Windsor Street Traffic Calming Project Evaluation
Cambridge, MA

Executive Summary

Windsor Street was reconstructed from Broadway to Main Street in Cambridge, MA in 2007. Traffic calming and pedestrian safety improvements were incorporated with the reconstruction of sidewalk and roadway re-paving. Primary goals of the improvements were to improve pedestrian safety and reduce traffic speeds. Following a community process, the project included a raised intersection at Windsor and Washington and crosswalk markings on Windsor Street at each intersection from Broadway to Main Street. A post construction survey of area residents indicated that both actual and perceived speeds of vehicles decreased and that pedestrian safety was improved.

Project Summary

In the fall of 2007, Windsor Street underwent street and sidewalk reconstruction, including the reconstruction of all curb cuts at crosswalks. Because of the presence of a school at the intersection of Windsor Street and Harvard Street and ongoing concerns about high speeds, traffic calming and pedestrian improvements were included with the street reconstruction. These improvements are described below:

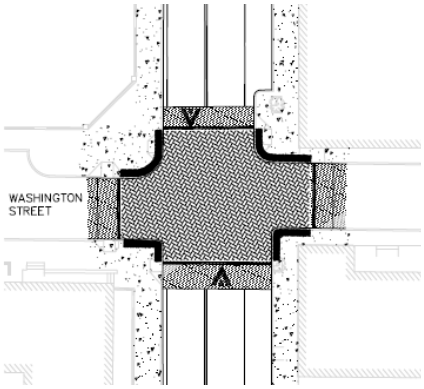
Raised intersection was constructed on Windsor Street at the intersection with Washington Street. A flashing yellow light was removed in conjunction with the installation of the new raised intersection as such devices have generally not proven to be effective.

Raised intersections are created by raising the roadway within an intersection to the level of the sidewalk. They improve pedestrian safety in a number of ways:

- Make crosswalks more apparent - this encourages pedestrians to use the crosswalk and reminds drivers that pedestrians use the intersection and have the right to cross.

- Allow pedestrians to cross the street without stepping down to the level of the street. This makes them more visible and lets drivers know that they are crossing a lane of pedestrian traffic.

- Slows vehicles by making vehicles ramp up, then down. Slower speeds are safer for pedestrians, cyclists and drivers.



Curb Extensions are created by extending the sidewalk into the parking lane at a crosswalk. These were installed at the intersections of Windsor Street and Harvard Street and Windsor Street and School Street.

Curb extensions improve safety in several ways:

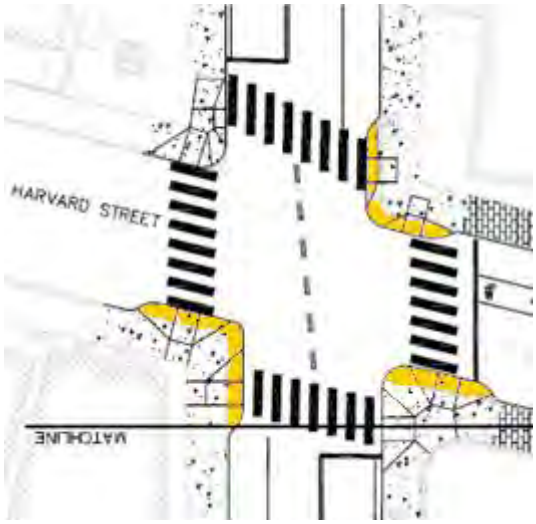
- Provide clear sight lines for drivers and pedestrians by preventing cars from parking illegally at corners.

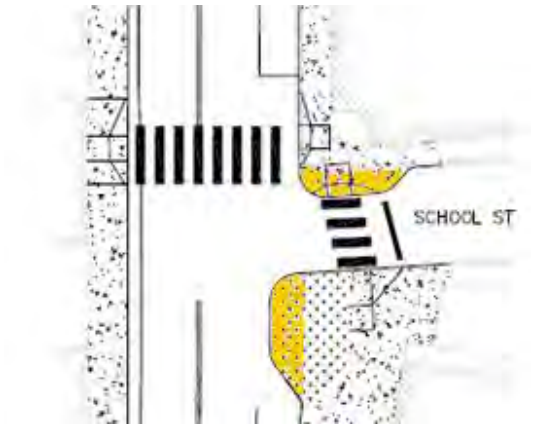
- Make pedestrians more visible to drivers by bringing them out in front of trees, parked cars, meters and non-crossing pedestrians.

- Reduce the length of crosswalks and the time a pedestrian spends in the street and increase the width of the sidewalk to change the emphasis of the intersection away from motorized vehicles.

- Curb extensions also force drivers to take turns more slowly by creating tighter turns at the intersection.

In addition to these improvements, thermo plastic zebra crosswalk markings were installed at all intersections. Such markings emphasize the pedestrian crossing to both drivers and pedestrians.





Speed Studies

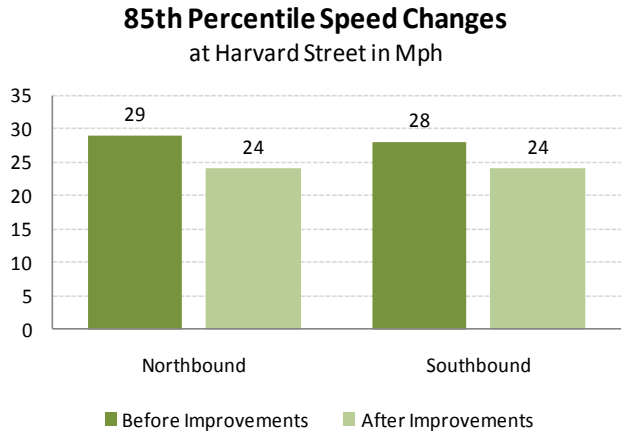
Speed

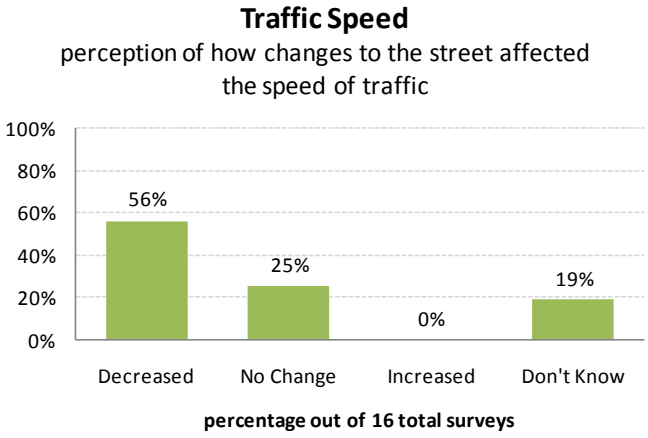
As part of the ongoing evaluation of this project, before and after speed studies were conducted. Both the percentage of vehicles exceeding the speed limit and the 85th percentile speed were used to evaluate changes in speeds. The 85th percentile speed is the speed at or below which 85% of vehicles travel. It is the standard speed used for design purposes and speed studies.

The speed limit on Windsor Street is 30 mph. After improvements, the 85th percentile speed for northbound vehicles on Windsor Street at Harvard Street decreased from 29

mph before construction to 24 mph. The southbound 85th percentile speed decreased from 28 mph to 24mph. This represents an important reduction in speed for a number of reasons. When vehicles travel more slowly, it is significantly easier for drivers to stop should they need to, e.g., to yield to a crossing pedestrian. This reduces the likelihood of a collision. In addition, lower speeds significantly reduce the chance of injuries being serious should an incident occur; injury severity to pedestrians decreases exponentially with each mile per hour reduction in speed.

On most residential streets in Cambridge, residents do not feel comfortable with traffic speeds at or exceeding 30 mph. Speeds of 25 mph feel more comfortable and are much safer for residents, pedestrians, motorists and cyclists.





Resident Survey

Methodology

As part of the ongoing evaluation of the traffic calming project, a survey of residents along Windsor Street was conducted in June of 2008. A copy of the survey is included at the end of this report. One hundred-forty (140) surveys were mailed to residents with a stamped self-addressed return envelope to facilitate responses. Sixteen (16) surveys were returned, providing a relatively low 11% response rate.

Results

Overall the majority of respondents reported that they liked the results from the project and noticed a decrease in traffic speeds. A majority also felt that Windsor Street is safer for pedestrians, motorists and children. It is notable that most respondents (69%) reported that the project did not affect traffic volumes. Although counts have not been done to

verify this, the response likely indicates that the project did not unintentionally increase traffic volumes on neighboring streets.

The majority of residents (56%) did not know if the City did a good job involving the neighborhood in the planning of the project. 38% responded favorably, while only 6% responded negatively. This may indicate that additional methods of public involvement should be considered.

The concern raised most frequently by respondents about the project involved the raised intersections. Several described them as "ski bumps" and "take-offs" and were worried they could make cars more likely to lose control. National statistics show these safety concerns to be unfounded and Cambridge Police records show that since the raised intersections were installed there have been no reports vehicles losing control because of raised devices.

Conclusion

After construction, the 85th percentile speeds on Windsor Street were reduced from 4 to 5 mph. The percentage of cars exceeding the 30 mph speed limit was also reduced.

The survey of residents along Windsor Street shows overall support for the traffic calming project. A large majority (69%) of residents believe that the overall look of the street has improved, that traffic speeds have decreased, and that the street is now safer for pedestrians. The results from the before-and-after speed studies support these findings. Few residents (13%) had a negative view of the project. Two- thirds of all respondents would like to see similar projects in the future.

In addition to improved safety, the project helps the City of Cambridge to meet its goal of improving air quality by supporting sustainable modes of transportation such as walking and cycling. Detail information about the City's Traffic Calming Program can be found in the City's web page (*www.cambridgema.gov/cdd/et/tc/index.html*)

Further information on sustainable modes of transportation can be found in the City of Cambridge, Community Development Department, Environmental and transportation Planning, Programs and Services (*www.cambridgema.gov/~CDD/et/*).

APPENDIX A

Resident Survey for Windsor Street
Traffic Calming Project

During 2007, the City of Cambridge reconstructed Windsor Street from Hampshire Street to Main Street. Traffic calming measures were included in this project in response to residents' concerns about pedestrian crossings and speeding in the area. This project included enhanced pedestrian crossings with curb extensions at School Street, Harvard Street, and a raised intersection at Washington Street. Crosswalk markings and pedestrian curb ramps were installed as part of this project. In addition to these improvements, the City made on-street parking changes to improve intersection visibility.

We would appreciate your help in evaluating the project. By completing this survey, you can help us improve the design and implementation of future projects in the city. Please return the survey in the enclosed envelope by May 8, 2009. If you have any questions, or if you know of anyone who should have received this survey but did not, please contact **Juan Avendano, Traffic Calming Project Manager,** at **(617) 349-4655** or **javendano@cambridgema.gov**.

Thank you for taking the time to give us your opinions and to help evaluate this project.

Response Rate: 11% (16 of 140 Returned)

1. **How do you use the street? (Circle all that apply)**

56% drive	94% walk	44% bike	0% other

2. **How do you think the project has affected the following traffic issues?**

traffic speed	56% decreased	0% increased	25% no change	19% don't know
traffic volume	6% decreased	0% increased	69% no change	25% don't know
traffic noise level	25% decreased	6% increased	50% no change	19% don't know

3. **How do you think the project has affected the following safety issues?**

safety of pedestrians	56% better	0% worse	19% no change	25% don't know
safety of bicyclists	19% better	6% worse	38% no change	37% don't know

safety of motorists	38% better	0% worse	37% no change	25% don't know
safety of children	38% better	6% worse	6% no change	50% don't know

5. **How do you think the overall atmosphere / look of the street has changed?**

75% better 6% worse 19% no change 0% don't know

6. **Do you think the City did a good job of involving the neighborhood in the planning stages of this project?**

38% yes 56% no 6% don't know

7. **What is your overall view of this project?**

69% like it 19% neutral 12% don't like it 0% don't know

8. **Would you like to see more projects like this around Cambridge?**

69% yes 19% no 6% don't know 6% no response

9. **What street do you live on?** N/A

How long have you lived there? N/A

10. **Do you rent or own your home? (Circle one)**

50% rent 50% own

11. **Do you own a car?**

44% yes 56% no

If yes, how many?

56% zero 44% one 0% two 0% three 0% four+

12. **Do you have a driveway or other private parking space for your car(s)?**

19% yes 81% no

13. **Do you have children that live in your home?**

19% yes 81% no

14. **What is your gender? (Circle one)**

38% male 63% female

15. **How do you think the City handled the construction phase of this project? Please explain.**

Well: 44%
Okay: 13%
Badly: 0%

16. **What do you like best about the project? Why?**

Appearance: 44%
Slows Traffic: 25%
Improves Safety for Pedestrians: 19%

17. **What do you like least about the project? Why?**

Request for more raised intersections: 13%
Better signage and construction detailing: 13%
Humps damage cars: 13%

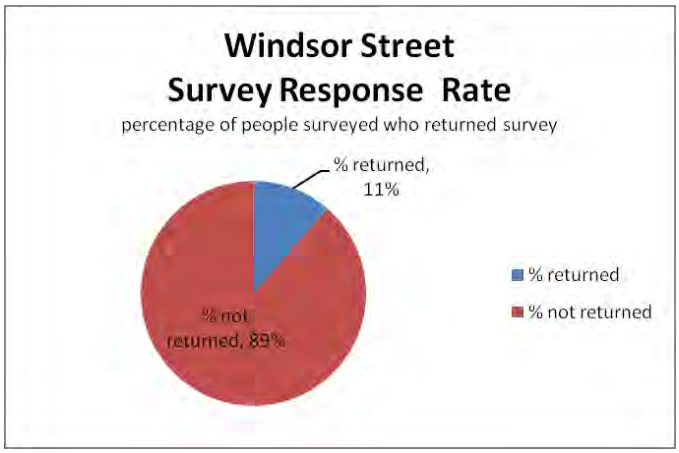
18. **OPTIONAL: Name**:

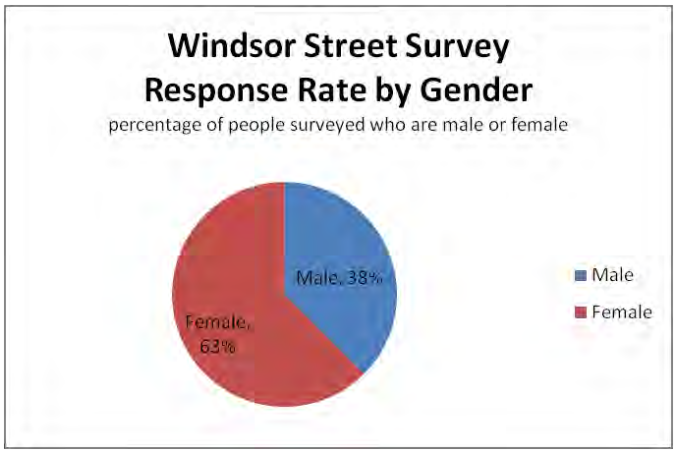
Address:

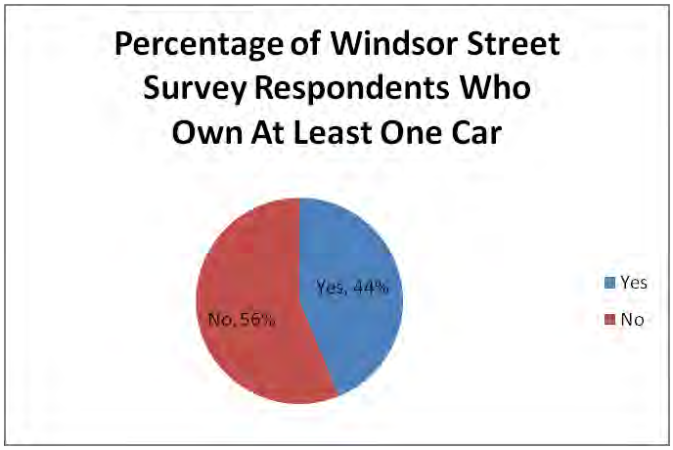
Juan Avendano
Community Development Department
344 Broadway
Cambridge, MA 02141
Tel: (617) 349-4655
Fax: (617) 349-4633
TTY: (617) 349-4621

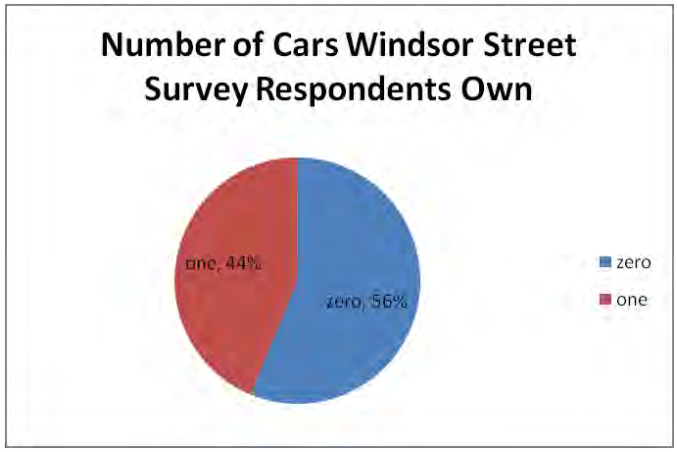
APPENDIX B

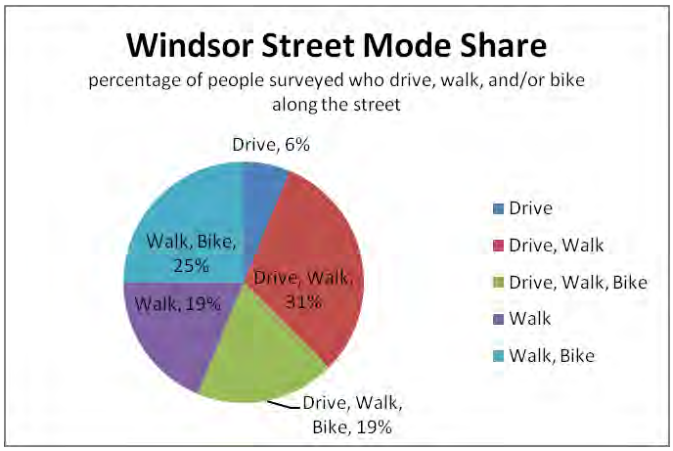
Windsor Street Survey Results

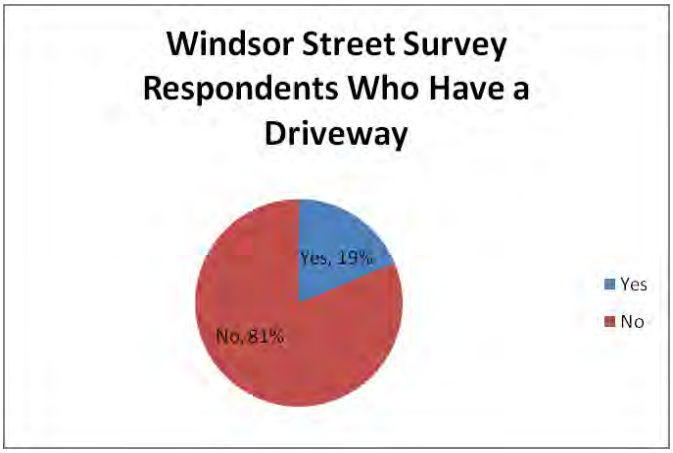


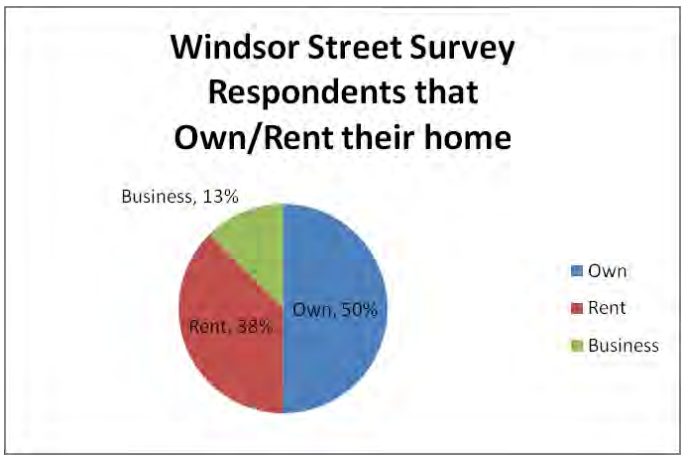


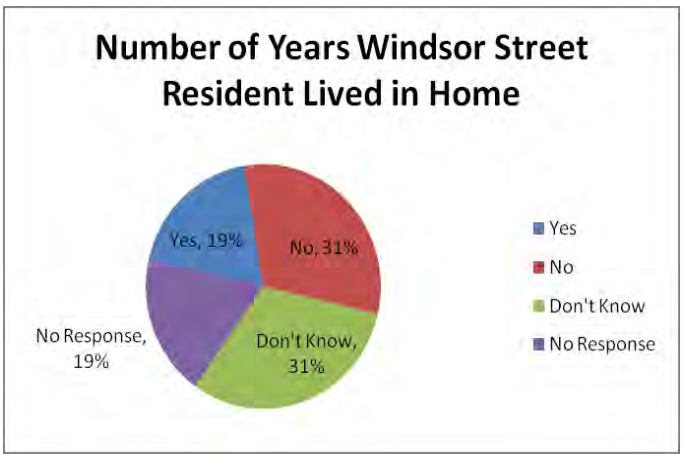


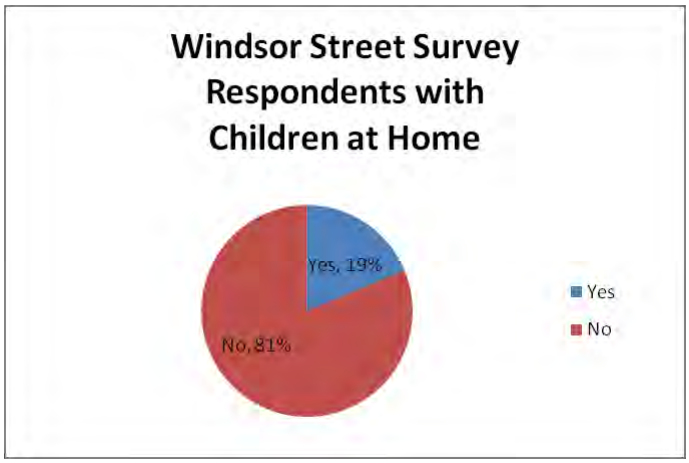


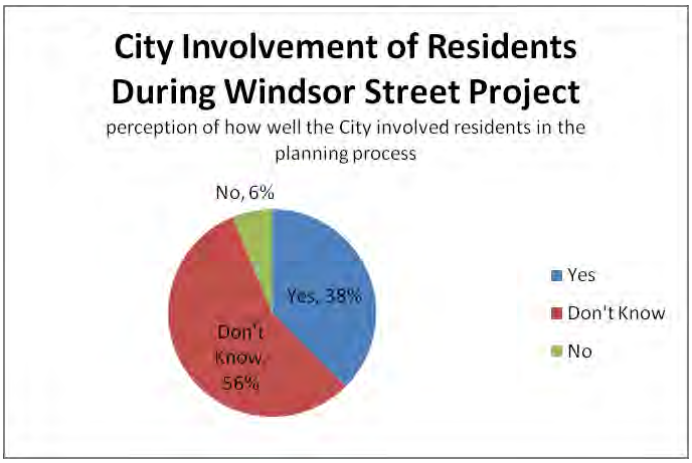


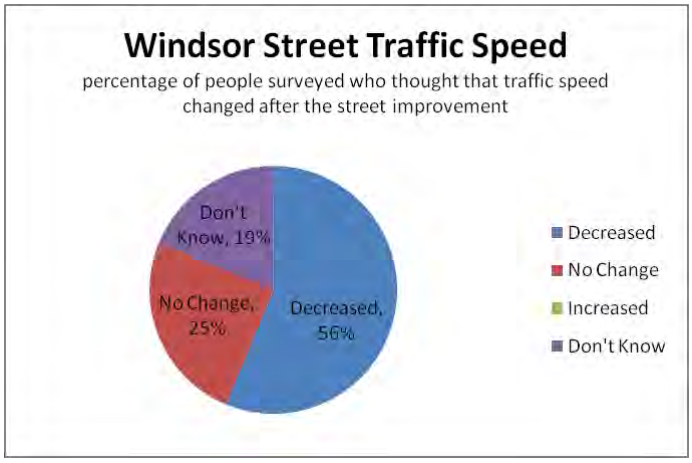


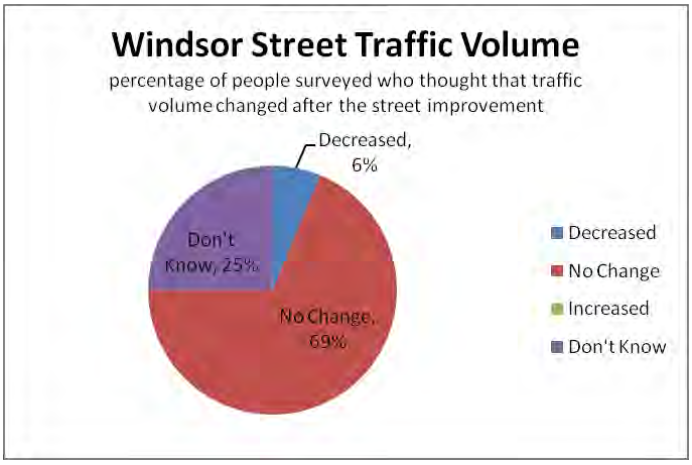

Windsor Street Survey Respondents that Own/Rent their home
Business, 13%
Rent, 38%
Own, 50%
Own
Rent
Business

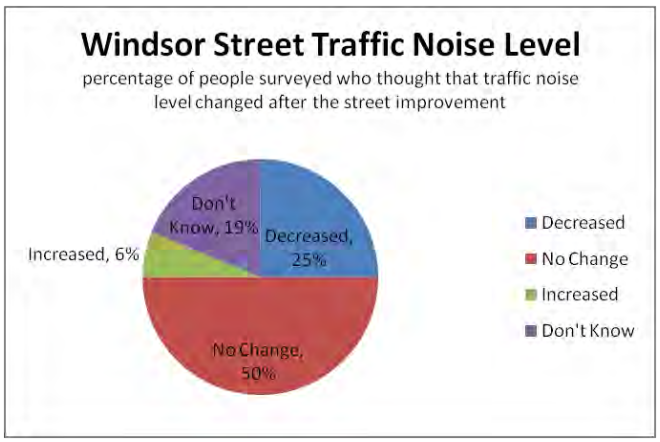

Number of Years Windsor Street Resident Lived in Home
Yes, 19%
No, 31%
No Response, 19%
Don't Know, 31%
Yes
No
Don't Know
No Response

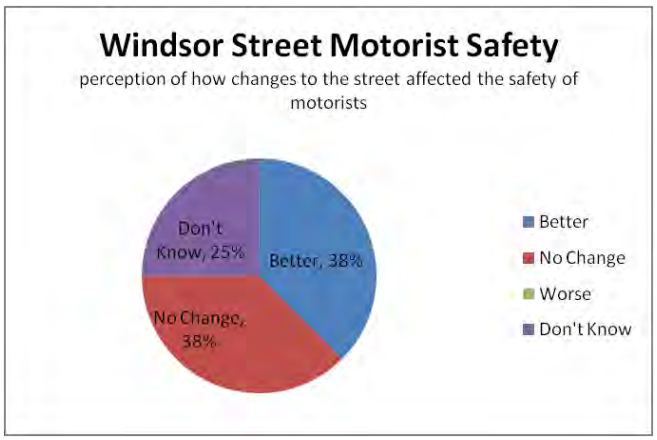

Windsor Street Survey Respondents with Children at Home
Yes, 19%
No, 81%
Yes
No

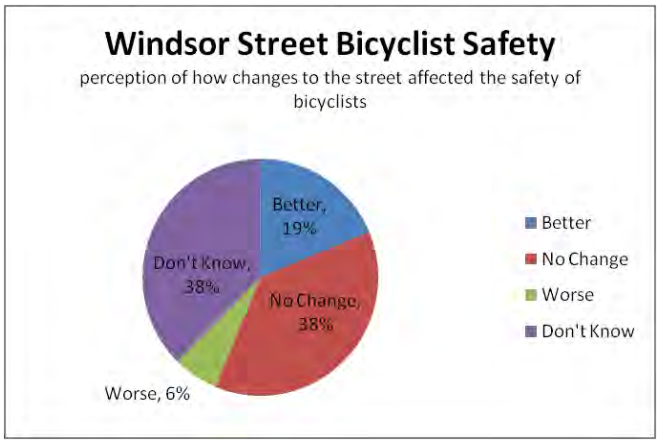

City Involvement of Residents During Windsor Street Project
perception of how well the City involved residents in the planning process
No, 6%
Yes, 38%
Don't Know, 56%
Yes
Don't Know
No


Windsor Street Traffic Speed
percentage of people surveyed who thought that traffic speed changed after the street improvement
Don't Know, 19%
No Change, 25%
Decreased, 56%
Decreased
No Change
Increased
Don't Know


Windsor Street Traffic Volume
percentage of people surveyed who thought that traffic volume changed after the street improvement
Decreased, 6%
Don't Know, 25%
No Change, 69%
Decreased
No Change
Increased
Don't Know

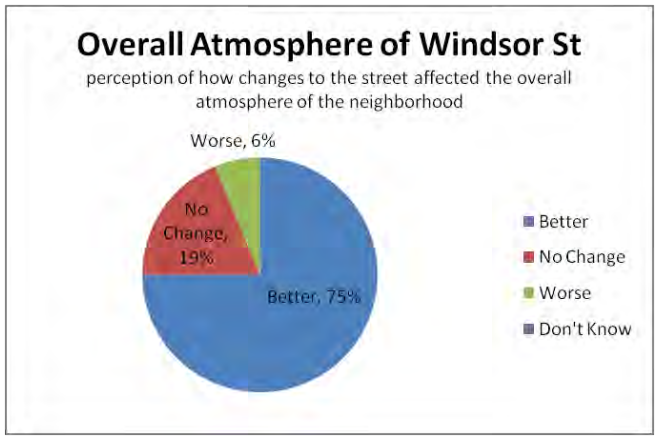

Windsor Street Traffic Noise Level
percentage of people surveyed who thought that traffic noise level changed after the street improvement
Don't Know, 19%
Decreased, 25%
Increased, 6%
No Change, 50%
Decreased
No Change
Increased
Don't Know

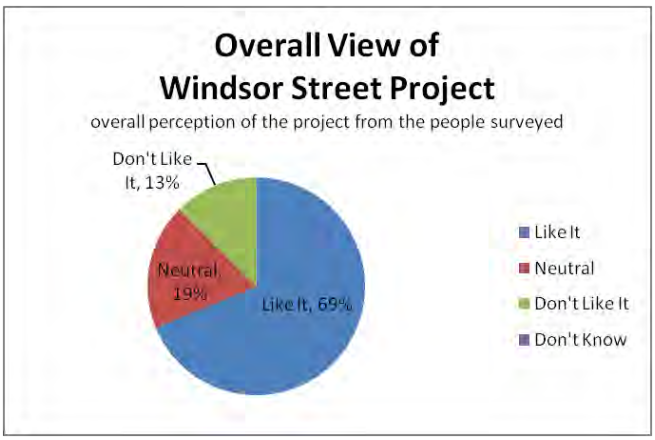

Windsor Street Motorist Safety
perception of how changes to the street affected the safety of motorists
Don't Know, 25%
Better, 38%
No Change, 38%
Better
No Change
Worse
Don't Know

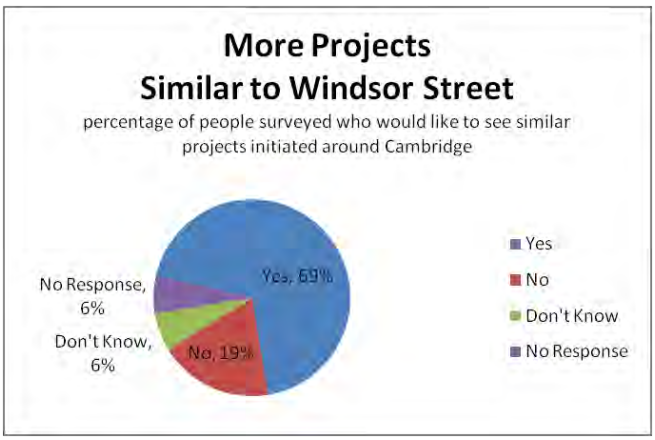

Windsor Street Bicyclist Safety
perception of how changes to the street affected the safety of bicyclists
Better, 19%
Don't Know, 38%
No Change, 38%
Worse, 6%
Better
No Change
Worse
Don't Know


Windsor Street Pedestrian Safety
perception of how changes to the street affected the safety of pedestrians
Don't Know, 25%
No Change, 19%
Better, 56%
Better
No Change
Worse
Don't Know


Windsor Street Child Safety
perception of how changes to the street affected the safety of children
Better, 38%
Don't Know, 50%
No Change, 6%
Worse, 6%
Better
No Change
Worse
Don't Know


Overall Atmosphere of Windsor St
perception of how changes to the street affected the overall atmosphere of the neighborhood
Worse, 6%
No Change, 19%
Better, 75%
Better
No Change
Worse
Don't Know


Overall View of
Windsor Street Project
overall perception of the project from the people surveyed
Don't Like It, 13%
Neutral, 19%
Like It, 69%
Like It
Neutral
Don't Like It
Don't Know


More Projects
Similar to Windsor Street
percentage of people surveyed who would like to see similar projects initiated around Cambridge
No Response, 6%
Don't Know, 6%
No, 19%
Yes, 69%
Yes
No
Don't Know
No Response