

# MARYLAND BICYCLE & PEDESTRIAN MASTER PLAN UPDATE

## Bicycle and Pedestrian User Survey Results

The Maryland Department of Transportation (MDOT) is leading an update of its 2002 Bicycle and Pedestrian Master Plan. The purpose of the update is to reflect on progress since the 2002 Plan and identify new issues and opportunities toward achieving its vision for biking and walking in Maryland. As part of this effort, MDOT and its consultant team conducted a bicycle and pedestrian user survey to understand who is biking and walking in Maryland and to gain insight from the experience and perspectives of all types of Maryland's residents and visitors.

### Background

#### Purpose and Goals

High quality community input is fundamental to successfully accomplishing a Bicycle and Pedestrian Master Plan update that meets the needs and reflects the priorities of Maryland's current and potential bicyclists and pedestrians. One important tool for collection of this input has been the Bicycle and Pedestrian User Survey, which uses a series of multiple choice and open-ended response questions to solicit the opinions of those most affected by plan outcomes.

The survey was available on the Master Plan Update project website for approximately 10 weeks, and was advertised on the Maryland Motor Vehicle Administration website and promoted on social media. It was also promoted by numerous bicycle and pedestrian advocacy organizations as part of our Advisory Group and Stakeholder Outreach efforts and a link to the survey was emailed to the project's mailing list. During this period, the survey had 3,386 respondents representing 391 of Maryland's 619 zip codes, as well as areas in Virginia and Washington, DC.

During the same time period that the Bicycle and Pedestrian User Needs survey was conducted, MDOT also conducted an online survey to inform development of the Maryland Transportation Plan (MTP). Results of that survey also showed broad support for improving bicycle and pedestrian facilities. Key findings from that survey are referenced in this report. The full results of that survey are available at: [www.mdot.maryland.gov/mtp](http://www.mdot.maryland.gov/mtp).

#### Respondent Demographics

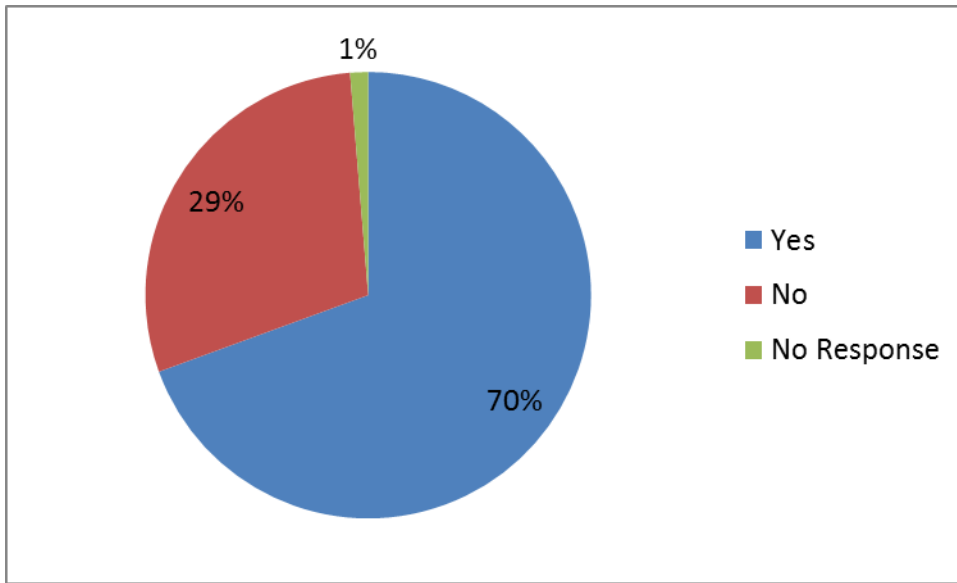
Survey respondents were invited to answer optional sociodemographic questions to provide insight into who participated and to help understand which communities may require additional outreach efforts. The results were analyzed as a whole, and also divided and analyzed by male and female, as well as suburban, urban, and rural respondents. Key findings are presented below.

1. Approximately 60% of respondents are male, and 40% are female.
  - Most (approximately 56.5%) describe their communities as suburban, while approximately 16.7% live in rural areas and 26.8% live in urban areas
2. Approximately 70% of respondents said that suitability for walking or biking was important for their choice of where to live or work (Figure 1).

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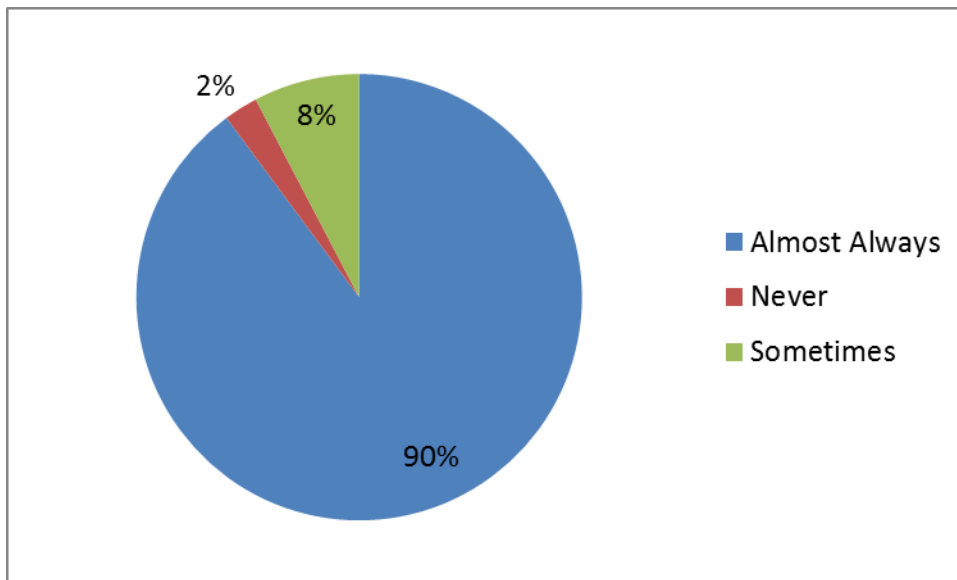
Figure 1. Was Suitability to Walking or Biking Important in Choosing Where to Live or Work?



Most respondents (approximately 60%) were between the ages of 40 and 64, while approximately 27% were between 18 and 39, 12% were over 65 and only 7 participants were younger than 17 years of age

3. The majority of respondents (approximately 90%) almost always have access to a motor vehicle (Figure 2).

Figure 2. Do You Have Access to a Motor Vehicle?

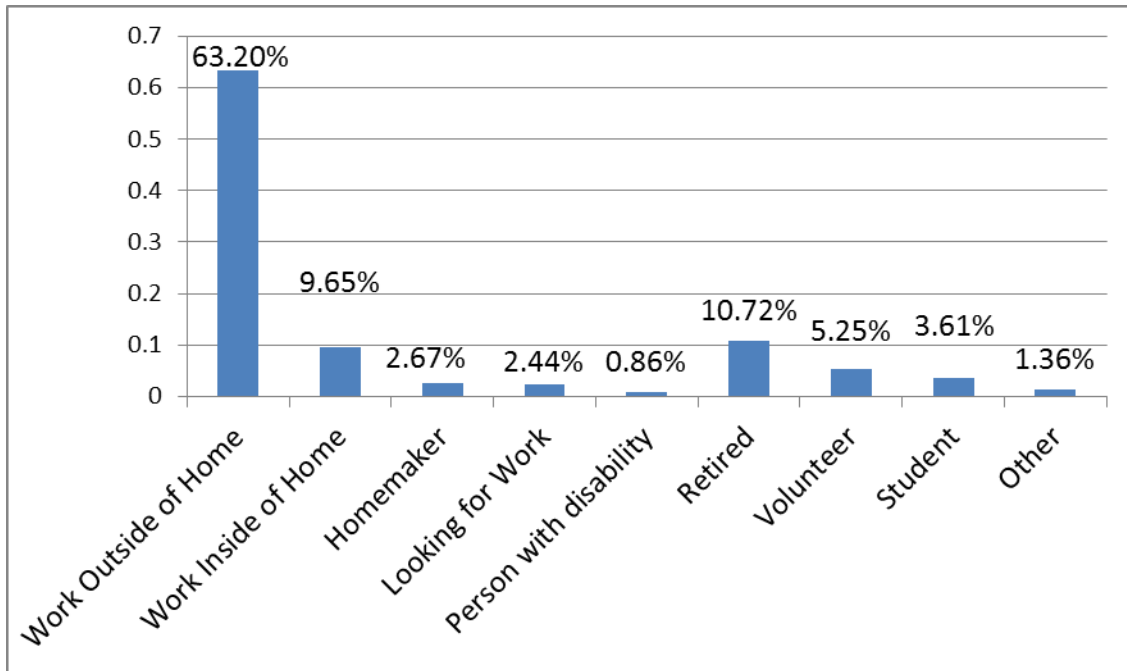


4. Approximately 63% work outside of their home (Figure 3).

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Figure 3. Where Do You Work?



### Results:

#### Pedestrian-Related Questions

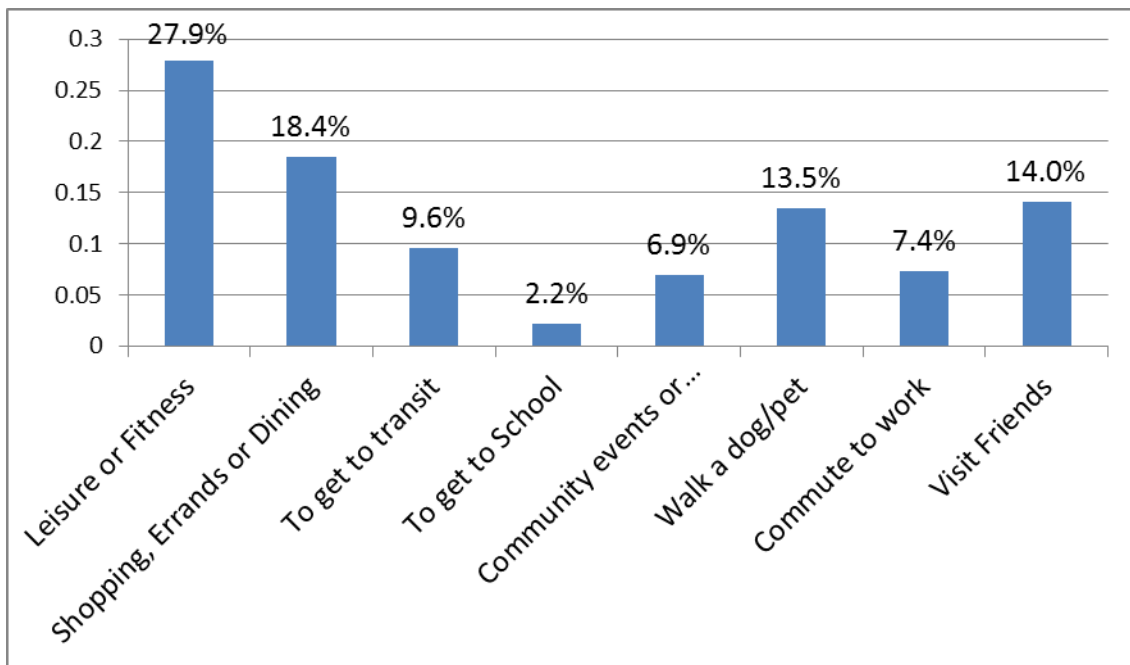
Survey respondents answered four multi-part questions specific to pedestrian activities. They were asked why they walk (trip purpose), how far they are willing to walk, what factors stop them from walking, and the most important improvements that would enable them to walk. Survey responses for these pedestrian-related questions are provided in *Appendix A*. Some important findings from these questions are summarized below.

1. The most common reasons that respondents walk “almost daily” or “regularly” are leisure or fitness and shopping or dining.
  - Approximately 57% of respondents walk daily or regularly for a transportation purpose (as opposed to leisure, fitness or to walk a pet) (Figure 4)

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Figure 4. Why Do You Walk Daily or Regularly?

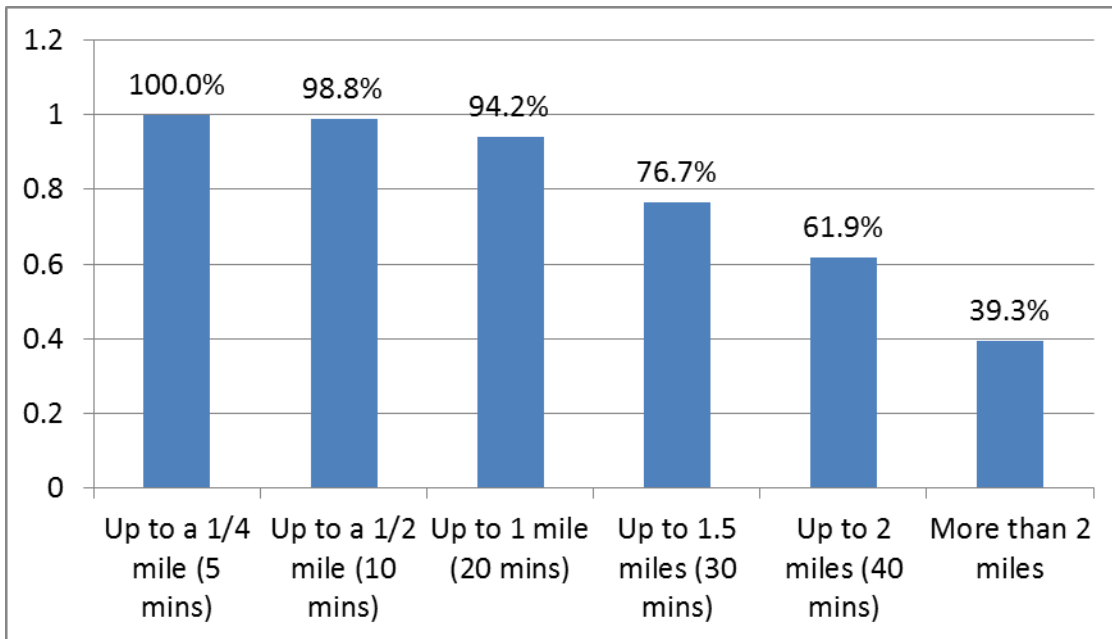


- Approximately 79% of all respondents walk daily or regularly; with even higher rates among urban residents (approximately 85%).
2. A number of participants (approximately 40%) reported that over two miles was a comfortable walking distance (Figure 5).

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Figure 5. What is a Comfortable Walking Distance?

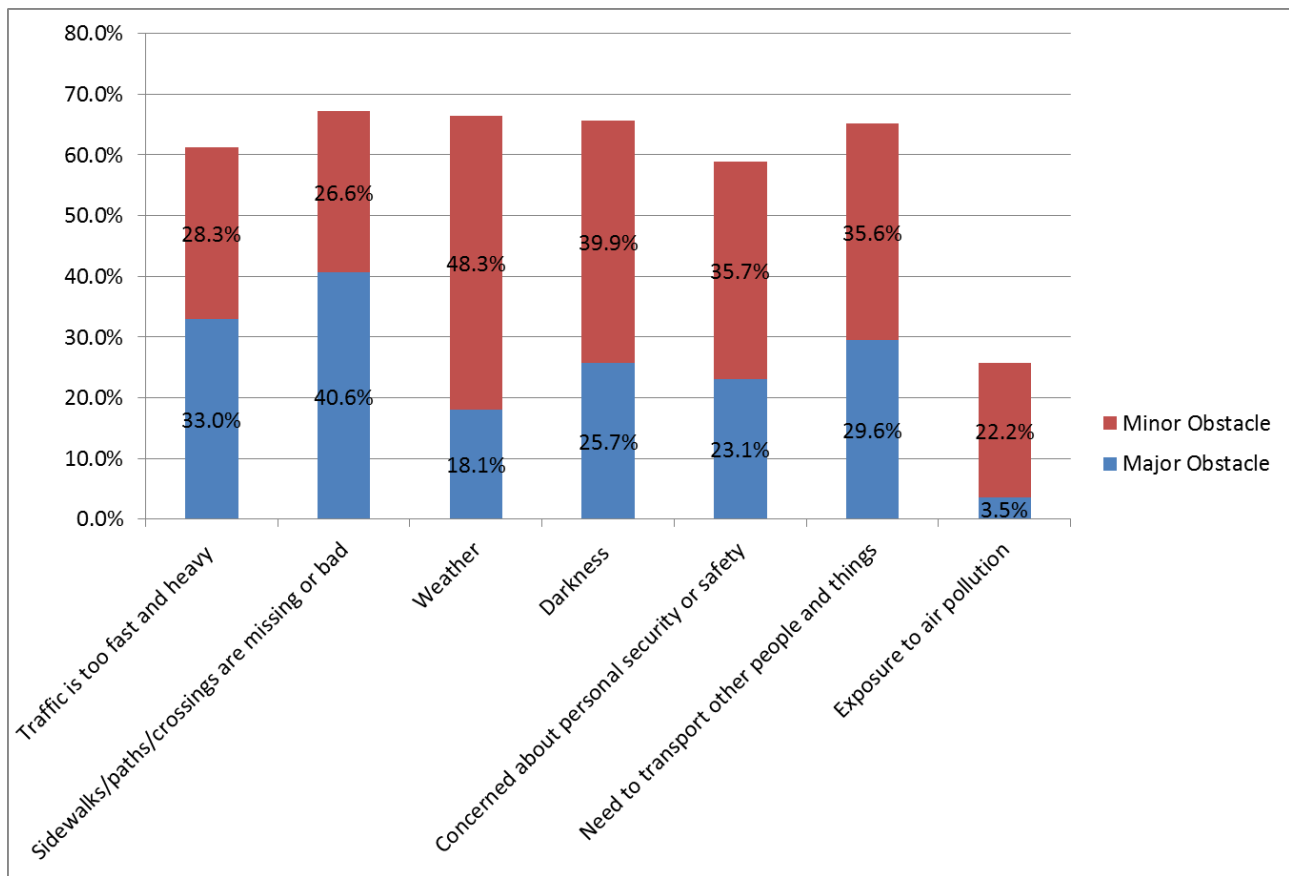


3. Four obstacles to walking were far more frequently cited than others:
  - Pedestrian facilities such as sidewalks and paths are missing or bad
  - Traffic is too fast or heavy
  - The need to transport people or things
  - Darkness
  - Approximately 49% of respondents cited at least one infrastructure related obstacle to walking as a “major obstacle” (Figure 6).

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Figure 6. What are the Biggest Obstacles to Walking?



4. Four pedestrian improvements were the most frequently cited as necessary to improve conditions:

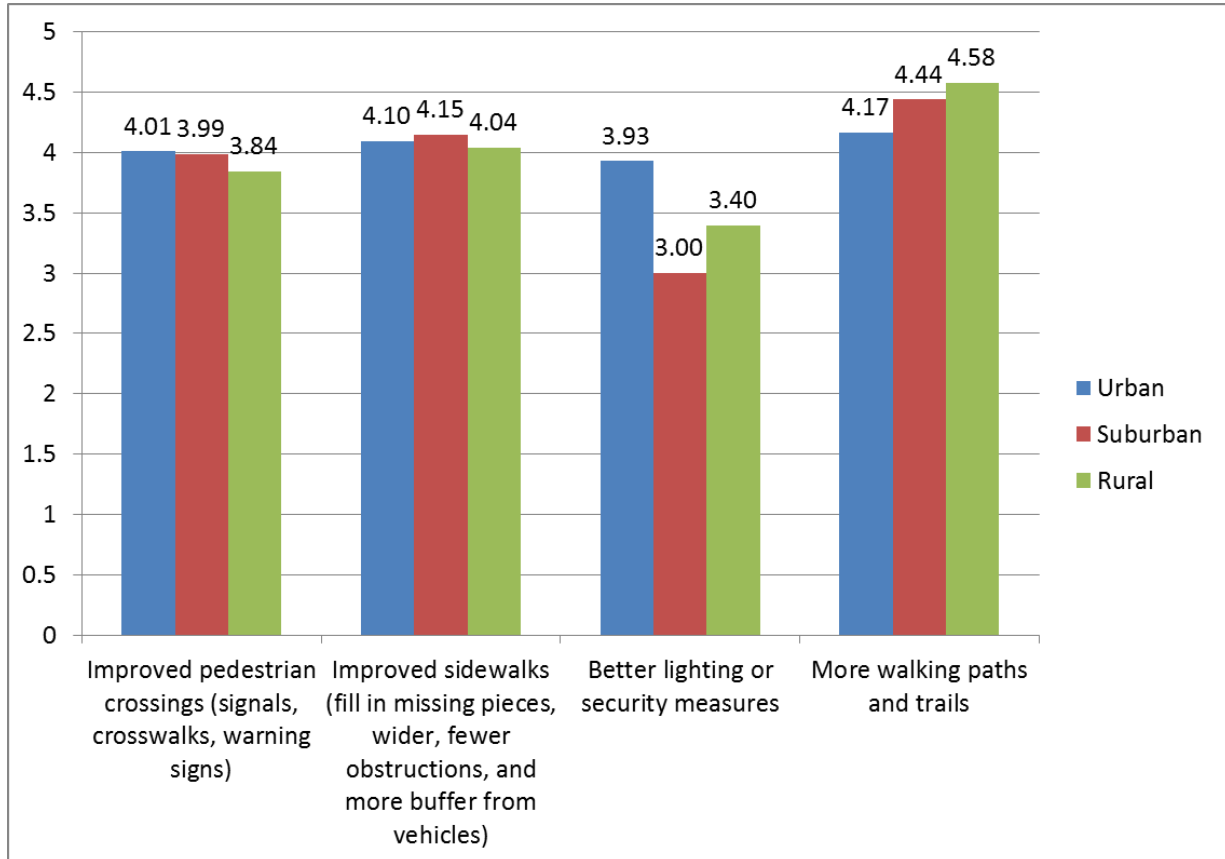
- More walking paths and trails
- Improved sidewalks
- Improved pedestrian crossings
- Better lighting and security measures

Respondents were asked to rank potential walking improvements from 1 (Not at all important) to 5 (Extremely important). All improvements were ranked as very important. Even the lowest ranked improvement scored 3.5 out of 5, on average (Figure 7).

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Figure 7. Pedestrian Priorities by Community Type (ranked out of five)



Survey results indicate that respondents walk regularly for many purposes and place high priority on improving the location and quality of pedestrian facilities. Pedestrian priorities were largely the same between the three community types, with a slightly higher prioritization of security and lighting in the urban areas and paths and trails in the rural areas.

### Bicycle-Related Questions

Survey respondents answered six multi-part questions specific to bicycle activities. They were asked:

- how comfortable they are on a bicycle;
- why they ride a bicycle (trip purpose);
- the types of bicycle facilities they prefer to use;
- how far they are willing to bicycle;
- what factors stop them from riding a bicycle; and
- what the most important improvements are that would enable them to bicycle.

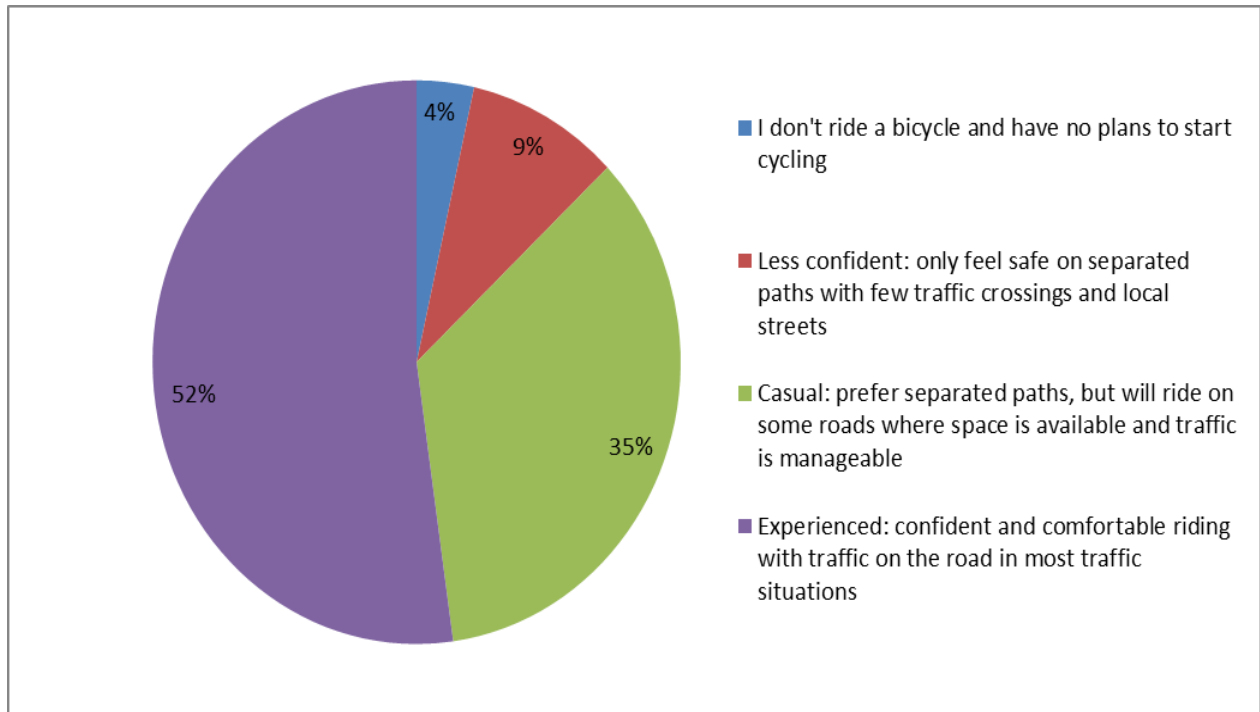
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Survey responses for these bicycle-related questions are provided in *Appendix A*. Some important findings from these questions are summarized below.

1. Most of the respondents (approximately 52%) describe themselves as experienced and confident cyclists (Figure 8). Approximately 35% describe themselves as casual riders. Only a small minority of respondents (approximately 13%) say they are less confident, or don't ride a bicycle.

Figure 8. What is Your Level of Bicycling Comfort and Experience?



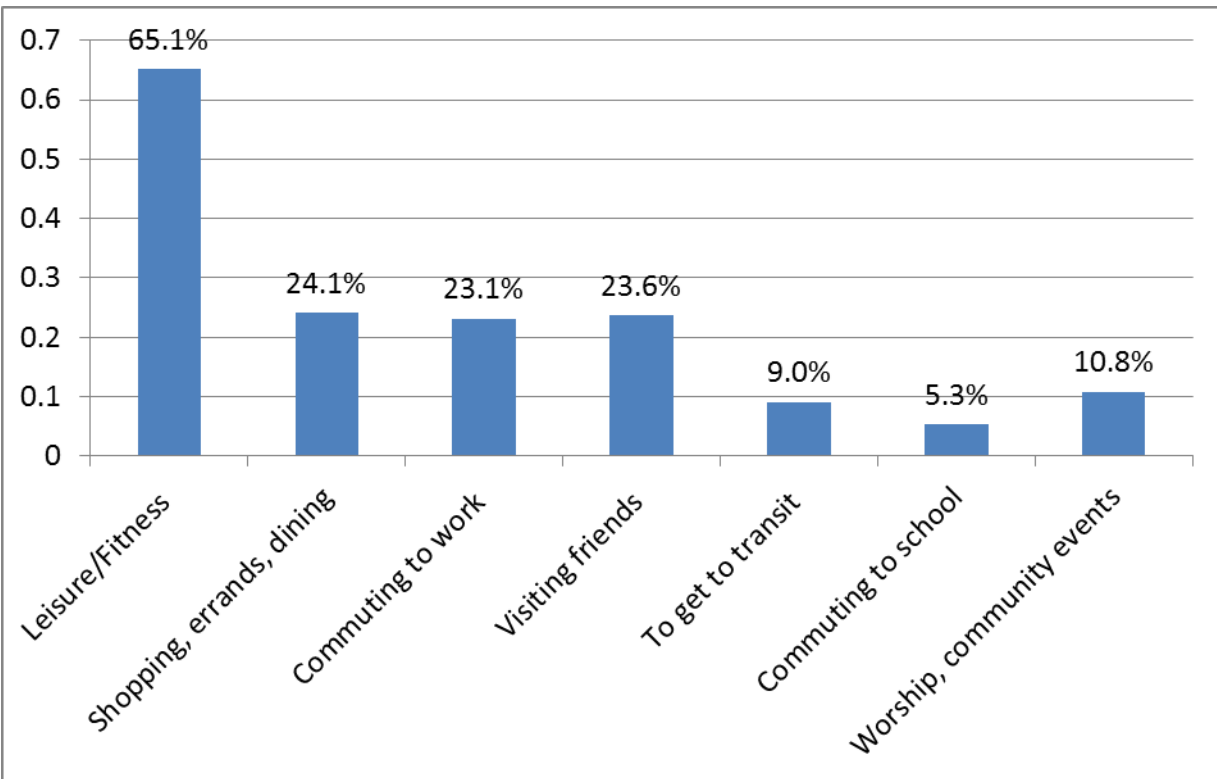
2. Approximately 65% of respondents say that they ride a bicycle for leisure or fitness either daily or regularly, while approximately 40% of respondents bike daily or regularly for a transportation purpose (as opposed to fitness or leisure).



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Figure 9. Why do You Bicycle Daily or Regularly?

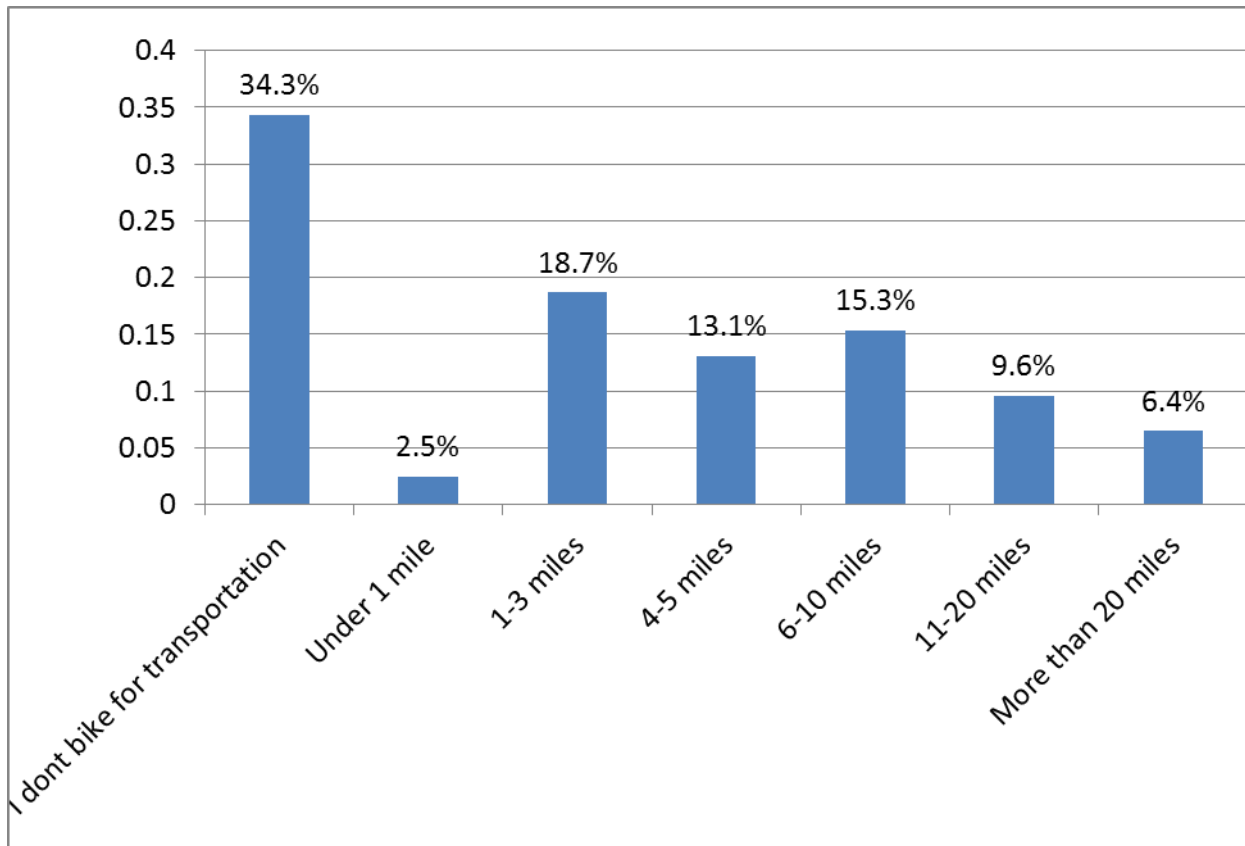


- Of respondents who use a bicycle for transportation, a distance of one to three miles was the most commonly reported comfortable distance (Figure 10).
  - Approximately 34% of respondents report that they do not bicycle for transportation

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Figure 10. What is Your Maximum Comfortable Riding Distance?

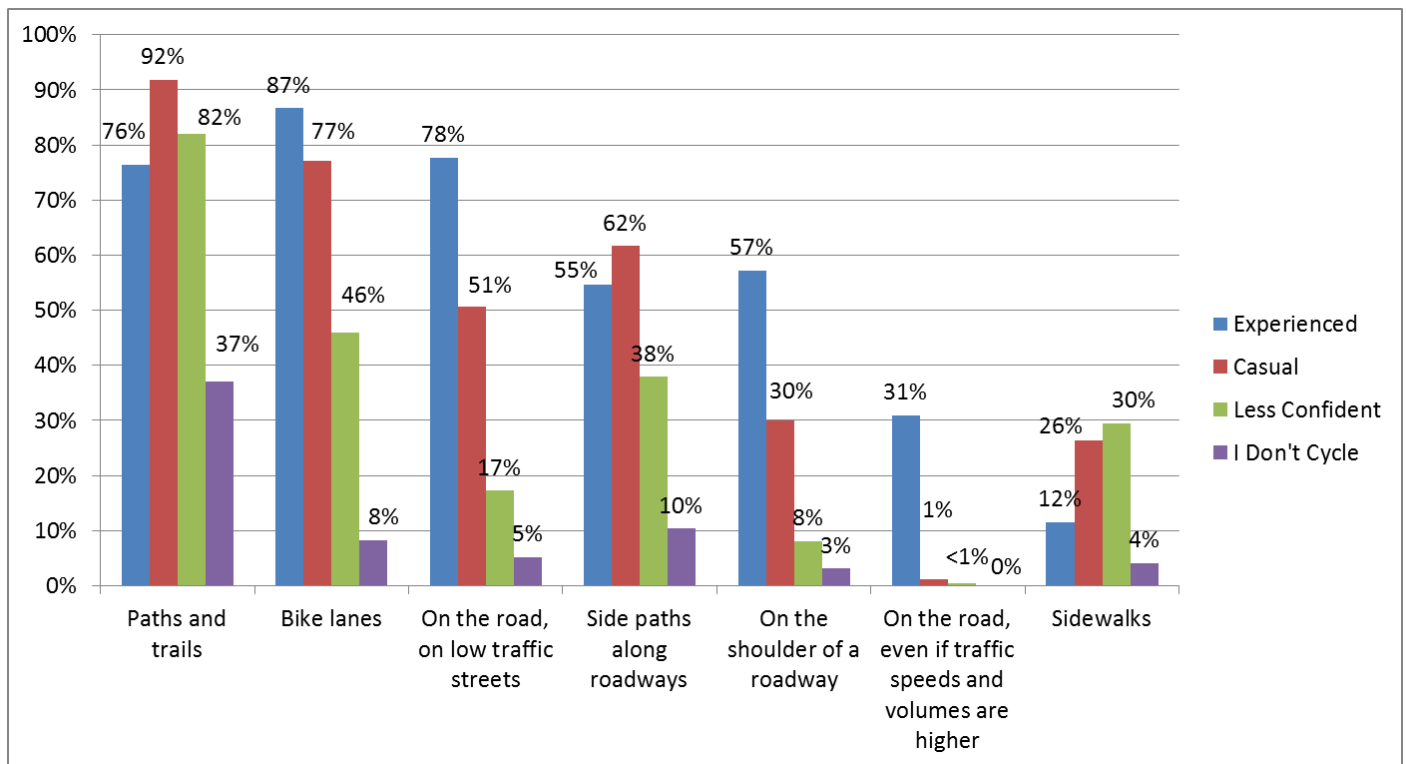


4. Bike lanes, paths, and trails were commonly cited as comfortable bicycling facilities (between 67% and 70% of respondents).
  - Low traffic streets and side paths along roadways were also widely considered comfortable (between 47% and 52% of respondents) (Figure 11)

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Figure 11. Where Are You Comfortable Bicycling?



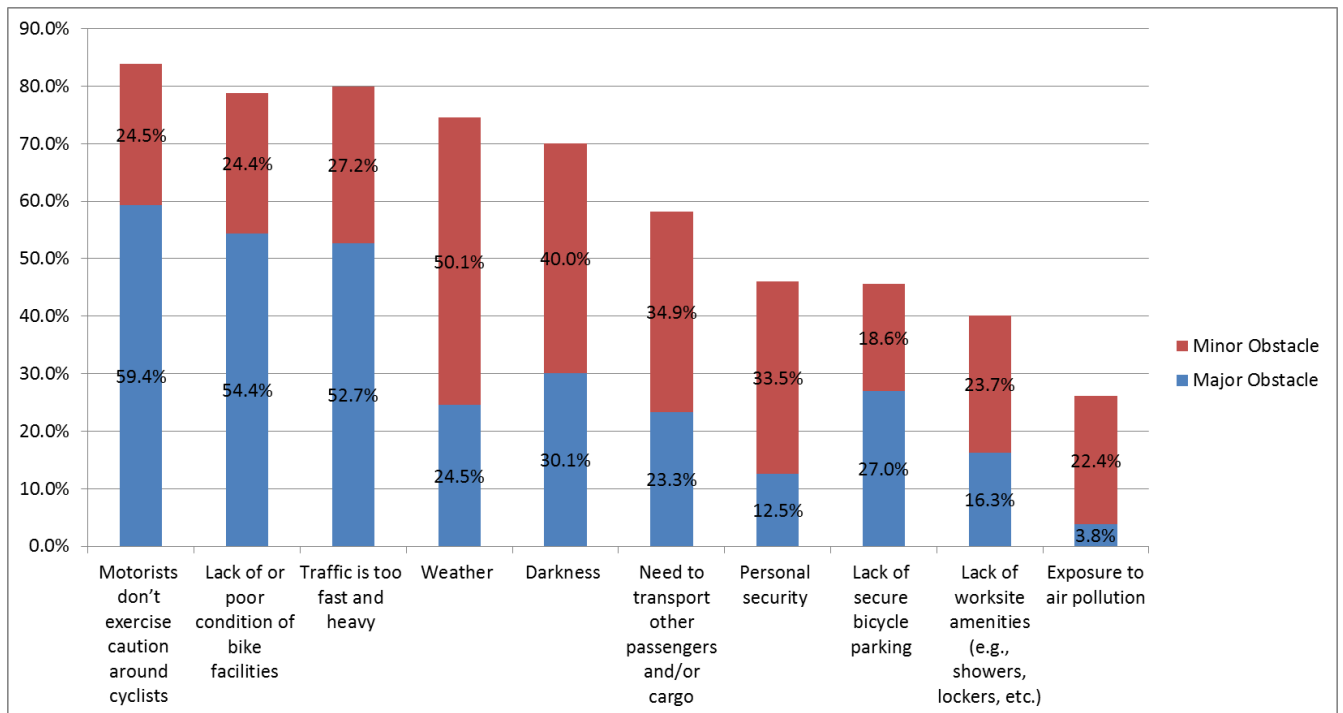
5. Three obstacles to bicycling were far more frequently cited than others

- Motorists don't exercise caution around cyclists
- Lack of or poor condition of bike facilities
- Traffic is too fast and heavy
- Approximately 75% of respondents cited at least one infrastructure-related obstacle to bicycling (which was very similar across urban, suburban and rural respondents), including traffic volume and speed, lack of facilities, and lack of bicycle parking (Figure 12).

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Figure 12. What are the Biggest Obstacles to Cycling?



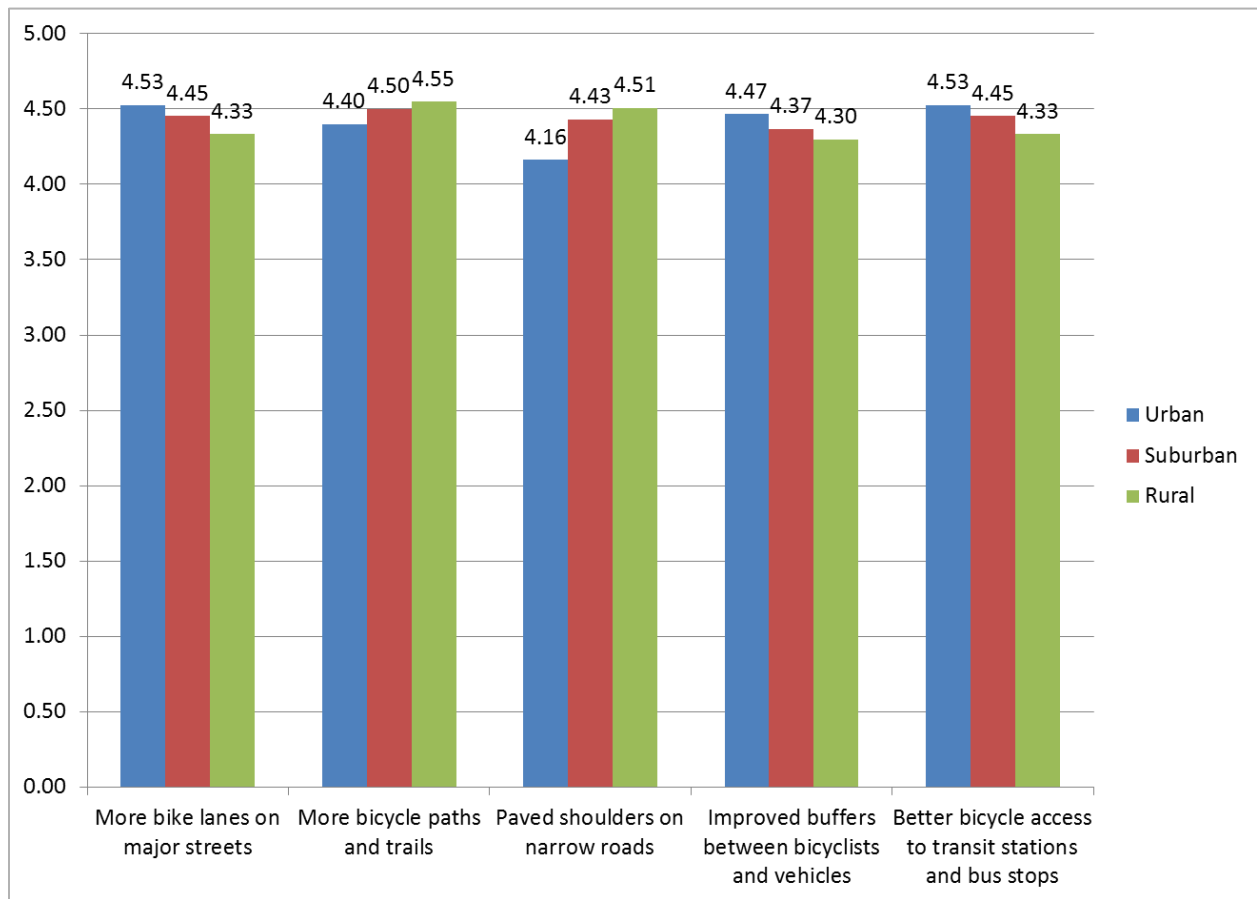
6. Three bicycle improvements were the most frequently cited as necessary to improve conditions:
- More bicycle paths and trails
  - More bike lanes on major streets
  - Better bicycle access to transit stations and bus stops
  - All improvements were ranked as very important. Even the lowest ranked improvement scored 3.6 out of 5, on average.

Overall, the survey respondents self-reported as a very experienced group of bicyclists, though a sizeable minority rides primarily for recreation, not transportation. They are very concerned with the connectivity and quality of bicycle facilities and expressed discomfort with motorists and a preference for facilities that are not shared with vehicle traffic. The strongly expressed preference for bicycle connectivity to transit suggests that more bicycling for transportation might take place if this were improved (Figure 13).

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Figure 13. What are the Most Important Bicycle Improvements (ranked out of 5)?



Top priorities for improving bicycle conditions included building on-road and off-road facilities as well as improving access to transit. These findings are consistent with the MTP survey results, in which on-road and off-road bicycle facilities were the most frequently cited top priorities for improving cycling and walking.

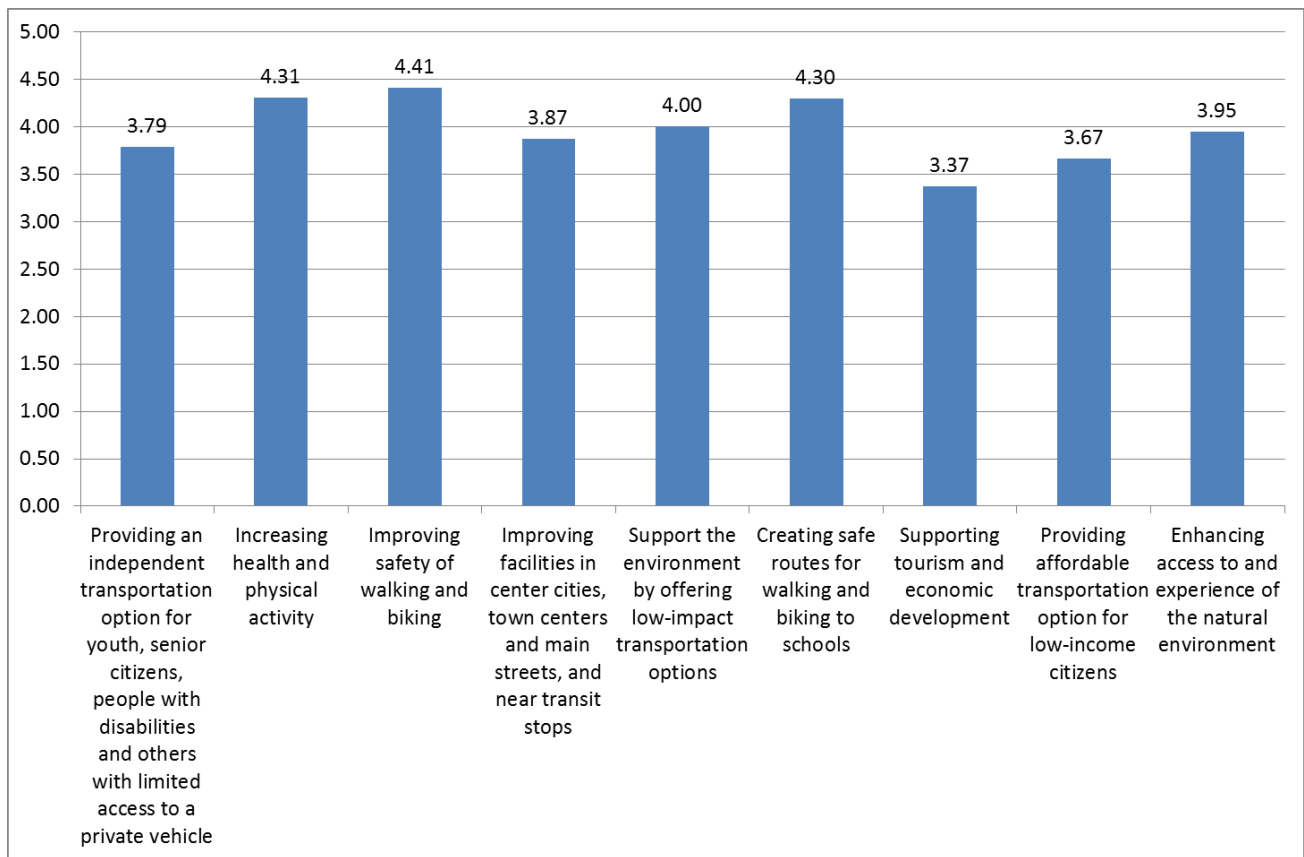
### Priorities for Investing in Walking and Bicycling

Survey respondents were asked what they considered the most important reasons for investing in bicycling and walking. This question was also posed as part of the MTP survey. Improving the safety of walking and biking was the most frequent response in both surveys (especially near schools), followed by increasing physical health and activity, supporting the environment, and improving facilities in cities and towns. This user survey's prioritization results can be seen in Figure 14.

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Figure 14. The Most Important Reasons to Invest in Bicycle and Pedestrian Improvements (Ranked Out of Five)



### Conclusion

The Bicycle and Pedestrian User Survey responses indicate strong desire for improved bicycle and pedestrian infrastructure, as well as safety and education work.

Nearly 80% of survey respondents reported walking for one or more purpose at least daily or regularly, with the highest rates of walking by urban dwelling respondents. Missing or poor quality pedestrian facilities was cited as the most common obstacle to walking and improving infrastructure was rated as the top priority for improvement. In most cases, urban, suburban and rural priorities for pedestrian improvements were similar, though lighting and security were higher priorities in urban areas than in either suburban or rural areas.

About half of survey respondents self-reported as experienced bicyclists, while the remaining half reported casual, less experienced or no cycling experience. Leisure and fitness riding was the most common daily or regular bicycle trip purpose, though 39.5% reported riding daily or regularly for a transportation purpose. Survey respondents consistently reported the need for many types of infrastructure improvements, and also expressed concerns about safety and motorist behavior. The

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survey revealed important differences in the types of bicycle facilities preferred by cyclists of different experience levels, which is consistent with other national research showing that highly experienced cyclists are comfortable and often prefer to ride with traffic, while less experienced cyclists are not comfortable riding with traffic and require separated bicycle facilities to feel comfortable.

### Appendices

- A. Complete Results for Selected Survey Questions

# Appendix A: Complete Results for Selected Survey Questions

<b>What are the major obstacles to bicycling?</b>	<b>Respondents</b>
Lack of or poor condition of bike facilities Not an Obstacle	407
Lack of or poor condition of bike facilities Minor Obstacle	827
Lack of or poor condition of bike facilities Major Obstacle	1841
Traffic is too fast and heavy Not an Obstacle	368
Traffic is too fast and heavy Minor Obstacle	922
Traffic is too fast and heavy Major Obstacle	1786
Motorists don't exercise caution around cyclists Not an Obstacle	250
Motorists don't exercise caution around cyclists	828
Motorists don't exercise caution around cyclists	2010
Weather Not an Obstacle	537
Weather Minor Obstacle	1696
Weather Major Obstacle	831
Darkness Not an Obstacle	685
Darkness Minor Obstacle	1353
Darkness Major Obstacle	1020
Lack of secure bicycle parking Not an Obstacle	807
Lack of secure bicycle parking Minor Obstacle	1328
Lack of secure bicycle parking Major Obstacle	914
Lack of worksite amenities (e.g., showers, lockers, etc.) Not an Obstacle	1642
Lack of worksite amenities (e.g., showers, lockers, etc.) Minor Obstacle	804
Lack of worksite amenities (e.g., showers, lockers, etc.)	552
Personal security Not an Obstacle	1478
Personal security Minor Obstacle	1135
Personal security Major Obstacle	424
Need to transport other passengers and/or cargo Not an Obstacle	1075
Need to transport other passengers and/or cargo Minor Obstacle	1182
Need to transport other passengers and/or cargo Major Obstacle	790
Exposure to air pollution Not an Obstacle	2122
Exposure to air pollution Minor Obstacle	757
Exposure to air pollution Major Obstacle	128

<b>Most important bicycle improvements</b>	<b>Out of 5</b>
More bike lanes on major streets	4.448568732
More bike lanes on minor streets	3.939923713
More bicycle paths and trails	4.479120879
Paved shoulders on narrow roads	4.369489375
More wide outside lanes (easier to share lane with cars)	4.084345048
More shared lane markings (sharrows) in travel lanes	3.95978121
Improved buffers between bicyclists and vehicles	4.378566899
Better bicycle parking, storage and workplace amenities (eg. showers)	3.596350832
Better bicycle access to transit stations and bus stops	4.448568732
More on-road bike signage (share the road signs/bike may use full lane signs)	3.425483871



Better bike accommodation through intersections and interchanges	3.815948963
Slower traffic	4.172535211
More and better bike route wayfinding signs and bike maps	3.644850818
Increased maintenance (street sweeping/repair of roads)	3.751608752
increased enforcement and education of traffic laws	3.79728419
A bike sharing program	4.009677419

**Where are you comfortable bicycling?**

	<b>Respondents</b>	<b>Proportion</b>
Bike lanes	2282	0.673951565
On the shoulder of a roadway	1230	0.363260484
Paths and trails	2391	0.706142942
Side paths along roadways	1606	0.474305966
On the road, on low traffic streets	1794	0.529828706
On the road, even in high, fast traffic	499	0.14737153
Sidewalks	543	0.160366214

**Maximum comfortable biking distance**

	<b>Respondents</b>	<b>Proportion</b>
I don't bike for transportation	959	0.343481375
Under 1 mile	69	0.024713467
1-3 miles	522	0.186962751
4-5 miles	366	0.131088825
6-10 miles	428	0.153295129
11-20 miles	268	0.095988539
More than 20 miles	180	0.064469914

**Reasons for bike trips**

	<b>Respondents</b>
Leisure/Fitness Daily	343
Leisure/Fitness Regularly	1861
Leisure/Fitness Rarely	474
Leisure/Fitness Never	144
Shopping, errands, dining Daily	130
Shopping, errands, dining Regularly	686
Shopping, errands, dining Rarely	1127
Shopping, errands, dining Never	844
To get to transit Daily	81
To get to transit Regularly	225
To get to transit Rarely	688
To get to transit Never	1785
Commuting to school Daily	78
Commuting to school Regularly	102
Commuting to school Rarely	245
Commuting to school Never	2278
Worship, community events Daily	41
Worship, community events Regularly	323
Worship, community events Rarely	635
Worship, community events Never	1744
Commuting to work Daily	333

Commuting to work Regularly	449
Commuting to work Rarely	516
Commuting to work Never	1461
Visiting friends Daily	96
Visiting friends Regularly	704
Visiting friends Rarely	1062
Visiting friends Never	908

<b>Level of bicycling experience</b>	<b>Respondents</b>	<b>Proportion</b>
I don't ride a bicycle and have no plans to start cycling	98	0.04
Less confident: only feel safe on separated paths with few traffic crossings and local	262	0.09
Casual: prefer separated paths, but will ride on some roads where space is available and traffic is manageable	977	0.35
Experienced: confident and comfortable riding with traffic on the road in most	1461	0.52

<b>Most important pedestrian improvements</b>	<b>Out of 5</b>
Improved pedestrian crossings (signals, crosswalks, warning signs)	3.96
Improved curb ramps and accessibility for people with disabilities	3.50
Slower traffic	3.50
Improved sidewalks (fill in missing pieces, wider, fewer obstructions, and more buffer	4.11
Fill in gaps in sidewalks	3.79
Improved pedestrian access to transit stops and stations	3.51
Better lighting or security measures	3.68
Better sidewalk maintenance (repair of infrastructure, or removal of snow/debris)	3.72
More walking paths and trails	4.38
Increased education and enforcement of pedestrian traffic laws	3.69
Other: (Please specify)	

<b>The biggest obstacles to walking</b>	<b>Respondents</b>
Traffic is too fast and heavy - Not an obstacle	882
Traffic is too fast and heavy - Minor obstacle	958
Traffic is too fast and heavy - Major obstacle	1116
Sidewalks/paths/crossings are missing or bad - Not an obstacle	688
Sidewalks/paths/crossings are missing or bad - Minor obstacle	902
Sidewalks/paths/crossings are missing or bad - Major obstacle	1374
Weather - Not an obstacle	717
Weather - Minor obstacle	1635
Weather - Major obstacle	612
Darkness - Not an obstacle	745
Darkness - Minor obstacle	1351
Darkness - Major obstacle	871
Concerned about personal security or safety - Not an obstacle	962
Concerned about personal security or safety - Minor obstacle	1210
Concerned about personal security or safety - Major obstacle	783
Need to transport other people and things - Not an obstacle	746
Need to transport other people and things - Minor obstacle	1204
Need to transport other people and things - Major obstacle	1001

Exposure to air pollution - Not an obstacle	2051
Exposure to air pollution - Minor obstacle	751
Exposure to air pollution - Major obstacle	119

**Maximum comfortable walking distance**

	<b>Respondents</b>	<b>Proportion</b>
Up to a 1/4 mile (5 mins)	35	0.01032753
Up to a 1/2 mile (10 mins)	134	0.039539687
Up to 1 mile (20 mins)	508	0.149896725
Up to 1.5 miles (30 mins)	431	0.127176158
Up to 2 miles (40 mins)	655	0.193272352
More than 2 miles	1142	0.336972558

**Reasons for walking trips**

	<b>Respondents</b>
Leisure/Fitness Daily	579
Leisure/Fitness Regularly	1616
Leisure/Fitness Rarely	520
Leisure/Fitness Never	77
Shopping, errands, dining Daily	277
Shopping, errands, dining Regularly	1172
Shopping, errands, dining Rarely	933
Shopping, errands, dining Never	393
To get to transit Daily	260
To get to transit Regularly	493
To get to transit Rarely	871
To get to transit Never	1132
Commuting to school Daily	84
Commuting to school Regularly	91
Commuting to school Rarely	330
Commuting to school Never	2160
Worship, community events Daily	38
Worship, community events Regularly	504
Worship, community events Rarely	772
Worship, community events Never	1403
Walk dog/pet Daily	590
Walk dog/pet Regularly	468
Walk dog/pet Rarely	279
Walk dog/pet Never	1396
Commuting to work Daily	305
Commuting to work Regularly	275
Commuting to work Rarely	474
Commuting to work Never	1689
Visiting friends Daily	127
Visiting friends Regularly	976
Visiting friends Rarely	1017
Visiting friends Never	635