Existing Conditions Analysis

# ROUTES 303/304 SAFETY AND SUSTAINABILITY STUDY, CLARKSTOWN, NY

Town of Clarkstown
Rockland County Department of Planning

*Prepared for:*

Town of Clarkstown
Rockland County Department of Planning
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*Prepared by:*

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# Contents

# Executive Summary

This is a once-in-a-generation comprehensive study of Routes 303 and 304 in the Town of Clarkstown. These roadways collectively carry upwards of 40,000 vehicles daily and are the only north/south major roadways in Clarkstown connecting to the NY Thruway and Palisades Parkway, as well as the only major north/south truck routes in the county. They are key to mobility in much of Clarkstown, however safety and sustainability concerns have brought about this effort.

It is being undertaken as a partnership of the Town of Clarkstown and Rockland County. This report documents Existing Conditions in the two corridors – and is the first of several major publications that will be developed during the lifetime of the study.

This report evaluates a range of aspects of what is working well and what is not on the Routes 303 and 304 corridors. There are no recommendations in this report, because the objective is simply to document Existing Conditions to create a baseline for the rest of the study. Subsequent work tasks will explore specific options for enhancing the two corridors, and will make formal design and funding recommendations.

Key findings from this set of Existing Conditions analyses are summarized below.

## Physical Infrastructure (Chapter 2)

Route 303 is a 2-lane roadway for most of its length in Clarkstown, whereas Route 304 has extended 4-lane sections. Both roadways have sidewalks in limited areas, as well as variable shoulder widths. Pavement condition is currently somewhat better on Route 304 than 303, in part due to the presence of trucks heavily loaded with aggregate using Route 303 to access quarries at either end of Clarkstown. There is one bridge in poor condition, which carries the NY Thruway over Route 303.

In keeping with the varied context and cross-sections of the corridors, posted speed limits vary from 35 to 55 mph.

## Bicycle and Pedestrian Conditions (Chapter 3)

Cyclists and pedestrians use both corridors, but conditions are suboptimal in some stretches of the roadways. A detailed crash analysis studied 50 crashes involving bicyclists and pedestrians, finding that the majority of these crashes occurred on Route 304. Five pedestrians and one cyclist have died in crashes on the corridors in the past 10 years. An evaluation of crash hotspots identified design features that present barriers to bicycle and pedestrian safety, including wide diagonal crossings, poor pavement conditions, and limited opportunities to cross the corridor safely.

## Road Safety (Chapter 4)

Enhancing road safety on Routes 303 and 304 for all types of users is one of the main goals of this study. An in-depth statistical analysis of crash records was undertaken to document crash patterns. A key finding is that the Route 304 corridor has values for Level of Service of Safety (LOSS) along much of its length that suggest the potential for safety improvements.

## Traffic Congestion (Chapter 5)

Traffic congestion was evaluated using industry-standard techniques for calculating traffic delays. Additionally, the study team drew on an emerging Big Data resource generated from anonymized cell-phone tracing to establish congestion patterns outside of the usual weekday peak hours. The analysis found that Route 303 has somewhat more congestion than Route 304, but that most of the traffic movements that are congested are on side streets approaching Routes 303 or 304 rather than north-south travel on the corridors themselves. Locations where congestion was identified include Route 303 at Lake Road in Valley Cottage, and Route 304 at Germonds Road.

## Land Use/Property Access (Chapter 6)

Property-access issues vary throughout the two corridors. Conditions range from limited-access sections where no property access is permitted, through to stretches with high density of driveway access to small adjacent properties, in some cases without dedicated left-turn lanes. Additionally, Route 303 is uniquely impacted by the presence of two quarries that generate trucks that are heavily loaded with aggregate and sand, leading to challenges including degradation of pavement conditions and conflicts between automobile traffic and slow-moving truck traffic.

## Next Steps

Following publication of this Existing Conditions report, the study team will be undertaking a public outreach program to build awareness of this study, ensure that diverse voices are engaged in the study, and launch this study into the next steps of addressing the challenges along these corridors.

# 1 Introduction

The Town of Clarkstown and County of Rockland Department of Planning -have embarked on this study of the New York State Routes 303 and 304 corridors in Clarkstown, to address safety and sustainability issues and ensure that the corridors are equipped to serve the community's 21st-century transportation needs.

This report is the first major work product of this study. It aims to establish Existing Conditions in the two corridors considering both the physical infrastructure (pavement and bridge conditions, traffic signal equipment, etc.) as well as how travelers are using the corridors.

After public outreach and consultation to ensure that this report is as comprehensive as possible, there will be follow-up work tasks to complete the study. The study team will be studying potential future conditions, developing alternatives to enhance the Routes 303 and 304 corridors, and testing how the alternatives stack up against the safety and sustainability objectives of the study. Upon the completion of each major section of the research, the study team will be performing additional public outreach, to ensure that all voices are heard in planning the future of these two important corridors.

# Overview of the Corridors

The Routes 303 and 304 corridors serve a key role in the transportation system of the Town of Clarkstown, running nearly the full north-south length of the Town and serving neighborhoods that do not have direct access to the NY Thruway and Palisades Interstate Parkway freeway-class facilities.

Figure 1 shows Average Annual Daily Traffic (AADT) traffic volumes on the two corridors, which range from over 20,000 vehicles per day at their southern ends to approximately half these levels at their northern limits.

Both of these corridors are classified as Urban Principal Arterials; however their design varies greatly along their lengths.

Route 304 is a freeway with a 55 mph posted speed limit as it enters Clarkstown from the south, however it then transitions to serve mixed-use neighborhoods in which its speed limit drops to 35 mph.

Route 303 carries somewhat lower traffic volumes, however in most places it has a single travel lane in each direction. It carries particularly heavy truck traffic, due to its use to access quarries at both the south and north of its routing through Clarkstown.

Accommodations for pedestrians on both corridors are limited, with sidewalks currently in a few select locations (see Chapter 2).

In recent years, safety concerns have come to the forefront, with several high-profile crashes that galvanized the motivation to perform this fresh look at the Routes 303 and 304 corridors.

The remainder of this report is organized as follows:

- Chapter 2 surveys the physical infrastructure in place in the corridors
- Chapter 3 reviews bicycle and pedestrian conditions
- Chapter 4 assesses road safety issues, using detailed crash data
- Chapter 5 identifies locations and times when congestion occurs
- Chapter 6 evaluates the land use context in which the corridors are located.

# 2 Physical Infrastructure

This Chapter summarizes the infrastructure that is located on the Routes 303 and 304 corridors, including both physical infrastructure (number of lanes, pavement condition, etc.) as well as the specifications of the traffic-signal controller equipment that is used to control the traffic signals (traffic lights) along these corridors.

## Descriptions of the Corridors

The Routes 303 and 304 corridors run generally north-south, accommodating traffic movements through portions of the Town of Clarkstown that are not served by the NYS Thruway and Palisades Interstate Parkway limited-access roadways.

Portions of Route 304 are limited-access, meaning adjacent properties do not have access directly onto the corridors, however all of Route 303 and the majority of Route 304 provide land access to the properties that front the corridors.

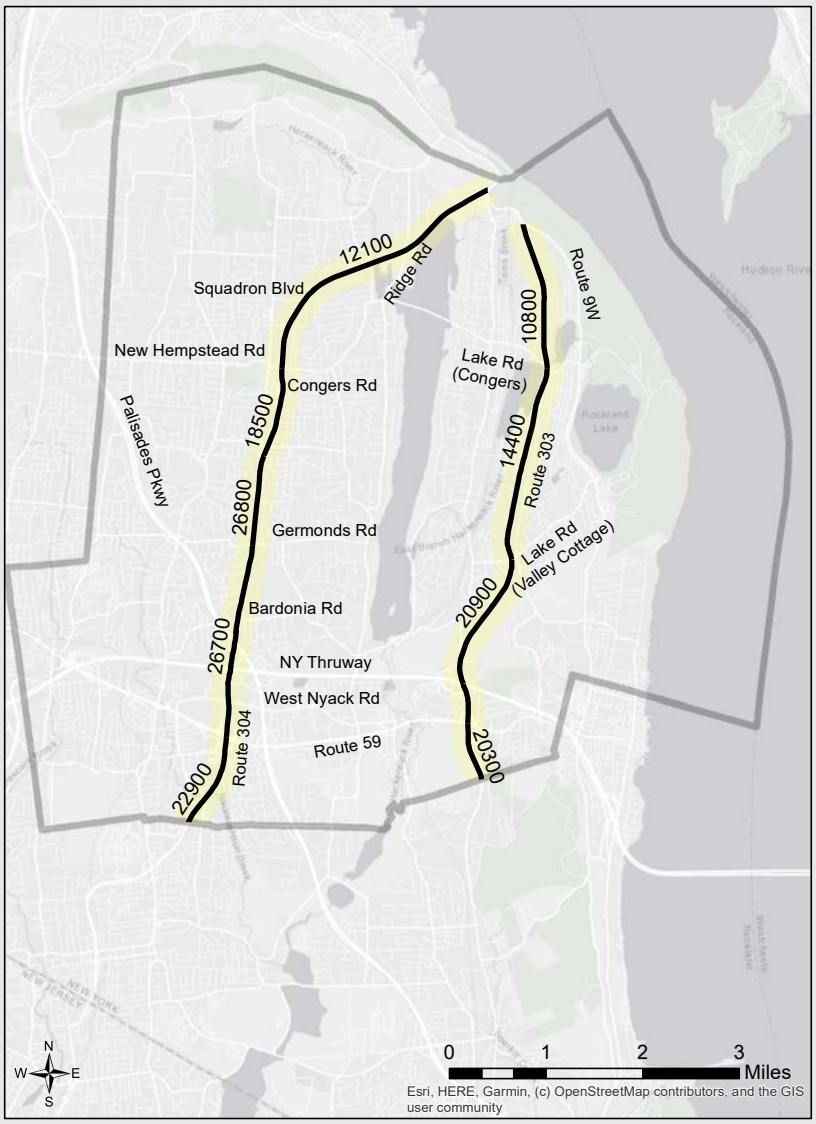



***Figure 1:*** *Average Annual Daily Travel (AADT), vehicles/day, on Routes 303 and 304*

*Figure 2: Clockwise from top-left: Route 303 at Palisades Center Mall looking north, at Lake Road (Valley Cottage) looking south, and at Lake Road (Congers) looking south*

## Overview of Route 303

At the southern extent of the study area (to the south of Route 59), Route 303 provides two travel lanes in each direction with turning lanes at some intersections, and provides access to NY Route 59 through a full-movement interchange.

Route 303 continues past the Palisades Center shopping mall, and intersects the New York State Thruway in a partial clover leaf interchange located adjacent to the Mall. A landscaped buffer is provided between the northbound and southbound lanes up to the intersection with Storms Road,  where Route 303 narrows to one travel lane, in each direction with turning lanes at key locations. The section of Route 303 north of Storms Road is also referred to as Country Ridge Road. Route 303 continues through Congers, passing east of Congers Lake before it intersects Lake Road then continuing to its northern terminus at US 9W.

*Figure 3: Clockwise from top-left: Route 304 at Bardonia Road looking west, at Germonds Road looking north, and at Squadron Boulevard looking south*

## Overview of Route 304

Route 304 in Clarkstown generally provides two travel lanes in each direction with dedicated turning lanes at many of the signalized intersections. Just north of a major intersection with West Nyack Road, Route 304 passes over the New York State Thruway and the Palisades Interstate Parkway but does not provide direct access to either route.

The section between Bardonia Road and Germonds Avenue is particularly constrained,

Route 304 continues north as it intersects Germonds Road at a signalized intersection, providing access to several of the Town's school campuses that are located to the east.

North of Germonds Road, Route 304 serves the downtown business district of New City at South Main Street. To the north of New City, the roadway provides separated northbound and southbound lanes, either by a landscaped median strip or guard rail. This cross-section continues to just north of Congers Road where the four-lane roadway narrows to one lane in either direction (with turning lanes) up to its northern end at its intersection with US 9W.

The intersection of Route 304 and US 9W is less than one mile north of the intersection of Route 303 and US 9W, which is Route 303's northern limit.

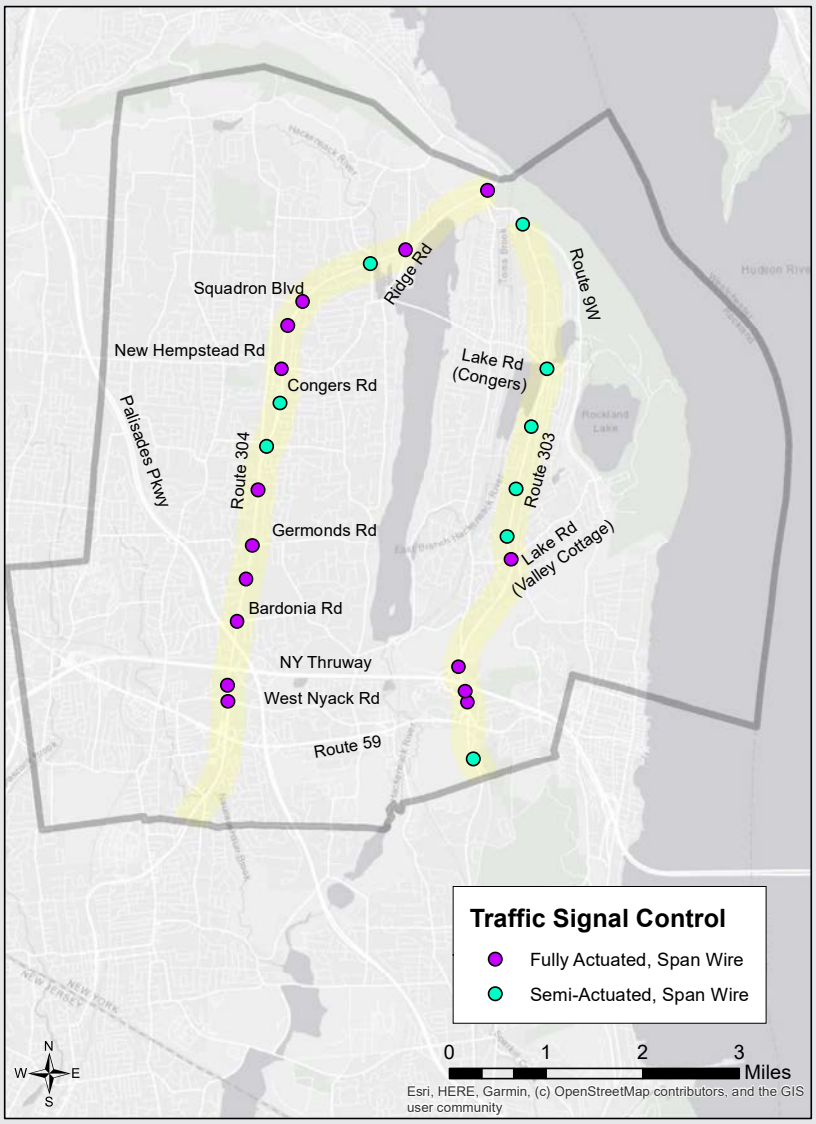



***Figure 4:** Traffic signal locations*

# Traffic Signal Control

Figure 4 shows the location of traffic signals (traffic lights) on the Routes 303 and 304 corridors.

Signalized intersections on Routes 303 and 304 typically operate independently from one another (i.e. “uncoordinated”), because of the distance between them which reduces the effectiveness of coordination. Exceptions to this are the following intersections which are coordinated with other traffic signals:

- Route 304 and Demarest Mill Road
- Route 304 and Laurel Road
- Route 304 and 3rd Street

In terms of specifications of the traffic signal controllers (the computers that control the traffic lights, along both the Routes 303 and 304 corridors, all traffic signals have 2070 controllers in 330-type cabinets. The signals are span wire with pedestrian signals and countdown timers where crosswalks are present. The detection is a mix of legacy in-pavement loop detectors and

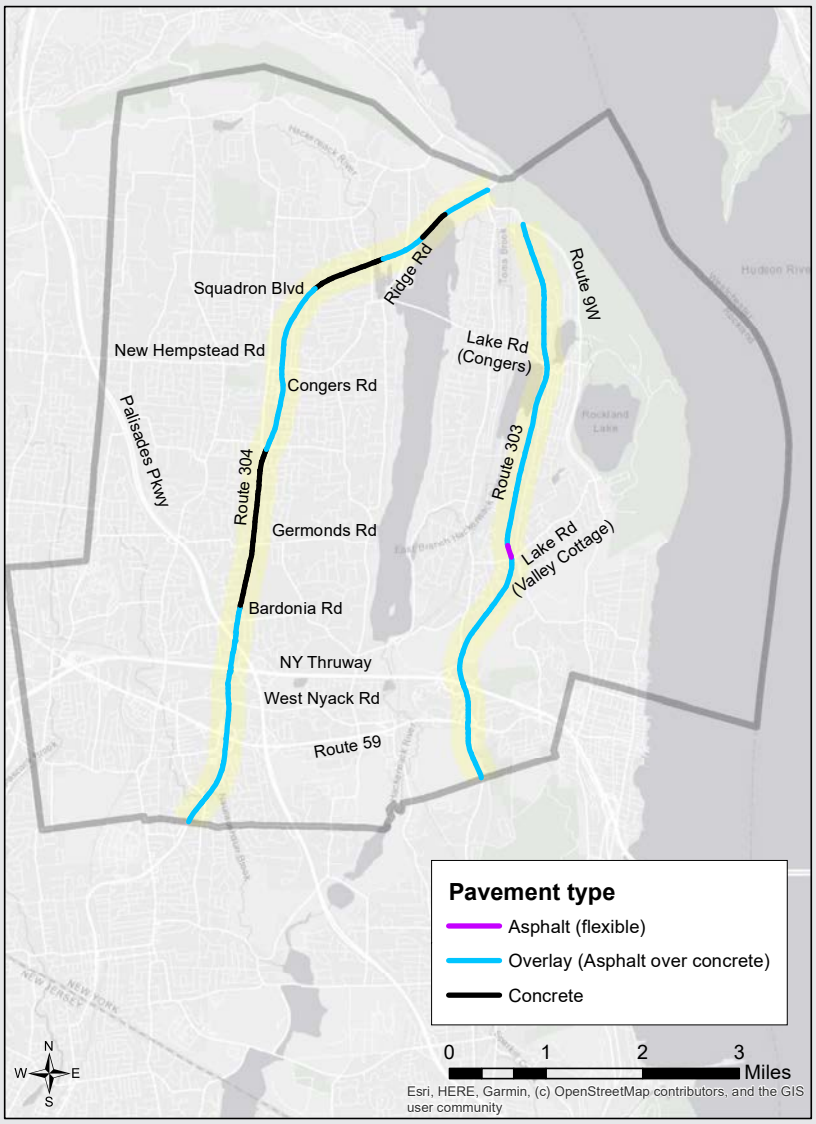



***Figure 5:** Pavement Type*

newer 360-degree video detection cameras, with Figure 4 showing that most signals on Route 303 are semi-actuated (i.e. vehicle detection on the side-street only) whereas most signals on Route 304 are fully-actuated (with vehicle detection on all approaches). Some intersections have been upgraded to provide communication to the State's central system, ATMS, via wireless cellular modems.

## Pavement Type and Condition

Figure 5 shows the pavement type on the corridors.

All of Route 303 is asphalt surface, with Route 304 being partially asphalt surface (65% of lane-miles, including sections of asphalt overlay on top of concrete base) and partially concrete surface (35% of lane-miles).

The concrete pavement on Route 304 is found in three sections: to the south of New

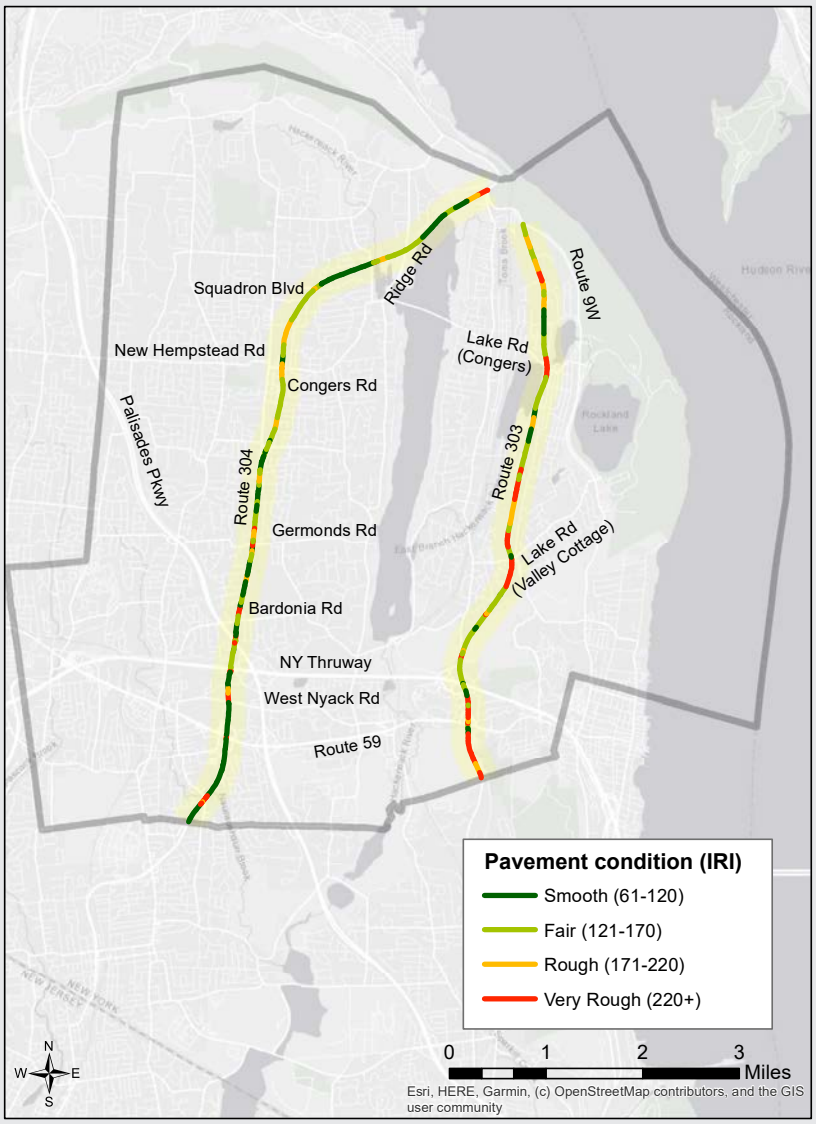



***Figure 6:** Pavement condition (based on International Roughness Index)*

City, to the north of Squadron Boulevard, and finally a section in the north that runs next to DeForest Lake. Note that Figure 5 only shows pavement-type on the travel lanes; segments with paved shoulder may be different pavement-type or not be full-depth pavement.

NYSDOT maintains an active re-paving and maintenance program, informed by regular field data collection of pavement condition. Figure 6 below shows pavement condition collected by NYSDOT during 2023, with green the smoothest pavement and red the roughest.

Using the standard International Roughness Index, pavement on Route 304 in Clarkstown is generally in better condition than pavement on Route 303. 22% of lane-miles of Route 304 are classified as Rough or Very Rough condition, compared to 48% of Route 303.

Figure 6 shows that the roughest sections of pavement on Route 303 are in the vicinity of the Palisades Mall and in Valley Cottage near the Lake Road intersection.

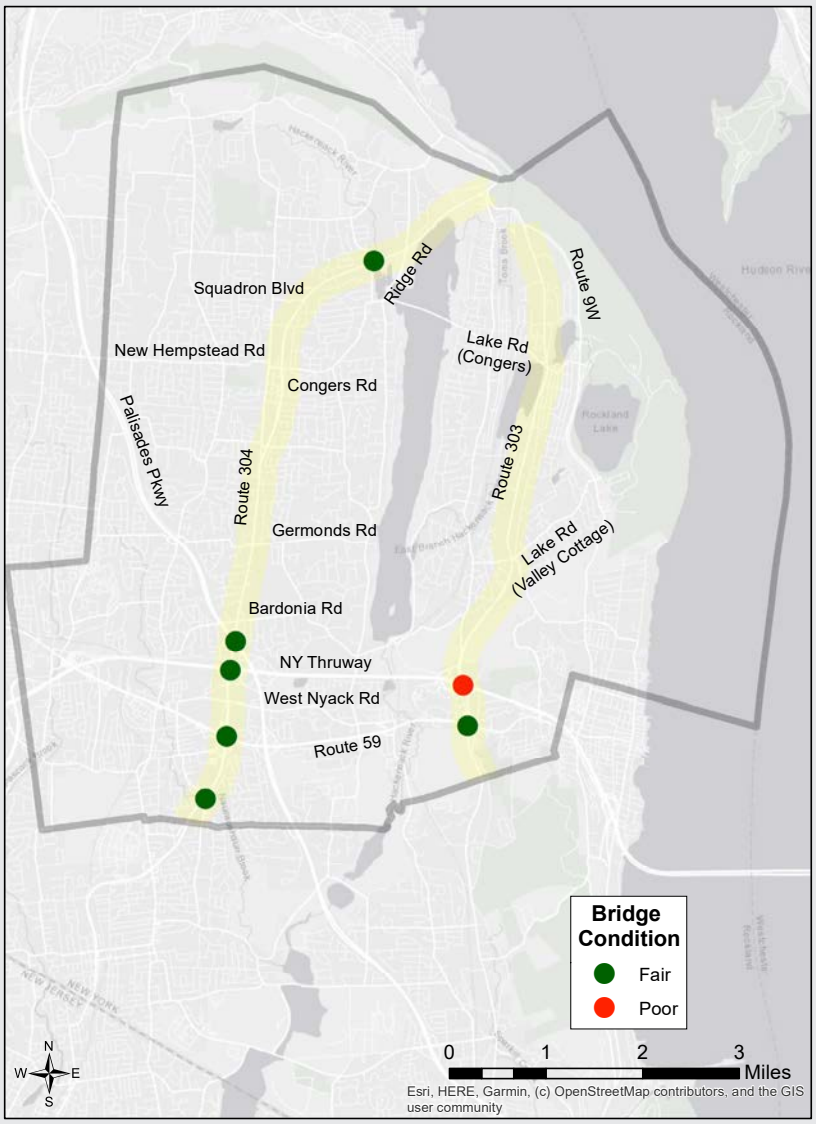



***Figure 7:** Condition of Bridges*

# Bridge Conditions

As with pavement, bridges that carry roads over other features degrade over time, and their condition must be managed through recurring maintenance and eventually replacement. The industry standard system for bridge condition has three classes: Good, Fair, and Poor. It should be noted that, per NYSDOT, the fact that a bridge is in poor condition does not imply that it is unsafe; rather it indicates that its structural capacity is affected and, at a minimum, requires ongoing monitoring of its condition.

Figure 7 shows that the Route 303 corridor has two bridge structures, which carry Route 59 and the NY Thruway over Route 303. The Thruway bridge is in Poor condition, while the Route 59 structure is in Fair condition.

There are seven bridges on the Route 304 corridor, from Blauvelt Road in the south to the Lake DeForest Inlet in the north; all of the bridges on Route 304 are in Fair condition.

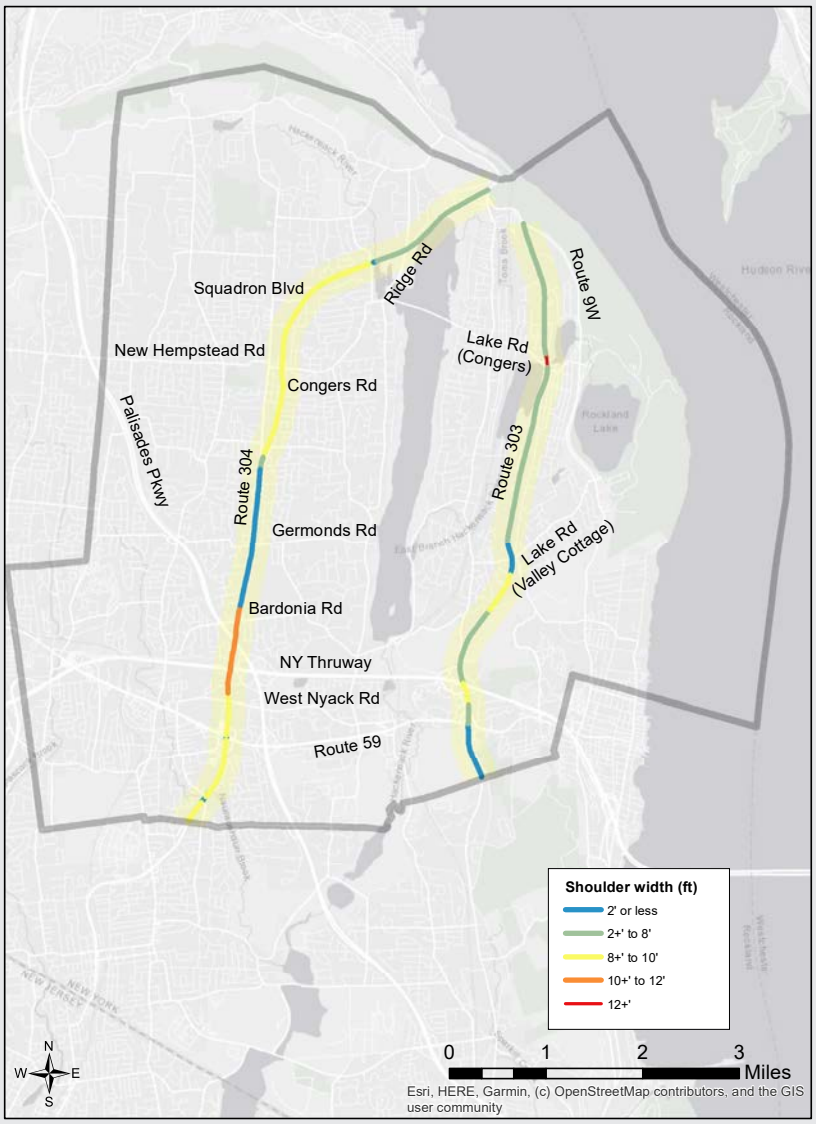



***Figure 8:** Shoulder Width*

# Shoulders

Figure 8 presents the width of the shoulders of the Routes 303 and 304 corridors. Shoulders provide the opportunity for broken-down or stopped vehicles to allow following vehicles to pass.

Route 303 has shoulders that are primarily up to 8' width, with sections 2' or less near Clarkstown's southern town line (south of Rt 59) as well as at the Lake Road (Valley Cottage) intersection.

Route 304 generally has wider shoulders than Route 303, with two exceptions. Near the roadway's northern limit, where it is limited-access, shoulder width is between 2' and 8'.

However, a more important constriction of shoulder width is found at the section of Route 304 between Bardonia Road and South Main Street just to the south of New City. This is a four-lane section with a carriageway of ~48' flanked by sidewalks. Traffic is permitted to turn left from Route 304 into side streets and properties fronting the roadway, however there are no turn lanes, so turning traffic must turn from the left-hand through lane of Route 304 which generally carries the fastest-moving traffic. This creates a conflict between slow-moving/ stopped turning traffic and high-speed traffic continuing north or south on Route 304.

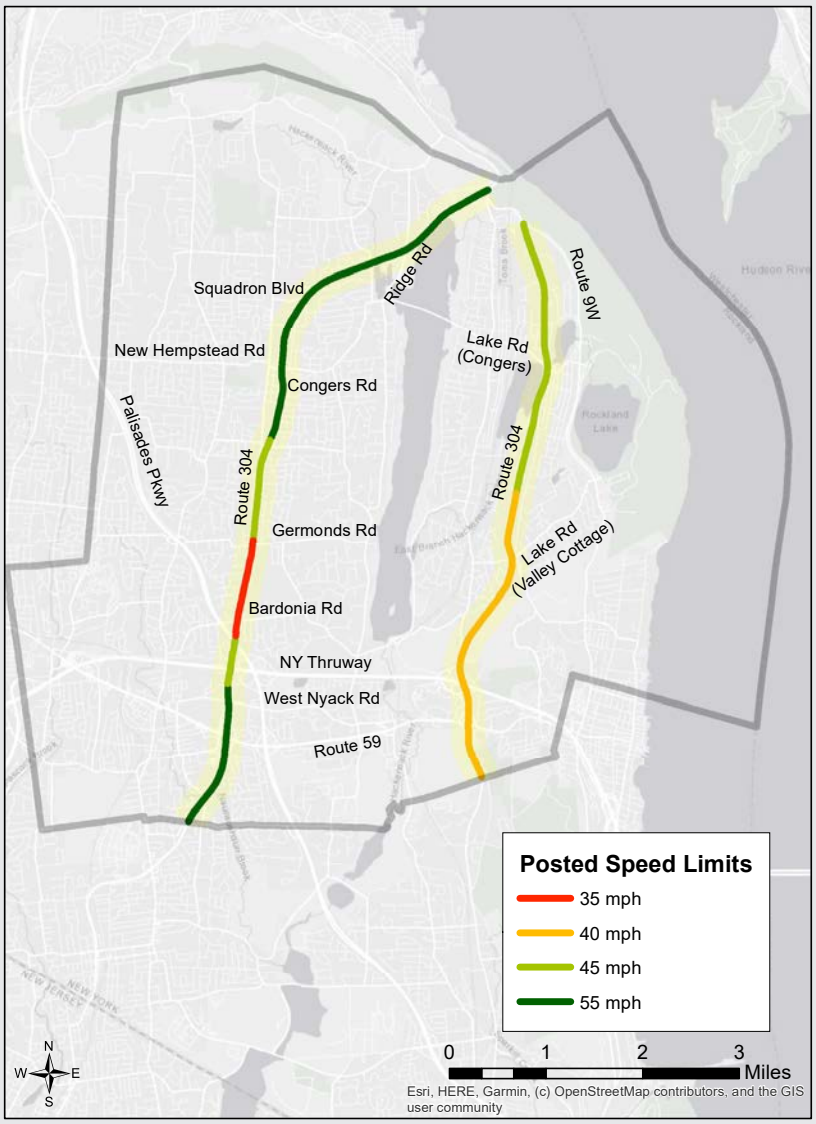



***Figure 9:*** *Posted Speed Limits*

## Speed Limits

Speed limits vary across the two road corridors, as depicted in Figure 9.

Route 303 has a posted speed limit of 40 miles per hour for its southern section, transitioning to 45 mph for its northern portion.

The posted speed limit on Route 304 changes four times: it is 55 mph at both the southern and northern limits of the study area, with transitions to 45 mph and then to 35 mph for the section between Bardonia and Germonds Road, to the south of New City.

## Public Transportation

Various public transportation routes serve the Routes 303 and 304 corridors, several of which are accessed at the five park-and-ride locations shown in Figure 10.

Transport of Rockland (TOR) Routes 91 and 97 run on Route 303, with connecting services including TOR routes 59 and 92 as well as the Hudson Link services points in Westchester County. The Clarkstown Mini-Trans community transit service operates on portions of the

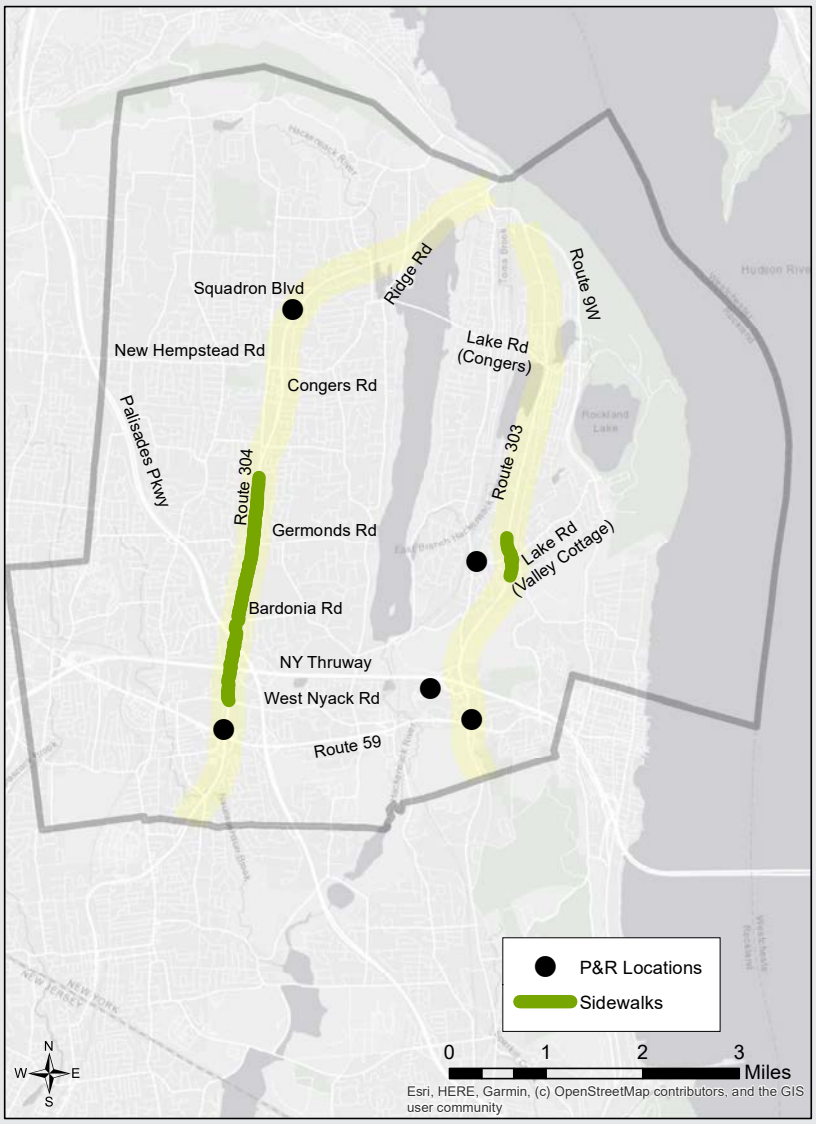



***Figure 10:** Sidewalks and Park-and-Ride Locations*

corridors and surrounding neighborhoods, including serving the Route 304 Park & Ride south of Squadron Blvd. Additionally, Coach USA/Red & Tan Routes 9-9A, 9T-AT, 11AT, 47, 48, 49, and 49A also serve portions of both the Routes 303 and 304 corridors, with the 47, 48, and 49 routes serving as major commuter routes to Manhattan.

## Sidewalks

The majority of the length of the Routes 303 and 304 corridors do not have sidewalks, as can also be seen in Figure 10. Sidewalks are found on Route 303 in Valley Cottage, in the vicinity of Lake Road. On Route 304, sidewalks are found from West Nyack Road (where the freeway section to the south transitions to be a signalized arterial) to Virginia Street, approximately 1,000' south of South Main Street in New City. Accommodation for pedestrians is discussed further in the next Chapter.

# 2 Bicycle and Pedestrian Conditions

Walking and bicycling (collectively termed “active transportation”) are important for corridors such as Routes 303 and 304 for a variety of reasons. They can provide public health and recreation benefits, they help reduce traffic volumes and congestion, and they contribute to neighborhood vitality.

This Chapter reviews existing conditions for bicyclists and pedestrians in the two corridors.

## Crash Analysis

New York State’s CLEAR database provides the baseline of data that was used to focus on crashes involving bicyclists and pedestrians, to identify their characteristics and contributing factors.

In the past 10 years, there have been 50 crashes along both corridors between motor vehicles and bicyclists/pedestrians, with 62% occurring on Route 304 and 38% occurring on Route 303 (see Figure 11). Six of these crashes (five pedestrians and one bicyclist) resulted in a fatality. Crash severity is generally consistent for bicycles and pedestrians, with most crashes resulting in some level of injury.

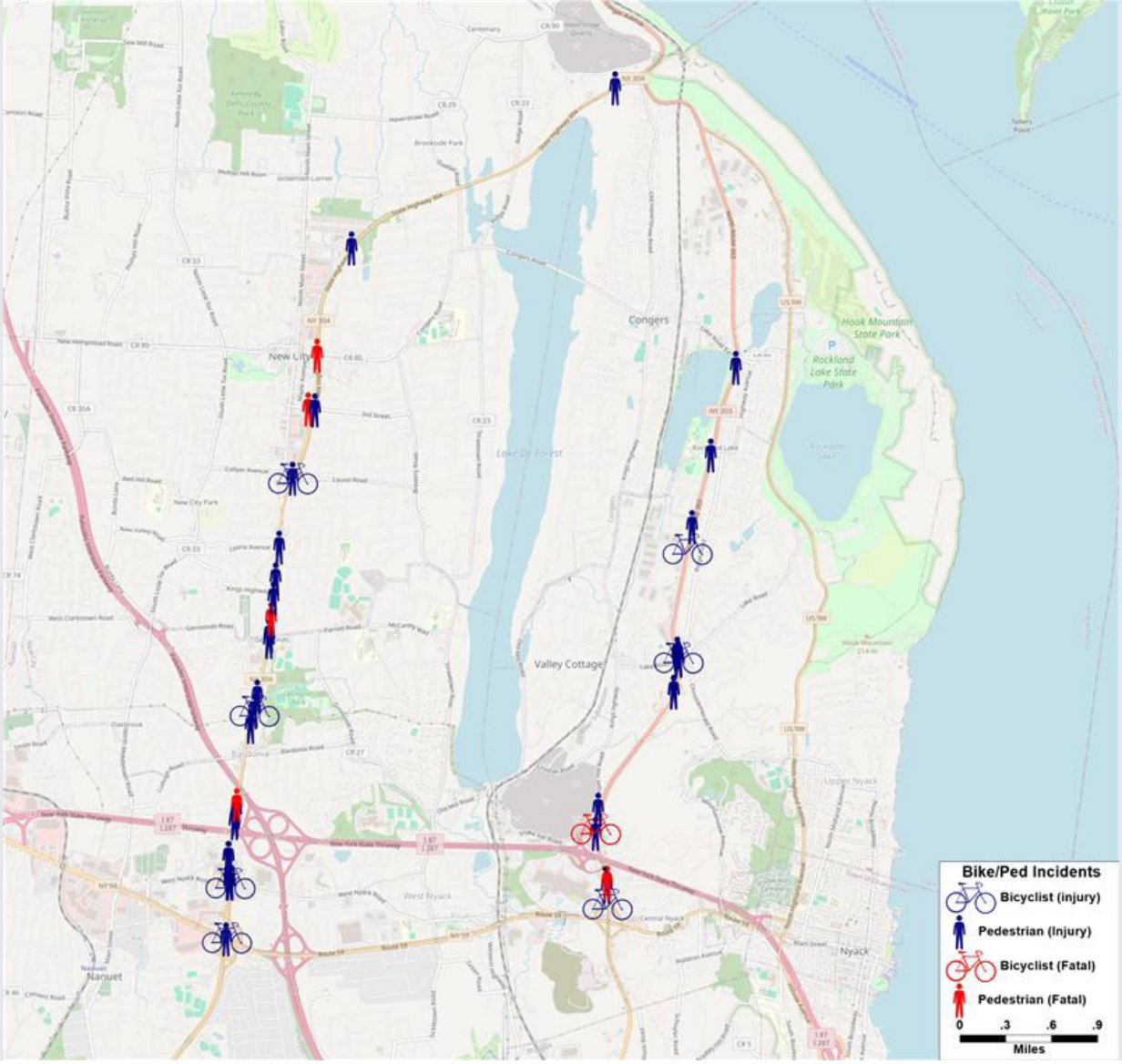
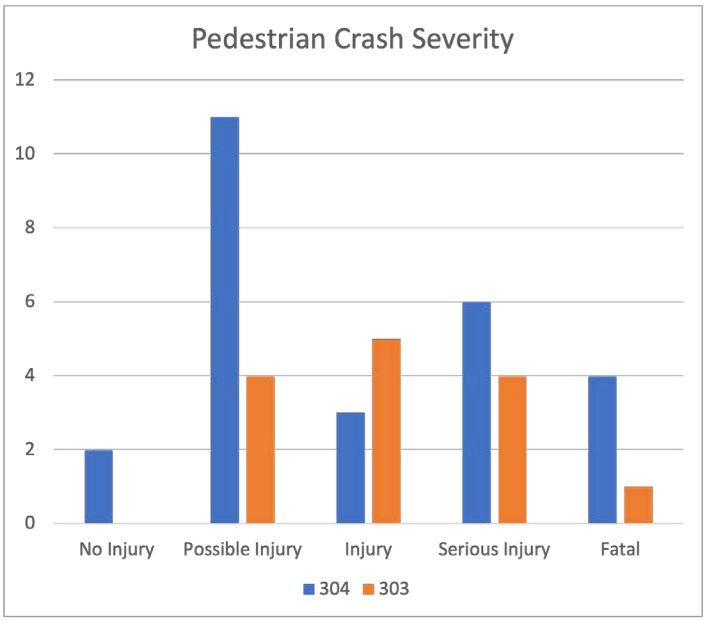



***Figure 11:*** *Bicycle and Pedestrian Injuries and Fatalities, 2013-2023*



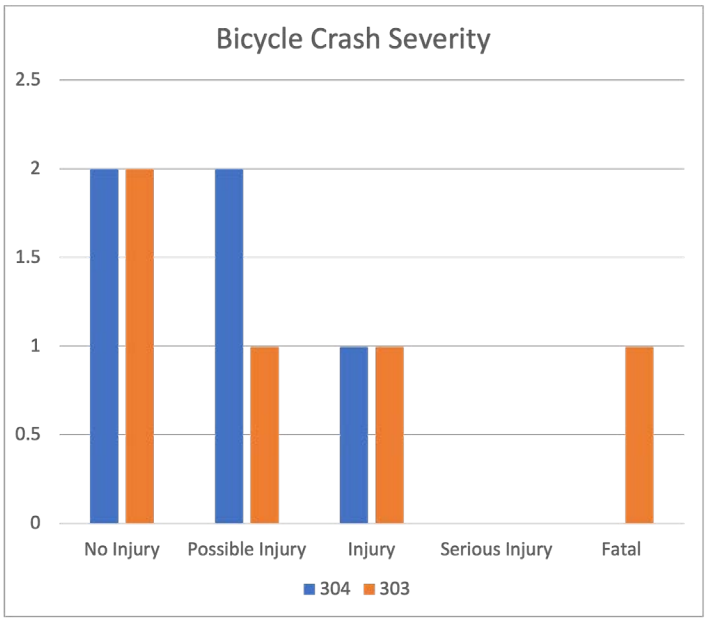




***Figure 12:*** *Crash severity for crashes involving pedestrians (L) and cyclists (R)*

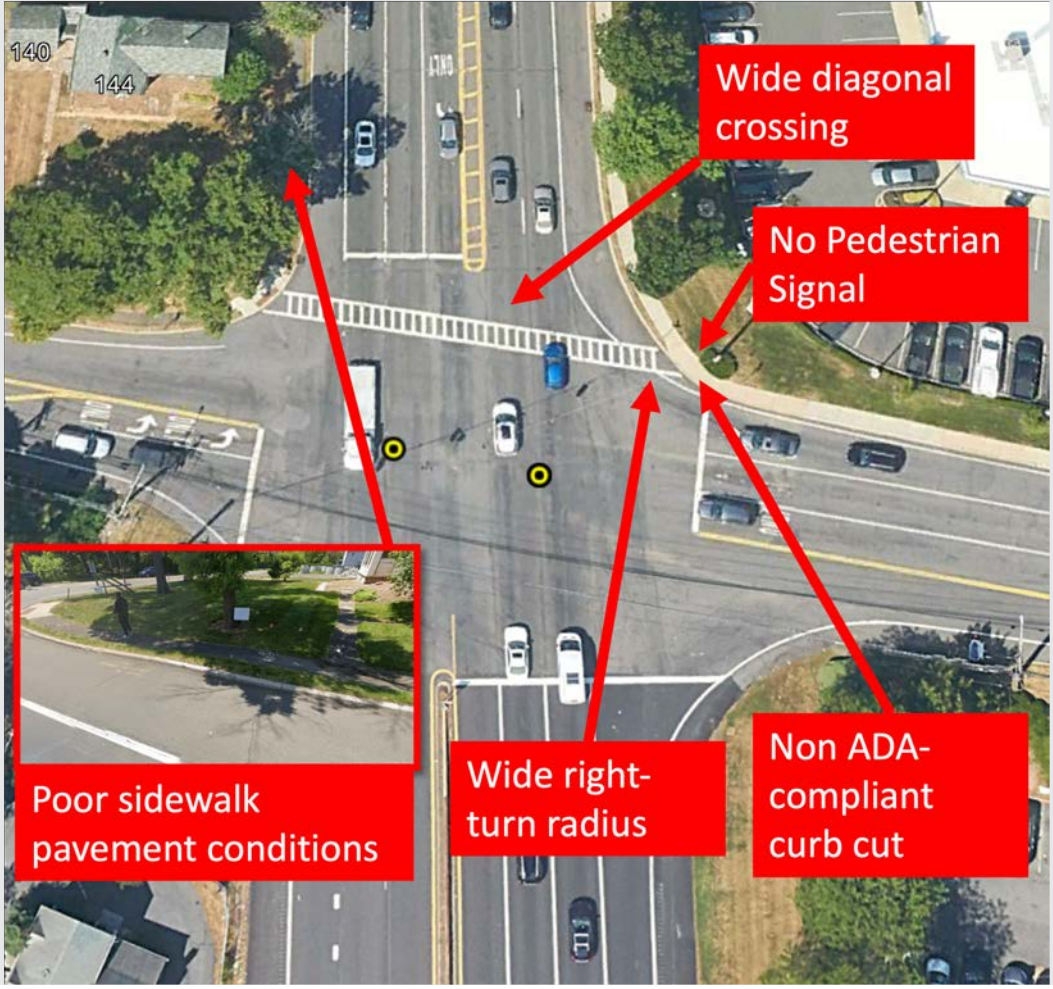



***Figure 13:*** *Roadway Design Challenges at the Route 304 and West Nyack Road Intersection*

***Table 1:*** *Ten Identified Hotspots of Pedestrian/Cyclist Crashes, by Presence of Marked Crosswalks*

| Location | E/W Marked Crosswalk | N/S Marked Crosswalk |
|---|---|---|
| 1. W Nyack Rd and Rt 304 | Y | N |
| 2. 3rd St and Rt 304 | Y | Y |
| 3. Congers Rd and Rt 304 | Y | Y |
| 4. S Main St and Clearview Rd | N | Y |
| 5. Village Green and Rt 304 | N | N |
| 6. Germonds Rd and 304 | Y | Y |
| 7. Lake Rd and Country Ridge Rd | Y | Y |
| 8. Brookside Ave and Rt 303 | N | N |
| 9. N Palisades Center Dr and Rt 303 | N | N |
| 10. E Palisades Center Dr and Rt 303 | N | N |

Nine out of 31 crashes on Route 304 and 13 out of 19 crashes on route 303 occurred at or immediately adjacent to intersections. Analysis of location data reveals 10 crash hotspots[1] along both corridors, identified in Table 1. Many of these hotspots exhibit design features that present barriers to bicycle and pedestrian safety. These include wide diagonal crossings across four or more traffic lanes, poor pavement conditions (both in-road and on sidewalk), lack of crosswalks on some approaches, wide turn radii which encourage high turning speeds, and a lack of pedestrian signalization at major intersections such as Route 304 and West Nyack Road (Figure 13).

*1 Crash hotspots are defined as areas with clusters of three or more crashes (of any nonfatal severity) within 250 ft of each other and/or where one or more fatalities occurred.*

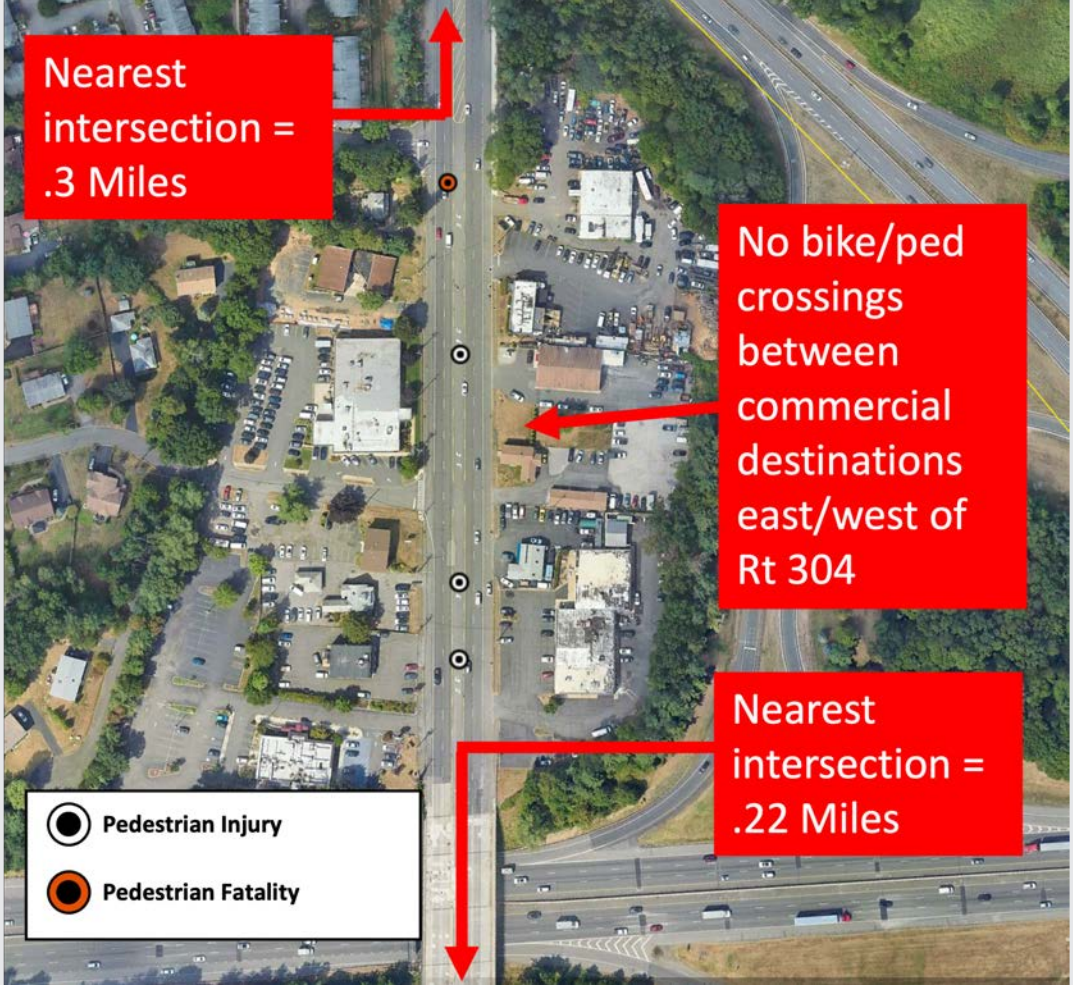



***Figure 14:*** *Route 304 Immediately North of NY Thruway. Three Pedestrian Crashes and Fatality were Likely the Result of Jay-Walking Between Businesses on Either Side of Route 304*

Another major design challenge is a pervasive lack of marked east/west crosswalks on both corridors, even between major commercial thoroughfares such as the stretch of 304 between the NY Thruway and the Palisades Interstate Parkway depicted in Figure 14. There are only 14 marked crossings on Route 304 between Rt 59 and its northern limit at Rt 9W. Excluding 4 crossings which exist in parallel at intersections, Route 304 exhibits an average distance of .67 miles between crossings.[2] Route 303 has 4 marked crossings in the 5.42 miles between Rt 59 and Rt 9W.

2 *The longest distance between marked crossings on Rt 304 is 1.04 miles between Germonds Rd and Laurel Rd.*

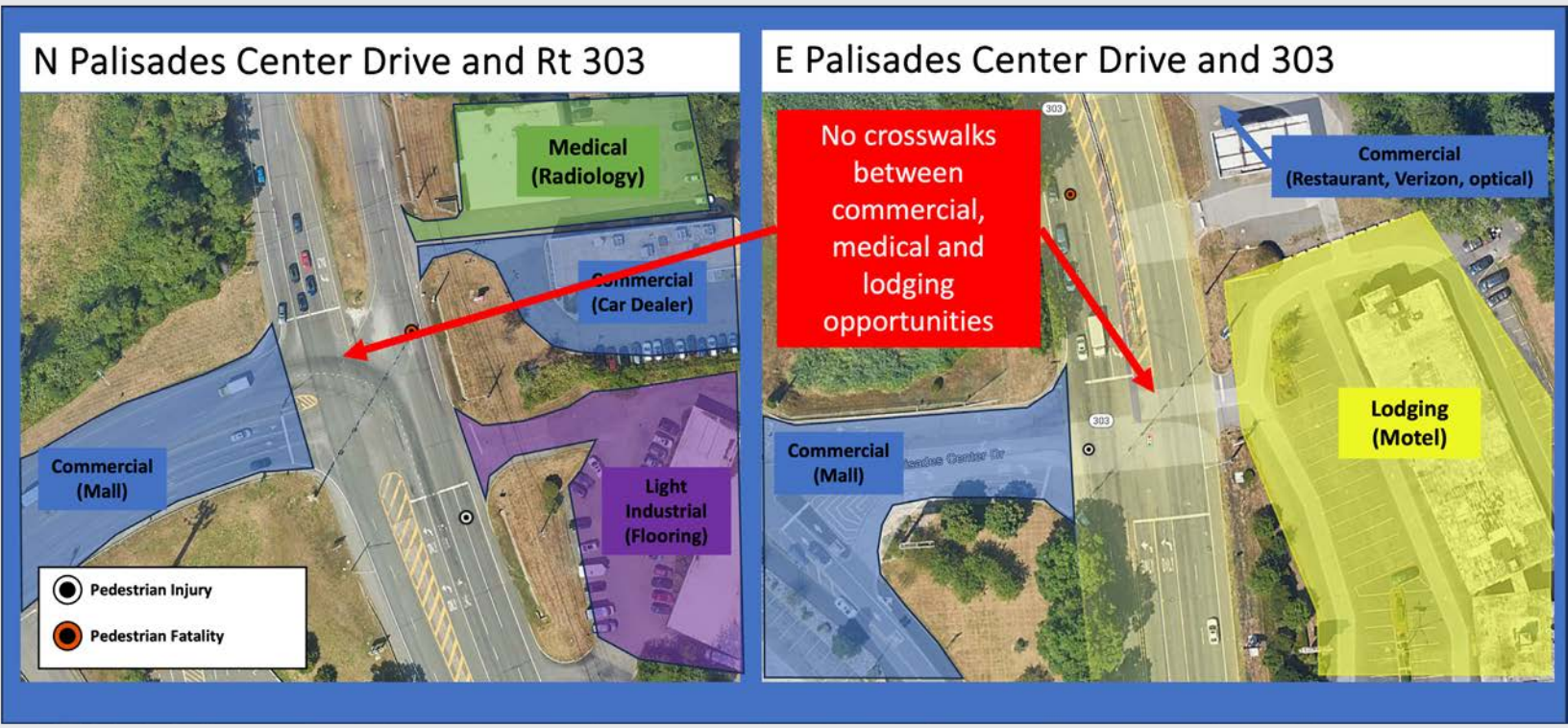



***Figure 15:*** *Lack of Marked Crossings on Route 303 next to Palisades Center limits co-beneficial land uses on either side of the corridor, and has resulted in pedestrian injuries and fatalities*

This lack of marked crossings is particularly challenging given the abundance of commercial, industrial and lodging opportunities on both sides of each corridor. This severely limits nonmotorized access to both jobs and consumer retail activity on adjacent sides of the corridor inhibiting opportunities for 'secondary economic activity.' As an example, workers relying on public transit or a single-family vehicle on the east side of Route 303 between North Palisades Drive and East Palisades Drive, are far less likely to take advantage of retail opportunities or take lunch at Palisades Center Mall (see Figure 15). This lack of crossings as a barrier to East/West connectivity is underscored by pedestrian fatalities in both locations.

## Other Crash Factors

Time of day and lighting do not appear to be primary factors in the *occurrence* of crash incidents involving cyclists/pedestrians, with 62% of crashes occurring during daylight hours.

While 38% of crashes involving bicycles and pedestrians occurred during hours with lower light conditions, the majority of these low-light crashes occurred on roadways where street lighting was present.

Low light is, however, a *compounding factor* influencing the severity of crashes, with five (5) out of six (6) fatal crashes occurring on dark roads with low lighting. Weather does not appear to be a significant contributing factor to bicycle and pedestrian crashes with 74% of crashes occurring in clear conditions including five out of six total fatalities.

***Table 2:** Intersections on Routes 303/304 with the Highest Number of Pedestrian Crossings, by Presence vs Lack of Crosswalks*

| Route 303 | | | | Route 304 | | | |
|---|---|---|---|---|---|---|---|
| Cross Street | N/S Crosswalk | E/W Crosswalk | #Ped Crossings | Cross Street | N/S Crosswalk | E/W Crosswalk | #Ped Crossings |
| Lake Road: Congers | Yes | No | 27 | Village Green | No | No | 19 |
| Hemenway Ave | No | No | 15 | Ludvigh Rd/Bardonia Rd | Yes | Yes | 15 |
| Palisades Center Drive | No | No | 10 | Dustman Lane | Yes | No | 13 |
| Lake Road: Valley Cottage | Yes | Yes | 9 | Congers Road | Yes | Yes | 13 |

# Bicycle and Pedestrian Volumes

Peak hour traffic volume counts were performed at locations along Routes 303 and 304 in May of 2024, including the number of pedestrian and bicycle crossings at each location.

Pedestrian and bicycle volumes on Routes 303 and 304 are significantly lower relative to observed motor-vehicle volumes. There were a total of 317 peak hour bicycle and pedestrian crossings on Routes 303 and 304 during the study period. 71% of these crossings were pedestrian crossings, while the remaining 29% were cyclists.

There were nearly 10% more total bicycle and pedestrian crossings on route 304, likely the result of the increased number of retail opportunities and marked crossings. 60% of bicycle crossings occurred on route 303. Lack of crosswalks does not appear to impede pedestrian crossings as the top four crossing locations on each corridor – which account for more than half of all crossings – as only three locations have crosswalks in both directions.

The majority of pedestrian crossings on both Routes 303 and 304 are lateral east and/or west across the corridor; this is likely driven by the presence of commercial destinations on either side of the corridor. Only two of the highest volume pedestrian crossings are crash hotspots.

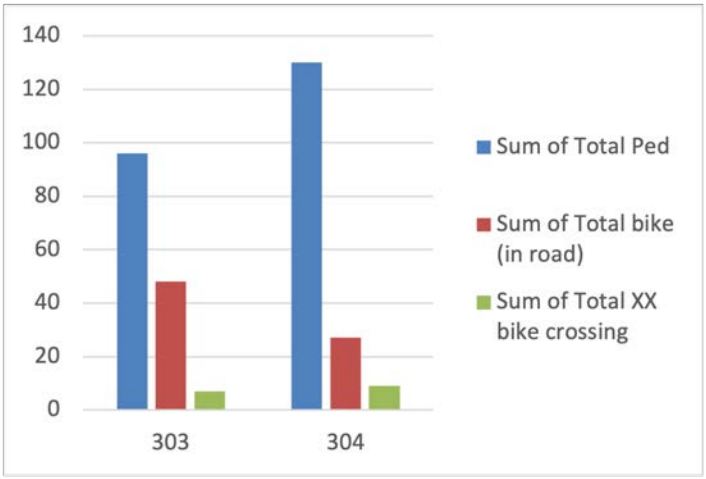



***Figure 16:** Total Volumes for Pedestrians, Bicycles on Road, and Bicycles in Crosswalks ("XX" in legend) on Routes 303 and 304*

***Table 3:** Intersections on Routes 303/304 with the Highest Number of Cyclist Crossings*

| Corridor | Cross Street | Number of Crossings |
|---|---|---|
| 303 | Lake Road: Congers | 17 |
| 304 | Route 9W | 10 |
| 303 | Route 9W/Leif Blvd | 8 |
| 303 | Gilchrest Road | 6 |

***Table 4:** Weekend vs weekday peak bicycle volumes, two selected locations on Route 303*

| Location | Weekday Peak | Weekend Peak |
|---|---|---|
| Lake Road: Valley Cottage & Route 303 | 6 | 1* |
| Route 9W/Leif Blvd & Route 303 | 8 | 46 |
| ** 30 additional trips occurred outside of peak hours on the weekend* | | |

The majority of weekday bike crossings were within the roadway while approximately 17% of bike crossings used crosswalks where present. All but one of the top 5 weekday bicycle crossings by volume were on Route 303, with the one exception being the intersection of Route 304 and NYS Route 9W (otherwise known as New York State Bike Route 9).

## Weekend Bicycle Data

Weekend bicycle counts were collected at two selected locations: 1) Lake Road-Valley Cottage & Route 303, and 2) Route 9W/Leif Blvd & Route 303. Per Table 4 below, weekend bicycle volumes on Route 9W/Leif Blvd & Route 303 far outpaced weekday peak volumes; this aligns with anecdotal observations of weekend bike volumes on New York State Bike Route 9W. It should be noted that while weekday peak volumes on Lake Road (Valley Cottage), and Route 303 exceed weekend peak hour volumes, the majority of crossings, a total of 30, occurred between the hours of 9:00 AM and 2:00 PM.

# 4 Road Safety

Enhancing road safety on Routes 303 and 304 for all types of road users is one of the main goals of this study. This Chapter presents a review of the crash history of the two corridors, with a detailed assessment of the types of crashes that have occurred along with factors that contributed to the crashes.

In addition to standard statistical analysis of crash history, each crash involving a death (fatality) on Routes 303 or 304 was reviewed in detail by this study's project management committee, including both the full crash report and local newspaper articles that in many cases provided additional details beyond those captured in the filed crash reports.

## Overview

Crash data was obtained from *New York State's* CLEAR (Crash Location Engineering & Analysis Repository) *dashboard*, a comprehensive database *of reportable road crashes across New York State* managed by the New York State Department of Transportation. This repository includes detailed information about traffic crashes within the state and is primarily designed to facilitate the analysis and improvement of road safety by providing accurate and accessible data.

An analysis of crashes within the project area was conducted to document crash types and severity, as well as to examine crash patterns, contributing factors, and potential countermeasures. The analysis covered a ten-year period from January 1, 2014, to December 31, 2023, a period that extends prior to the covid pandemic and encompasses the crash history that partly motivated this study. Crash data summaries generally include details such as location, time and date, crash type, and weather and pavement conditions.

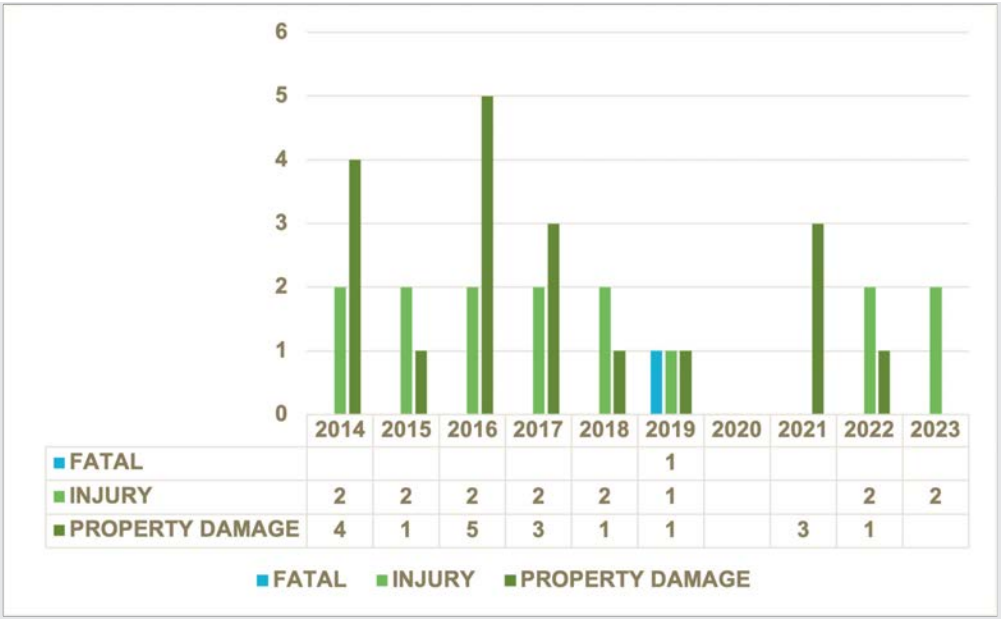



***Figure 17:** Crashes with Alcohol Involved, 2014-2023*

***Table 5:** Distribution of Crash Type, 2014 – 2023*

| Crash Type | Route 303 | | Route 304 | |
|---|---|---|---|---|
| | Number | Percentage | Number | Percentage |
| Animal | 138 | 6.9% | 235 | 9.1% |
| Bicyclist | 4 | 0.2% | 4 | 0.2% |
| Motor Vehicle | 1,667 | 83.7% | 2,154 | 83.0% |
| Object | 145 | 7.3% | 141 | 5.4% |
| Other | 15 | 0.8% | 25 | 1.0% |
| Overturned | 4 | 0.2% | 3 | 0.1% |
| Pedestrian | 15 | 0.8% | 27 | 1.0% |
| Run Off Road | 3 | 0.2% | 6 | 0.2% |
| Total | 1,991 | | 2,595 | |

***Table 6:** Distribution of Crash Severity, 2014 – 2023*

| Severity | Route 303 | | Route 304 | |
|---|---|---|---|---|
| | Number | Percentage | Number | Percentage |
| Property Damage | 1,570 | 78.9% | 1,940 | 74.8% |
| Possible Injury | 306 | 15.4% | 450 | 17.3% |
| Injury | 86 | 4.3% | 151 | 5.8% |
| Serious Injury | 23 | 1.2% | 42 | 1.6% |
| Fatality | 6 | 0.3% | 12 | 0.5% |
| Total | 1,991 | | 2,595 | |

# Statistical Analysis of Crash History

During the period studied, a total of 1,991 crashes occurred along the Route 303 Corridor and 2,595 crashes along the Route 304 Corridor. Table 5 and Table 6 summarize the crashes by corridor in the study area, detailing crash types and severity.

In addition, the crash data was summarized by several different criteria and variables. These included:

- Crashes involving pedestrians and bicyclists. (see detailed discussion in Chapter 3)
- Crashes involving alcohol. (see Figure 17)
- Annual crashes involving serious injuries (including fatalities) by corridor to see if there were any changes in rates over time. (see Figure 18)
- Crashes involving fatalities were further summarized by corridor in terms of what type of collision was involved. (see Table 7)


***Figure 18:** Crashes with Serious Injuries by Year, 2014-2023*

General observations regarding crashes on Routes 303 and 304 are:

- **Overall Number of Crashes:** Route 304 had a higher number of crashes (2,595) compared to Route 303 (1,991) over the ten-year period.
- **Crash Type Distribution:** Reportable crashes involving collision with an animal (many of which are likely to involve deer or other larger wildlife) are more frequent on Route 304 (9.1%) compared to Route 303 (6.9%). Pedestrian and bicyclist crashes are low (around 1%) as a percentage of all reportable crashes on the corridors.
- **Crash Severity:** Property damage crashes are by far the most common on both routes (around 75%). Route 304 has a slightly higher percentage of crashes with possible injury (17.3%) compared to Route 303 (15.4%). The data suggests a slightly higher risk of severe injuries (including fatalities) on Route 304.

***Table 7:** Type of Fatality, 2014 – 2023*

| Route 303 | Route 304 |
|---|---|
| ***6 Fatalities over the last 10 years*** | ***12 Fatalities over the last 10 years*** |
| 1 Pedestrian | 4 Pedestrian |
| 1 Bicyclist | |
| 2 “Right Angle” collisions at signalized intersections | 4 “Right Angle” collisions at signalized intersections |
| 1 Head-on collision | 1 Head-on collision |
| 1 Stop Sign collision | |
| | 1 Rear-end collision |
| | 1 Sideswipe collision |
| | 1 Guide rail/Overturned collision |

# Analysis of Standard Safety Metrics (PSI and LOSS)

Two measures of safety are important for understanding how safety on Routes 303 and 304 compare to similar roadways, and the potential for enhancing the history of crashes moving forward.

The first of these measures is the **Potential for Safety Improvement (PSI)**, which was developed to evaluate the potential effectiveness of safety countermeasures. It compares the actual number of crashes at a location to the expected number of crashes based on factors like traffic volume, roadway characteristics, and crash history. A higher PSI indicates a greater potential for reducing crashes through safety improvements.

The second measure is known as the **Level of Service of Safety (LOSS)**. It compares the observed crash frequency and/or severity to the expected crash history based on other similar types of roads. LOSS offers a complementary perspective to the PSI measure, by directly comparing observed to expected safety performance. This approach provides a more nuanced understanding of safety performance and can be used to benchmark performance, identify outliers, and evaluate countermeasures.

LOSS values range between 1 and 4, with LOSS 1 indicating the lowest potential for crash reduction and LOSS 3 and 4 indicating segments with high potential for crash reduction meriting further exploration.

PSI and LOSS values for segments along Routes 303 & 304 were obtained from NYSDOT's CLEAR database[1]. Table 8 and Table 9 display the results, with cells highlighted for segments having elevated PSI and/or LOSS values. The PSI and LOSS values are presented both for "All crashes" and only "Fatal and severe injury crashes" for completeness, however this study's analysis uses the PSI for the fatal and severe injury crashes, to ensure focus on the most impactful crashes.

Figure 19 presents the mapped LOSS values, showing that much of Route 304 is characterized by elevated LOSS values of 3 and 4, with the same true for Route 303 but to a lesser extent. On Route 303, the highest LOSS values are just to the south of Lake Road in Valley Cottage – a segment where a fatality has occurred.

Potential for Safety Improvement (PSI) is the difference between the expected crash frequency and the predicted crash frequency.

- When PSI is greater than zero, a site experiences more crashes than expected.
- When PSI is less than zero, a site experiences fewer crashes than expected.

1 *Note: Some of the segments did not have crash data reportable from the CLEAR system*


***Figure 19:*** *Level of Service for Safety (LOSS) Values from NYS's CLEAR System*

Level of Service of Safety (LOSS) is the ranking of sites according to their observed and expected crash frequency for the entire population, where the degree of deviation is then labeled into four classes of level of service.

- LOSS I indicates a low potential for crash reduction.
- LOSS II indicates low to moderate potential for crash reduction.
- LOSS III indicates moderate to high potential for crash reduction.
- LOSS IV indicates a high potential for crash reduction.

***Table 8:** Route 303 Safety Measures PSI & LOSS*

| Segment | | | All Crashes | | Fatal & Severe Injury Crashes | |
|---|---|---|---|---|---|---|
| From | To | Direction | PSI | LOSS | PSI | LOSS |
| Town Line-South (MP 4.71) | SR 59 (MP 5.50) | NB | 15.03 | 4 | 0.10 | 3 |
| | | SB | 9.94 | 3 | (0.01) | 2 |
| SR 59 (MP 5.50) | E. Palisades Center Dr (MP 5.69) | NB | (0.10) | 2 | - | - |
| | | SB | (1.06) | 2 | - | - |
| E. Palisades Center Dr (MP 5.69) | NYS Thruway (MP 5.92) | NB | 2.15 | 3 | 0.10 | 3 |
| | | SB | 2.53 | 3 | 0.10 | 3 |
| NYS Thruway (MP 5.92)) | Casper Hill Rd (MP 6.25) | NB | 10.56 | 4 | 0.11 | 3 |
| | | SB | 9.79 | 4 | (0.03) | 2 |
| Casper Hill Rd (MP 6.25) | Storms Rd (MP 6.77) | NB | (6.84) | 2 | (0.04) | 2 |
| | | SB | (9.20) | 2 | (0.16) | 2 |
| Storms Rd (MP 6.77) | North of Brookridge Dr (MP 7.22) | NB | 7.26 | 4 | 0.02 | 4 |
| | | SB | 6.83 | 4 | 0.02 | 4 |
| North of Broodridge Dr (MP 7.22) | Lake Rd, Valley Cottage (MP 7.36) | NB | (1.23) | 2 | - | - |
| | | SB | N/A | N/A | N/A | N/A |
| Lake Rd, Valley Cottage (MP 7.36) | USPS (MP 7.51) | NB | 2.45 | 3 | - | - |
| | | SB | N/A | N/A | N/A | N/A |
| USPS (MP 7.51) | Congers Lake Rd (MP 9.39) | NB | 25.80 | 4 | 0.08 | 3 |
| | | SB | N/A | N/A | N/A | N/A |
| Congers Lake Rd (MP 9.39) | North of Lakewood Dr (MP 9.50) | NB | 3.73 | 4 | (0.00) | 2 |
| | | SB | N/A | N/A | N/A | N/A |
| North of Lakewood Dr (MP 9.50) | Route 9W (MP 10.92) | NB | N/A | N/A | N/A | N/A |
| | | SB | N/A | N/A | N/A | N/A |

***Table 9:** Route 304 Safety Measures PSI & LOSS*

| Segment | | | All Crashes | | Fatal & Severe Injury Crashes | |
|---|---|---|---|---|---|---|
| From | To | Direction | PSI | LOSS | PSI | LOSS |
| Town Line-South (MP 2.34) | South of Blauvelt Rd. (MP 2.74) | NB | (1.98) | 3 | (0.70) | 2 |
| | | SB | (3.12) | 2 | (0.70) | 2 |
| South of Blauvelt Rd. (MP 2.74) | SR 59 (MP 3.48) | NB | (6.79) | 3 | (2.39) | 3 |
| | | SB | (8.55) | 3 | (2.39) | 2 |
| SR 59 (MP 3.48) | North of West Nyack (MP 3.94) | NB | 4.83 | 4 | (0.99) | 4 |
| | | SB | 4.44 | 4 | (1.35) | 4 |
| North of West Nyack (MP 3.94) | South of NYS Thruway (MP 4.15) | NB | 7.15 | 4 | (0.85) | 4 |
| | | SB | 5.80 | 4 | (1.02) | 4 |
| South of NYS Thruway (MP 4.15) | Palisades Interstate Pkwy (MP 4.47) | NB | 0.10 | 4 | (0.86) | 4 |
| | | SB | (0.28) | 4 | (0.86) | 4 |
| Palisades Interstate Pkwy (MP 4.47) | Germonds Road (MP 5.49) | NB | 33.94 | 4 | (4.24) | 4 |
| | | SB | 33.94 | 4 | (4.24) | 4 |
| Germonds Road (MP 5.49) | North of Crambrook Rd (MP 6.28) | NB | 28.65 | 4 | (2.20) | 4 |
| | | SB | N/A | N/A | N/A | N/A |
| North of Crambrook Rd (MP 6.28) | South Main St – Local (MP 6.43) | NB | (0.28) | 4 | (0.44) | 4 |
| | | SB | (0.28) | 4 | (0.28) | 4 |
| South Main St: Local (MP 6.43) | | NB | 5.92 | 4 | (2.49) | 4 |
| | | SB | 3.96 | 4 | (2.11) | 4 |
| Congers Rd (MP 7.36) | Route 9W (MP 10.37) | NB | 17.49 | 4 | (4.39) | 4 |
| | | SB | 17.49 | 4 | (4.04) | 4 |

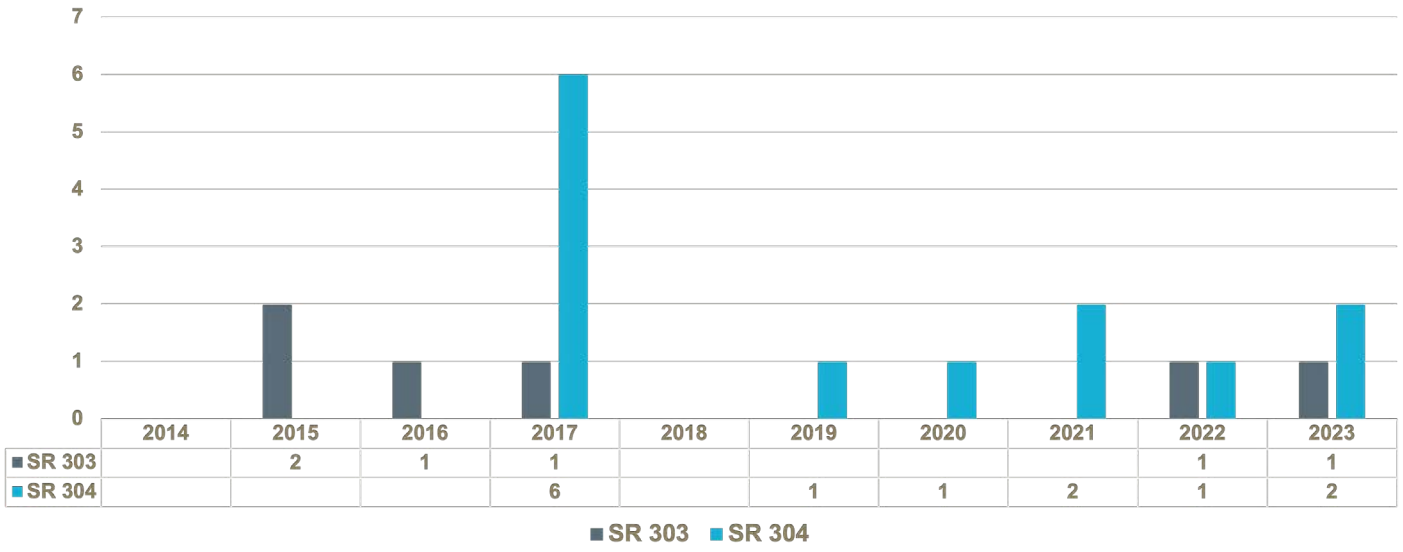



***Figure 20:** Number of Fatal Crashes, 2014–2023*

# Reviews of Crashes Involving Deaths

Crashes involving deaths (fatalities) were the focus of detailed analysis by the study team, with the objective of understanding in depth the contributing factors of each of these types of crashes. Figure 20 shows that fatalities were particularly high in year 2017, with seven deaths occurring, six of them on Route 304.

For this subset of only the crashes involving road deaths, the study team reviewed the crash reports from the CLEAR database, as well as local newspaper articles covering these crashes. Figure 21 and Figure 22 present an example of the visual materials used by the study team in their review of each fatality. The example shown is of Route 304 and West Nyack Road, where three fatal crashes were reviewed. The intersection with West Nyack Road is the point of transition between Route 304's freeway section with a 55 mph speed limit (to the south) and its signalized arterial section with a posted limit of 45 mph (to the north of West Nyack Road).

The Appendix contains the full set of this type of materials, for each of the fatal crashes in the Routes 303 and 304 corridors.

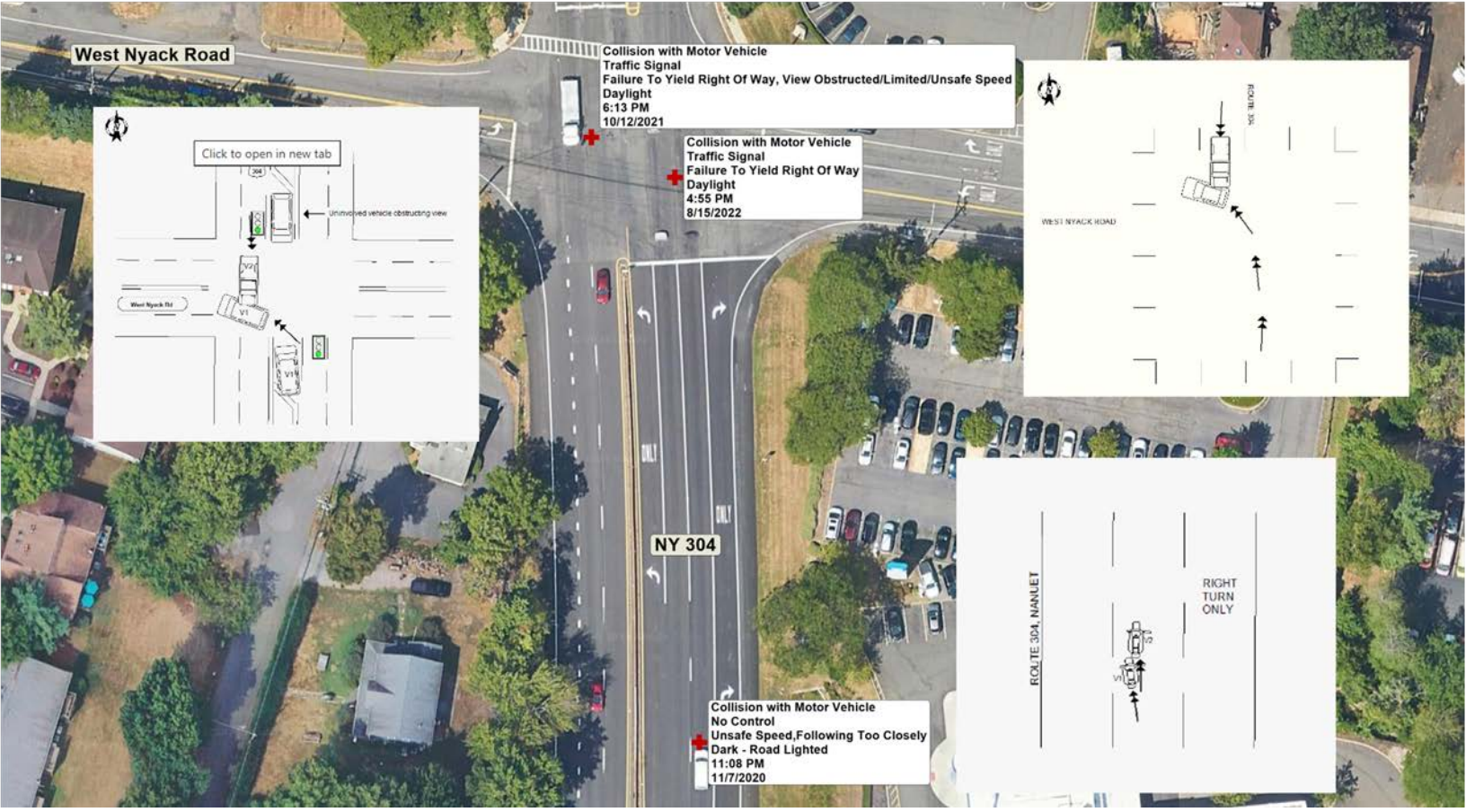



***Figure 21:*** *Example Summary of Fatal Crashes, Route 304 at West Nyack Road (3 Occurrences of Fatal Crashes)*

# Man, 36, dies from injuries in fatal motorcycle crash in Nanuet on Saturday night

**Eugene Rapay**
Rockland/Westchester Journal News

Published 1:38 p.m. ET Nov. 8, 2020 | Updated 1:49 p.m. ET Nov. 8, 2020

A 36-year-old Rockland County resident died after a motorcycle accident on West Nyack Road and Route 304 in Nanuet on Saturday night.

According to Clarkstown police, they responded to a call around 11:05 p.m. and rendered aid to an injured man lying on the road. He was transported to Nyack Hospital, where he was pronounced dead.

He reportedly struck another motorcycle operator, causing both operators to lose control. The other operator involved in the accident declined medical treatment, police said.

The accident is still being investigated by Clarkstown police. The roadway was closed for several hours overnight.

***Figure 22:*** *Example of Local Newspaper Article Covering a Fatal Crash on Route 304, as Reviewed by Study Team*

# 5 Traffic Conditions

Traffic Congestion can be frustrating to travelers, with real-world consequences including impacts on local economic development. However, widening roads to accommodate all vehicular travel demand with no congestion can be unrealistic, and at odds with other goals including sustainability, speed management, and providing a sense of place in a town's hamlets.

This Chapter draws on best-available data to present as full a picture of congestion as possible. This includes both traffic-volume data collected in Spring 2024 (presented first), followed by an emerging type of data based on anonymized cell-phone tracking, which allows identification of patterns of congestion at all times of the day, days of the week, and even months of the year.

The objective is to establish the existing patterns of congestion, so that the study can make informed choices about corridor improvements to address congestion as well as other goals such as safety enhancements, placemaking, and sustainability.

# Evaluation of Congestion Based on Level of Service

This section presents the analysis of the traffic congestion that is occurring on Routes 303 and 304 today during the weekday morning and afternoon peak hours. This analysis is based on industry-standard evaluation of Level-of-Service using Synchro software data collected from the field during May 2024.

## Data Collection

In order to analyze traffic operating conditions within the study area, peak hour Turning Movement Counts (TMCs) were collected using video cameras for the following key intersections in the study area:

### *Route 304*

1. Route 304 and West Nyack Road
2. Route 304 and Demarest Mill Road
3. Route 304 and Dustman Lane/Driveway
4. Route 304 and Village Green
5. Route 304 and Ludvigh Road/ Bardonia Road
6. Route 304 and Bardonia Mall
7. Route 304 and Monterey Gardens
8. Route 304 and Germonds Road
9. Route 304 and Leona Avenue
10. Route 304 and South Main Street
11. Route 304 and Laurel Road
12. Route 304 and 3rd Street
13. Route 304 and Congers Road
14. Route 304 and Cavalry Drive
15. Route 304 and Squadron Boulevard/East Cavalry Drive
16. Route 304 and East Philips Hill Road/Cosmos Lane
17. Route 304 and Goebel Road
18. Route 304 and Ridge Road
19. Route 304 and Old Haverstraw Road
20. Route 304 and Route 9W

### *Route 303*

1. Route 303 and Clarkstown Transfer Station
2. Route 303 and East Palisades Center Drive
3. Route 303 and Palisades Center Drive
4. Route 303 and North Palisades Center Drive
5. Route 303 and Casper Hill Road
6. Route 303 and Storms Road
7. Route 303 and Lake Road (Valley Cottage)
8. Christian Herald Road/Ridge Road and Lake Road (Valley Cottage)
9. Route 303 and Valley Cottage Shopping Center Driveway
10. Route 303 and Executive Boulevard
11. Route 303 and Gilchrest Road/ Highway Avenue
12. Route 303 and Lake Road (Congers)
13. Route 303 and Hemenway Avenue
14. Route 303 and Hilltop Road/Randi Lane
15. Route 303 and Kohl Industrial Park
16. Route 303 and Lief Boulevard and Route 9W

The data included vehicle, bicycle, and pedestrian volume counts and vehicle classification counts. Weekday traffic data was collected on Wednesday, May 8, 2024, from 7:00 AM to 6:00 PM. Turning Movement Counts are provided in Appendix B.

To understand the fluctuation in traffic volumes over a typical weekday, continuous bidirectional 7-day Automatic Traffic Recorder (ATR) traffic volume data was collected at 12 locations in the study area starting on Tuesday, May 7, 2024. ATRs are provided in Appendix C.

Based on the data collected in May 2024, the vehicular traffic peak hours for the study area were determined to be:

- 8:00 AM to 9:00 AM for the weekday AM peak hour
- 4:30 PM to 5:30 PM for the weekday PM peak hour

Peak hour traffic volumes are presented in Appendix B. Peak hour traffic volumes noted a mix in passenger car, bus, and truck use along each corridor. Route 303 experienced a higher level of heavy vehicles, especially north of Lake Road (Congers); see discussion of this issue in Chapter 6. Heavy vehicles were observed to a lesser degree during the weekday PM peak hour.

## Traffic Level of Service (LOS)

Traffic operating conditions at each study intersection were analyzed using the Synchro 11 software to compute delays, volume-to-capacity (v/c) ratios, and approach queues. These metrics determine a general Level of Service (LOS) which assigns a letter grade of A through F based on the *Highway Capacity Manual* (HCM) methodology.

Detailed analysis methodology, Synchro reports and LOS tables are provided in **Appendix E**.

While this safety and sustainability study aims to improve traffic safety and better accommodate pedestrians, bicyclists, and transit, it does not aim to improve vehicular LOS but to balance the needs of all transportation modes throughout the study area (that is, vehicles, transit, pedestrians, and cyclists). Corridor operations were evaluated by three categories of vehicular delay – free flow with limited to no congestion (less than 35 seconds of average vehicle delay), moderate flow (between 35 seconds and 55 seconds of average vehicle delay) and congested (greater than 55 seconds of average vehicle delay).

As shown in Appendix B, the majority of the lanes and approaches currently operate at free flow to moderate flow conditions during the peak hours analyzed, with the exception of the following approaches considered to be congested during at least one of the peak hours analyzed:

- The eastbound Demarest Mill Road approach during the weekday PM peak hour at the intersection of Route 304 and Demarest Mill Road.
- The eastbound Dustman Lane approach during the weekday AM and PM peak hours at the intersection of Route 304 and Dustman Lane.
- The westbound Dustman Lane approach during the weekday PM peak hour at the intersection of Route 304 and Dustman Lane.
- The eastbound Village Green approach during the weekday PM peak hour at the intersection of Route 304 and Village Green.

- The eastbound Ludvigh Road approach during the weekday Pm peak hour at the intersection of Route 304 and Ludvigh Road/Bardonia Road.
- The eastbound Germonds Road approach during the weekday AM peak hour at the intersection of Route 304 and Germonds Road.
- The southbound Route 304 approach during the weekday AM peak hour at the intersection of Route 304 and Germonds Road.
- The westbound Laurel Road approach during the weekday AM and PM peak hours at the intersection of Route 304 and Laurel Road.
- The eastbound Congers Road approach during the weekday PM peak hour at the intersection of Route 304 and Congers Road.
- The eastbound Lake Road (Valley Cottage) approach during the weekday AM and PM peak hours at the intersection of Route 303 and Lake Road (Valley Cottage).
- The westbound Lake Road (Valley Cottage) approach during the weekday AM peak hour at the intersection of Route 303 and Lake Road (Valley Cottage).
- The northbound Christian Herald Road approach during the weekday PM peak hour at the intersection of Christian Herald Road/ Ridge Road and Lake Road (Valley Cottage).

The congestion identified at these locations will be taken into account during subsequent phases of this study. All but one of the congested locations was found to be on a side-street approach, rather than on the north-south lanes of Routes 303 or 304 themselves. The one exception to this was the southbound approach at the intersection of Route 304 and Germonds Road, during the weekday morning peak period.

# Evaluation of Congestion Based on Anonymized Cell-Phone Tracking (NPMRDS)

This section presents the analysis of the traffic congestion that is occurring on Routes 303 and 304 today using an emerging type of data based on anonymized cell-phone tracking. This dataset, known as the National Performance Management Research Data Set (NPMRDS) allows identification of patterns of congestion at all times of the day, days of the week, and months of the year.

Rather than congestion being expressed as seconds of delay at approaches to key intersections, as in the previous section, the NPMRDS data consists of average speed data for segments along the two corridors.

# Description of NPMRDS Data

Historical speed and travel time data from the NPMRDS was compiled for both corridors for the 2023 calendar year to understand how congestion and travel times vary throughout the corridors, by different days of the week, and throughout the year.

The NPMRDS is a ‘big data’ dataset comprised of an aggregation of anonymized probe vehicle travel times (both cars and trucks) collected from an array of connected technology devices including in-vehicle navigation systems, commercial vehicle fleets, and mobile devices.

All NPMRDS data presented for this study was computed using tools made available by the AVAIL Lab (Albany Visualization And Informatics Laboratory) at SUNY Albany.

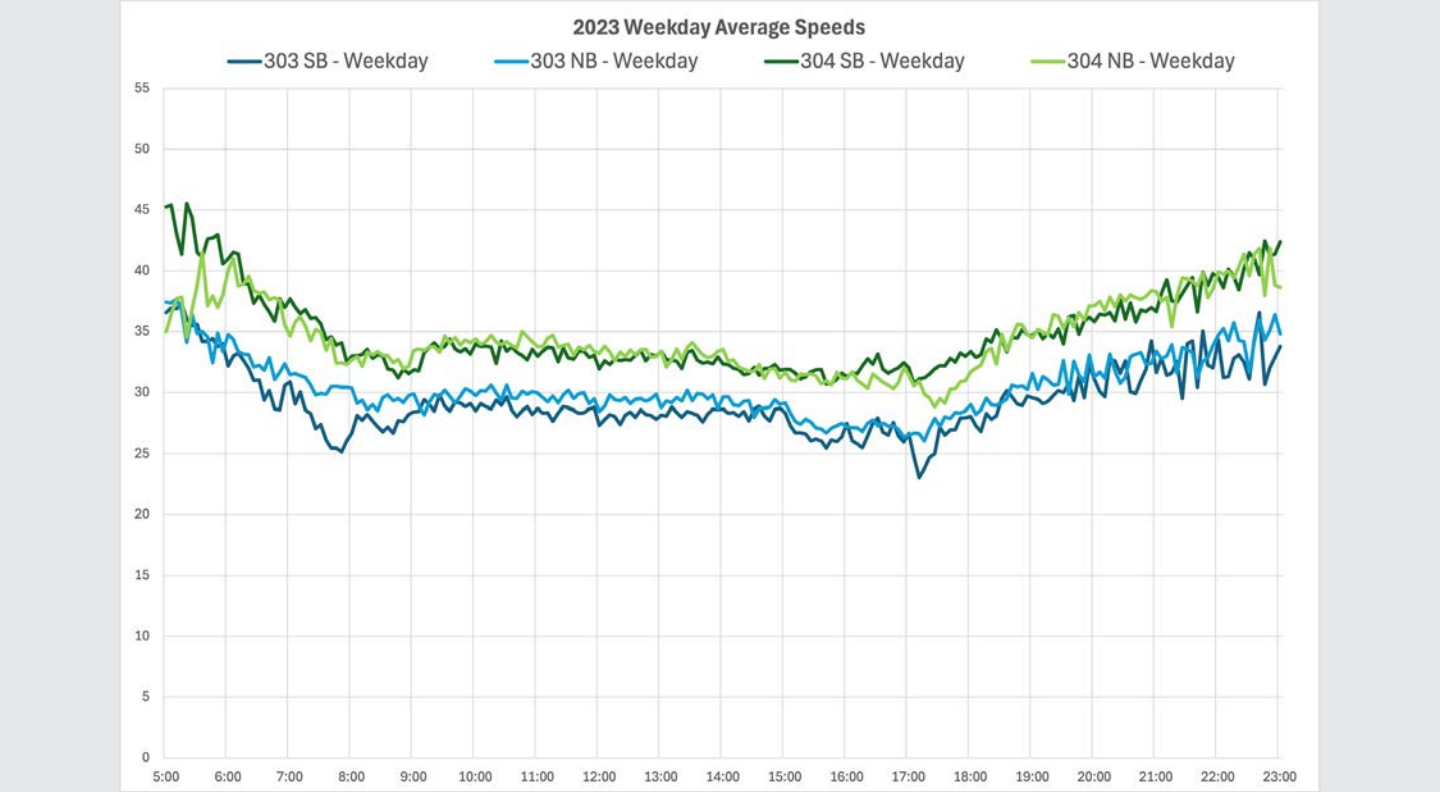



***Figure 23:*** *Weekday Travel Speeds on Routes 303 and 304, by Corridor and Direction*

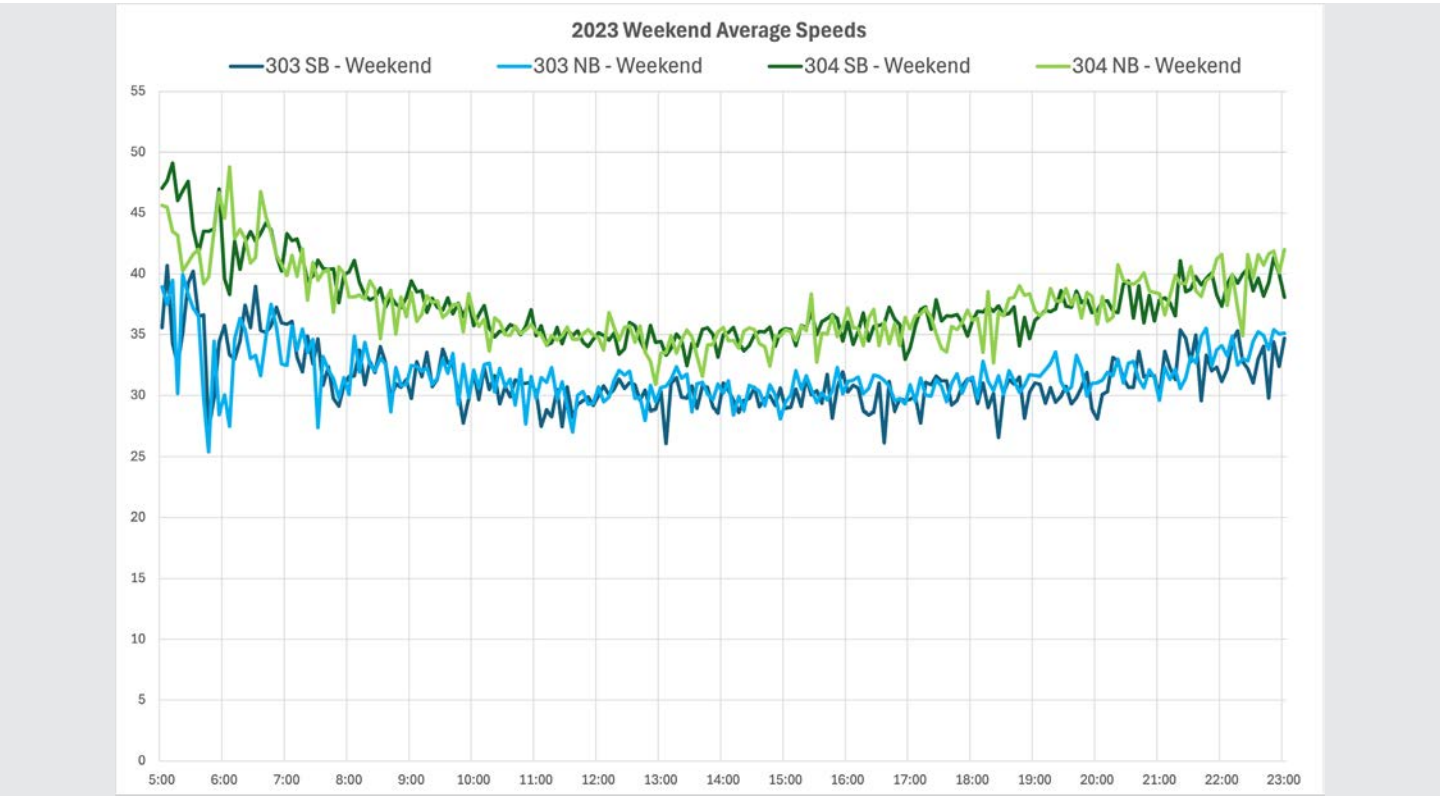



***Figure 24:*** *Weekend Travel Speeds on Routes 303 and 304, by Corridor and Direction*

## Time-of-Day and Day-of-Week Congestion Patterns

The 2023 average travel speeds across the full length of the Route 303 and 304 study corridors are presented in Figure 23 and Figure 24 for weekdays and weekends, respectively. Only hours between 5 am and 11 pm are shown, because limited data during the low-volume overnight hours mean that the data are less reliable during those relatively uncongested hours.

Figure 23 shows the weekday travel speeds along both corridors in both directions are generally consistent across the daytime hours between 7 am and 7 pm. Within these hours, Route 304 sees average corridor travel speeds 30 and 35 mph, while Route 303 typically operates a little slower and between 25 and 30 mph. Both corridors see slightly slower speeds during the morning peak period between 7 am and 9 am and the afternoon speed between 3 pm and 6 pm, especially for the northbound directions on both routes. However, these peak period speeds are typically within 3 mph of the typical midday hours' travel speeds. As expected, significantly higher travel speeds are experienced in the early morning and late evening hours when traffic demands are lower.

Similarly, Figure 24 shows the typical weekend travel speeds along both corridors and directions. The slowest speeds in both directions typically are seen in the midday to afternoon hours between 11 am and 5 pm, with both directions of Route 304 operating at speeds around 33 to 38 mph and Route 303 at a slower 27 to 32 mph. The figure shows the weekend speeds are slightly higher than the weekday speeds, but only by a few miles per hour.

While these figures show the average travel speeds across the full length of the study corridors, the NPMRDS data also allows a more granular look at how speeds vary within the corridor.

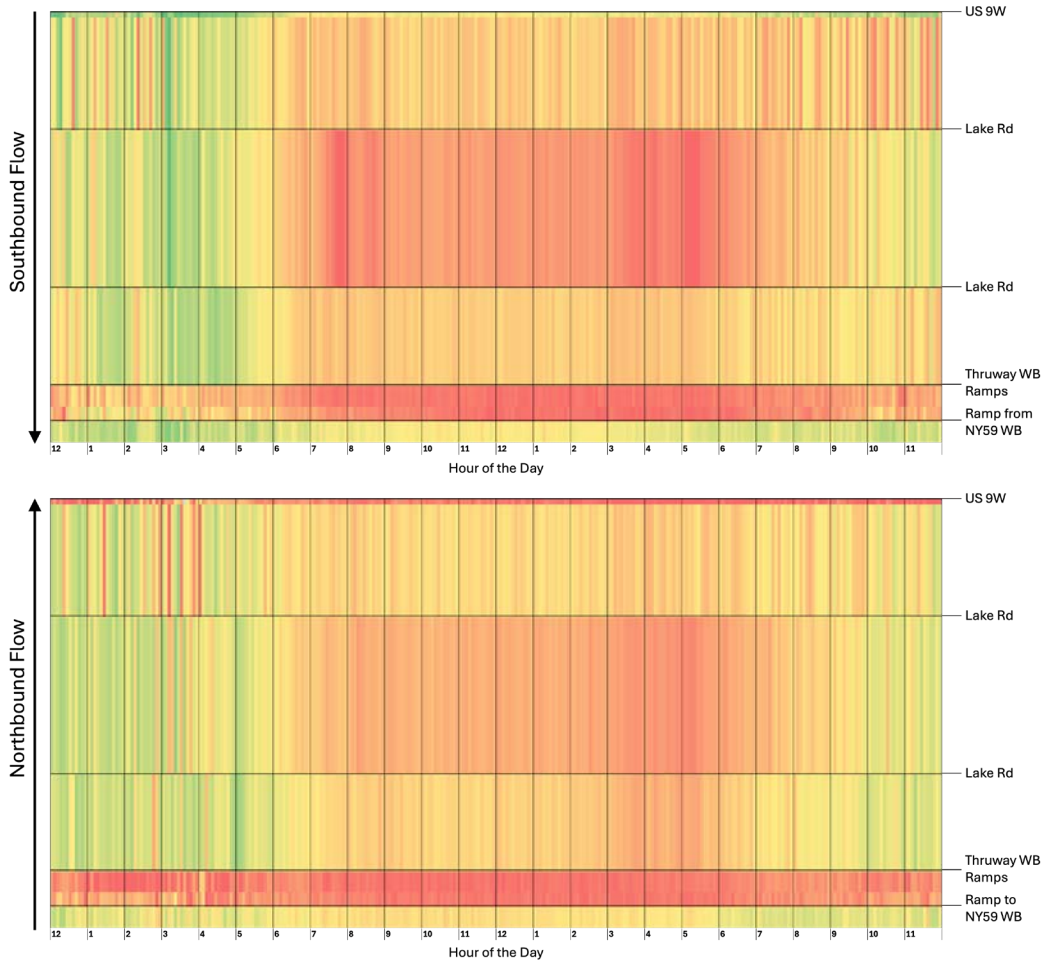



***Figure 25:*** *Route 303 Typical Weekday Travel Speeds by Hour-of-Day, Southbound (Top) and Northbound (Bottom)*

Figure 25 and Figure 26 show the average travel speeds across the 24 hours of a typical weekday for the entire 2023 calendar year for both corridors with a time-space diagram of speeds for each direction of travel. For each plot, the Y-axis represents the distance along the corridor and the X-axis represents the time of day.

The colors of the cells in the time-space diagrams show the average travel speeds for that roadway segment for each in five-minute increments of the 24-hour typical weekday. The darkest red represents the slowest speeds of 20 mph or below, the dark green represents 50 mph or above, and the intermediate orange, yellow, and lighter green colors represent the speeds between. Intersecting roadways defining the reported roadway segments are also shown.

The reported average speeds could be influenced by any combination of heavier traffic flows and congested conditions along the roadway or at traffic signals along the defined roadway segment. In some cases, changing posted speed limits along the corridor can also influence the reported average travel speeds. Short-term construction or roadwork, crashes or other incidents, or poor weather conditions could also impact the reported speeds, however, reporting the average speeds over all weekdays in the 2023 calendar year should minimize the impacts of those conditions.

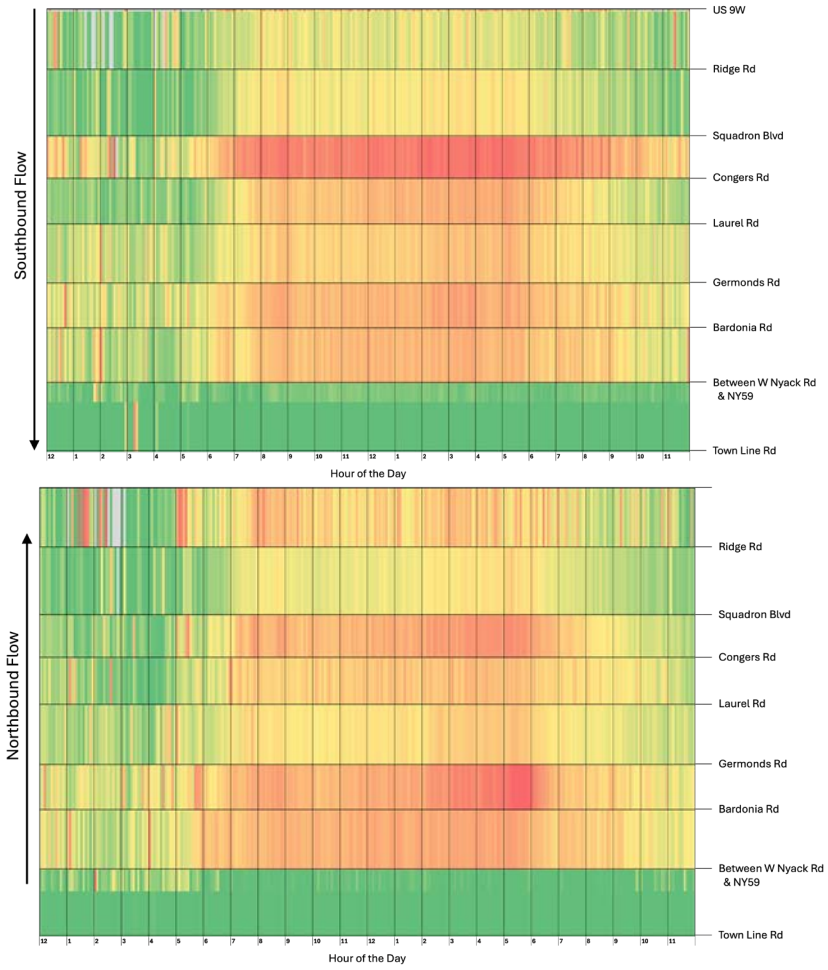


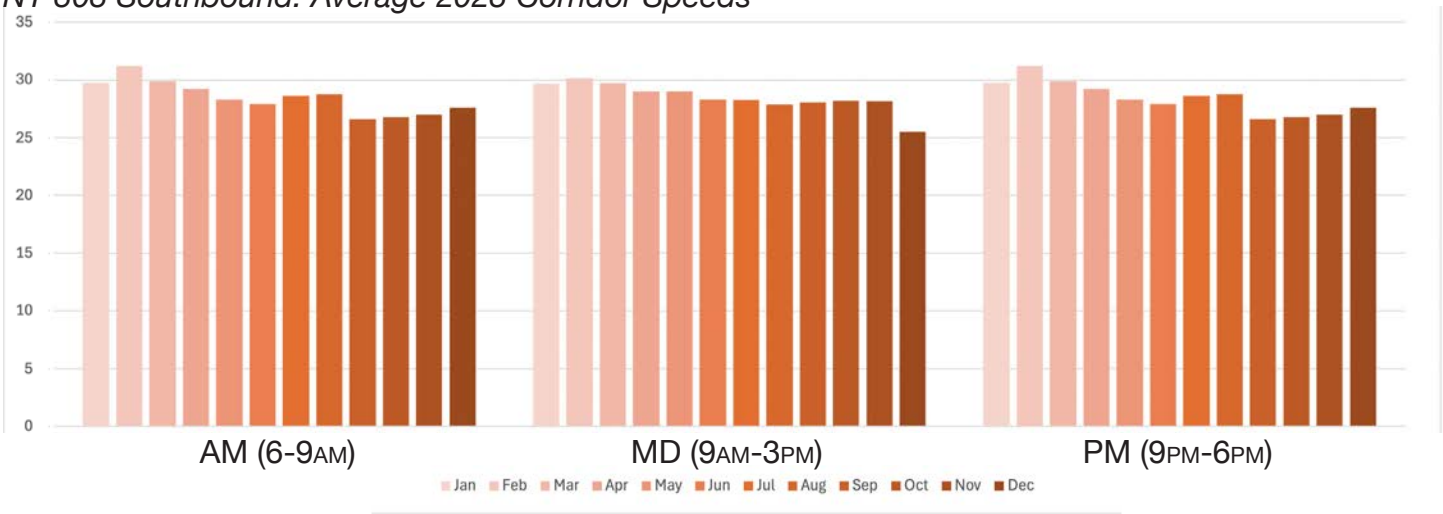

***Figure 26:** Route 304 Typical Weekday Travel Speeds by Hour-of-Day, Southbound (top) and Northbound (bottom)*

Figure 25 shows the average weekday travel speeds along Route 303, between the northern terminus with US 9W and the southern limits of the study corridor to the south of the Route 59 ramps. Both directions of travel show typical weekday speeds in the corridor are the slowest (most red) between Lake Rd (Congers) and Lake Rd (Valley Cottage) and between the I-287 and Route 59 access ramps. While the slower speeds in these sections of the corridors occur consistently through most of the daytime hours, speeds are at their lowest in the morning peak hour between 7 am and 8 am, and in the afternoon peak hours between 3 pm and 6 pm. Northbound average speeds in the afternoon peak hours are also slower between the I-287 ramps and Lake Rd (Valley Cottage).

Figure 26 shows the average weekday travel speeds along Route 304 from the northern terminus at US 9W to the southern limits of the study corridor at Town Line Road. In the southbound direction, slowed speeds can be seen along most of the 304 corridor between the hours of 7am to 7 pm.

The slowest speeds can be seen traveling from Squadron Blvd to Congers Rd., where average speeds are routinely below 25 mph. More moderate (25 to 35 mph) are seen along traveling further to the south from Squadron Blvd. to south of West Nyack Rd. Limited variations in speeds are seen in the morning and afternoon peak period hours, and speeds are somewhat consistently slow throughout the entire daytime hours.

*NY 303 Southbound: Average 2023 Corridor Speeds*




*NY 303 Northbound: Average 2023 Corridor Speeds*

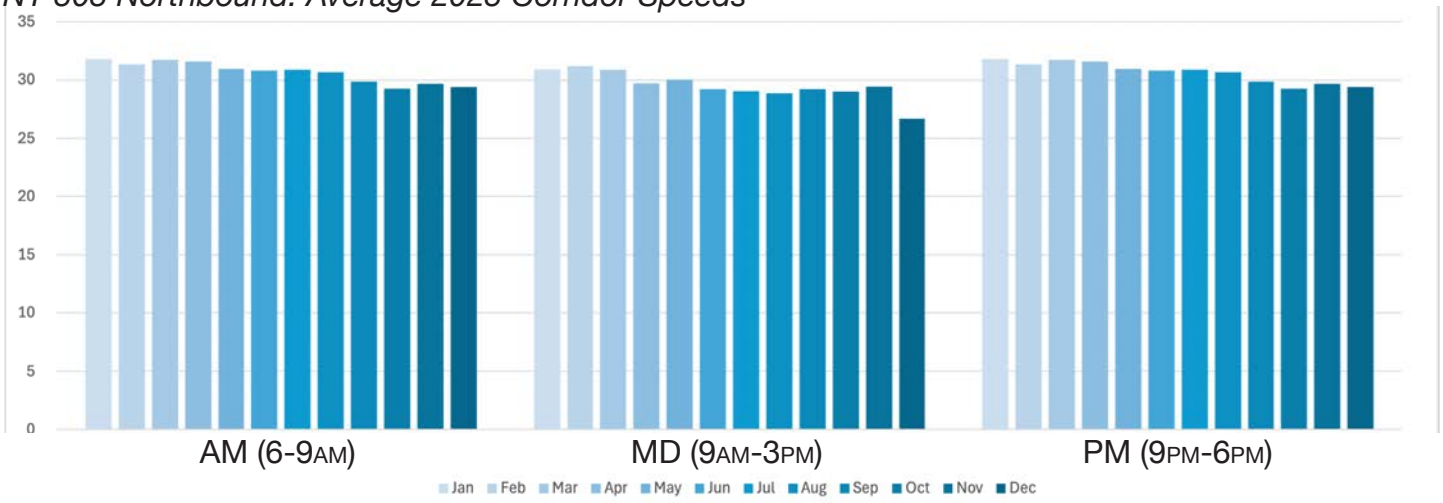
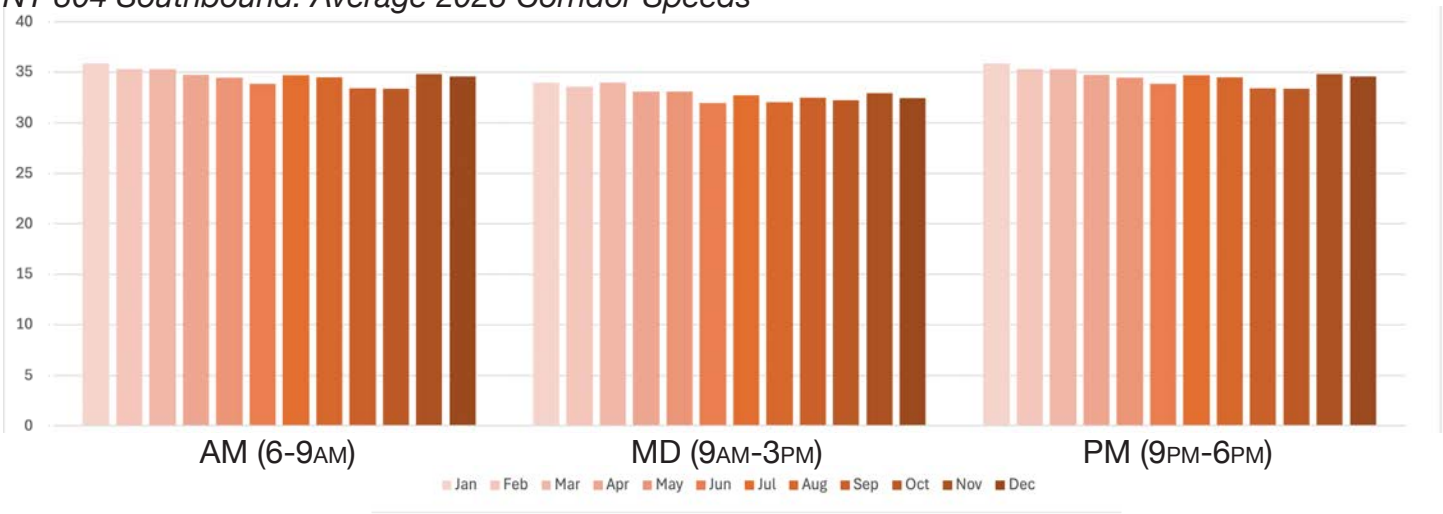



***Figure 27:*** *Route 303 Average 2023 Weekday Speed by Month, Southbound (Top) and Northbound (Bottom)*

Traveling northbound on Route 304 also sees fairly consistently slow speeds throughout the corridor between the daytime hours of 7 am and 7 pm. The slowest speeds in the corridor are seen traveling north from West Nyack Rd. to Germonds Rd. and from Congress Rd. to Squadron Blvd., where average speeds typically range between 25 and 30 mph during the daytime hours. In the afternoon peak hours between 3 pm and 6 pm, however, average northbound travel speeds from Bardonia Rd. to Germonds Rd. and from Congers Rd. to Squadron Blvd are consistently below 25 mph. Speeds in both directions of Route 304 to the south of West Nyack Rd. routinely see speeds above 50 miles an hour throughout the typical weekday conditions.

Since the NPMRDS data is recorded daily, we can partition the data to draw out seasonal travel effects on the average travel speeds in the Route 303 and 304 corridors. Figure 27 and Figure 28 show the average 2023 weekday northbound and southbound corridor travel speeds segmented by time of day (AM

*NY 304 Southbound: Average 2023 Corridor Speeds*




*NY 304 Northbound: Average 2023 Corridor Speeds*

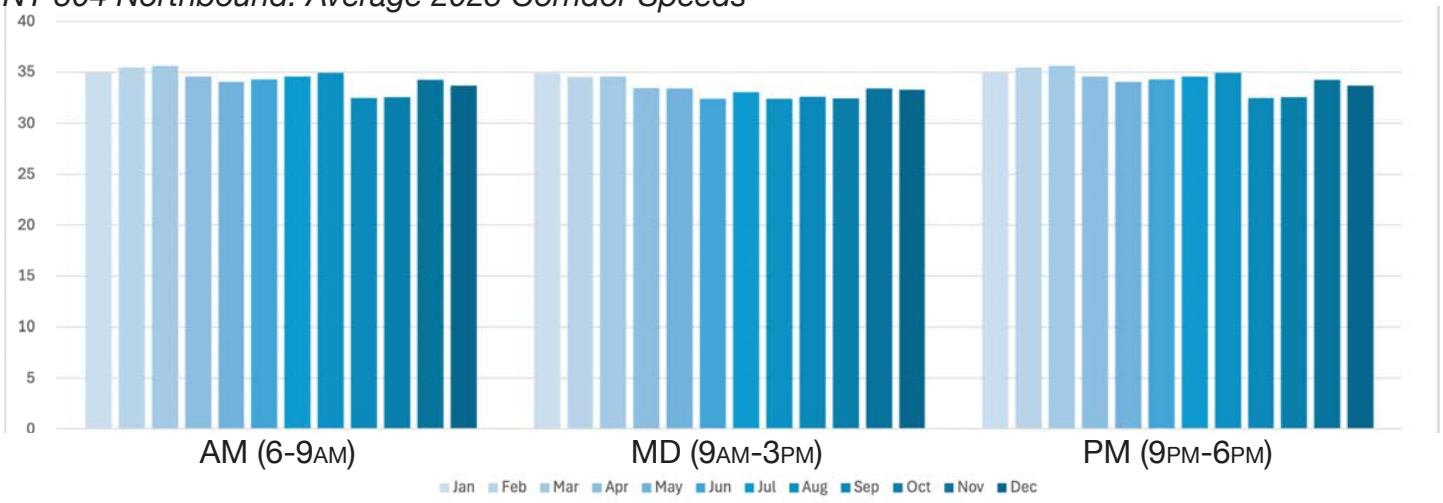



***Figure 28:** Route 304 Average 2023 Weekday Speed by Month, Southbound (top) and Northbound (bottom)*

peak, midday, and PM peak hours) for each month for Routes 303 and 304, respectively.

While the variations amongst the average weekday speeds by month in both the northbound and southbound directions of Route 303 are typically less than 3 mph, a general trend of slightly higher speeds in the winter months and slower speeds in the fall months can be seen in all times of the day. The most notable difference in the monthly speeds for Route 303 can be seen in the lower December midday speeds, where speeds are notably lower than in any other month. This can be inferred as being caused by additional traffic and congestion on Route 303 in the vicinity of the Palisades Center.

The seasonal impacts on average travel speeds in the Route 304 corridor are somewhat similar with slightly faster speeds in the winter months and slower speeds in the fall months. Unlike the Route 303 corridor, however, the 2023 December weekday travel speeds are not notably different in the Route 304 corridor.

# 6 Land Use/Property Access

In addition to providing mobility to travelers, the Routes 303 and 304 corridors also provide the essential function of enabling access to adjacent properties.

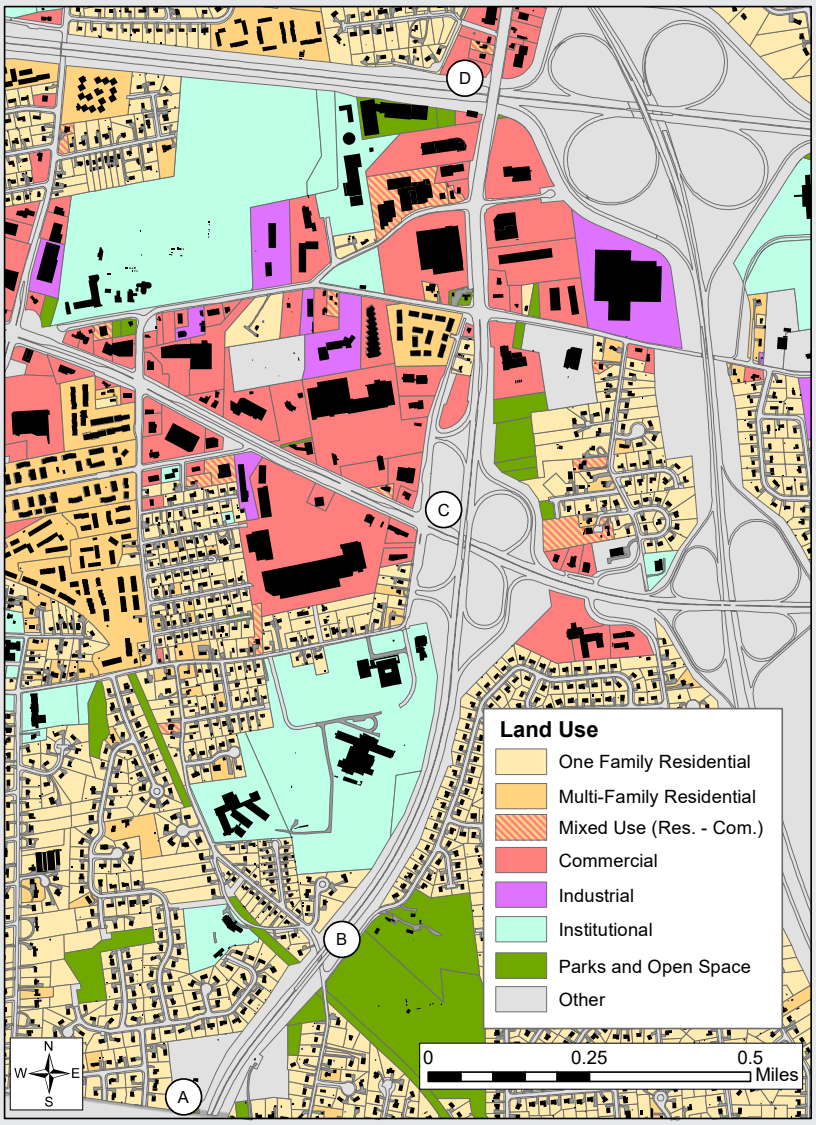
This Chapter summarizes existing land use conditions in the properties that front the two corridors. Following a review of land use conditions in each of the two corridors, this Chapter includes a discussion of the unique truck-traffic issues experienced by the Route 303 corridor due to the presence of two major quarries to the south and north of the study area.

In upcoming work tasks, the study team will investigate how the Routes 303 and 304 corridors would operate under possible future changes in land use.

## Land Use in the Route 304 Corridor

Figures 29 through 33 present land uses along the Route 304 corridor. Note that the land use data used throughout this Chapter is based on year 2021 conditions, as published by the Rockland County GIS Division in 2023.From the Orangetown town line to West Nyack Road, no access to adjacent properties is provided on this limited-access section of roadway.

From the signalized intersection at West Nyack Road, past the bridges over the NY Thruway and Palisades Interstate Parkway, onwards to Bardonia Road, properties along Route 304 include a variety of commercial and retail uses, notably automotive dealers (see Figure 29 and Figure 30). These uses front a 5-lane section with a center left-turn lane to facilitate access to these properties, and the commercial properties south of the NY Thruway are generally larger




***Key to Labeled Points:***

A: Town line with Orangetown

B: Blauvelt Road

C: Route 59

D: NY Thruway

***Figure 29:*** *Land use on Route 304 Between Town Line with Orangetown and NY Thruway*

parcels than the commercial uses north of the Thruway. In addition to the commercial uses in this stretch of Route 304, there is a multi-family development on the west side of the corridor which has access only onto Route 304.

North of Bardonia Road, Route 304 narrows and there is a diversity of land uses, including Bardonia Elementary School, single-family residential, multi-family residential, and commercial uses (Figure 30). This section of Route 304 does not have a center left-turn lane, so traffic turning left into adjacent properties must use a shared left/through lane. Approaching Germonds Road, there are several multi-family developments, along with the Albert Magnus High School on the east side of the corridor.

***Key to Labeled Points:***

A: NY Thruway

B: Palisades Pkwy

C: Bardonia Rd

D: Germonds Rd

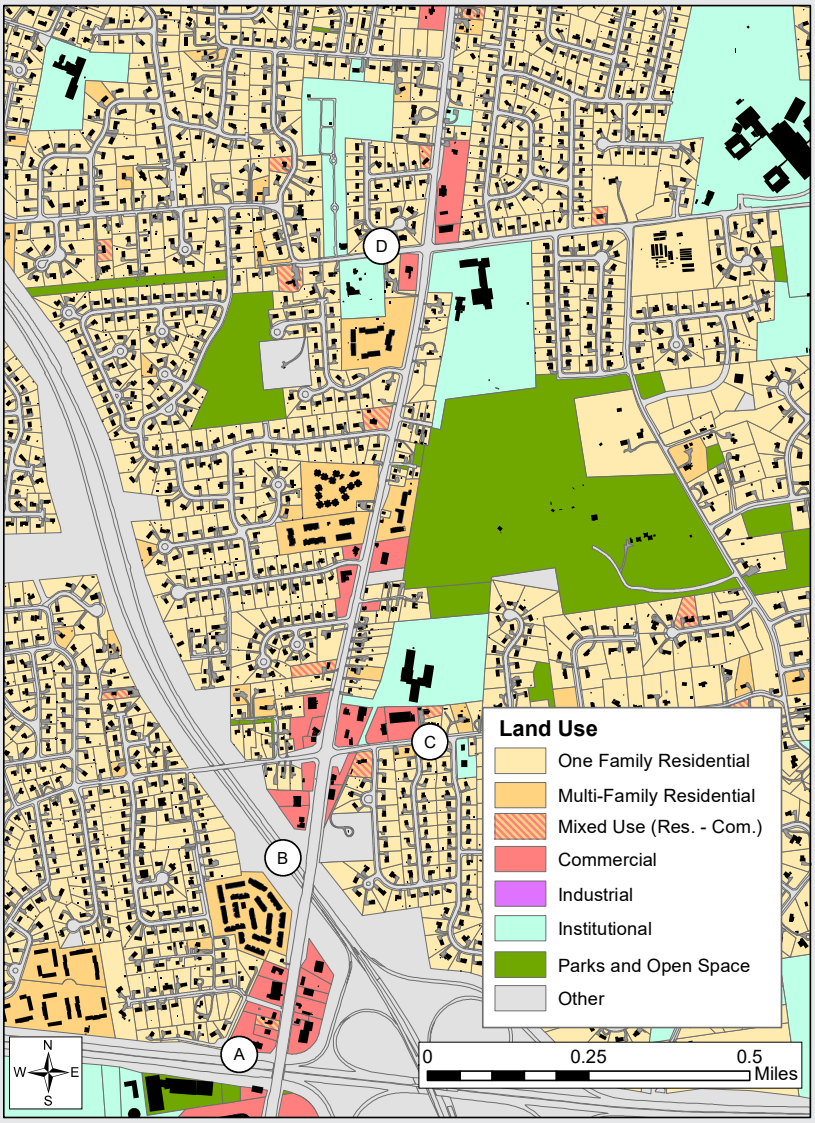
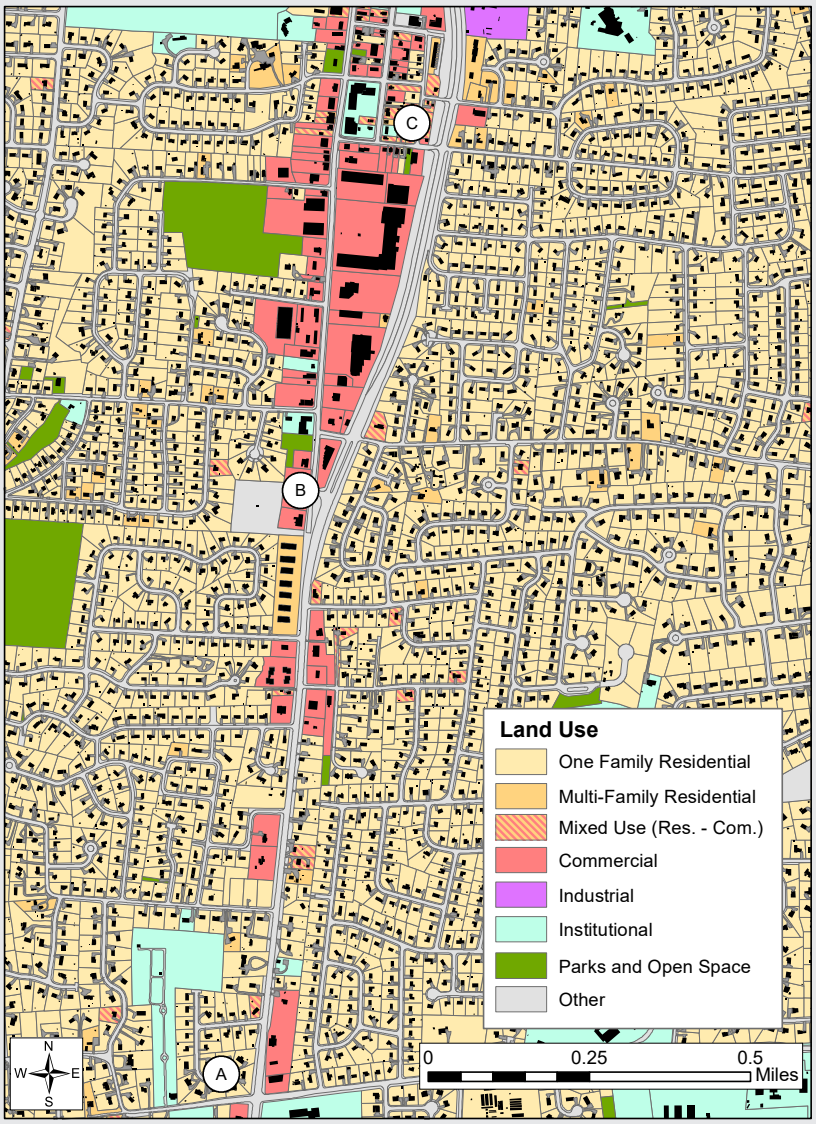



***Figure 30:*** *Land use on Route 304 between NY Thruway and Germonds Rd*

After Germonds Road, land uses are predominantly single-family residential and small-scale commercial, with left turns permitted from Route 304 but no dedicated left-turn lane provided (Figure 31). Many properties are small in size, leading to a high density of access driveways in this section.




***Key to Labeled Points:***

A: Germonds Rd

B: Split with South Main St

C: 3rd St

***Figure 31:*** *Land use on Route 304 between Germonds Rd and 3rd St*

Just south of the New City hamlet Route 304 splits from South Main Street, which runs to the west of Route 304 directly into the hamlet. North of this location Route 304 has signalized intersections but does not provide access to adjacent properties (Figure 31). To the east of Route 304 is a predominantly single-family residential neighborhood, and to the west are several major commercial properties which are afforded access onto the local roadway network (not Route 304 itself).

***Key to Labeled Points:***

A: 3rd St

B: Congers Rd

C: Calvary Dr

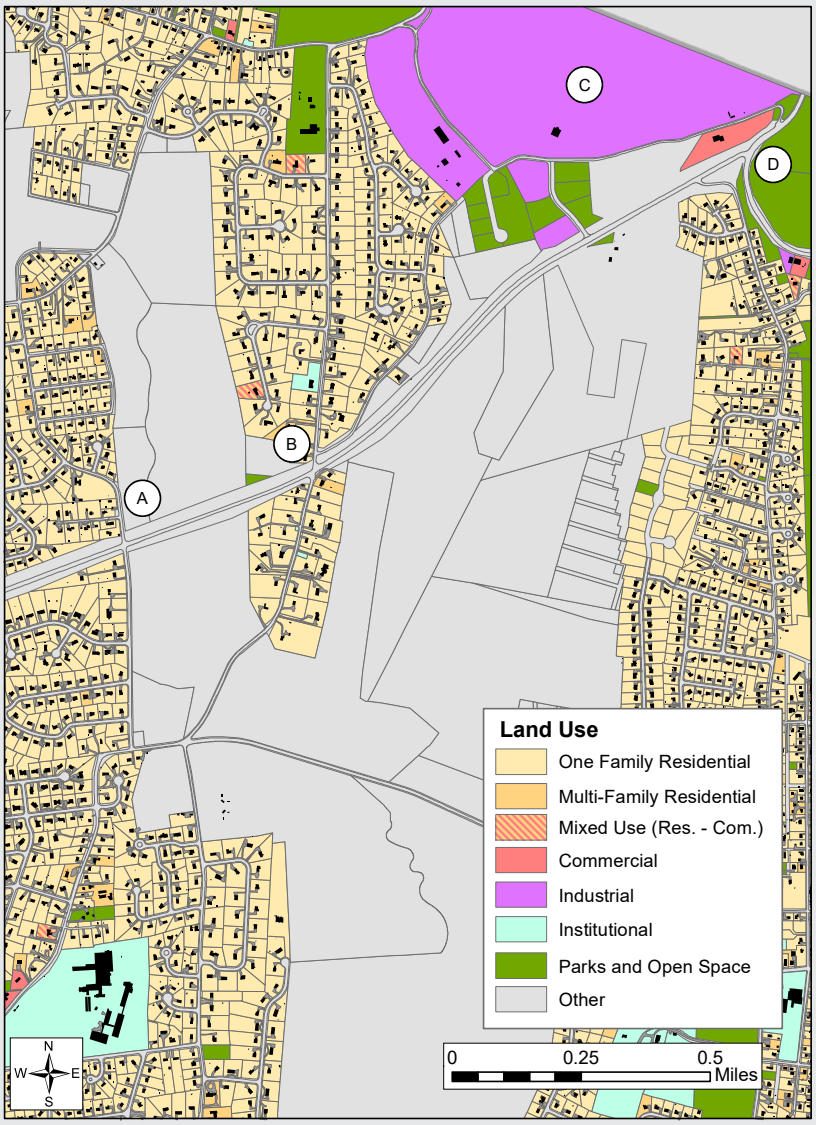
D: Squadron Blvd

E: Phillips Hill Rd

F: Goebel Rd


***Figure 32:*** *Land use on Route 304 between 3rd St and Goebel Rd*

A similar pattern is found to the north of 3rd Street up to Cavalry Dr, however on the east side of the corridor are multi-family, commercial, and industrial properties (Figure 32). On the west side of Route 304 is the Route 304 Park-and-Ride lot, which unlike other properties has access directly onto Route 304.




***Key to Labeled Points:***

A: Goebel Rd

B: Ridge Rd

C: Quarry

D: Route 9W

***Figure 33:*** *Land use on Route 304 between Goebel Rd and Route 9W*

Finally, between Squadron Drive and the northern limit of Route 303 at Route 9W, intersections are widely spaced and adjacent land uses (which do not access Route 304) are predominantly single-family residential and protected lands associated with the DeForest Lake reservoir (Figure 33). The only property that is accessed from Route 304 is the Davies Farm, approximately ¼-mile south of Route 304's terminus at Route 9W.

***Key to Labeled Points:***

A: Transfer Station

B: Route 59 interchange

C: Palisades Center Mall

D: NY Thruway

E: Quarry

F: Storms Rd

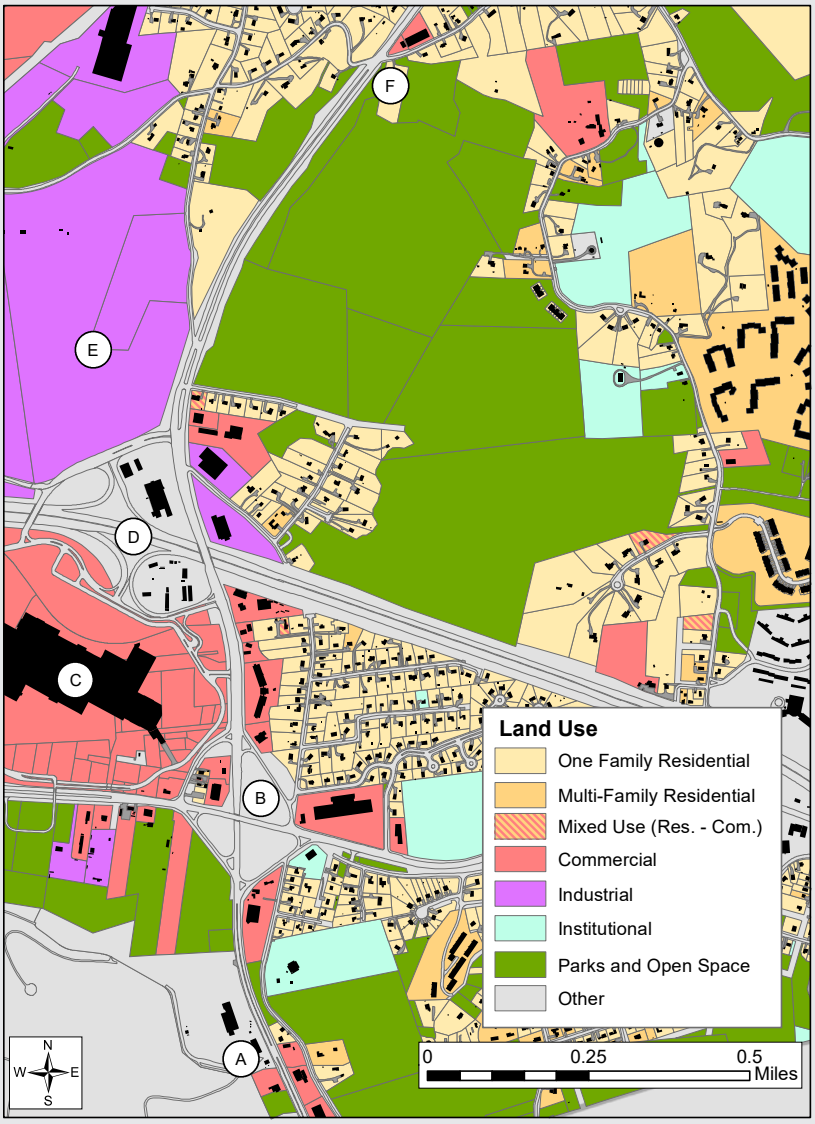
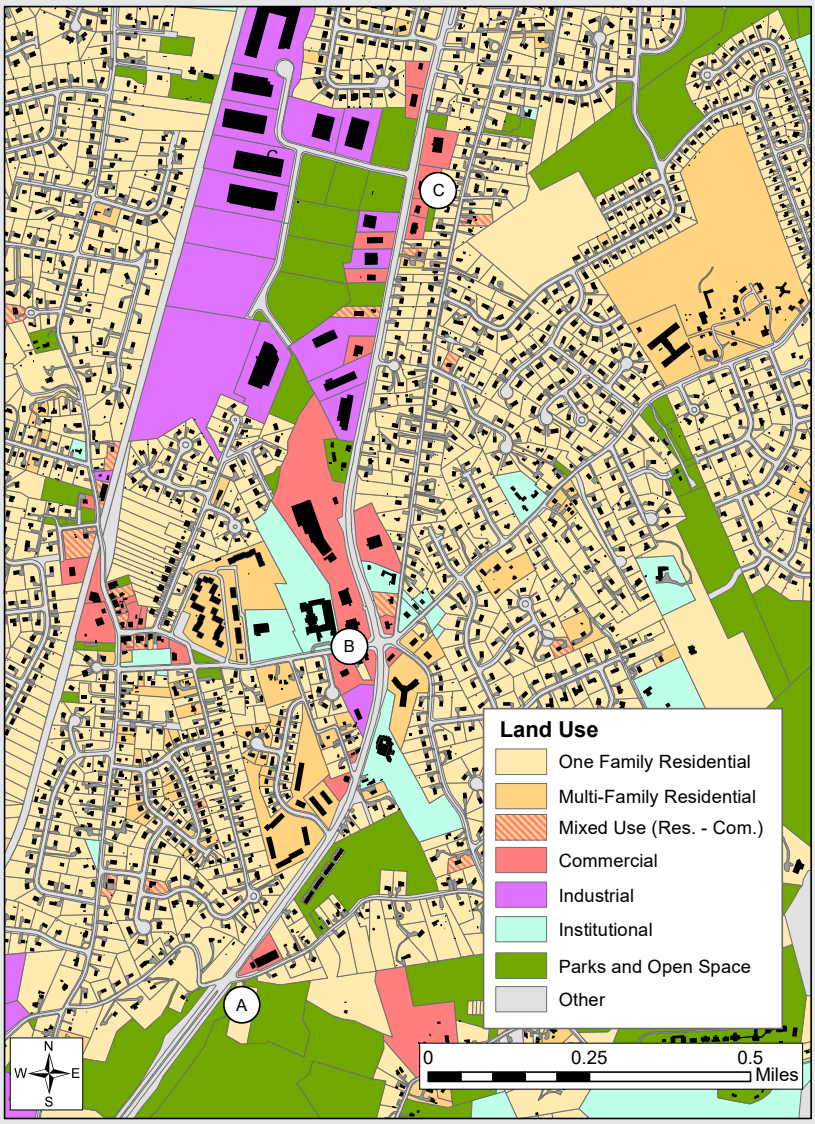



***Figure 34:*** *Land use on Route 303 between Transfer Station and Storms Rd*

# Land Use in the Route 303 Corridor

Figure 34 through Figure 37 depict land uses along Route 303, from south to north.

Route 303 south of the NY Thruway consists of commercial land uses, notably the Palisades Center Mall on the west side of the corridor, which is accessed through three of the traffic signals on Route 303 (Figure 34). Most commercial land uses in this stretch include dedicated off-street parking lots with driveways onto Route 303. There are two park-and-ride lots in this portion of Route 303, one located within the Route 59/303 interchange ramps and the second located to the west of the Palisades Center Mall.




***Key to Labeled Points:***

A: Storm Rd

B: Lake Rd (Valley Cottage)

C: Executive Blvd

***Figure 35:*** *Land use on Route 303 between Storms Rd and Executive Blvd*

North of North Palisades Center Drive, there is limited to no property access south of Storms Road (Figure 35). Between Storms Road and Lake Road in Valley Cottage adjacent properties are a mix of residential (single-family and multi-family) and commercial uses. This stretch also includes the Valley Cottage Library, accessed from Route 303.

The Valley Cottage Elementary School is located to the west of Route 303, approximately 500’ to the west of the complex intersection of Route 303 with Lake Road (Valley Cottage). Further to the west is a shared parking facility for municipal and commuter Park-and-Ride parking.

***Key to Labeled Points:***

A: Executive Blvd

B: Gilchrest Rd

C: Lake Rd (Congers)

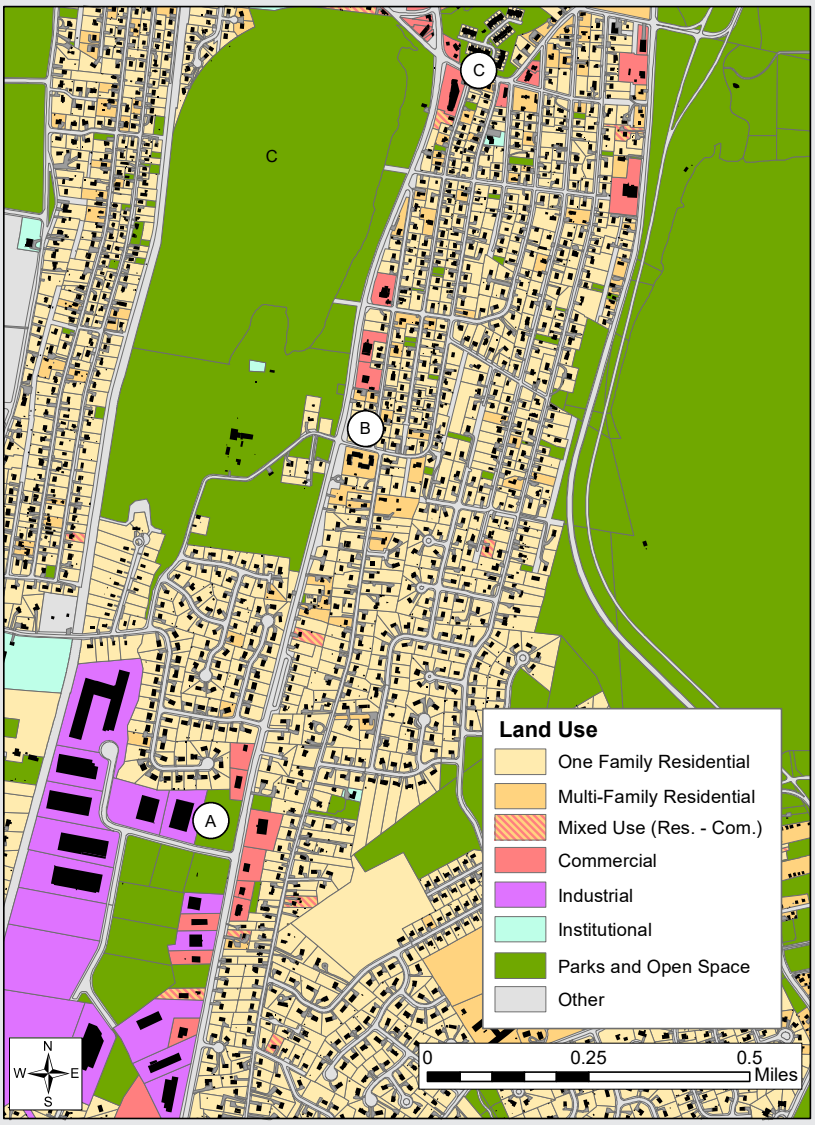



***Figure 36:*** *Land use on Route 303 between Executive Blvd and Lake Road (Congers)*

To the north of Lake Road (Valley Cottage) are larger commercial and industrial properties (including the Clarkstown Executive Park), along with single-family homes on the east side of the corridor (Figure 35). After Executive Drive, adjacent uses are mainly single-family residential (with some small-scale multi-family and commercial properties), and Congers Lake Memorial Park on the west side of the corridor (Figure 36).


***Key to Labeled Points:***

A: Lake Rd (Congers)

B: Hilltop Rd

C: Brenner Dr

D: Route 9W

***Figure 37:*** *Land use on Route 303 between Lake Road (Congers) and Route 9W*

Commercial properties are located at the intersection of Route 303 with Lake Road (Congers), and north of Lake Road there is a mix of land use types, becoming all residential between Fisher Avenue and Hilltop Road (Figure 37).

Between Hilltop Road and the northern terminus of Route 303 at Route 9W, properties are larger and include a number of light-industrial and warehouse uses which generate significant truck traffic as well as vacant property. At the signalized intersection with Route 9W, access to a multifamily development is provided by the western leg of this intersection.

# Truck-Traffic Generating Land Uses on Route 303

Route 303 is the only north/south highway in Rockland County that connects northern New Jersey to Rockland and onto Orange County. It is also unique in serving the aggregate industry, specifically two major rock quarries (one located in Clarkstown near the NY Thruway [see Figure 34], and one in Haverstraw immediately to the north of Clarkstown in Haverstraw [see Figure 33]).

In order to move the volumes of aggregate from these quarries to New York City and Long Island, trucks are permitted to carry more weight than the current national gross vehicle weight (GVW) for tractor trailers (80,000 lbs) and tandem trucks. This is done through permitting by NYSDOT, where tractor trailers can be allowed to weigh up to 120,000 lbs and tandem dump trucks with specialized axels up to 80,000 lbs.

NYSDOT has two types of Divisible Load Overweight Permits divided into two distinct categories: Statewide permits and Downstate permits.

Statewide permits are valid on any road under the jurisdiction of NYSDOT throughout the entire state.

Downstate permits are only valid on NYSDOT roads in Westchester, Rockland, Putnam, Orange, Dutchess, Nassau and Suffolk counties. To obtain a Downstate permit, applicants must have Downstate grandfather rights, which were put in place following WWII.

These trucks in the corridor weighing 120,000 pounds cause major degradation of Route 303's roadway surface, roadway bed, shoulders and bridges. This occurs in both directions as the trucks coming from points south and east bring loads of sand up to the Rockland facilities which have no local sand resources for producing concrete and asphalt. These heavily loaded trucks also accelerate and decelerate slowly, which can cause impatience in drivers on the two-lane sections of Route 303 leading to illegal passing of these slow-moving trucks.

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Rockland County

TOWN OF CLARKSTOWN NEW YORK