

Working Group Meeting #4

March 3rd, 2025



Agenda

- Public Engagement Debrief
 - Open House
 - Walking Tours
- Traffic diversion analysis
 - Process
 - Preliminary Findings



Public Engagement Debrief

Open House & Walking Tours



Overview

4

Walking Tours

Saturday 2/8 11am, 1pm, 3pm
Monday 2/10 5pm

65

Participants

Most Attended: Sat 2/8 11am
29 Participants

537

Question Responses

Survey Open from 2/8 until
2/28 5pm

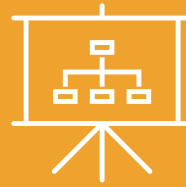
Event Objectives

- Residents, visitors, and stakeholders were able to learn about the project, meet the Design Team, discuss objectives, and begin to form and share their ideas to help Envision Needham Center.



Connect

Face time with project team with open conversations and questions



Educate

Project awareness including timeline, pilot, and grants



Involve

Engagement activities for direct design participation

Event Details

- **Informational Boards** – Read + Discuss
 - Project Intro, Project Milestone, Pilot Project, Safe Streets for All
 - Design Exploration board removed after 45 min – didn't align with event objectives
- **Design Your Own Streetscapes** – Hands-on “Puzzle” Pieces
 - 3 activities available for the public to design their own cross-sections
 - Different right-of-way widths along the street that would allow for different features
- **Project Goal Boards** – Add Your Own Thoughts
 - Safety + Mobility, Sustainability + Resilience, Beautification + Placemaking
- **Place Experience Board** – Vote
 - Participants to identify how they want Great Plain Avenue to feel: Traditional, Traditional + Modern, or Modern
- **Children's Table** – Activity + Coloring Sheets



Results & Observations

- Estimated Participant Total: 75 (not including project team or working group)
- Attendee concerns:
 - Safety
 - Placemaking
 - Traffic (within project limits & elsewhere)
 - Parking
- Discussion themes:
 - Data-backed best practices
 - Traffic circulation study
 - Pilot demonstration
 - Ongoing engagement

Key Takeaways



Vigorous Community
Involvement



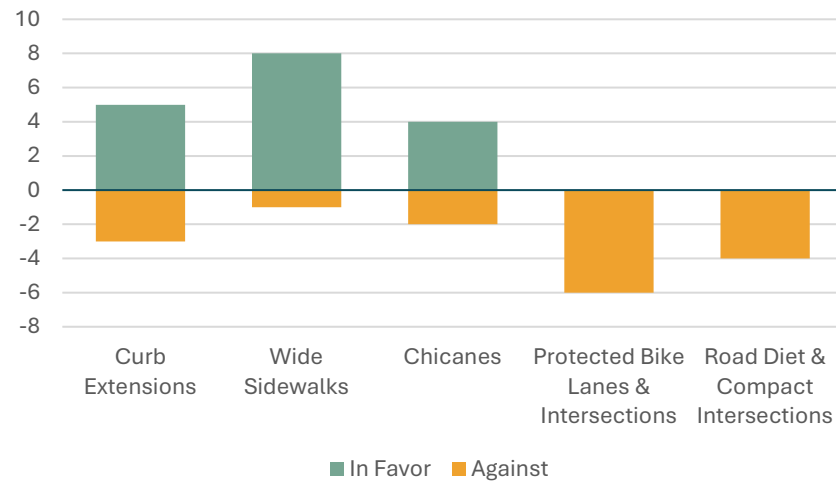
Prioritize Placemaking, Safety,
& Active Transportation



Need for consistent
public updates

Results & Observations

Safety & Mobility



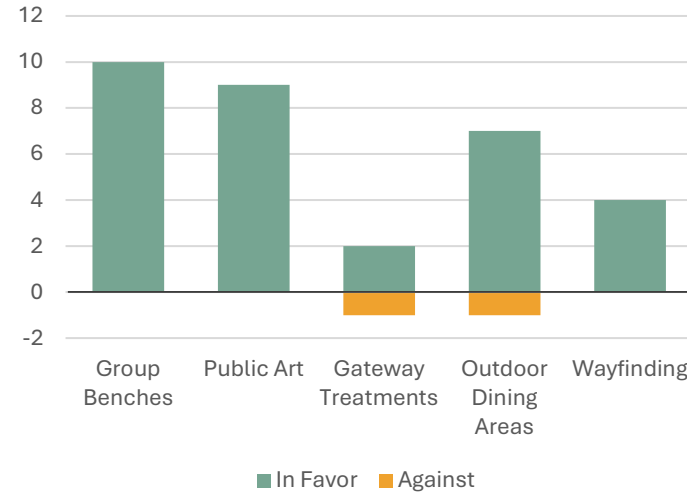
Protected bike lanes:

- Concerned about impact of traffic
- Lack of current cyclists in the Center
- Flex posts “don’t work” – constant maintenance
- What happens outside project limits?

Road diets / curb extensions:

- “Traffic is already bad – this will make it worse”

Beautification & Placemaking



Group benches:

- Need shade or wood materials

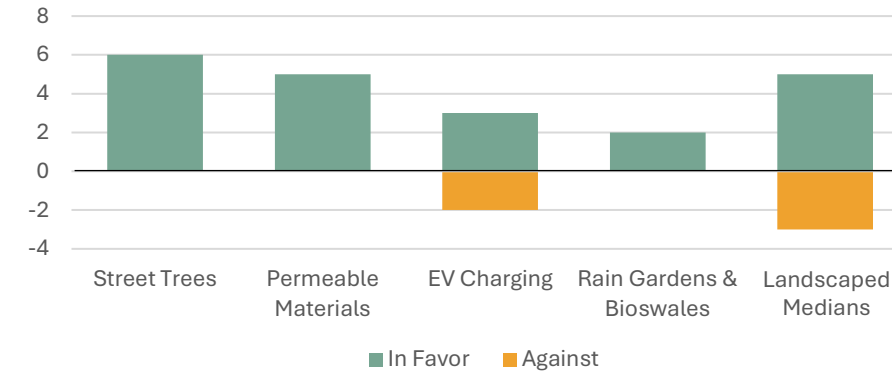
Gateway treatments:

- Memorable placemaking

Outdoor dining:

- Great way to enhance Needham
- Not appealing next to a busy street

Sustainability & Resilience



Permeable materials:

- Would like to mimic a brick pattern

EV Charging:

- Might be more appropriate at library/grocery store than downtown

Landscaped medians:

- Native plants preferred
- Would rather add plantings to sidewalk areas



Results & Observations

I want Great Plain Avenue to feel...



TRADITIONAL

8



**TRADITIONAL
& MODERN**

26



MODERN

2





Outreach Event No. 2B

Walking Tours

Great Plain Avenue
Sat 02.08.25 | 11 am, 1 pm, 3 pm
Mon 02.10.25 | 5 pm



Event Objectives

- Guided Walking Tours of the project limits provided opportunity for stakeholders to engage with the Design Team and Working Group members while taking the Walking Tour survey.



Observe

Lead the public in looking at existing conditions



Converse

Engage in conversations and allow for questions



Collect

Encourage feedback through Walking Tour Survey

Event Details

- Participants were walked through **10 pre-identified stops** throughout the project limits starting with stop 1 one at the Town Common on the corner of Great Plain Ave and Highland Ave
- Participants were informed of the high-level questions the design team is asking including **questions on safety, pedestrian comfort, general feel of the specific location**, and in some cases, pointed questions about existing conditions or potential changes (these questions were in alignment with Survey questions)
- After stop 10, participants were brought to the public alley adjacent to Chapel Street where the new textile themed mural is for final observational opportunities and open Q&A
- Participants were reminded that the digital survey would be open and available until **Friday February 28th**



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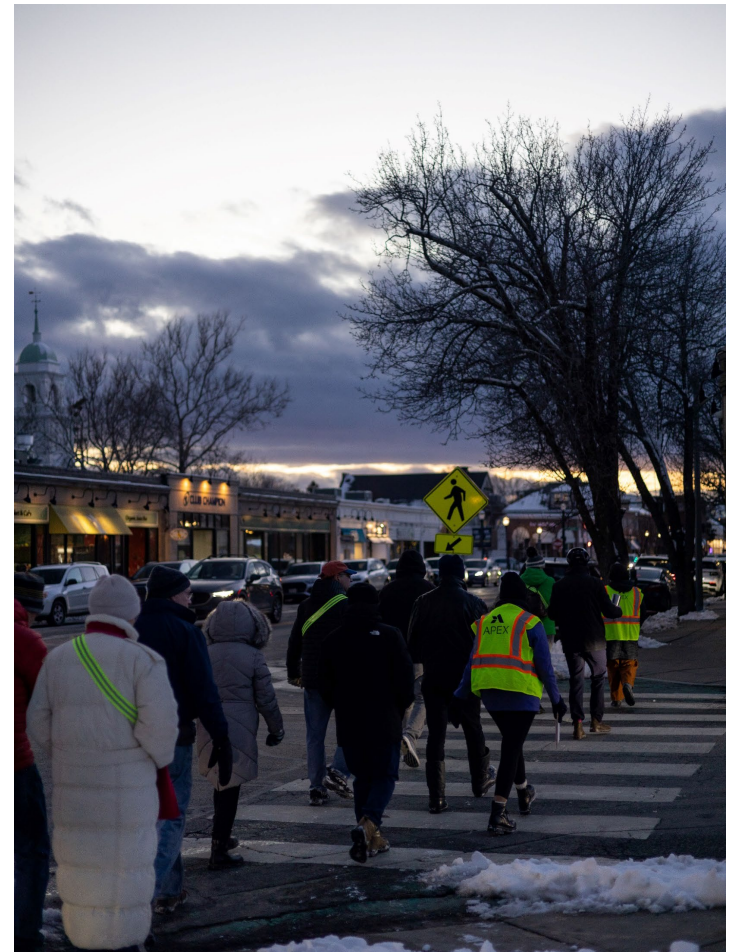
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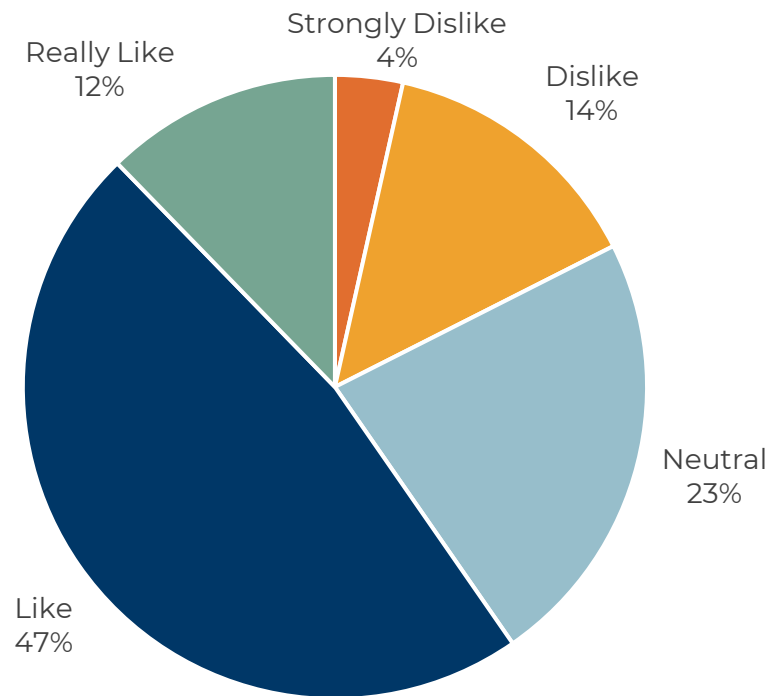
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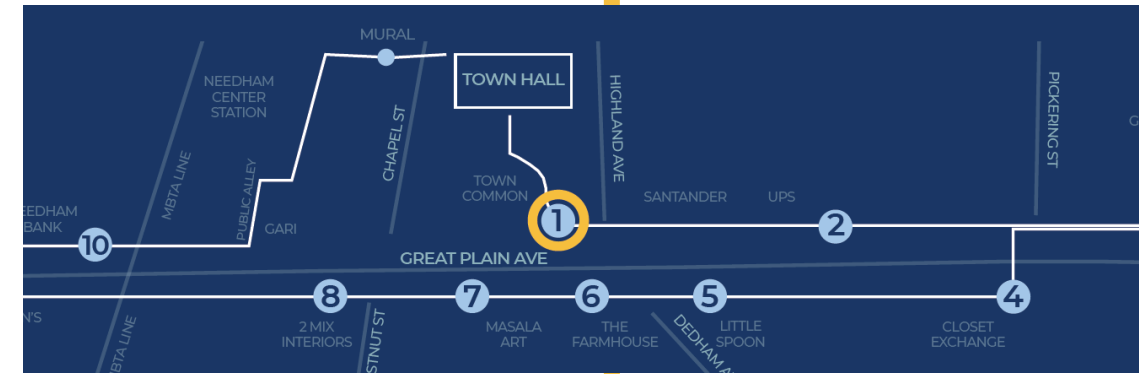


Preliminary Shares

Stop 1: This pedestrian area was updated in 2017.
Do you like the materials/aesthetics?



Strongly Dislike Dislike Neutral Like Really Like



"From a transportation standpoint, I like the use of brick at this intersection as a traffic calming technique, and I like the way the rounded sidewalk corner juts out into the street a bit."

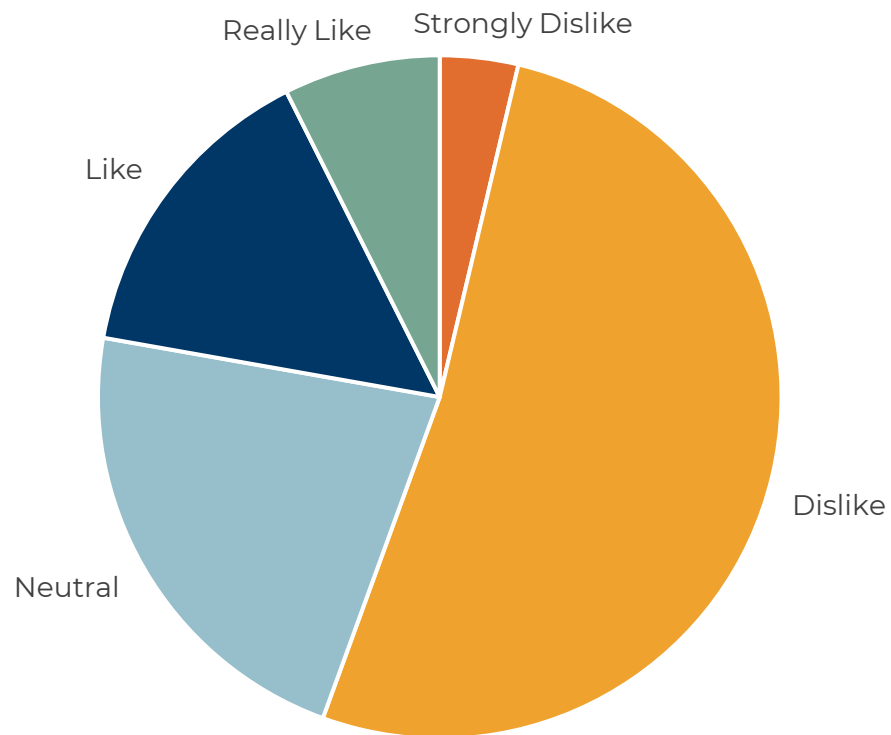
"The updates took away the charm of the old downtown ..."

"...I'd like to see design that preserves the historic look of the center."



Preliminary Shares

Stop 2: How do you feel about the width of the sidewalk here and the types of on the sidewalk?



Strongly Dislike Dislike Neutral Like Really Like



"Too narrow. This is a forgotten and old feeling stretch of town. It is not welcoming"

"I think the sidewalk here could be wider -- I sometimes dog walk here and it can be awkward to pass someone, or come upon someone who is coming out of a shop...it would be nice to have some seating areas, including outdoor seating for potential restaurants if one ever moves in on this of the street."

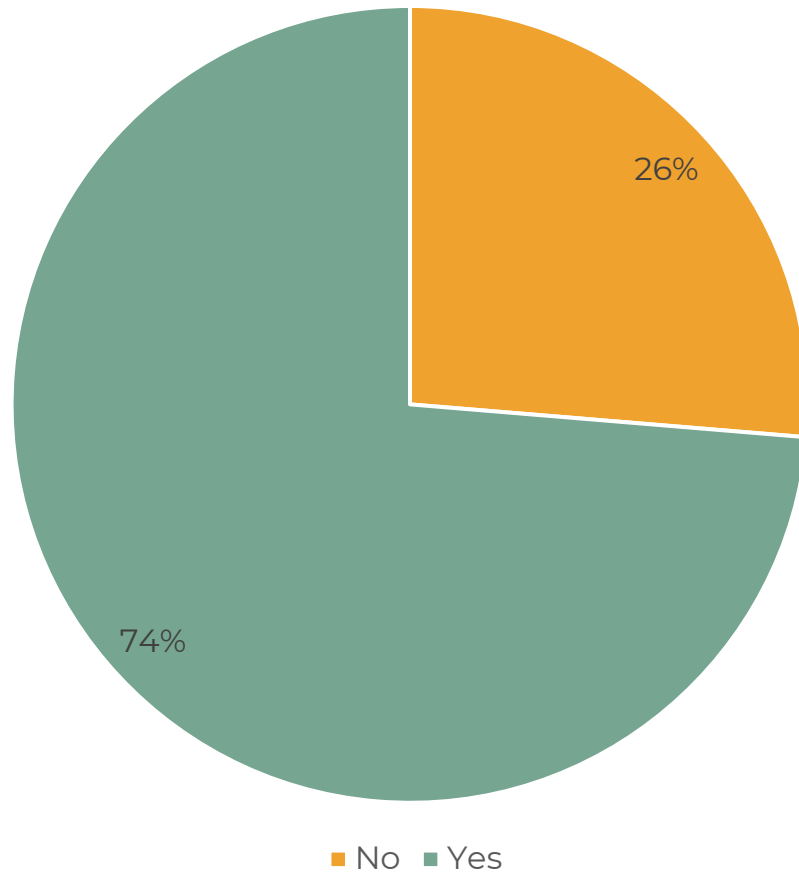
"Easy to walk individual but a group would have more difficulty"

"It would be nice to see some bump outs with some plantings and benches..."



Preliminary Shares

Stop 3: If it were safer would you ride your bicycle here?



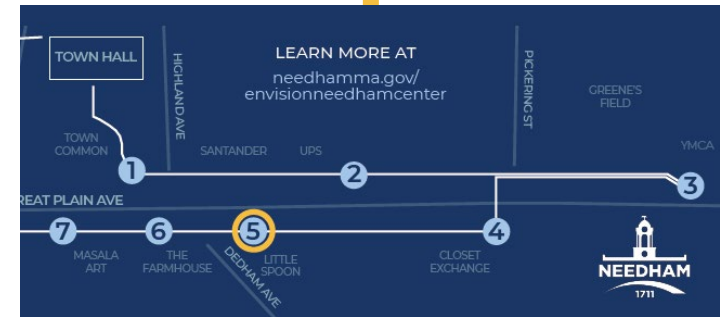
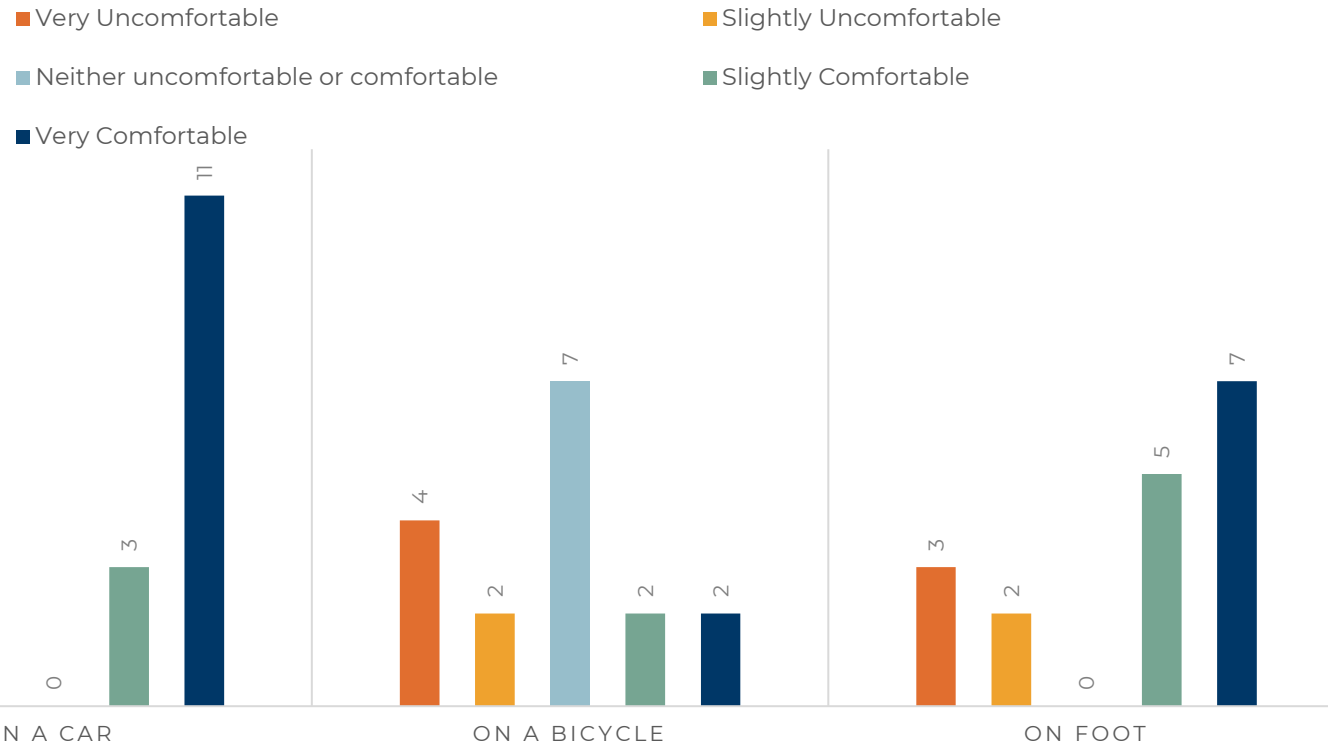
"Comfortable here as a sidewalk pedestrian but not as a crossing pedestrian."

"I'd like to ride my bike into the town center, but getting there is currently a challenge as there aren't bike lines on the major roads."

"For me to ride my bike here, it would really have to be much improved, with more space for bike travel and separation from car traffic..."

Preliminary Shares

Stop 5: Dedham Ave Intersection Comfort



"Island is great but no walk signal to cross to it from Little Spoon."

"As a motorist hard to track which lights are applicable to my lane"

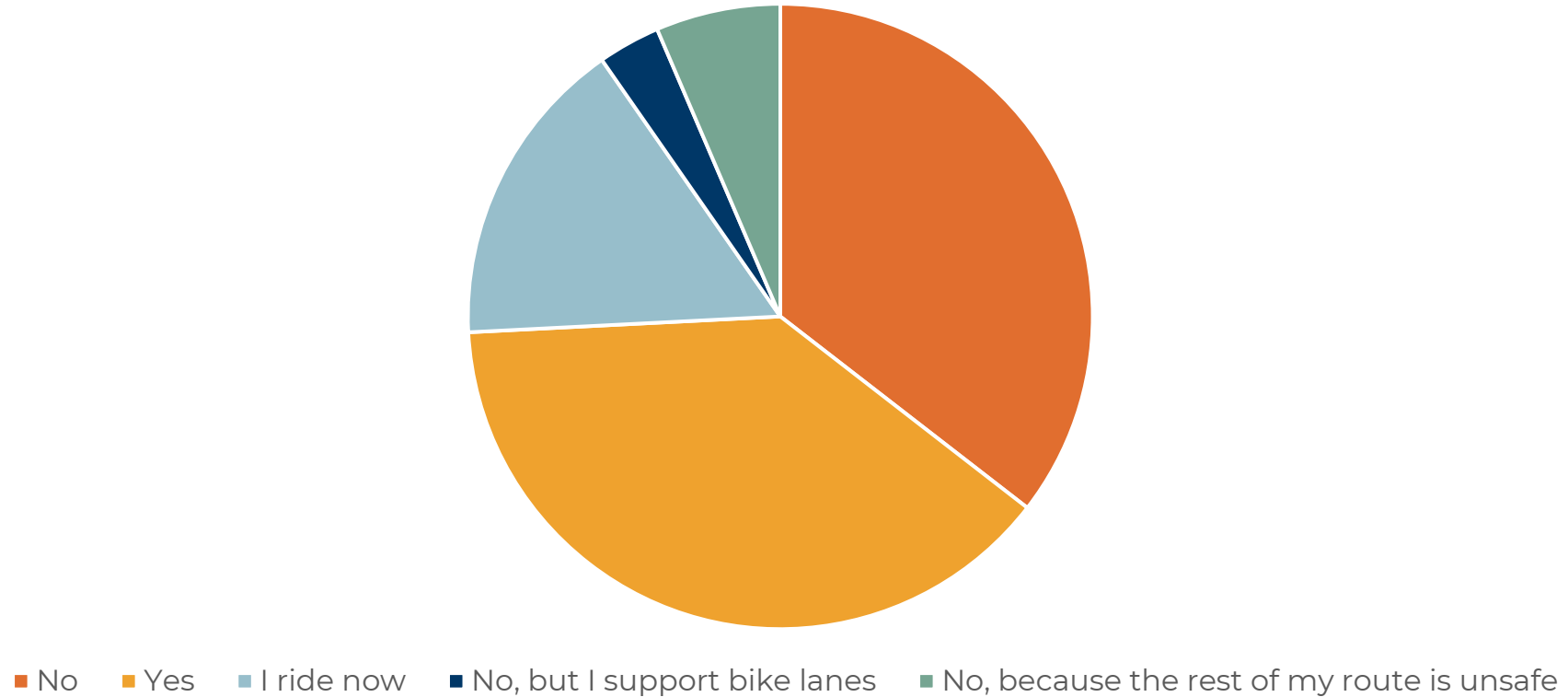
"The extended light from the last renovation was very helpful."

"Everything takes too long. Pedestrians wait a long time for a signal that is too quick. And getting g through this intersection as a driver can take multiple light cycles during busy times..."



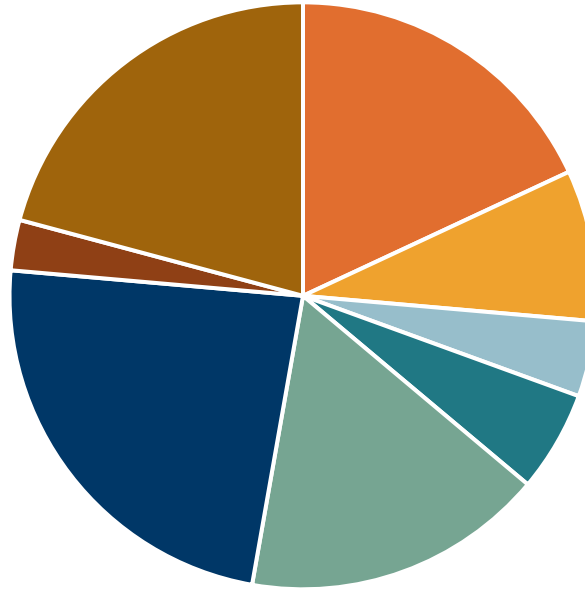
Preliminary Takeaways

Would you ride your bicycle along Great Plain Avenue if it were safer?



Preliminary Takeaways

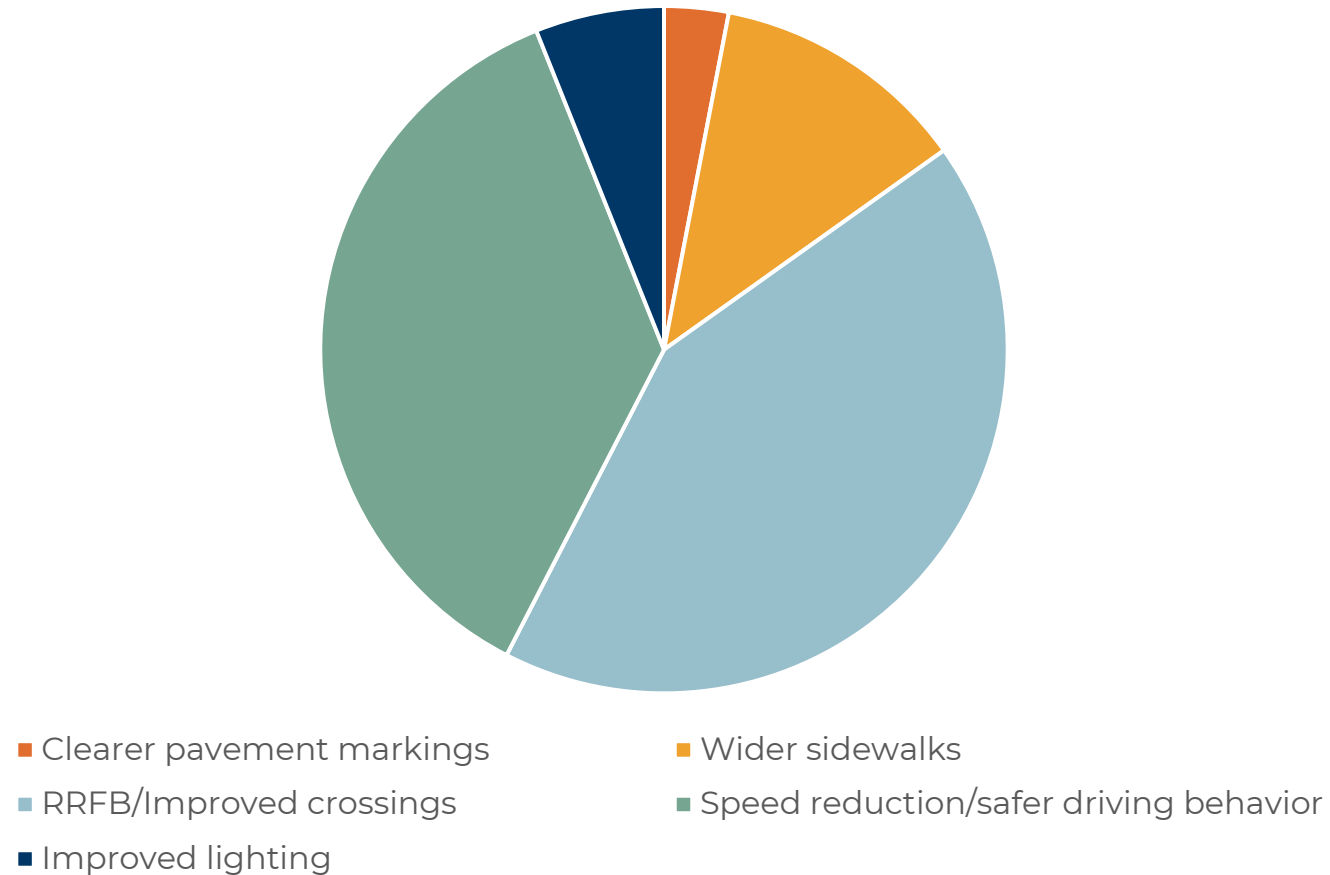
What would it take to make Needham Center an engaging destination for you?



- Beautification & Landscaping
- Reduced Train noise
- Wider/better sidewalks & crossings
- Reduced Car speeds
- More Parking
- Better bike lanes
- Placemaking/Business diversity
- Outdoor seating/dining/events

Preliminary Takeaways

What improvements would make downtown safer for people of all ages?



Traffic Diversion Analysis

Process & Preliminary Findings



Process

1

Estimate how many trips will be diverted from Needham Center to the surrounding roadway network

2

Identify potential routes for these diverted trips

3

Evaluate two traffic scenarios

- Worst case
- Realistic case



Process

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Estimate how many trips will be diverted from Needham Center to the surrounding roadway network

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Identify potential routes for these diverted trips

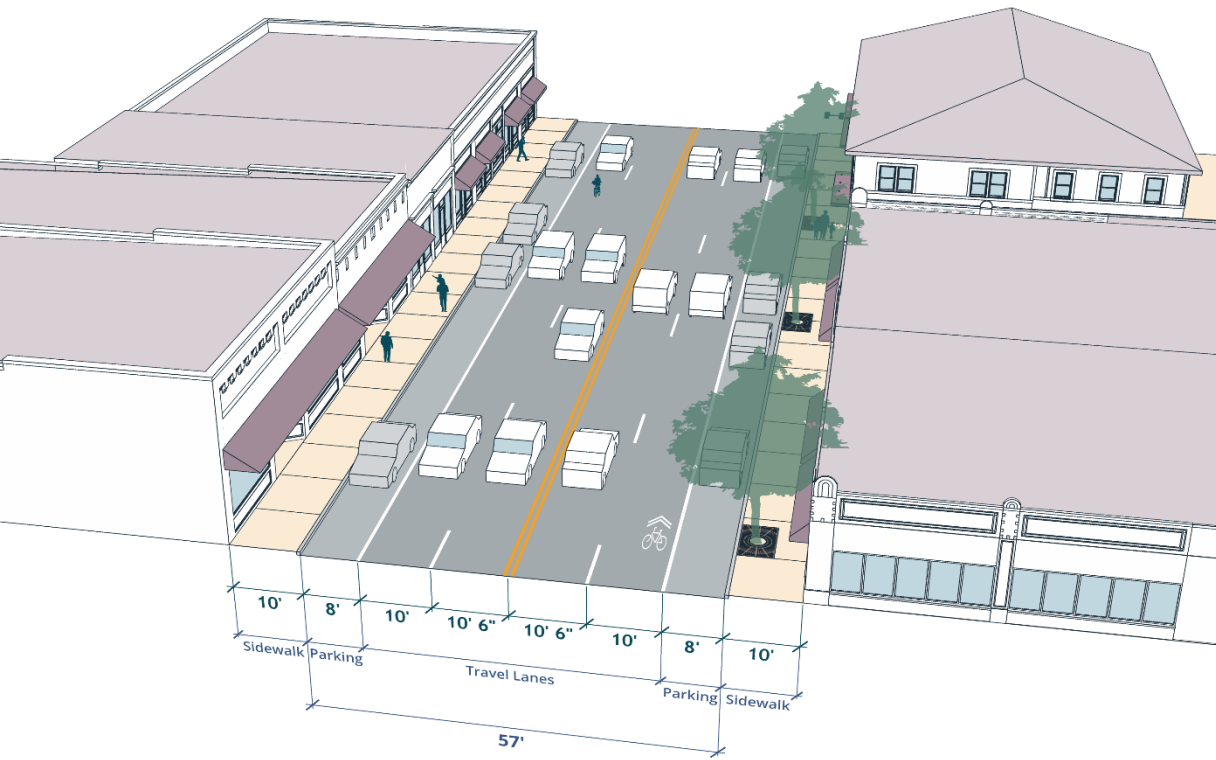
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Evaluate two traffic scenarios

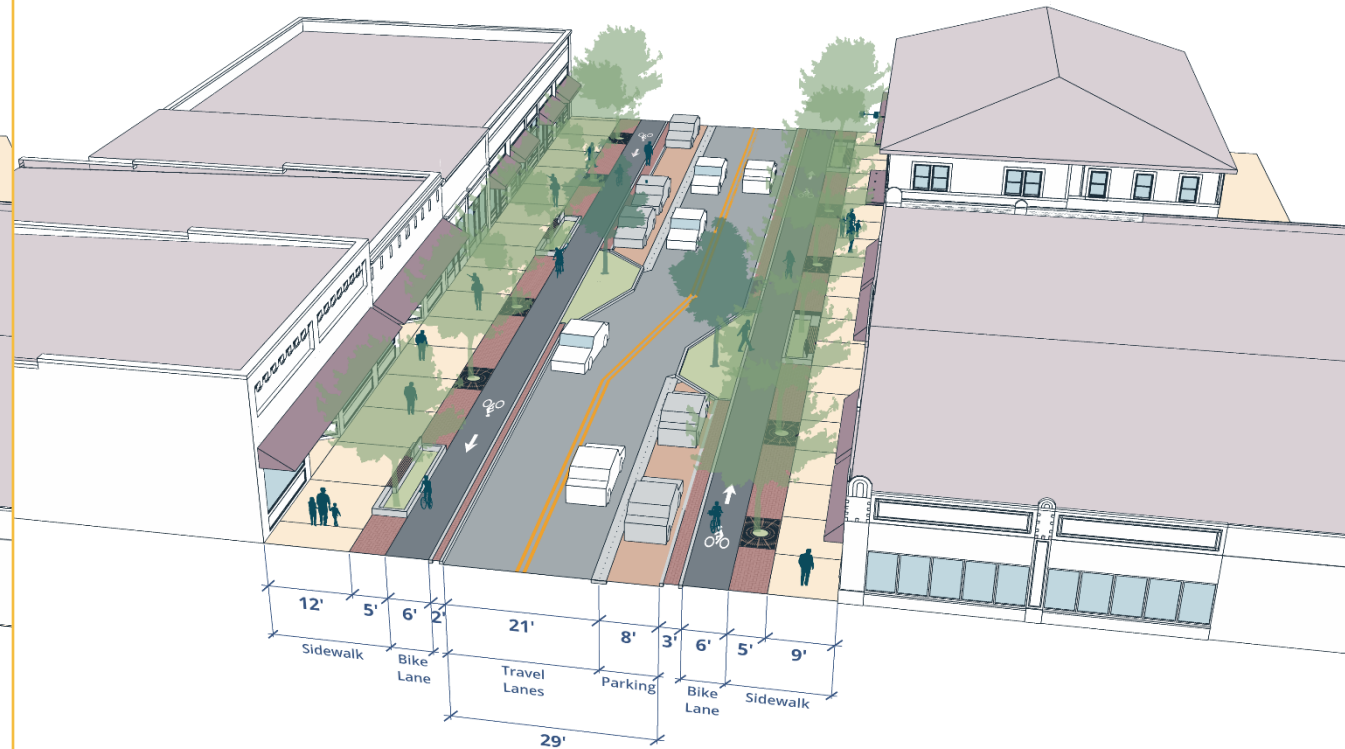
- Worst case
- Realistic case



Existing & Proposed Conditions



Existing



Proposed

Key Takeaway:

The traffic diversion analysis estimates how regional traffic will adjust to a road diet that eliminates two travel lanes along Great Plain Avenue within the project limits.



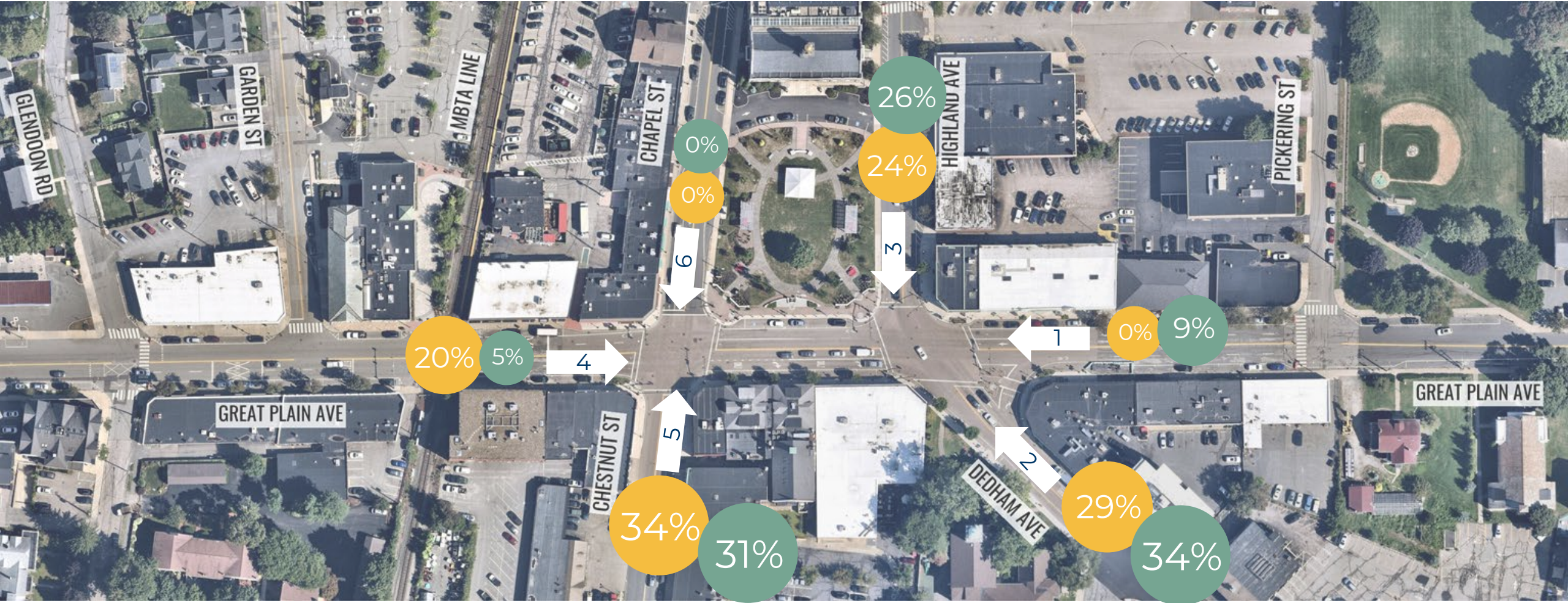
Assumptions

- All roadways within the Center will be reduced to one lane in each direction
- Exclusive pedestrian phasing will remain in effect
- Traffic signal timing will be adjusted to respond to the demand given the proposed lane configuration
- On each approach, any portion of the traffic that is over capacity will be diverted to surrounding roadways



Percentage of trips diverted

Peak hours

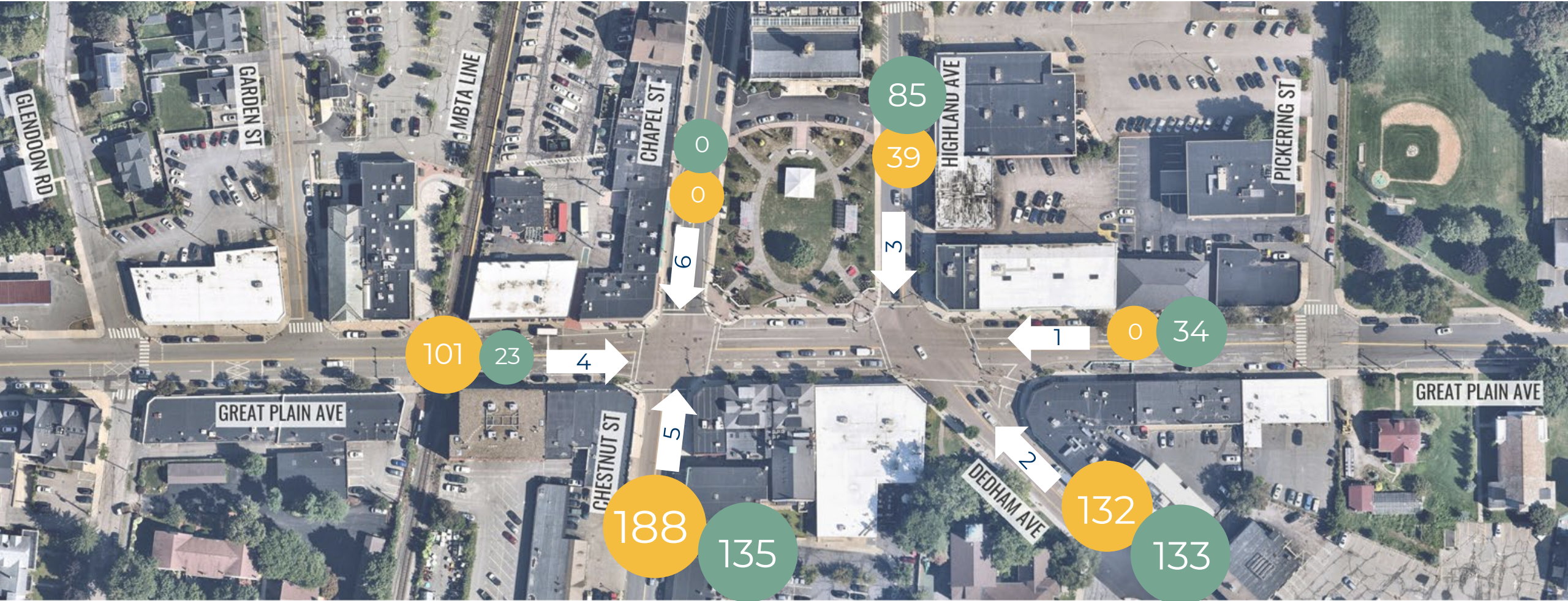


Key Takeaway:
Trips passing through project limits via Chestnut St Northbound, Dedham Ave Northbound, & Highland Ave Southbound are most likely to be diverted by a reduction in travel lanes.



Number of trips diverted

Peak hours

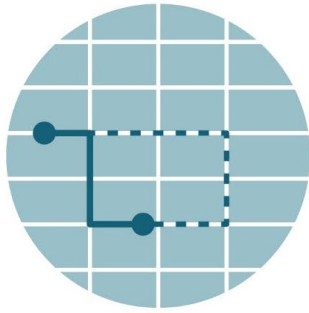


Key Takeaway:

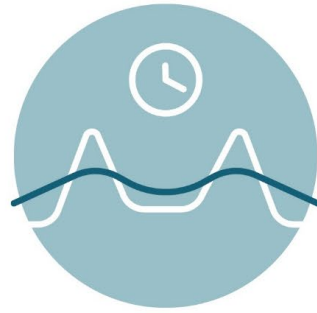
Trips passing through the project limits via Dedham Ave Northbound and Chestnut St Northbound will likely represent greatest number of diverted trips due to a reduction in travel lanes.



How changes in vehicle capacity can change behavior



Route Change



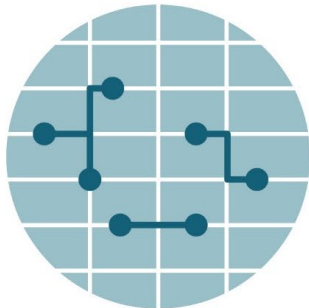
Time Shift



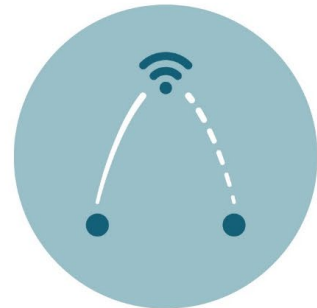
Proximity Shift



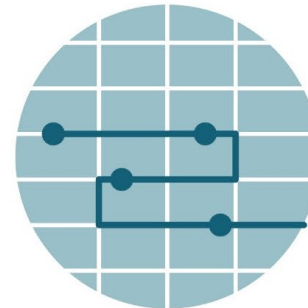
Mode Change



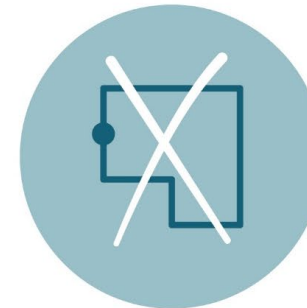
Trip Length Change



Trip Substitution



Trip Chaining



Trip Elimination

Process

1

Estimate how many trips will be diverted from Needham Center to the surrounding roadway network

2

Identify potential routes for these diverted trips

3

Evaluate two traffic scenarios

- Worst case
- Realistic case



How Alternative Routes were Identified

1

Replica data platform

- Derived from phone data, traffic counts, and demographic data
- Uses trip origins, destinations and lengths to estimate traffic diversion routes that could result from a change in vehicle capacity

2

Google Mapping

- Used to confirm diversion routes

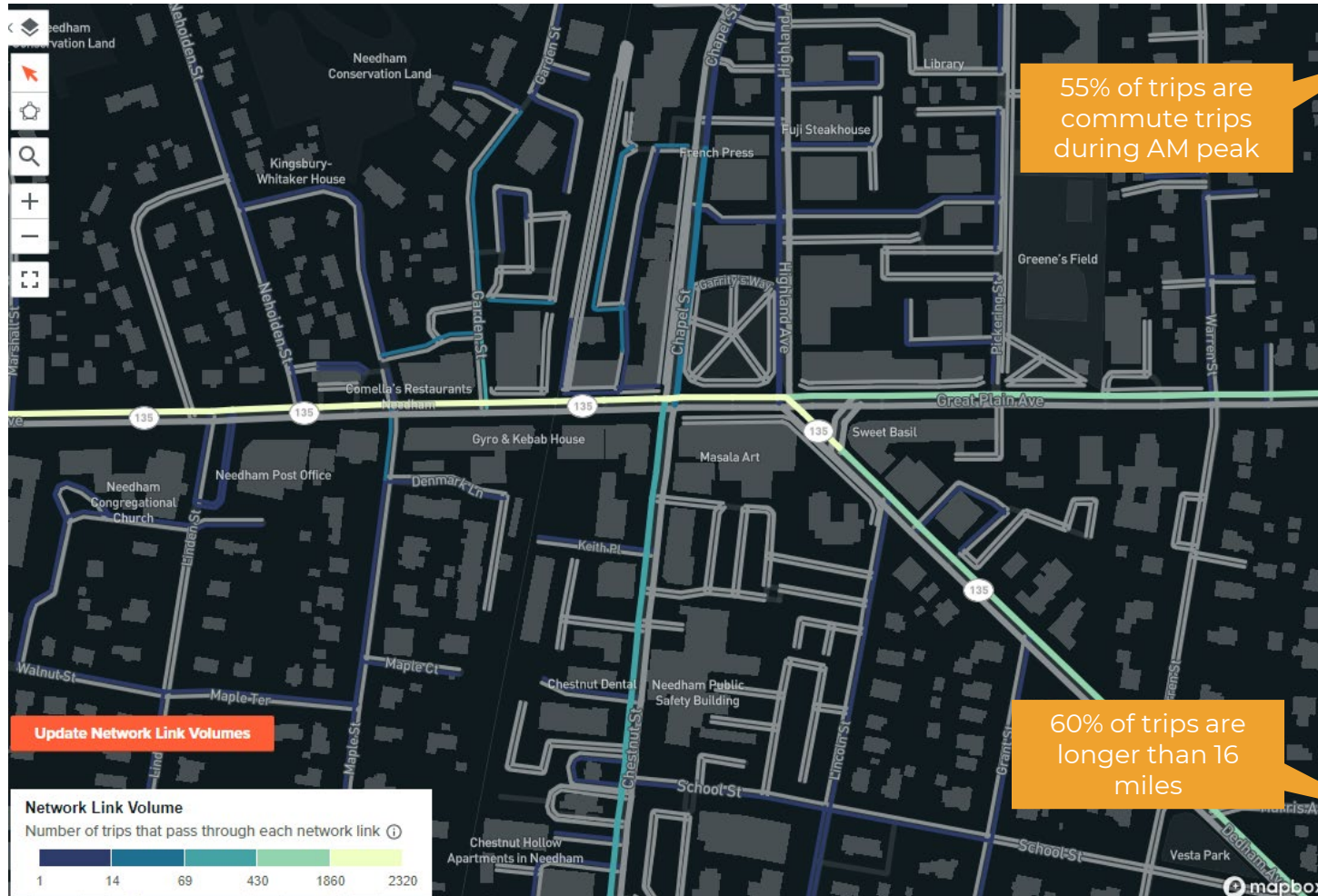
3

Diversion Estimates

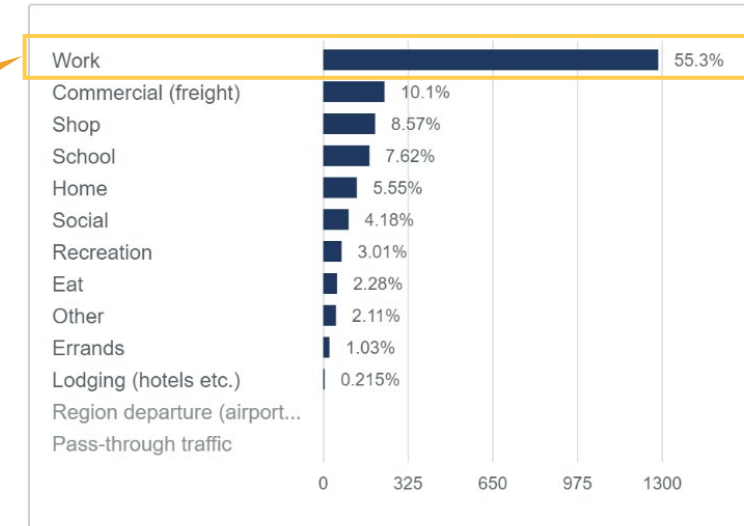
- Inform the locations of additional traffic counts and analyses
- Aid in identifying mitigation on streets that may see increased traffic
- Aid in planning for the pilot demonstration



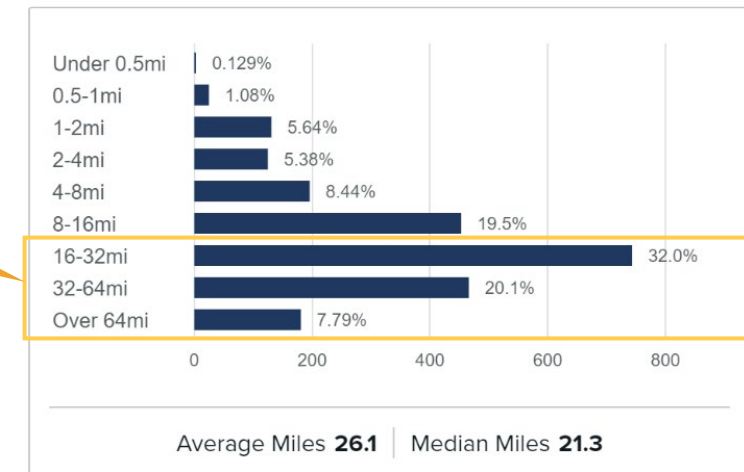
Replica Data – AM Peak Hour



Trip Purpose



Trip Distance (Miles)



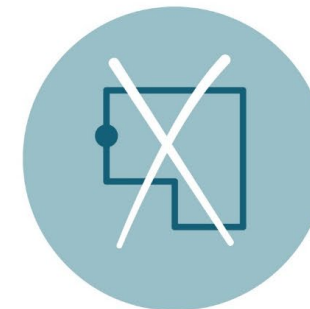
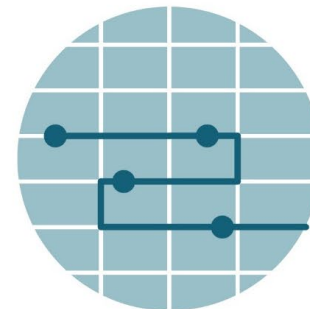
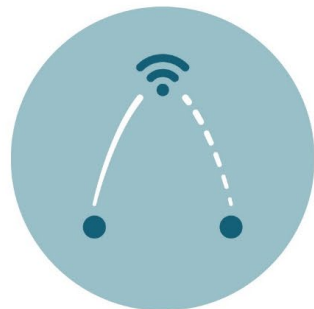
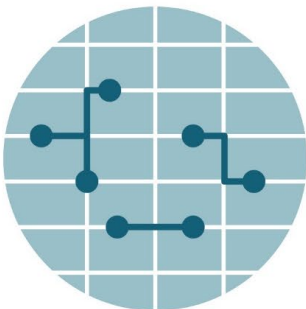
Why do people drive through Needham?

- Mass Pike (I-90) has tolls
- I-95 can be congested



How changes in vehicle capacity can change behavior

Worst case scenario



Key Takeaway:

In the worst-case scenario, drivers only adjust their behavior due to the reduction in vehicle capacity in Needham Center by changing their route.



Process

1

Estimate how many trips will be diverted from Needham Center to the surrounding roadway network

2

Identify potential routes for these diverted trips

3

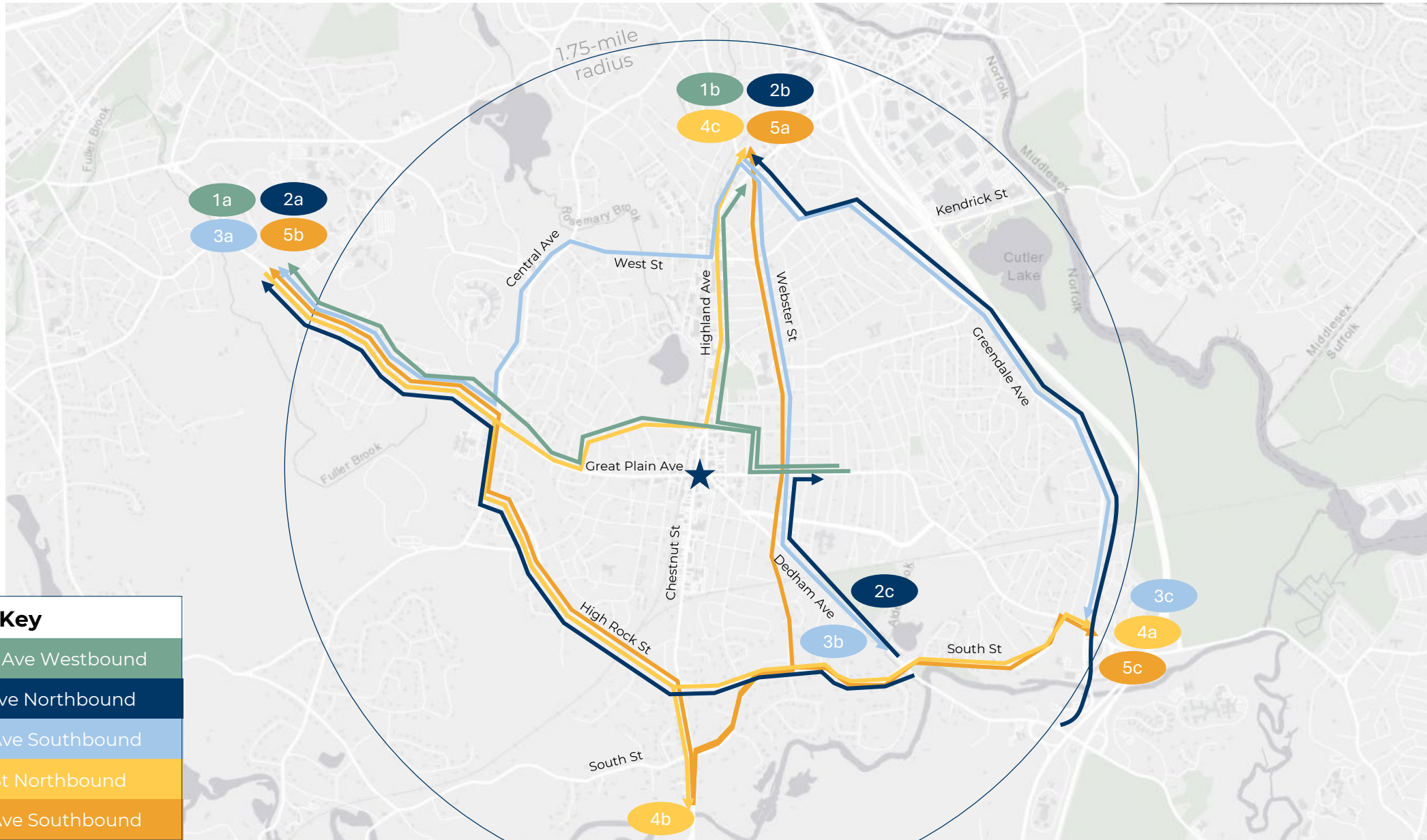
Evaluate two traffic scenarios

- **Worst case**
- Realistic case



- All traffic diverts onto local streets within 1.75 miles of the Center
- No shift to other travel modes
- No diversion onto regional highways or roadways

Potential diversion routes

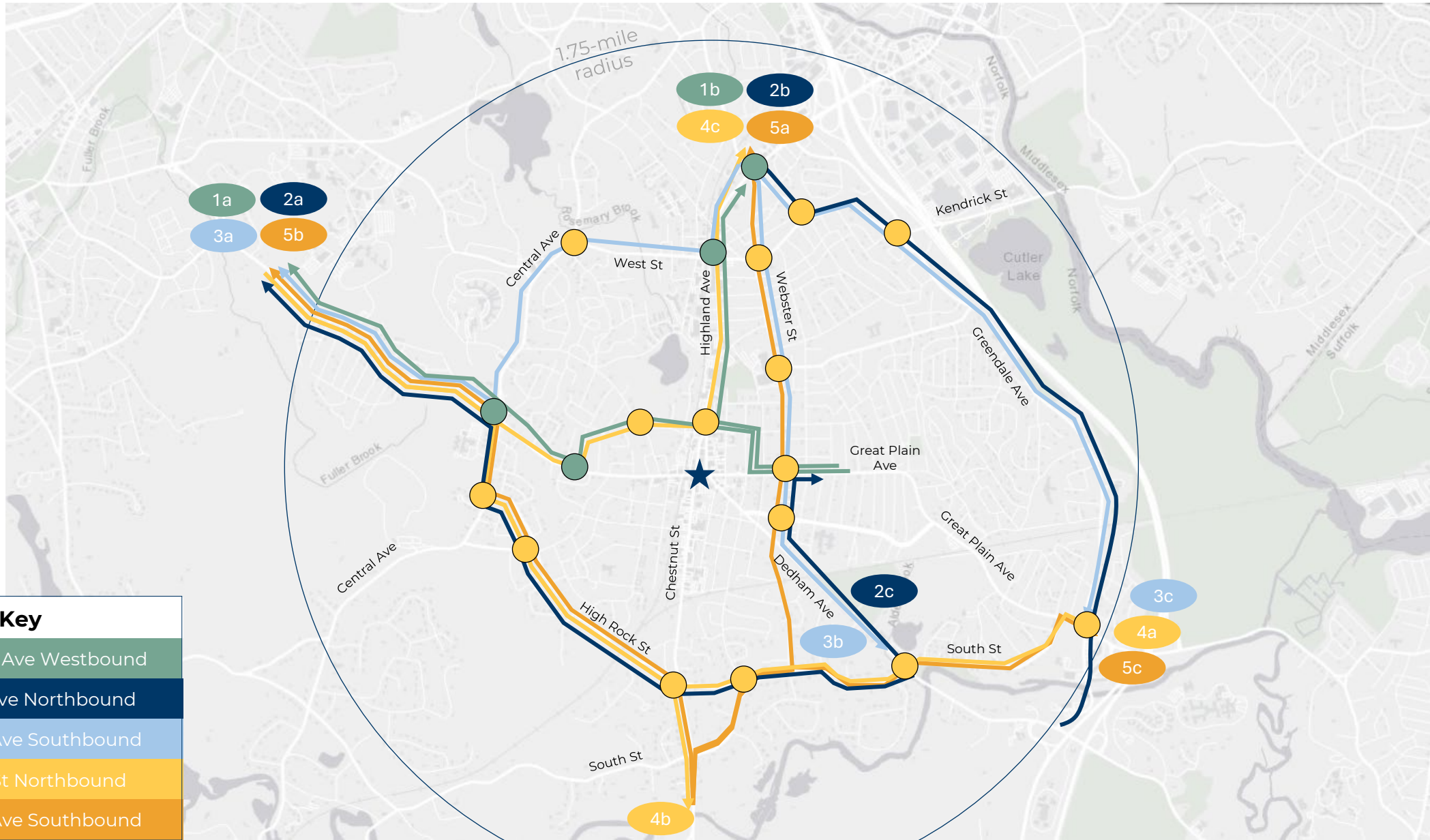


Approach Key
1: Great Plain Ave Westbound
2: Dedham Ave Northbound
3: Highland Ave Southbound
4: Chestnut St Northbound
5: Highland Ave Southbound

Potential diversion routes

Impacted Intersections

- Increased traffic from diversion
- Shifted turning movements from diversion



Approach Key	
1:	Great Plain Ave Westbound
2:	Dedham Ave Northbound
3:	Highland Ave Southbound
4:	Chestnut St Northbound
5:	Highland Ave Southbound



Process

1

Estimate how many trips will be diverted from Needham Center to the surrounding roadway network

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Evaluate two traffic scenarios

- Worst case
- **Realistic case**

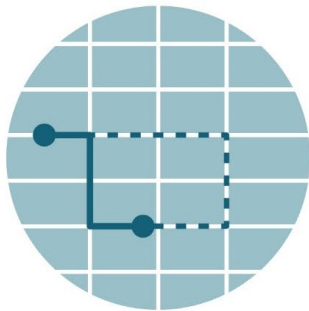


- Trips < 1 mile will become walking trips, biking trips, or “park once and walk” trips
- Trips > 16 miles will divert to regional highways
- Remaining trips will divert to streets around the Center

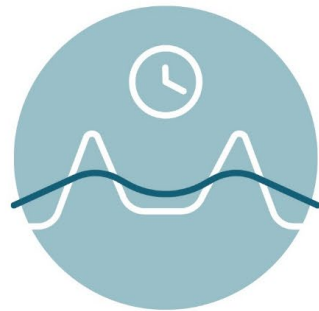


How changes in vehicle capacity can change behavior

Realistic scenario



Route Change



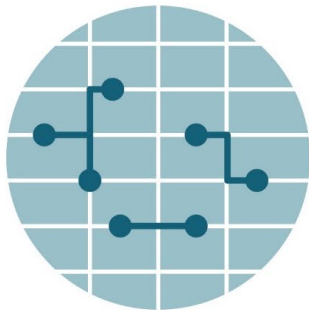
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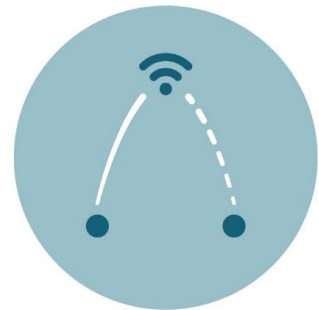
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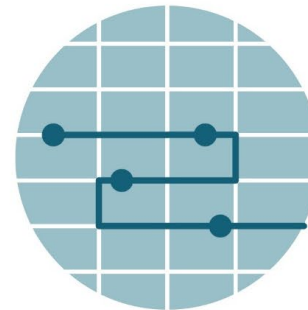
Mode Change



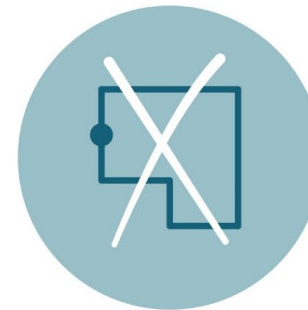
Trip Length Change



Trip Substitution



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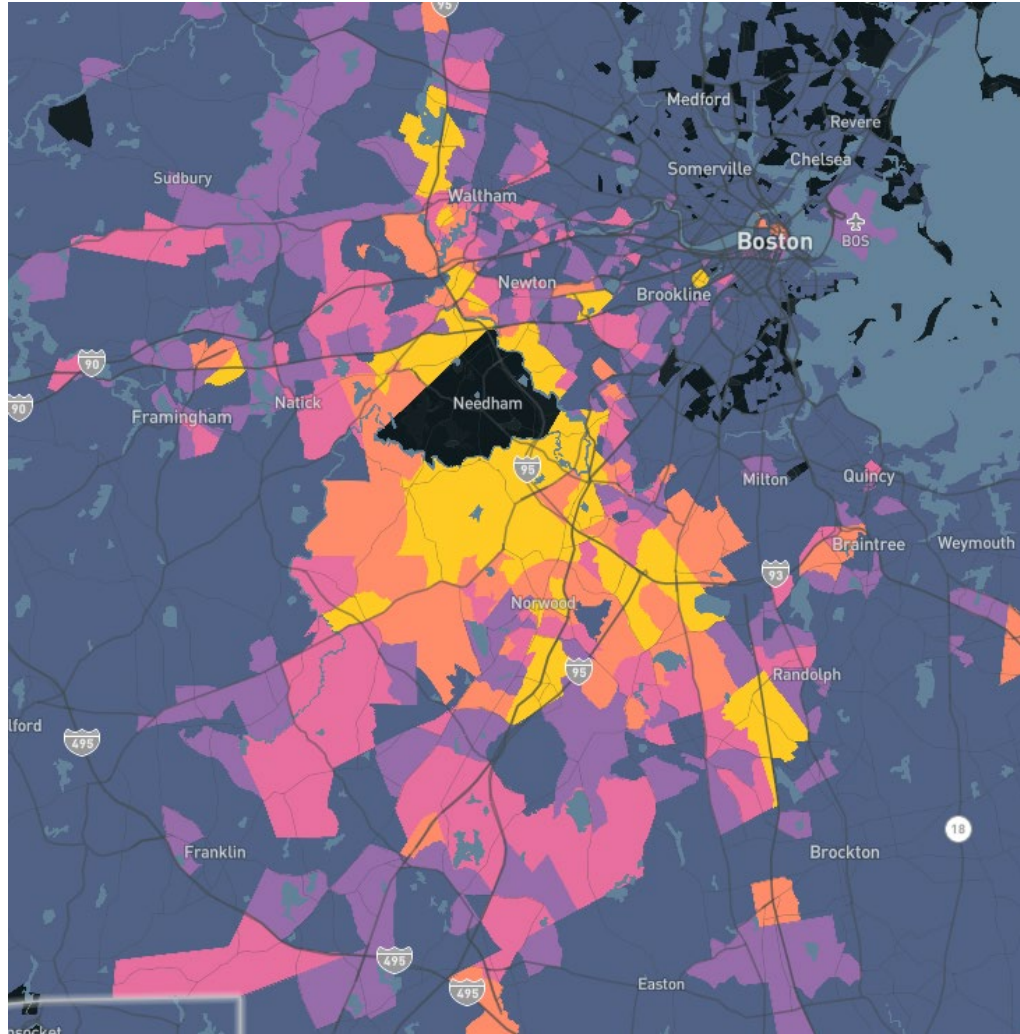
Trip Elimination

Key Takeaway:

In a realistic scenario, drivers adjust to the reduction in vehicle capacity in Needham Center by changing several travel behaviors.



Trips passing through Needham



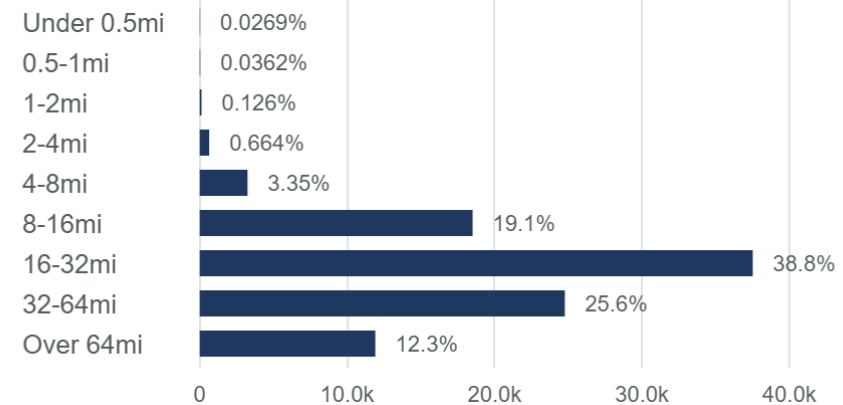
96.8k trips by 73.6k trip takers • High certainty ⓘ

Trips by Destination

Number of trips ending in each area



Trip Distance (Miles)



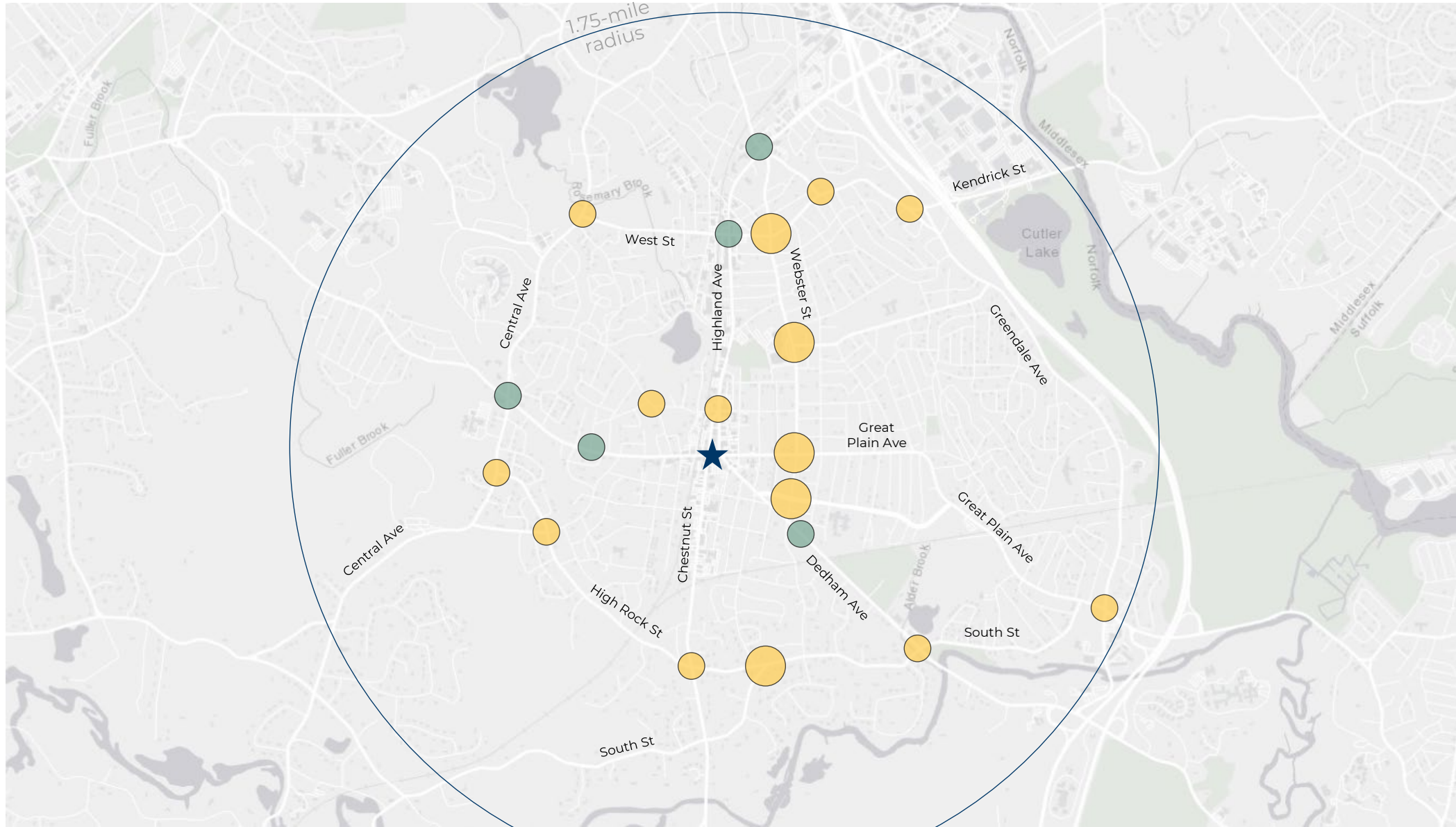
Average Miles **35.4** | Median Miles **25.4**



Impacted intersections

Realistic scenario

- Low impact
- Negligible impact
- Possible change in pattern



Summary

- Reducing the vehicular capacity of Needham Center will likely cause trips currently passing through project limits to divert to alternative routes
- Many trips passing through Needham Center at peak hours are regional commuting trips
 - **60%** of AM trips passing through the Center are **> 16 miles**
 - **55%** of AM trips are **work related**
- Length of trips suggests that many viable alternative routes with similar travel times are available
- Degree to which drivers change their behavior will influence which roadways are impacted by the project and by how much – not an exact science
- Team will monitor nearby key intersections most likely to be impacted by pilot demonstration to understand impacts & recommend ways to mitigate increased traffic



Next Steps

- Coordinate with Town officials on traffic diversion model
- Identify intersections outside project limits to monitor during pilot demonstration
- Prior to pilot demonstration:
 - Collect traffic data at intersections anticipated to be most impacted by diverted traffic
 - Public informational session
 - Public outreach (online notices, flyers, changeable message boards, etc.)
 - Proactively implement improvements where required
- During pilot demonstration:
 - Collect data at the same intersections
 - Assess where permanent improvements are warranted

