PM Pedestrian	344
PM Bicyclists	5



IMPLEMENTATION

CORRIDOR 5

BERGEN STREET

FROM

GRUMMAN AVENUE TO WEST MARKET STREET

Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Install median or pedestrian island***
- ***Install mid-block crossing with HAWK or RRFB beacon at the hospital***
- ***Install curb extensions to reduce crossing distance at appropriate locations***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Restripe existing crosswalks and stripe new crosswalks along the entire corridor***
- ***Create dedicated left turn lanes at 12th Avenue***
- ***Upgrade traffic signal at Bergen Street and 12th Avenue***
- ***Install pedestrian countdown signals at all signalized intersections***
- ***Install pedestrian scale lighting study***
- ***Install bike lanes***
- ***Consider pedestrian plaza at Muhammad Ali Avenue***
- ***Road diet study***

IMPLEMENTATION

Existing Conditions:

- ***Residential, Commercial***
- ***5 lanes, undivided / 2 lanes undivided***
- ***75 ft wide roadway***
- ***Sidewalks***
- ***Pedestrian signage***
- ***Pedestrian countdown signals***
- ***NJ Transit bus stop route***

CORRIDOR 6
CLINTON AVENUE
FROM SOUTH 20TH STREET TO LINCOLN PARK

Pedestrians killed or seriously injured between 2009-2013: 3

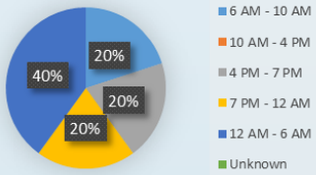
Vehicular Crashes: 2

KSI/Mile: 3.5

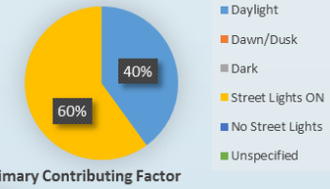
Volumes:

AM Pedestrian	106
AM Bicyclists	-
PM Pedestrian	337
PM Bicyclists	16

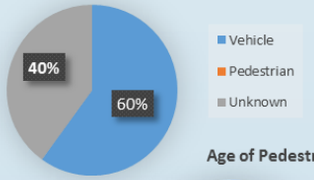
Time of Day



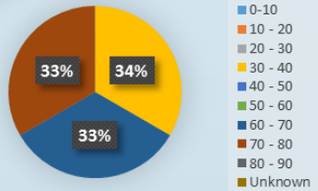
Light Condition



Primary Contributing Factor



Age of Pedestrians Involved



IMPLEMENTATION

CORRIDOR 6
CLINTON AVENUE
FROM SOUTH 20TH STREET TO LINCOLN PARK

Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Install rumble strips***
- ***Install bus stop striping***
- ***Install intersection lane guides***
- ***Install mid-block crossing at commercial establishments with a HAWK or RRFB beacon***
- ***Install median, pedestrian islands, and/or curb extensions***
- ***Install bike lanes***
- ***Pedestrian scale lighting study***
- ***Road diet study***

IMPLEMENTATION

CORRIDOR 7
14th AVENUE
FROM
SOUTH 20TH STREET
TO
JONES STREET

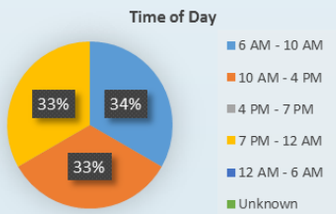
Pedestrians killed or seriously injured between 2009-2013: 2

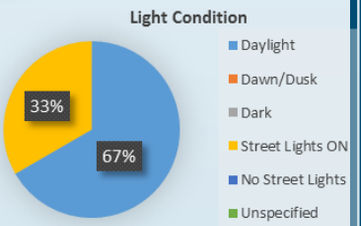
Vehicular Crashes: 1

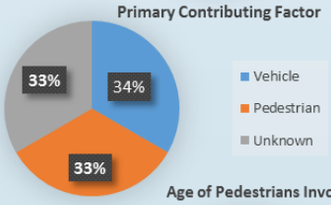
KSI/Mile: 3.1

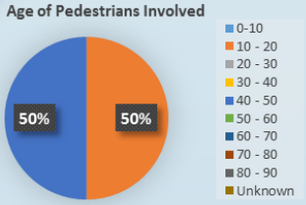
Volumes:

AM Pedestrian	35
AM Bicyclists	2
PM Pedestrian	61
PM Bicyclists	1





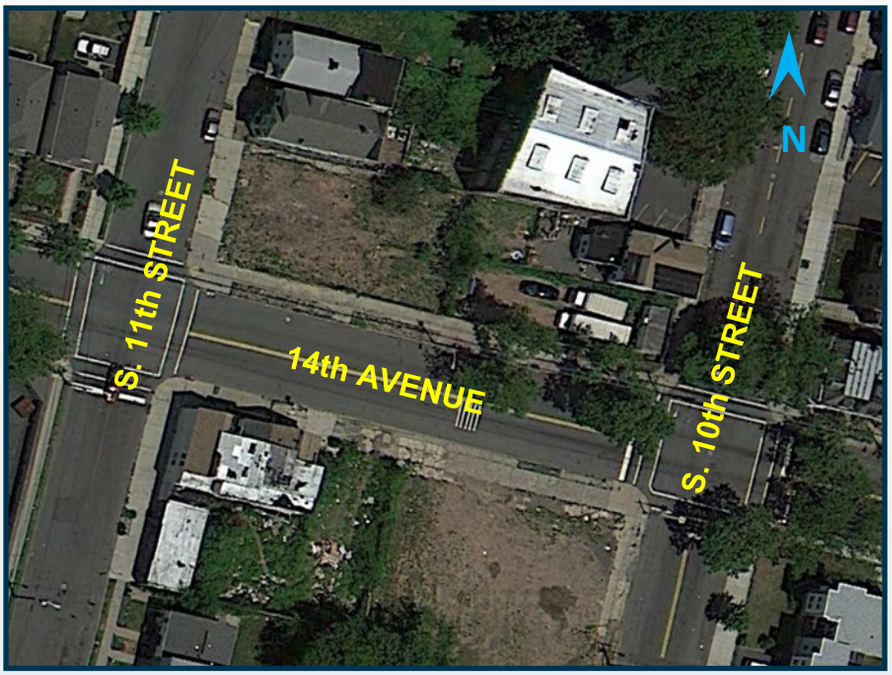




Existing Conditions:

- *Residential, School*
- *2 Lanes, undivided*
- *36 ft wide roadway*
- *Sidewalks*
- *Pedestrian signage*
- *School Flashers*
- *NJ Transit bus stop route*

IMPLEMENTATION



Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

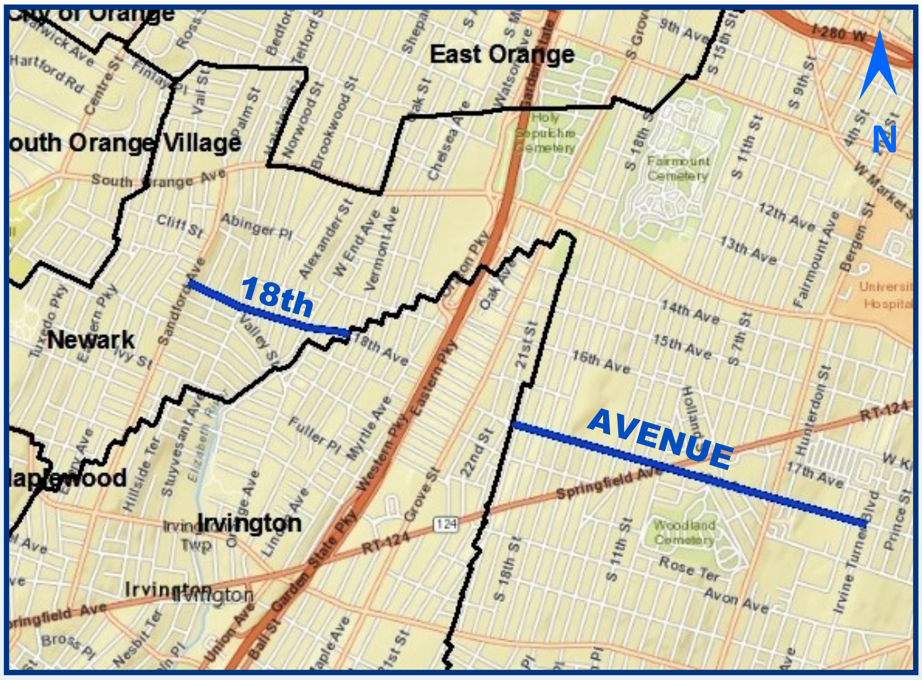
Note 2: Aerial from 2010. May not reflect existing conditions.

CORRIDOR 7
14th AVENUE
FROM
SOUTH 20TH STREET
TO
JONES STREET

Recommendations

- ***Tree & shrub trimming to enhance visibility of signs and/or accessibility of sidewalks***
- ***Eliminate sidewalk trip hazards***
- ***Install parking stripes***
- ***Install pedestrian warning signage***
- ***Install high visibility crosswalks or raised crosswalks***
- ***Install median, pedestrian islands, and/or curb extensions to reduce crossing distance***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Installed raised intersection at S. 11th and S. 10th Streets***
- ***Install pedestrian countdown signals at all signalized intersections***
- ***Pedestrian scale lighting study***

IMPLEMENTATION



CORRIDOR 8

18th AVENUE

FROM
IRVINE TURNER BLVD.
TO
SANDFORD AVENUE

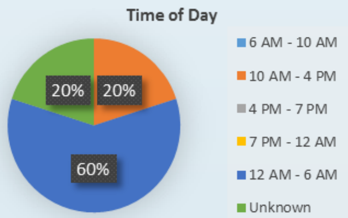
Pedestrians killed or seriously injured between 2009-2013: 1

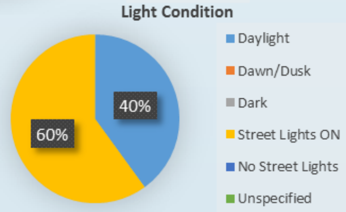
Vehicular Crashes: 4

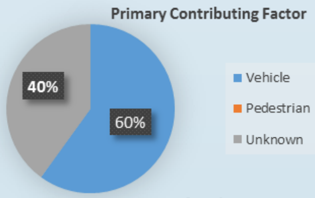
KSI/Mile: 2.0

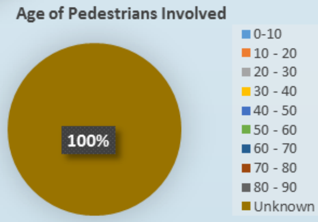
Volumes:

AM Pedestrian	122
AM Bicyclists	4
PM Pedestrian	119
PM Bicyclists	9









Existing Conditions:

- *Residential, Commercial, School*
- *2 Lanes, undivided*
- *38 ft wide roadway*
- *Sidewalks*
- *Pedestrian signage*
- *NJ Transit bus stop route*
- *West Side Park (Essex County)*

IMPLEMENTATION

CORRIDOR 8
18th AVENUE
FROM
IRVINE TURNER BLVD.
TO
SANDFORD AVENUE

Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

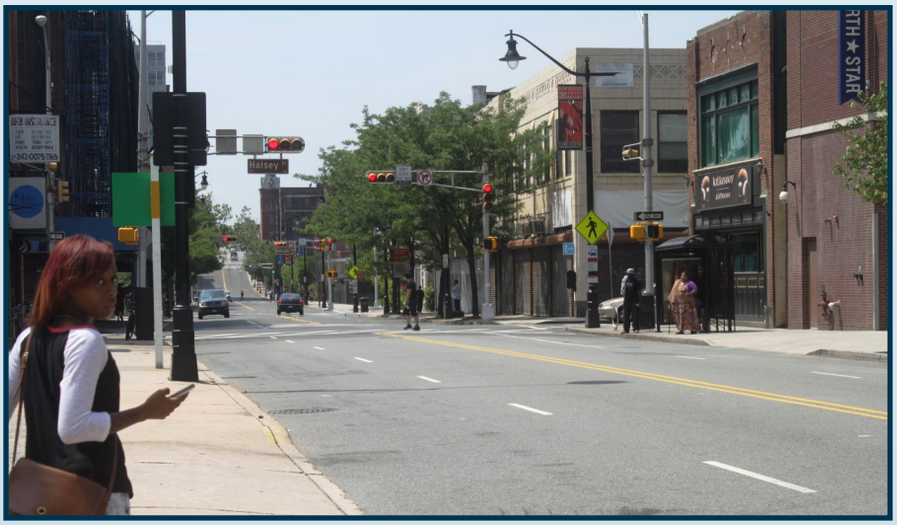
Recommendations

- ***Install parking stripes***
- ***Install pedestrian warning signage***
- ***Install high visibility crosswalks or raised crosswalks***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Install median, pedestrian islands, and/or curb extensions to reducing crossing distance***
- ***Upgrade traffic signals including pedestrian countdown signals***
- ***Install streetscape furniture near West Side Park at S. 17th Street***

IMPLEMENTATION

Existing Conditions:

- ***Residential, Commercial, University, Hospital, School***
- ***4 Lanes, undivided***
- ***37 ft wide roadway***
- ***Sidewalks***
- ***Pedestrian signage***
- ***Shared bike lanes***
- ***NJ Transit bus stop route***
- ***Pedestrian scale lighting***



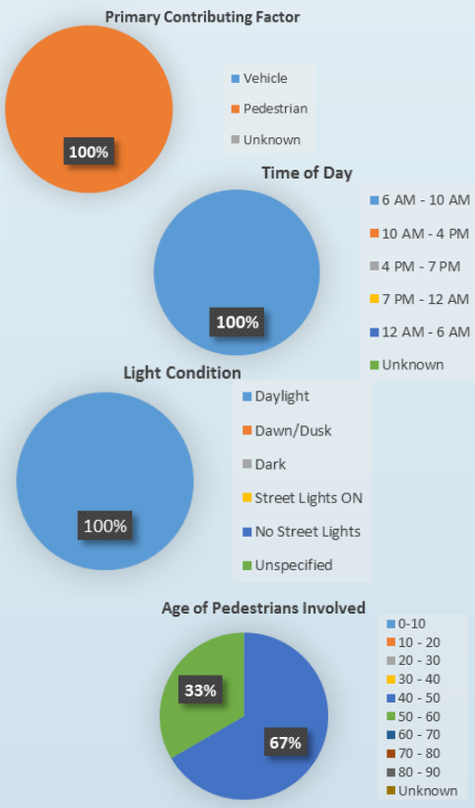
CORRIDOR 9 CENTRAL AVENUE

FROM
Dr. MLK Jr. BLVD.
TO
BROAD STREET

Pedestrians killed or seriously injured between 2009-2013: 1
Vehicular Crashes: 0
KSI/Mile: 2.5

Volumes:

AM Pedestrian	102
AM Bicyclists	5
PM Pedestrian	256
PM Bicyclists	13



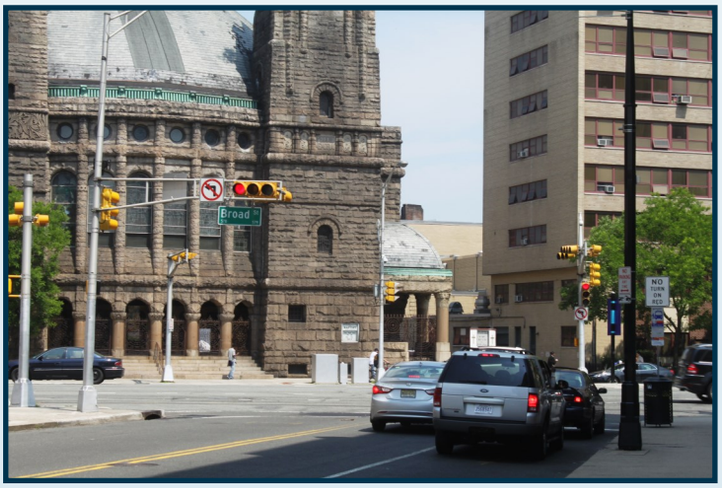
IMPLEMENTATION

CORRIDOR 9
CENTRAL AVENUE
FROM
DR. MLK Jr. BLVD.
TO
BROAD STREET

Note: Aerial from 2010. May not reflect existing conditions.
Aerial depicts location were pedestrian crash occurred

Recommendations

- ***Bus stop striping***
- ***Upgrade crosswalks at Broad Street and Dr. MLK Jr. Blvd.***
- ***Upgrade traffic signal at Broad Street***
- ***Road Diet study***



IMPLEMENTATION

Existing Conditions:

- ***Commercial, Residential***
- ***2 Lanes, undivided***
- ***37 ft wide roadway***
- ***Sidewalks***
- ***Pedestrian signage***
- ***NJ Transit bus stop route***

CORRIDOR 10

ORANGE STREET

FROM

W. MARKET STREET

TO

BROAD STREET

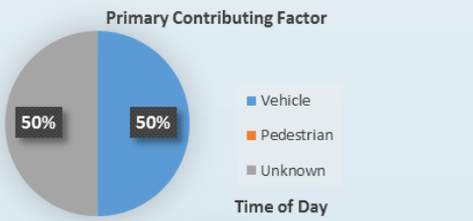
Pedestrians killed or seriously injured between 2009-2013: 0

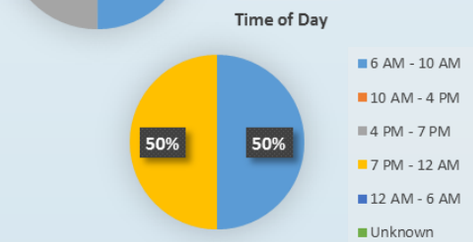
Vehicular Crashes: 2

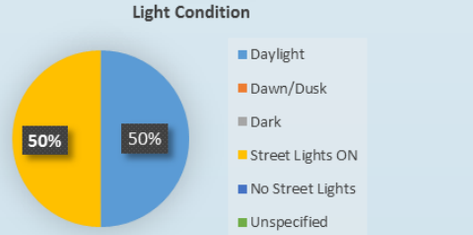
KSI/Mile: 1.9

Volumes:

AM Pedestrian	73
AM Bicyclists	3
PM Pedestrian	83
PM Bicyclists	5







IMPLEMENTATION

CORRIDOR 10
ORANGE STREET
FROM
W. MARKET STREET
TO
BROAD STREET

Note 1: Aerial depicts location where pedestrian fatality/injury occurred and where the pedestrian and bicycle volumes where collected

Note 2: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Enforce no parking on sidewalks***
- ***Install parking striping***
- ***Install bus stop striping***
- ***Enhanced pedestrian signage***
- ***Install pedestrian islands and/or curb extensions***
- ***Upgrade crosswalks (including angled crosswalks) and curb ramps to meet ADA compliance***
- ***Upgrade sidewalks in poor condition***
- ***Install pedestrian countdown signals***
- ***Install HAWK or RRFB signal at uncontrolled intersections***
- ***Conduct traffic signal warrant analysis at N. 7th Street***

IMPLEMENTATION

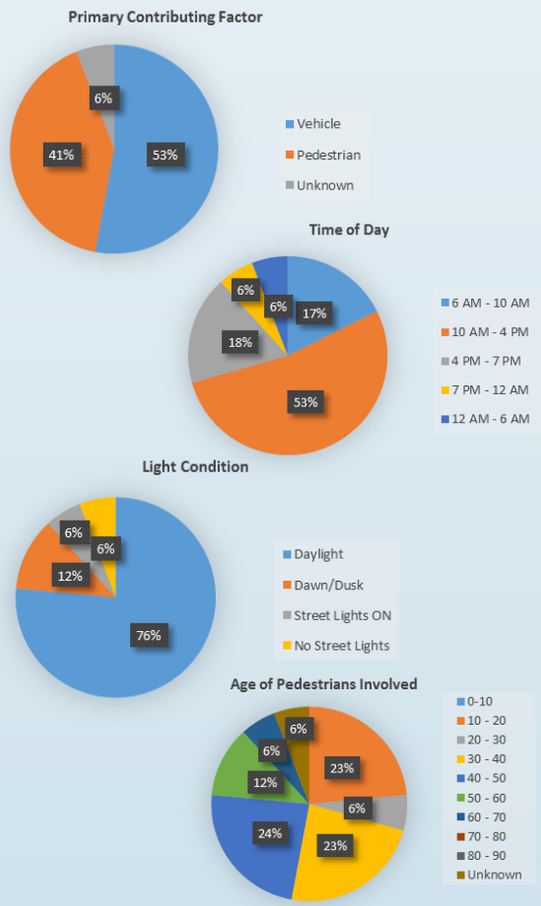
INTERSECTION 1

BROAD STREET AND MARKET STREET

Pedestrians killed or seriously injured between 2009-2013: 17

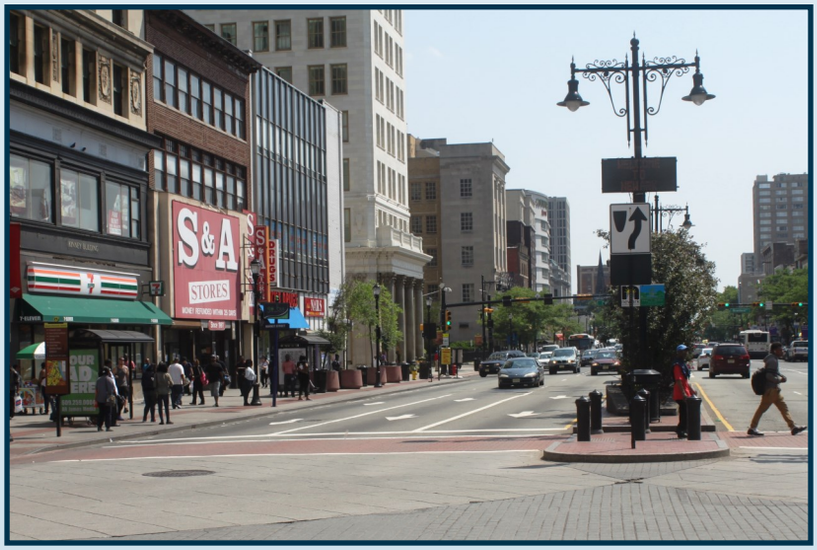
Volumes:

AM Pedestrian Volumes	2,439
AM Bicycle Volumes	9
PM Pedestrian Volumes	3,556
PM Bicycle Volumes	20



Existing Conditions:

- ***Commercial, Office***
- ***Signalized with pedestrian countdowns signals***
- ***Brick stamped crosswalks***
- ***ADA accessible curb ramps***
- ***Pedestrian median/refuge island (Broad Street)***
- ***Parking stripes***
- ***Sidewalks***
- ***Major NJ Transit bus routes***
- ***Lighting***



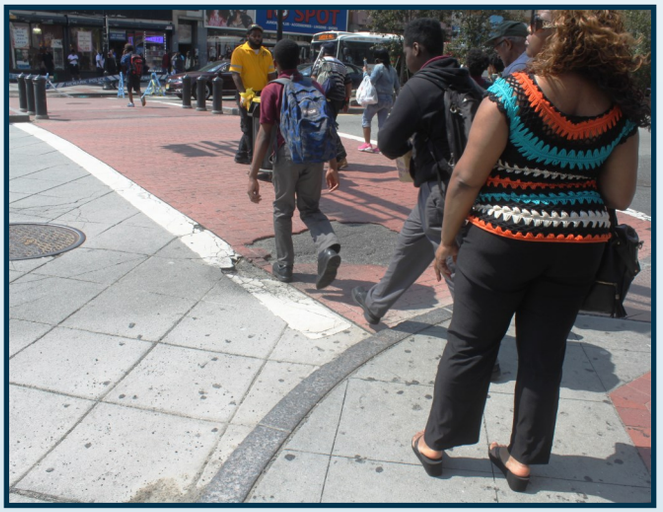
IMPLEMENTATION

Note: Aerial from 2010. May not reflect existing conditions.

INTERSECTION 1
BROAD STREET
AND
MARKET STREET

Recommendations

- ***Repair damaged crosswalks***
- ***Add pedestrian warning signs***
- ***Evaluate signal timing and consider adding an all pedestrian phase or lead pedestrian phase***



IMPLEMENTATION

Existing Conditions:

- *Commercial, Office*
- *Major NJ Transit bus route (including GoBus)*
- *Signalized with pedestrian countdown signals*
- *Bricked stamped crosswalks*
- *ADA compliant curb ramps*
- *Parking stripes*
- *Sidewalks*

INTERSECTION 2

MARKET STREET AND MULBERRY STREET

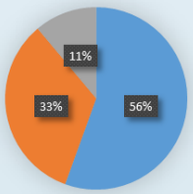
Pedestrians killed or seriously injured between 2009-2013: 8

Bike crashes during the same period: 1

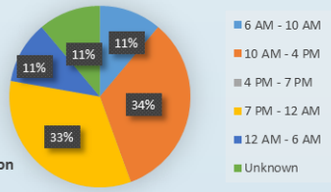
Volumes:

AM Pedestrian Volumes	116
AM Bicycle Volumes	-
PM Pedestrian Volumes	837
PM Bicycle Volumes	5

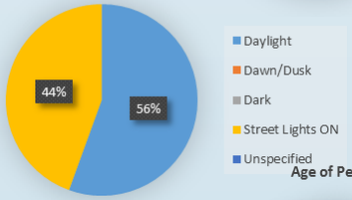
Primary Contributing Factor



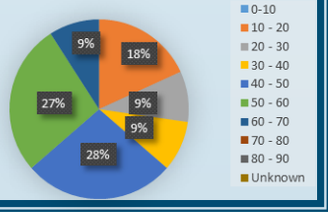
Time of Day



Light Condition



Age of Pedestrians Involved



IMPLEMENTATION

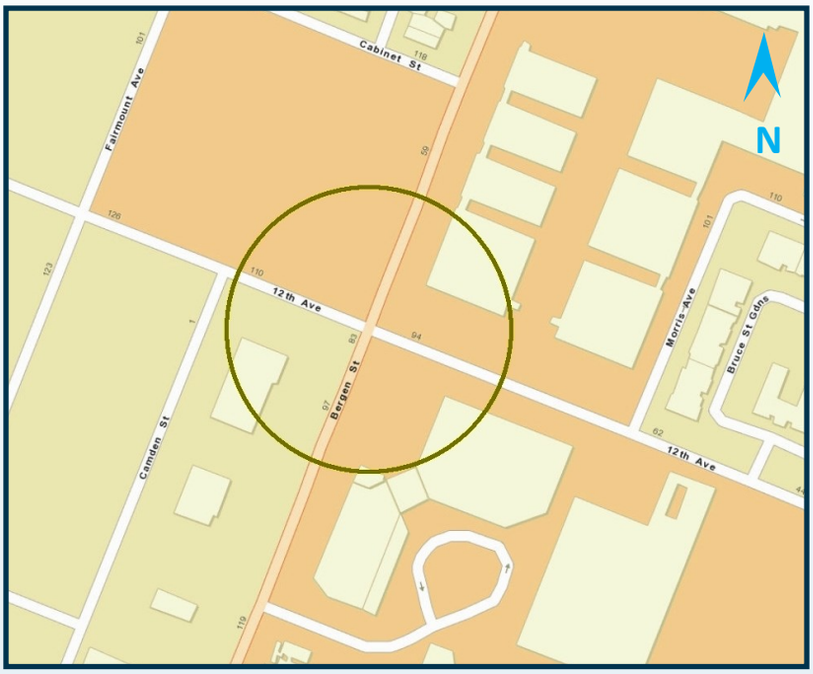
INTERSECTION 2
MARKET STREET AND MULBERRY STREET

Note: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Add pedestrian warning signs***
- ***Relocate bus stop on Market Street to far side***
- ***Consider ergonomic crosswalks across Market Street***
- ***Review signal timing and consider adding an all pedestrian phase or lead pedestrian phase***
- ***Bike lanes***

IMPLEMENTATION



INTERSECTION 3

BERGEN STREET AND 12TH AVENUE

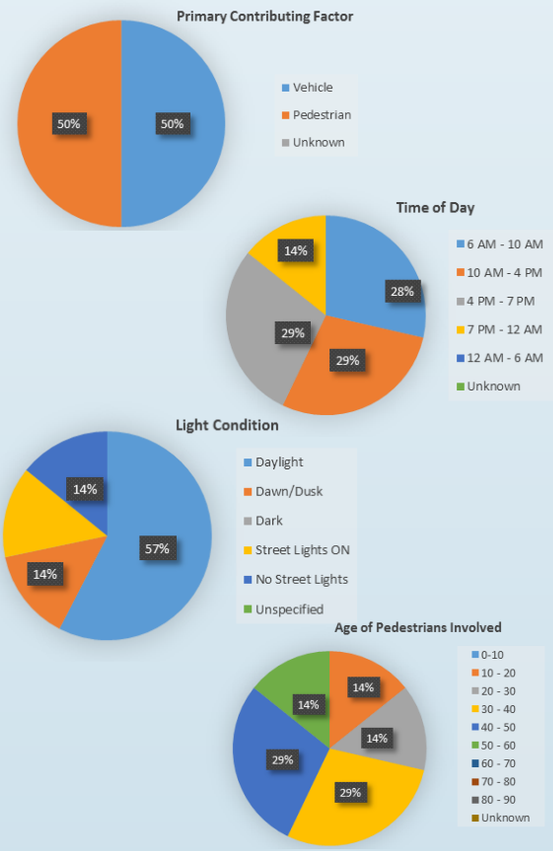
Pedestrians killed or seriously injured between 2009-2013: 7

Volumes:

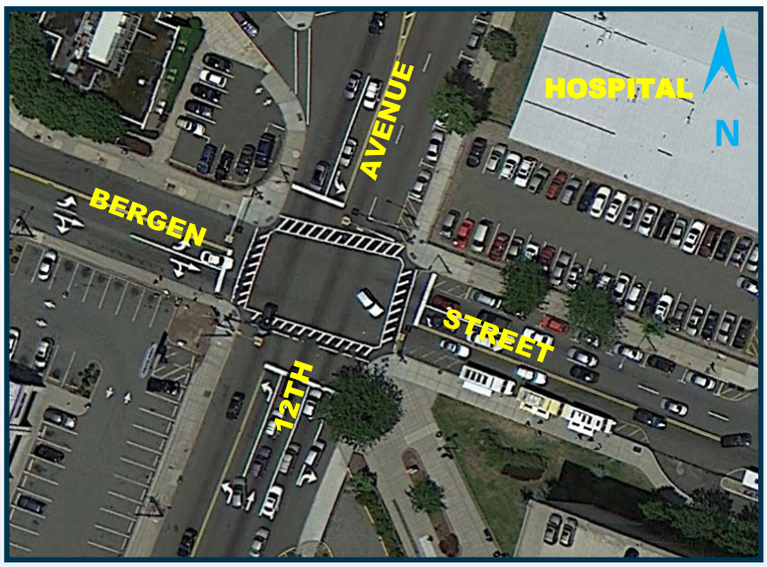
AM Pedestrian Volumes	313
AM Bicycle Volumes	4
PM Pedestrian Volumes	412
PM Bicycle Volumes	5

Existing Conditions:

- *Commercial, Hospital, University, Office*
- *Signalized with pedestrian countdown signals*
- *Marked Crosswalks*
- *Curb ramps*
- *Pedestrian signs*
- *Sidewalks*



IMPLEMENTATION



Note: Aerial from 2010. May not reflect existing conditions.

INTERSECTION 3
BERGEN STREET
AND
12TH AVENUE

Recommendations

- ***Restripe existing crosswalks***
- ***Address trip hazards along sidewalks and crosswalks***
- ***Install pedestrian countdown signals***
- ***Install median, pedestrian island and/or curb extensions to reduce crossing distance***
- ***Install mid-block crossing on Bergen Street at the Hospital with pedestrian-scale lighting***
- ***Implement road diet***
- ***Install bus stop striping***
- ***Install striping to prohibit parking close to crosswalks***

IMPLEMENTATION

Existing Conditions:

- ***Commercial, Residential***
- ***Unsignalized***
- ***Brick stamped crosswalks***
- ***ADA compliant curb ramps***
- ***Curb extensions***

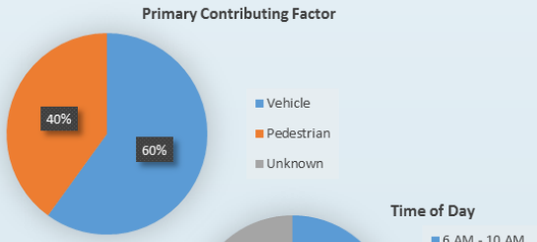
INTERSECTION 4

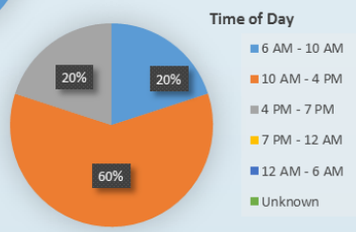
FERRY STREET AND MONROE STREET

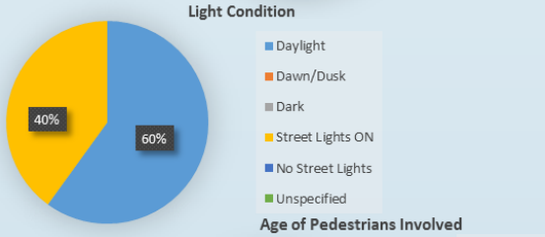
Pedestrians killed or seriously injured between 2009-2013: 5

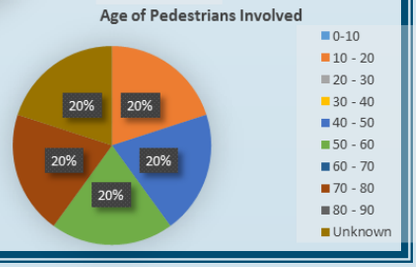
Volumes:

AM Pedestrian Volumes	333
AM Bicycle Volumes	5
PM Pedestrian Volumes	778
PM Bicycle Volumes	9

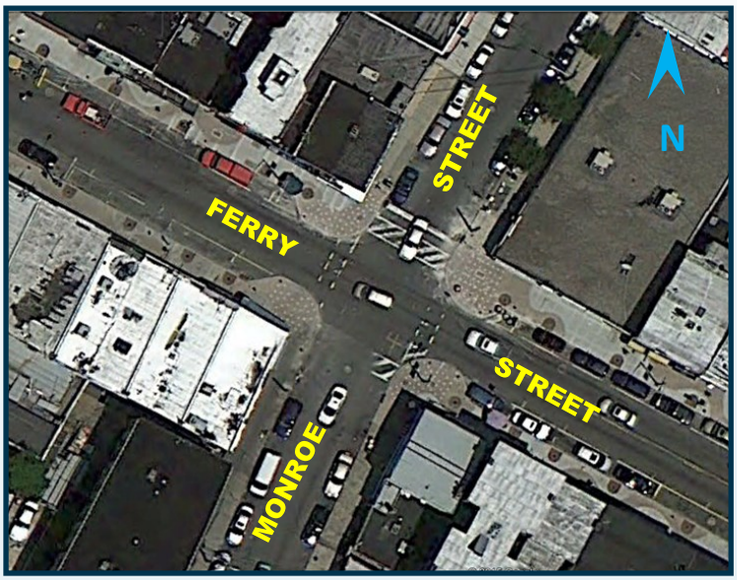








IMPLEMENTATION



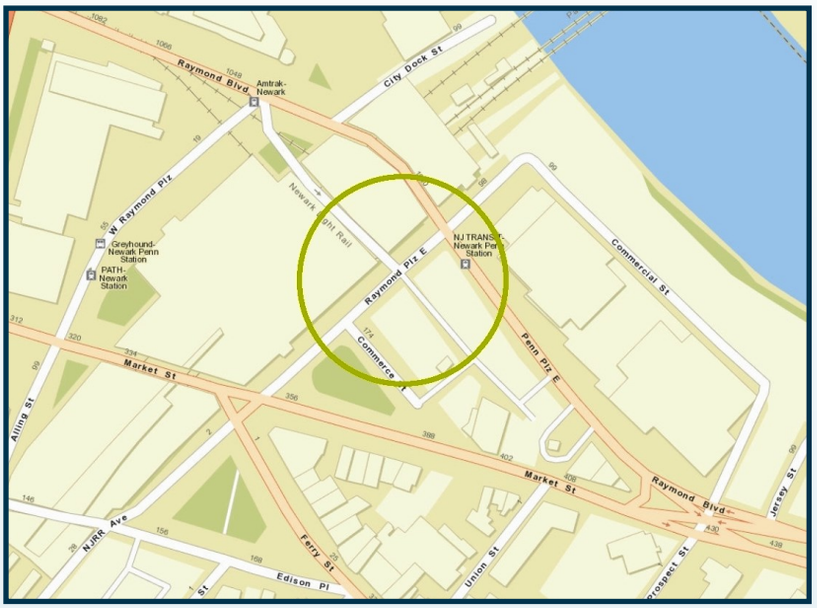
INTERSECTION 4
FERRY STREET
AND
MONROE STREET

Note: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Add pedestrian signs***
- ***Add in-road breakaway stop for pedestrian signs***

IMPLEMENTATION



Existing Conditions:

- ***Major Transit Hub (Penn Station), Commercial, Office***
- ***Signalized with pedestrian countdown signals***
- ***Brick imprinted crosswalks***
- ***ADA compliant curb ramps***
- ***Pedestrian signs***
- ***Audible pedestrian push buttons***
- ***Pedestrian-scale lighting***

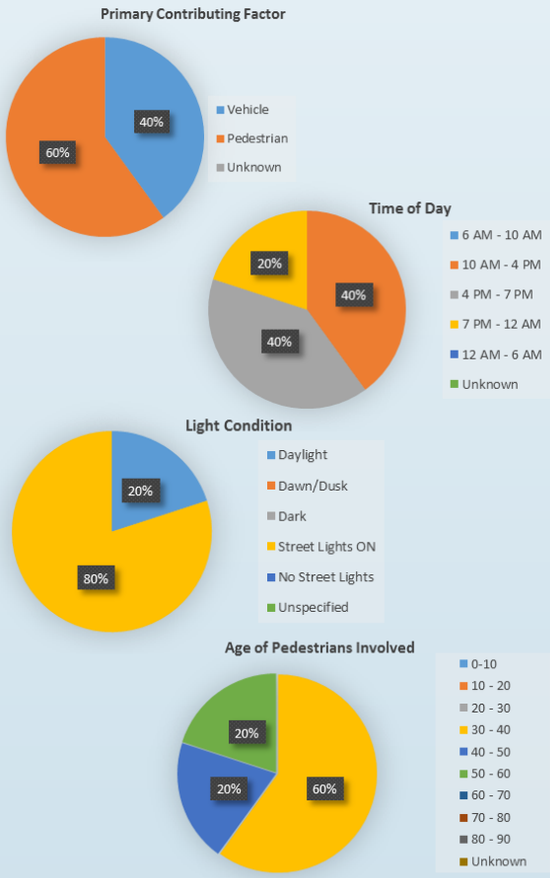
INTERSECTION 5

RAYMOND BLVD AND RAYMOND PLAZA EAST

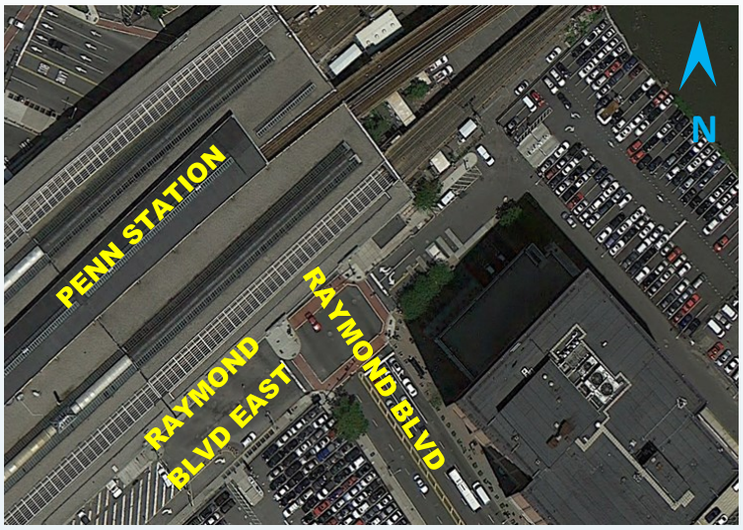
Pedestrians killed or seriously injured between 2009-2013: 5

Volumes:

AM Pedestrian Volumes	234
AM Bicycle Volumes	4
PM Pedestrian Volumes	326
PM Bicycle Volumes	5



IMPLEMENTATION



Note: Aerial from 2010. May not reflect existing conditions.

INTERSECTION 5
RAYMOND BLVD AND RAYMOND PLAZA EAST

Recommendations

- ***Review signal timing and consider adding an all pedestrian phase or lead pedestrian phase***
- ***Traffic signal timing review for pedestrian crossing times***
- ***Add median or pedestrian island on Raymond Blvd***
- ***Add additional lighting under Penn Station***
- ***Add bike facilities***

IMPLEMENTATION

INTERSECTION 6

WALNUT STREET AND McWHORTER STREET

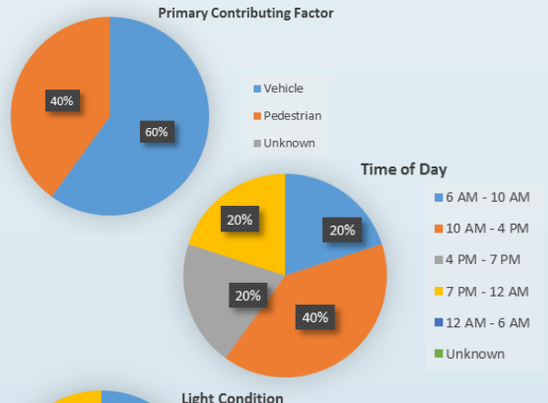
Pedestrians killed or seriously injured between 2009-2013: 5

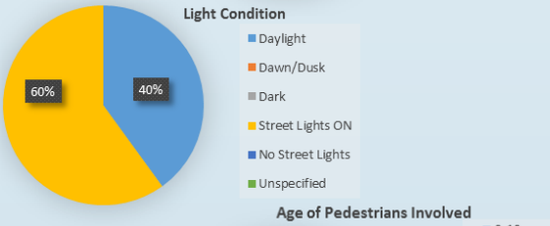
Volumes:

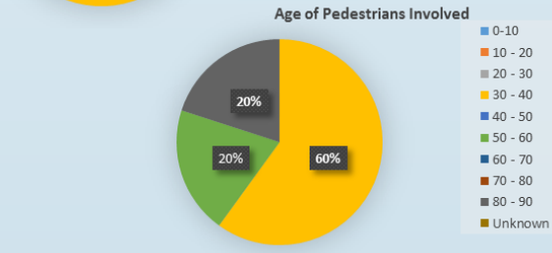
AM Pedestrian Volumes	97
AM Bicycle Volumes	2
PM Pedestrian Volumes	140
PM Bicycle Volumes	8

Existing Conditions:

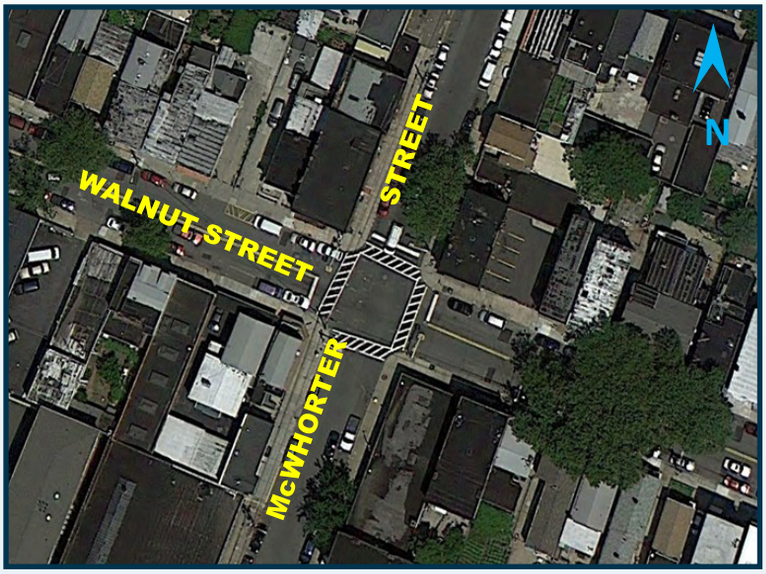
- *Residential/Commercial*
- *Signalized*
- *Marked Crosswalks*
- *Curb ramps*
- *Pedestrian signs*
- *Bus Stop*







IMPLEMENTATION



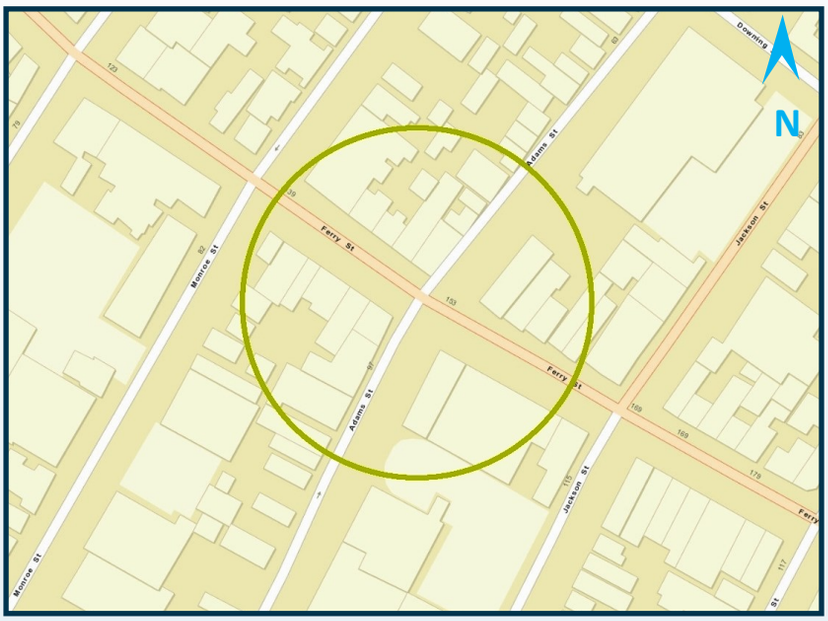
Note: Aerial from 2010. May not reflect existing conditions.

INTERSECTION 6
WALNUT STREET AND McWHORTER STREET

Recommendations

- ***Restripe crosswalks***
- ***Upgrade traffic signal including pedestrian countdown signals***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Install parking and bus stop striping***
- ***Install curb extensions to prevent parking close to crosswalks***
- ***Install bike lanes along McWhorter***
- ***Relocate bus stop***
- ***Road diet study***
- ***Investigate street lighting and add pedestrian scale lighting***

IMPLEMENTATION



Existing Conditions:

- ***Residential/Commercial***
- ***Signalized***
- ***Pedestrian Countdown Signals***
- ***Brick stamped crosswalks***
- ***ADA compliant curb ramps***
- ***Pedestrian signs***
- ***Parking Stripes (on Ferry Street)***

INTERSECTION 7

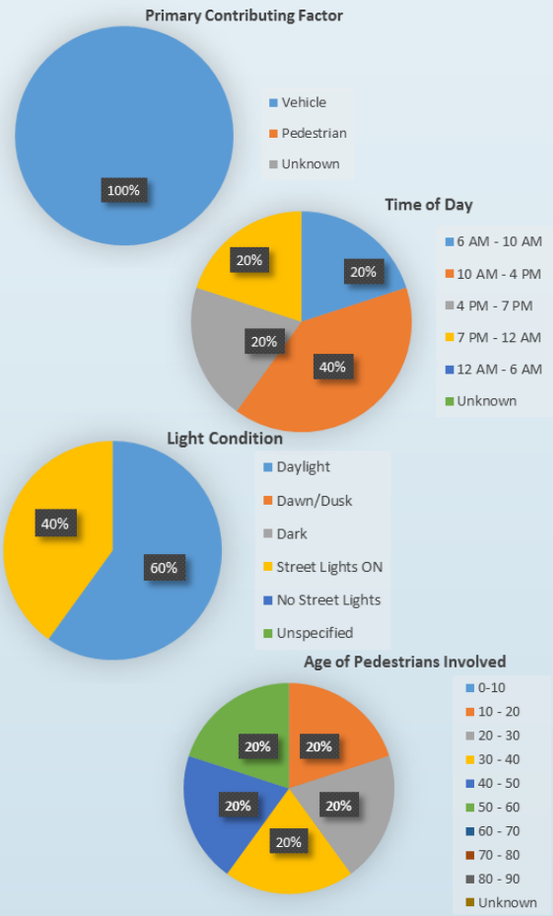
FERRY STREET AND ADAMS STREET

Pedestrians killed or seriously injured between 2009-2013: 4

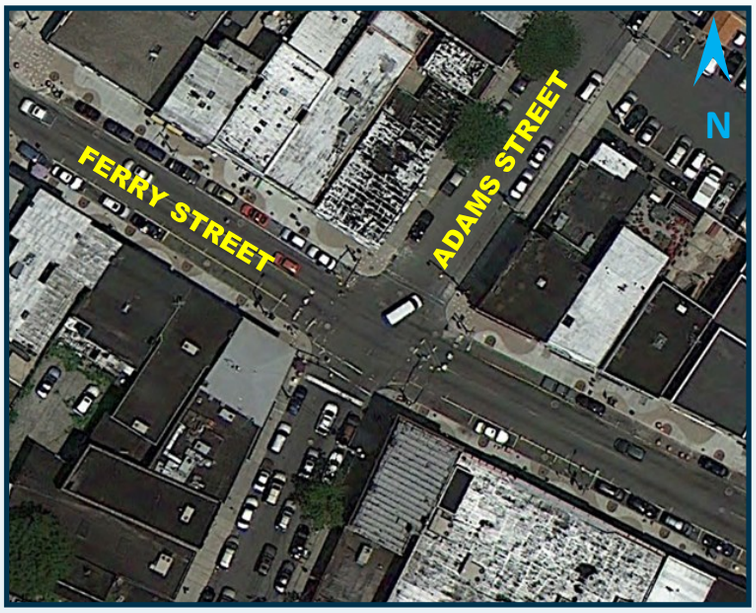
Bike Crashes during the same period: 1

Volumes:

AM Pedestrian Volumes	376
AM Bicycle Volumes	11
PM Pedestrian Volumes	973
PM Bicycle Volumes	15



IMPLEMENTATION



INTERSECTION 7
FERRY STREET
AND
ADAMS STREET

Note: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Install curb extensions***
- ***Install In-road State Law Stop for Pedestrian signs***
- ***Install No Turn on Red signs***
- ***Consider implementing lead pedestrian phase***
- ***Install bike lanes***

IMPLEMENTATION

Existing Conditions:

- *Commercial, Office, University*
- *Signalized*
- *Pedestrian Countdown Signals*
- *Brick stamped crosswalks*
- *ADA compliant curb ramps*
- *Pedestrian signs*
- *Parking Stripes (on Mulberry Street)*
- *NJ Transit bus stops on Raymond*

INTERSECTION 8

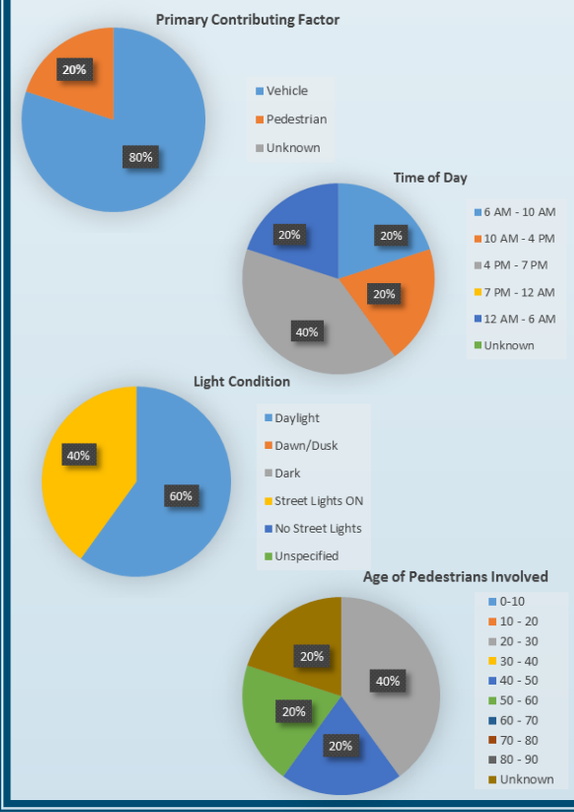
RAYMOND BLVD AND MULBERRY STREET

Pedestrians killed or seriously injured between 2009-2013: 4

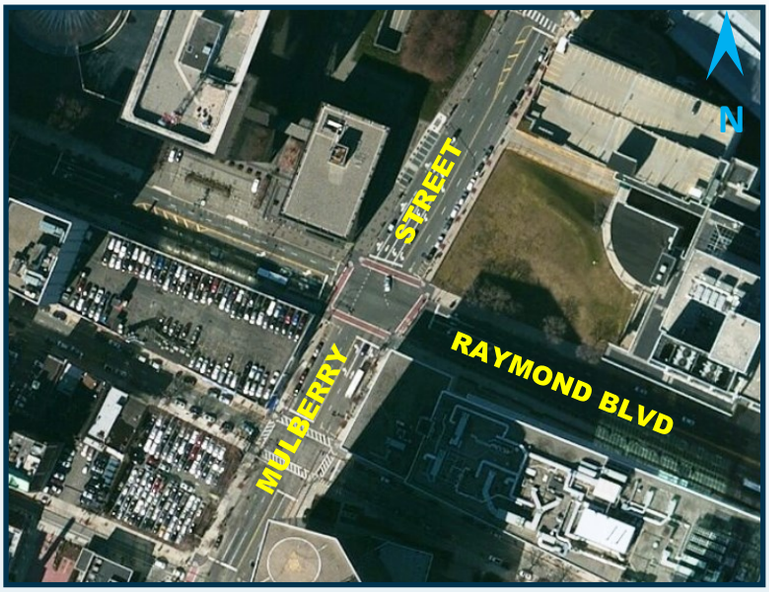
Bike Crashes during the same period: 1

Volumes:

AM Pedestrian Volumes	419
AM Bicycle Volumes	-
PM Pedestrian Volumes	394
PM Bicycle Volumes	9



IMPLEMENTATION

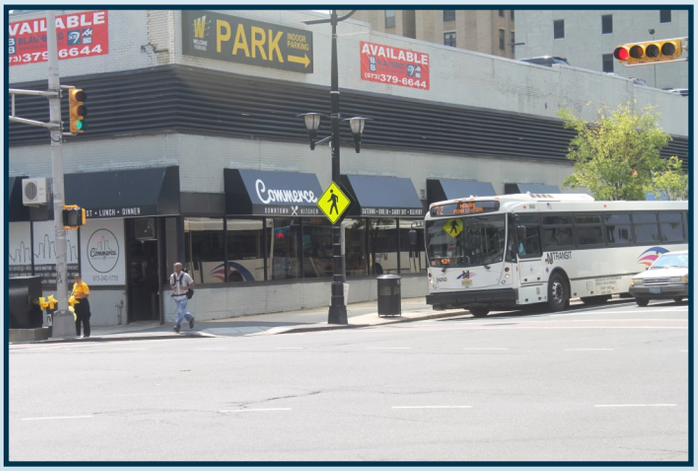


INTERSECTION 8
RAYMOND BLVD AND MULBERRY STREET

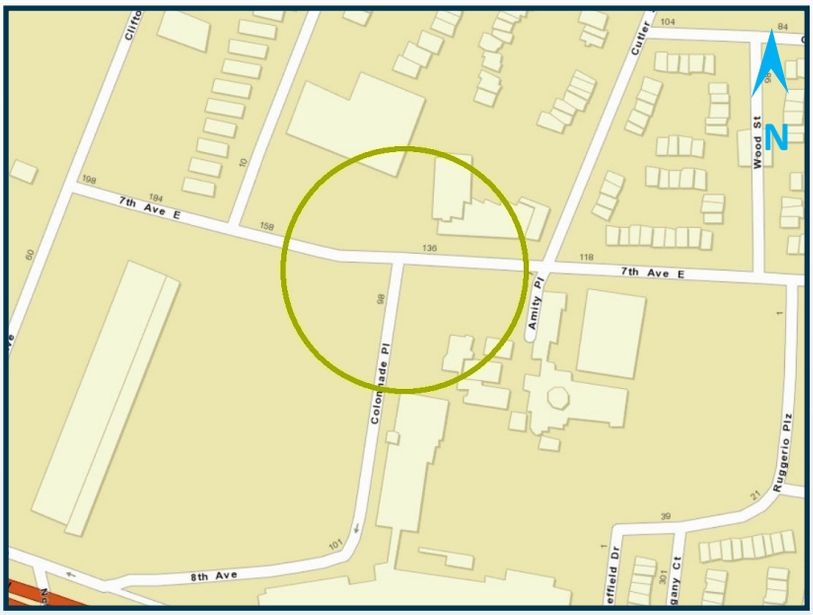
Note: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Upgrade traffic signal***
- ***Consider exclusive pedestrian phase or lead pedestrian phase***
- ***Install bike lanes***



IMPLEMENTATION



INTERSECTION 9

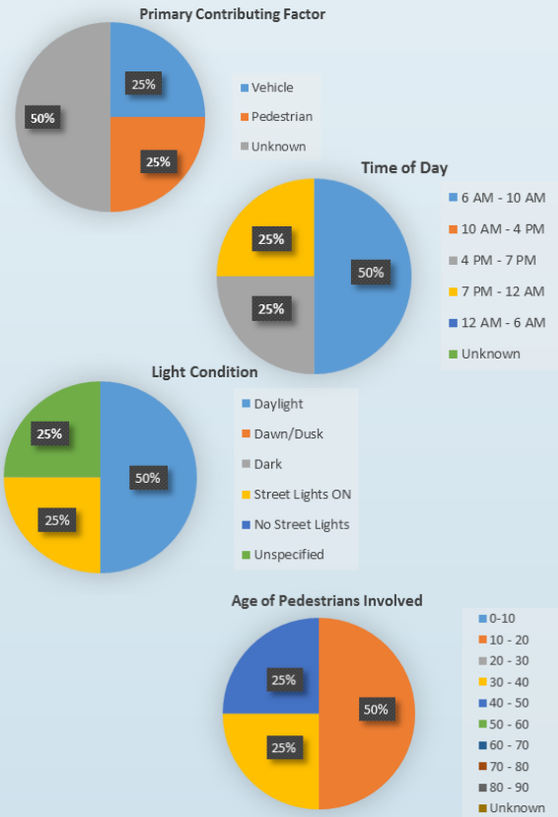
7th AVENUE AND COLONNADE PLACE

Pedestrians killed or seriously injured between 2009-2013: 3

Bike Crashes during the same period: 1

Volumes:

AM Pedestrian Volumes	314
AM Bicycle Volumes	7
PM Pedestrian Volumes	42
PM Bicycle Volumes	1



Existing Conditions:

- *Residential, Commercial*
- *Unsignalized*
- *Marked Crosswalks (only one side across 7th Avenue)*
- *School nearby*
- *NJ Transit bus stop*
- *Longitudinal rumble stripes*

IMPLEMENTATION

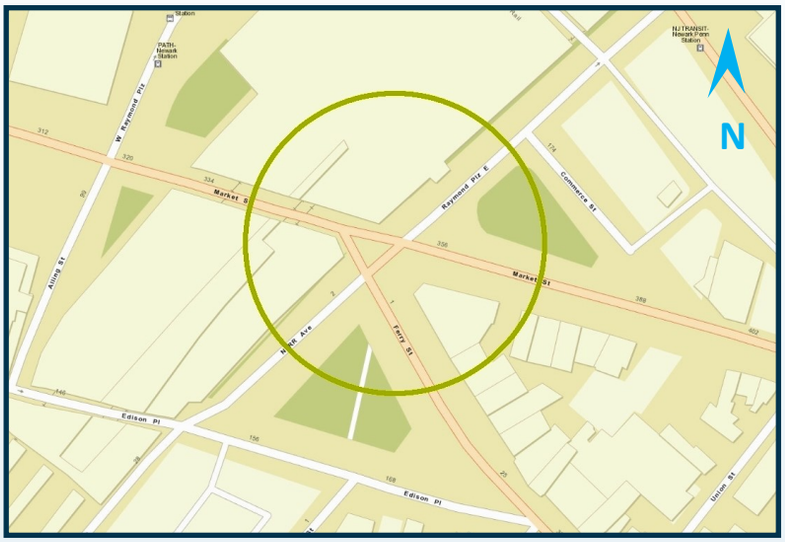
INTERSECTION 9
7th AVENUE AND COLONNADE PLACE

Note: Aerial from 2010. May not reflect existing conditions.

Recommendations

- ***Install In-road Stop for Pedestrian In-road signs***
- ***Install 2nd Crosswalk across 7th Avenue***
- ***Install parking & bus stop striping***
- ***Consider a multi-way stop***
- ***Upgrade curb ramps to meet ADA compliance***
- ***Install curb extensions and/or pedestrian island***
- ***Install speed humps or speed table***
- ***Install bike lanes***

IMPLEMENTATION



INTERSECTION 10

MARKET STREET AND RAYMOND PLAZA EAST

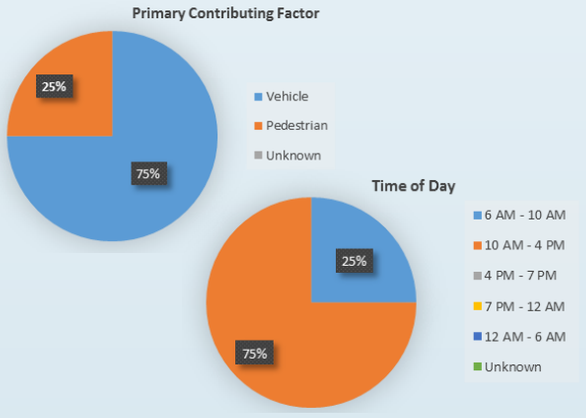
Pedestrians killed or seriously injured between 2009-2013: 4

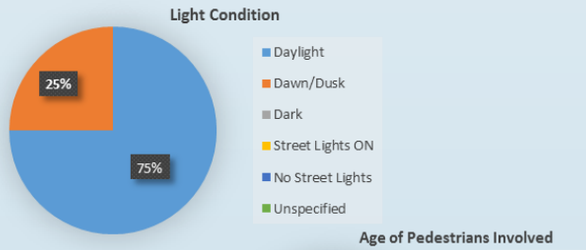
Volumes:

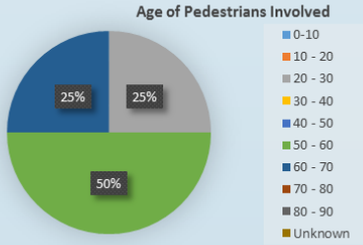
AM Pedestrian Volumes	445
AM Bicycle Volumes	2
PM Pedestrian Volumes	509
PM Bicycle Volumes	4

Existing Conditions:

- *Major Transit Hub (Penn Station), Commercial, Office*
- *Signalized with pedestrian countdown signals*
- *Brick Stamped crosswalks*
- *ADA compliant curb ramps*
- *Pedestrian signs*
- *Audible pedestrian push buttons*
- *Pedestrian-scale lighting*







IMPLEMENTATION

INTERSECTION 10 MARKET STREET AND RAYMOND PLAZA EAST

Note: Aerial from 2010. May not reflect existing

Recommendations

- ***Consider exclusive pedestrian signal phase***
- ***Install enhanced lighting under Penn Station***
- ***Install pedestrian island and/or curb extensions***
- ***Consider ergonomic crosswalk***
- ***Install No Turn on Red signs***