

Town of Belmont Townwide Traffic Study

Traffic Advisory Committee Meeting

November 08, 2018



TOWN OF BELMONT



BSC GROUP

Purpose of Study

- Analyze current travel patterns,
- Determine the extent of cut-through traffic,
- Identify strategies to eliminate, reduce, or mitigate cut-through traffic volumes.



Study Objectives

- Improve safety for all users
- Eliminate, reduce, or mitigate cut-through traffic
- Reduce congestion/improve or maintain access

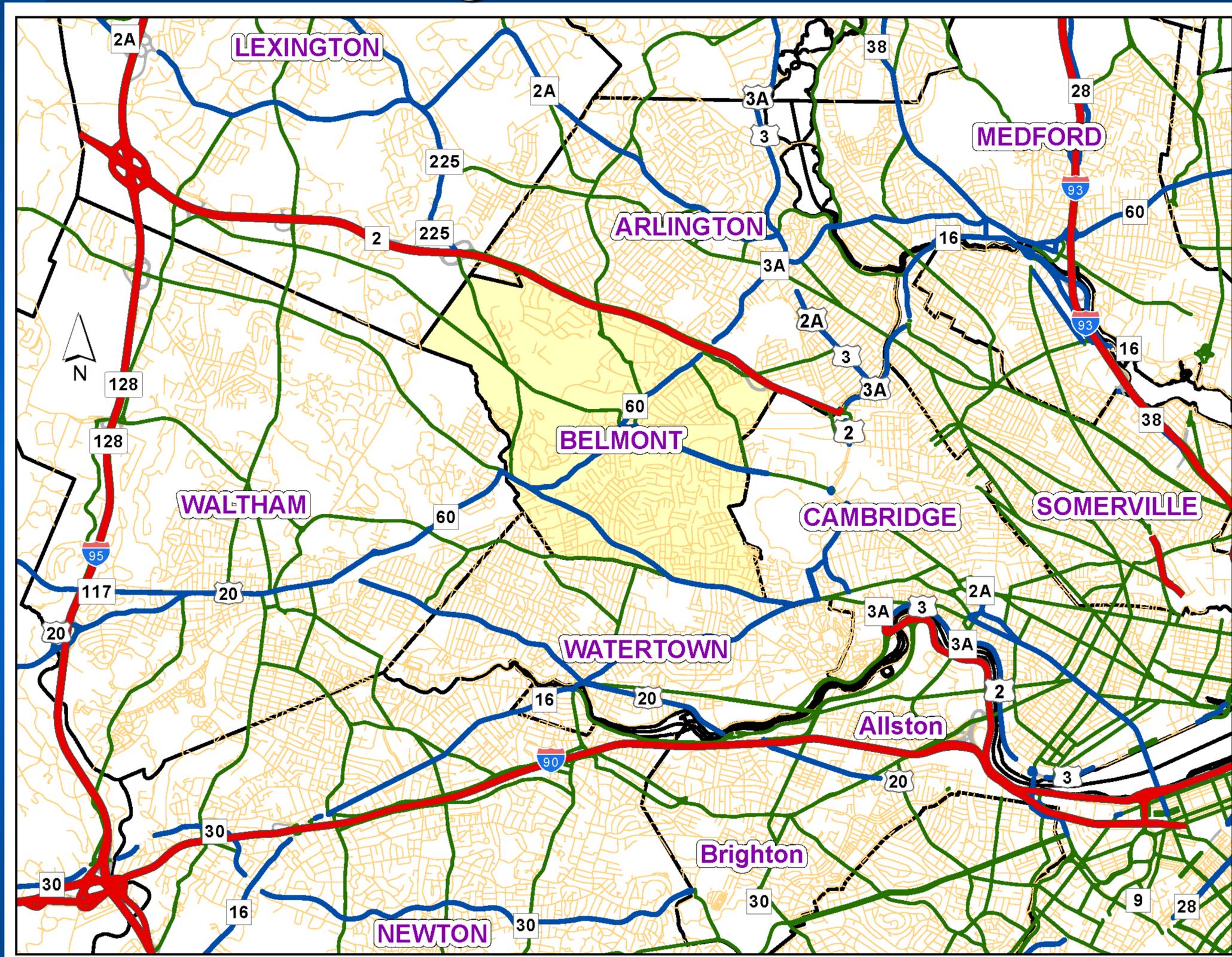


Key Findings

- Regional congestion contributes to cut-through traffic in Belmont
- High percentage of cut-through traffic is from immediate adjacent towns
- Peak traffic flow is generally directional based on time of day
- Neighborhoods near congested main roads experience high cut-through traffic volumes



Regional Context

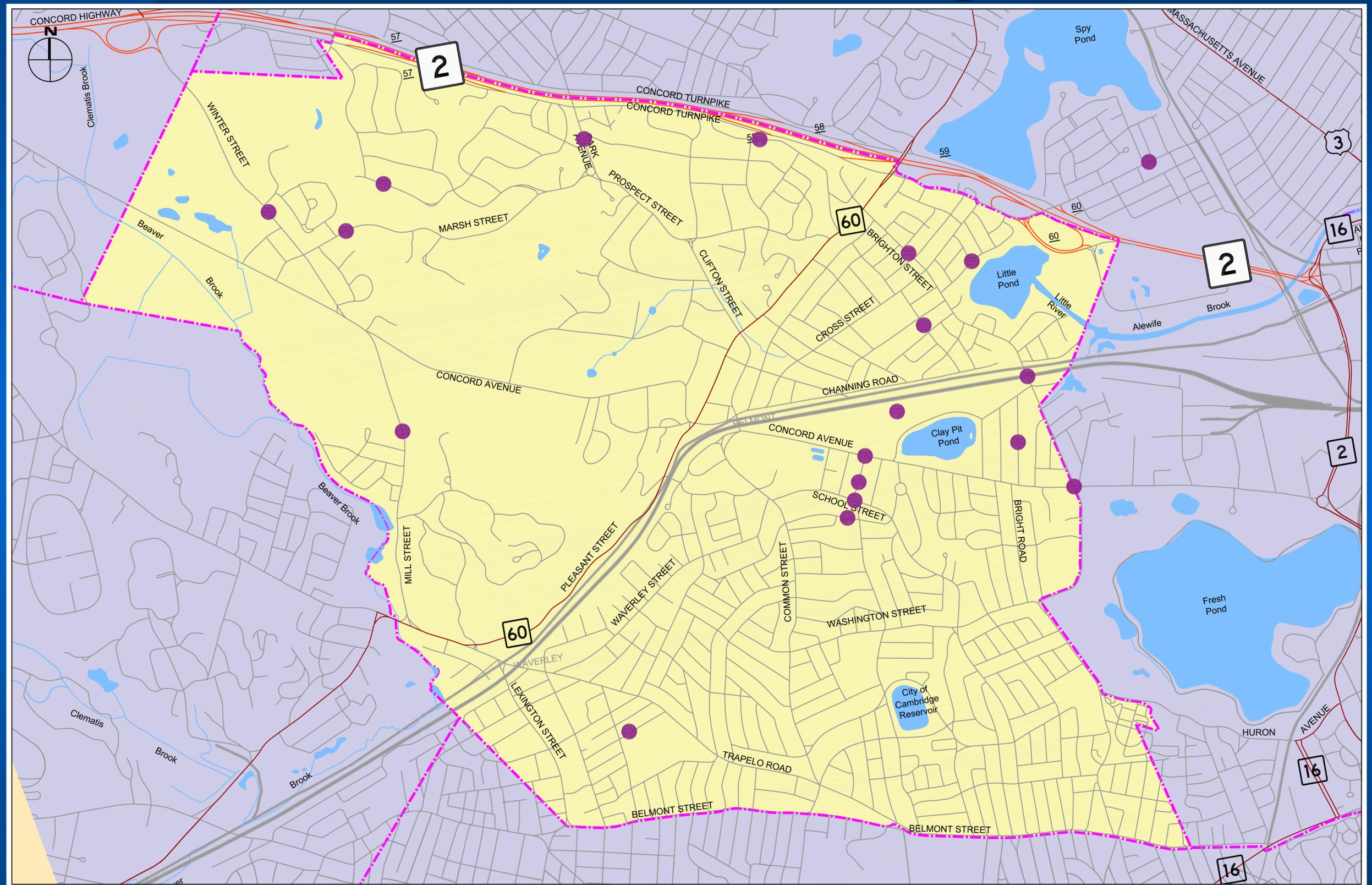


Summary of TAC and Community Concerns

- Heavy congestion on Belmont streets
- Cut-through traffic worsened by navigational apps
- Speeding through neighborhood streets
- Pedestrian and bicycle safety
- School traffic contributing to AM congestion
- Lack of enforcement of existing traffic regulations



Resident Concerns Map



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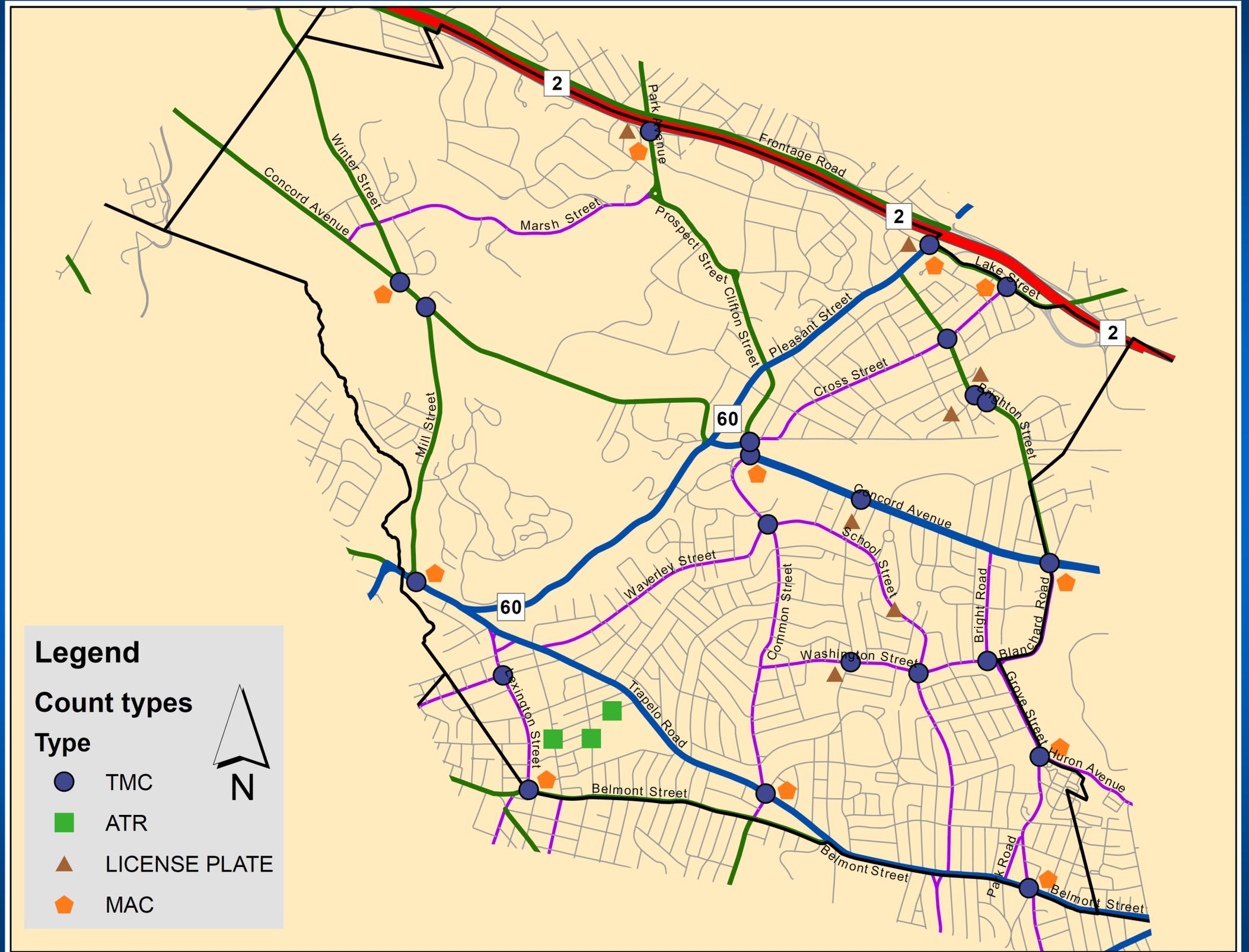
Data Collection

- 12-Hour Turning Movement counts at 22 locations:
 - **Pedestrians; Bicycles; Vehicles**
- Recording of media access control (MAC) address of Wi-Fi enabled devices at 11 locations to determine:
 - **Travel times; Cut-through traffic**
- 48-hour automated traffic recording (ATR) counts at 3 locations
- License Plate surveys by Belmont Police at 7 locations

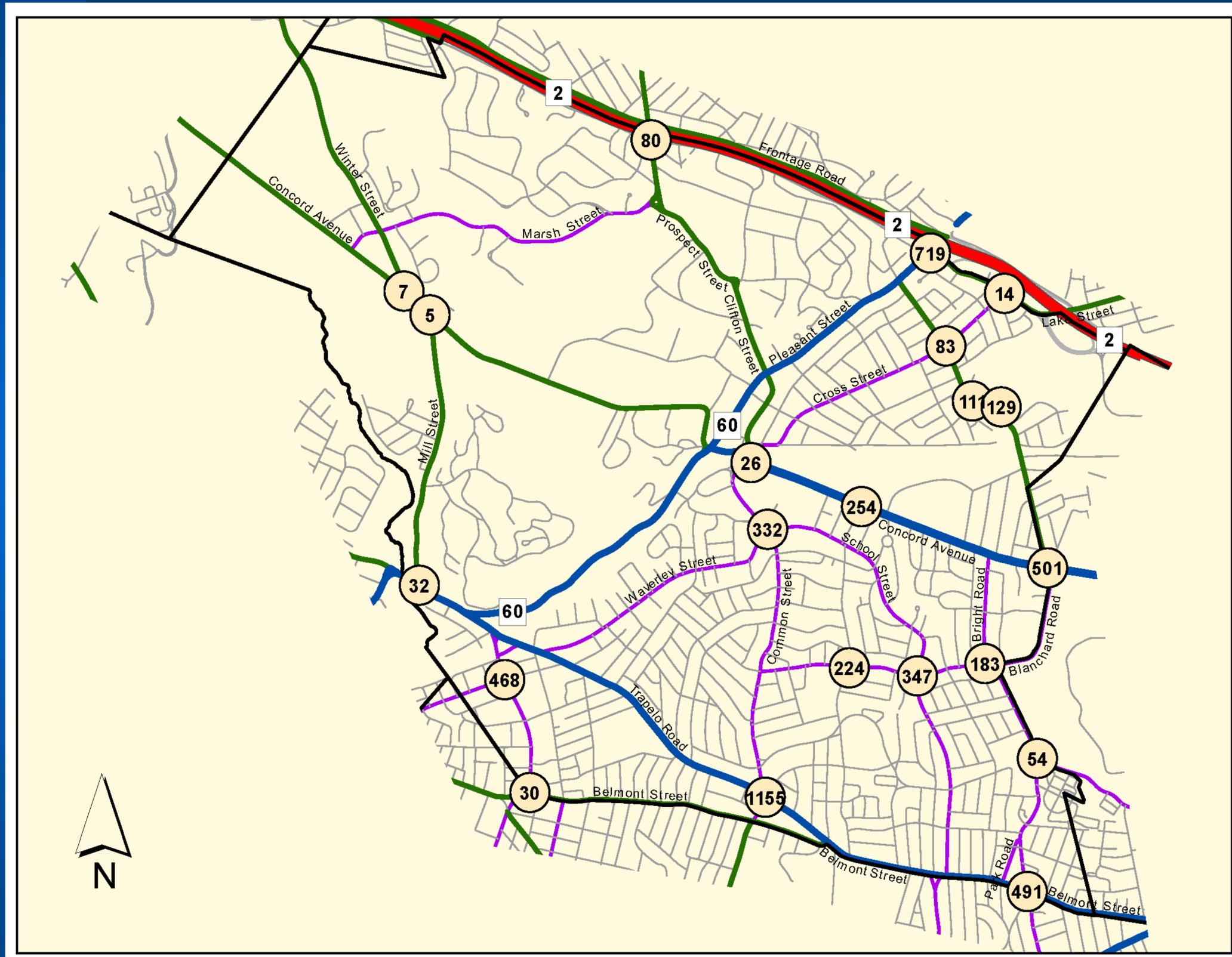


Study Area

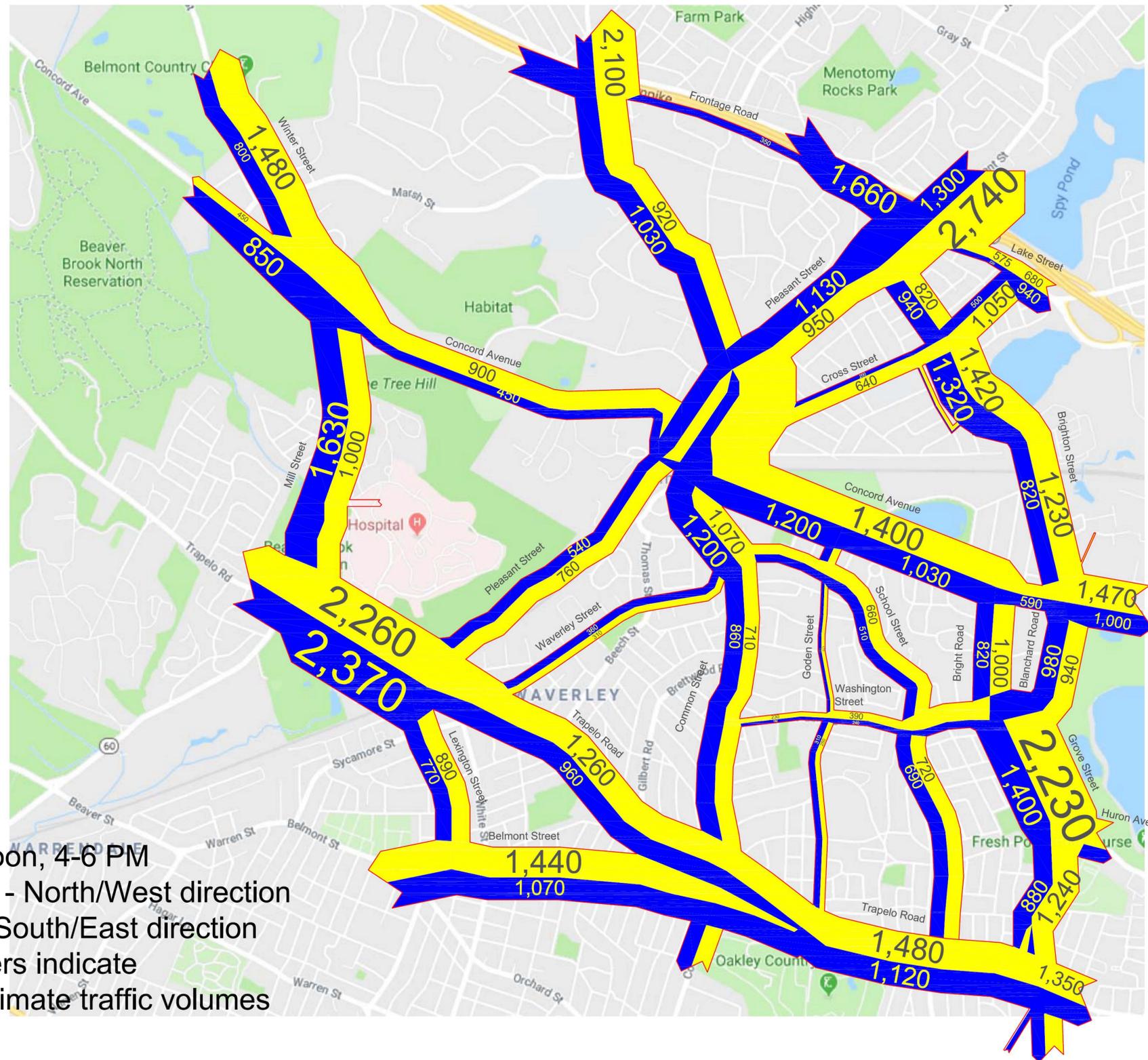
LOCATION	TMC	ATR	LICENSE	MAC
Winter/Concord	X			X
Concord/Mill	X			
Trapelo/Mill	X			X
Lexington/Belmont	X			X
Park/Rt 2	X		X	X
Common/Concord	X			X
Common/School	X			
Common/Trapelo	X			X
Concord/Goden	X		X	
Goden/Washington	X		X	
Pleasant/Lake	X		X	X
Brighton/Cross	X			
Washington/School	X			
Lake/Cross	X			X
Blanchard/Concord	X			X
Washington/Bright	X			
Grove/Huron	X			X
Belmont/Grove	X			X
Brighton/Statler	X		X	
Brighton/Eliot	X			
Lexington/Sycamore	X			
White/Walnut		X		
Walnut/Trapelo		X		
Maple/Chestnut		X		
Waterhouse/Eliot			X	
School/Stone			X	
Concord/Leonard	X			



Existing 12-Hour Pedestrian Crossing Volumes



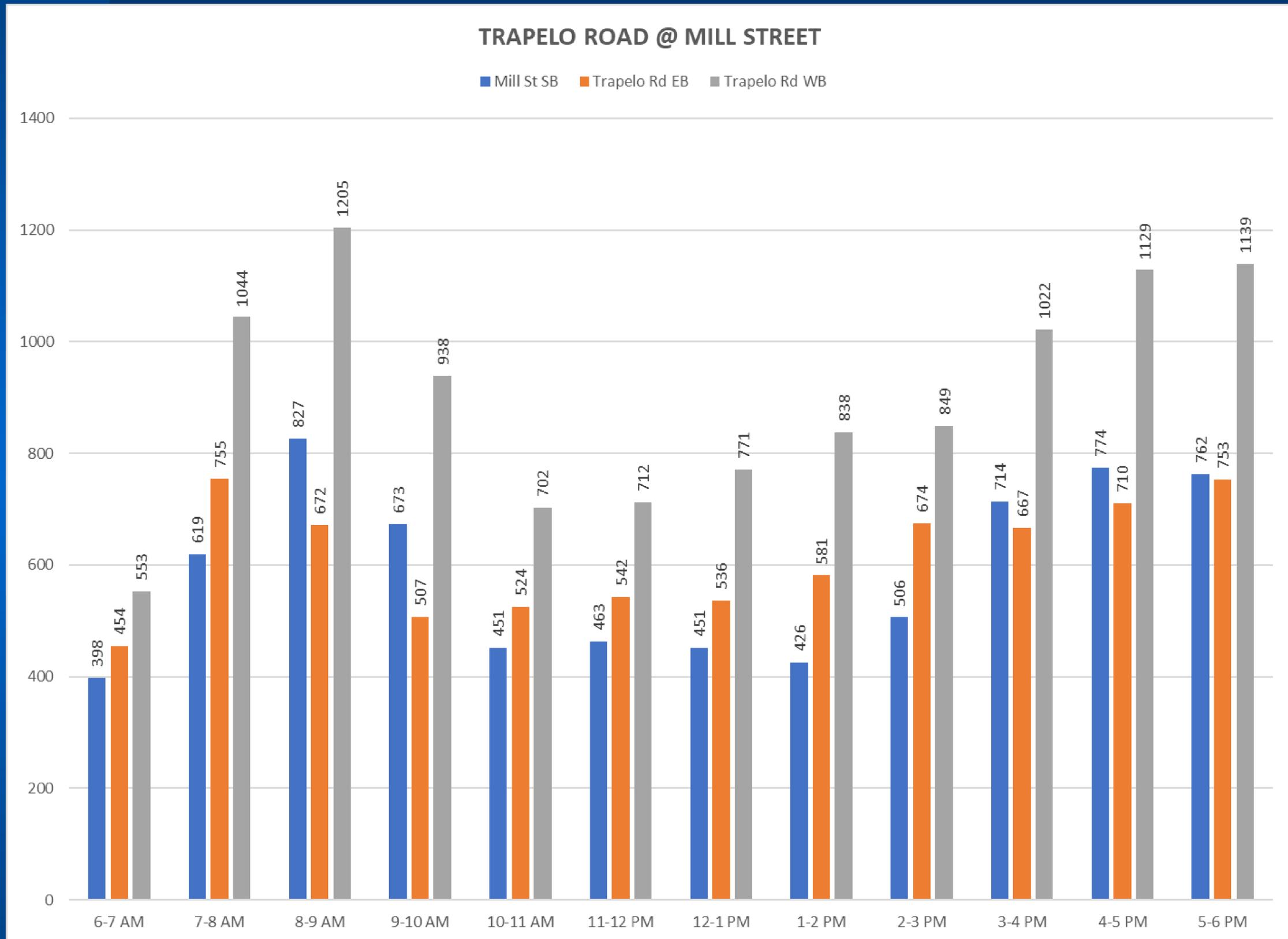
Travel Patterns PM



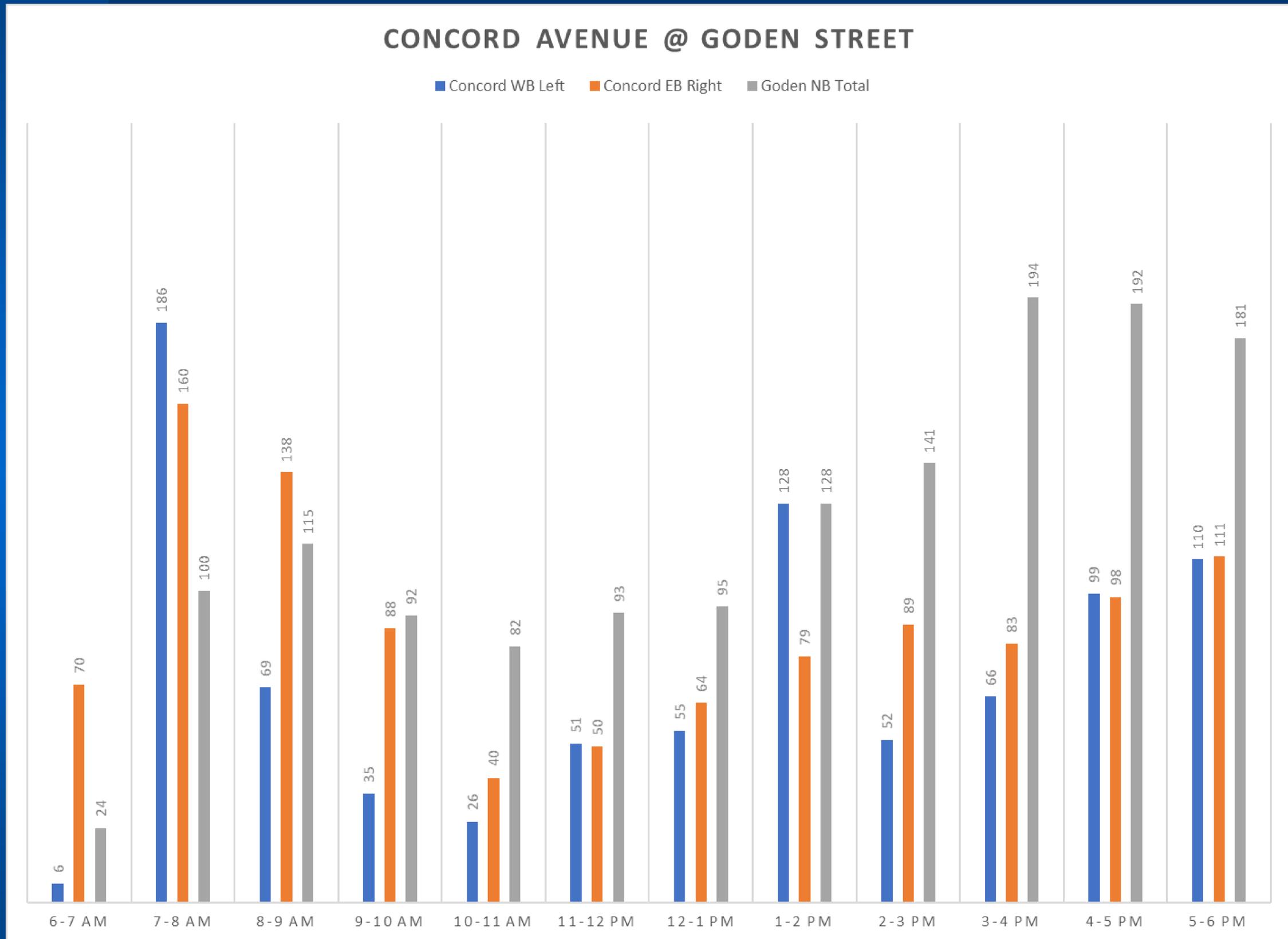
Afternoon, 4-6 PM
Yellow - North/West direction
Blue - South/East direction
Numbers indicate
approximate traffic volumes



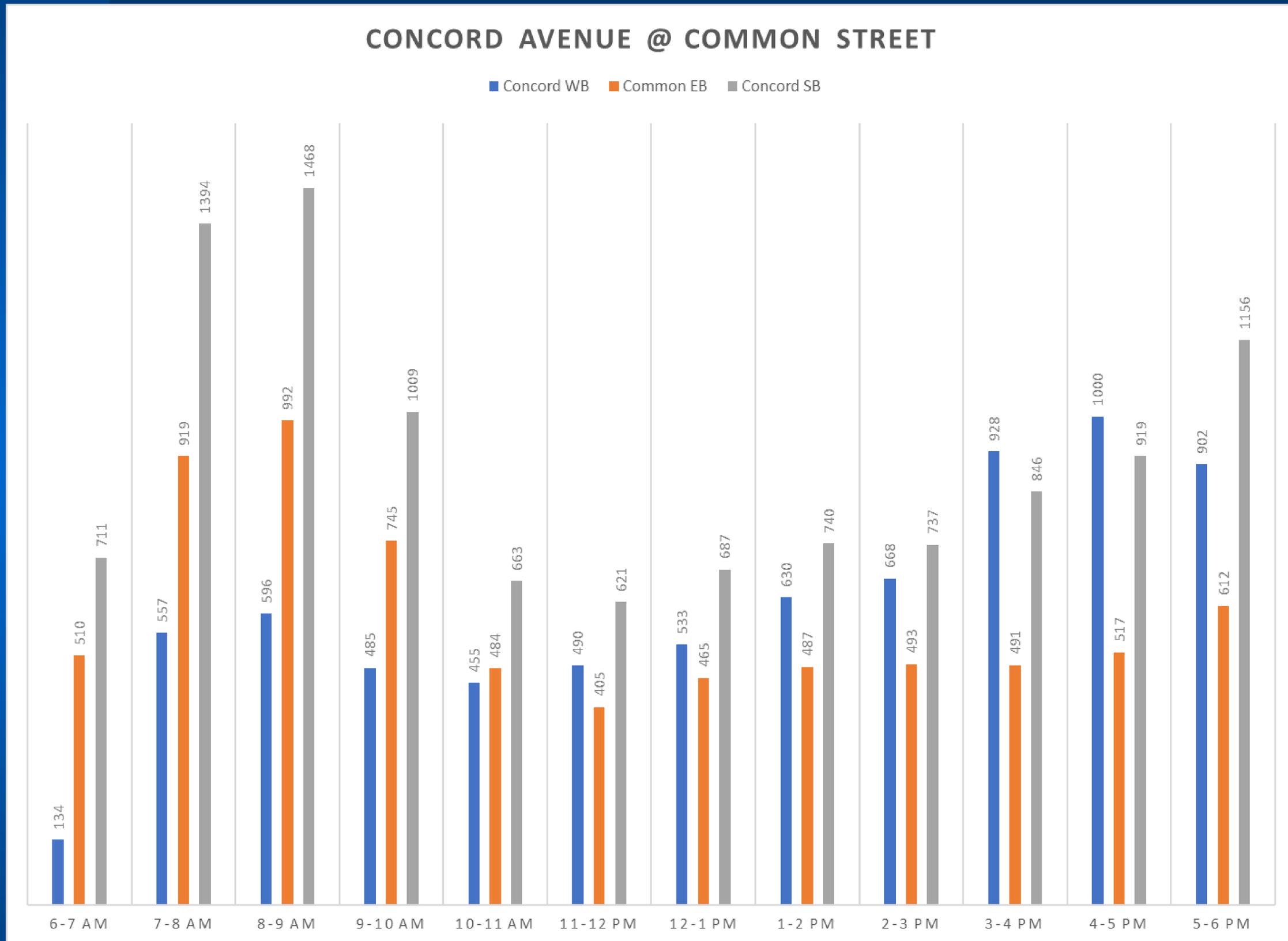
Hourly Traffic Volume Variation



Hourly Traffic Volume Variation

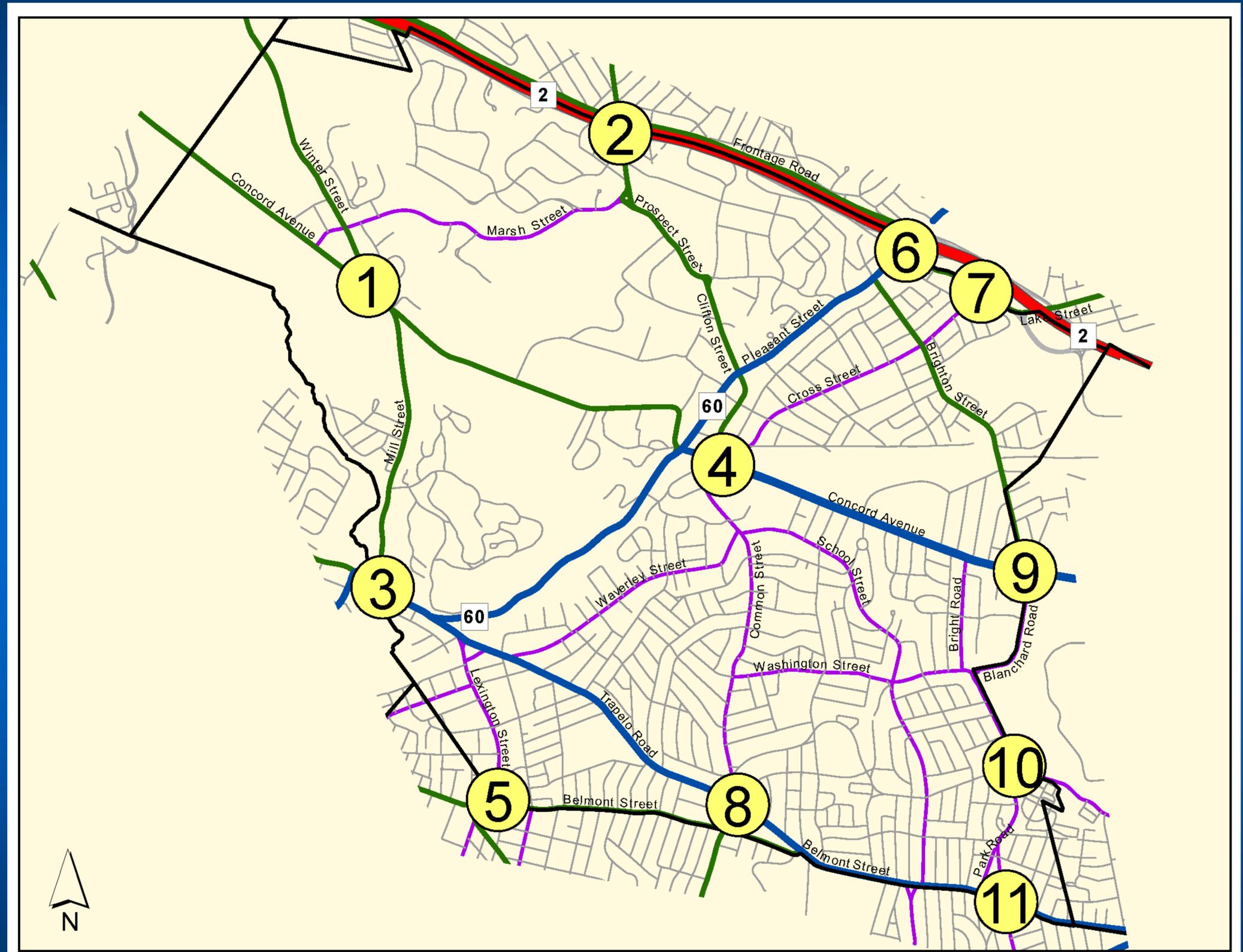


Hourly Traffic Volume Variation

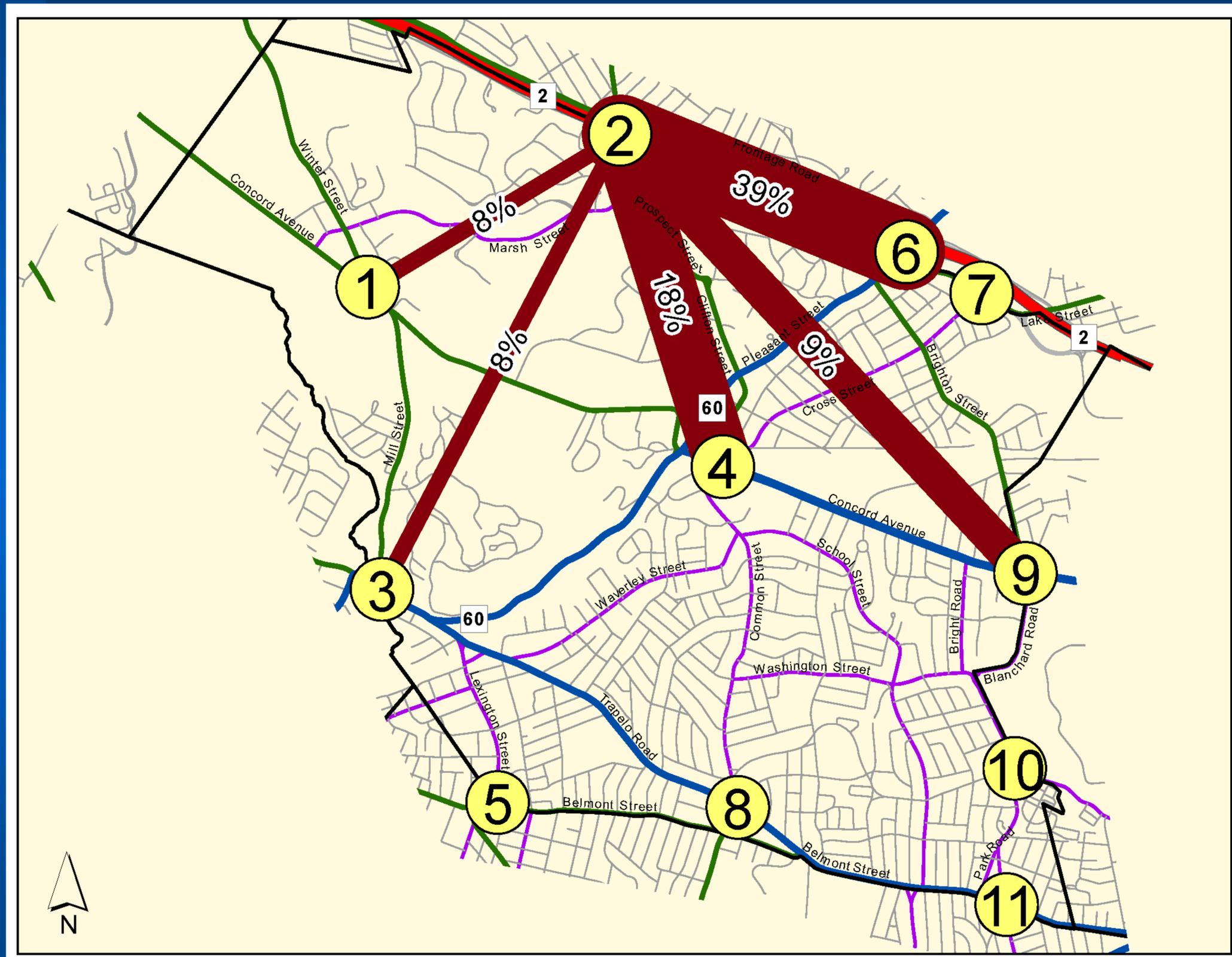


Trip Pattern – Node Map

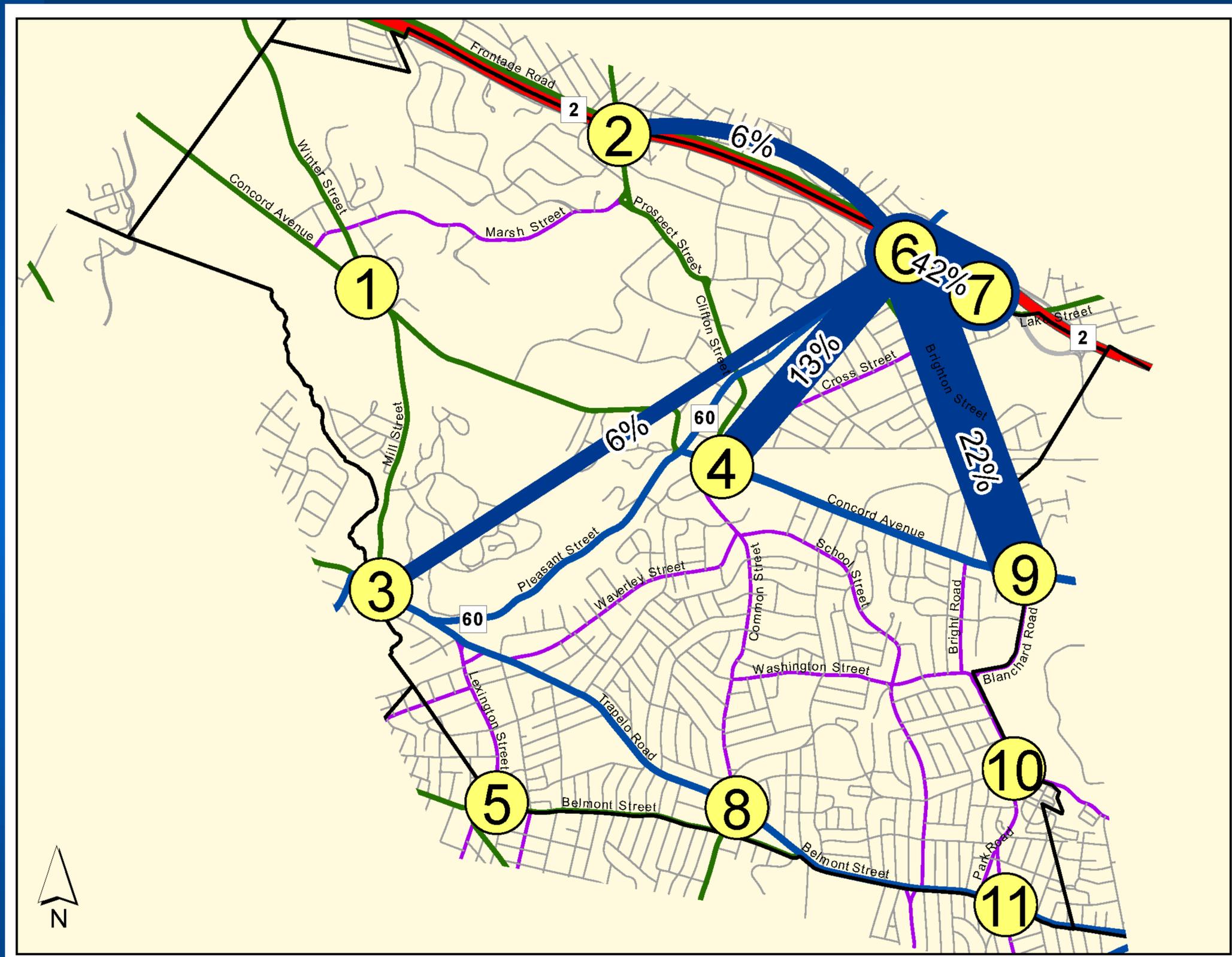
NODE	LOCATION
1	Concord Avenue/Marsh Street
2	Park Avenue/Route 2
3	Mill Street/Trapelo Road
4	Concord Avenue/Common Street
5	Lexington Street/Belmont Street
6	Pleasant Street/Lake Street
7	Cross Street/Lake Street
8	Cushing Square
9	Concord Avenue/Blanchard Road
10	Huron Avenue/Grove Street
11	Belmont Street/Grove Street



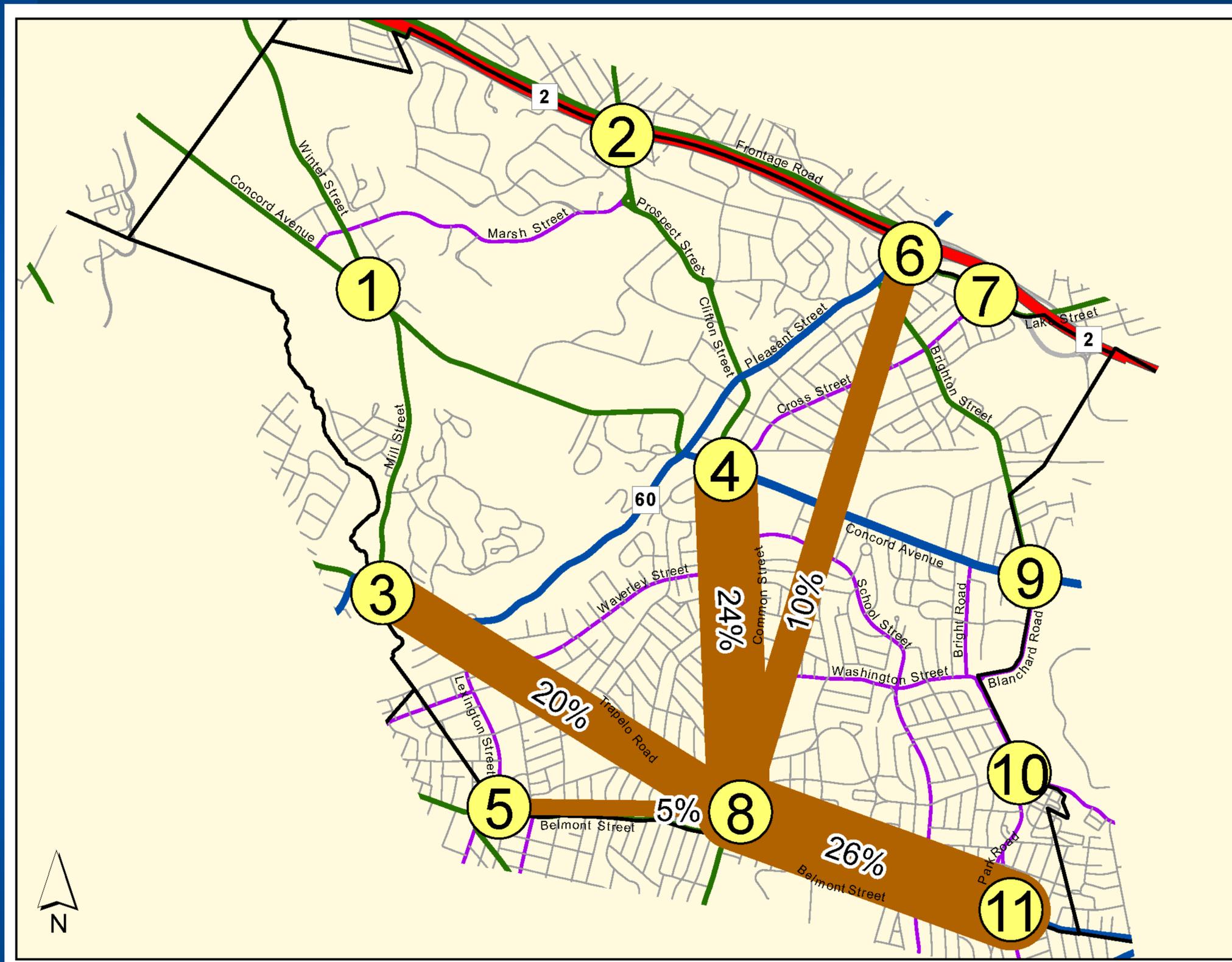
AM Trip Pattern – From Park Ave



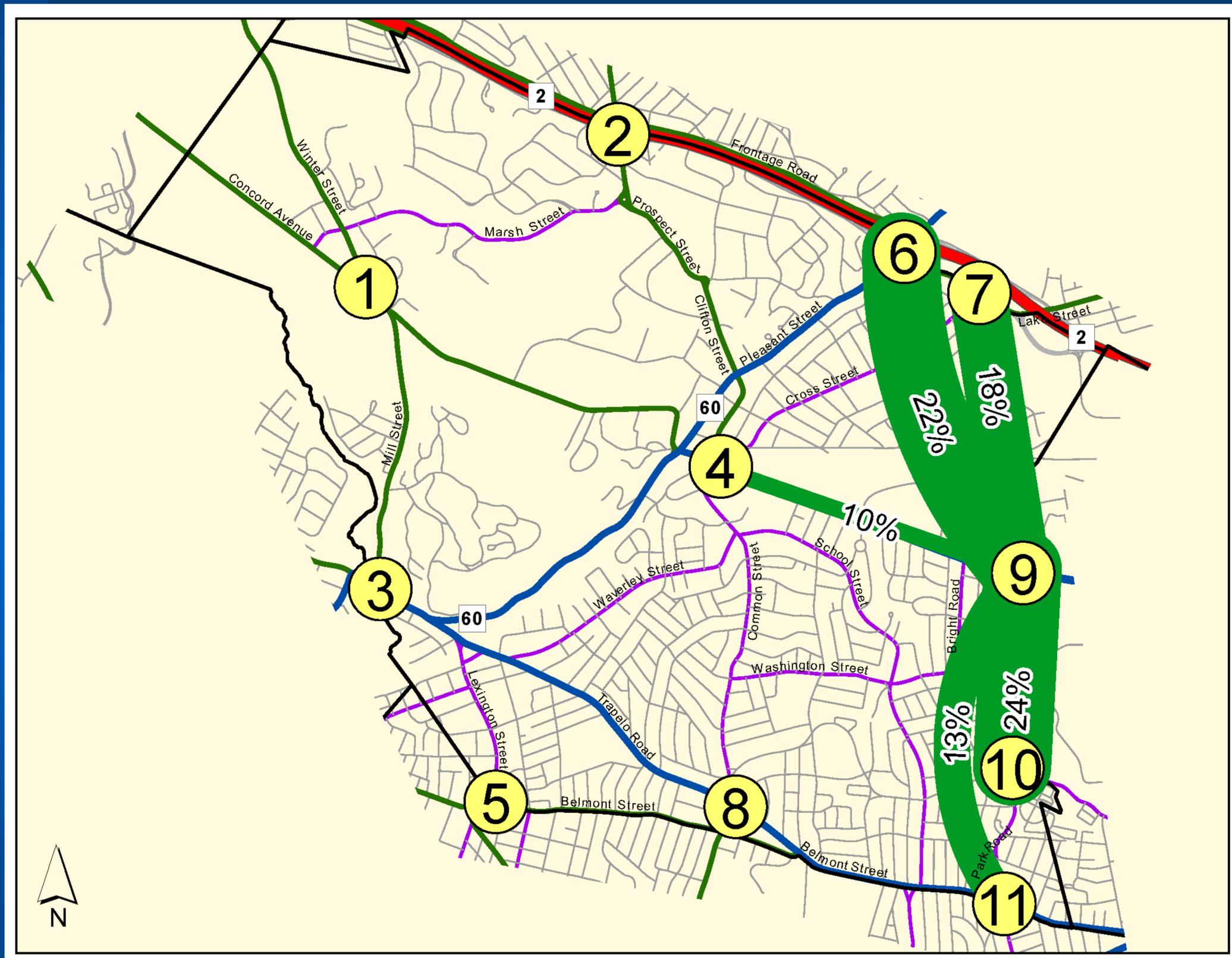
AM Trip Pattern – From Pleasant St



PM Trip Pattern – From Cushing Sq

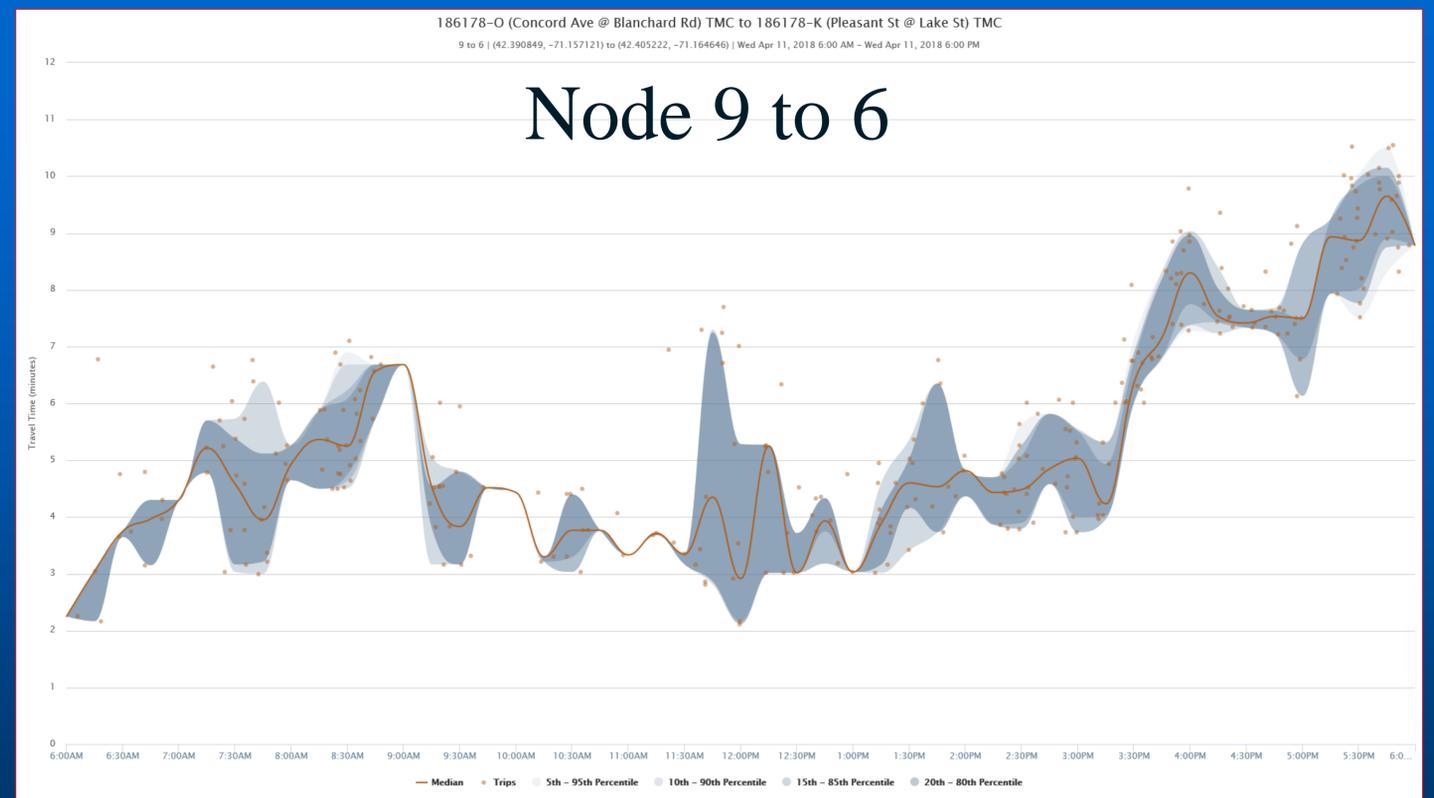
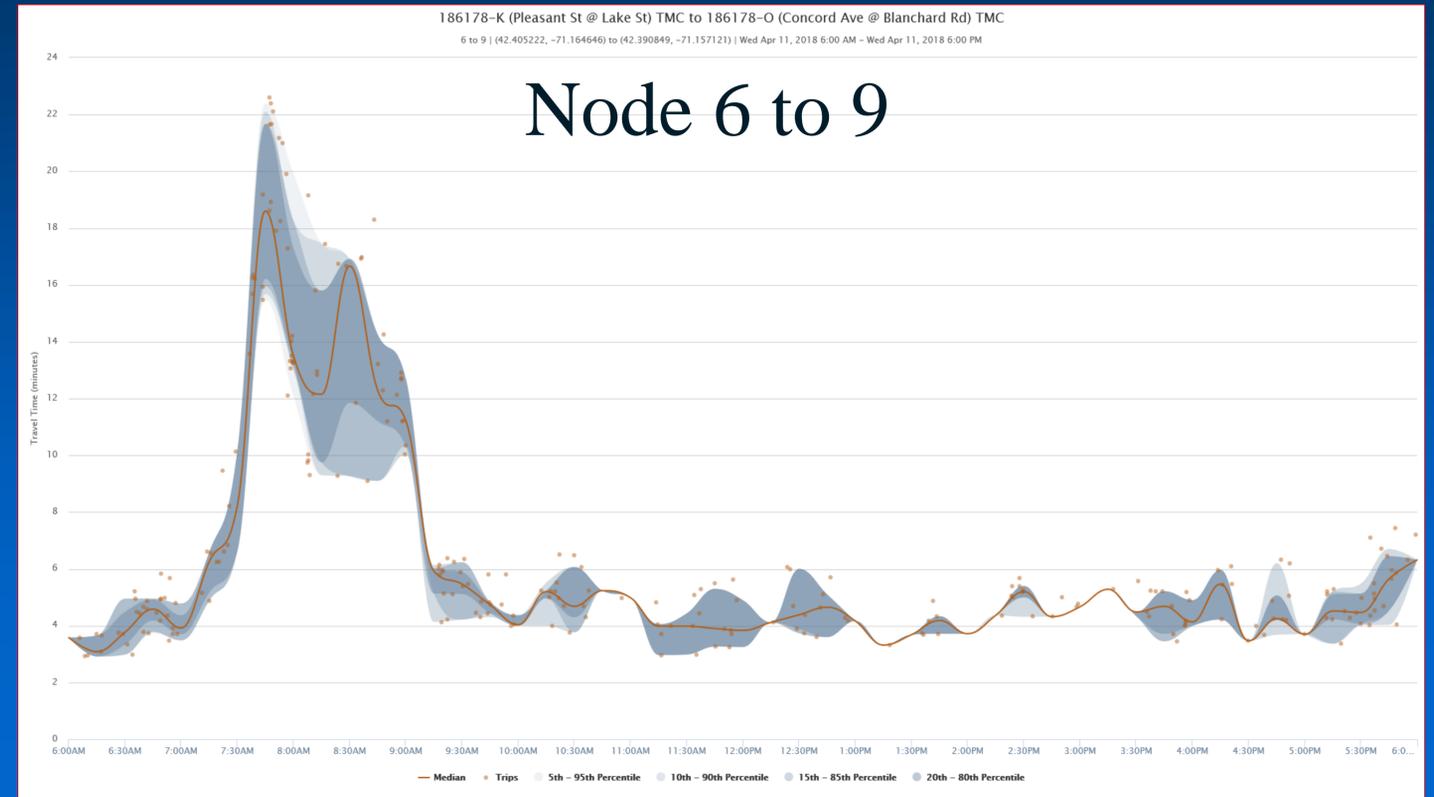
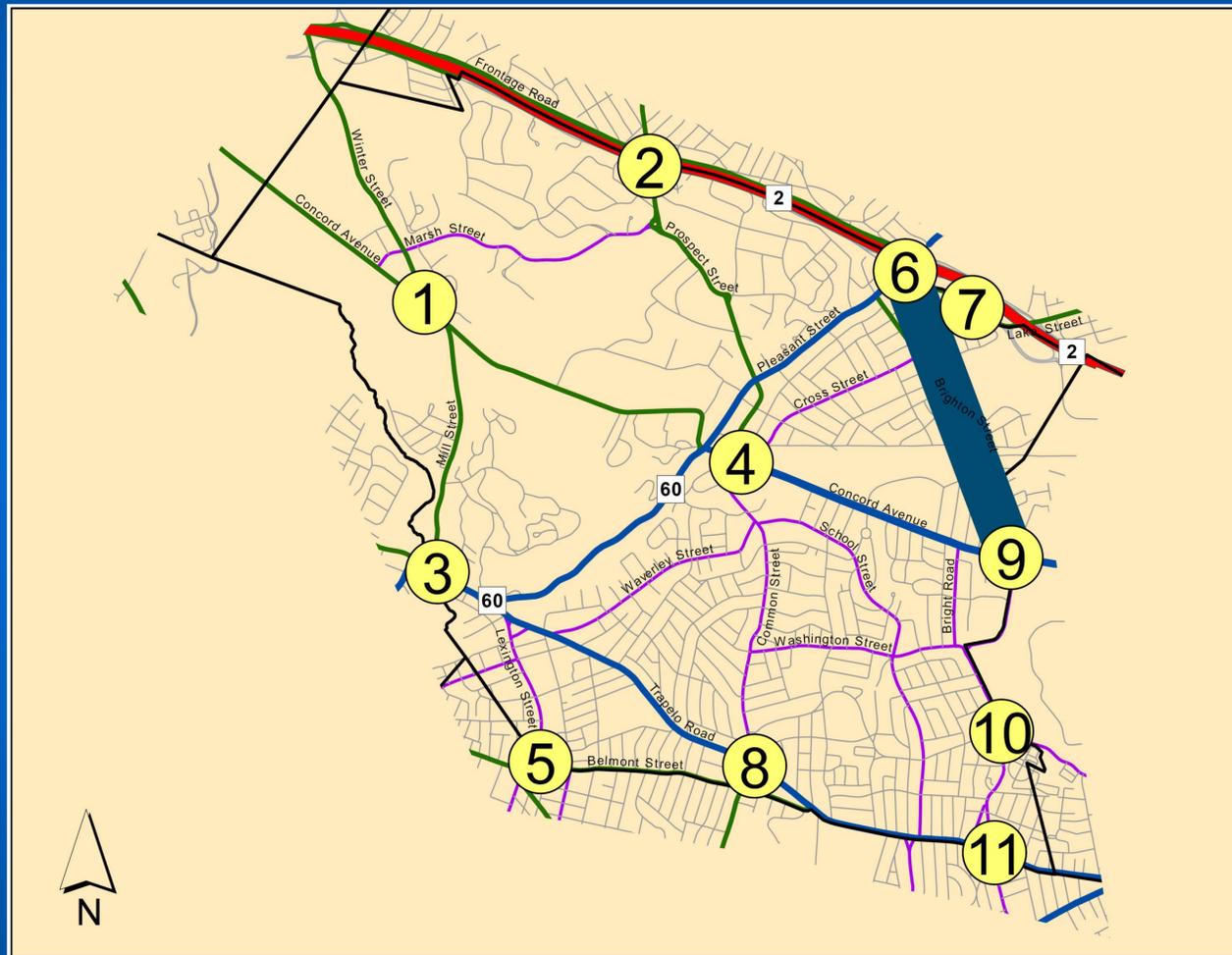


PM Trip Pattern – From Concord/Blanchard



Travel Time Patterns Between

Pleasant/Lake (node 6) to Concord/Blanchard (node 9)

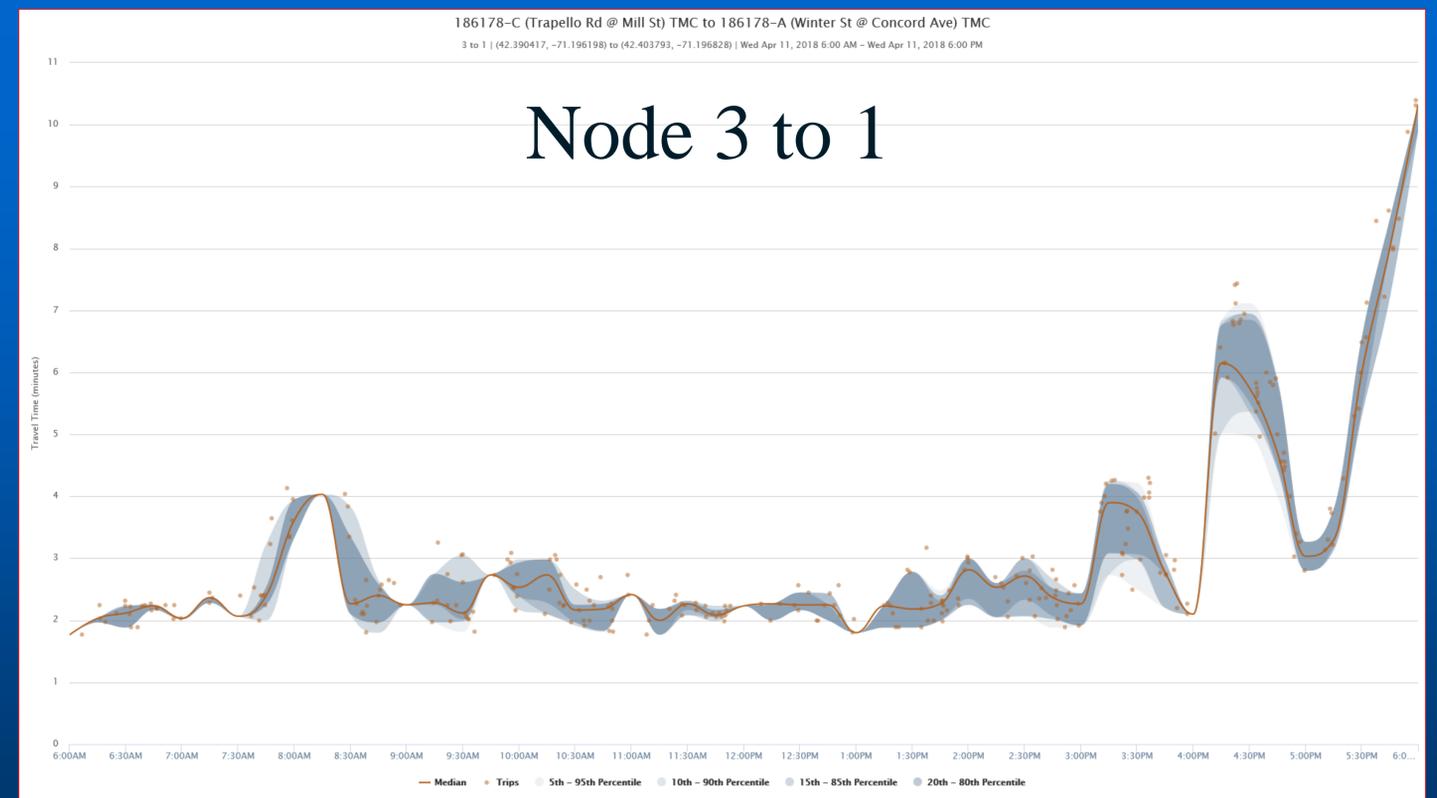
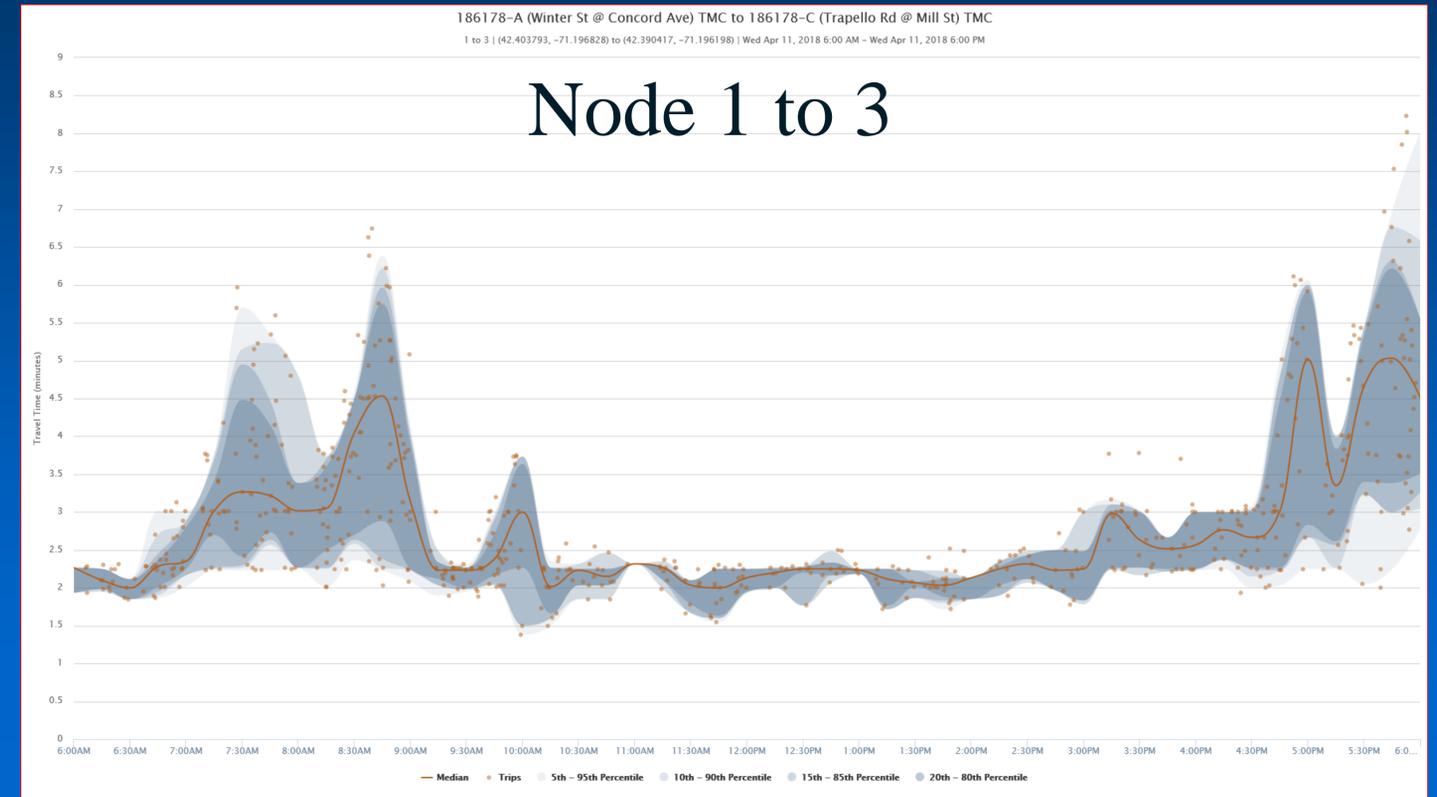


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Travel Time Patterns Between

Winter/Concord (node 1) to Trapelo/Mill (node 3)

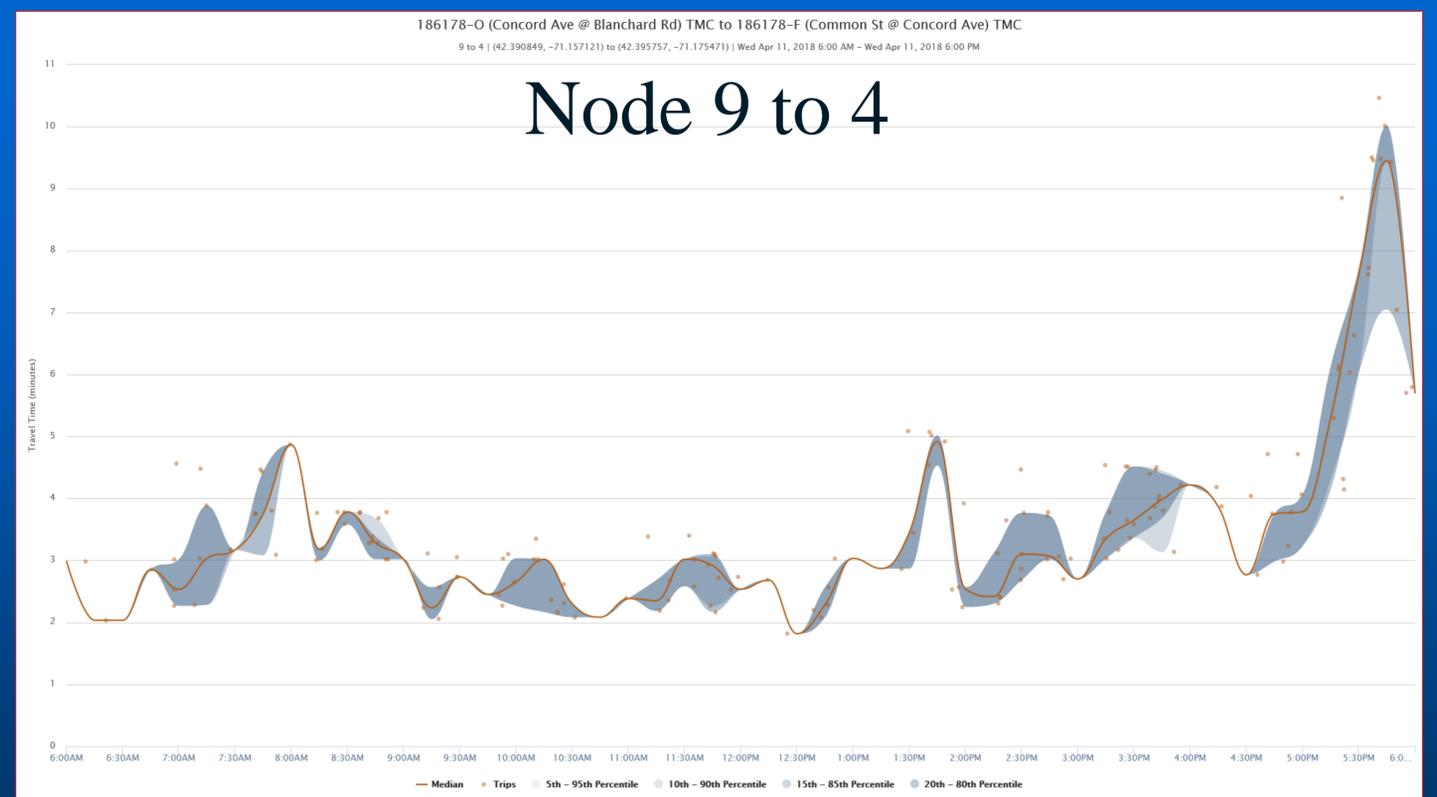
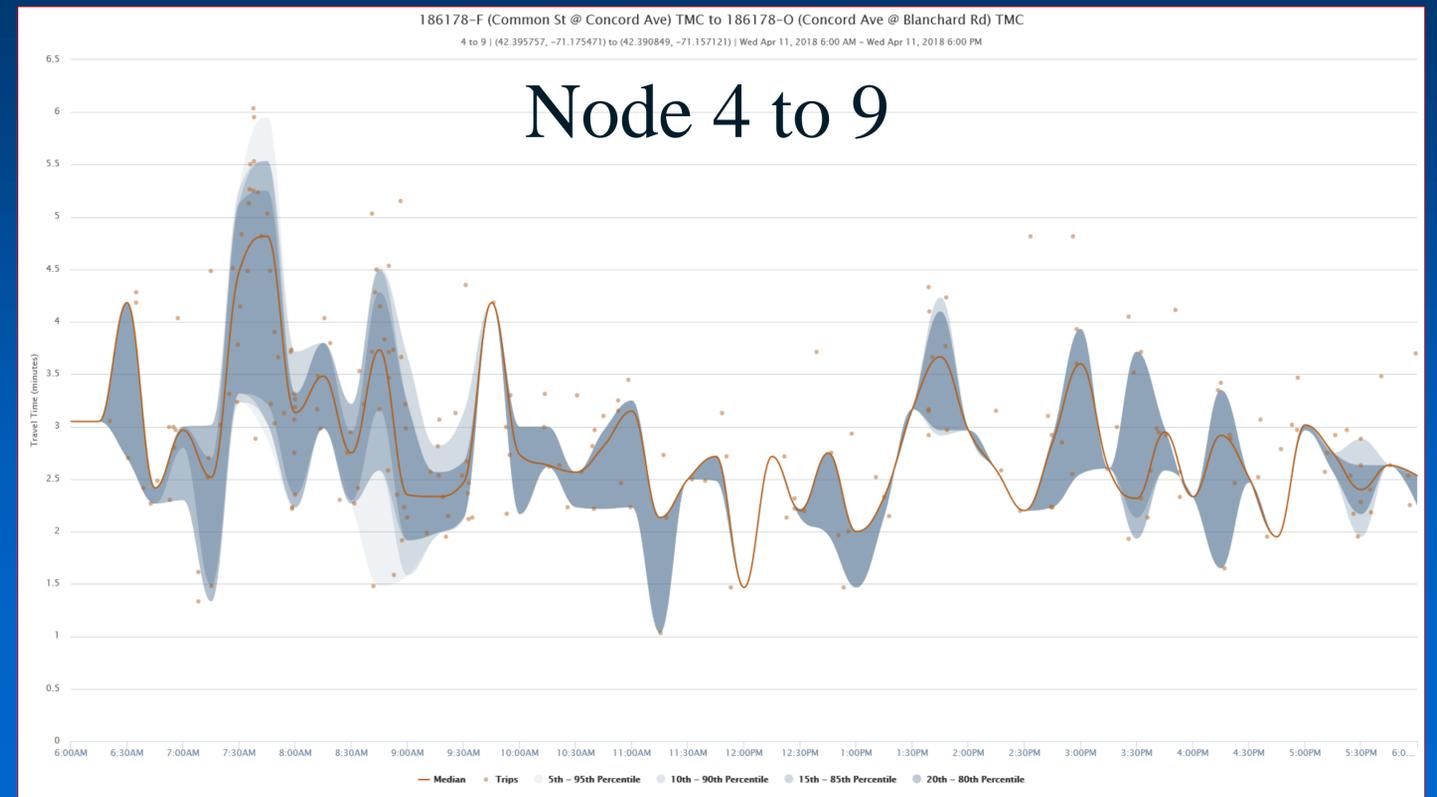


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Travel Time Patterns Between

Common/Concord (node 4) to Blanchard/Concord (node 9)



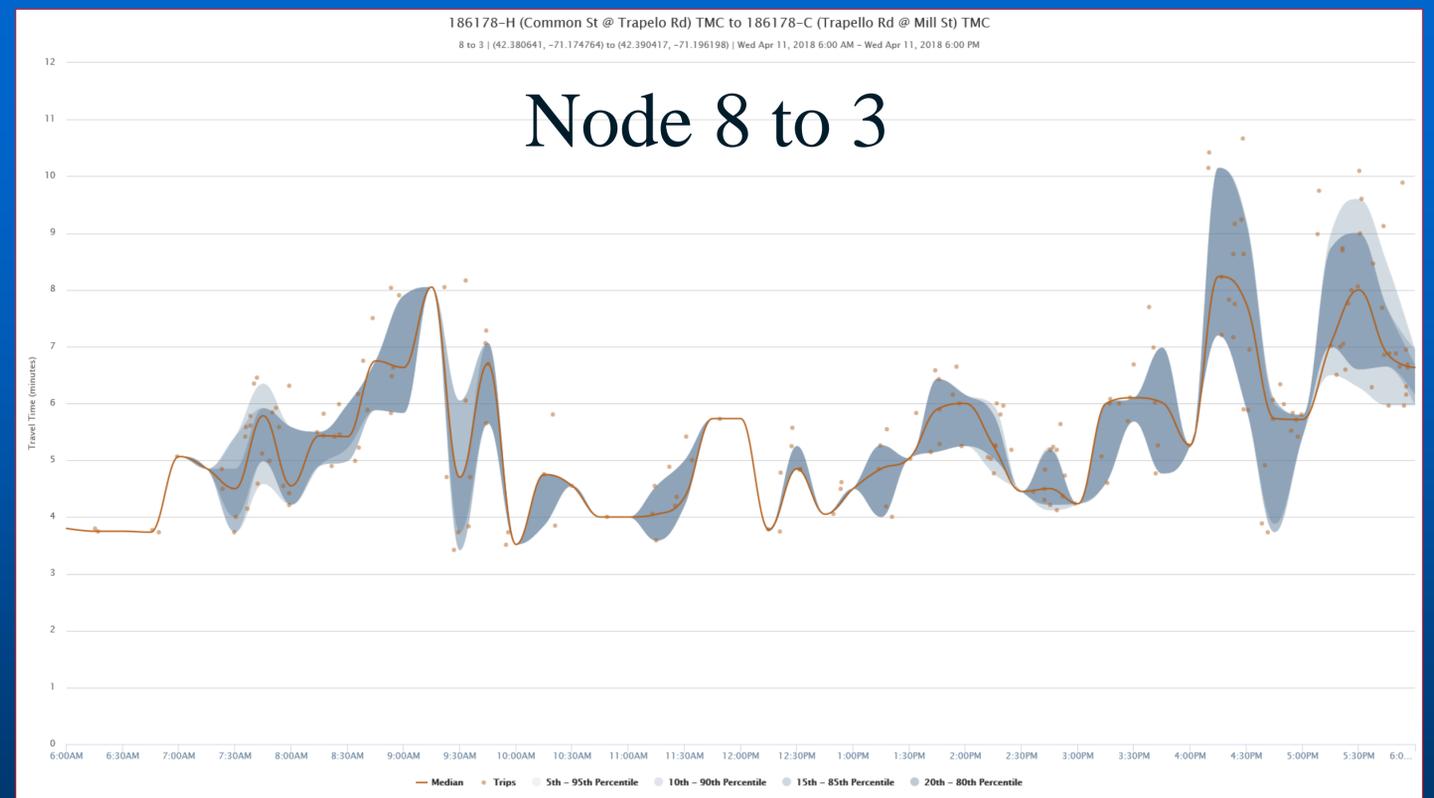
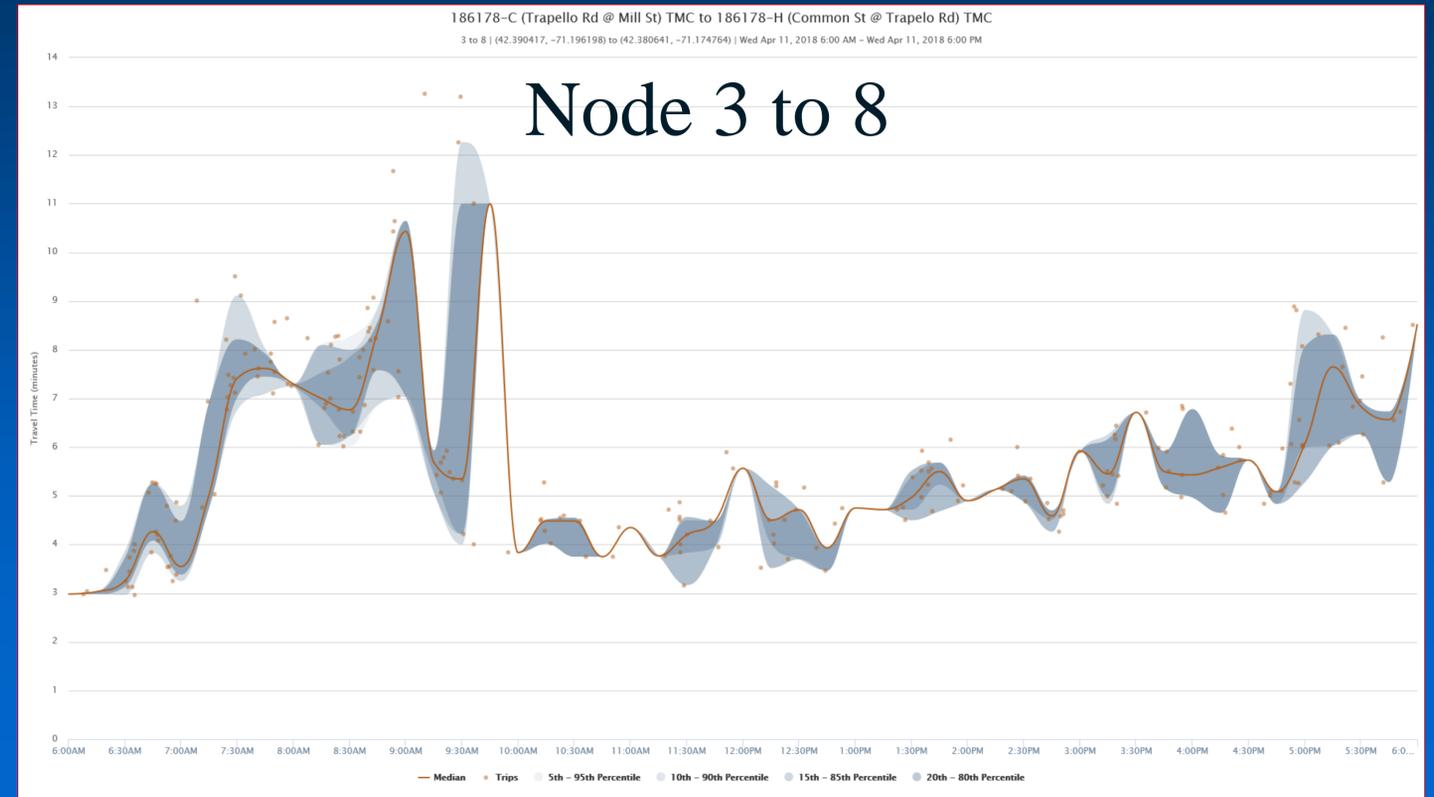
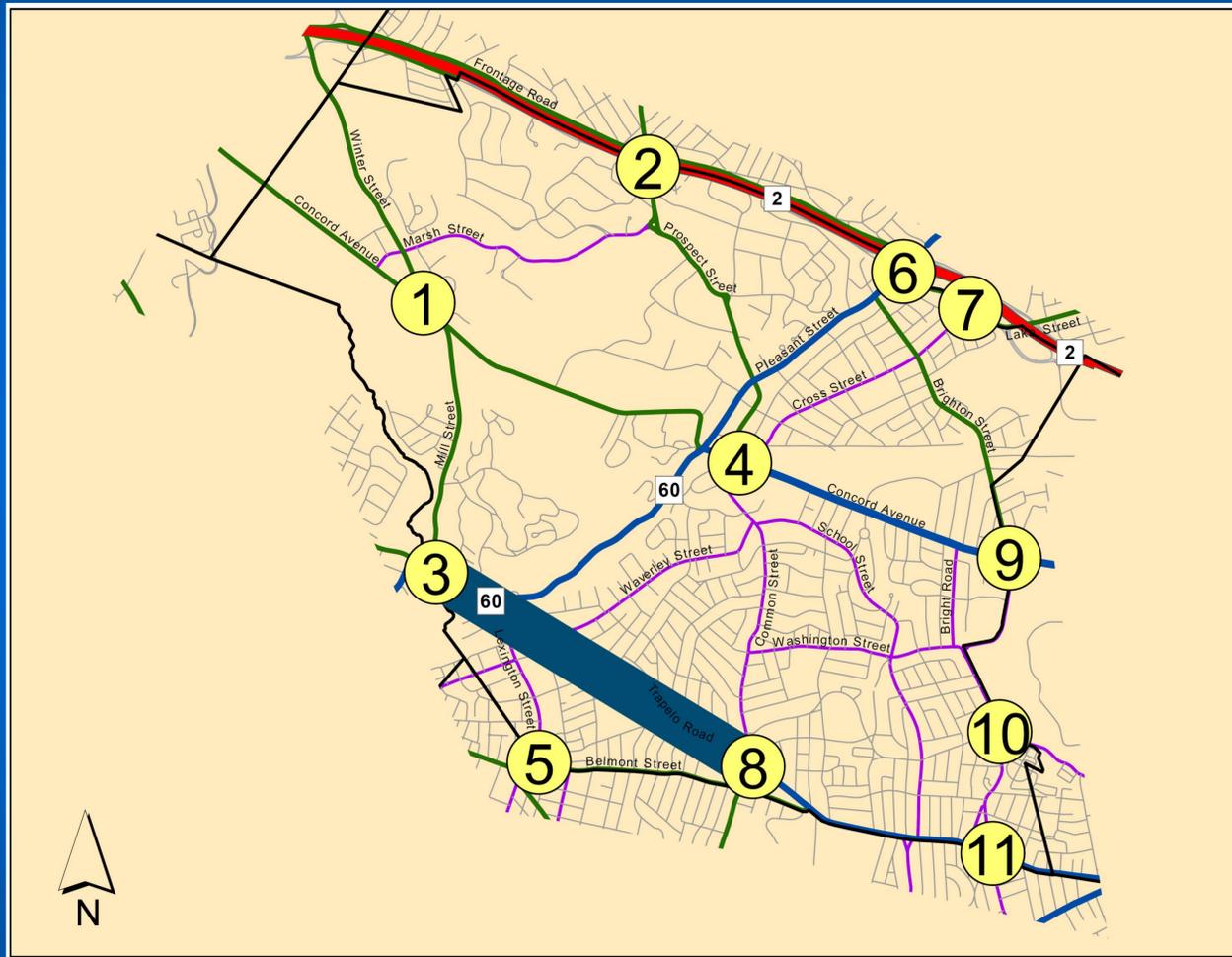
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Travel Time Patterns Between

Trapelo/Mill (node 3) to Trapelo/Common (node 8)



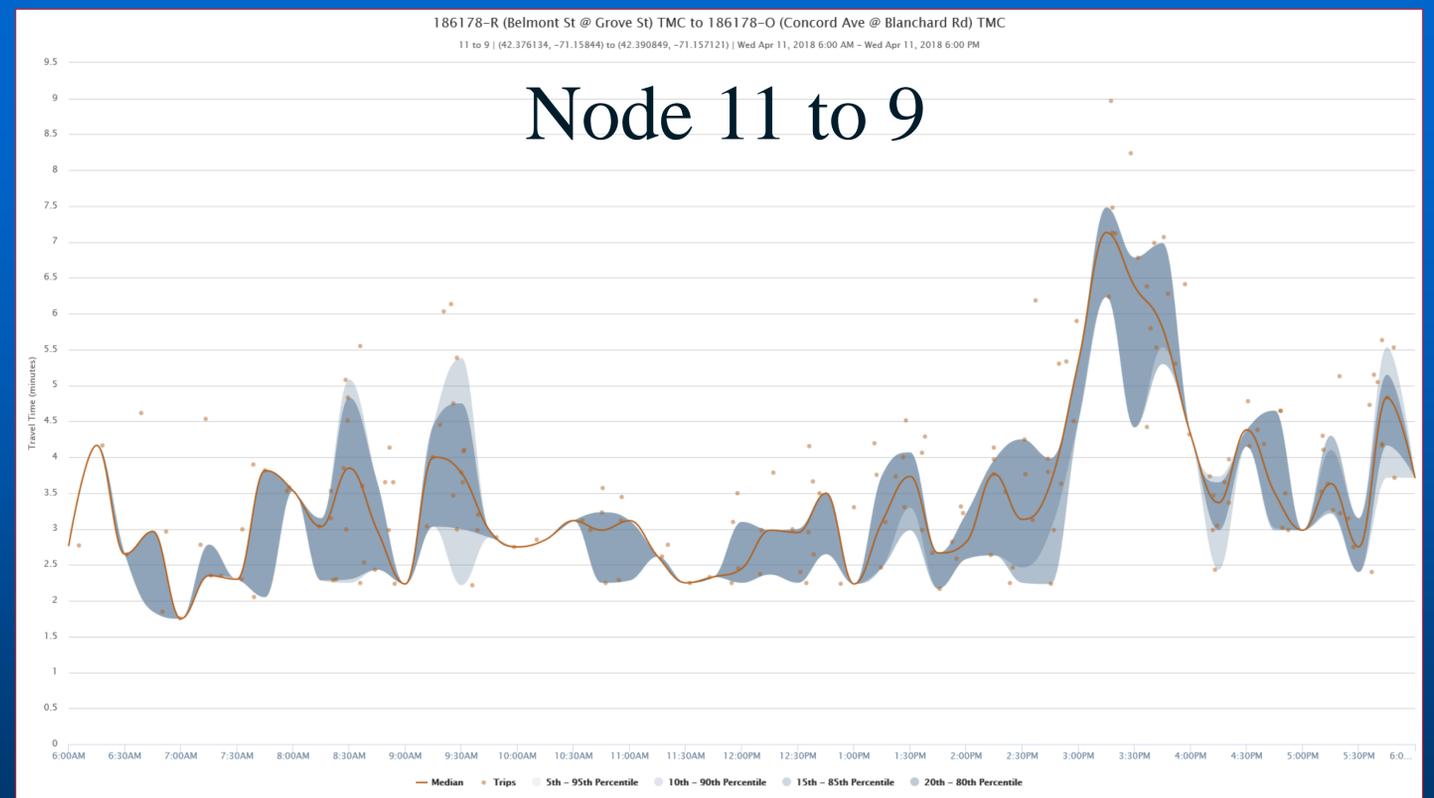
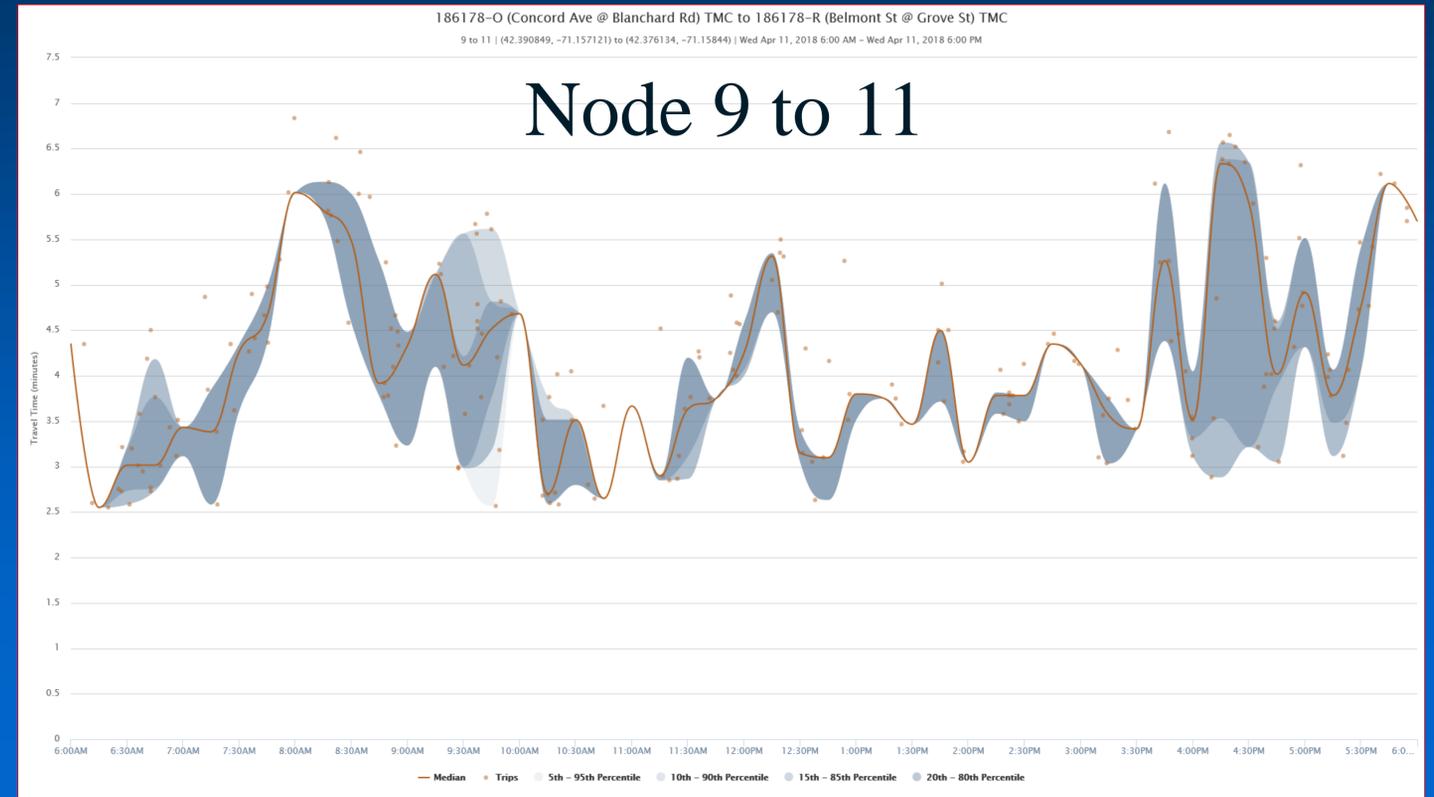
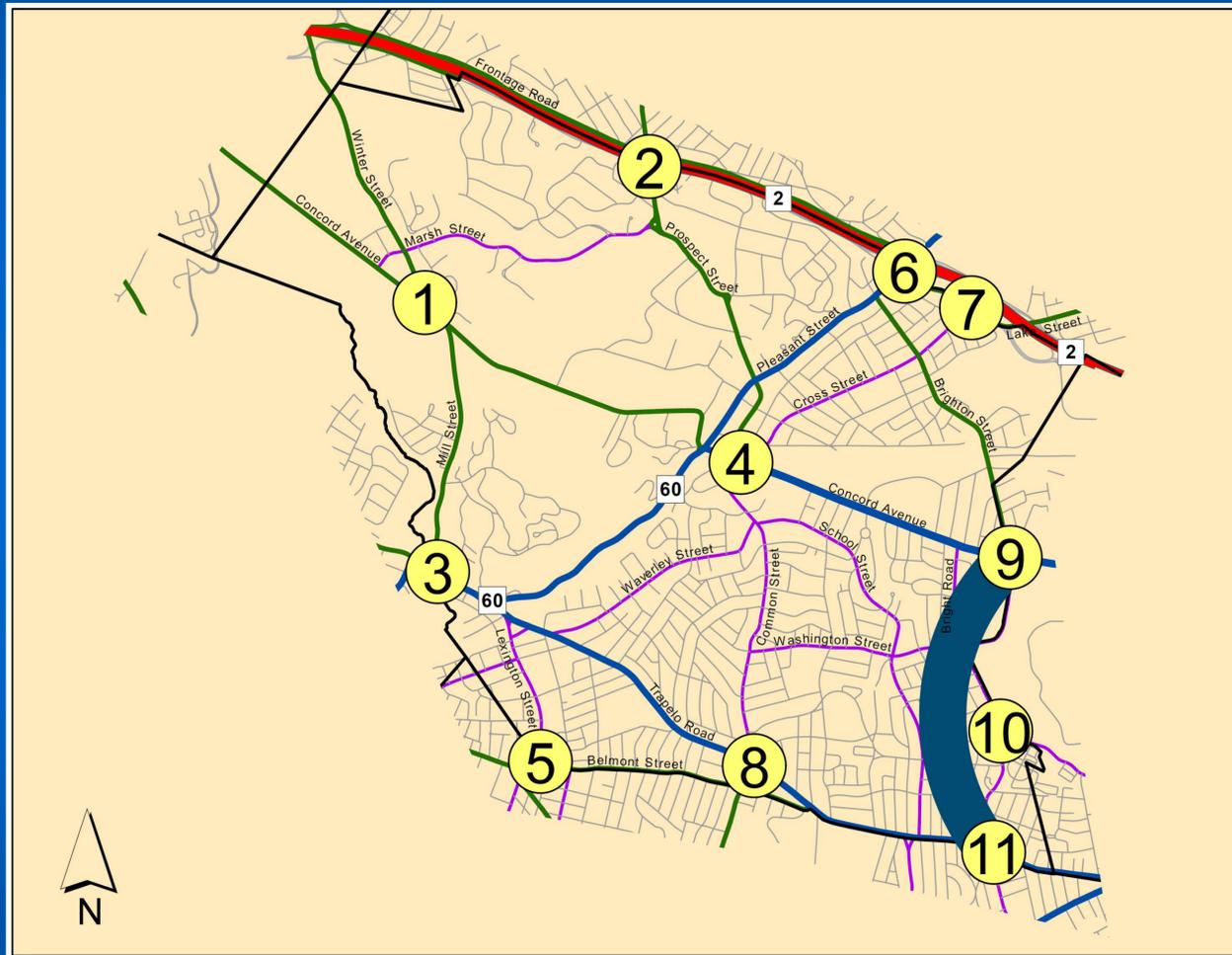
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Travel Time Patterns Between

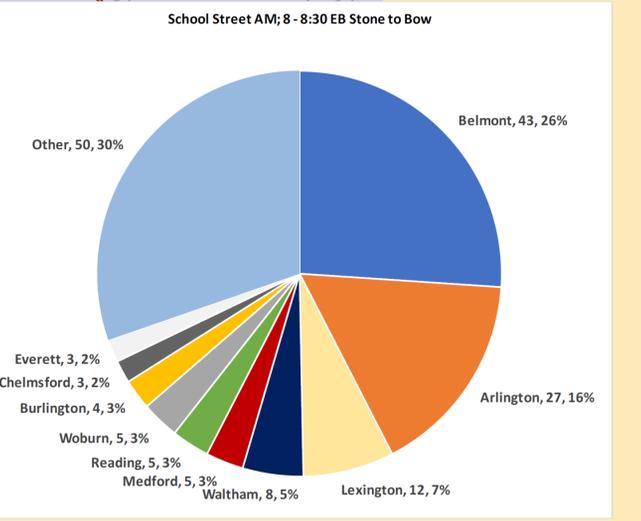
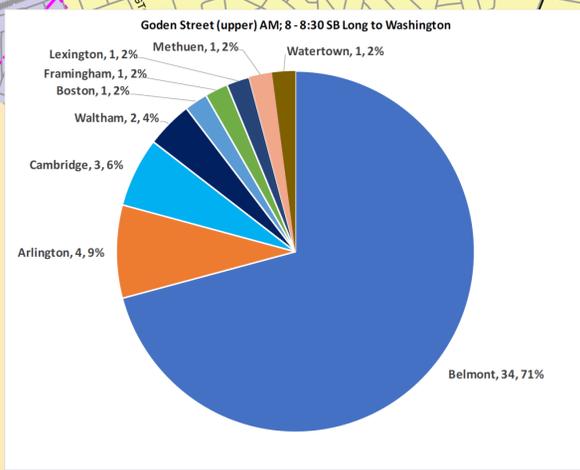
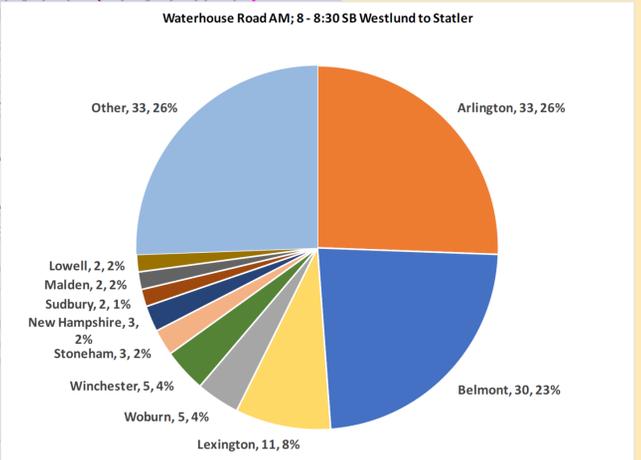
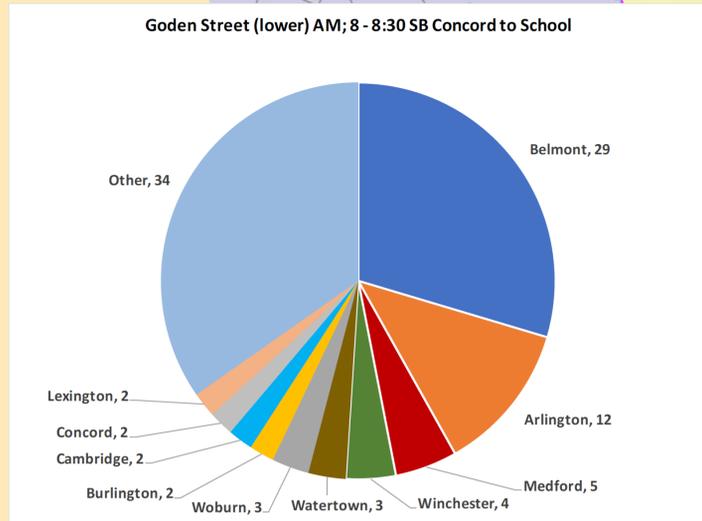
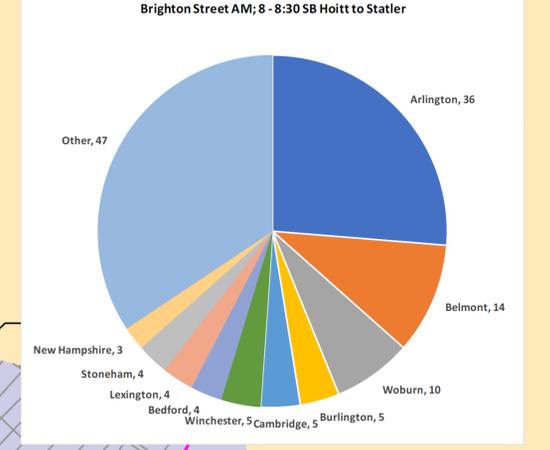
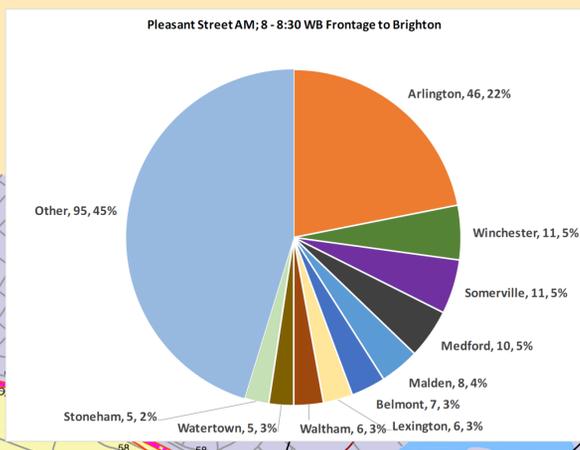
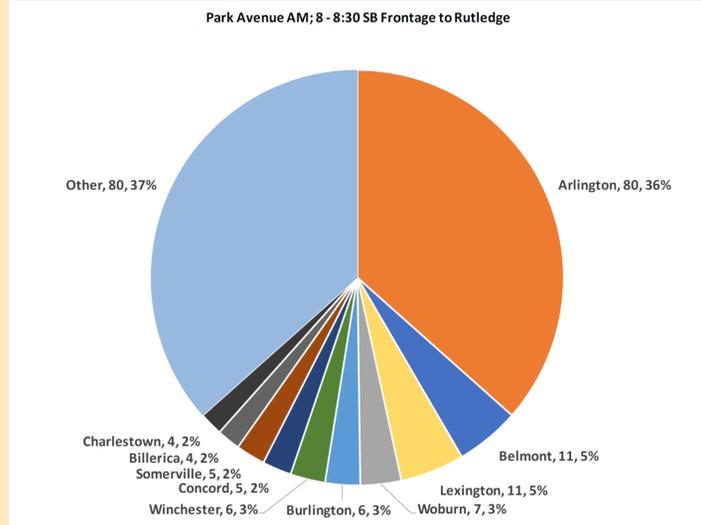
Concord/Blanchard (node 9) to Belmont/Grove (node 11)



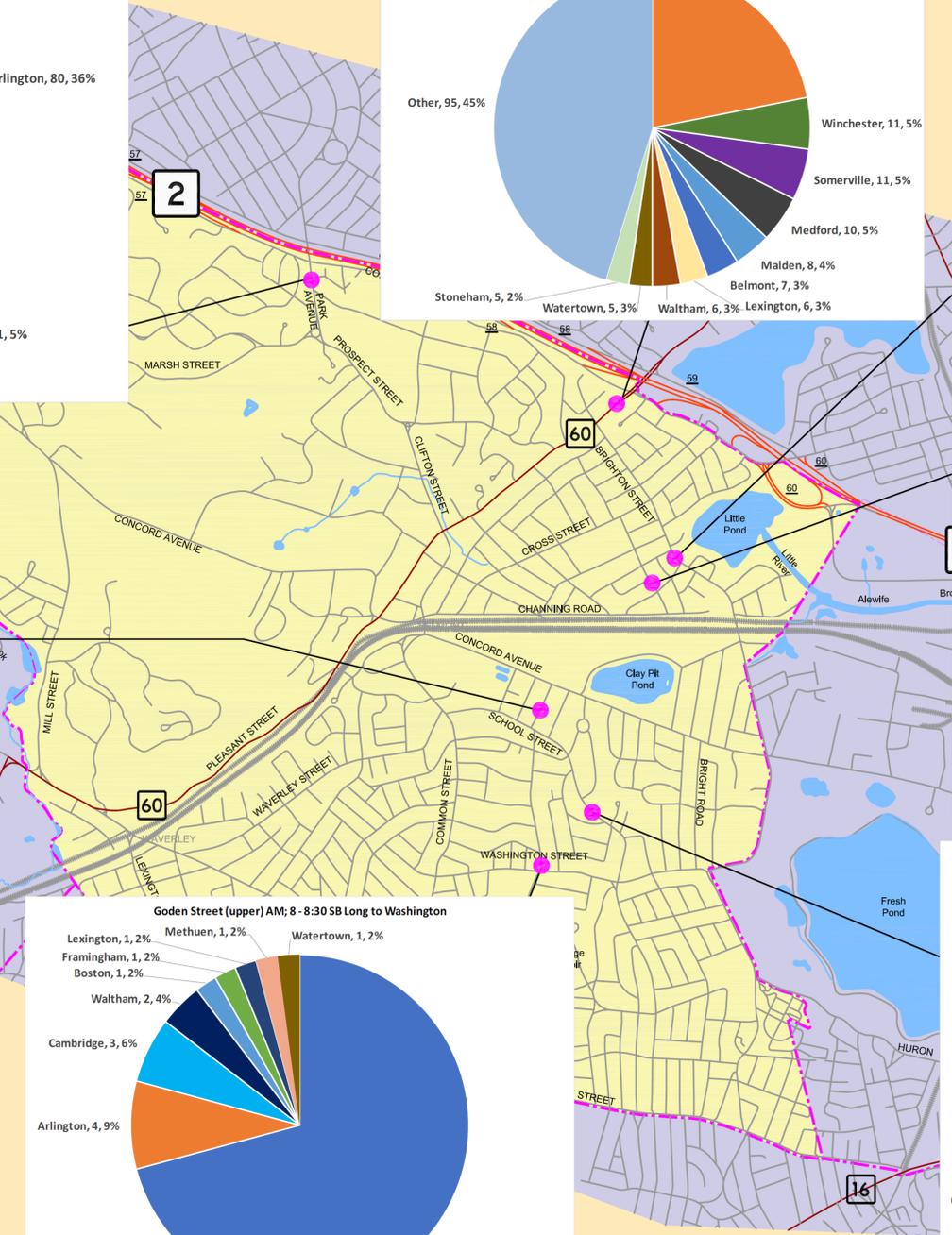
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License Plate Survey - AM



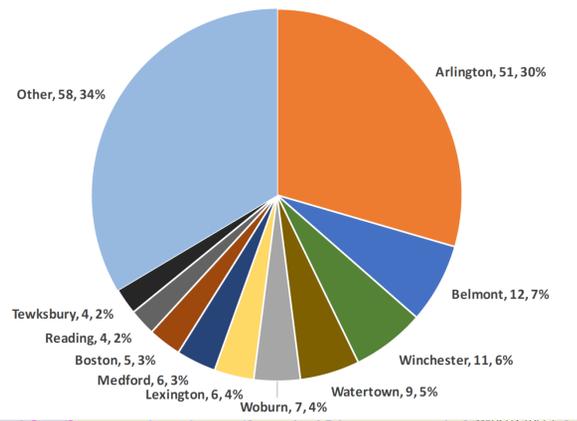
- Belmont
- Arlington
- Lexington
- Medford
- Woburn
- Watertown
- Burlington
- Cambridge
- Winchester



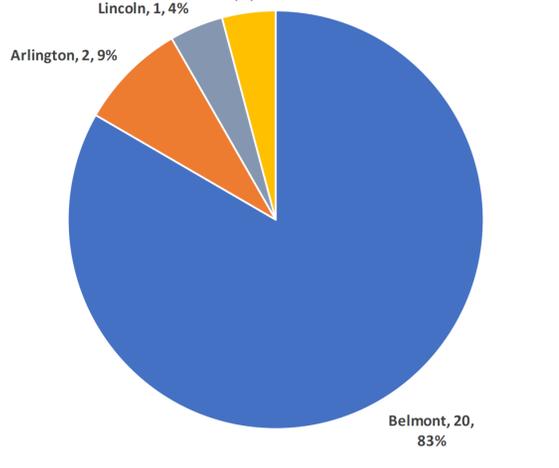
License Plate Survey - PM



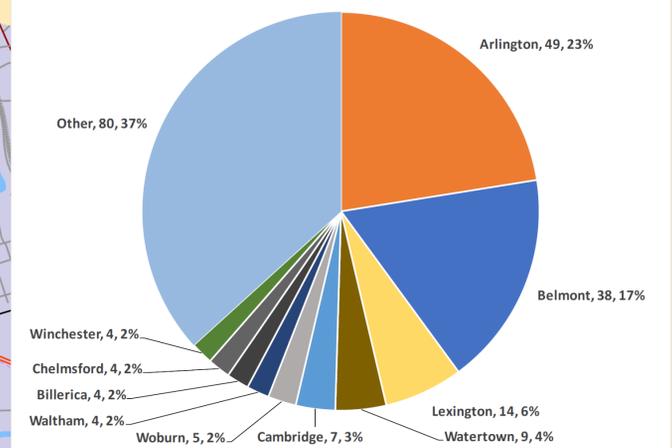
Park Avenue PM; 5 - 5:30 NB Rutledge to Frontage



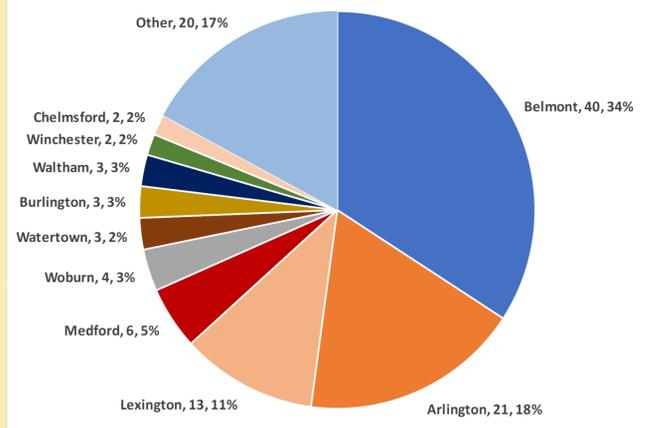
Waterhouse Road PM; 5 - 5:30 NB Westlund to Statler



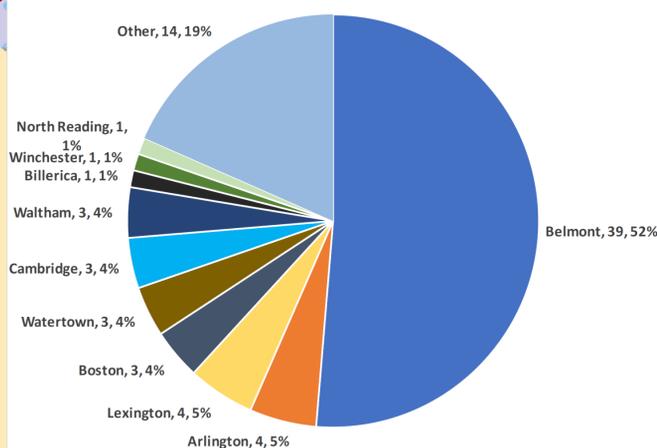
Brighton Street PM; 5 - 5:30 NB Hoitt to Statler



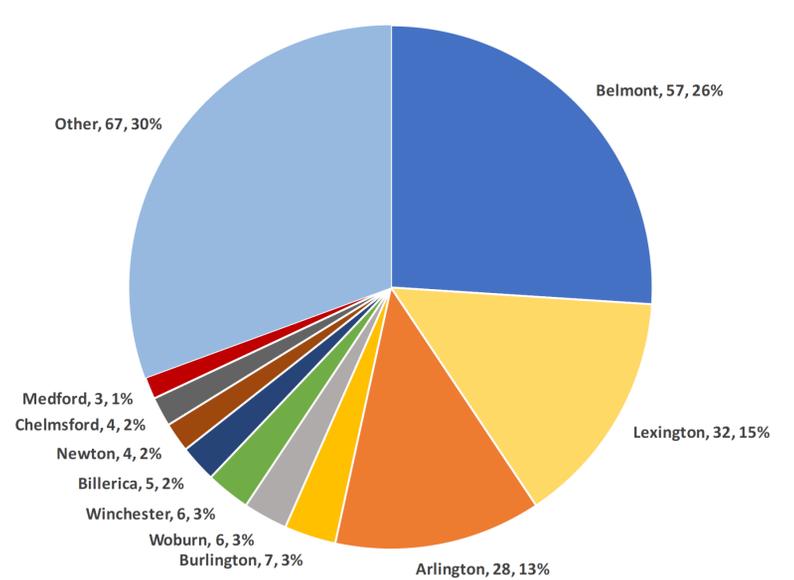
Goden Street (lower) PM; 5 - 5:30 NB School to Concord



Goden Street (upper) PM; 5 - 5:30 NB Washington to Long



School Street PM; 5 - 5:30 NB Bow to Stone



- Belmont
- Arlington
- Lexington
- Medford
- Woburn
- Watertown
- Burlington
- Cambridge
- Winchester

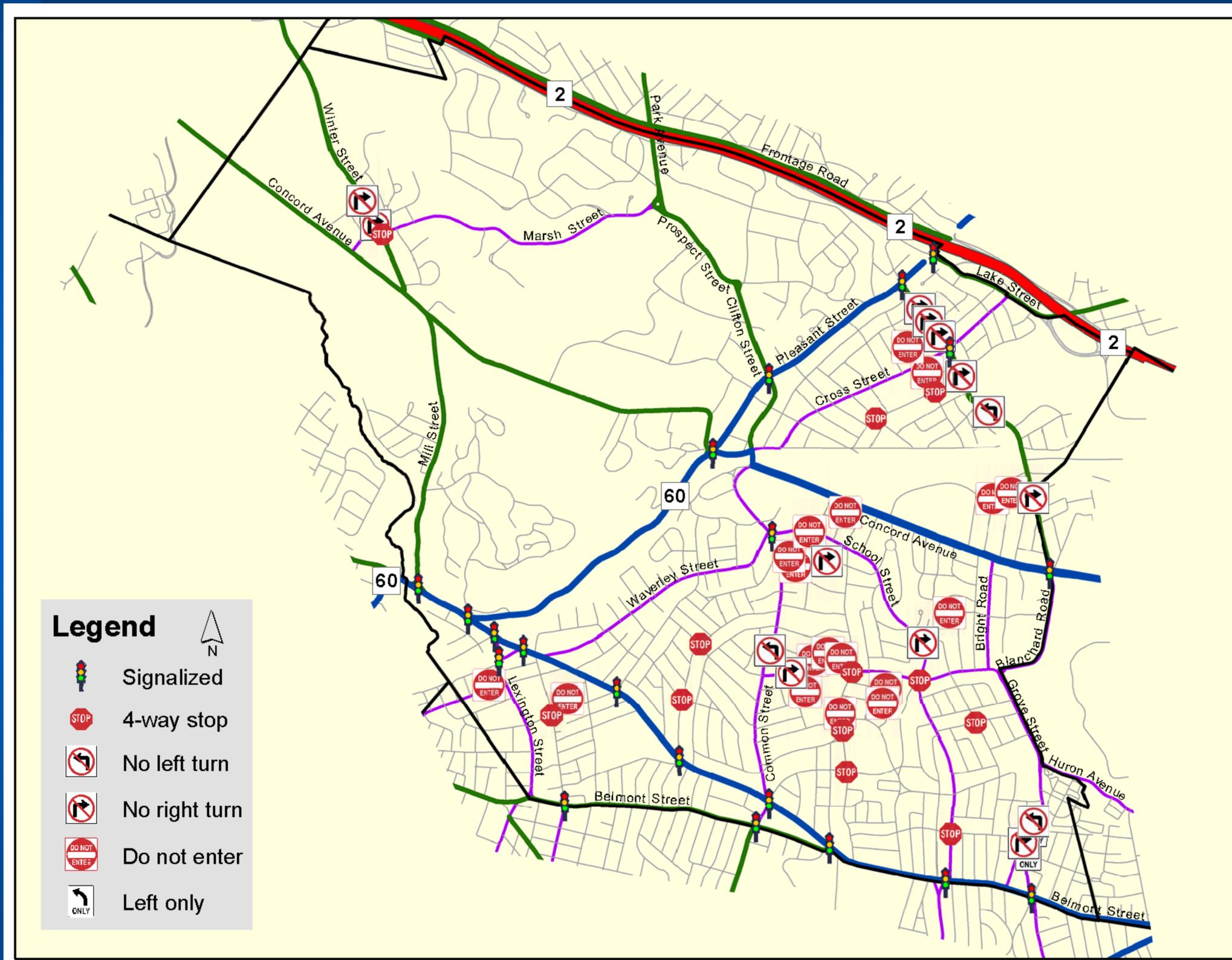


Approximate Cut-Through Traffic Percentages

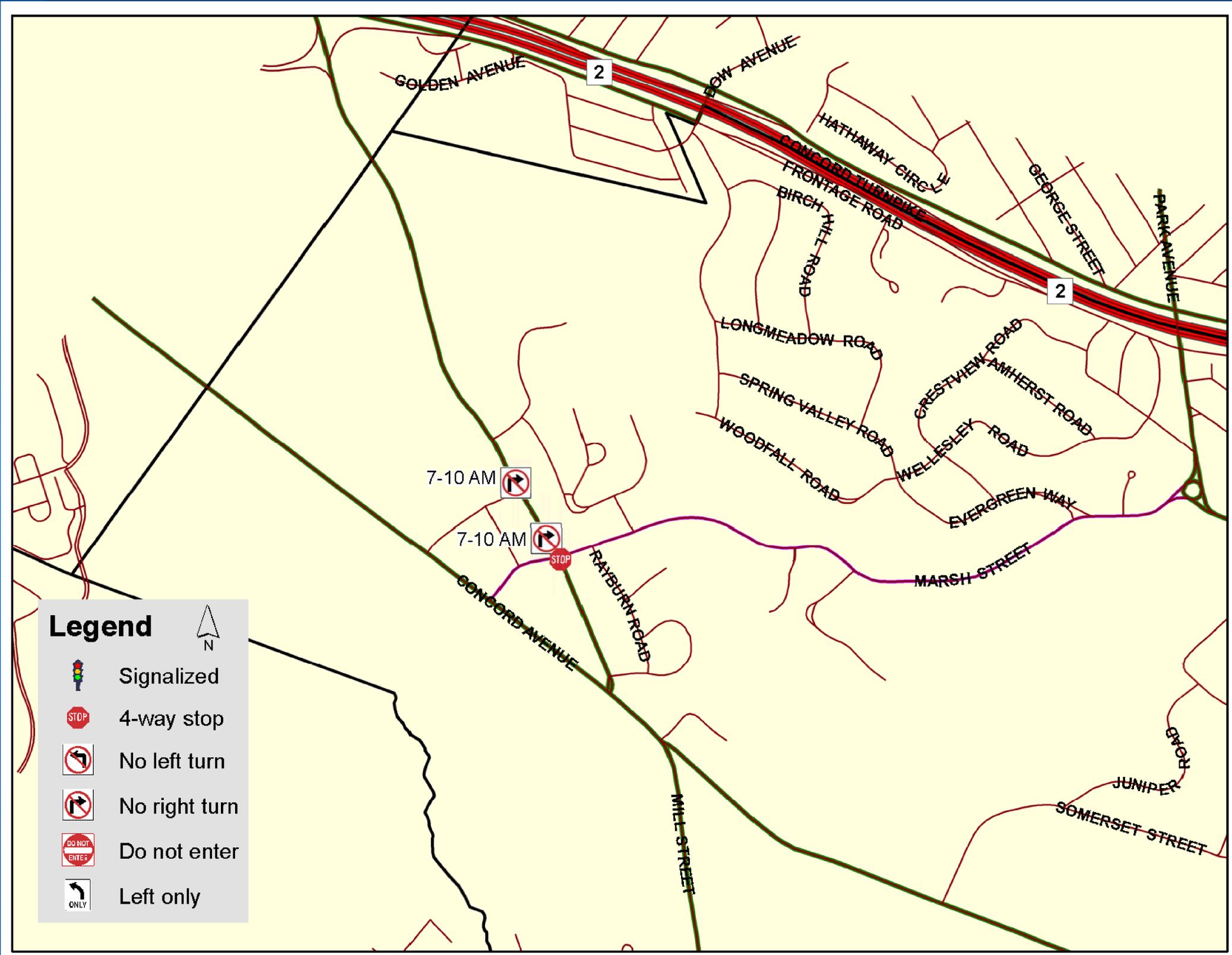
ENTRY POINT	Trips ending outside Belmont		
	12 hr (6-6)	AM (7-9)	PM (4-6)
Concord @ Winter	25%-41%	29%-41%	19%-37%
Park @ Rt 2	38%-58%	54%-80%	20%-26%
Trapelo @ Mill	79%-89%	85%-94%	83%-93%
Belmont @ Lexington	37%-46%	25%-29%	42%-56%
Pleasant @ Rt 2	66%-82%	57%-83%	71%-81%
Lake @ Cross	44%-52%	35%-39%	51%-74%
Trapelo @ Common	48%-53%	42%-48%	64%-70%
Concord @ Blanchard	64%-71%	66%-72%	74%-83%
Grove @ Huron	30%-50%	25%-46%	35%-50%
Belmont @ Grove	64%-71%	67%-72%	69%-79%



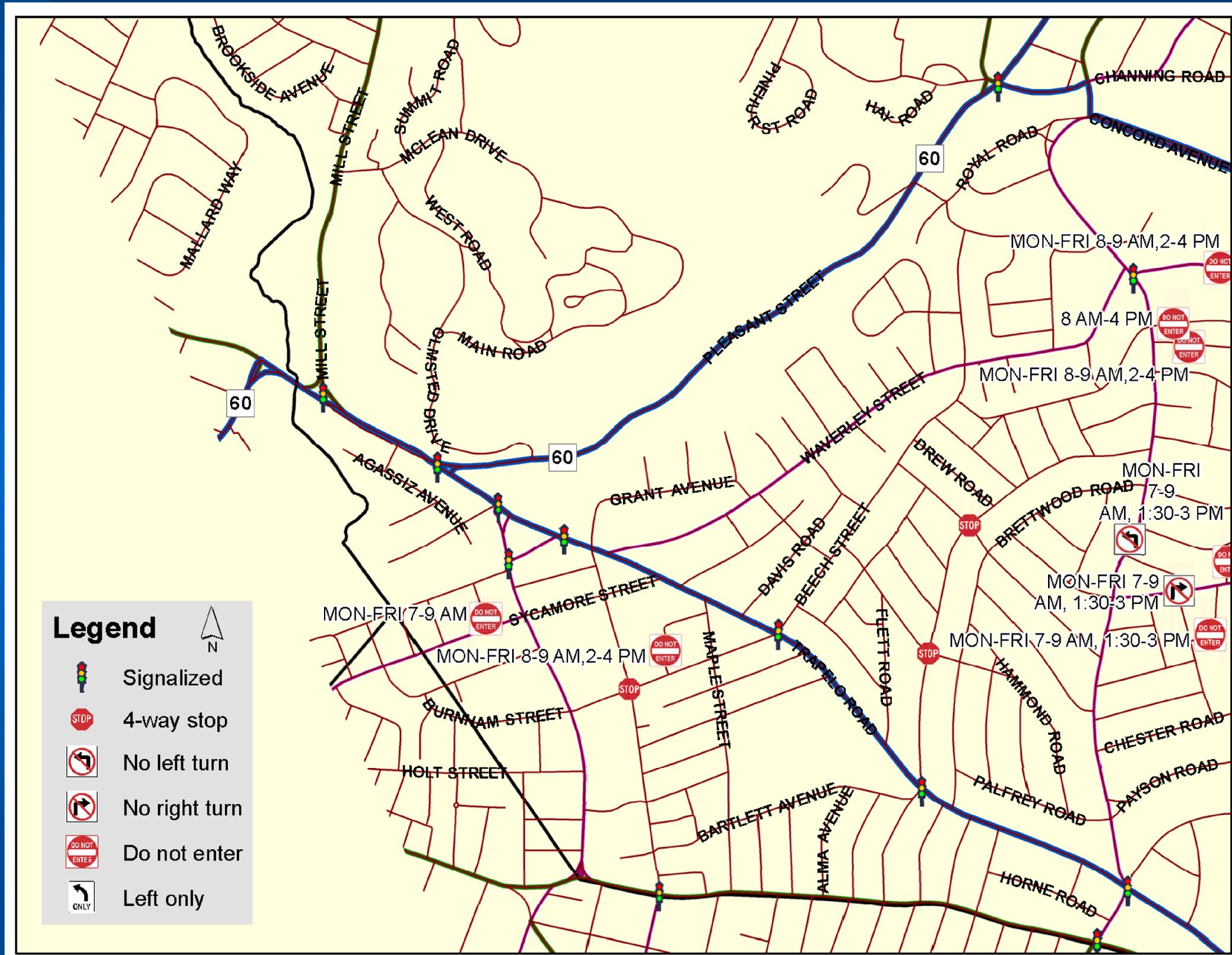
Existing Traffic Restrictions



Existing Traffic Restrictions



Existing Traffic Restrictions



Study Objectives - Restated

- Improve safety for all users
- Minimize cut-through traffic
- Reduce congestion/improve or maintain access



Mitigation Strategies

- Safety is the Goal
- Cut-through traffic: Keep vehicles on main roads
- Speeding: Employ self regulating roadway design
- Congestion: Increase capacity at key intersections



Traffic Calming: Volume vs Speed

- *Traffic calming* will mitigate traffic impacts on pedestrians and bicyclists
- *Volume control measures* use barriers to preclude one or more movements along a street or at an intersection (e.g. roadway closures, turn restrictions, circulation changes).
- *Speed control measures* use deflection of vehicle paths to moderate speeds (e.g. speed tables, raised crosswalks, roundabouts, parking treatments).



Examples of Volume Control Measures



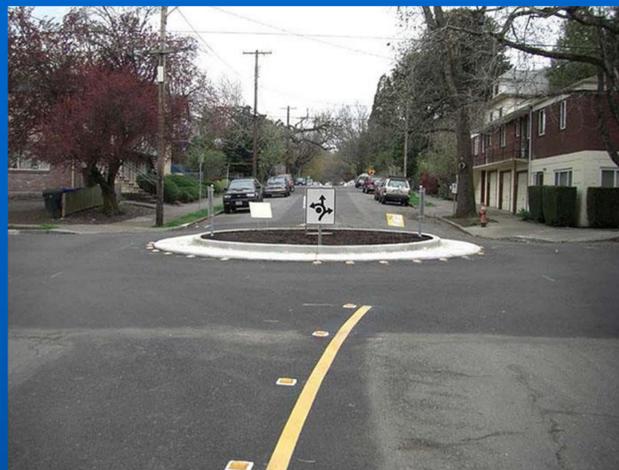
Diverters



Median Barriers



One-Way/Circulation Changes



Traffic Circle



Turn Restrictions



Road Closure



Examples of Speed Control Measures



Speed Hump



Choker



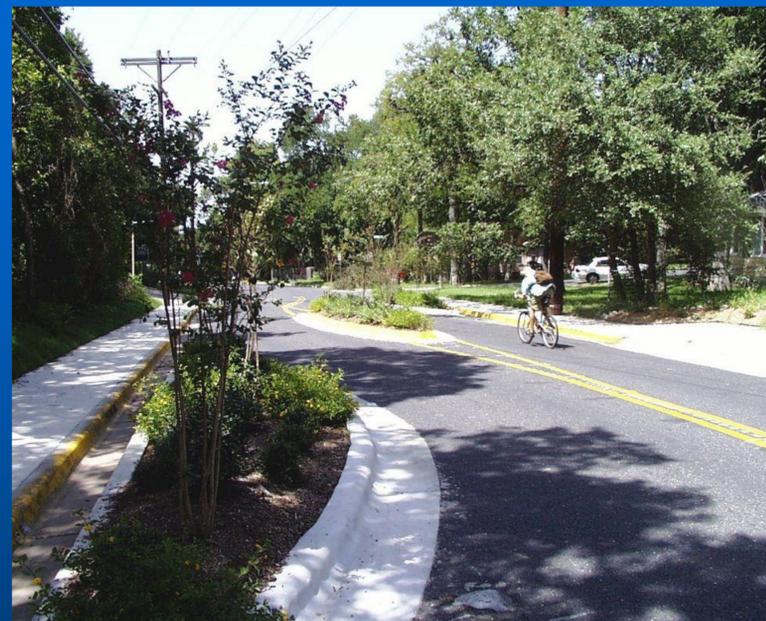
On-Street Parking



Speed Feedback



Chicane



Lateral Shift

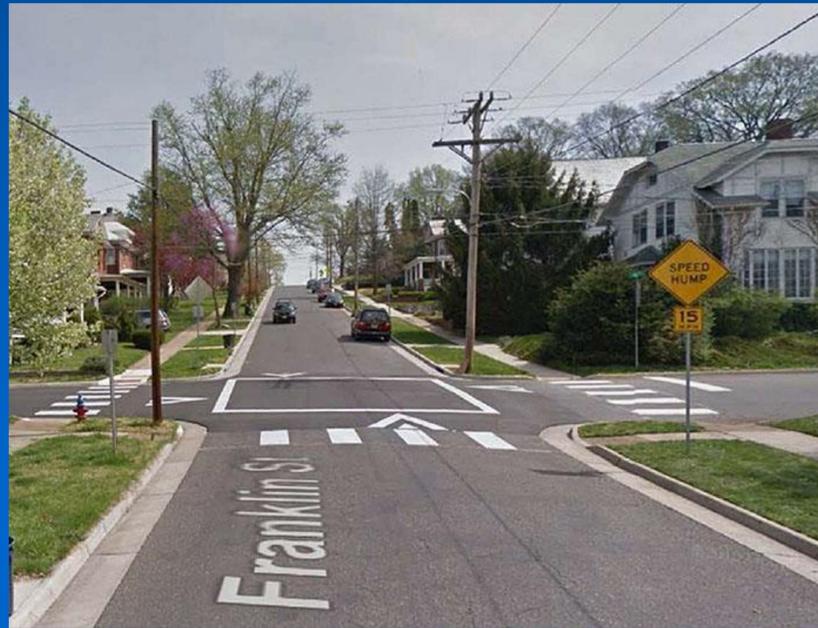


Corner Extension



Examples of Pedestrian Safety

Measures



Raised Intersection



Crossing Island



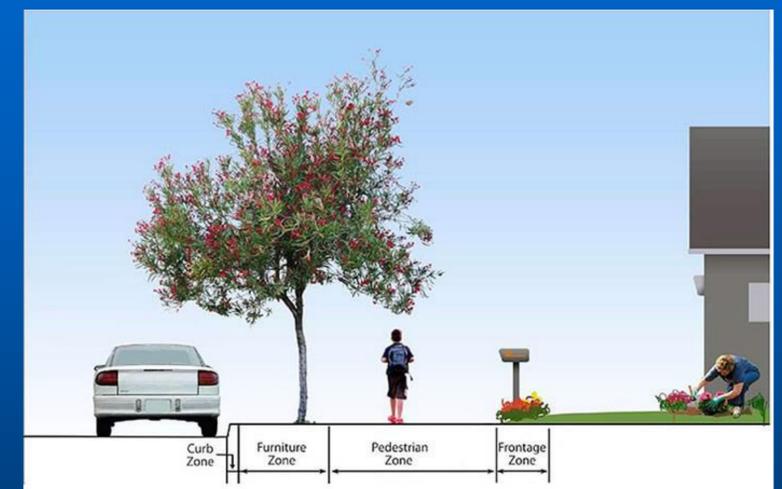
Rectangular Rapid Flashing Beacon (RRFB)



Raised Crossing



Colored Crosswalks



Curbing and Street Furniture



Measures Under State Jurisdiction

- Tolling of Non-Residential traffic
 - **Needs state approval**
- Automatic Speed Enforcement
 - **Needs legislation**
- Restricting Access from Neighboring Towns
 - **Restricting access from/to roadways under state jurisdiction or built with Federal funds requires MassDOT permission.**
 - **Neighboring town's approval also required.**



Next Steps

Selectmen appointed Transportation Advisory Committee will be tasked with the following:

- Reviewing the written Draft Report
- Identify acceptable commuter traffic routes through Belmont
- Recommend techniques to keep commuter traffic on the main routes
- Recommend techniques to improve safety for pedestrians and bicycles along main routes
- Evaluate existing traffic controls and recommend upgrades and improvements as required
- Evaluate the feasibility of separating Belmont traffic from commuter traffic



• Questions????

