NORTH AVENUE PILOT PROJECT

1ST QUARTER: JULY – SEPTEMBER 2016

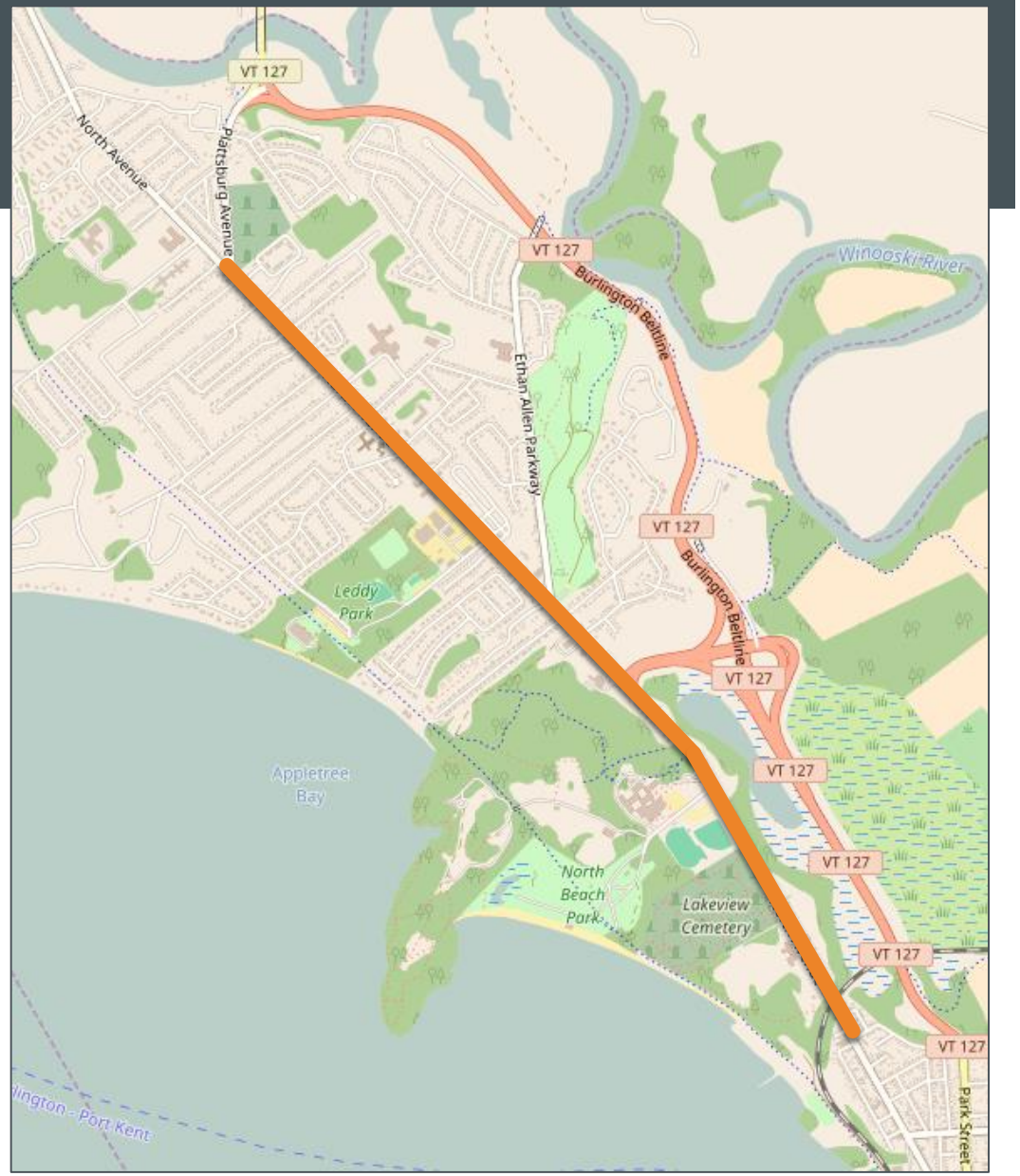
AGENDA:
NORTH AVENUE PILOT PROJECT 1ST QUARTER

- Project Background
- Data Highlights
- Staff Recommendations
- City Council Q&A

PROJECT BACKGROUND

PROJECT BACKGROUND: POLICIES AND PLANS

- 2011 Transportation Plan and Act 34
- 2014 North Avenue Corridor Study
- Pilot
  - Goals: enhance safety + reduce crashes + calm traffic
    - Balance efficient traffic flow
  - Removable: paint, signs, signalization, modular infrastructure
  - Segments:
    - 4- to 3-lanes
    - Buffered / Protected bike lanes replaced parking
    - Buffered bike lanes narrowed travel lanes in ONE
    - Route 127 intersection



PROJECT BACKGROUND: PILOT DEVELOPMENT

Public Process

- North Avenue Task Force
- Ward 4/7 and 2/3 NPAs
- Leddy Beach Bites
- North Avenue News
- Burlington School District "Spotlight"
- The Bagel
- Front Porch Forum
- June + September Public Forum

Responsiveness

- Bus pull-in
- Protected lane adjustments
- Re-timed signals
- Route 127 bollards
- Pedestrian push-buttons
- Wrong Way, Ride With Traffic
- Scarified pavement

DATA AND PUBLIC OPINIONS

DATA COLLECTION

- 3 immediate assessments
  - Crashes / safety observations
  - Intersections operations / side street wait times
  - Travel times
- Additional 1st Quarter assessments
  - Benefit Cost Analysis
  - Emergency Services
- Full reports and analysis in packets and online

CRASH ANALYSIS

JULY 1 – SEPTEMBER 30

CRASH ANALYSIS
JULY 1 – SEPTEMBER 30

- Crash data vs. Driver opinions
  - 38% feel less safe
  - 39% feel more safe
  - 23% unsure/about the same

	2012	2013	2014	2015	2016	Change from Average
Citywide	475	513	511	503	520	+4%
North Ave A	18	18	19	23	10	-49%
Type of Crash						
Backing Into	1	0	1	0	1	0%
Broadside	7	4	2	4	1	-76%
Head On	1	1	2	2	0	-100%
Rear End	4	4	5	6	7	+47%
Roadside Obst	2	1	2	4	0	-100%
Sideswipe	2	3	5	4	1	-71%
Other/Unknown	1	5	2	3	0	-100%
North Ave B (subset of A)	13	10	8	12	6	-44%
Type of Crash						
Backing Into	1	0	0	0	0	0%
Broadside	6	2	1	3	0	-100%
Head On	1	0	2	1	0	-100%
Rear End	2	1	3	3	5	+122%
Roadside Obst	1	0	0	2	0	-100%
Sideswipe	2	2	1	2	1	-43%
Other/Unknown	0	4	1	1	0	-100%

*North Ave A consists of the stretch from Washington St to Plattsburg Ave
*North Ave B consists of the stretch from Route 127 to Shore Rd

CRASH ANALYSIS
JULY 1 – SEPTEMBER 30: INJURIES

	2012	2013	2014	2015	2016	Change from Weighted Average
North Ave A	18	18	19	23	10	-49%
Injuries	3	3	0	4	1	-60%
North Ave B (subset of A)	13	10	8	12	6	-44%
Injuries	3	1	0	3	0	-100%

TRAFFIC ANALYSIS

TRAVEL TIMES, WAIT TIMES, SPEEDS, AND VOLUMES

TRAFFIC IMPACTS: TRAVEL TIMES

Projected average 1-2 minute increase

- Morning peak hour
  - +21 seconds northbound / +32 seconds southbound
  - Max: +51 seconds NB / +2m 33 seconds SB
- Evening peak hour
  - +1m. 10 seconds northbound / +13 seconds southbound
  - Max: +3m 37 seconds NB / +58 seconds northbound

Table 1: AM Peak Travel Times

		AM Peak Travel Times (minutes : seconds)			
		Before Pilot		During Pilot	
		6/17/2015	11/4/2015	8/4/2016	9/21/2016
Northbound	Average	01:53	01:55	02:01	02:16
	Max	02:32	02:27	03:26	03:18
Southbound	Average	01:59	02:06	02:04	02:38
	Max	03:06	02:59	03:14	05:32

Table 2: PM Peak Travel Times

		PM Peak Travel Times (minutes : seconds)			
		Before Pilot		During Pilot	
		6/16/2015	11/4/2015	8/3/2016	9/20/2016
Northbound	Average	02:01	02:01	03:29	03:11
	Max	02:54	02:24	07:10*	06:01
Southbound	Average	02:11	02:25	02:33	02:38
	Max	03:09	03:58	03:22	04:56

*Ethan Allen Parkway signal detection issue – since resolved

TRAFFIC IMPACTS: WAIT TIMES

- Weighted average delay increases
  - ~6 seconds AM, ~12 seconds PM
- Greatest impacts at Village Green
- Data should be recollected
  - School traffic
  - Signal detection fixed

Table 3: AM Peak Side Street Delay (seconds)

	Before Pilot	During Pilot	Delay Increase
Killarney	10.6	19.1	8.5
Lakewood	6.8	9.3	2.5
Saratoga	12.6	16.2	3.6
Village Green	8.6	17.8	9.2
Weighted Average	9.3	15.4	6.1

Table 4: PM Peak Side Street Delay (seconds)

	Before Pilot	During Pilot	Delay Increase
Killarney	19.2	26.7	7.5
Lakewood	8.9	19.4	10.5
Saratoga	17.5	24.3*	6.8
Village Green	15.0	36.5*	21.6
Weighted Average	14.0	26.4	12.3

*Ethan Allen Parkway signal detection issue – since resolved

TRAFFIC IMPACTS:
SPEEDS + VOLUMES – MOTOR VEHICLES

		Speed and Volume	
		Before Pilot	During Pilot
Saratoga	85th Percentile	38 mph	39 mph
	Average	34 mph	34 mph
	Percent exceeding posted speed limit (30 mph)	86%	84%
	Volume (AADT)	16,200	16,900
Shore	85th Percentile	34 mph	33 mph
	Average	29 mph	29 mph
	Percent exceeding posted speed limit (30 mph)	46%	42%
	Volume (AADT)	14,500	14,200

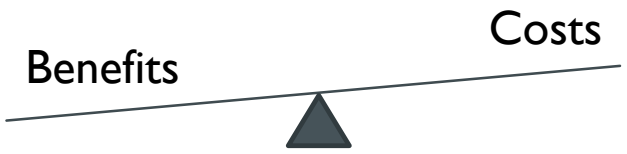
TRAFFIC IMPACTS:
SPEEDS + VOLUMES – BICYCLES AND PEDESTRIANS

		Average Volumes by mode*	
		Before Pilot	During Pilot
Bicycles	On road	36	69
	On sidewalk	33	13
Pedestrians		77	85

*Averages were derived from both the AM and PM peak, totaling 4 hours per day (6 for VT 127 intersection) and were aggregated from all four intersections listed above.

BENEFIT COST ANALYSIS: TRAVEL TIMES / CRASHES

- Crash costs based on National Safety Council data
  - $78,900 / injury, $8,900 / property damage
- Travel time increases/costs
  - 1 minute AM/PM peaks, 15 seconds 6:00 am – 9:00 pm
  - $31.20/hour, 85% personal, 15% business
- Discounted at 1.2%



1.48 Benefit/Cost Ratio

Year	Crash Reduction Savings	Discounted Crash Reduction Savings	Travel Time Increases	Discounted Travel Time Increases
0	$659,100.0	$659,100.0	$436,920.3	$436,920.3
1	$659,100.0	$651,284.6	$436,920.3	$431,739.4
2	$659,100.0	$643,561.8	$436,920.3	$426,620.0
3	$659,100.0	$635,930.7	$436,920.3	$421,561.2
4	$659,100.0	$628,390.0	$436,920.3	$416,562.5
5	$659,100.0	$620,938.7	$436,920.3	$411,623.0
6	$659,100.0	$613,575.8	$436,920.3	$406,742.1
7	$659,100.0	$606,300.2	$436,920.3	$401,919.1
8	$659,100.0	$599,110.9	$436,920.3	$397,153.2
9	$659,100.0	$592,006.8	$436,920.3	$392,443.9
10	$659,100.0	$584,987.0	$436,920.3	$387,790.4
11	$659,100.0	$578,050.4	$436,920.3	$383,192.1
12	$659,100.0	$571,196.0	$436,920.3	$378,648.3
13	$659,100.0	$564,422.9	$436,920.3	$374,158.4
14	$659,100.0	$557,730.2	$436,920.3	$369,721.8
15	$659,100.0	$551,116.8	$436,920.3	$365,337.7
16	$659,100.0	$544,581.8	$436,920.3	$361,005.7
17	$659,100.0	$538,124.3	$436,920.3	$356,725.0
18	$659,100.0	$531,743.4	$436,920.3	$352,495.0
19	$659,100.0	$525,438.1	$436,920.3	$348,315.2
20	$659,100.0	$519,207.6	$436,920.3	$344,185.0
Total	-------	$12,316,797.9	-------	$8,164,859.5

PUBLIC OPINIONS

SURVEY RESULTS + PROCESS

PUBLIC OPINIONS: PRE-SURVEY FEEDBACK

Initial Opinions

- 350+ emails and phone calls to the DPW
- Ward 4/7 NPAs: July, August, September
- Ward 2/3 NPA: September
- The Bagel
- September 20 public forum

Emergency Services

- Police Department
- Fire Department

PUBLIC OPINIONS: SURVEY DEVELOPMENT

Measuring Public Opinions

- Third-party led
- Online due to time constraints between school and winter
- Spring 2017: paper and phone surveys
- CCRPC assistance with surveys
- Sept. 13 – Oct 2 = 2700+ respondents

Source	Count	Percent
City website/Social Media/Public Meetings	1,809	65%
Front Porch Forum	876	32%
Local Motion	76	3%
GMT/Other	2	0%
Total	**2,763**	**100%**

SURVEY INTRODUCTION

¼ of the NNE population

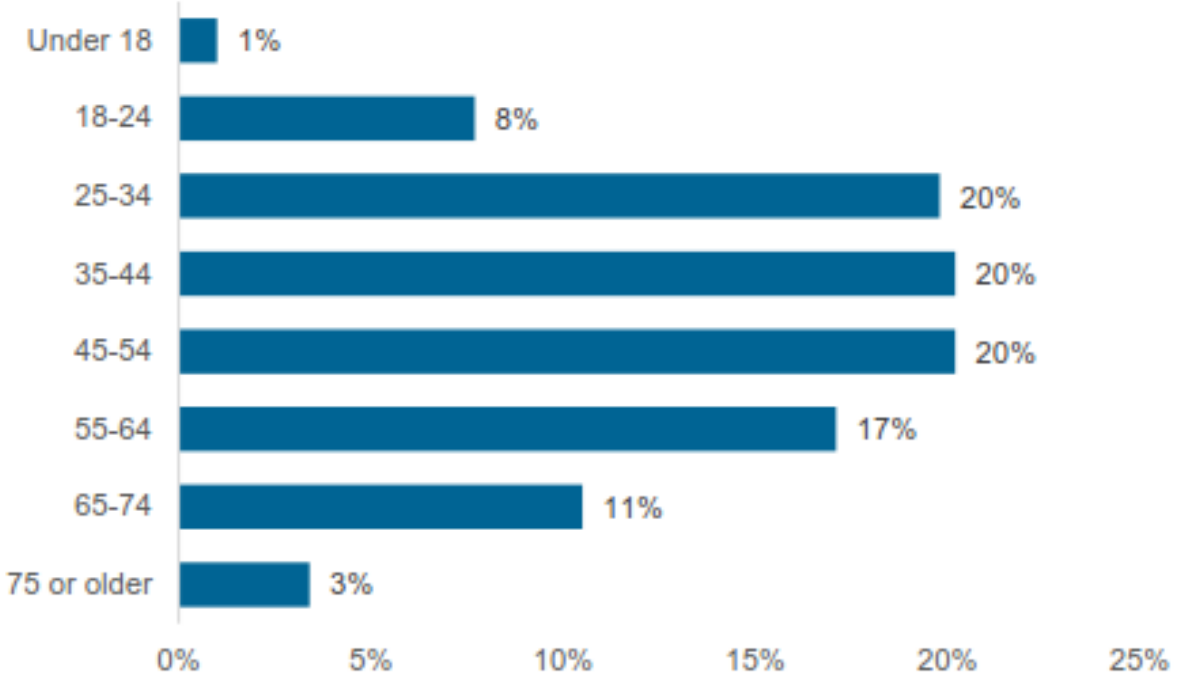
- Very successful response rate, high degree of confidence in results
- Drivers are well represented
  - NNE respondents: all drive, 40% bike, 43% walk/run, and 10% but
  - All respondents: 95% drive, 45% bike, 37% walk/run, 9% bus

SURVEY DEMOGRAPHICS

Residency

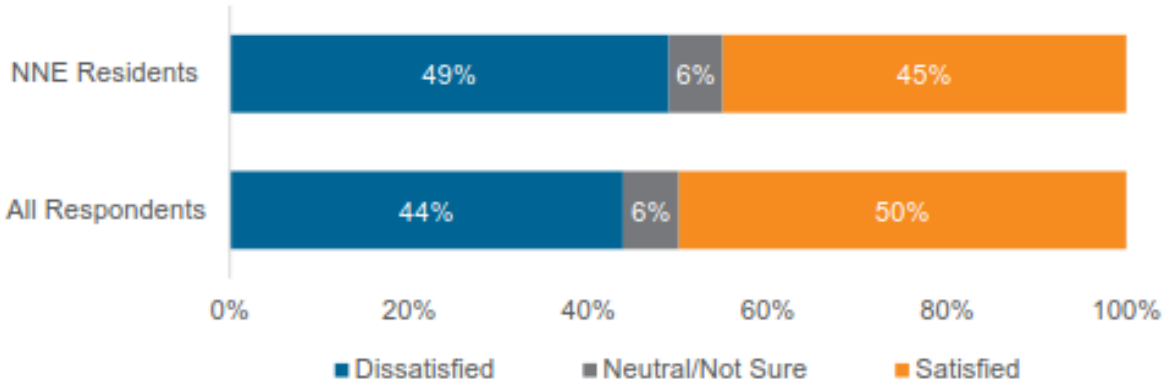
Ward #	Count	Percent
Ward 1	97	4%
Ward 2	90	3%
Ward 3	207	8%
Ward 4	1,055	39%
Ward 5	131	5%
Ward 6	100	4%
Ward 7	767	28%
Ward 8	44	2%
Outside Burlington	232	9%
Total	**2,723**	**100%**

Age of Respondents

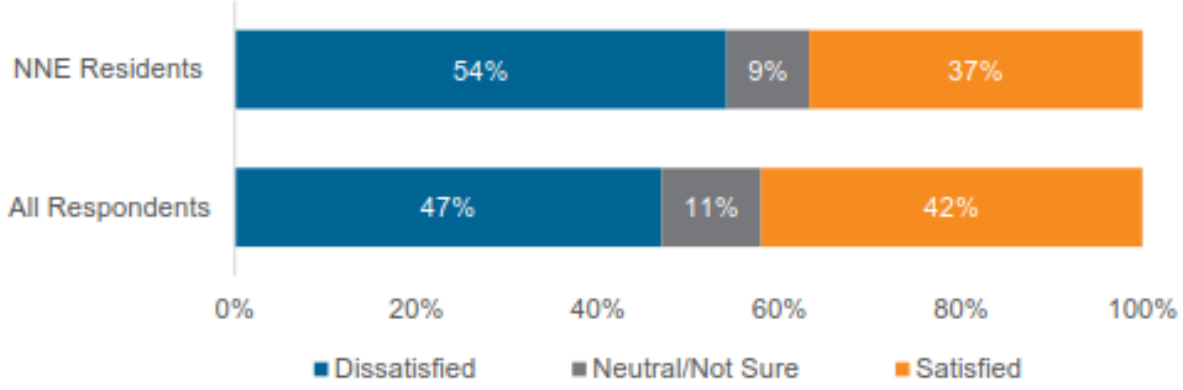


SURVEY RESULTS: PROJECT OPINIONS

4-lanes reconfigured to 3-lanes

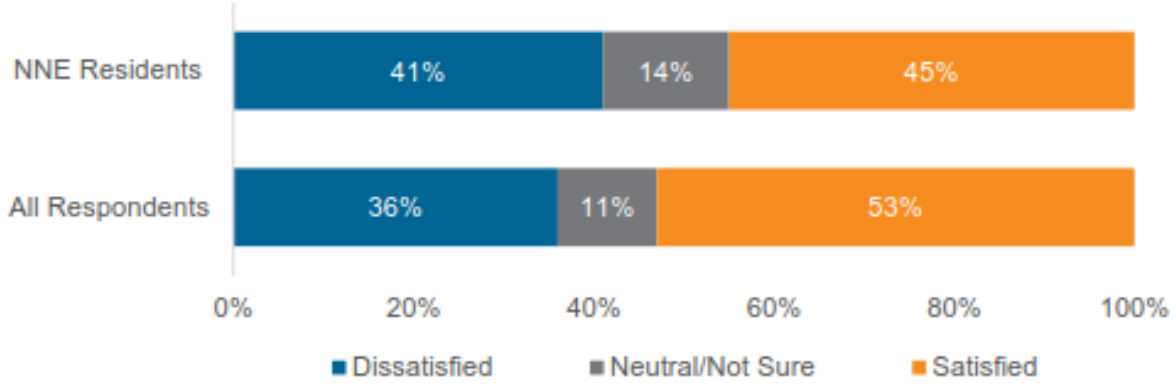


Route 127 modifications

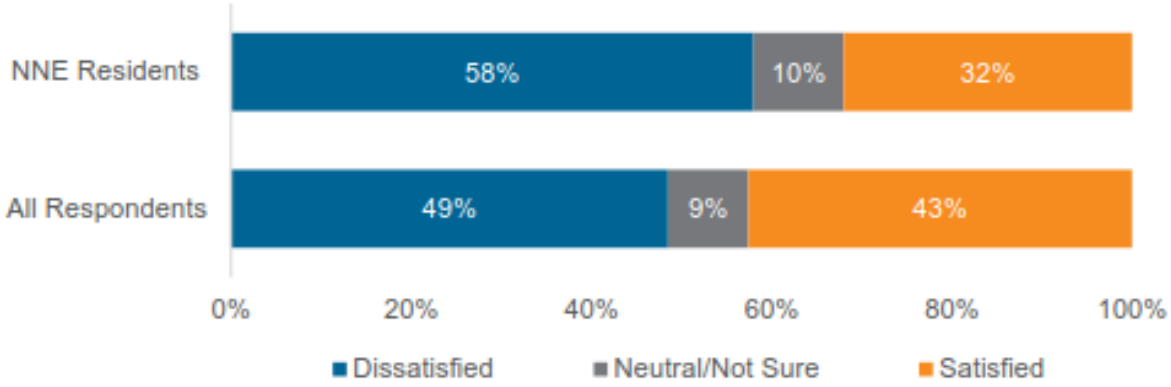


SURVEY RESULTS: PROJECT OPINIONS

Bike lanes buffered by paint

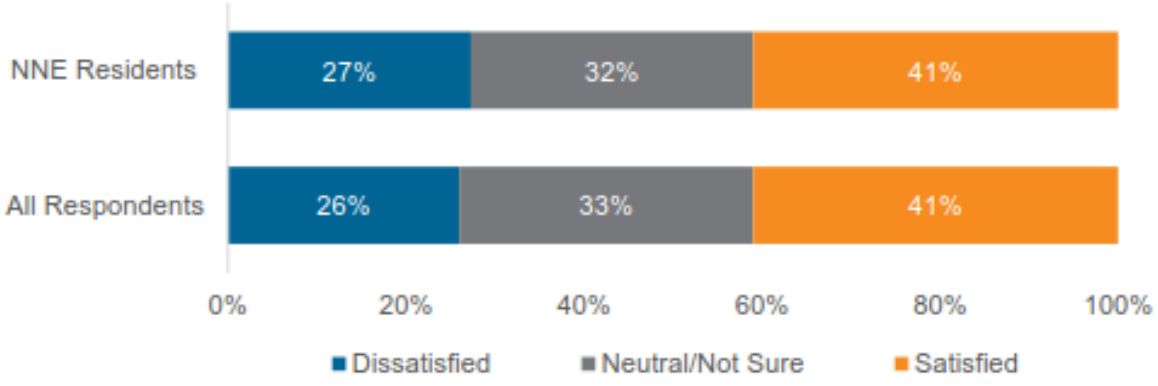


Bike lanes protected by delineators

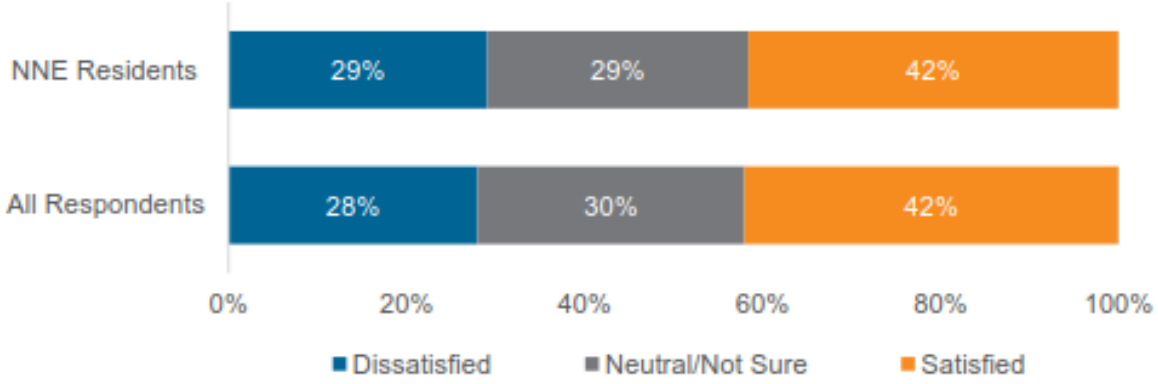


SURVEY RESULTS: PROJECT OPINIONS

On-street parking removal Shore/Plattsburg



On-street parking removal Institute/127



PRE-WINTER RECOMMENDATIONS

STAFF RECOMMENDATIONS

- BCA is net positive
- Potential increase in public safety from fewer crashes
- Initial traffic data is consistent with projections, no imminent operational failure
- Survey does not indicate overwhelming opposition to pilot overall

Recommendations →

- Remove bike lane bollards and "armadillos", do not reinstall on this section
- Monitor Route 127 intersection, evaluate possible modifications
- Monitor all intersections to minimize travel times
- Continue to monitor, measure, and make adjustments to project
- Retain lane configurations to June 2017
- Spring surveys – paper, phone
- Return to Council in June 2017 with final recommendations and reports
- Identify additional improvements over winter:
  - Bike lane materials and configurations
  - Benches, planters
  - Sign and marking plans if reconfiguration will be long-term
  - Continue crosswalk coordination at 5 locations

CITY COUNCIL DISCUSSION

Chapin Spencer, Director

Nicole Losch, Sr. Planner

www.burlingtonvt.gov/dpw/north-avenue-pilot-project

northavepilot@burlingtonvt.gov

BURLINGTON, VT PUBLIC WORKS

APPENDIX

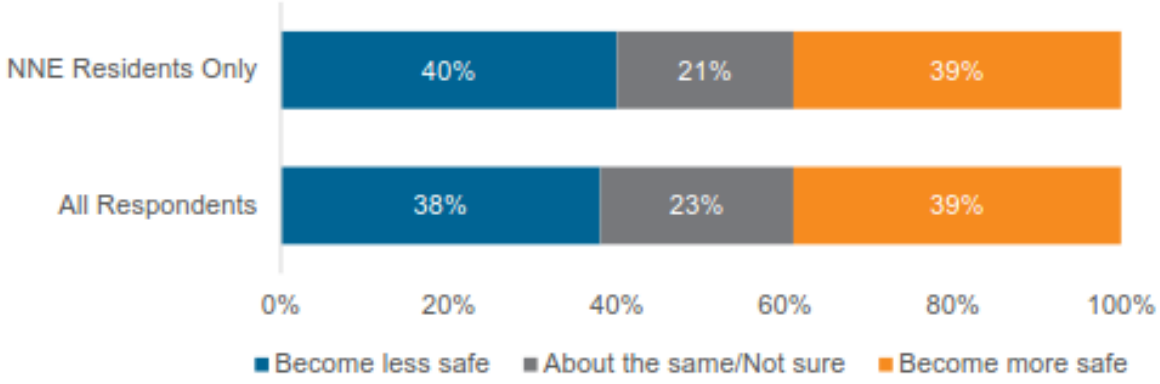
ADDITIONAL SURVEY DATA

SURVEY RESULTS: PROJECT OPINIONS

Modes of travel

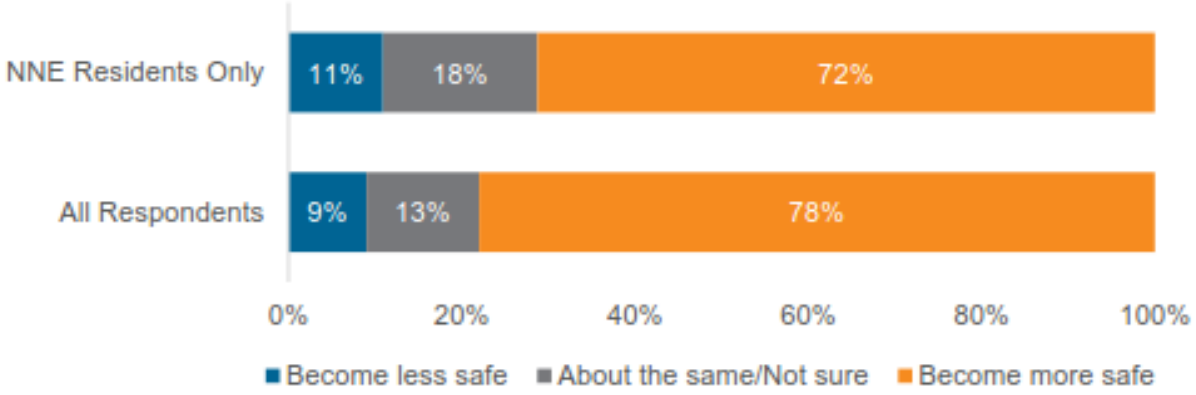
Mode	NNE Residents		All Respondents	
	Count	Percent of Respondents	Count	Percent of Respondents
Car	1,813	100%	2,614	96%
Bike	734	40%	1,233	45%
Walk/Run	787	43%	1,011	37%
Bus	176	10%	250	9%
No recent trips	1	0%	11	0%

Driving safety

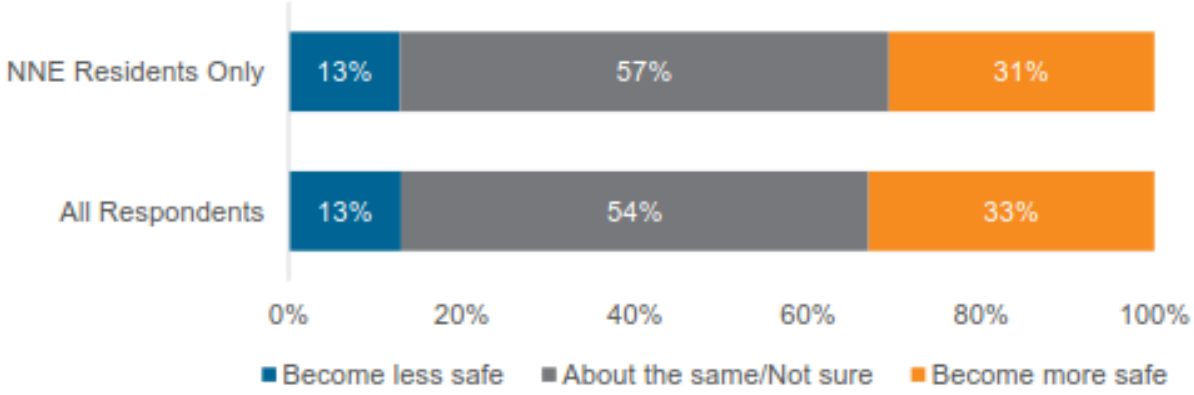


SURVEY RESULTS: PROJECT OPINIONS

Biking safety

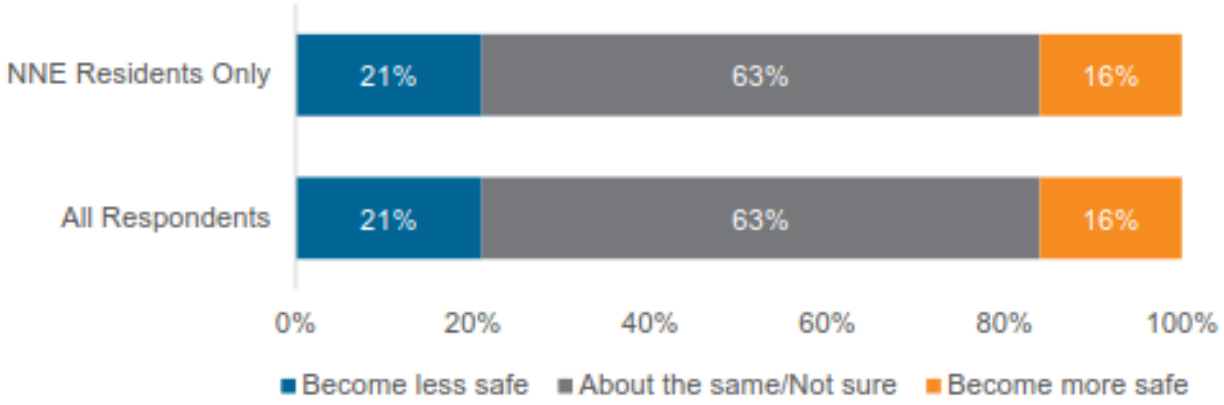


Walking/running safety



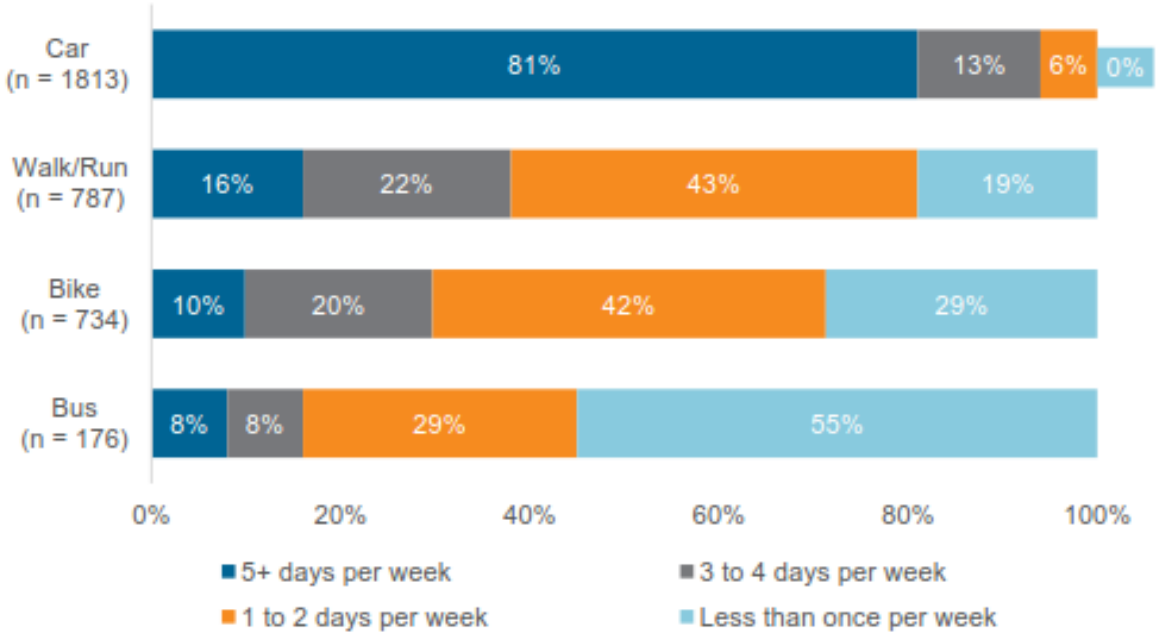
SURVEY RESULTS: PROJECT OPINIONS

Transit safety

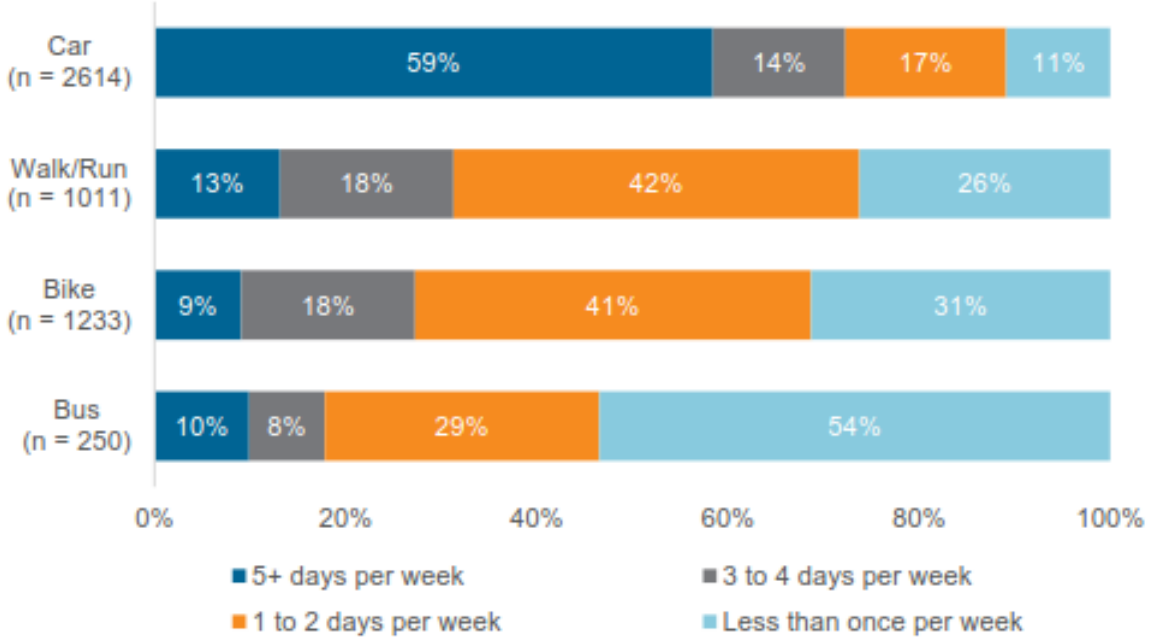


SURVEY RESULTS: PUBLIC OPINIONS

NNE frequency of travel modes

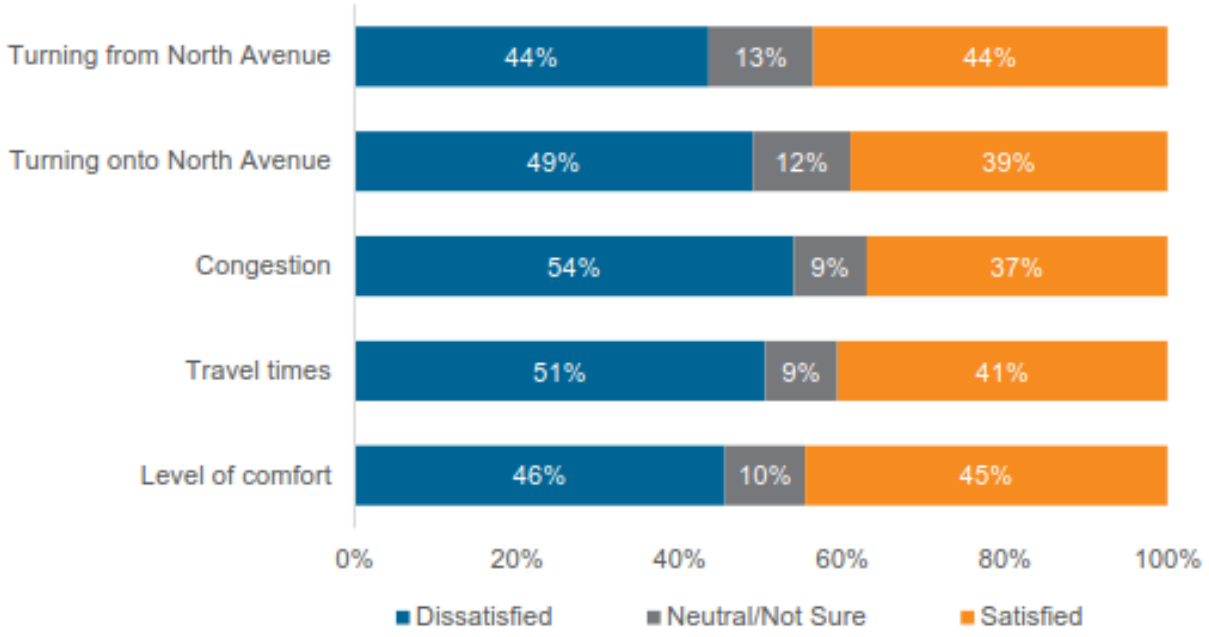


Citywide frequency of travel modes

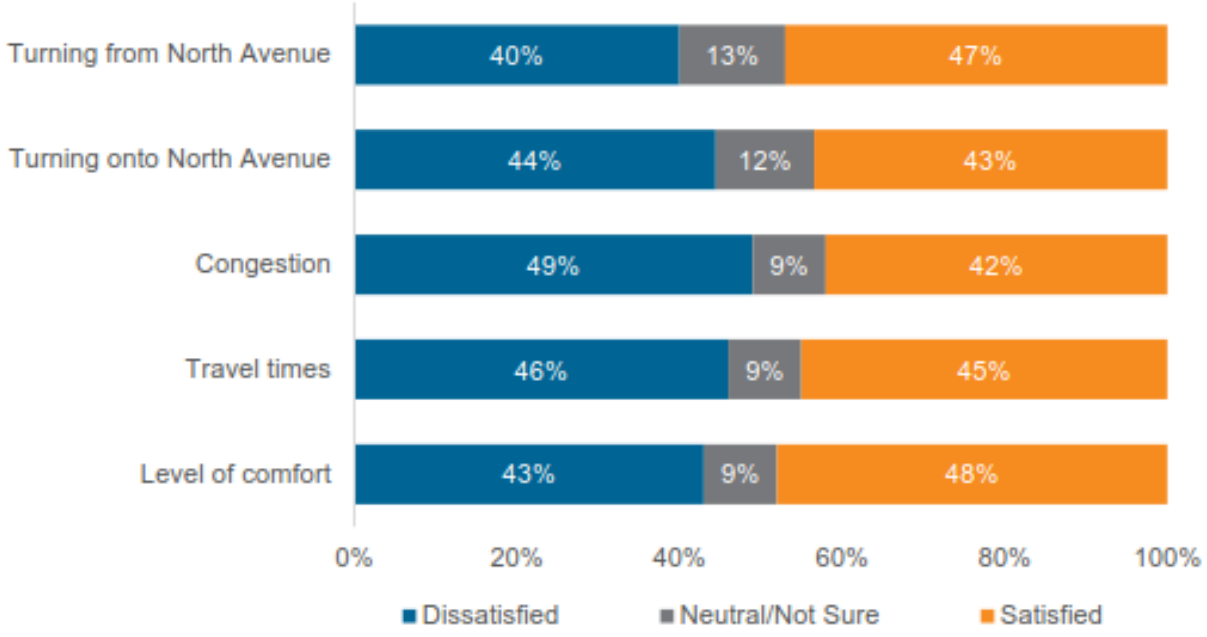


SURVEY RESULTS: PUBLIC OPINIONS

NNE driver satisfaction

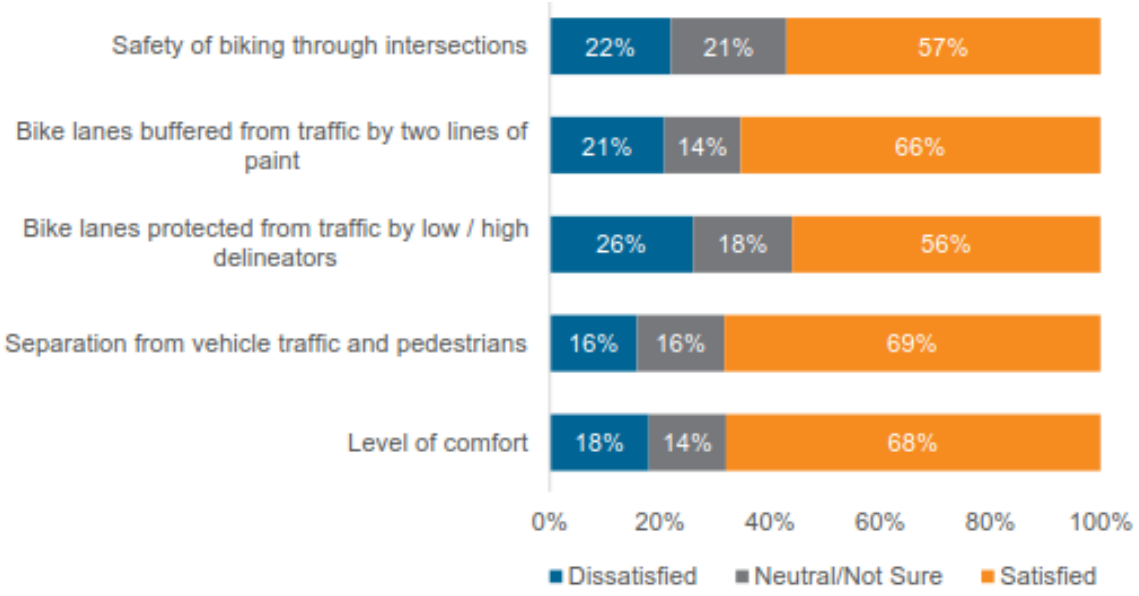


Citywide driver satisfaction

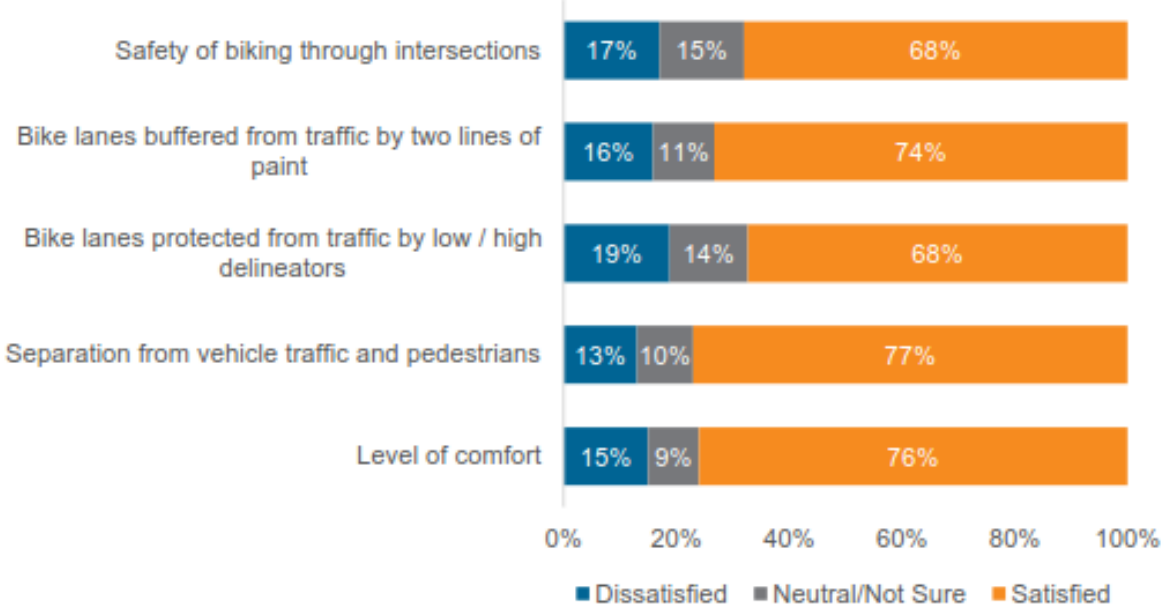


SURVEY RESULTS: PUBLIC OPINIONS

NNE bicycling satisfaction

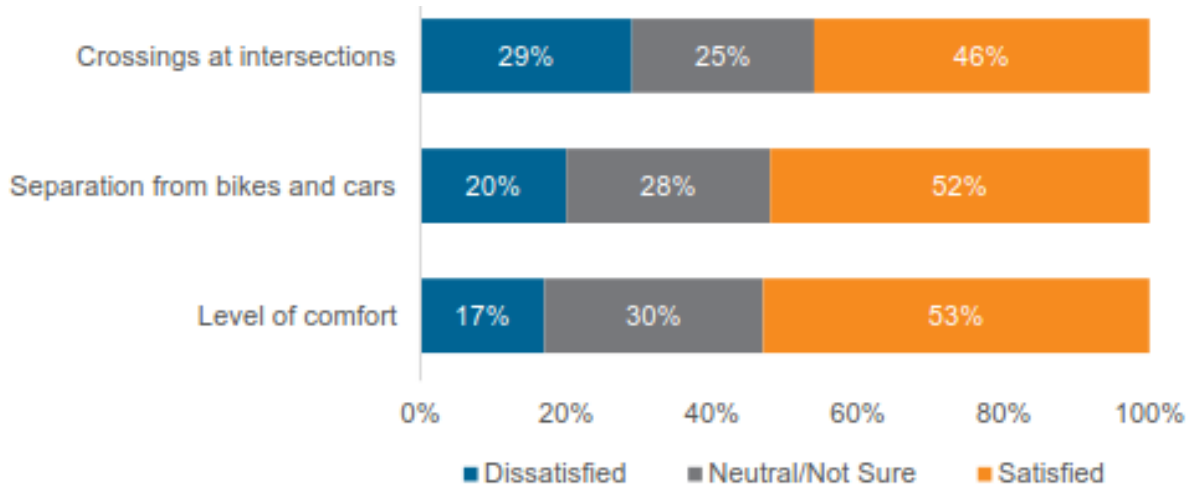


Citywide bicycling satisfaction

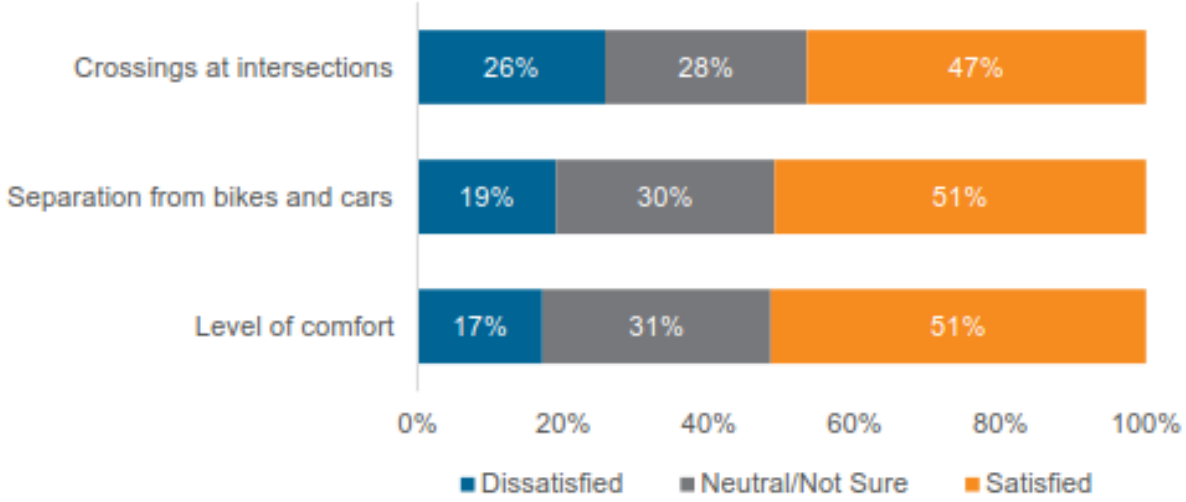


SURVEY RESULTS: PUBLIC OPINIONS

NNE walking/running satisfaction

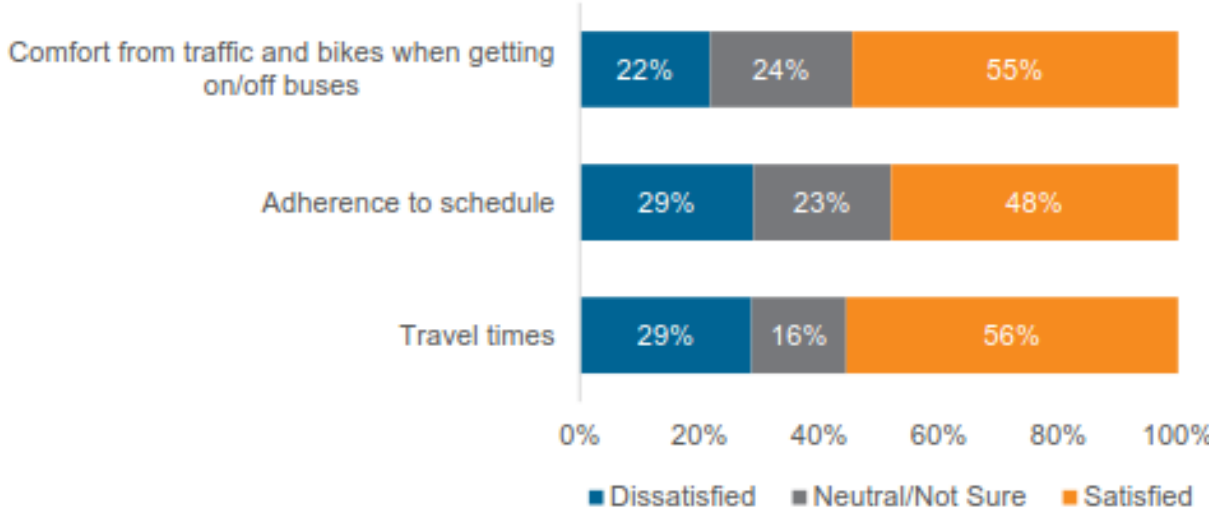
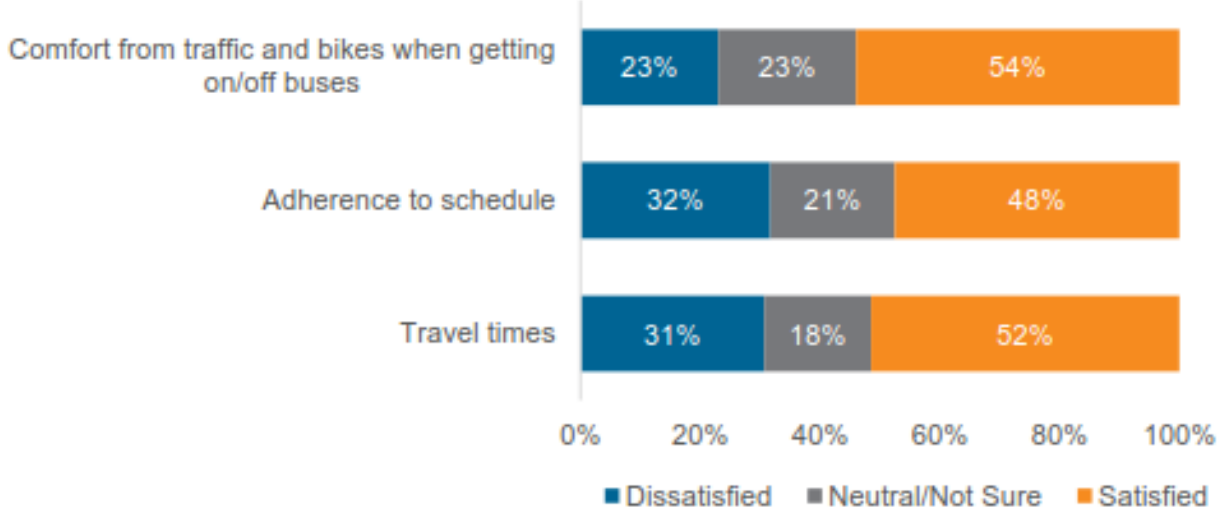


Citywide walking/running satisfaction



SURVEY RESULTS: PUBLIC OPINIONS

NNE transit satisfaction



Citywide transit satisfaction