

# Cycling Past 50: A Closer Look into the World of Older Cyclists, Year 4 Survey

Carol A. Kachadoorian, Executive Director, db|Tilde CORE, Inc.



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Carol A. Kachadoorian, Executive Director, db|Tilde CORE, Inc.

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# Executive Summary

This report provides the results of Year 4 of the 50+ Cycling Survey. The Cycling Survey, which began in late 2017, captures information on cycling habits, preferences, and experiences of older adults who cycle. Responses included older adults living in countries around the world, but the analysis is limited to countries with the greatest number of responses—the United States and Canada—totaling 5,000. The report includes a comparison of Year 3 and Year 4 survey responses for many questions and topics, as well as a consideration of updates for the Year 5 survey.

Taken as a whole, the surveys' responses provide a rich database of information about older cyclists. They help answer questions such as who is cycling, when do they cycle and where, how far do they go, and how often. Further analyses help us answer a fundamental question about how to keep cycling in people's lives as they age by considering questions such as:

- How does the role cycling plays in their life course affect the amount of cycling an older adult does and how long they expect to continue cycling?
- How can the effects of the aging process be mitigated to support cycling as people age into their 70s, 80s, and even 90s.
- What is important for people when they cycle? What do they want from cycling?
- What infrastructure designs and operations benefit older cyclists?

Based on survey responses and analysis, older adults cycle for many reasons including to remain fit, for socialization, and for daily errands. The survey offers two self-identifying frameworks. First, early in the survey, people identify as a regular or non-regular cyclist. Second, after answering a series of questions about their cycling habits, experiences, and preferences, respondents select from four types of cyclists: *Interested but Concerned*, *Casual and Somewhat Confident*, *Experienced and Confident*, and *A Mix of All*. The analysis uses these two frameworks to identify differences among older adults for questions such as how a past-year crash affects their expectation to continue cycling and if they are comfortable cycling at night or alone.

Older adults engage in various types of cycling, including for daily errands, local and longer distance tourism, and sport cycling, such as racing, and mountain and gravel biking. Cycling rates and distances for all types of cycling vary by gender, age, and life circumstances. Injury and illness may cause a temporary cessation to cycling, but all those responding to the survey resumed cycling as part of or after recovery. The survey also captured life course information related to cycling at four timepoints: (1) when the person learned to cycle, (2) times in the past when they stopped cycling for at least a year (temporary cessation), (3) past-year changes in cycling rates or distances, and (4) anticipating a time when they would stop cycling altogether (permanent cessation). Older adults' abilities to cycle are typically affected by their physical health and the health of their family

members. Caregiving responsibilities can reduce the amount of cycling, although cycling benefits these older adults as caregivers, especially for their mental health.

Both regular and non-regular cyclists adapt to changing health and life circumstances by the amount and location of their cycling and by the type of bike they ride. Adaptive bikes such as electric-assist, tandems, and tricycles offer older adults ways to cycle comfortably and safely. These bikes also allow older adults to begin cycling or continue cycling when circumstances change. Older adults responding to the survey identified why they ride these bikes and cite their pros and cons.

The survey includes a visual preference section comprised of a series of photos of cycling contexts. Respondents are asked to select from four to six options for cycling through each context, then rate it on safety and comfort on a scale of one to five.

Past-year near misses and falls capture how older cyclists travel through the built environment and negotiate with others who are walking, cycling, and driving a motor vehicle. Fall descriptions were coded and grouped into six categories: (1) weather, (2) surface conditions and construction, (3) operator error, (4) actions of others, (5) bike issues, and (6) physical limitations (chronic conditions, effects of aging). Overall, surface conditions and operator error caused the most falls. Differences in gender tend to be age-based with an overall decline in falls beginning at age 70.

The analysis is premised on the fact that cycling remains a benefit for older adults by contributing to their physical and mental well-being and offering mobility independence regardless of their ability to continue driving a motor vehicle. Thus, the survey responses analyzed in this report can be used by transportation planners and engineers, public health professionals, those working on physical activity and wellness for older adults, and advocates, as well as older adults themselves. The issues identified in the survey's responses in need of further work include: a stronger analysis of cycling risks for older cyclists of color and women, the impact of care-giving on cycling rates, the impact of injury and chronic conditions on potential cycling cessation, the impact of social or cultural pressure on cessation, and cycling facility design and maintenance that benefit older cyclists.

# 1. Introduction

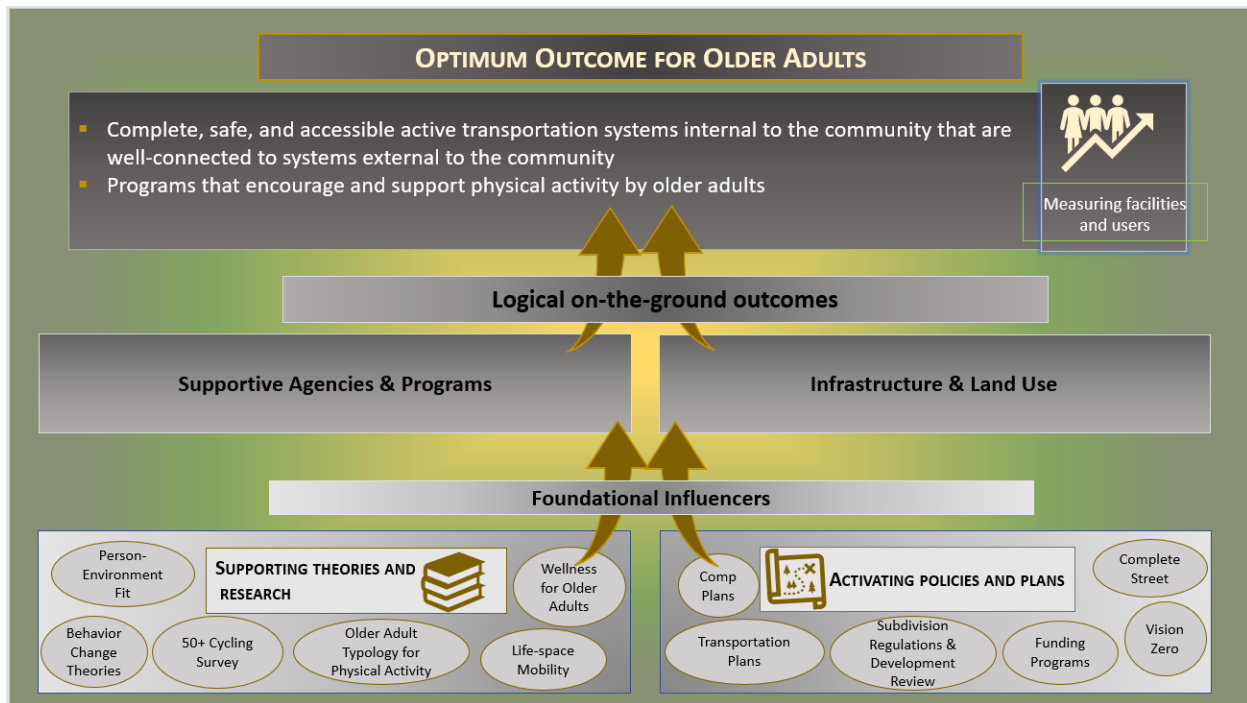
The 50+ Cycling Survey is a survey of older adults who cycle. First offered in 2018, the survey provides information about the cycling history, habits, and preferences of older adults. Now in its fourth year, the results shown here represent over 5,000 respondents ages 50 to 85-plus and can be used by engineers, planners, public health and recreation professionals, advocates, decision-makers, and others. The survey helps answer the question: how can our growing understanding of older cyclists affect policy, programs, design, and practice? A pdf of this year's survey is in Appendix A.



## 1.1 The Survey in a Broader Context

The 50+ Cycling Survey offers a way for older adults who ride a bicycle to share their experiences and preferences. Its North American reach brings together older cyclists from different geographic areas. They cycle during a range of weather conditions, on varying topography and cycling infrastructure, and in different cycling cultures. The survey's purpose is grounded in a commitment to finding ways to encourage and support quality of life goals as people age through various pathways.

Figure 1. Model—Optimum Outcome for Older Adults



Cycling is one way that people can remain physically active, socially engaged, and improve their overall wellness as they age. The survey is one piece of many efforts to accomplish these goals. It fits into a larger framework that begins with Foundational Influencers that lead to Supportive Programs, Infrastructure, and Land Use. Figure 1 shows a model for the “Optimum Outcome for Older Adults.” The model includes the survey as a Foundational Influencer, as it provides information about older cyclists that can be used for program development, infrastructure design and operation, and land development.

The 5,000 survey responses provide a large database of information about older cyclists. These data answer questions such as who is cycling, when do they cycle and where, how far do they go, and how often. Further analyses help us answer a fundamental question about how to keep cycling in people’s lives as they age by considering questions such as:

- How does the role cycling plays in their life course affect the amount of cycling an older adult does and how long they expect to continue cycling?
- How can the effects of the aging process be mitigated to support cycling as people age into their 70s, 80s, and even 90s.
- What is important for people when they cycle? What do they want from cycling?
- What infrastructure designs and operations benefit older cyclists?

## 1.2 The Survey Timeframe and Promotion

The survey was open from August 2021 through March 2022, with links to the online survey form on the Mineta Transportation Institute and db|Tilde CORE websites. The Mineta Transportation Institute and db|Tilde CORE, Inc. led promotional efforts, reaching out to national, regional, and local organizations in the United States and Canada via e-newsletters, social media, and websites. National organizations in addition to the Mineta Transportation Institute included the American Planning Association, the National Safe Routes Partnership, the Rails to Trails Conservancy, Adventure Cycling, and the U.S. and Canadian Associations of Retired People (AARP and CARP, respectively). Regional organizations included various Metropolitan Planning Organizations (MPOs), bicycle clubs, and advocacy organizations. Local organizations included local governments, non-profits, and active transportation organizations (walking and cycling or just cycling). Organizations whose audiences were specifically lower income or racially diverse were asked to promote the survey. Given the low percentage of respondents fitting either of these two factors, this outreach was not especially successful.

As with the Year 3 survey, the Year 4 survey overlapped with the COVID-19 pandemic. The effects of the pandemic and changes to daily lives affected some results such as cycling frequency. For more information about the survey, to ask about specific analysis, and to offer to promote the Year 5 survey, contact [info@db|TildeCORE.org](mailto:info@db|TildeCORE.org) or (202) 713-9397.

## 1.3 Differences between Year 3 and Year 4 Survey

While to a large extent the Year 4 survey duplicated the Year 3 survey, there were three key differences:

- Because of the partnership with the Mineta Transportation Institute, the survey was subject to federal human subject testing review by the San José State Institutional Review Board. As part of this process, language was added to the beginning of the survey, including a required sign-off by respondents.
- Questions about the types of cycling older adults do and the types of bicycle they ride were added. This expands the existing questions about e-bikes and adult trikes, and cycling purposes and distances.
- The Visual Preference Survey was revised to provide more details about cycling contexts in order to reduce speculation about responses. There are fewer photos to respond to because each photo has two questions.

Smaller refinements and changes to the survey are detailed in most sections under the heading Comparison to Year 3 Survey.

## 2. The Basics

This section of the report provides a profile of those completing the survey: age, gender, and geographic location (by state or province).

### 2.1 Who Answered the Survey

Those answering the survey are not asked where they live. However, the survey tool, Alchemer, reports the geographic location where responses were entered. Based on this information, it appears that people living in 23 countries answered the survey. The response rate was highest for those from the United States and Canada, so responses from other countries are excluded from the results here. The total number of responses from which the analyses are drawn is 5,097.

#### *2.1.1 Considerations for the Year 5 Survey*

If the survey can be expanded to capture more international responses, we may add a question asking where respondents live. If not, we will focus on North America.

### 2.2 Gender and Age

Ninety-four percent of those responding to the question, *Do you describe yourself as a woman, a man, or in some other way?* selected either “Woman” or “Man.” Less than 1% answered “Some other way” or “Prefer not to answer.” Because of the low response rate for these two answer options and the focus of this survey on gender and age differences (even for non-binary older adults), responses from these older adults were excluded from some analyses in this report.

This year’s survey asked people to give their age, rather than selecting from 5-year age groups, requiring some interpretation. Age responses with obvious typographical errors or those that appeared to be someone’s birth year were converted into an age. The analysis then grouped the individual ages in one of two ways depending on the analysis: in five-year age groups or in three larger age groups, typically, 50–65, 66–75, and 76+. See Figure 2 for response rates by gender and age for all combinations.

Figure 2. Response Rates by Age and Gender

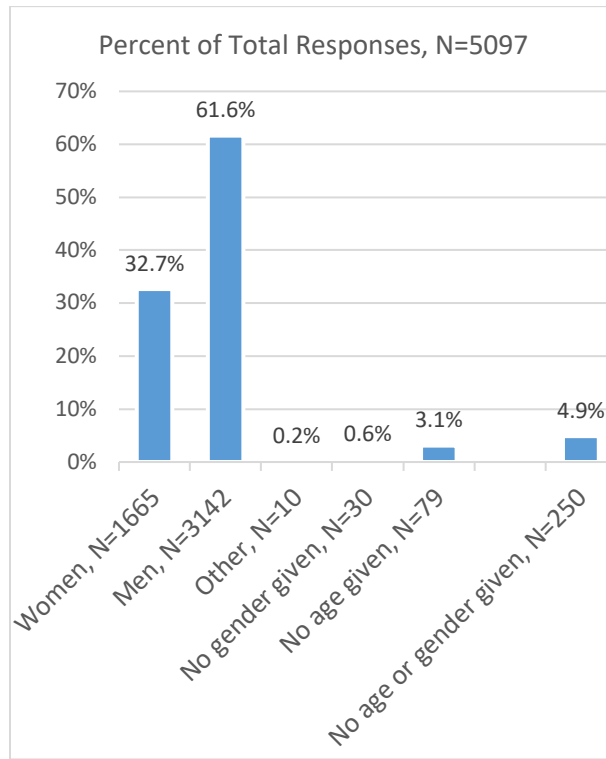
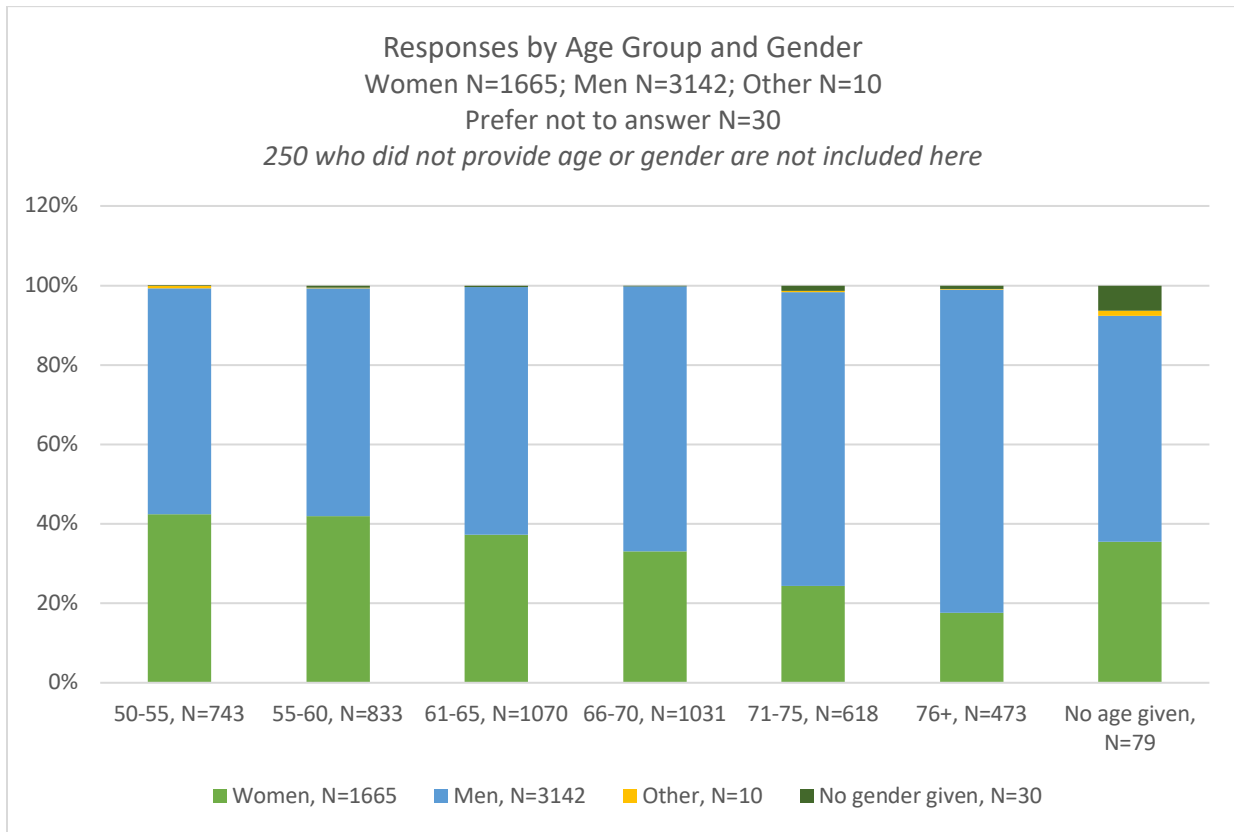


Figure 3 shows the percentage of responses by gender and age group, including those who did not provide their gender, their age, or both. The figure shows about the same rate of responses for women and men up to age 60, then a gradual decline of responses from women, dipping at age 76 and older.

A note about the analysis. Because the analysis focuses on gender and age differences, only those who provided this information are included in the analysis.

Figure 3. Responses by Age Group and Gender

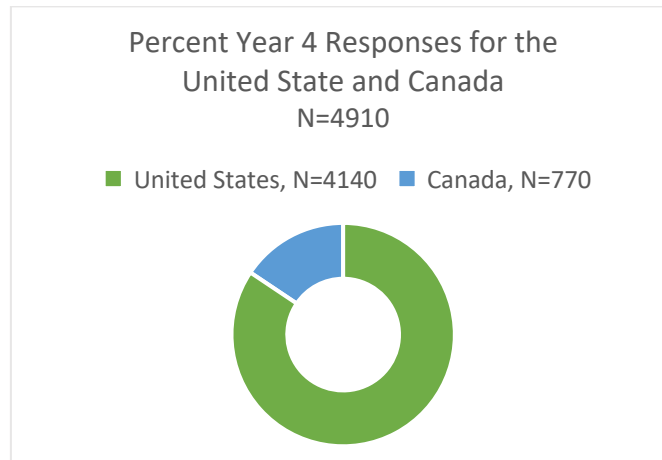


### 2.3 Geography

This year’s survey included older cyclists from Canada as well as the United States, with 15.6% from Canada and 84.4% from the United States (see Figure 4). Older cyclists in all 50 U.S. states responded to the survey, as did older cyclists from eight Canadian provinces. The largest number of Canadian responses were from the provinces of British Columbia, Ontario, and Alberta, owing to personal contacts and outreach efforts. See Figures 5 and 6.



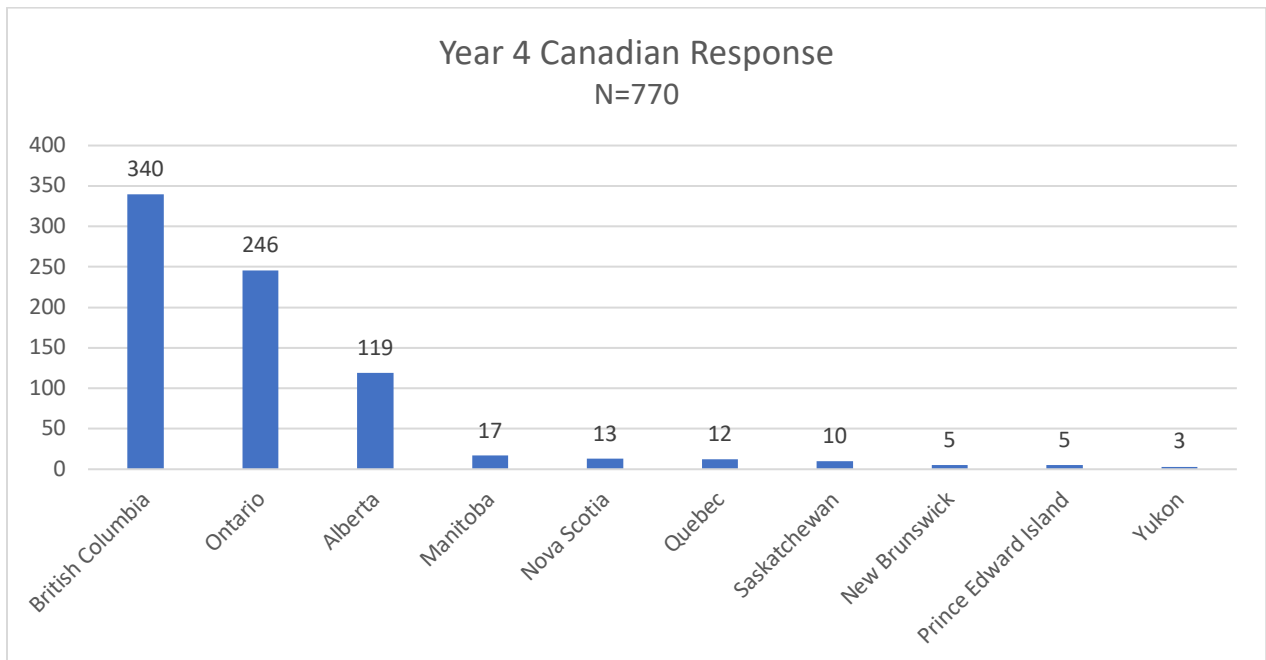
Figure 4. Share of Responses, U.S. and Canada



## 2.4 Comparison with the Year 3 Survey

The overall Year 4 survey response rate from the United States was higher than Year 3. On the whole, most states had increased responses, but a few had decreased responses. It is unclear whether states with a high number of responses skew the results of some questions. Figure 7 compares the percentage of total responses received between Year 3 and Year 4 for each state.

Figure 5. Responses by Canadian Provinces



## 2.5 Considerations for the Year 5 Survey

### *With respect to ages*

Given the benefits of doing the analyses by age group, the Year 5 survey will use this technique instead of asking for a specific age. This will simplify the process of analyzing answers and reduce the number of ambiguous answers. The current age groups seem to be the right ones to use, but if a different approach is more valid, the survey will reflect this. Grouping the respondents who were aged 76 and over was done to have a larger N for the analysis. Should responses from people 76 years and older increase significantly, dividing this group into two will be considered, based on a natural breaks approach.

### *With respect to gender*

It is understandable and expected that some people who respond choose not to identify with one of the gender options. Interestingly, the largest group of responses for the answer option, *In some other way*, was for those between 50 and 55 years old. Perhaps over time, the number of people who do not provide a gender will decrease, especially if the survey offers more gender choice options and its anonymity is emphasized.

### *With respect to diversity of respondents*

A more effective outreach strategy is needed to better capture the variety of older adults who cycle regardless of how frequently or how far. The strategy will include offering the survey in other languages, starting with Spanish and Chinese.

Figure 6. Responses by U.S. States

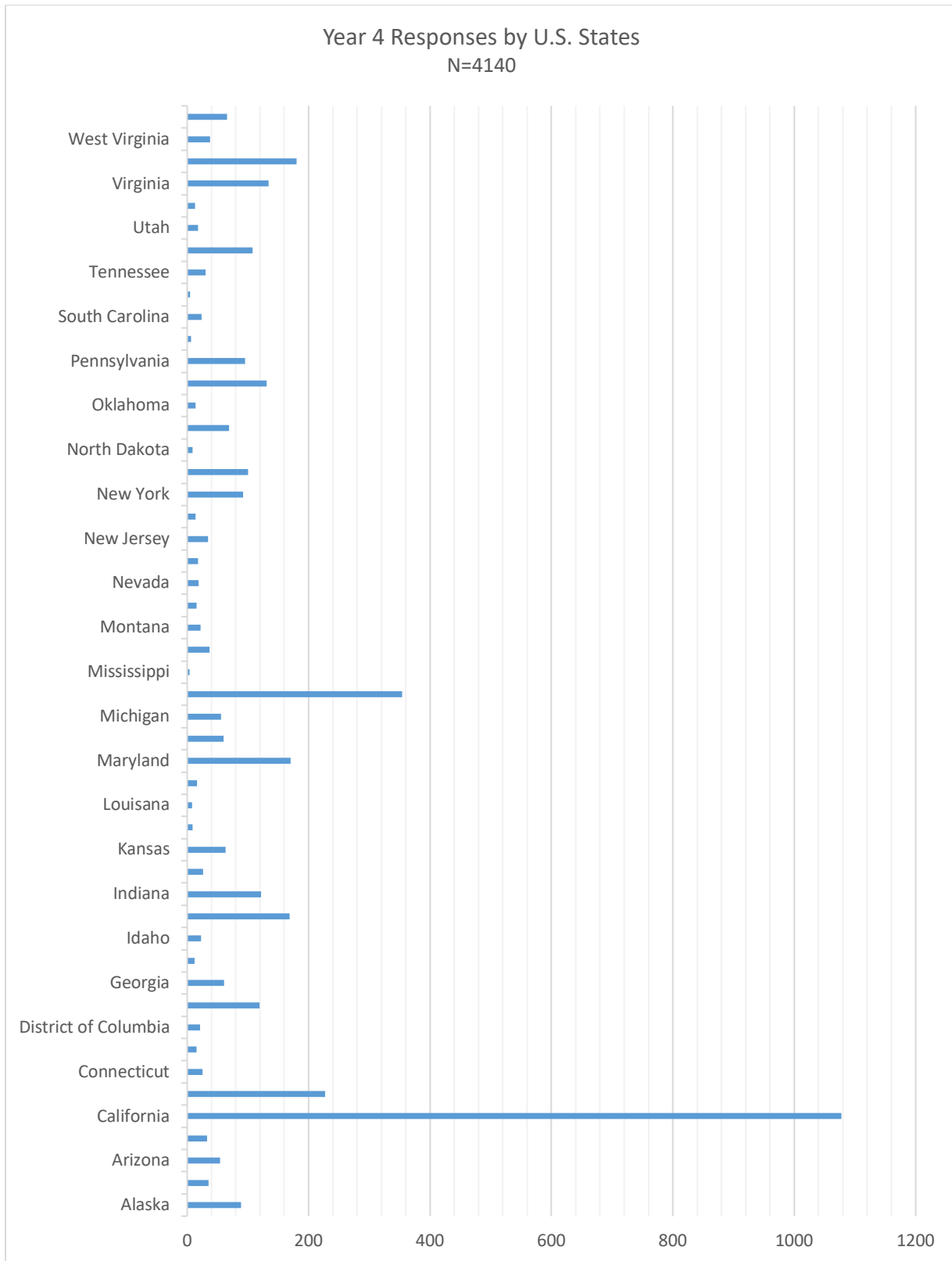
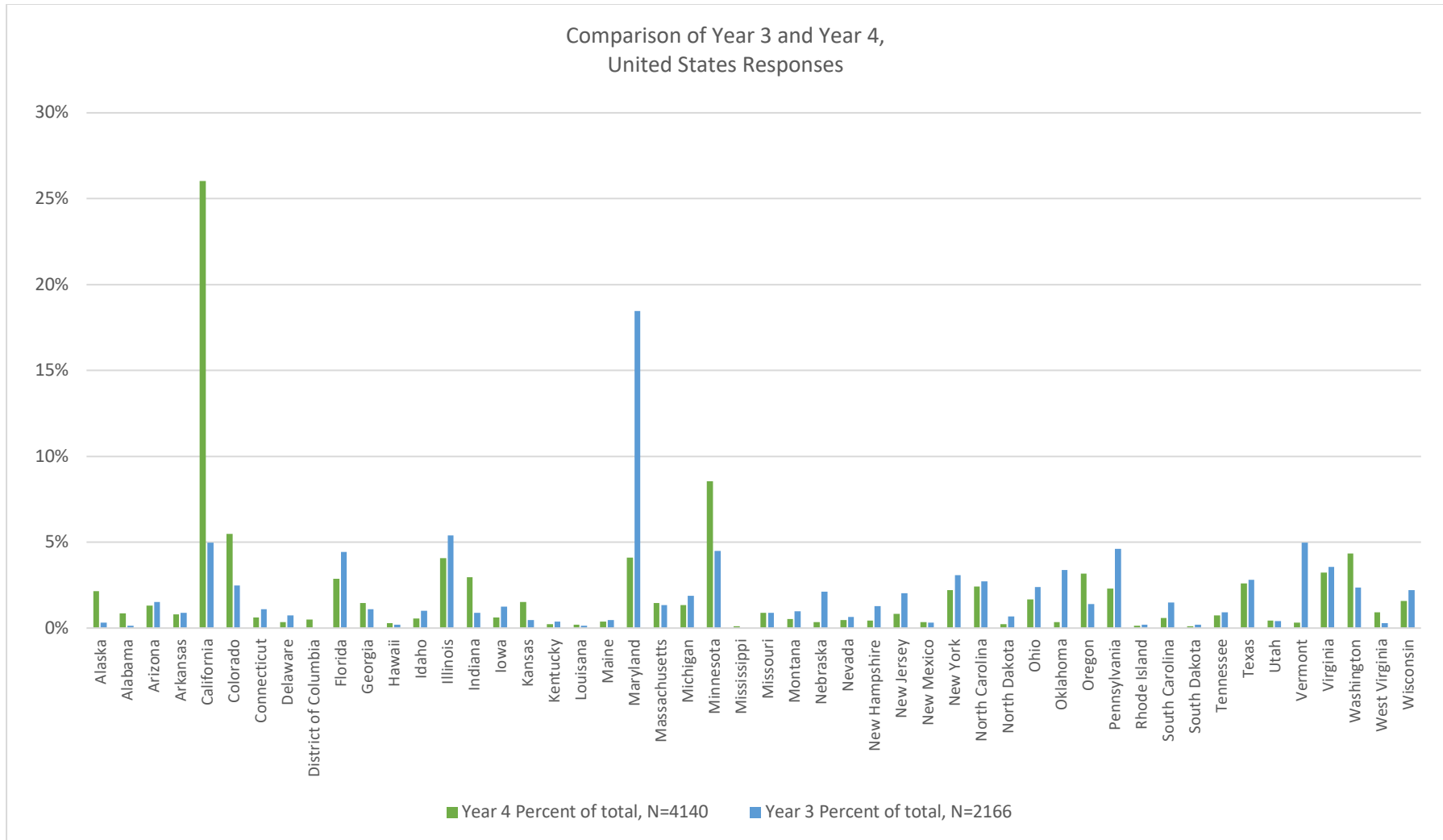


Figure 7. Comparison of Year 3 and Year 4 Responses by State



### 3. How People Think of Themselves and Cycling

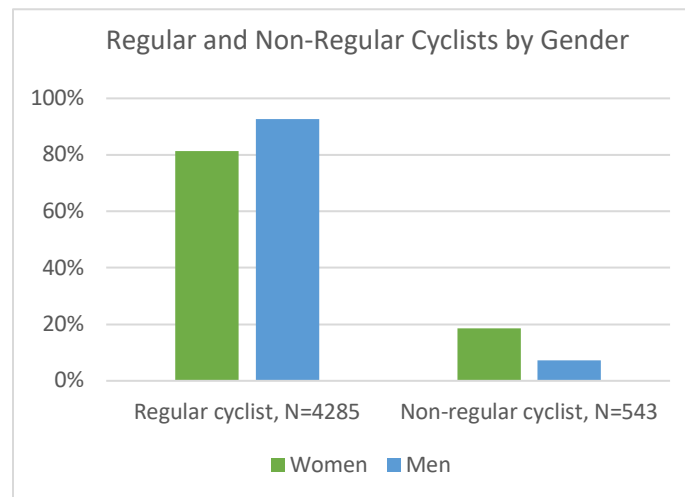
While promoting the survey, a conversation with someone who agreed to help increase responses from people of color pointed out that a word can mean one thing in one cycling community and a different thing in another. The word in question was “cyclist.” In this person’s experience, people of color think of cycling as a physical activity not as a way to define themselves. So, saying “Do you ride a bicycle” would resonate in that community more than asking “Are you a cyclist.” Based on this distinction, we changed the wording in promotional materials.

The survey includes two different questions asking about how people think of themselves with respect to cycling. The first question, which came early in the survey, asked people if they cycled regularly, with “Yes” or “No” answer options. The answer was self-defined so that people who cycle once a month could consider themselves equally as a “regular” or “non-regular” cyclist. People who answered “No” were asked what prompted them to cycle. Those answering “Yes” were asked about their cycling frequency. The second question came at the end of the first part of the survey (just before Part 2, Visual Preference), asking people to identify with one of four types of cyclists. The results from the two questions and their accompanying follow-up questions are detailed below.

#### 3.1 Comparison of Regular and Non-regular Cyclists

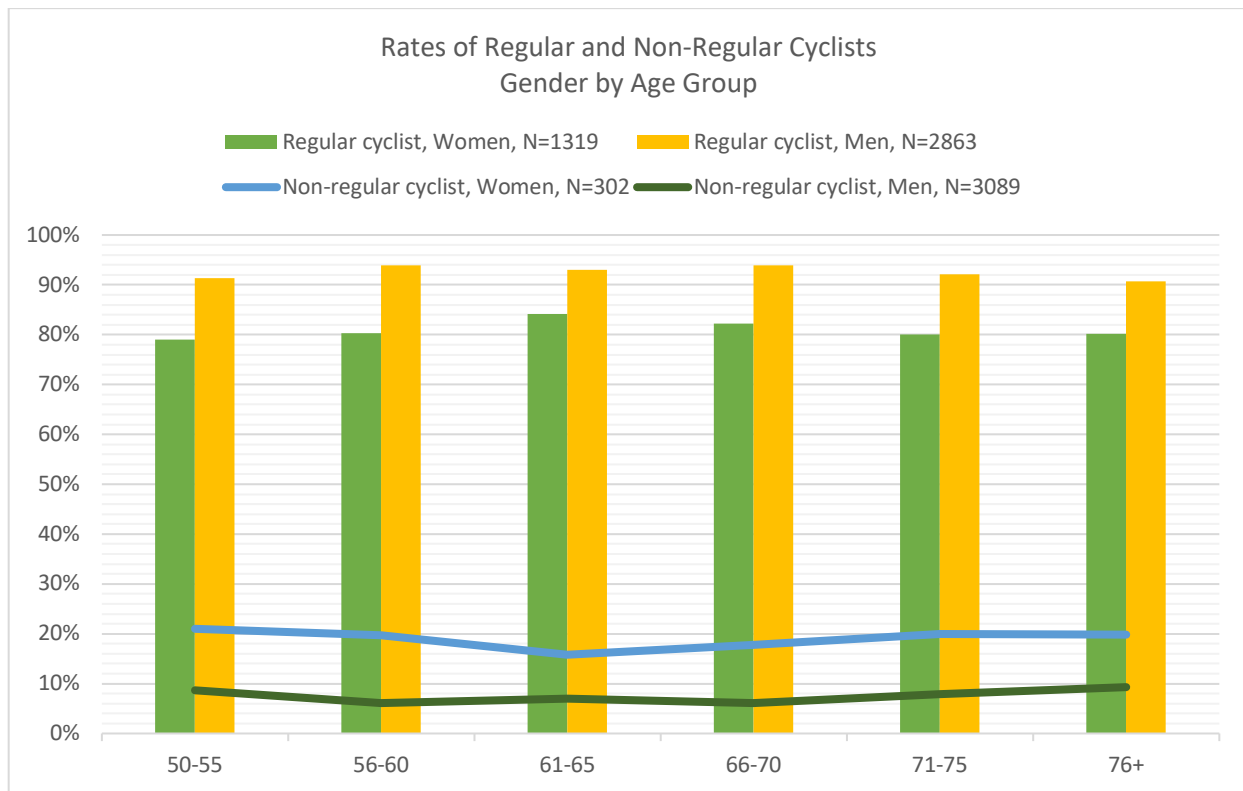
When asked to identify themselves as a regular or non-regular cyclist, respondents determined what “regular” meant to them and identified as one or the other. Just under 89% identified as regular cyclists (88.8%), with the remainder as non-regular. More men identified as regular, 92.7%, compared to 81.3% of women. See Figure 8.

Figure 8. Comparison of Regular and Non-regular Cyclists



Age and gender differences between regular and non-regular cyclists are shown in Figure 9. For women, the rate of regular cyclists is lowest for those aged 50 to 55 at 79%, rising to 84.2% for those aged 61 to 65. For men, the rate of regular cyclists is relatively flat, with a low of 90.7% for those 76 and older and a high of 93.9% for those 66 to 70 years old. Rates for non-regular cyclists by age and gender are typically opposite those for regular cyclists. In other words, if the rate of regular cyclist for one age group and gender rises, the rate for non-regular cyclists for that age group and gender drops.

Figure 9. Regular and Non-regular Cyclists by Age Group and Gender



### 3.1.1 Cycling frequencies for regular cyclists

Those indicating they were a regular cyclist were asked about how often they cycle, responding to answer options of “6+ times a week,” “3-5 times a week,” “1-2 times a week,” “1-3 times a month,” and “Weather-dependent.” Figure 10 shows cycling frequencies by age group for women and men. Regardless of gender, the highest percentage of cycling frequency selected was “3-5 5 times a week,” except for women 76 and older who reported nearly daily cycling. Cycling frequency of “1-2times a week” was the second most often selected frequency, except for women 76+ whose second highest rate was “3-5 times a week.” The answer option chosen the fewest times was “1-3 times a month,” which suggests that regular cyclists tend to cycle at least once a week.

### 3.1.2 Cycling patterns for non-regular cyclists

The survey treated non-regular cyclists differently than regular cyclists. Instead of asking how frequently they cycled, non-regular cyclists were asked what prompted them to cycle. Nine answer options, as well as “Other” with a response requirement, resulted in 15 different prompts, grouped into five categories as shown in Table 1.

Figure 10. Cycling Frequencies for Regular Cyclists by Age and Gender

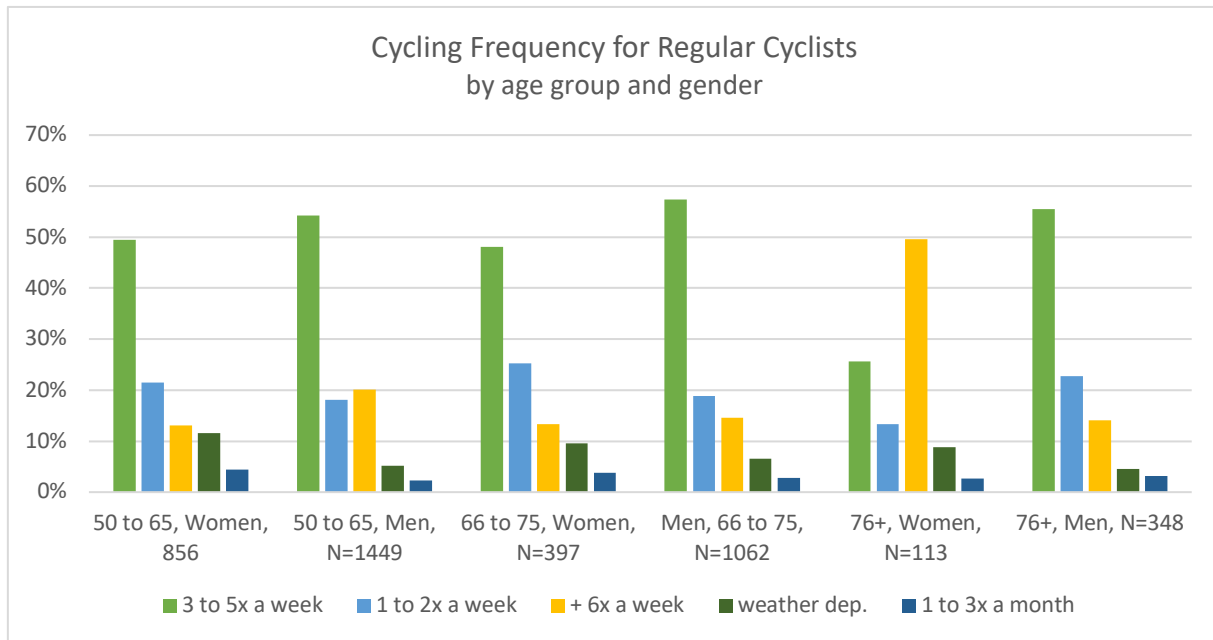


Table 1. Factors by Category Affecting Cycling for Non-Regular Cyclists

Personal-Lifestyle	Social Relations	Health & Safety	Cycling Environment	Work Related
<ul style="list-style-type: none"> <li>▪ While on vacation, including a cycling vacation</li> <li>▪ When with children or grandchildren</li> <li>▪ When the weather allows</li> <li>▪ When pushed by someone</li> <li>▪ When they feel like it</li> <li>▪ When they have time</li> <li>▪ When they want to do errands</li> <li>▪ To simplify the trip by not using a car</li> <li>▪ To participate in touring or cycling events</li> </ul>	<ul style="list-style-type: none"> <li>▪ When there is someone to ride with</li> <li>▪ When going on a club ride</li> </ul>	<ul style="list-style-type: none"> <li>▪ To be physically active</li> <li>▪ When there are no limiting health issues</li> <li>▪ When it feels safe</li> </ul>	<ul style="list-style-type: none"> <li>▪ When a working bike is available</li> <li>▪ When trails are not crowded</li> </ul>	<ul style="list-style-type: none"> <li>▪ To travel to and from work</li> </ul>

An interesting approach to deciding to cycle emerged from written responses. First, non-regular cyclists have a specific distance in mind when cycling for transportation such as when running errands. The distance may be as little as a mile or as great as 10 miles, but the decision to cycle rather than use another form of transportation is based on this criterion. Second, non-regular cyclists ride when the destination is more easily reached by bike, such as to avoid the hassles associated with parking a car, or if a car is unavailable to them. One response sums it up as, “Best transportation (along with walking) for the environment; quicker for distances than walking; cooler in heat than getting in a car.” Overall, non-regular cyclists are prompted to cycle most often for Personal-Lifestyle reasons, averaging 57.9%, then for Social Relations reasons, averaging 30%.



Table 2. Rates of Categories That Prompt Cycling by Non-Regular Cyclists

	Personal-Lifestyle	Social Relations	Health & Safety	Cycling Environment	Work-Related
Women	57.3%	29.4%	10.9%	1.8%	0.5%
Men	58.5%	30.5%	9.1%	1.2%	0.7%
Average	57.9%	30.0%	10.0%	1.5%	0.6%

### 3.2 Typology of Cyclists

After completing questions about their cycling habits and experiences, the survey asks respondents to identify themselves as one of four types of cyclists. The typology presented in the survey is a modification of the one developed by Roger Geller and used widely for infrastructure planning, in that it replaces the non-cyclist type (No Way, No How) with *Varies by Situation* (A Mix of All). This question for the Year 4 survey was augmented by a brief definition of each type shown in Table 3. The table also shows the breakout of how respondents identified with the four types by gender and combined.

Table 3. Distribution of Four Types of Cyclists

Interested but Concerned	Casual and Somewhat Confident	Experienced and Confident	Varies by Situation
<i>I ride a bike but am concerned about safety and my ability to ride</i>	<i>I am comfortable cycling, especially where there are good bicycling facilities</i>	<i>I am very comfortable cycling most days and in most places</i>	<i>The type of cyclist I am varies by the situation</i>
3.7% Women 1.9% Men 2.5% Combined	11.9% Women 14.4% Men 13.4% Combined	64.0% Women 64.6% Men 64.4% Combined	20.8% Women 19.0% Men 19.7% Combined

Most people answering this question selected *Experienced and Confident*, averaging 64.4%, with little difference between women and men. The *Varies by Situation* type was selected next at 19.7% with more women selecting this type than men. This difference is also reflected in the *Interested but Concerned* type with nearly twice as many women choosing this type than men. Conversely, far more men identified as *Casual and Somewhat Confident*.

In addition to comparing the type of cyclist by gender, we analyzed the types selected by gender and age, and regular versus non-regular cyclists.

### 3.2.1 Type by gender and age

Figures 11–14 show each type of cyclist by gender and age. Overall, as people age, they identify as what may be considered a more conservative or safe type of cyclist, especially for the *Varies by Situation* and *Interested but Concerned* types. The rates for both women and men drop beginning at age 66 for *Experienced and Confident*.

Figure 11. Interested but Concerned Type by Gender and Age

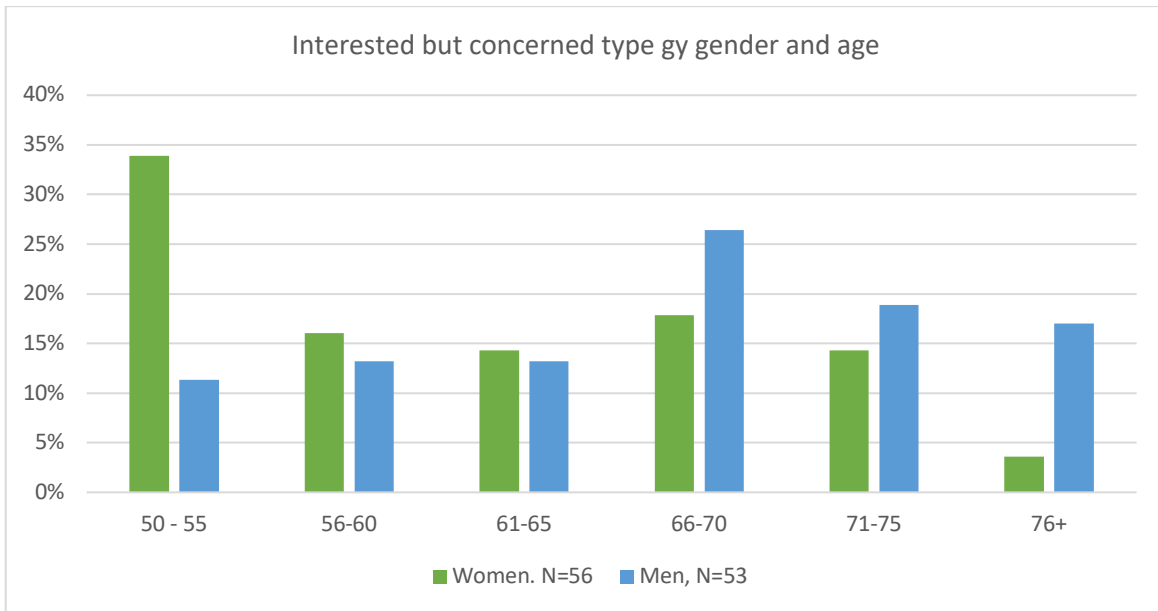


Figure 12. Casual and Somewhat Confident Type by Gender and Age

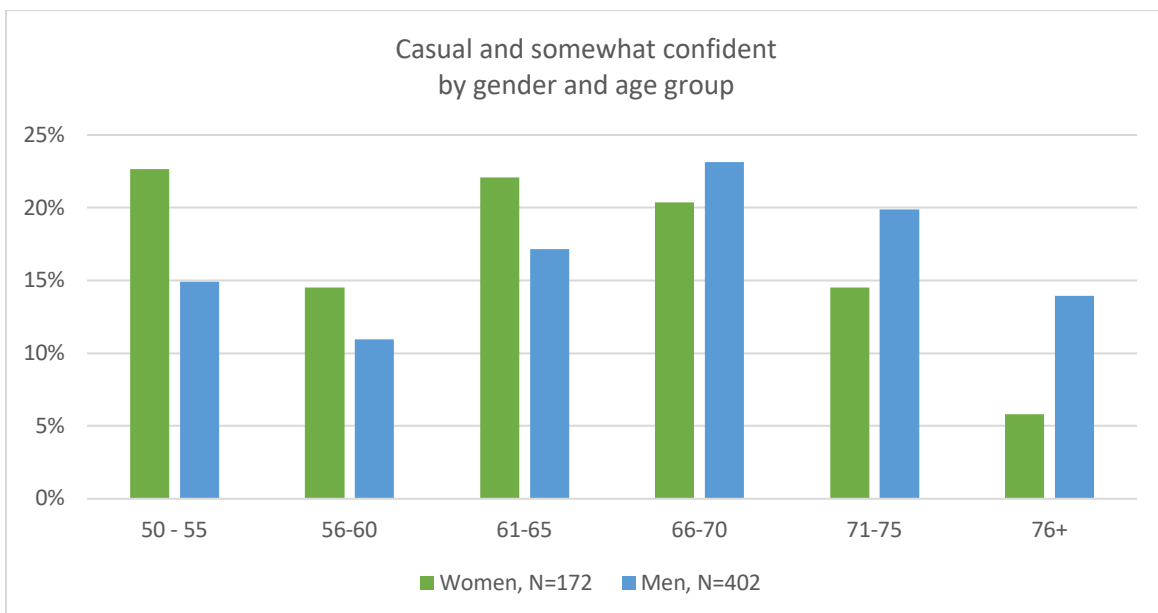
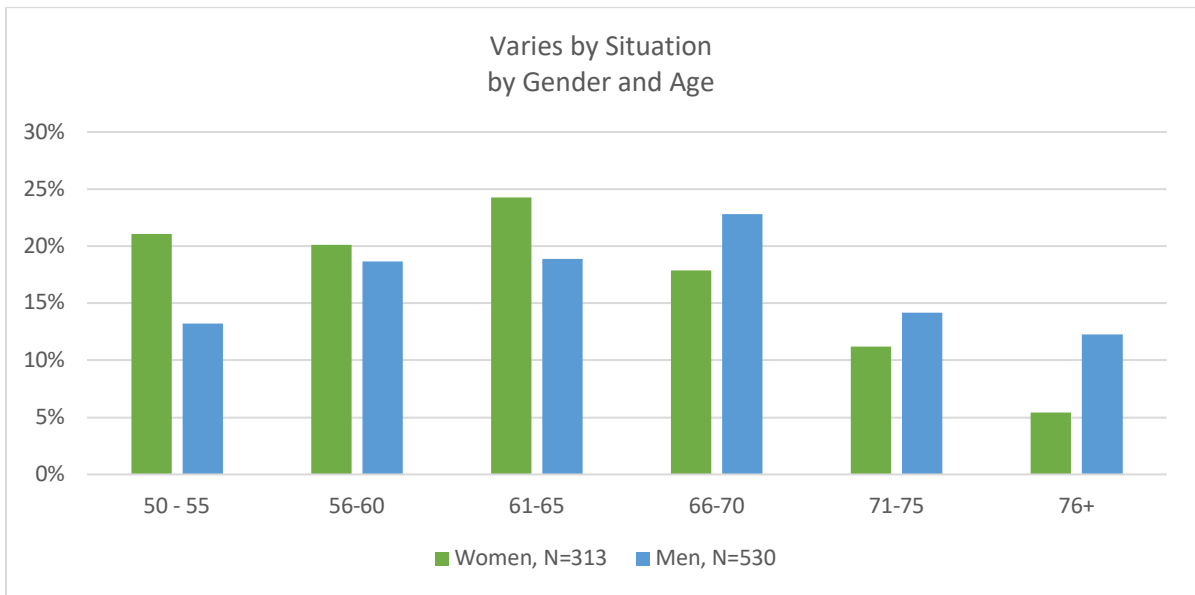


Figure 13. Experienced and Confident Type by Gender and Age



Figure 14. Varies by Situation Type by Gender and Age



### 3.2.2 Comparing regular and non-regular cyclists by type of cyclists

There are differences between the type of cyclist selected based on whether the respondent considers themselves to be a regular or non-regular cyclist. Non-regular cyclists lean more towards being situational, with lower rates of identifying as a *Casual and Somewhat Confident* or *Experienced*

and Confident cyclist. The rate for *Interested but Concerned* is about the same for regular and non-regular cyclists. See Figures 15 and 16.

Figure 15. Distribution of Regular and Non-Regular Cyclists by Type

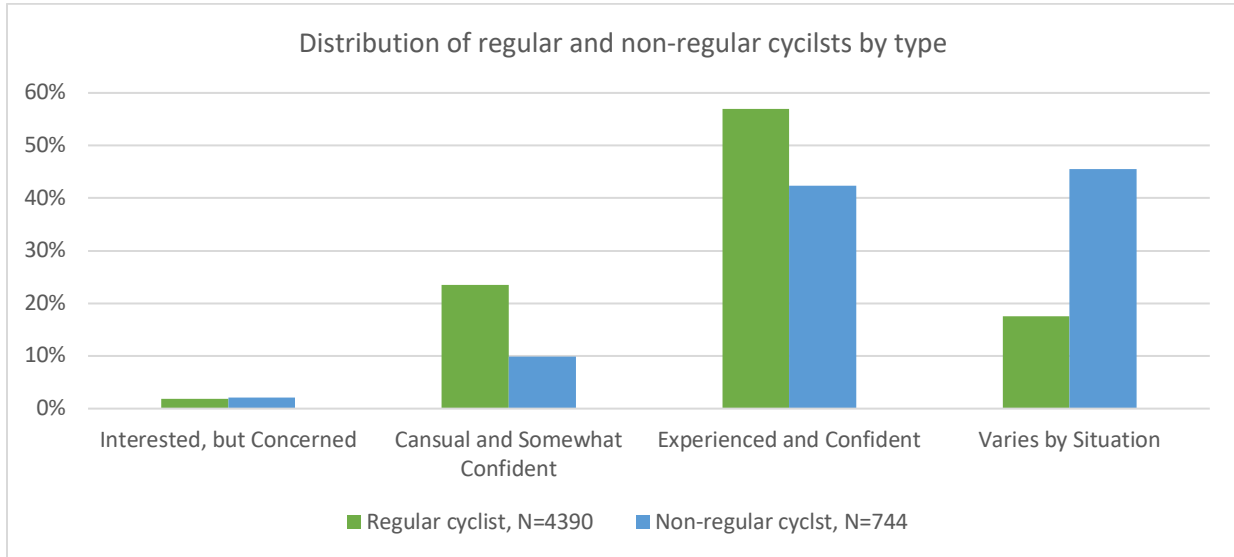
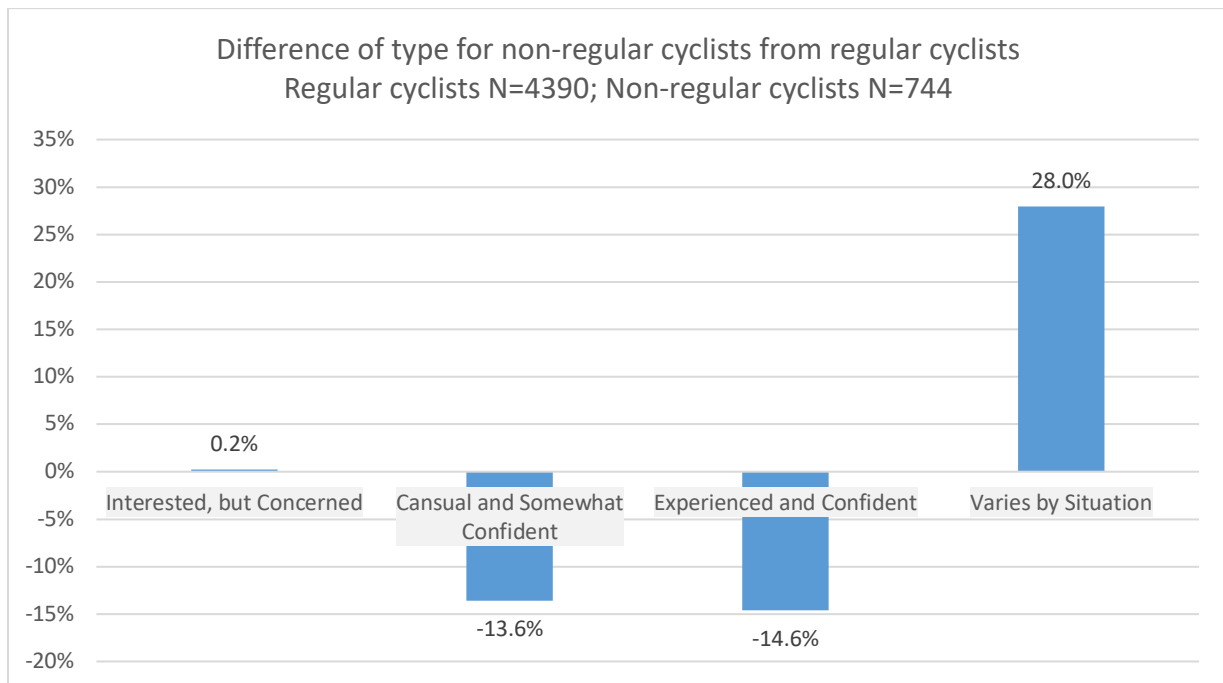


Figure 16. Difference of Type for Non-Regular Cyclists from Regular Cyclists



### 3.2.3 Comparison with Year 3 Survey

Changes in the percentage of people by type (for both regular and non-regular cyclists) are shown in Figures 17 and 18, with a three-fold increase in people responding, including more who are experienced cyclists. Notable changes were therefore the large relative increase (over 15%) in Experienced and Confident cyclists, large relative decrease (10%) in Casual and Somewhat Confident cyclists, large relative decrease (10%) in Casual and Somewhat Confident cyclists, and smaller relative decreases in the other two categories.

Figure 17. Comparison of Year 3 and Year 4 Type of Cyclist

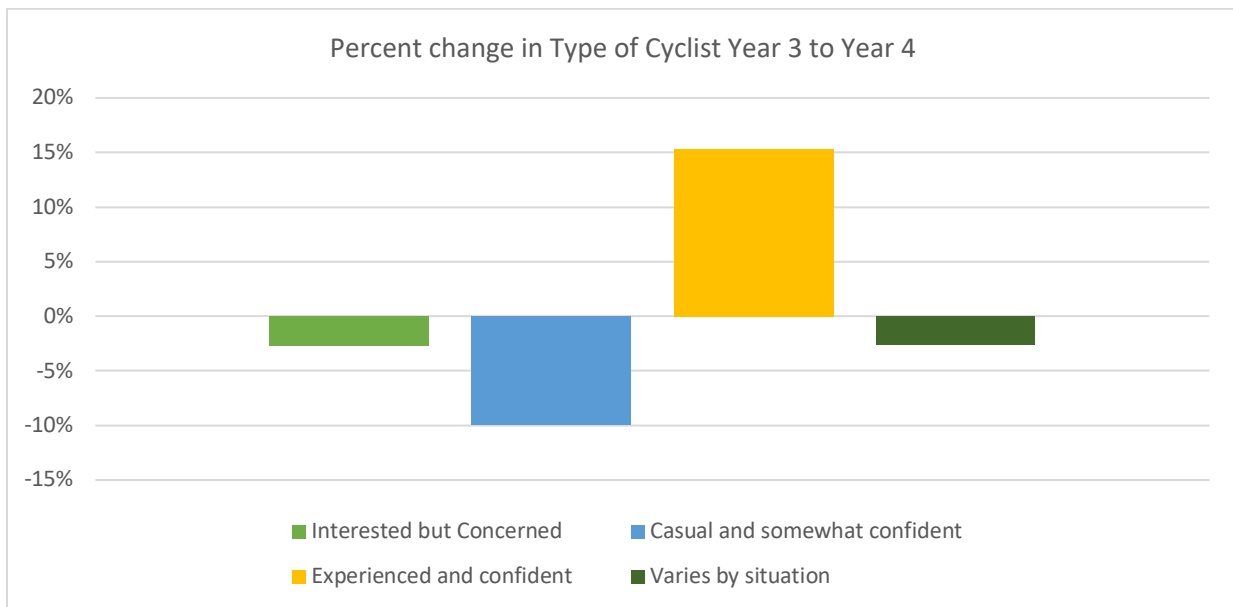
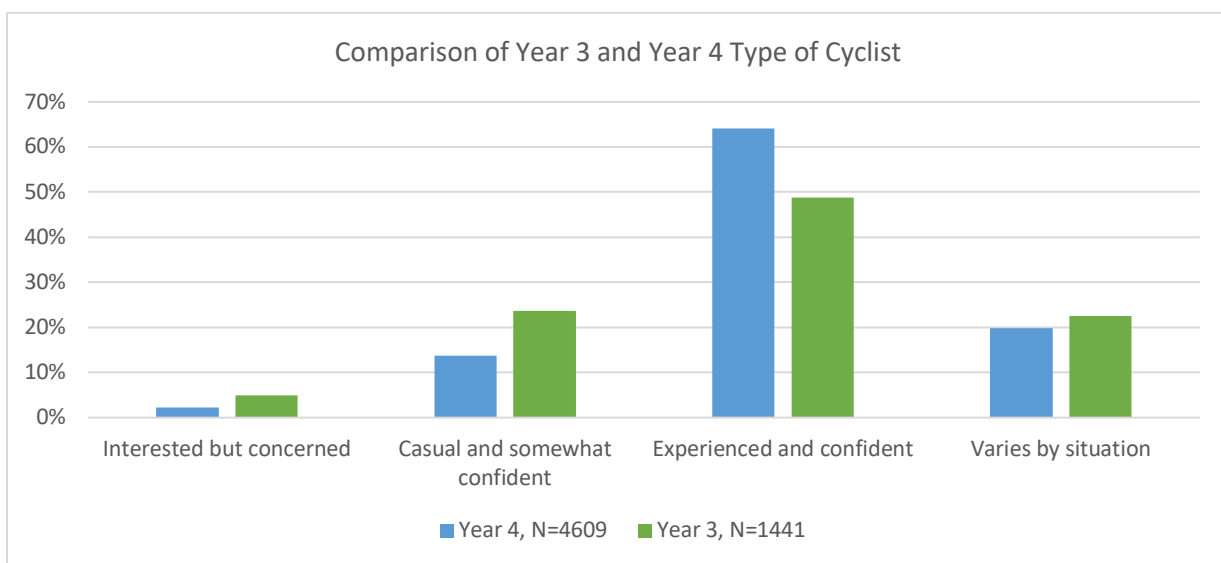


Figure 18. Percent Change in Type from Year 3 to Year 4



The Year 3 breakout of Type of Cyclist for regular cyclists is similar to Year 4, but different for non-regular cyclists in that fewer identified as the *Experienced and Confident* type and more were the *Casual and Somewhat Confident* type. Regular cyclists shifted a bit from *Experienced and Confident* to *Casual and Somewhat Confident*, perhaps due to the larger response rate, which captured some less-experienced cyclists, who considered themselves “regular” (see Figures 19 and 20).

Figure 19. Year 3 Regular and Non-Regular cyclist by type

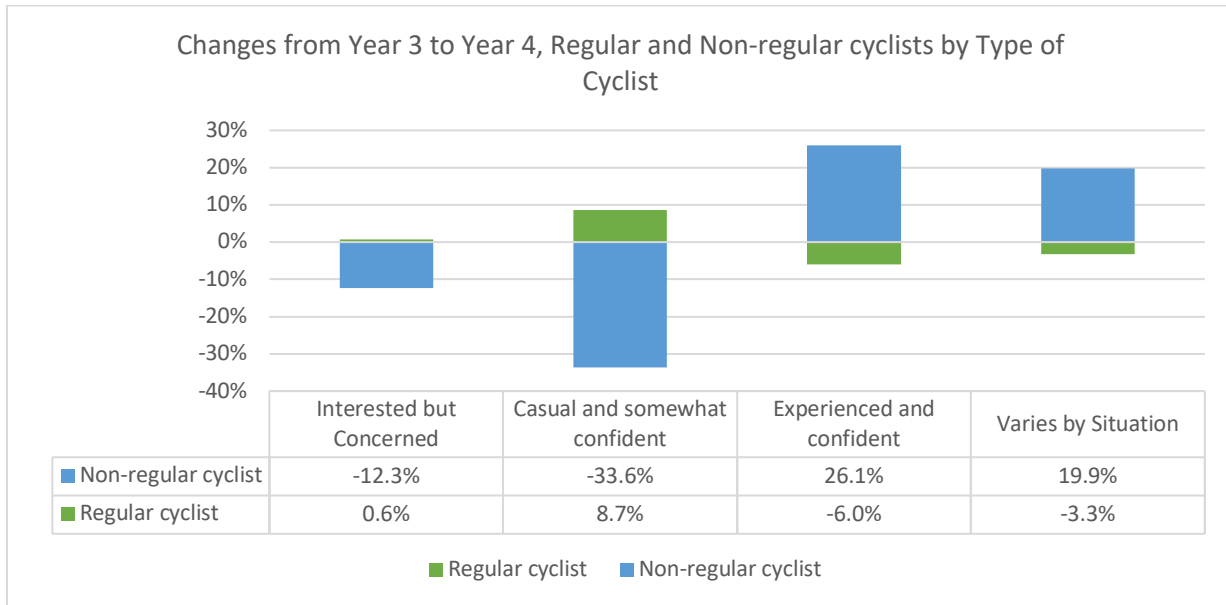
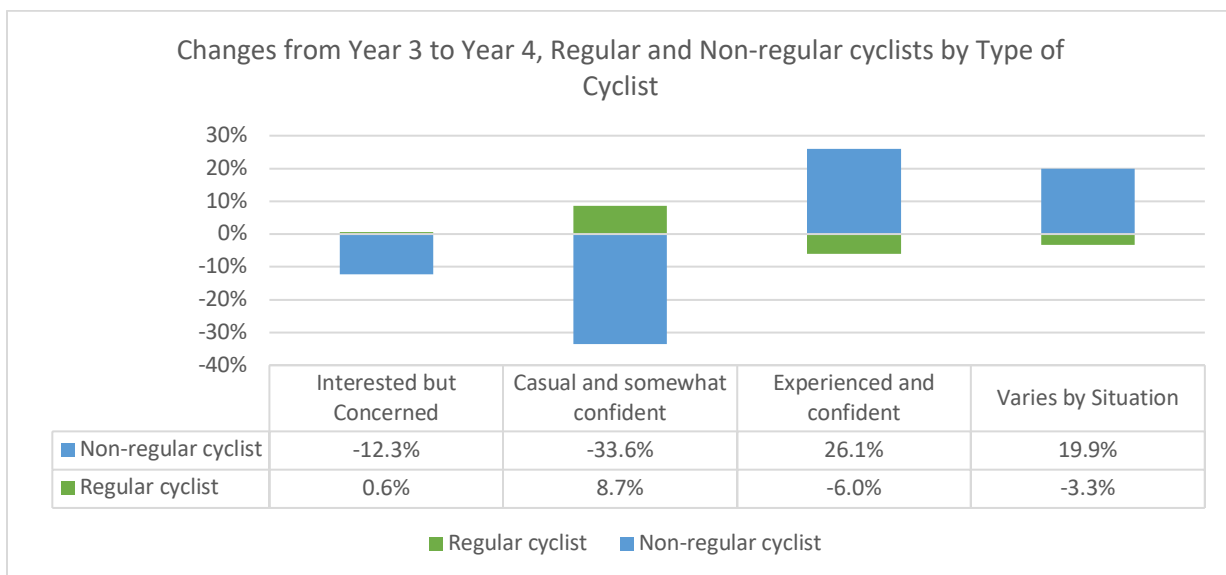


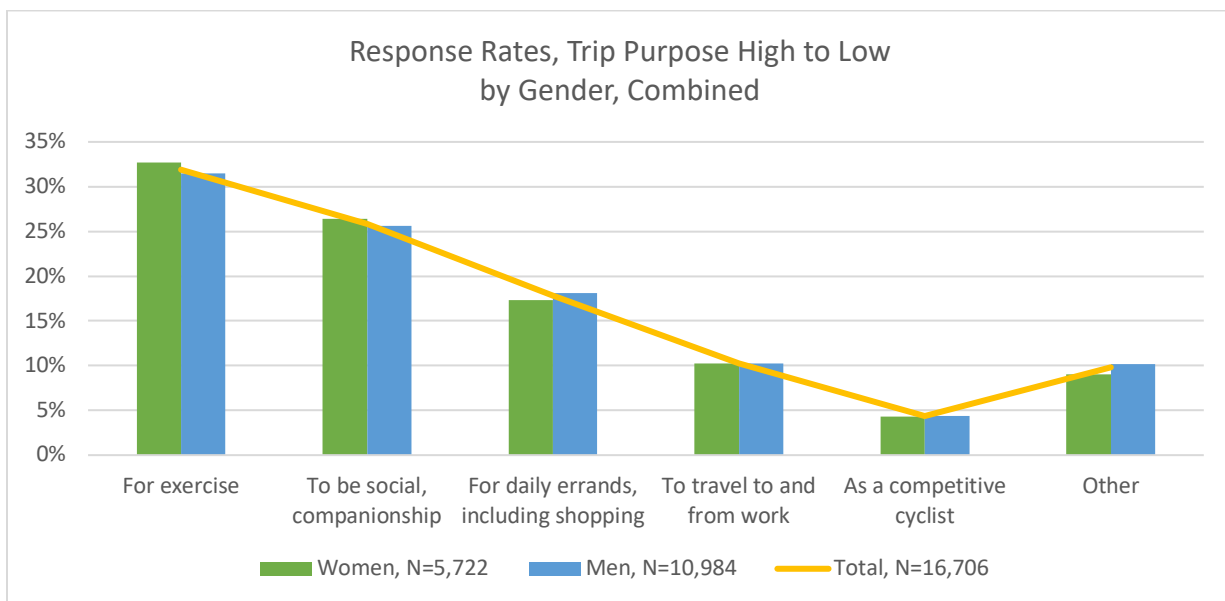
Figure 20. Changes from Year 3 to Year 4 for Regular and Non-Regular Cyclists by Type



## 4. Trip Purpose and Distance

Older adults cycle for various reasons. A ride varies by the person making it and the purpose of the trip, both of which affect the distance traveled. The survey included a question about trip purpose with seven options for trip distance ranging from a few blocks to more than 50 miles. Results from this matrix provide a picture of the variety of purposes and distances. Figure 21 shows the percentage of responses by gender for six trip purposes. (Note that the large number of responses is due to respondents answering for more than one trip purpose and more than one distance for some trip purposes.)

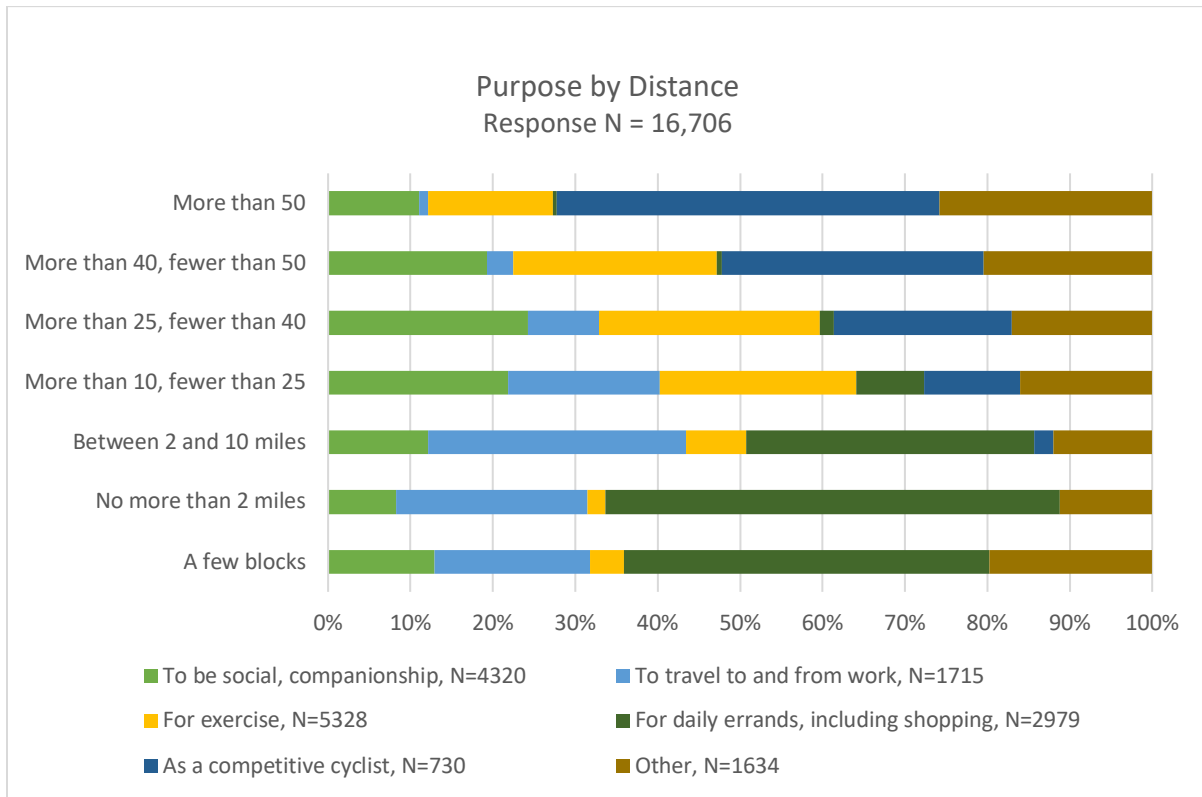
Figure 21. Response Rates for Trip Purpose by Gender



Even with about twice as many responses from men compared to women, the reasons why people cycle is consistent between genders. Based on responses, exercise is the most popular reason for cycling, followed by social and companionship motivations. As can be expected, cycling to and from work is only about 10% overall due to many who stop working in their mid-60s, evidenced by the rate of 44.7% for those aged 50 to 64.

Combining trip purpose and distance responses for women and men are shown in Figure 22. The range of distances for each purpose suggests that people cycle shorter distances for daily errands and work-related trips, a middle range for social or companionship reasons, and farthest for exercise and for competitive events. The “Other” trip is unknown, so the relatively even distribution of distances is not surprising. Note that distances were also included as kilometers for those responding to the survey living in Canada.

Figure 22. Trip Purpose by Distance



#### 4.1 Analysis of the Top Four Trip Purposes

We grouped respondents into three larger age ranges—50 to 64, 65 to 75, and 76 and older—then analyzed responses for the four trip purposes with the most responses: For exercise, To be social or for companionship, For daily errands including shopping, and For travel to and from work. A discussion of these four trip purposes follows.

##### 4.1.1 Cycling for exercise

Cycling for exercise received the highest number of responses with 32.7% for women and 31.5% for men, regardless of distance. As might be expected, 10 miles is generally the minimum distance cycled for a health and fitness benefit (see Figure 23). Distances cycled increased with age, perhaps due to older adults having more time to cycle. Figure 24, which combines percentages for the 10-to-24-mile and 25-to-49-mile answer options, shows a four-fold increase in these two distances for those 76 and older and a 67% increase for those 65 to 75. When comparing Figures 23 and 24, note that Figure 23 compares all age groups to 100%, but in fact the total distance traveled for this category was much less for the younger age group.



Figure 25 compares exercise-related cycling for women and men by distance. The lowest and highest two distances are about equal between genders, with more men cycling between 2 and 25 miles and more women cycling between 25 and 40 miles.

Figure 23. Cycling for Exercise Distance by Age Group

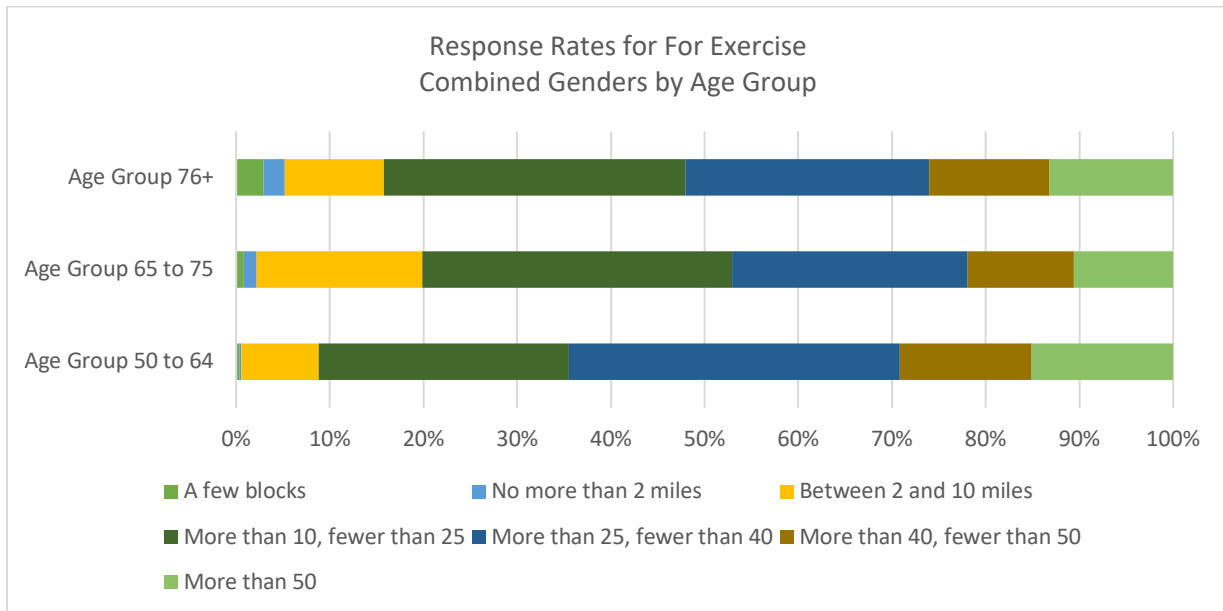


Figure 24. Combined Cycling for Exercise Distances by Age Group

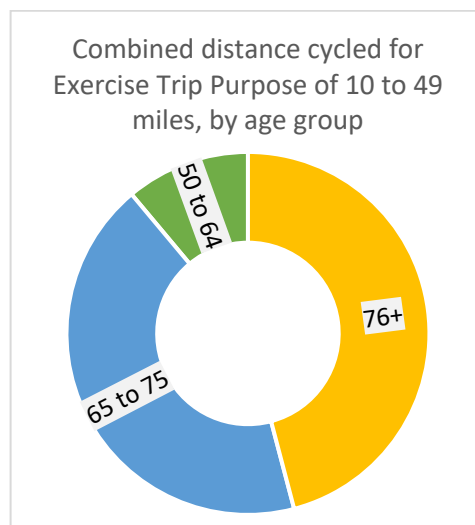
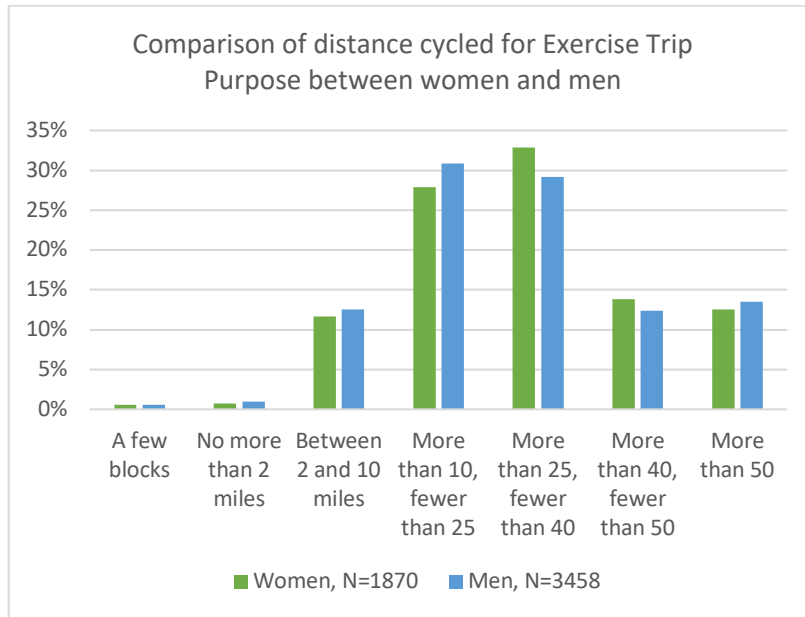


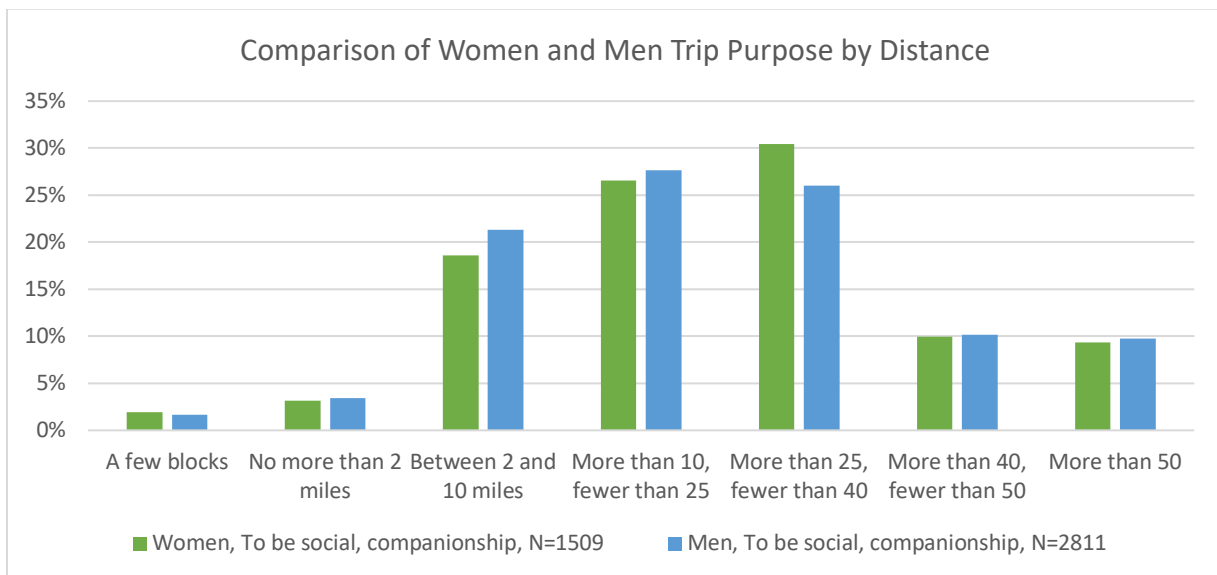
Figure 25. Distances Cycled for Exercise for Women and Men



4.1.2 Cycling to be social or for companionship

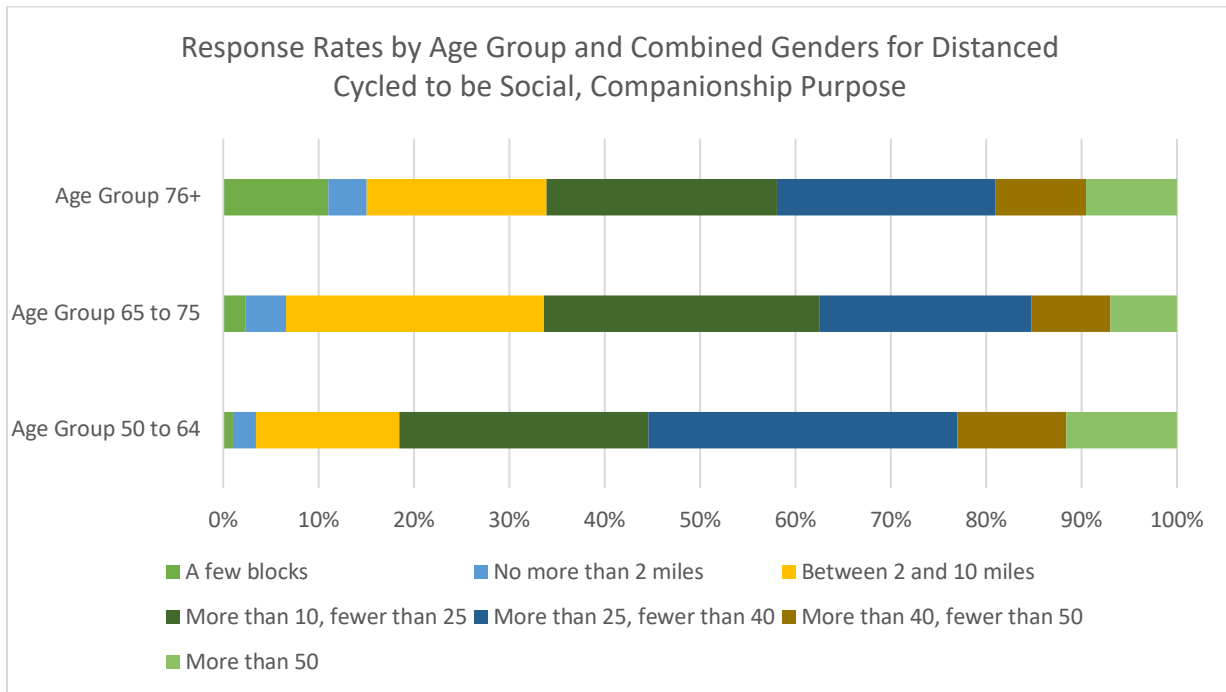
Responses in other survey questions, as well as this one, indicate that cycling as a social activity or for companionship has a high value for both women and men. These cycling trips are typically longer than for daily errands but are about the same length as for exercise. Distances cycled are highest in the 10-to-40-mile range, with differences between genders of all ages as shown in Figure 26. Interestingly, women responding to the survey reported cycling farther than men for distances between 25 and 40 miles, while men cycle socially for distances between 2 and 25 miles.

Figure 26. Comparison of Distance Cycled for Social Purposes, Women and Men



A closer look at distances cycled for the social or companionship Trip Purpose by age group shows generally shorter distances for those ages 65 to 75, with longer distances cycled by those 50 to 64. Those 76 and older tend to stay within the 10-to-40-mile range (see Figure 27).

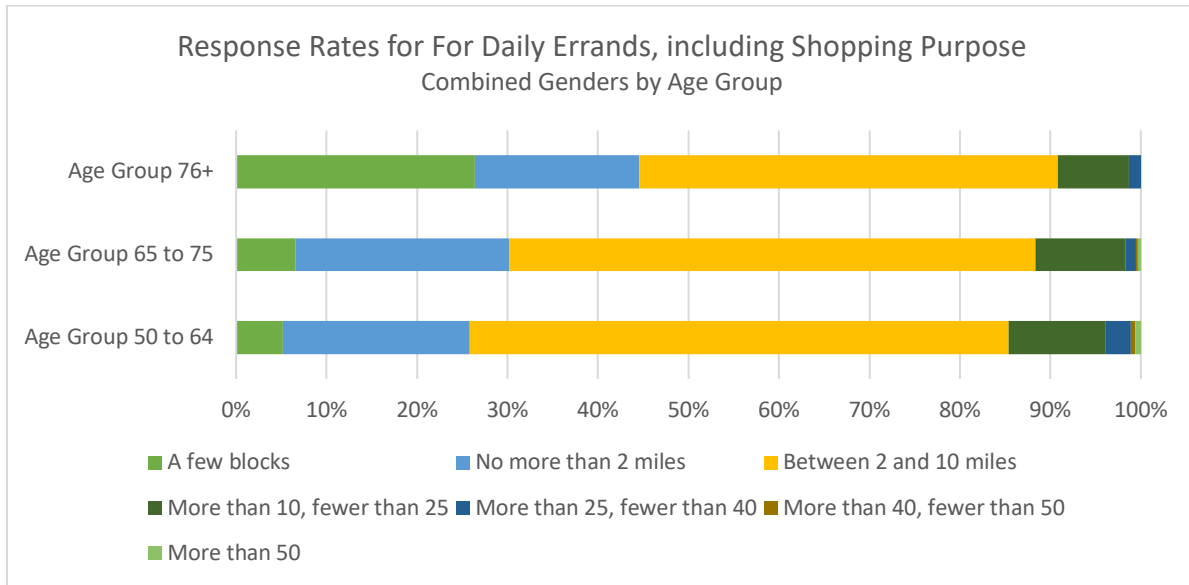
Figure 27. Distance Cycled to Be Social by Age Group



#### 4.1.3 Cycling for daily errands

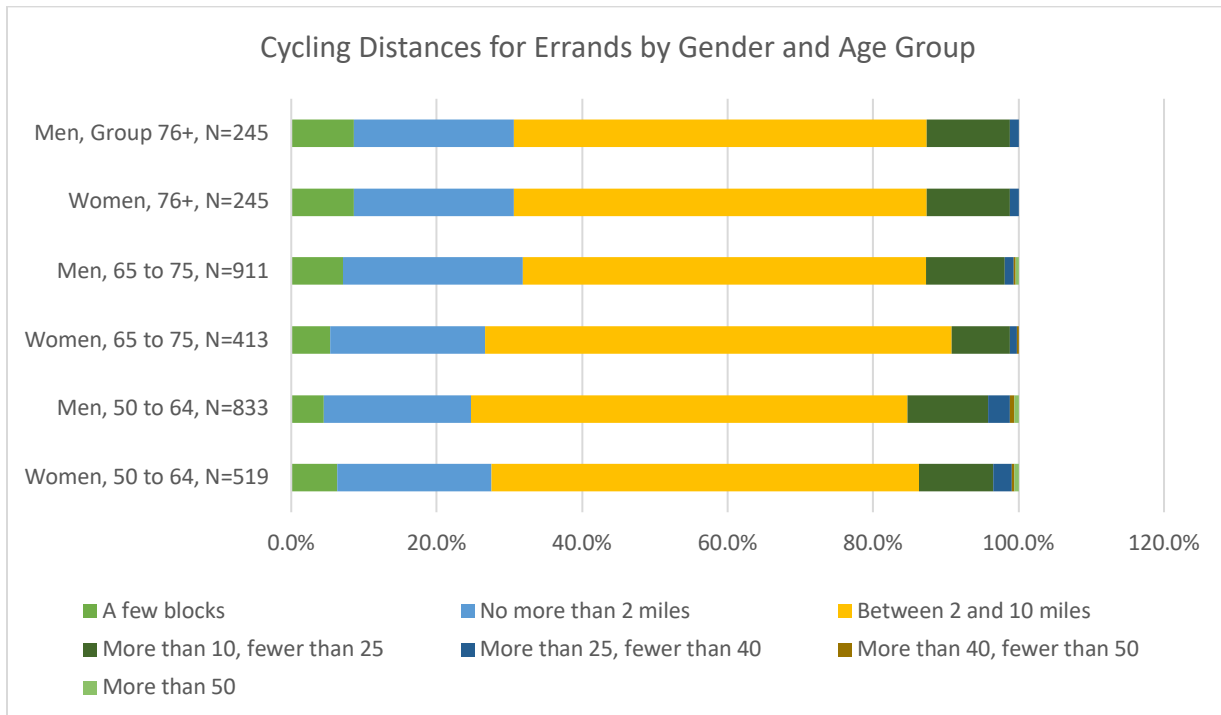
Cycling for daily errands is attractive for many older adults as it provides easy access to local destinations and satisfies environmental objectives. Regardless of age, the greatest responses were from those cycling between two and 10 miles. The next most frequent distance of no more than two miles is less than half the rate for longer distances, except for those 76 and older whose second highest rate is a few blocks. The longer distances of 10 miles and farther have the lowest rates, which makes sense as daily errands are typically done closer to home (see Figure 28).

Figure 28. Cycling for Daily Errands by Age Group and Distance



This breakout generally holds true when looking at it by gender. See Figure 29.

Figure 29. Cycling for Errands by Gender, Age Group, and Distance



#### 4.1.4 Cycling to work

Rates of cycling to work were 10.3% for women and men combined. Rates decline with age, as might be expected, most likely due to the end of “working life” as people age, as well as the decision to not cycle to work if conditions are considered more unsafe for older adults. Figure 30 shows a steep drop-off for cycling to work after age 75. The most common distance is between 2 and 10 miles for women and men combined, with a second longest distance of up to 25 miles. Distances traveled to work for women and men in all three age groups are shown in Figure 31.

Figure 30. Cycling to Work by Gender and Age Group

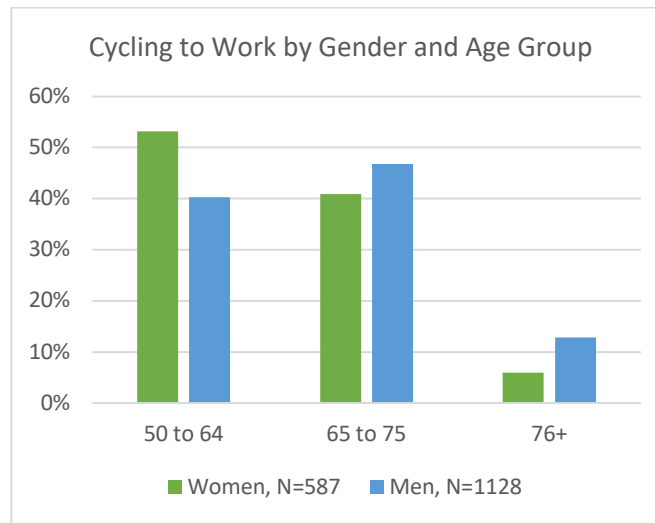
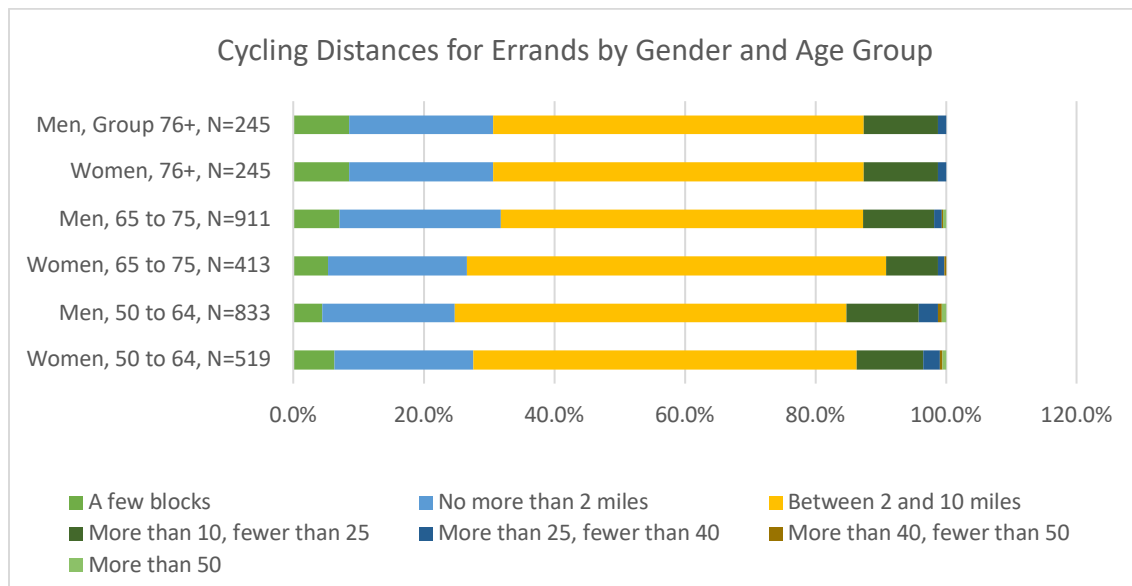


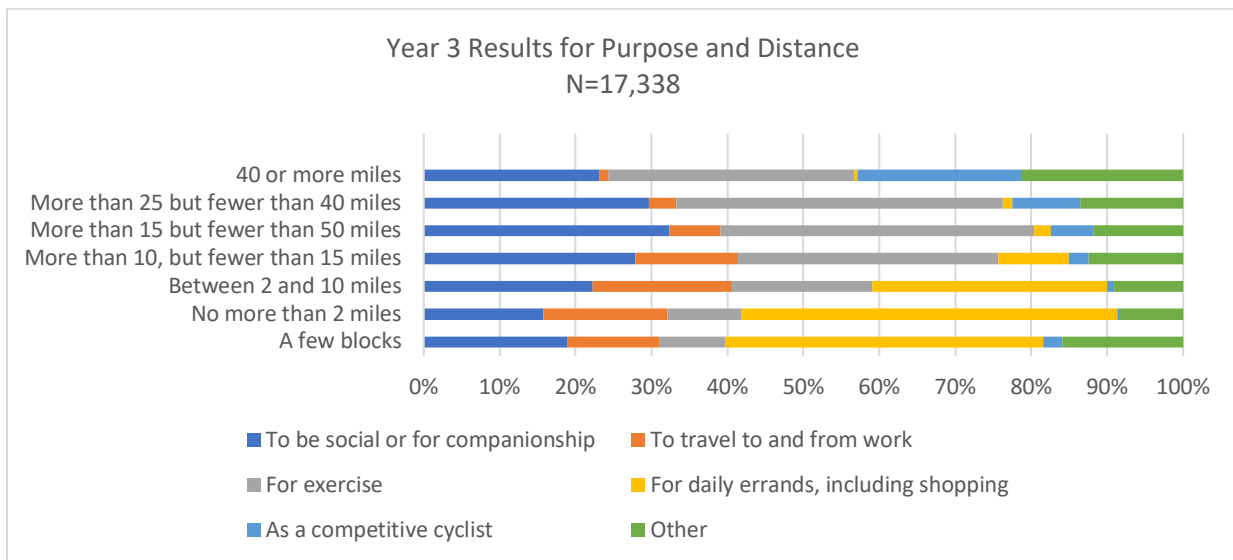
Figure 31. Work-related Cycling by Gender, Age Group, and Distance



#### 4.1.5 Comparison to Year 3 survey

The trip’s purpose and distance information were not included in the Year 3 Databook; however, Figure 32 shows the results. Note that the answer options for distances longer than 15 miles are different than those for the Year 4 survey. (We corrected these for the Year 4 survey.) Because of this, please look at information on the series of questions related to Section 8.2, Past-Year Changes in Cycling.

Figure 32. Year 3 Trip Purpose and Distance Responses



#### 4.1.6 Changes for Year 5 Survey

Given the number of people who selected “Other” for their trip purpose, the Year 5 survey will provide a way to identify these trip purposes and include them as an answer option. One option may be cycling tourism. The “Other” option can also ask for the respondent to provide the trip purpose in a write-in box.



# 5. Types of Cycling & Bicycles

## 5.1 Types of Cycling

Respondents selected the types of cycling they do from a pre-established list of answers. Answer options focused on the types of facilities or styles of cycling, not the bicycle type. Respondents could select as many that applied, resulting in nearly 12,900 selections. Figure 33 shows that the most common facilities and styles of cycling are for everyday cycling on roads and trails. These may be considered safer or easier to manage in that they require less gear or have a decreased fall risk, although it was not uncommon for respondents to identify crash risks due to actions by people driving motor vehicles and roadway design.

The next three cycling types—bike packing, mountain biking, and gravel cycling—can be considered within the framework of a sport. As such, they peak in the mid-60s, then decline. Bike packing and supported touring, as well as gravel cycling, remains higher than mountain biking as people age. Fewer women participate in these three types of cycling, with a decreased rate going from bike packing to gravel cycling to mountain biking. Figure 33 shows responses for all types of cycling by gender. Figure 34 shows participation rates for bike packing, mountain biking, and gravel cycling by age group. Figure 35 highlights differences in participation rates for the three “sport” types of cycling: bike packing, mountain biking, and gravel cycling.

Figure 33. Responses to Types of Cycling

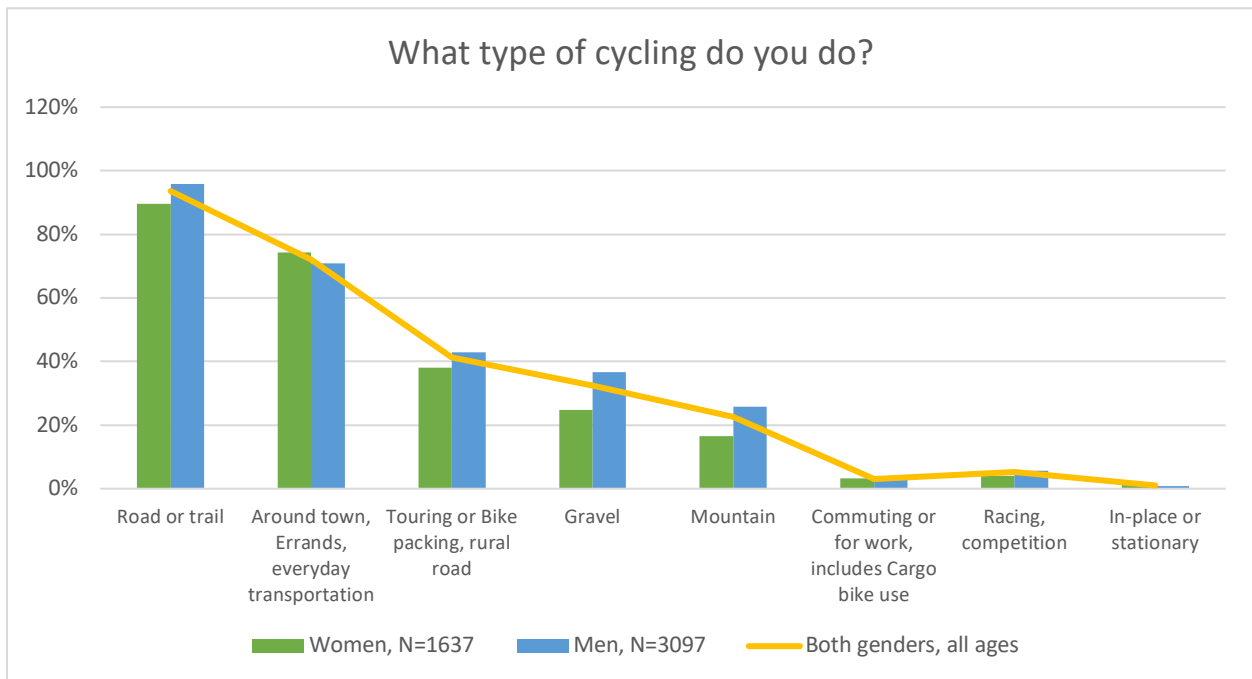


Figure 34. Rates of Bike Packing, Gravel Cycling, and Mountain Biking

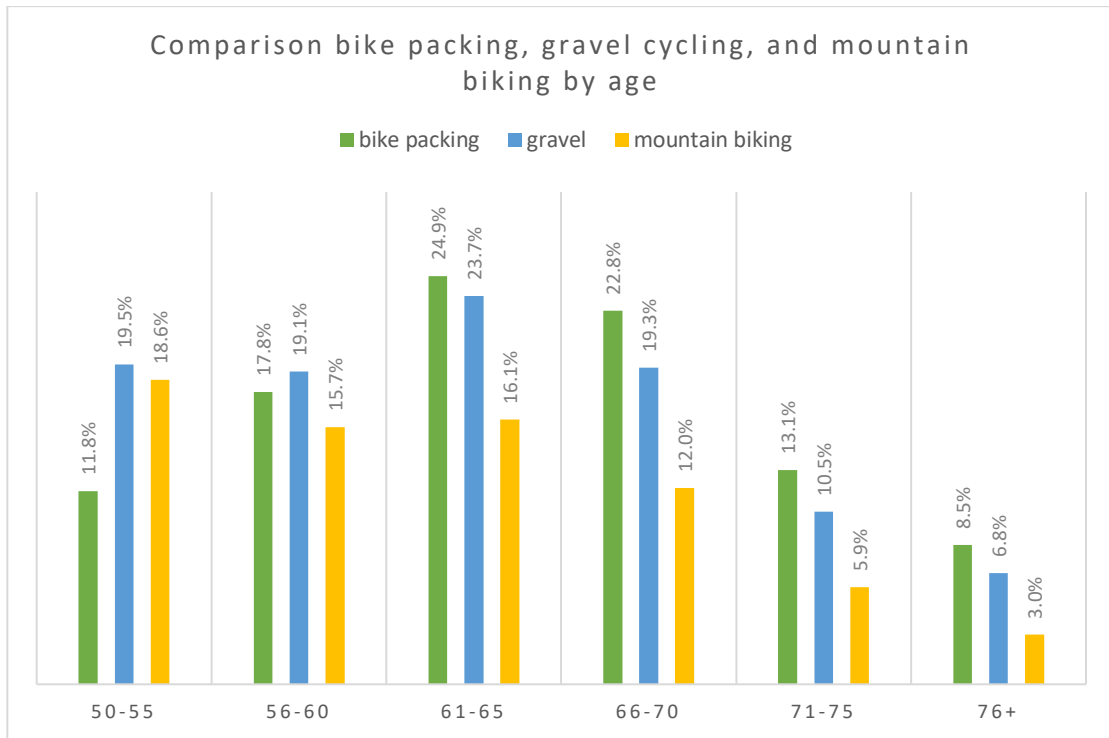
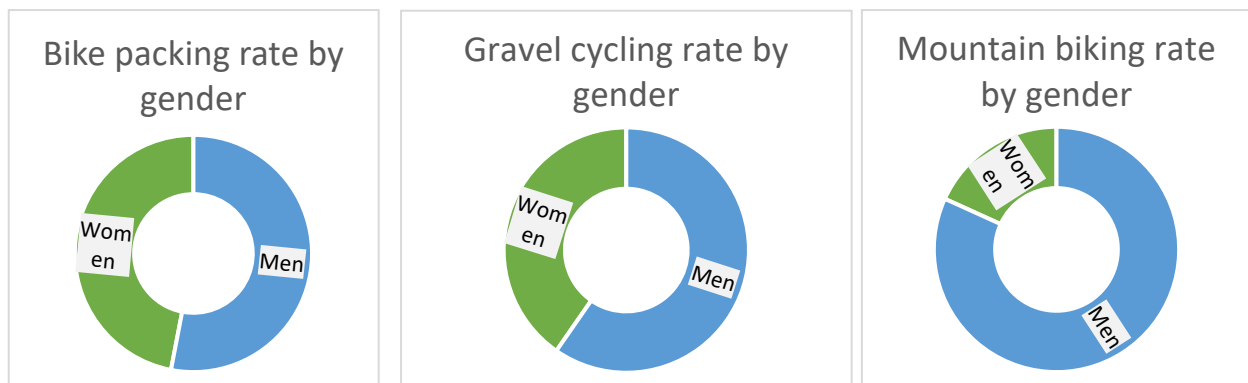


Figure 35. Rates of Sport Cycling by Gender



Types or styles of cycling provided in the “Other” category included everyday transportation, racing or other competitive events, work-related cycling, in-place cycling (such as on a trainer, Zwift, or Peloton), track cycling, and fat tire cycling (most often mentioned for winter cycling). These write-in responses were reallocated as shown in Table 4.



Table 4. Allocation of “Other” Responses for Types of Cycling

Write-in response	Was included in
Everyday cycling, errands, neighborhoods	Around town
Other types of competitive events	Racing
Track cycling (also referred to as velodrome)	Racing
Trail and Rail Trail	Road or trail
Commuting, using bike for work-related travel, including carrying tools and materials on a cargo bike	A new answer: Work-related
Stationary bike, trainer, etc.	A new answer: In-place or stationery
Fat Tire	A new answer: fat tire or winter

Some of these answer options were included in Figure 33 above; others that had a smaller number of responses were not. It may be that the number of responses would have been greater if these types of cycling were offered as an answer option.

#### 5.1.1 Comparison with Year 3 survey

This question was not offered in Year 3.

#### 5.1.2 Considerations for Year 5 Survey

Nearly all who responded to this question added information in the “Other” option, most of which were reallocated to an existing answer or assigned to a new answer. This question could have been better worded or included an explanation of what was meant by “type” of cycling. In addition, the Year 5 survey will include answer options for the types of cycling most often provided in the Year 4 survey as “Other.”

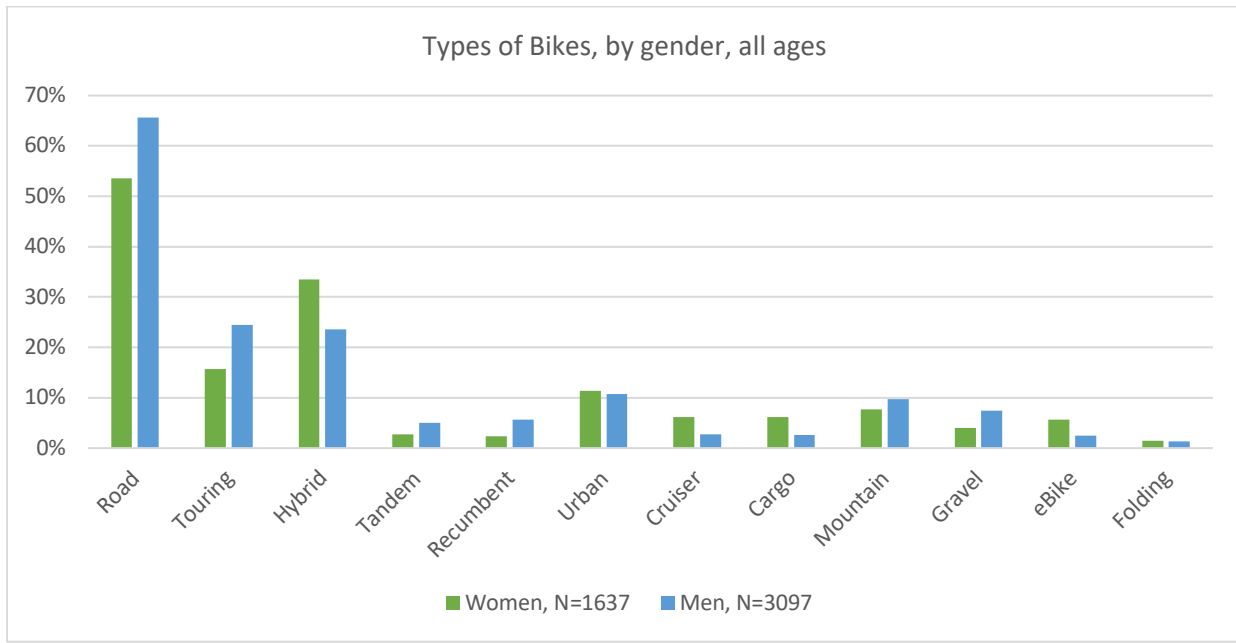
We will also consider using a matrix format to tie the type of cycling with the type of bicycle (see Section 5.2, Types of Bicycles.) Lastly, the answer option, *Road or Trail* needs to be two separate answers. While only 26 people responding entered “trail riding” in the *Other* answer option, many more likely selected the “Road or Trail” option. Given the desire of many older adults to avoid riding alongside or mixed with motor vehicles, separating these answer options will provide better information. As one respondent said, “Paved bike trails – don’t like cars.”

## 5.2 Types of Bicycles

In addition to asking the type of cycling respondents did, this year’s survey asked what type of bicycle they ride. People could select up to two responses from a list of eight types, plus an *Other*

field where they could enter a different type of bike. Figure 36 shows responses for the eight types offered (*Road* through *Cargo*) and the four most-often cited other types (“*Mountain*” through “*Folding*”).

Figure 36. Types of Bicycles by Gender



Write-in responses in the *Other* option of note included:

- 7 Bike share bikes
- 13 Triathlon (2 women; 11 men; ages 50 to 80)
- 15 Stationary (8 women, 7 men; ages 54 to 83)
- 17 Adult trikes
- 17 BMX bikes (all men between the ages of 50 and 83)
- 26 Recumbent adult trikes
- 23 Fixed-gear (2 women, 21 men; ages 54 to 81)

Older adults have a wide variety of bikes; some own multiple bikes for different purposes: “Occasionally use a road bike (it’s not as suitable for poor road conditions, so the hybrid is my primary bike). I also use a tandem when with spouse, transporting goods, or picking up another person” (66-year-old man).

The range of knowledge about bikes varies from very little to expert (and with pride). Some gave details of their bike, such as this: “Bikepack Gravel bike: Salsa Carbon Cutthroat. Touring bike often denotes a bike with tires that are more suited for pavement only, such as my CoMotion Cascadia which has 700x35 Schwalbe Marathons. Cutthroat has Vittoria Mezcal 2.35" tires suited for gravel” (67-year-old woman).

More information about older adults with e-bikes and adult trikes is included in this report under Section 5.3, Tandems, e-Bikes, and Trikes.

### *5.2.1 Comparison with the Year 3 Survey*

This question was not offered in Year 3.

### *5.2.2 Considerations for Year 5 Survey*

The Year 5 survey needs a better way to capture the many types of bikes. This could be a simple write-in question or a matrix option for people to select multiple features, such as a recumbent e-trike tandem. There should also be a brief description or photos of the types either in the survey or through a link to an existing webpage, given that some older adults may not know the type of bike they have.

## 5.3 Tandems, e-Bikes, and Trikes

As people age, they often consider a different type of bike that will allow them to continue cycling. The survey asked about three of these “adaptive” bikes: tandems, e-bikes, and trikes.

### *5.3.1 Tandems*

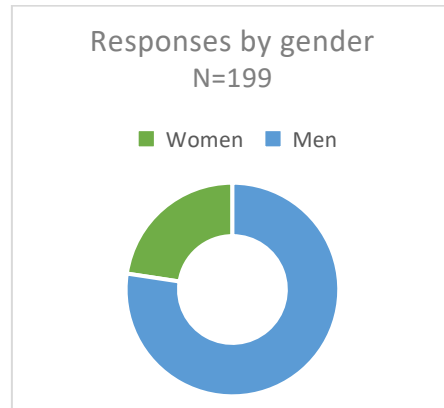
Tandems are a unique form of cycling with two people onboard, making teamwork essential. Just under 200 people (or about 4%) responded that they are tandem cyclists and provided interesting information about why they are, who they ride with, and their trip purpose. Figure 37 shows the response rate by gender. While over three-quarters of responses were from men, many said they are tandem cyclists in order to cycle with their wife, i.e., they are the captain, and their wife is the stoker.<sup>1</sup> This means that there may be more women who are tandem cyclists than responded to the survey. Survey responses show that women and men cycle with their life partner at the same rate, but more women report that they cycle with a friend or colleague than men, and more men cycle with a child or grandchild than women. Some responded that they ride with someone who

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<sup>1</sup> Tandem Terminology - <https://www.bicycle-and-bikes.com/bicycle-buying-guide/tandem-bicycles/tandem-bicycles-terminology/>

is blind, since tandems offer the benefit of cycling for people with limited or no vision (see Figure 38).

Figure 37. Tandem Cyclists by Gender



Tandem cycling is most often done for recreation and touring. Running errands and commuting to work cannot be done easily; however one 66-year-old woman takes her granddaughter to school by tandem. As noted in the above section, when answering the question about the type of bike people have, a 66-year-old man said he uses his tandem when giving rides to other people. Finally, three older tandem cyclists who remain competitive engage in racing (see Figure 39).

Figure 38. Tandem Cycling Partners by Gender

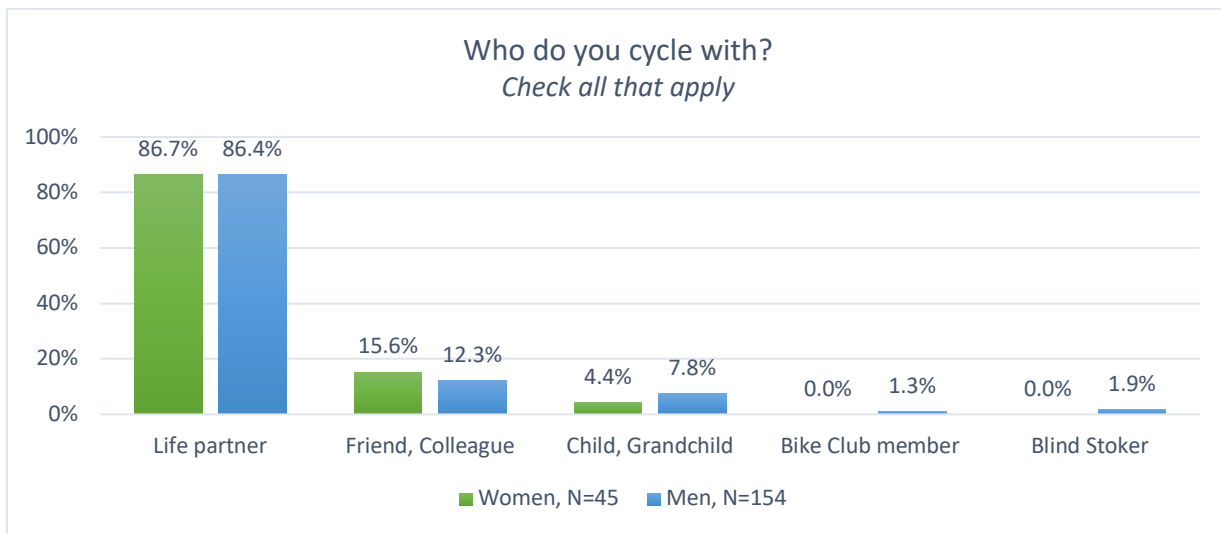
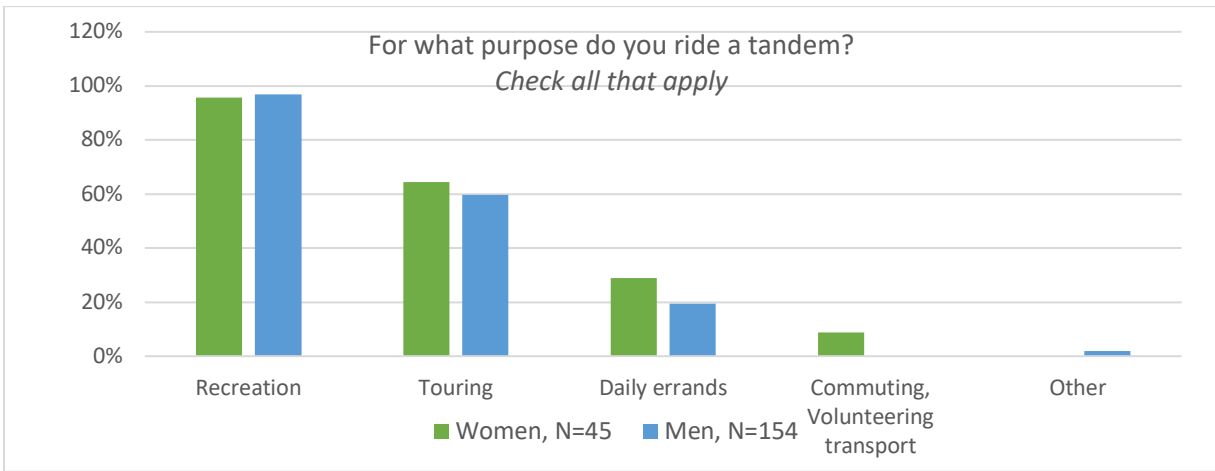


Figure 39. Tandem Cycling Purpose by Gender



Perhaps the most interesting answers came from the question, *What prompted you to begin riding a tandem?* Figure 40 shows the answers to this question. Common responses included for companionship with one’s life partner and the resulting ease of conversations while on the bicycle, as well as the compatibility of speed and endurance. Responses also included health- and ability-related reasons, such as someone with no or low vision being a stoker, being the captain for someone with no or low vision, or as a way to recover from an injury. Notable quotes from tandem cyclists are in Table 5. Note the one that likens tandem cycling to a relationship.

Figure 40. Reasons for Choosing Tandem Cycling

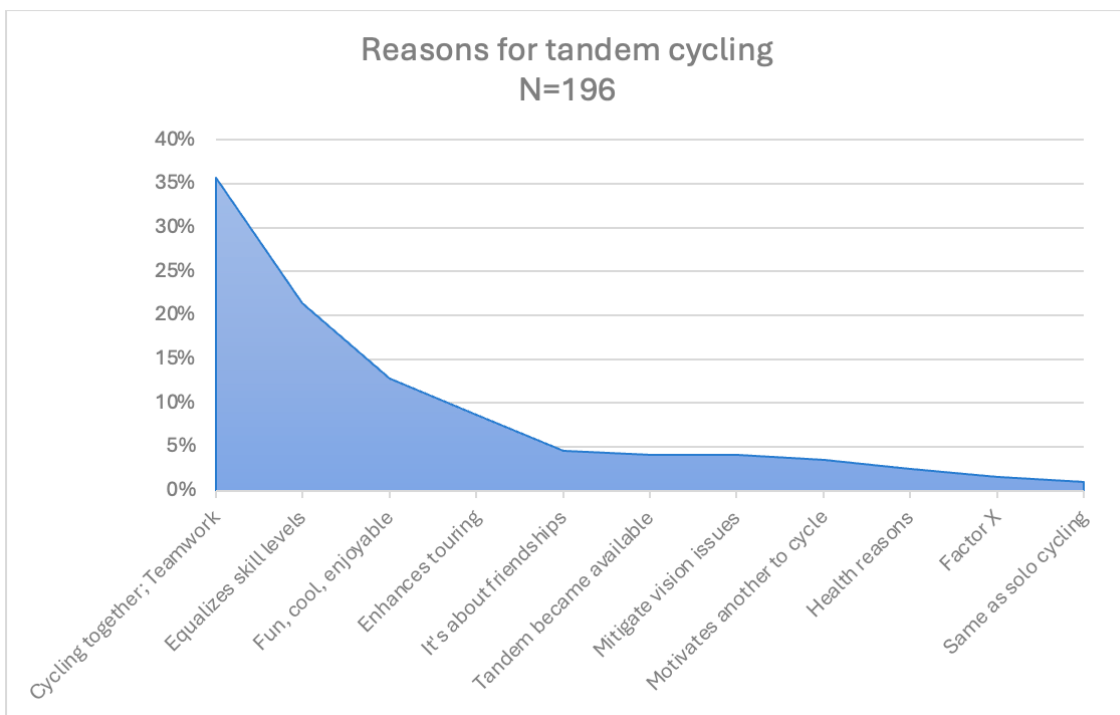


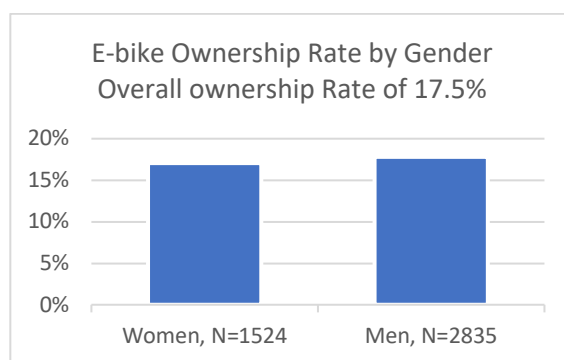
Table 5. Tandem Cycling Notable Quotes

Reasons for and benefits of tandem cycling
I bought it thinking I could tote my blind friend around on it. That didn't work, but [it] turned out my spouse and I loved it. We can chat and ride, which is hard when on two bikes. (58-year-old woman)
I wanted to be able to ride further and faster than I could ride on my own, and my partner is more technically skilled on a bicycle than I am. (64-year-old woman)
[It's] relationship building – whichever direction your relationship is going, you will get there twice as fast on a tandem.... (69-year-old man)
To share [the] love of biking. Also good for long trips, easier to ride up hills and to chat. (62-year-old woman)
[I was] invited by visually impaired friends who wanted to ride, but needed a sighted partner (73-year-old man)
Rode with my kids when they were little now with my grandchildren (71-year-old man)
Something we could do together as we aged (60-year-old woman)

### 5.3.2 E-bikes

The popularity of e-bikes continues to grow for people of all ages. COVID-19 restrictions were an incentive for more people to take up cycling, many of whom eventually purchased an e-bike. This growth in e-bike ownership is reflected in the Year 4 survey with an overall ownership rate of 17.5%, just over half of which represents purchases in the past year (Note that this percentage more accurately reflects ownership rates than the percentage shown in Figure 36). Figure 41 shows ownership rates for women and men. Figure 42 compares ownership rates by age group and gender with a past-year purchase. Overall ownership rates are higher for women aged 65 and younger, but higher for men older than 65. The rate of a past-year purchase is higher for women through age 65, then drops as more men 66 and older purchased an e-bike in the past year.

Figure 41. E-bike Ownership Rates by Gender



Ownership rates appear to be affected by income, and race or ethnicity. Figure 43 shows a higher ownership rate for higher income respondents. However, women of color (POC) reported a higher ownership rate than men of color (see Figure 44).

Figure 42. E-Bike Ownership Rates by Gender and Age Group, Overall and Past Year Purchase

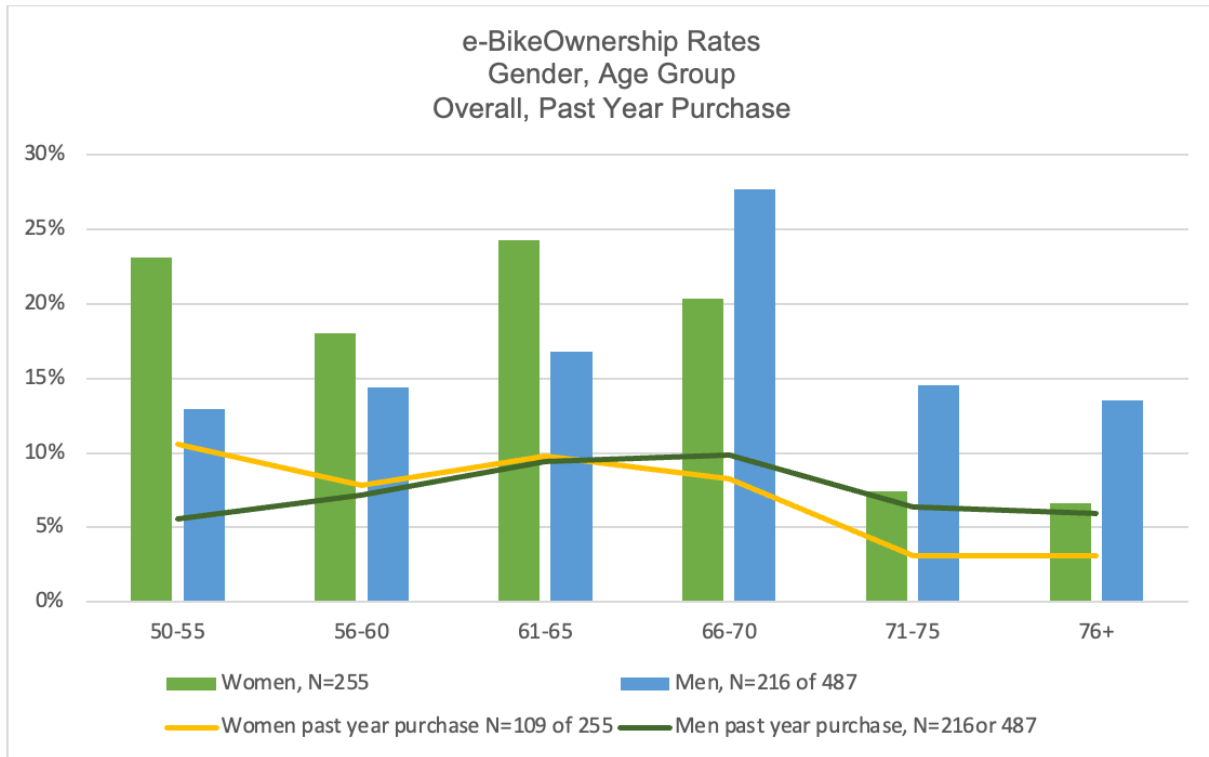


Figure 43. Ownership Rates by Income Group

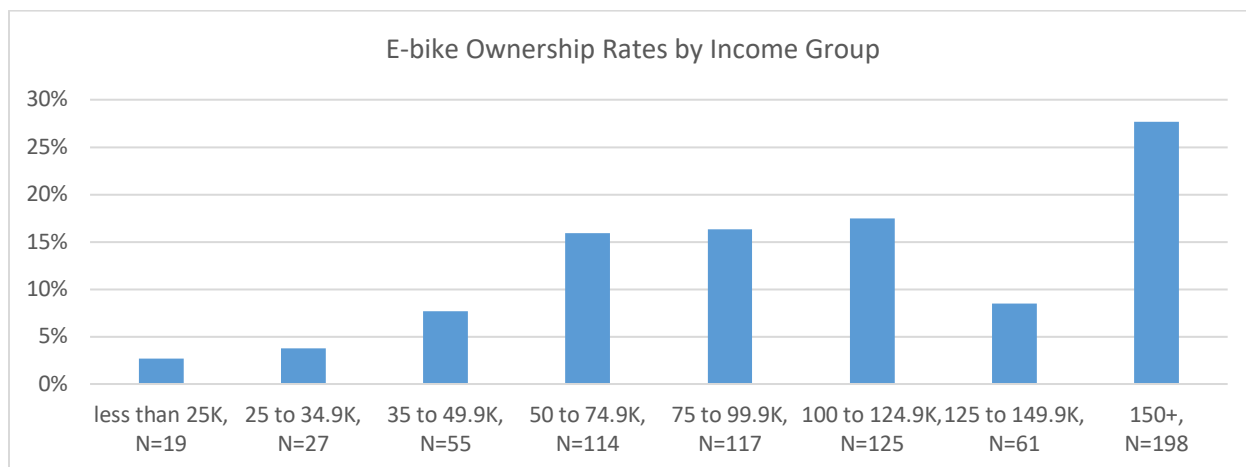
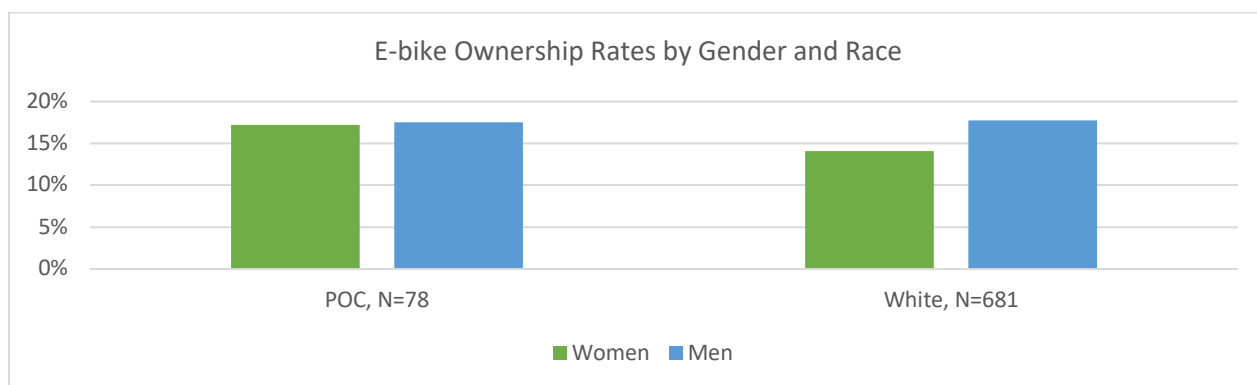


Figure 44. Ownership Rates by Gender and Race



Like other questions, people provided myriad reasons for purchasing an e-bike. The twenty answer options, some of which came from the write-in “Other” option, are grouped into four categories in Table 6 below, which includes the percentage distribution of reasons by category.

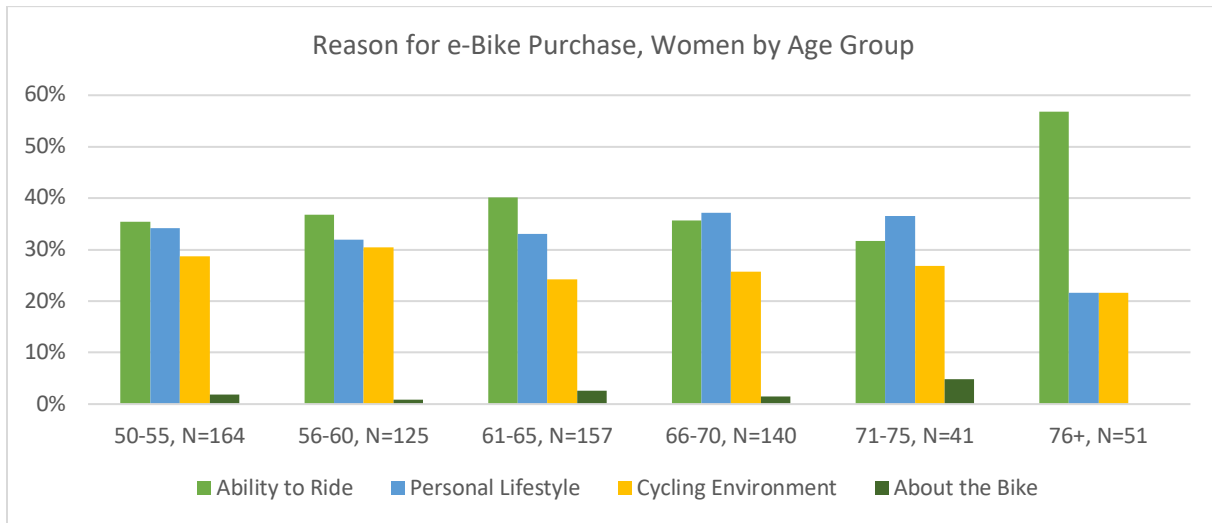


Table 6. Reasons for e-bike purchase by category

Ability to Ride (Health & Safety)	Personal-Lifestyle	About the Bike, Other	Cycling Environment
I don't have the strength or balance to ride a regular bike where I like to	I was curious and when I did a test ride, I was sold	It was affordable	I recently moved to a place where there are hills and the e-bike makes it easier to bike
I want to cycle farther than I do now	It was just time – I can't be any more specific than that; as an extra bike; instead of an extra car	Because they are fun	To make it easier to ride up hills or for mountain biking
To make it easier to ride with someone who cycles faster than me OR vice versa	Work-related travel; to ride in street clothes	It was a gift, prize, subsidized at work	To be more comfortable to ride in hot weather, winds, poor air quality, etc.
So my spouse and I can ride together	So I can do bicycle touring and group rides		The speed offers safety in tight situations; can get to places faster
Because of my age	So I could continue to ride during and after recovery from a medical condition		
To ride farther distances for everyday needs	To remain or get fit		
To make it easier to ride a tandem	To carry cargo, such as groceries; for general errands		
37.4%	27.9%	1.7%	33.0%

For women and men aged 50 to 65 and 76 and older, the most often cited reason for an e-bike purchase was to be able to ride. Those in the decade between 65 and 75 purchased an e-bike for *Personal-Lifestyle* reasons, or, in the case of men aged 66 to 70 for reasons related to the *Cycling Environment*. The *Cycling Environment* is perhaps less important for older cyclists because the e-bike mitigates some aspects of cycling conditions that make it difficult or unsafe to ride (see Figures 45 and 46).

Figure 45. Reasons for E-bike Purchase by Women by Age Group



While e-bikes are the right choice for some older cyclists, about 83% of respondents do not own one. Responses for a question asking under what circumstances they would purchase an e-bike were grouped into four categories, shown in Table 7.

Figure 46. Reasons for E-bike Purchase by Men by Age Group

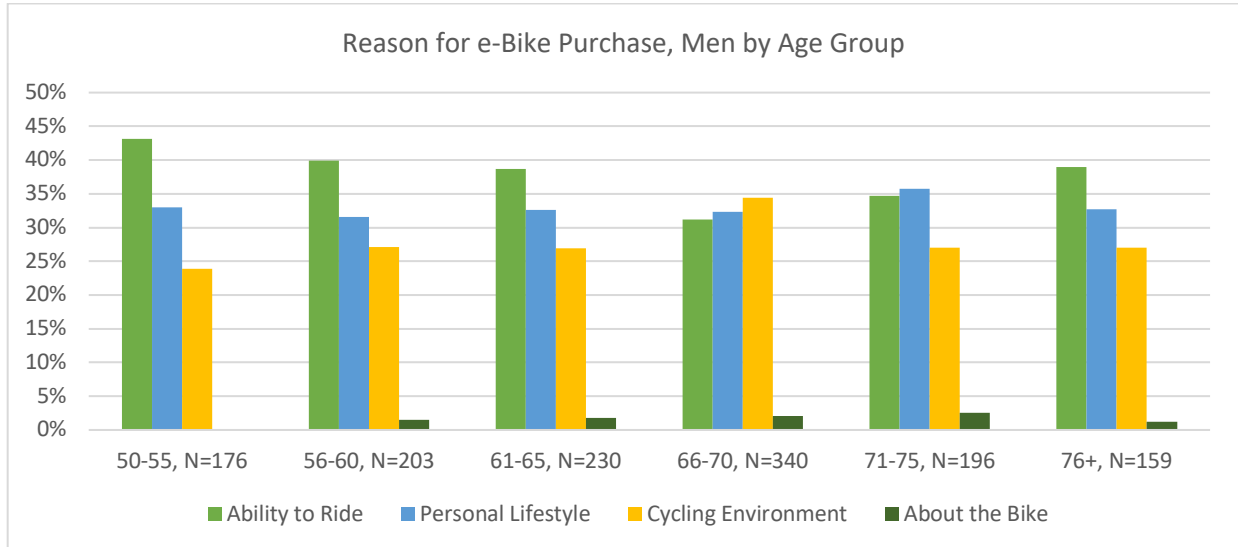


Table 7. Reasons for Future E-bike Purchase

Ability to Ride (Health & Safety)	Do Not Anticipate Getting One (Never)	Personal-Lifestyle	About the Bike, Other
When I develop a physical limitation on the type of cycling I do	I don't envision ever getting one	When I just decide to get one	I'm looking to buy now
To keep me active while I recover from a medical condition	When I'm dead	When I decide to use it to commute to work or to volunteer	When I can afford it
To ride with someone who rides an e-bike		As a replacement for a car or otherwise to haul cargo; run errands	When I have a place to store it and it's secure
When I lose the strength to ride a regular bike where I like to		When I'm old	Improved technology, lower weight
So someone I ride with can keep up with me (such as my wife)			
To ride farther or to ride up hills			
71.1%	12.1%	11.3%	5.6%

Figures 47 and 48 show the results of this question about a future e-bike purchase for women and men by age group and category. The ability to ride is the most common reason for an e-bike purchase. In contrast to those who currently own an e-bike, *Personal-Lifestyle* reasons are less important to current non-owners. Women are slightly more open to purchasing an e-bike, given the lower number who said they would never purchase one, compared to men in all but one age group.

Figure 47. Reason for Future E-bike Purchase for Women by Age Group

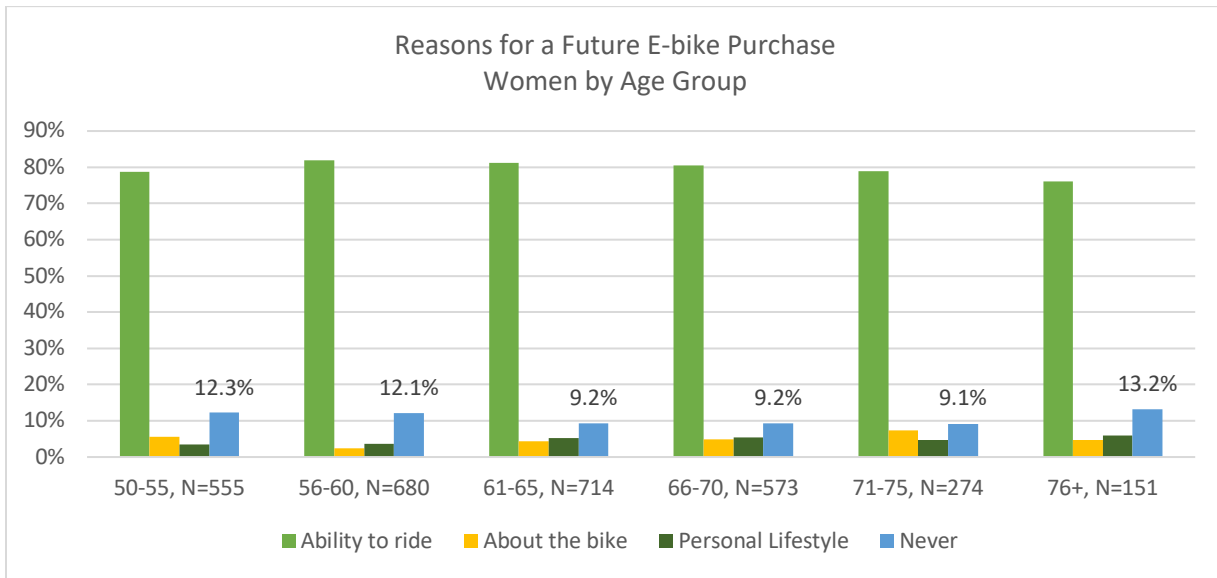
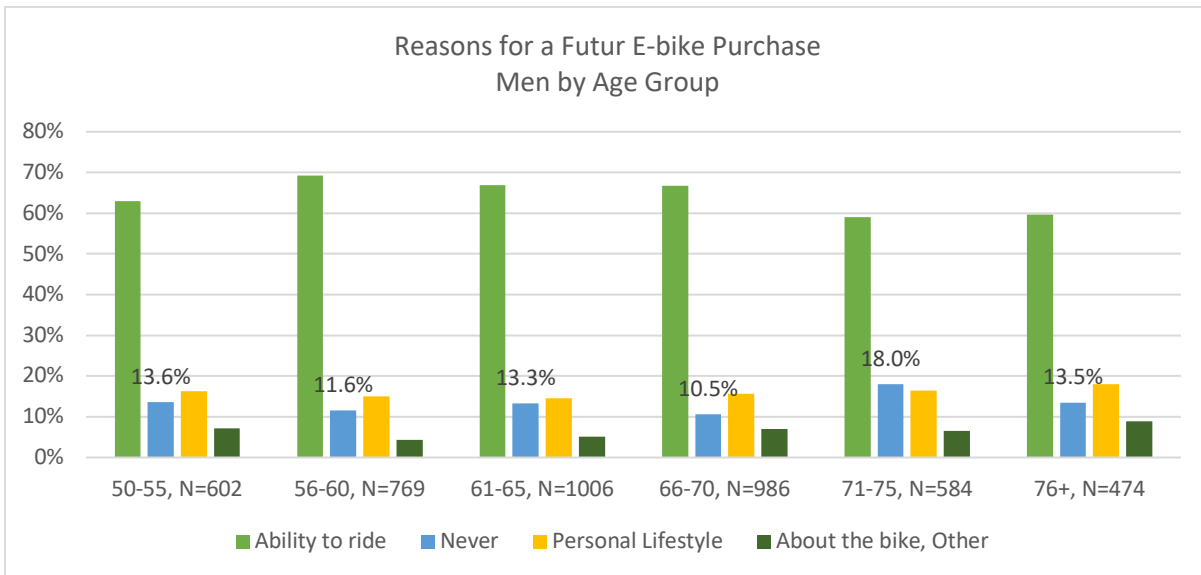


Figure 48. Reason for Future E-bike Purchase for Men by Age Group



Information about e-bikes as a consumer product, including more comments from survey respondents, is available on the db|Tilde CORE, Inc. website at this link: [www.db|TildeCORE.or](http://www.db|TildeCORE.or).

### 5.3.3 Adult Trikes

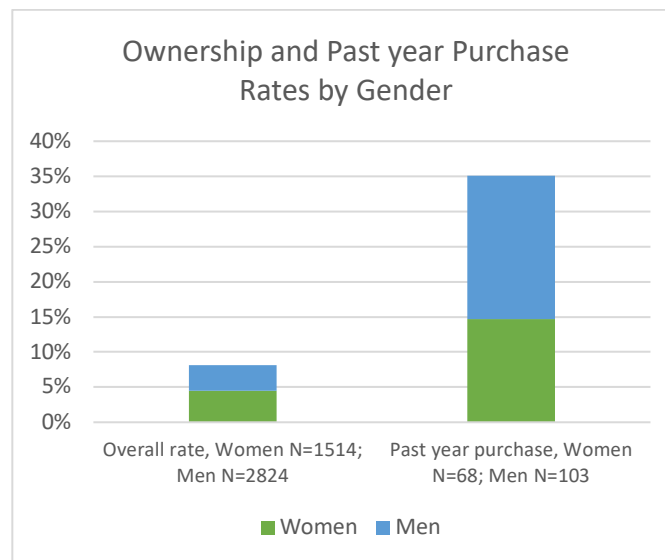
A small percentage of survey respondents own an adult trike—3.6%—which is about a one percent increase from the Year 3 survey. Of those responding *Yes* or *No* to owning an adult trike, 4.5% of

those were women and 3.6% were men. More men, however, purchased their trike in the past year (see Figure 49).

Differences in age groups show greater ownership rates for women in all but two groups: nearly 10% of men aged 50 to 55 own a trike, compared to just under 2% of women. Similarly, the ownership rate for men aged 61 to 65 is a bit higher than that for women. The largest differences between women and men for which women have higher ownership rates are for the 66 to 70 and 76+ age groups (see Figure 50).

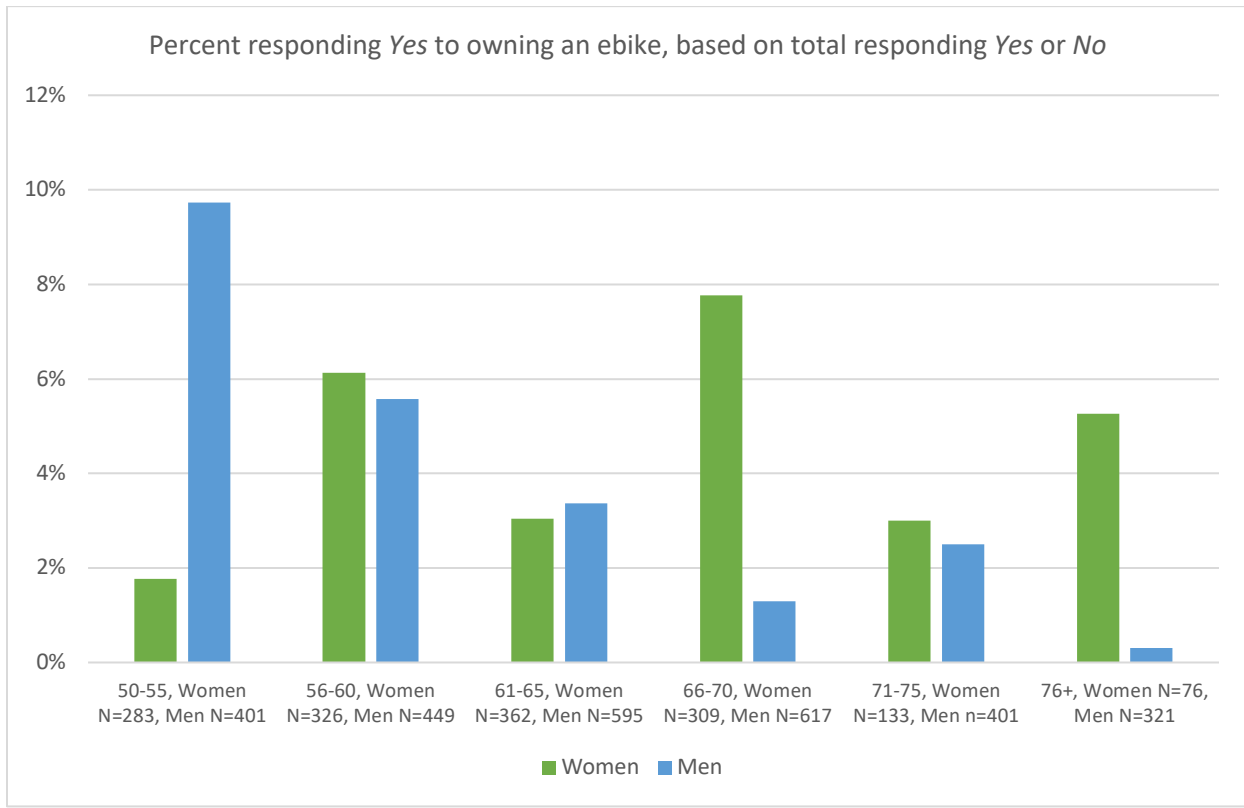
Recumbent trikes are more popular than the traditional sit-up trike at about 74%. Ownership between women and men is about the same, with recumbent trikes comprising 76% of those owned by women and 71% of those owned by men. Overall, 35% of recumbent trikes are e-assist.

Figure 49. Trike Ownership Rates by Gender, Including Past-year Purchase



The reasons for purchasing a trike range from mitigating medical issues, wanting more stability, getting on and off more easily, riding with someone else, carrying groceries and other items, and when they can afford it. Figure 51 shows the top two reasons for a future trike purchase, including when respondents have a physical limitation or health issue. Nearly 41% do not plan to purchase a trike.

Figure 50. Trike ownership rates by gender and age group



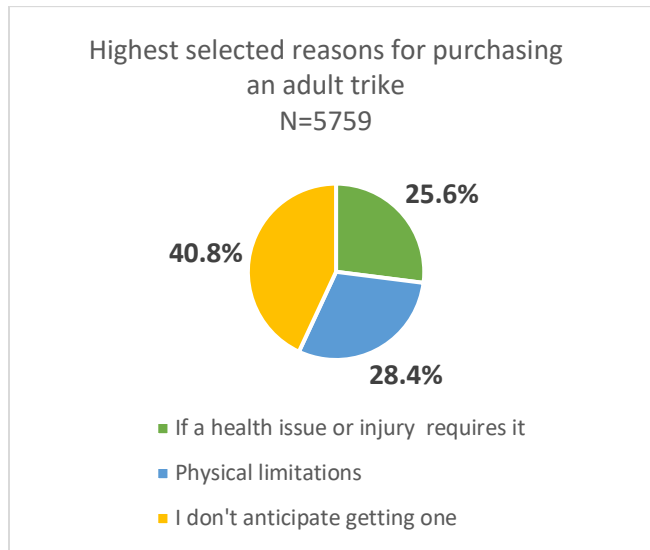
While trikes may be gaining in their image as a “sexy” bike, given the many configurations offered, there is less perceived status to owning a trike among many older cyclists. The greatest reasons for purchasing a trike are due to something making riding a 2-wheel bike impossible or unsafe.

As shown in Figure 51, 40.8% of those answering this question said they would not get one. There may be a sense of going backwards physically. One person put it this way, “If I can't ride a two-wheeler anymore, it's time to hang it up” (77-year-old man). This sentiment was echoed by someone who is trying to have an open mind, “Getting over my trike shame (I was the last kid in Grade 1 to give up trike)” (69-year-old man).

On the other hand, tandem trikes make it possible for partners to cycle with each other if one has a chronic physical or cognitive condition resulting in a diminished ability to cycle on their own: “Considering a tandem trike to ride with a friend with dementia.”

Other advantages noted are comfort on long tours, the “fun” value, their hauling ability, and assuming the older adult lives someplace with good infrastructure and places to shop. One person stated that they would purchase one if they had the “inability to ride a bicycle plus a massive change in infrastructure that would make it possible to ride away from the door zone/other car conflicts” (69-year-old man). One 65-year-old man wants a trike so he can start a pedicab business.

Figure 51. Top Reasons for Future Trike Purchase



Disadvantages of trikes include their size which make them “unwieldy” (“aren’t they dangerous on corners?” (76-year-old woman)), difficulty to store, the need for wider bikeways to accommodate their width, and some instability in steering them (“just turning around. I ride a three-wheel recumbent, and I took a tight turn on a weird incline too fast, so I tipped over” (55-year-old man). Finally, some consider trikes to be an old person’s bike. Several people said they would get one when they are older; others pointed to a specific birthday, such as 80, 90, or 100. It’s unclear if these comments were tongue-in-cheek or not.



## 6. What are Their Cycling-environment Experiences?

This section reports on several survey question series about cycling environments in which older adults feel comfortable: *What factors affect where you ride*; *Do you feel comfortable cycling at night*; and *Do you feel comfortable cycling alone*?

### 6.1 What Factors Affect Where You Ride?

The question, *What factors affect where you ride*, listed 17 answer-options and allowed people to select as many as apply. Originally intended as a non-built environment question, “Other” responses in Year 1 of the survey included built-environment factors that were included in subsequent years. This makes the question a catch-all of sorts, even though it comes later in the survey (Question 37). Several questions before and after this one ask for more details on some answer-options, such as night-time cycling, contributing to the overall answer to this question.

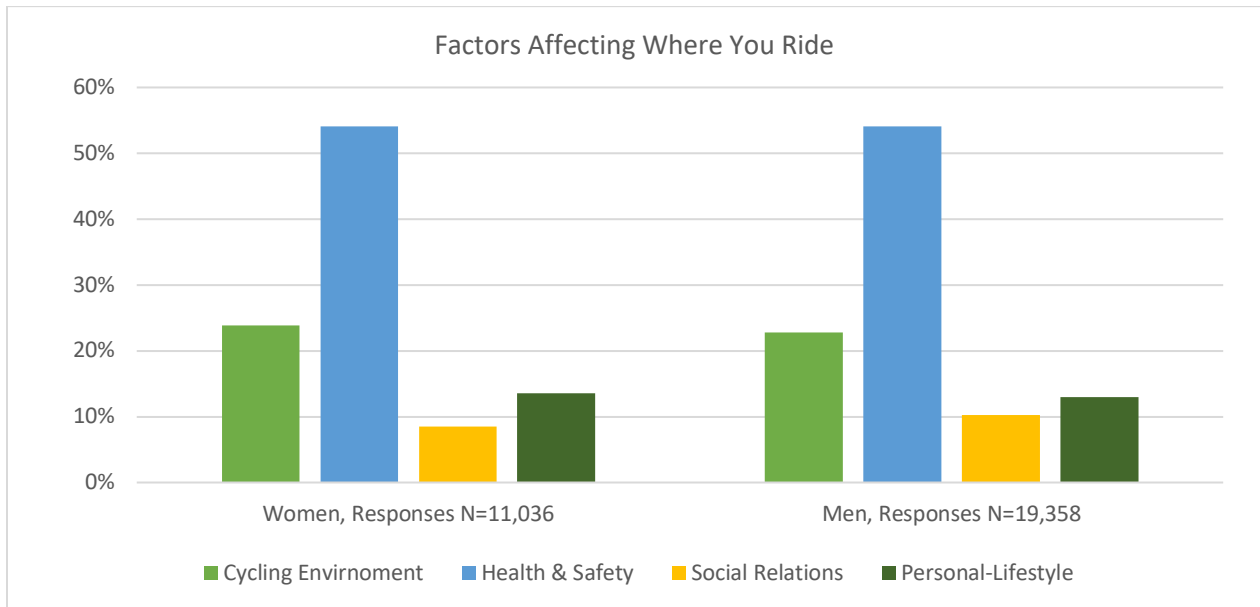
As with other questions that offer multiple answers, the 17 answer-options were grouped into four categories with the percentage of answers also shown in Table 8 below. Figure 52 shows small differences between women and men between each category, with the largest difference for *Social Relations* and *Personal-Lifestyle* factors.

Table 8. Factors affecting where older cyclists ride by category

Distribution of responses among four categories of answer options, N=30,394			
Cycling Environment	Health & Safety	Social Relations	Personal-Lifestyle
<ul style="list-style-type: none"> <li>▪ Other cyclists are present</li> <li>▪ Easy &amp; safe bike parking</li> <li>▪ Pleasant vistas, parks</li> <li>▪ Easy connections to destinations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Benches for breaks</li> <li>▪ Shade to cool off</li> <li>▪ Bathrooms, water fountains</li> <li>▪ Few or no cars</li> <li>▪ Roads are in good condition, no debris</li> <li>▪ Low volume, speed, neighborhood streets</li> <li>▪ Protected bike lanes</li> <li>▪ Overall feeling of being safe</li> </ul>	<ul style="list-style-type: none"> <li>▪ Places to stop, eat, shop, visit</li> <li>▪ Group rides</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ride primarily during the day</li> <li>▪ Avoiding rush hours</li> <li>▪ Avoiding night cycling</li> </ul>
23.2%	54.1%	9.6%	13.2%

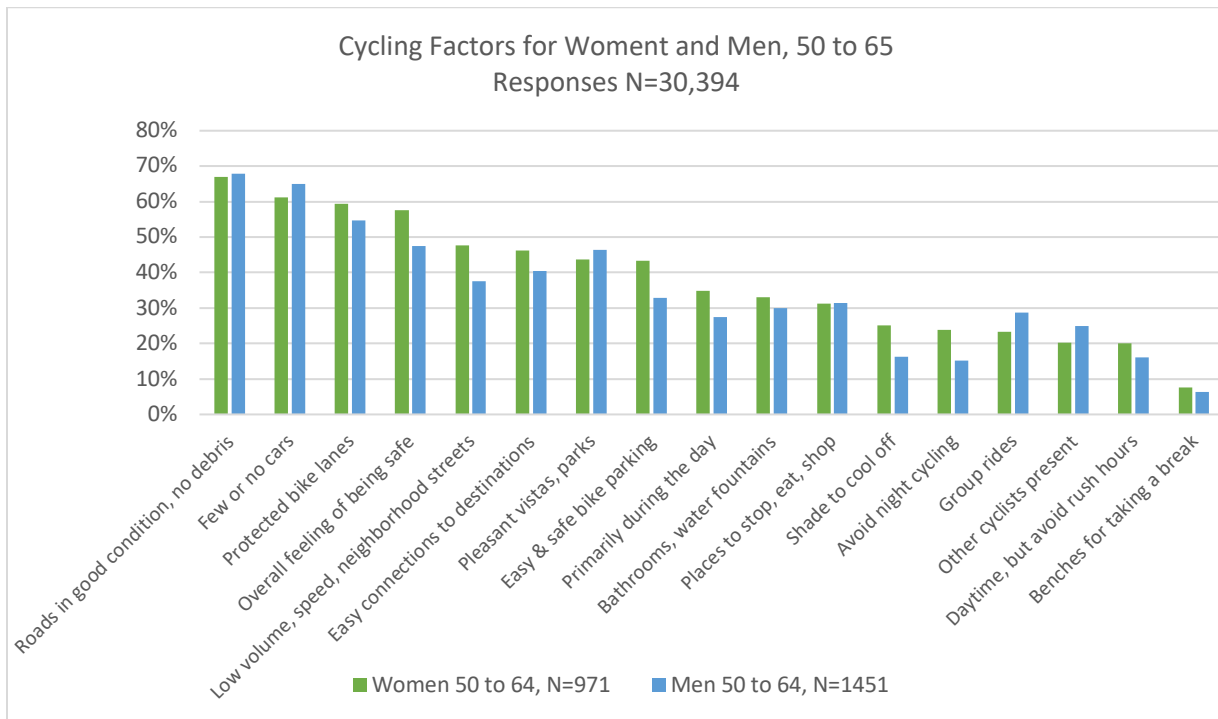


Figure 52. Factors Affecting Where Older Cyclists Ride by Gender



It may be that factors affecting where someone cycles changes as they age. Figure 53 shows answers for women and men aged 50 to 64. This provides a “base age group” against which the two subsequent age ranges are compared in Figures 54 and 55.

Figure 53. Factors Affecting Where Those 50 to 64 Ride



Highlights for people in the 65 to 74 age group when compared to the 50 to 64 age group include:

- A higher value on daytime cycling for women
- An overall lower concern for a feeling of being safe for both women and men
- An overall preference for bathrooms and water fountains for women and men
- A higher preference for pleasant vistas or parks by women
- A higher preference by women for group rides and cycling where other cyclists are present

Highlights for people 75 and older when compared to the 50 to 64 age group are include:

- A higher preference for daytime cycling for women and men, but nearly three times as important for men
- A higher preference by men for connections to destinations
- A higher preference for low volume and low speed neighborhood streets by men
- An overall lower concern for a feeling of being safe for both women and men
- An overall preference for accessible bathrooms and water fountains

Figure 54. Comparison with Base Age Group of Factors for Those 65–74

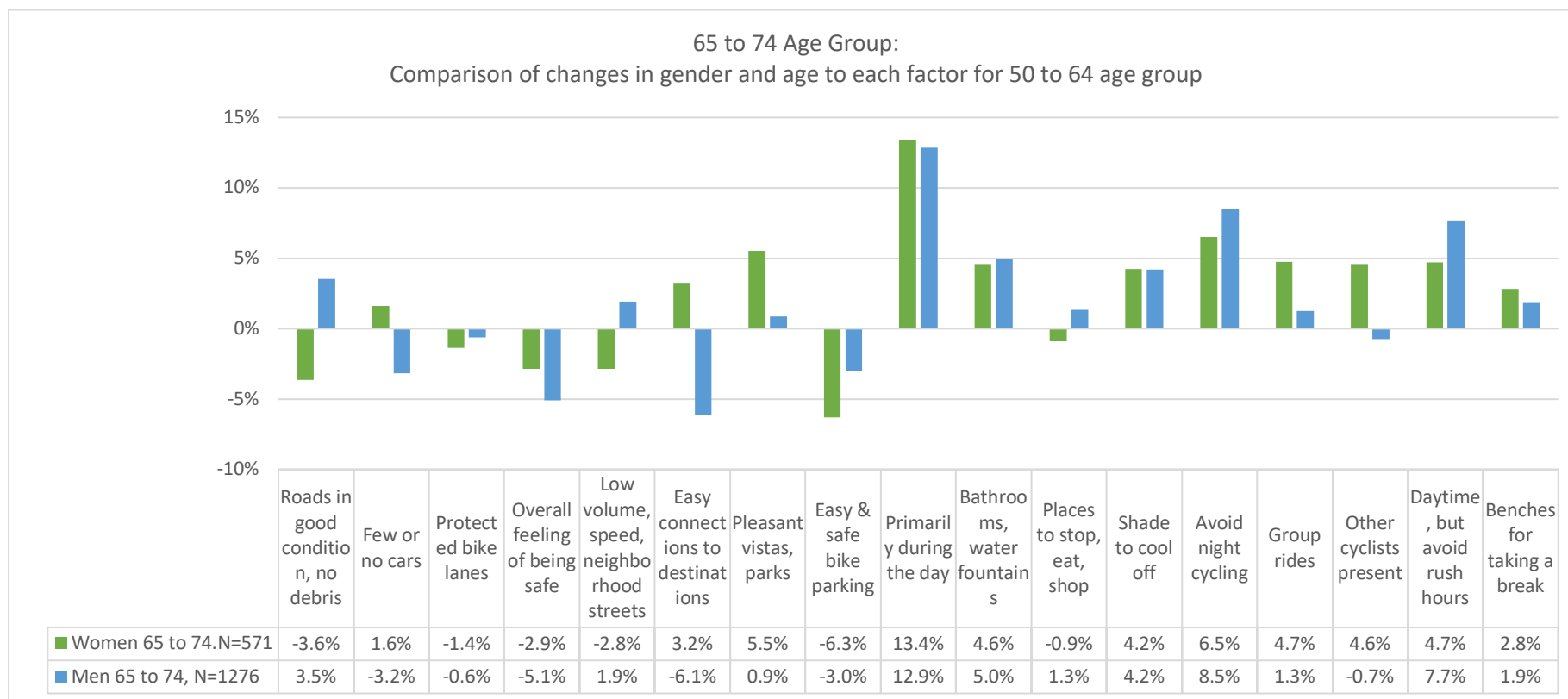
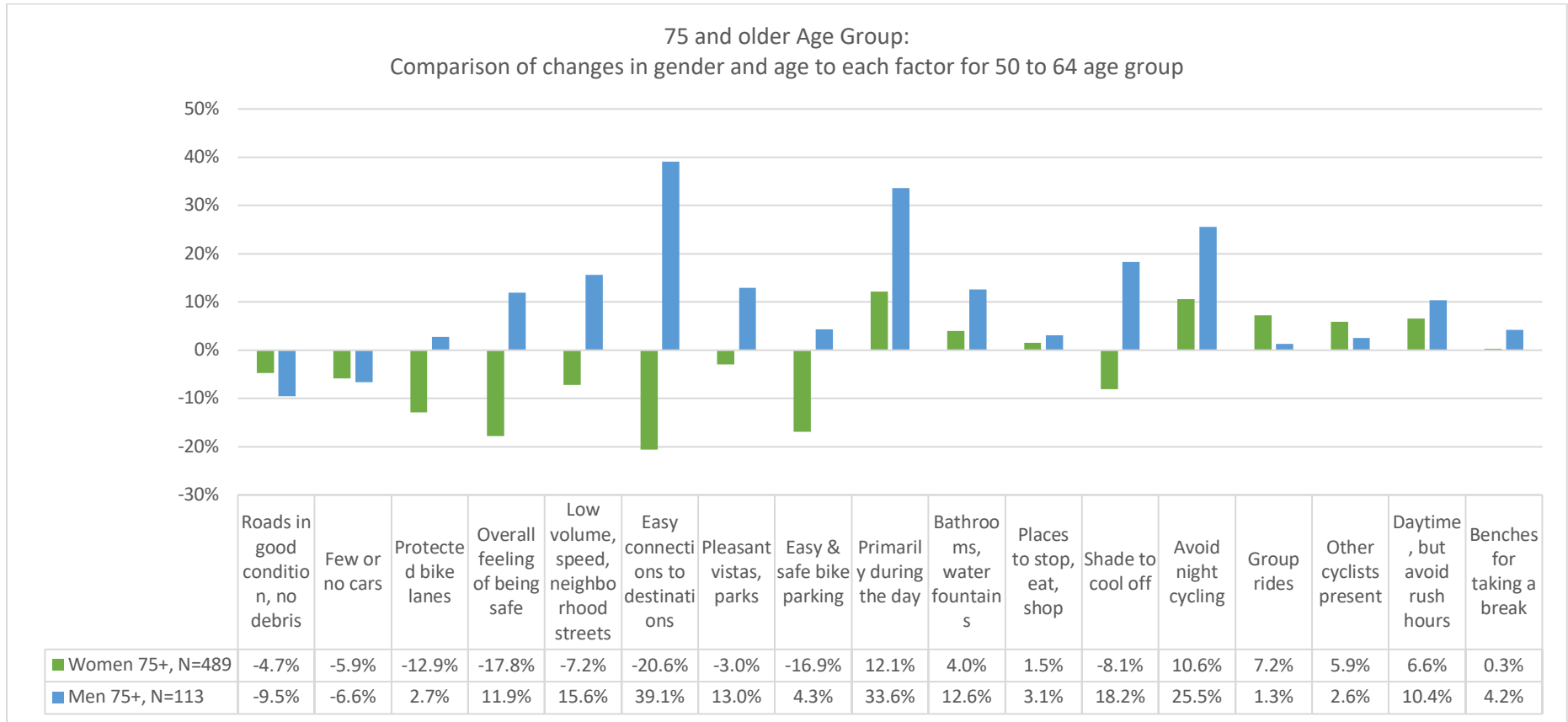


Figure 55. Comparison with Base Age Group of Factors for Those 75 and Older



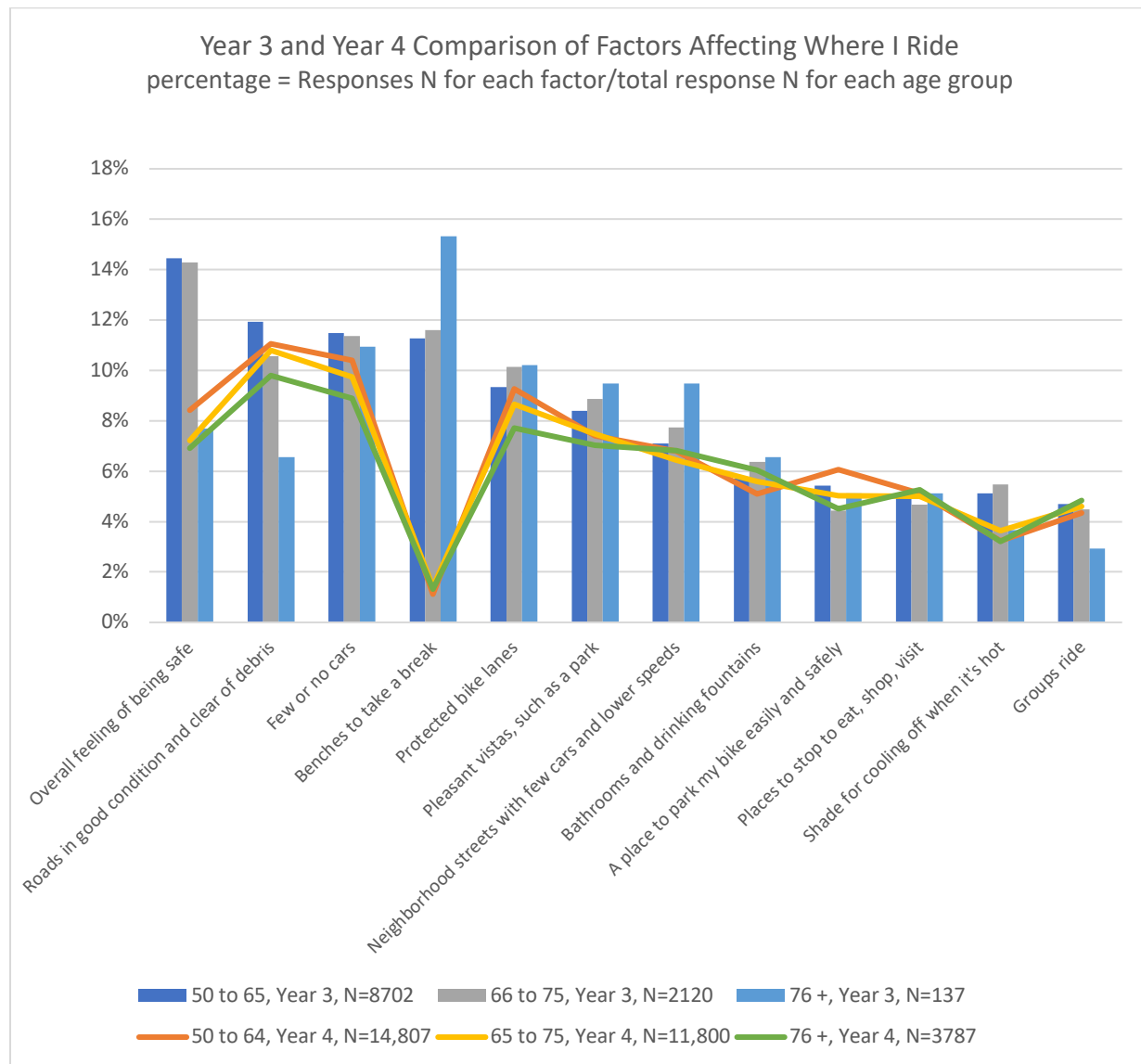
### 6.1.1 Comparison with the Year 3 Survey

Figure 56 compares the 12 answer-option factors used in both the Year 3 and Year 4 surveys. The data is arranged from highest to lowest percentages for the 50 to 65 age group from Year 3. Of note is the lower preference for overall safety, benches, and shade between Year 3 and Year 4. The only factor with a higher preference is for bicycle parking, by those aged 50 to 64.

### 6.1.2 Considerations for Year 5 Survey

This question may not be needed given its overlap with other questions such as cycling at night or alone. We will thus consider limiting the scope of this question.

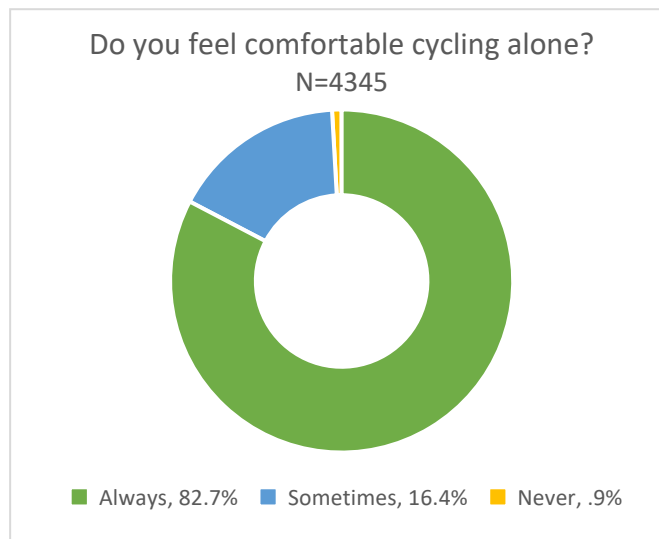
Figure 56. Comparison of Year 3 and Year 4 Responses



## 6.2 Question about Cycling Alone

The question about cycling alone offered three options: *Yes (always)*, *Sometimes (depends)*, and *Never*. The response rate for *Yes (always)* was 82.7%, with fewer than 1% of those responding *Never* (see Figure 57). Differences by age group and gender shown in Figure 58, indicate an overall decline in comfort with solo cycling as people age, a slight increase in those choosing the *Sometimes (depends)* answer, and no change in those who never cycle alone.

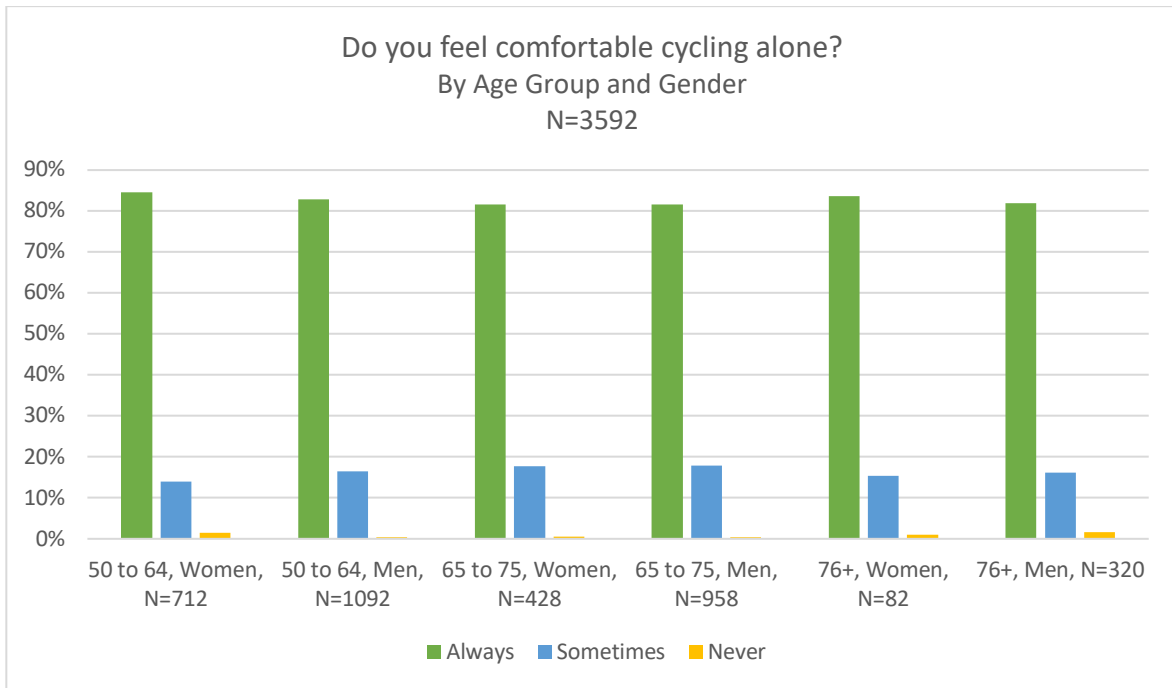
Figure 57. Responses about Cycling Alone



Those opting for *Sometimes (depends)* were asked about potential circumstances. Time of day and familiarity with the route are the most common factors, as shown in Figure 59. But, based on write-in answers, responses of significance were reasons *to cycle with someone else*, related to safety needs and unrelated to social companionship benefits:

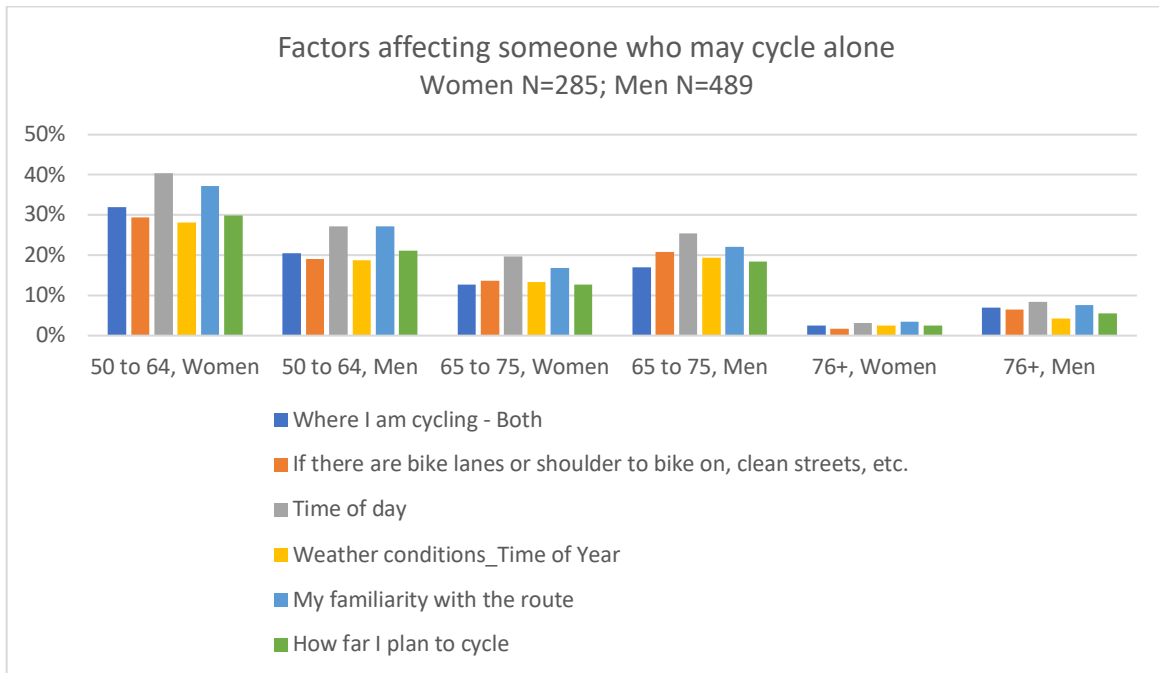
- Cycling with someone in case of emergencies (health, mechanical, safety-related)
- Cycling with someone else to avoid homeless people and encampments
- Cycling with someone else to avoid gender- or race-based harassment

Figure 58. Cycling Alone Responses by Age Group and Gender



Cycling with others on roads with higher motor vehicle volumes to be more visible

Figure 59. Factors Affecting Those Who May Cycle Alone by Age Group and Gender



### 6.2.1 Comparison with the Year 3 Survey

This question was not analyzed for the Year 3 Databook.

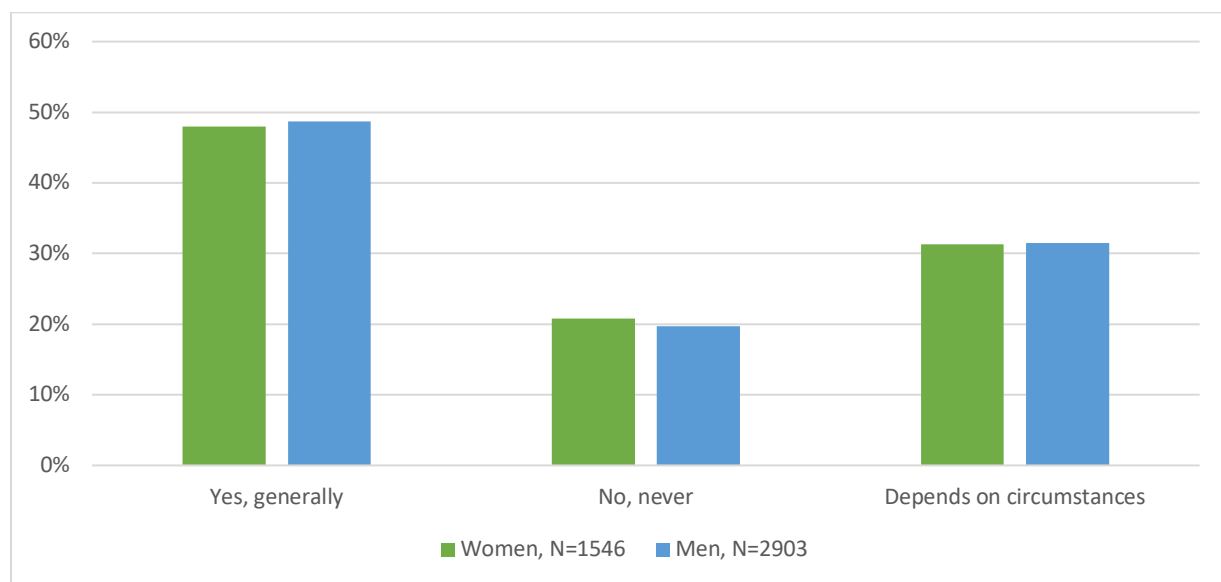
### 6.2.2 Considerations for Year 5 Survey

We plan to continue asking this question, with perhaps better clarity on the *Sometimes* answer options.

## 6.3 Cycling at Night

Cycling in times of low light or at night requires a cyclist's confidence that they can do so safely. Based on responses to this question, cycling at night includes early morning (dawn), late evening (dusk), and when the moon is out. Factors such as lighting, the presence of high-quality cycling infrastructure, and safe conditions determine if someone will cycle at night. For some, cycling in non-daylight hours is a non-starter. For many others, cycling at night is the result of the need to get someplace, the sheer pleasure of cycling during low light or night conditions, and simply a fact of life. In answer to the question, *Do you feel comfortable biking at night, assuming you have a front and back light*, only 20% said *No, never*. The remaining were split 48% to 32% between *Yes, generally* and *Depends on circumstances*. Figure 60 shows a small difference between women and men.

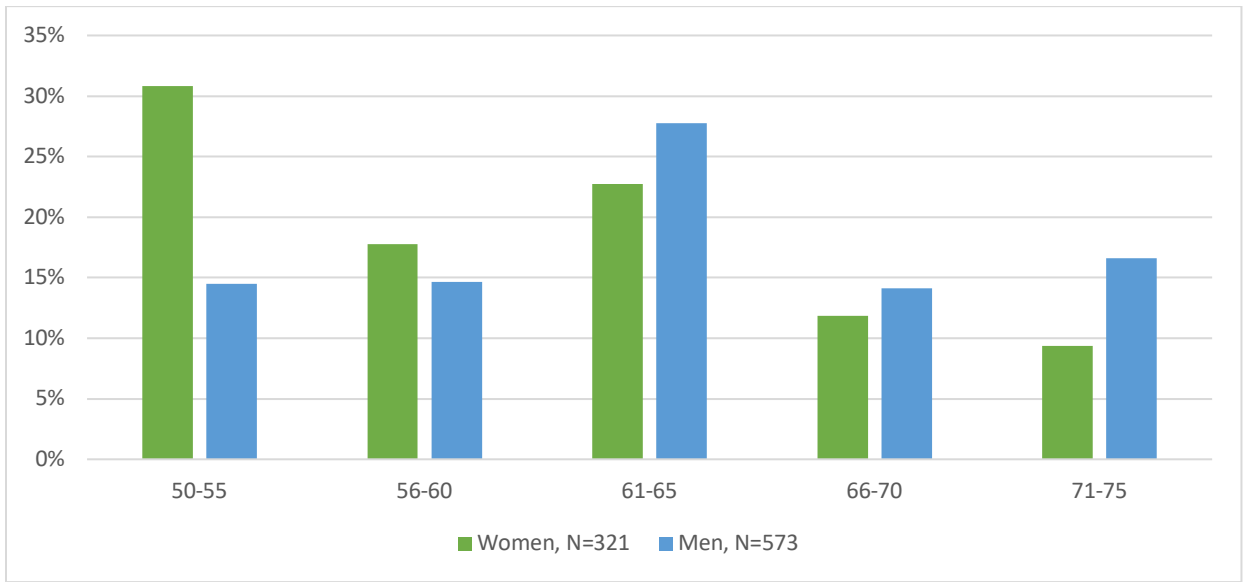
Figure 60. Responses About Cycling at Night by Gender



The peaks and valleys by gender are more apparent when looking at answers by age group. For example, about twice as many women than men aged 50 to 55 do not cycle at night. More men than women aged 61 and older do not cycle at night (see Figure 61).



Figure 61. No Cycling at Night by Gender and Age



Cyclists aged 66 to 70 seem to be the cross-over point between the response rate for women and men for the *Depends on circumstances* and *Yes, generally* answers. Women have a higher response rate for these answer options through age 66, with a higher response rate for men aged 71 and older (see Figures 62 and 63).

Figure 62. Depends on Circumstances Cycling Rate at Night by Gender and Age Group

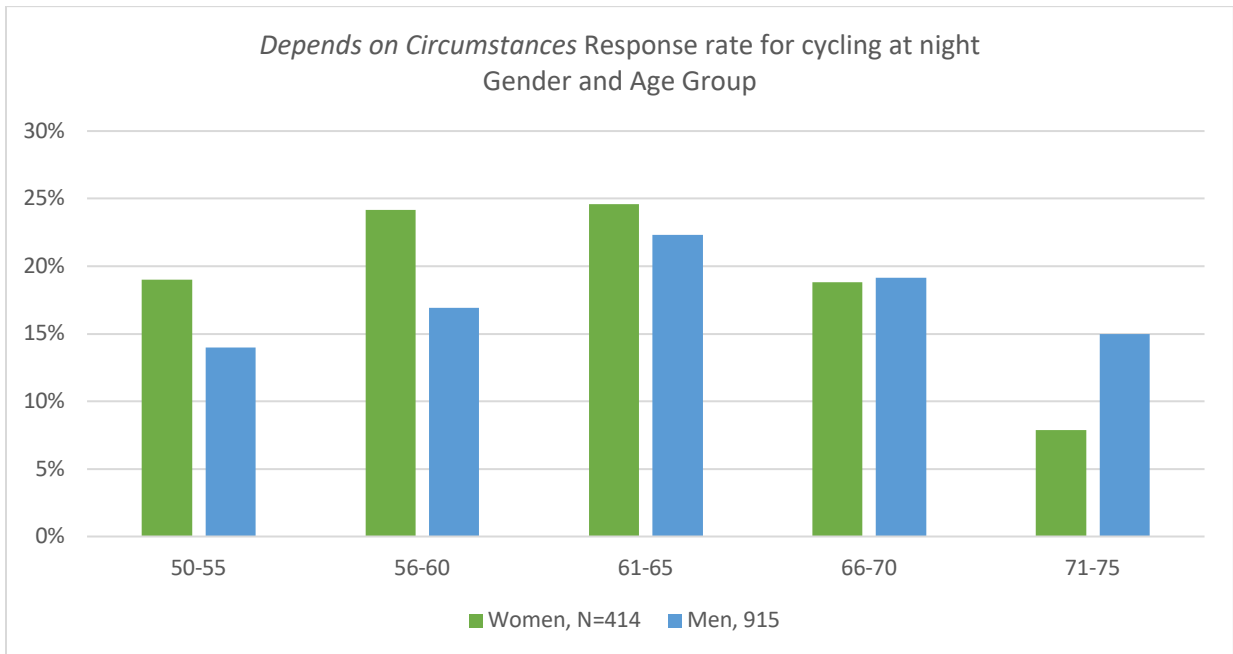
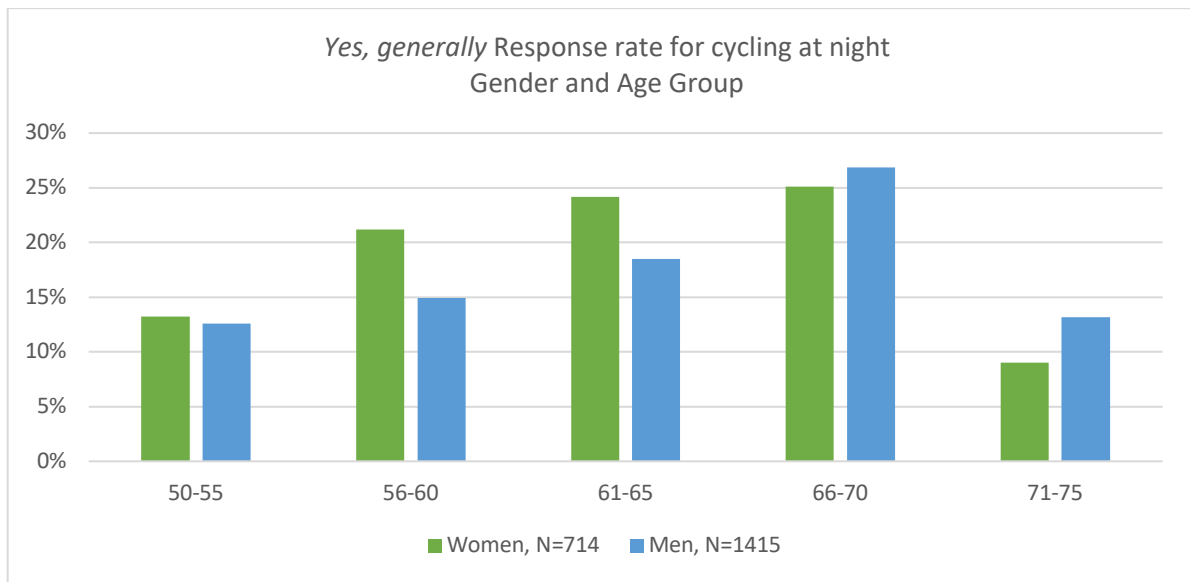


Figure 63. Yes, generally Responses for Cycling at Night by Gender and Age Group



Those who cycle at night, i.e., answered as either *Yes, Generally* or *Depends on Circumstances*, were asked to indicate the conditions that favor nighttime cycling. Six answer options were offered, along with write-in answers, providing useful insights into the nighttime cycling decision-making process. Overall, respondents say they cycle at night for reasons related to their comfort level and being prepared for low or no light.

Some noted the mental health benefits they received from cycling at night, similar to responses in other questions, such as during COVID-19 restrictions (see Section 8, *The Ebbs and Flows of Cycling Over the Lifecycle*). This response from a man aged 60 years old sums it up: “I cycle at night four or five times a week. I have good lights and use streets where there is not much traffic. Riding at night helps me clear my head from the day.” Interestingly, a 78-year-old man who indicated his nighttime cycling depends on the circumstances, notes: “Try not to drive much at night either.”<sup>2</sup> A response from a *Depends on Circumstances* nighttime cyclist summed it up by saying, “In general, I would not normally do it on purpose” (74-year-old man).

Responses from answer options and the write-in responses for the *Depends on Circumstances* answer option were grouped into the four categories shown in Table 9, including details and average response rate for each category. The table includes a speculative summary of why these factors affect whether someone decides to cycle at night.

<sup>2</sup> See the Section 8, *The Ebbs and Flows of Cycling Over the Lifecycle*, for more information on cycling cessation. A short article, *Ageing and mobility: a look at how ageing impacts driving and cycling* is on the [dbTilde CORE, Inc.](#) website at [this link](#).

Figure 64, which shows each category by gender, shows little difference between women and men. Note that all responses for the low rate for “Time of Day Choice” category were from write-in responses.

Table 9. Nighttime cycling Depends on Circumstances factors by category

Place & Distance Average 40.2%	Conditions Average 35.1%	My input Average 23.2%	Time of Day Choice Average 1.4%
<ul style="list-style-type: none"> <li>▪ Where I am cycling</li> <li>▪ How well I know the route</li> <li>▪ Distance I plan to ride</li> <li>▪ Safety of surrounding areas</li> </ul>	<ul style="list-style-type: none"> <li>▪ Street or trail lighting is present</li> <li>▪ Separated (protected) bike lanes or trails are present</li> <li>▪ Low motor vehicle traffic volumes</li> <li>▪ On neighborhood streets</li> <li>▪ Cycling surface is in good conditions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Who I cycle with</li> <li>▪ What I wear to be visible</li> <li>▪ Weather I will cycle in (temperature, precipitation, wind)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ride lasts longer</li> <li>▪ Meetings last longer</li> <li>▪ Choice to cycle at night to events</li> <li>▪ Participate in nighttime events</li> <li>▪ Fun of cycling at night</li> </ul>

Speculative summary for each category

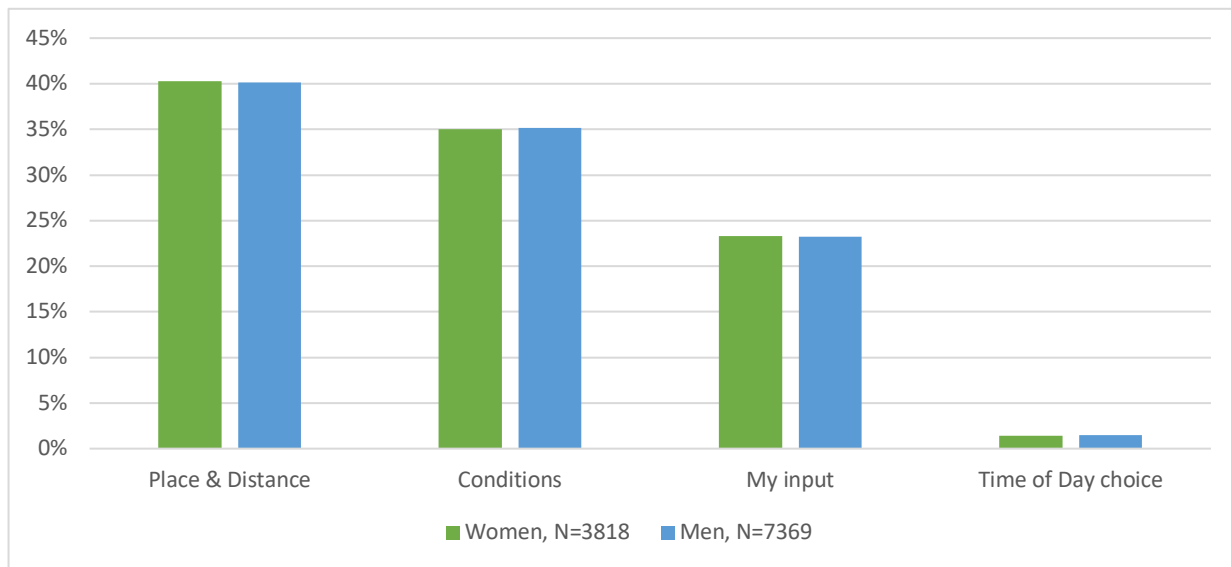
Most prefer separated cycling infrastructure, some only cycle at night on trails. While the practice of not lighting trails at night is slowly shifting towards lighting trails, one respondent praised her local trail for supporting its use at night: “The Indianapolis Cultural Trail is well-lighted at night” (66-year-old woman). At the other end of the spectrum, a 73-year-old man “Prefer[s] full moon on traffic free trails, no electric lights.”

Older adults recognize the risks of cycling with motorists who can be impatient, not see people cycling, or be under the influence. Nighttime cycling on roadways means fewer motor vehicles and can also reduce potential conflicts due to fewer people out walking and cycling.

The nighttime and early morning bring cooler temperatures when days are hot, making the ride more enjoyable. Some write-in responses detailed the type of lights and clothing cyclists use to remain visible. One 64-year-old man noted, “I prefer not to ride at night and especially at the end of long rides when I am tired and make poor decisions. Also, everything looks different at night.”

The nighttime cycling experience can be peaceful and fun. Those who tour or cycle for daily transportation expect to cycle at night when the day’s touring ride or a meeting runs long.

Figure 64. Nighttime Cycling by Category and Gender for *Yes, generally* Responses



### 6.3.1 Comparison with the Year 3 Survey

This question was included in the Year 3 survey, but not analyzed.

### 6.3.2 Considerations for Year 5 Survey

We will determine the value of keeping this question based on responses in the Year 4 survey.

## 7. Visual Preference Survey

The Year 4 Visual Preference Survey was restructured, asking respondents to provide more information about each cycling context shown in the photographs. We made this change to reduce the amount of speculation used in interpreting the Visual Preference portion of the Year 3 Survey Databook. The Year 3 survey used photos only, asking respondents to click on places they would bicycle. The Visual Preference portion of the Year 4 survey changed in several ways, including:

- Fewer photos that are not grouped by “along the roadway” and “across the roadway”
- A caption for each photo that includes the type of cycling facility and context
- A multiple-choice question asking respondents to say how and if they would use the facility shown
- A sliding Likert scale from 1 to 5 for respondents to indicate their level of safety and comfort with the cycling context shown in the photo

Given the number of variable and possible analyses that can be completed on the visual preference survey data, we are limiting the analysis included in the Databook. The following summary graph and accompanying legend (Table 10 and Figure 65 are organized by lowest safety and comfort scores to highest). It shows three potential thresholds in Safety & Comfort scores for the cycling contexts indicated by the vertical dashed lines and the legend’s three-column organization. Table 11 is a more detailed table showing these cycling contexts from low to high safety and comfort scores and includes the photo of each context as well as choices for its use by respondents who agreed to complete this portion of the survey.

Table 10. Summary Safety & Comfort scores for cycling conditions photos, low to high

Cycling Condition Caption, colors indicate safety & comfort score from low to high					
1	Major urban collector with no designated bike facility	7	Suburban collector road with center median, a bike lane without buffer, and a sidewalk	13	Shared pathway in the road of a collector road in a low-density neighborhood
2	Diagonal crossing between a buffered bicycle lane to a multi-use trail with a bicycle signal	8	Cycling pathway along a two-lane state route with wide shoulder and edge and center-line rumble strips	14	Neighborhood street with sidewalks on both sides and parking on one side
3	Single-lane roundabout with crosswalks and sidewalks for cyclists and pedestrians.	9	One-way buffered bicycle lane on an urban collector road with a center left turn lane	15	Two-way multiuse trail along a major arterial with a narrow grassy buffer
4	Shared road where people walking, cycling, scootering, driving, etc., can travel freely without designated pathways	10	Residential neighborhood street with parking and shared lane marking for bicyclists	16	Separated two-way bicycling facility along a one-way neighborhood collector street in an urban mixed used area
5	Intersection with bike through lane between right turn lane and through lane	11	Rural road with no shoulder, low traffic volumes, and widely spaced out housing and other development	17	Two-way multi-use trail in parkland and a forested area
6	Two-lane neighborhood commercial street with shared lane marking	12	Edge-lane road with bicycle priority		

Figure 65. Safety & Comfort Scores for Cycling Conditions Photos

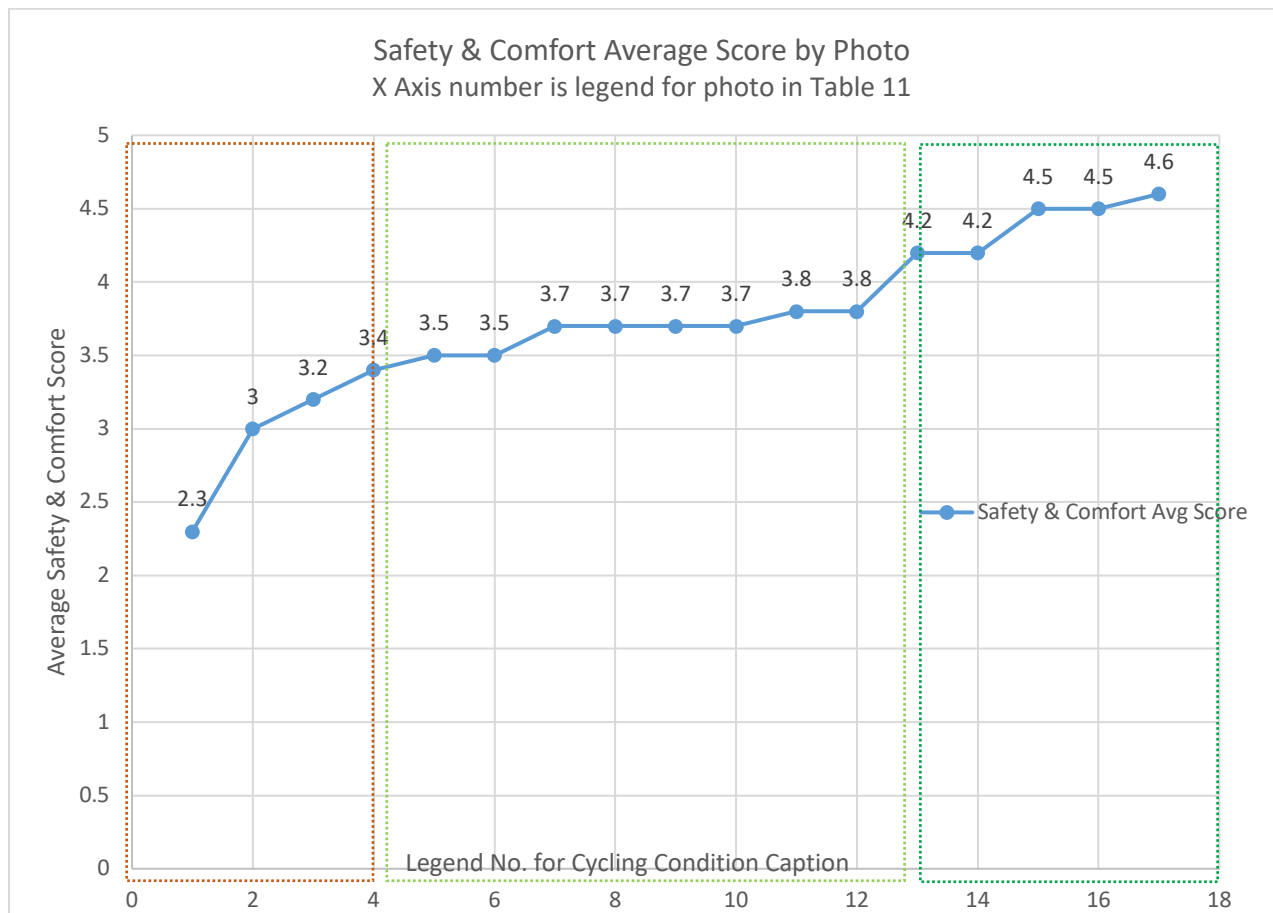


Table 11. Choices for travel through cycling context, low to high for safety & comfort score.


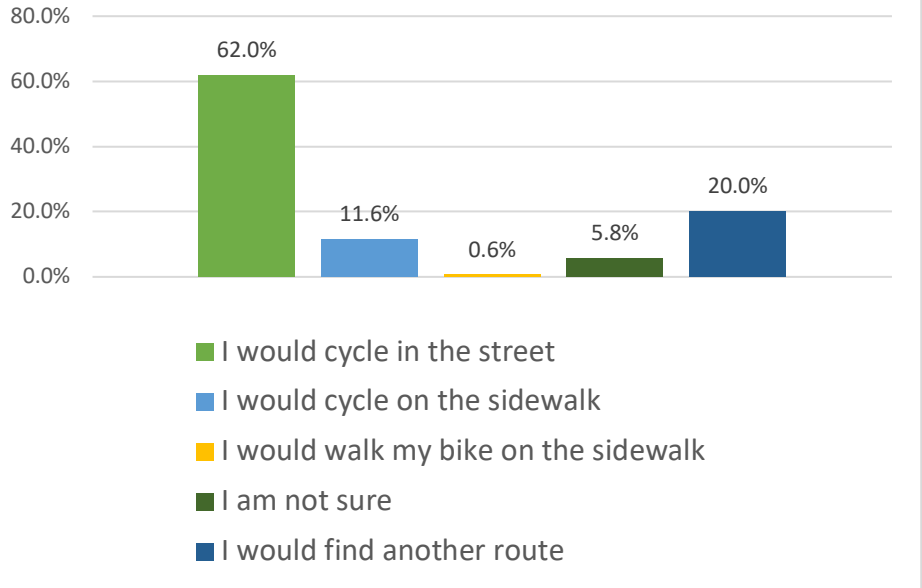
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 919 716 987">Major urban collector with no designated bike facility.</p>	 <table border="1" data-bbox="1024 732 1541 964"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would cycle in the street</td> <td>62.0%</td> </tr> <tr> <td>I would cycle on the sidewalk</td> <td>11.6%</td> </tr> <tr> <td>I would walk my bike on the sidewalk</td> <td>0.6%</td> </tr> <tr> <td>I am not sure</td> <td>5.8%</td> </tr> <tr> <td>I would find another route</td> <td>20.0%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would cycle in the street	62.0%	I would cycle on the sidewalk	11.6%	I would walk my bike on the sidewalk	0.6%	I am not sure	5.8%	I would find another route	20.0%	<p data-bbox="1808 402 1885 451">2.3</p>
Answer Option	Percentage													
I would cycle in the street	62.0%													
I would cycle on the sidewalk	11.6%													
I would walk my bike on the sidewalk	0.6%													
I am not sure	5.8%													
I would find another route	20.0%													


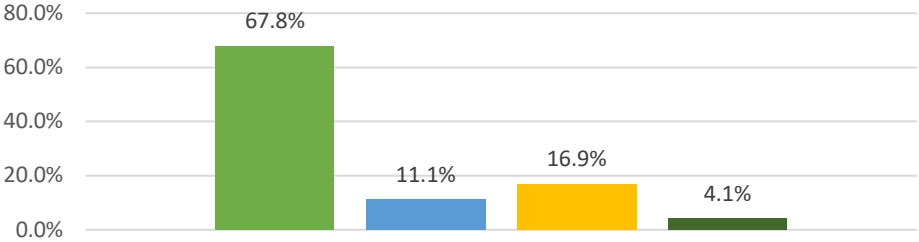
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 708 793 781">Diagonal crossing between a buffered bicycle lane to a multi-use trail with a bicycle signal.</p>	 <table border="1" data-bbox="842 326 1755 565"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the green dashed bicycle lane</td> <td>67.8%</td> </tr> <tr> <td>I would use crosswalks to travel through the intersection, even though it means crossing twice</td> <td>11.1%</td> </tr> <tr> <td>I am not sure</td> <td>16.9%</td> </tr> <tr> <td>I would find another route to use</td> <td>4.1%</td> </tr> </tbody> </table> <ul data-bbox="921 586 1730 824" style="list-style-type: none"> <li>■ I would use the green dashed bicycle lane</li> <li>■ I would use crosswalks to travel through the intersection, even though it means crossing twice</li> <li>■ I am not sure</li> <li>■ I would find another route to use</li> </ul>	Answer Option	Percentage	I would use the green dashed bicycle lane	67.8%	I would use crosswalks to travel through the intersection, even though it means crossing twice	11.1%	I am not sure	16.9%	I would find another route to use	4.1%	<p data-bbox="1808 321 1892 375">3.0</p>
Answer Option	Percentage											
I would use the green dashed bicycle lane	67.8%											
I would use crosswalks to travel through the intersection, even though it means crossing twice	11.1%											
I am not sure	16.9%											
I would find another route to use	4.1%											




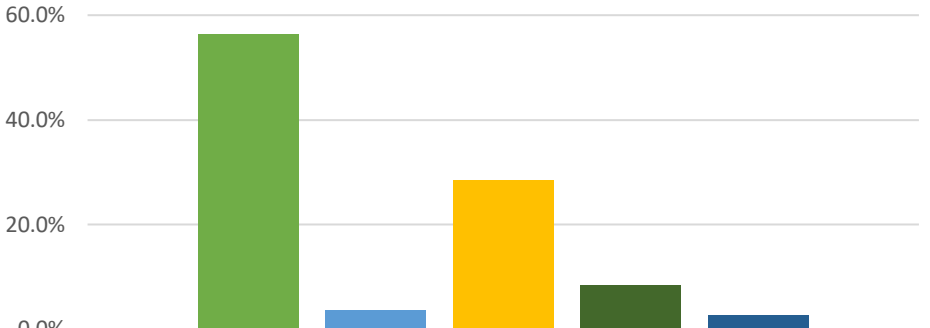
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 805 688 878">Single-lane roundabout with crosswalks and sidewalks for cyclists and pedestrians.</p>	 <table border="1" data-bbox="840 324 1764 649"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the vehicle travel lane to travel through the intersection, whether I'm cycling solo or with others</td> <td>58.0%</td> </tr> <tr> <td>I would use the vehicle travel lane to travel through the intersection, only when cycling with others</td> <td>4.0%</td> </tr> <tr> <td>I would use the crosswalks and sidewalks to travel through the intersection</td> <td>28.0%</td> </tr> <tr> <td>I am not sure</td> <td>8.0%</td> </tr> <tr> <td>I would find another route to use</td> <td>3.0%</td> </tr> </tbody> </table> <ul data-bbox="877 690 1696 917" style="list-style-type: none"> <li><span style="color: green;">■</span> I would use the vehicle travel lane to travel through the intersection, whether I'm cycling solo or with others</li> <li><span style="color: blue;">■</span> I would use the vehicle travel lane to travel through the intersection, only when cycling with others</li> <li><span style="color: yellow;">■</span> I would use the crosswalks and sidewalks to travel through the intersection</li> <li><span style="color: darkgreen;">■</span> I am not sure</li> <li><span style="color: blue;">■</span> I would find another route to use</li> </ul>	Answer Option	Percentage	I would use the vehicle travel lane to travel through the intersection, whether I'm cycling solo or with others	58.0%	I would use the vehicle travel lane to travel through the intersection, only when cycling with others	4.0%	I would use the crosswalks and sidewalks to travel through the intersection	28.0%	I am not sure	8.0%	I would find another route to use	3.0%	<p data-bbox="1808 321 1892 375">3.2</p>
Answer Option	Percentage													
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I would find another route to use	3.0%													


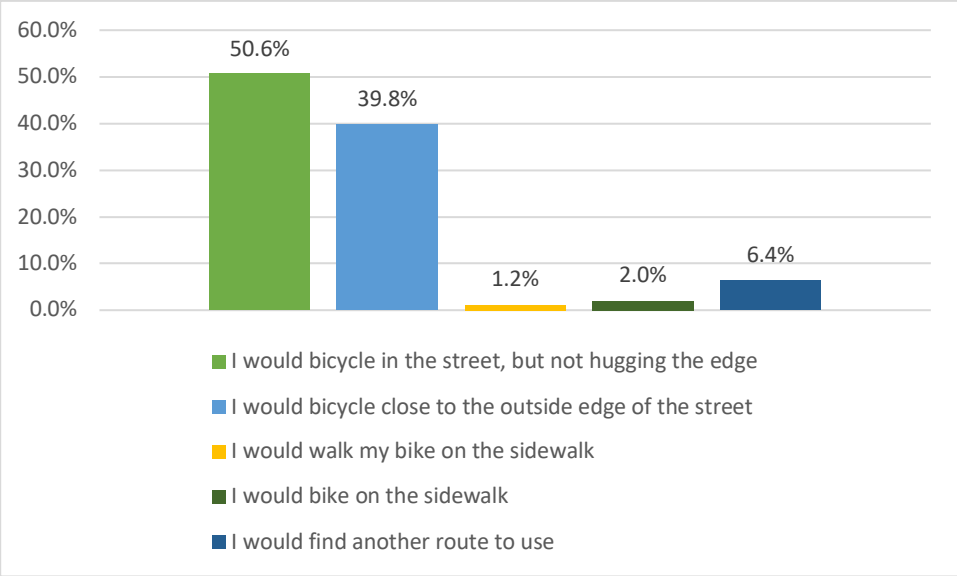
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 735 751 849">Shared road where people walking, cycling, scootering, driving, etc., can travel freely without designated pathways.</p>	 <table border="1" data-bbox="829 339 1780 911"> <thead> <tr> <th>Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would bicycle in the street, but not hugging the edge</td> <td>50.6%</td> </tr> <tr> <td>I would bicycle close to the outside edge of the street</td> <td>39.8%</td> </tr> <tr> <td>I would walk my bike on the sidewalk</td> <td>1.2%</td> </tr> <tr> <td>I would bike on the sidewalk</td> <td>2.0%</td> </tr> <tr> <td>I would find another route to use</td> <td>6.4%</td> </tr> </tbody> </table>	Option	Percentage	I would bicycle in the street, but not hugging the edge	50.6%	I would bicycle close to the outside edge of the street	39.8%	I would walk my bike on the sidewalk	1.2%	I would bike on the sidewalk	2.0%	I would find another route to use	6.4%	<p data-bbox="1808 321 1892 375">3.4</p>
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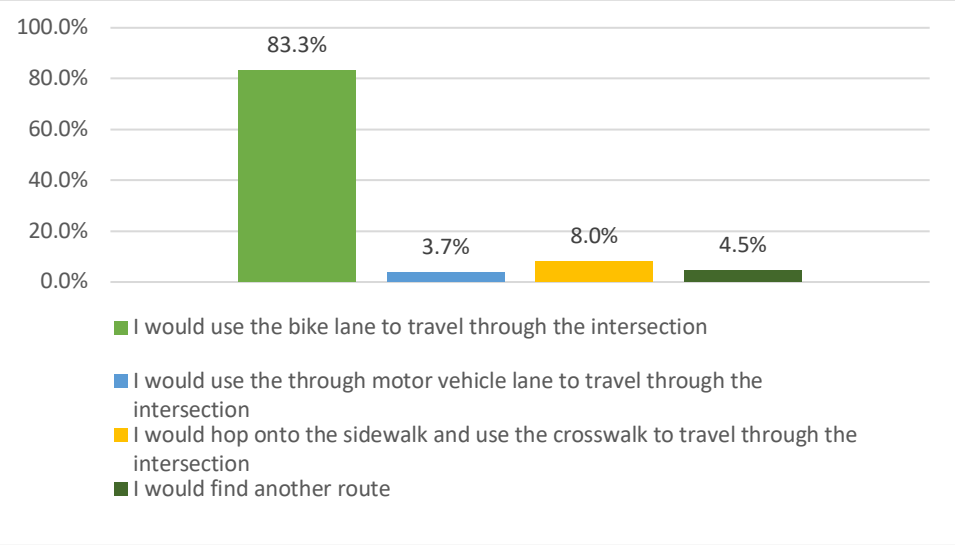
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 756 762 829">Intersection with bike through lane between right turn lane and through lane.</p>	 <table border="1" data-bbox="831 337 1780 878"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the bike lane to travel through the intersection</td> <td>83.3%</td> </tr> <tr> <td>I would use the through motor vehicle lane to travel through the intersection</td> <td>3.7%</td> </tr> <tr> <td>I would hop onto the sidewalk and use the crosswalk to travel through the intersection</td> <td>8.0%</td> </tr> <tr> <td>I would find another route</td> <td>4.5%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the bike lane to travel through the intersection	83.3%	I would use the through motor vehicle lane to travel through the intersection	3.7%	I would hop onto the sidewalk and use the crosswalk to travel through the intersection	8.0%	I would find another route	4.5%	<p data-bbox="1808 321 1892 375">3.5</p>
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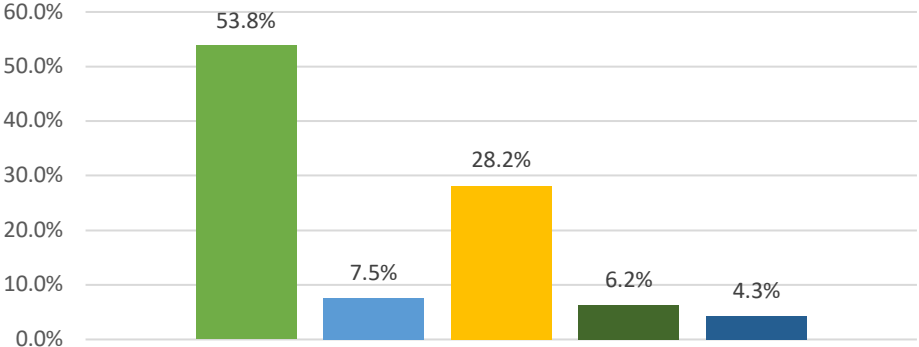
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 850 737 922">Two-lane neighborhood commercial street with shared lane marking.</p>	 <table border="1" data-bbox="842 334 1755 678"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would cycle along the shared lane markings</td> <td>53.8%</td> </tr> <tr> <td>I would cycle in the roadway, not paying close attention to the shared lane markings</td> <td>7.5%</td> </tr> <tr> <td>I would cycle between the outside white line and the curb</td> <td>28.2%</td> </tr> <tr> <td>I would hop onto the sidewalk and walk or cycle, especially if there is a lot of motor vehicle traffic</td> <td>6.2%</td> </tr> <tr> <td>I would find another route to use</td> <td>4.3%</td> </tr> </tbody> </table> <ul data-bbox="894 727 1724 964" style="list-style-type: none"> <li><span style="color: green;">■</span> I would cycle along the shared lane markings</li> <li><span style="color: blue;">■</span> I would cycle in the roadway, not paying close attention to the shared lane markings</li> <li><span style="color: yellow;">■</span> I would cycle between the outside white line and the curb</li> <li><span style="color: darkgreen;">■</span> I would hop onto the sidewalk and walk or cycle, especially if there is a lot of motor vehicle traffic</li> <li><span style="color: darkblue;">■</span> I would find another route to use</li> </ul>	Answer Option	Percentage	I would cycle along the shared lane markings	53.8%	I would cycle in the roadway, not paying close attention to the shared lane markings	7.5%	I would cycle between the outside white line and the curb	28.2%	I would hop onto the sidewalk and walk or cycle, especially if there is a lot of motor vehicle traffic	6.2%	I would find another route to use	4.3%	<p data-bbox="1808 321 1885 370">3.5</p>
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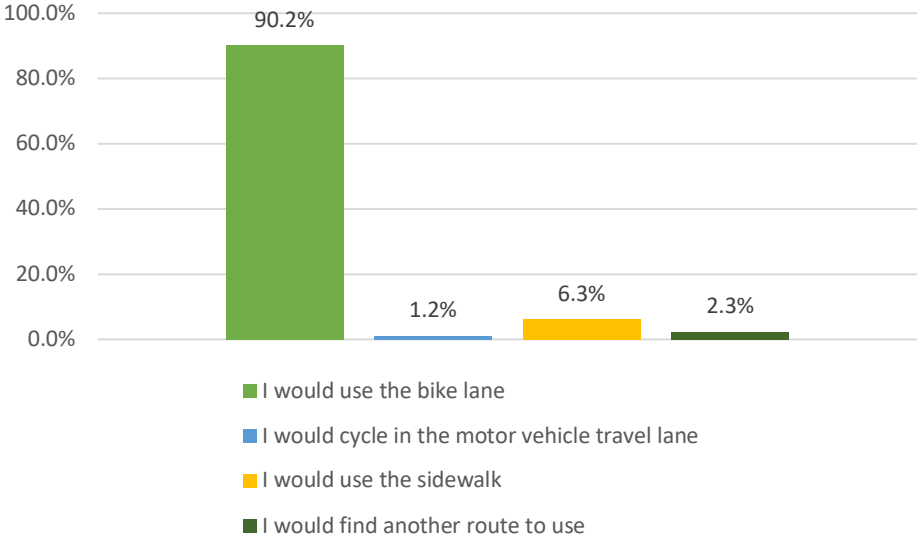
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 738 779 812">Suburban collector road with center median, a bike lane without buffer, and a sidewalk.</p>	 <table border="1" data-bbox="842 326 1759 862"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the bike lane</td> <td>90.2%</td> </tr> <tr> <td>I would cycle in the motor vehicle travel lane</td> <td>1.2%</td> </tr> <tr> <td>I would use the sidewalk</td> <td>6.3%</td> </tr> <tr> <td>I would find another route to use</td> <td>2.3%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the bike lane	90.2%	I would cycle in the motor vehicle travel lane	1.2%	I would use the sidewalk	6.3%	I would find another route to use	2.3%	<p data-bbox="1808 321 1892 370">3.7</p>
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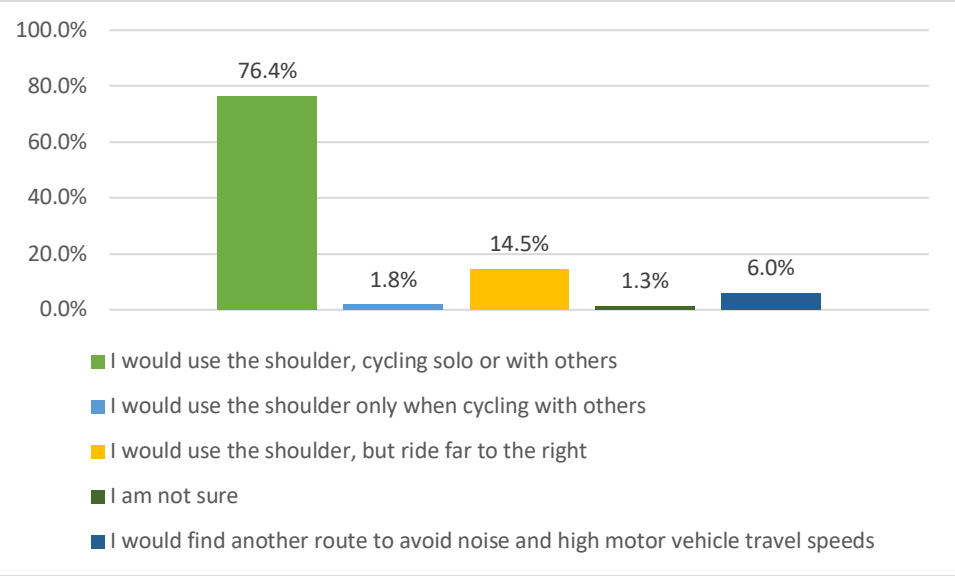
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 862 768 976">Cycling pathway along a two-lane state route with wide shoulder and edge- and center-line rumble strips.</p>	 <table border="1" data-bbox="831 358 1780 930"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the shoulder, cycling solo or with others</td> <td>76.4%</td> </tr> <tr> <td>I would use the shoulder only when cycling with others</td> <td>1.8%</td> </tr> <tr> <td>I would use the shoulder, but ride far to the right</td> <td>14.5%</td> </tr> <tr> <td>I am not sure</td> <td>1.3%</td> </tr> <tr> <td>I would find another route to avoid noise and high motor vehicle travel speeds</td> <td>6.0%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the shoulder, cycling solo or with others	76.4%	I would use the shoulder only when cycling with others	1.8%	I would use the shoulder, but ride far to the right	14.5%	I am not sure	1.3%	I would find another route to avoid noise and high motor vehicle travel speeds	6.0%	<p data-bbox="1808 321 1892 370">3.7</p>
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I would find another route to avoid noise and high motor vehicle travel speeds	6.0%													

Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 857 793 927">One-way buffered bicycle lane on an urban collector road with a center left turn lane.</p>	 <table border="1" data-bbox="842 354 1755 1117"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the bicycle lane</td> <td>96.0%</td> </tr> <tr> <td>I would cycle in the motor vehicle travel lane</td> <td>1.5%</td> </tr> <tr> <td>I would use the sidewalk either riding or walking my bicycle</td> <td>0.4%</td> </tr> <tr> <td>I am not sure</td> <td>1.3%</td> </tr> <tr> <td>I would find another route</td> <td>0.8%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the bicycle lane	96.0%	I would cycle in the motor vehicle travel lane	1.5%	I would use the sidewalk either riding or walking my bicycle	0.4%	I am not sure	1.3%	I would find another route	0.8%	<p data-bbox="1808 321 1892 370">3.7</p>
Answer Option	Percentage													
I would use the bicycle lane	96.0%													
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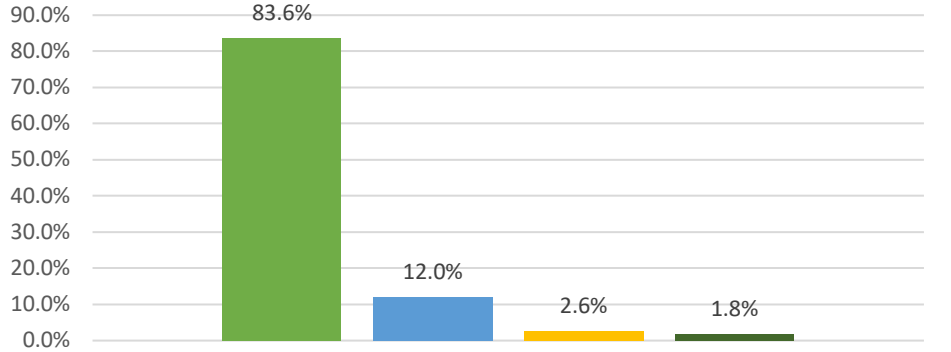
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 824 760 899">Residential neighborhood street with parking and shared lane marking for bicyclists.</p>	 <table border="1" data-bbox="835 324 1780 673"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would cycle in the street, following the shared lane marking</td> <td>83.6%</td> </tr> <tr> <td>I would cycle in the street, not paying close attention to the shared lane marking</td> <td>12.0%</td> </tr> <tr> <td>I would use the sidewalk</td> <td>2.6%</td> </tr> <tr> <td>I would find another route to use</td> <td>1.8%</td> </tr> </tbody> </table> <ul data-bbox="905 699 1709 862" style="list-style-type: none"> <li><span style="color: green;">■</span> I would cycle in the street, following the shared lane marking</li> <li><span style="color: blue;">■</span> I would cycle in the street, not paying close attention to the shared lane marking</li> <li><span style="color: yellow;">■</span> I would use the sidewalk</li> <li><span style="color: darkgreen;">■</span> I would find another route to use</li> </ul>	Answer Option	Percentage	I would cycle in the street, following the shared lane marking	83.6%	I would cycle in the street, not paying close attention to the shared lane marking	12.0%	I would use the sidewalk	2.6%	I would find another route to use	1.8%	<p data-bbox="1808 321 1892 370">3.7</p>
Answer Option	Percentage											
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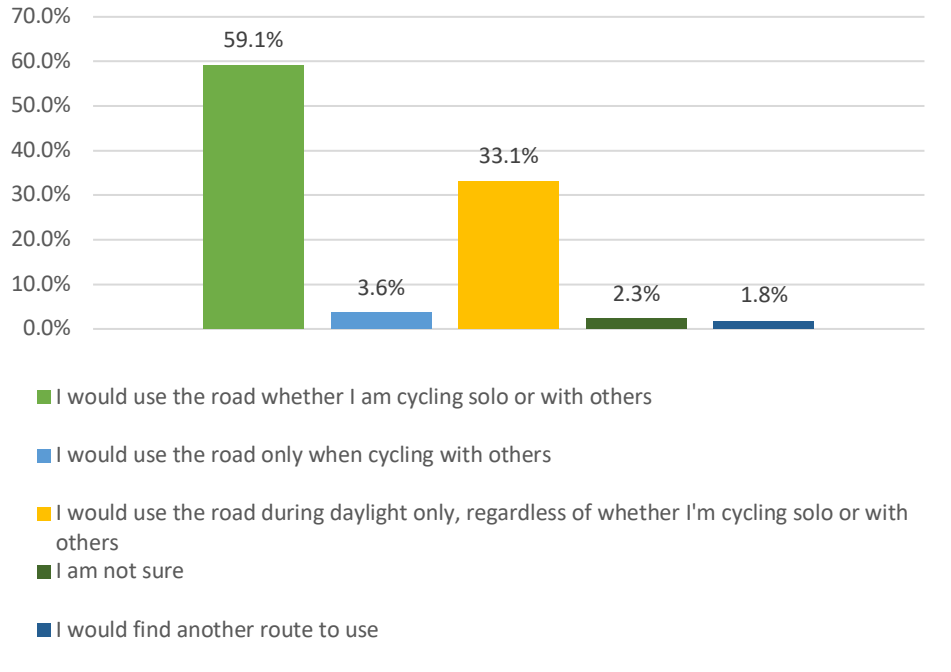
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 824 751 938">Rural road with no shoulder, low traffic volumes, and widely spaced out housing and other development.</p>	 <table border="1" data-bbox="835 326 1780 993"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the road whether I am cycling solo or with others</td> <td>59.1%</td> </tr> <tr> <td>I would use the road only when cycling with others</td> <td>3.6%</td> </tr> <tr> <td>I would use the road during daylight only, regardless of whether I'm cycling solo or with others</td> <td>33.1%</td> </tr> <tr> <td>I am not sure</td> <td>2.3%</td> </tr> <tr> <td>I would find another route to use</td> <td>1.8%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the road whether I am cycling solo or with others	59.1%	I would use the road only when cycling with others	3.6%	I would use the road during daylight only, regardless of whether I'm cycling solo or with others	33.1%	I am not sure	2.3%	I would find another route to use	1.8%	<p data-bbox="1808 321 1892 370">3.8</p>
Answer Option	Percentage													
I would use the road whether I am cycling solo or with others	59.1%													
I would use the road only when cycling with others	3.6%													
I would use the road during daylight only, regardless of whether I'm cycling solo or with others	33.1%													
I am not sure	2.3%													
I would find another route to use	1.8%													


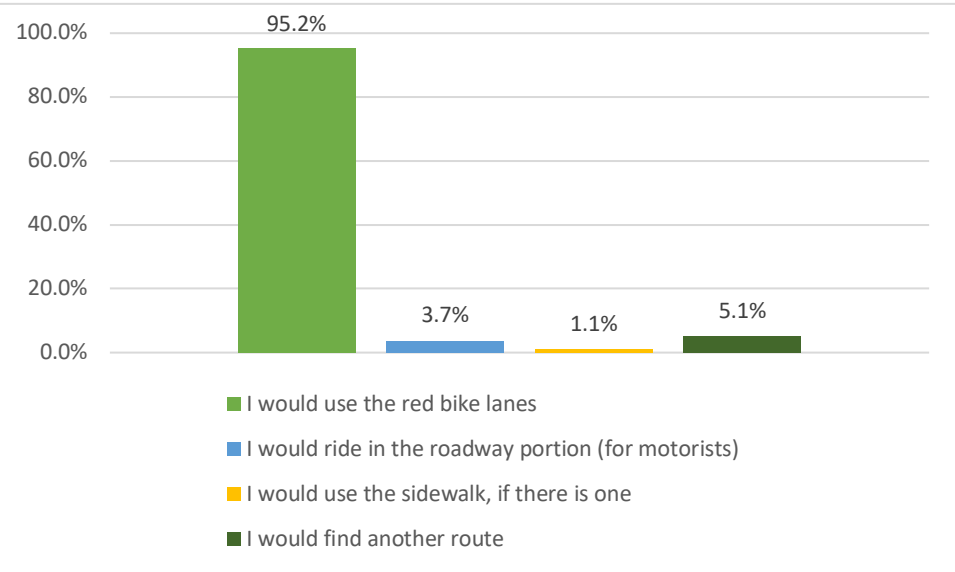
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 846 590 878">Edge lane road with bicycle priority.</p>	 <table border="1" data-bbox="831 326 1780 894"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the red bike lanes</td> <td>95.2%</td> </tr> <tr> <td>I would ride in the roadway portion (for motorists)</td> <td>3.7%</td> </tr> <tr> <td>I would use the sidewalk, if there is one</td> <td>1.1%</td> </tr> <tr> <td>I would find another route</td> <td>5.1%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the red bike lanes	95.2%	I would ride in the roadway portion (for motorists)	3.7%	I would use the sidewalk, if there is one	1.1%	I would find another route	5.1%	<p data-bbox="1808 321 1885 370">3.8</p>
Answer Option	Percentage											
I would use the red bike lanes	95.2%											
I would ride in the roadway portion (for motorists)	3.7%											
I would use the sidewalk, if there is one	1.1%											
I would find another route	5.1%											


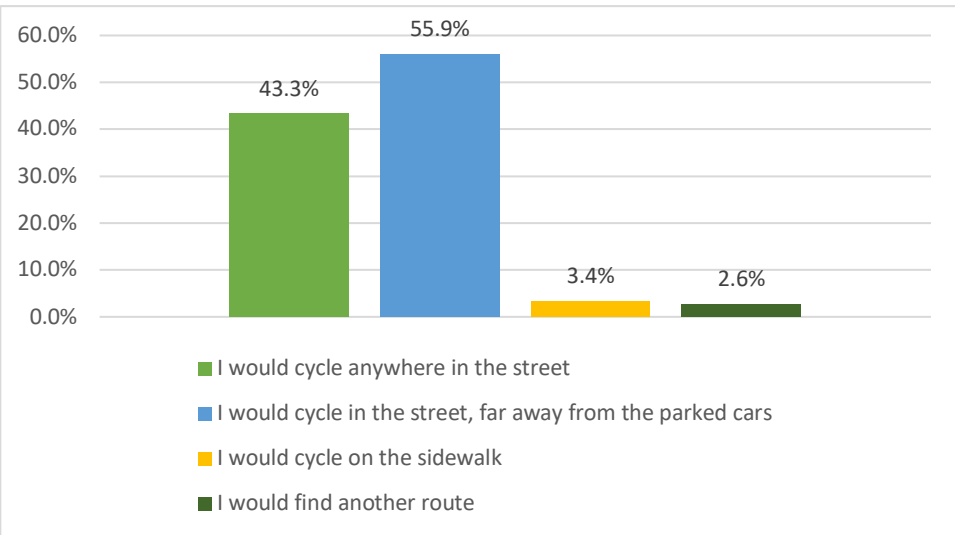
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 760 764 834">Neighborhood street with sidewalks on both sides and parking on one side.</p>	 <table border="1" data-bbox="827 326 1776 857"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would cycle anywhere in the street</td> <td>43.3%</td> </tr> <tr> <td>I would cycle in the street, far away from the parked cars</td> <td>55.9%</td> </tr> <tr> <td>I would cycle on the sidewalk</td> <td>3.4%</td> </tr> <tr> <td>I would find another route</td> <td>2.6%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would cycle anywhere in the street	43.3%	I would cycle in the street, far away from the parked cars	55.9%	I would cycle on the sidewalk	3.4%	I would find another route	2.6%	<p data-bbox="1808 321 1885 370">4.2</p>
Answer Option	Percentage											
I would cycle anywhere in the street	43.3%											
I would cycle in the street, far away from the parked cars	55.9%											
I would cycle on the sidewalk	3.4%											
I would find another route	2.6%											


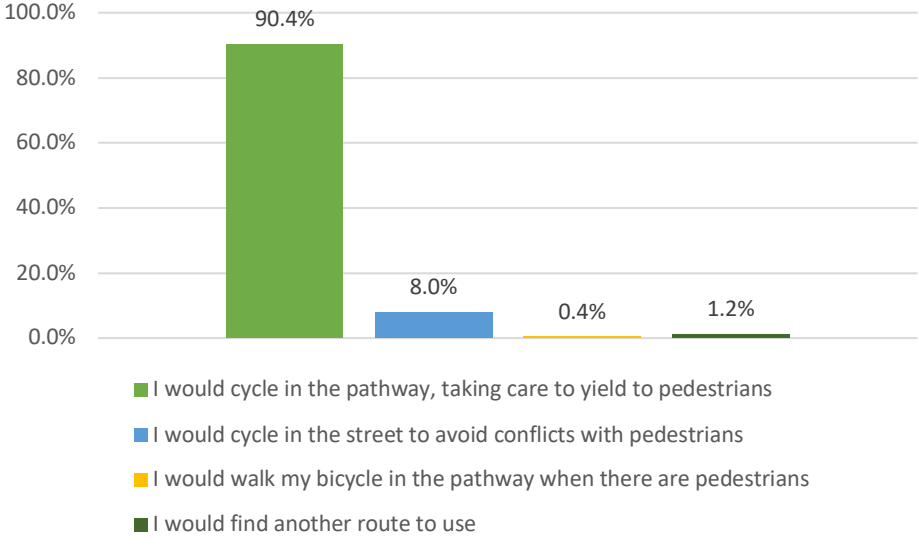
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 841 768 915">Shared pathway in the road of a collector road in a low-density neighborhood.</p>	 <table border="1" data-bbox="842 326 1755 878"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would cycle in the pathway, taking care to yield to pedestrians</td> <td>90.4%</td> </tr> <tr> <td>I would cycle in the street to avoid conflicts with pedestrians</td> <td>8.0%</td> </tr> <tr> <td>I would walk my bicycle in the pathway when there are pedestrians</td> <td>0.4%</td> </tr> <tr> <td>I would find another route to use</td> <td>1.2%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would cycle in the pathway, taking care to yield to pedestrians	90.4%	I would cycle in the street to avoid conflicts with pedestrians	8.0%	I would walk my bicycle in the pathway when there are pedestrians	0.4%	I would find another route to use	1.2%	<p data-bbox="1808 321 1885 370">4.3</p>
Answer Option	Percentage											
I would cycle in the pathway, taking care to yield to pedestrians	90.4%											
I would cycle in the street to avoid conflicts with pedestrians	8.0%											
I would walk my bicycle in the pathway when there are pedestrians	0.4%											
I would find another route to use	1.2%											


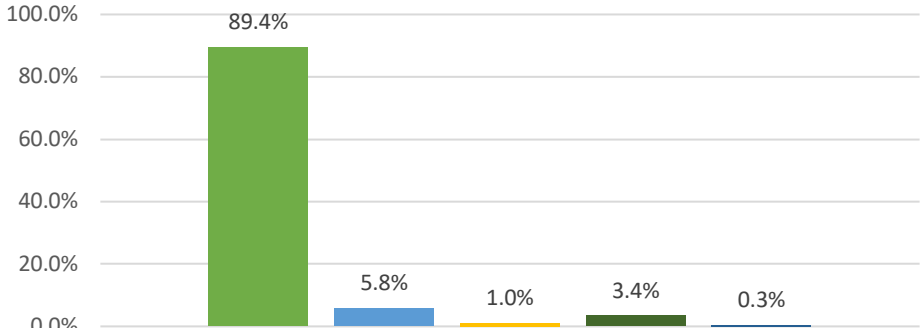
Photo and label	Answer options	Avg Safety Score												
 <p data-bbox="121 727 783 797">Two-way multi-use trail along a major arterial with a narrow grassy buffer.</p>	 <table border="1" data-bbox="842 651 1759 941"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the trail</td> <td>89.4%</td> </tr> <tr> <td>I would only use the bicycle lane farthest from the roadway</td> <td>5.8%</td> </tr> <tr> <td>I am not sure</td> <td>1.0%</td> </tr> <tr> <td>I would find another route to avoid cycling along this noisy road with high motor vehicle speeds</td> <td>3.4%</td> </tr> <tr> <td>I would find another route for other reasons</td> <td>0.3%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the trail	89.4%	I would only use the bicycle lane farthest from the roadway	5.8%	I am not sure	1.0%	I would find another route to avoid cycling along this noisy road with high motor vehicle speeds	3.4%	I would find another route for other reasons	0.3%	<p data-bbox="1808 321 1885 370">4.5</p>
Answer Option	Percentage													
I would use the trail	89.4%													
I would only use the bicycle lane farthest from the roadway	5.8%													
I am not sure	1.0%													
I would find another route to avoid cycling along this noisy road with high motor vehicle speeds	3.4%													
I would find another route for other reasons	0.3%													


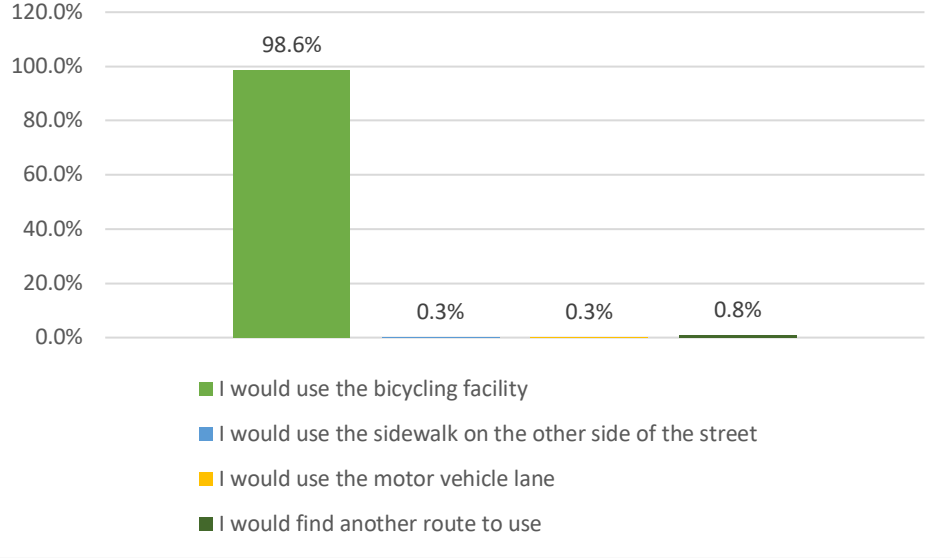

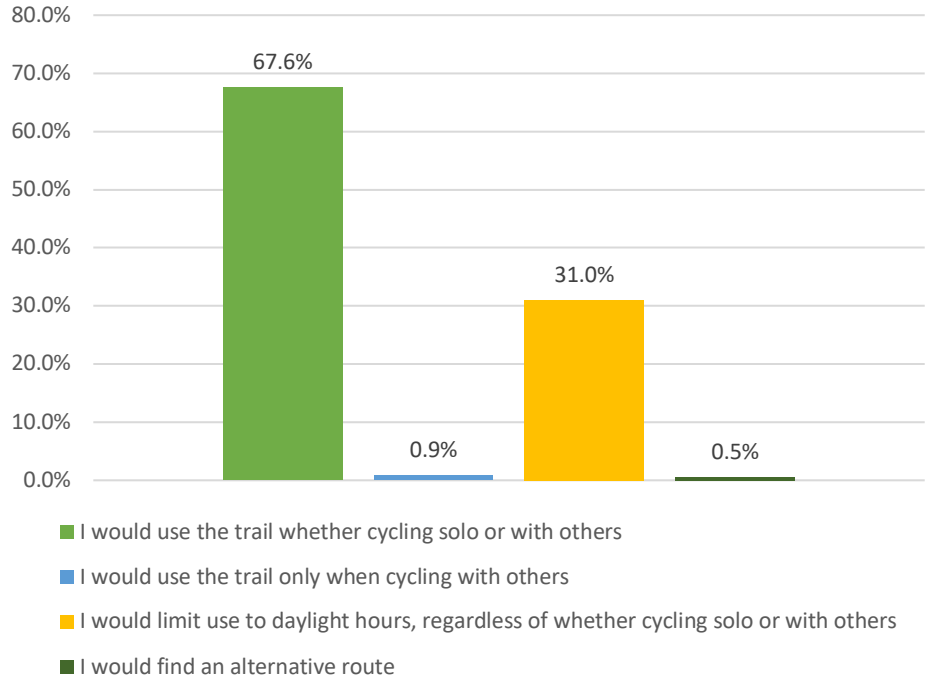
Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 850 798 956">Separated two-way bicycling facility along a one-way neighborhood collector street in an urban mixed used area.</p>	 <table border="1" data-bbox="835 326 1780 880"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the bicycling facility</td> <td>98.6%</td> </tr> <tr> <td>I would use the sidewalk on the other side of the street</td> <td>0.3%</td> </tr> <tr> <td>I would use the motor vehicle lane</td> <td>0.3%</td> </tr> <tr> <td>I would find another route to use</td> <td>0.8%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the bicycling facility	98.6%	I would use the sidewalk on the other side of the street	0.3%	I would use the motor vehicle lane	0.3%	I would find another route to use	0.8%	<p data-bbox="1808 196 1892 303">Avg Safety Score</p> <p data-bbox="1808 318 1881 370">4.5</p>
Answer Option	Percentage											
I would use the bicycling facility	98.6%											
I would use the sidewalk on the other side of the street	0.3%											
I would use the motor vehicle lane	0.3%											
I would find another route to use	0.8%											

Photo and label	Answer options	Avg Safety Score										
 <p data-bbox="121 862 779 932">Two-way multi-use trail in parkland and a forested area.</p>	 <table border="1" data-bbox="835 324 1780 1019"> <thead> <tr> <th>Answer Option</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>I would use the trail whether cycling solo or with others</td> <td>67.6%</td> </tr> <tr> <td>I would use the trail only when cycling with others</td> <td>0.9%</td> </tr> <tr> <td>I would limit use to daylight hours, regardless of whether cycling solo or with others</td> <td>31.0%</td> </tr> <tr> <td>I would find an alternative route</td> <td>0.5%</td> </tr> </tbody> </table>	Answer Option	Percentage	I would use the trail whether cycling solo or with others	67.6%	I would use the trail only when cycling with others	0.9%	I would limit use to daylight hours, regardless of whether cycling solo or with others	31.0%	I would find an alternative route	0.5%	<p data-bbox="1808 321 1885 370">4.6</p>
Answer Option	Percentage											
I would use the trail whether cycling solo or with others	67.6%											
I would use the trail only when cycling with others	0.9%											
I would limit use to daylight hours, regardless of whether cycling solo or with others	31.0%											
I would find an alternative route	0.5%											

### 7.1.1 Comparison with the Year 3 Survey

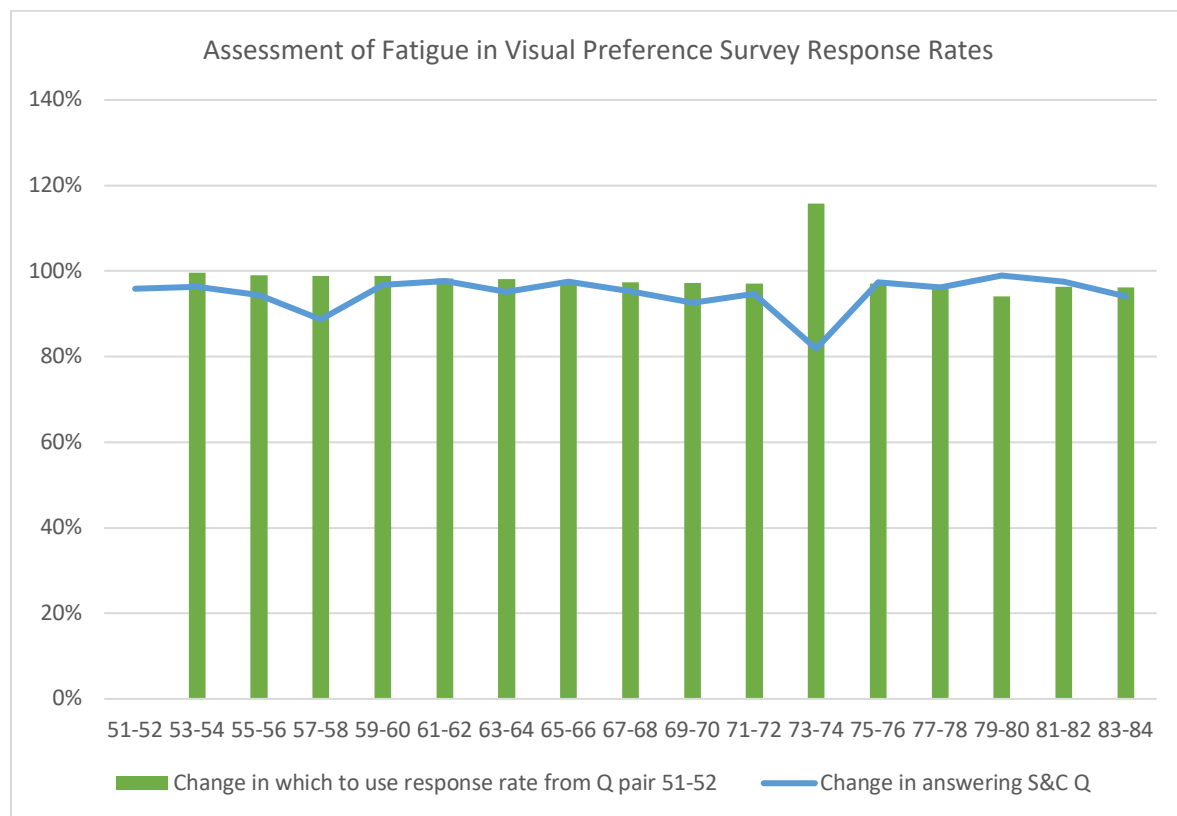
As discussed above, the Year 4 Visual Preference Survey was restructured, asking respondents to provide more information about each cycling context shown in the photographs. We made this change to reduce the amount of speculation used in interpreting the Visual Preference portion of the Year 3 Survey Databook.

### 7.1.2 Considerations for Year 5 Survey

We believe the Year 4 restructuring of the Visual Preference portion of the survey provided more useful information, including reactions to a couple of newer cycling facilities. However, some respondents contacted us to recommend that even more context information be provided such as the posted speed limit and volume of motor vehicle traffic. Others recommended using videos from the cyclist's perspective. This type of information will be considered for the next survey.

Survey fatigue is something we will consider when determining the Year 5 Visual Preference portion's structure. Figure 66 shows a trend towards fewer people answering the first question in each question pair compared to the first question pair, as well as a trends towards fewer people answering the second of the two questions.

Figure 66. Visual Preference Survey Fatigue Assessment

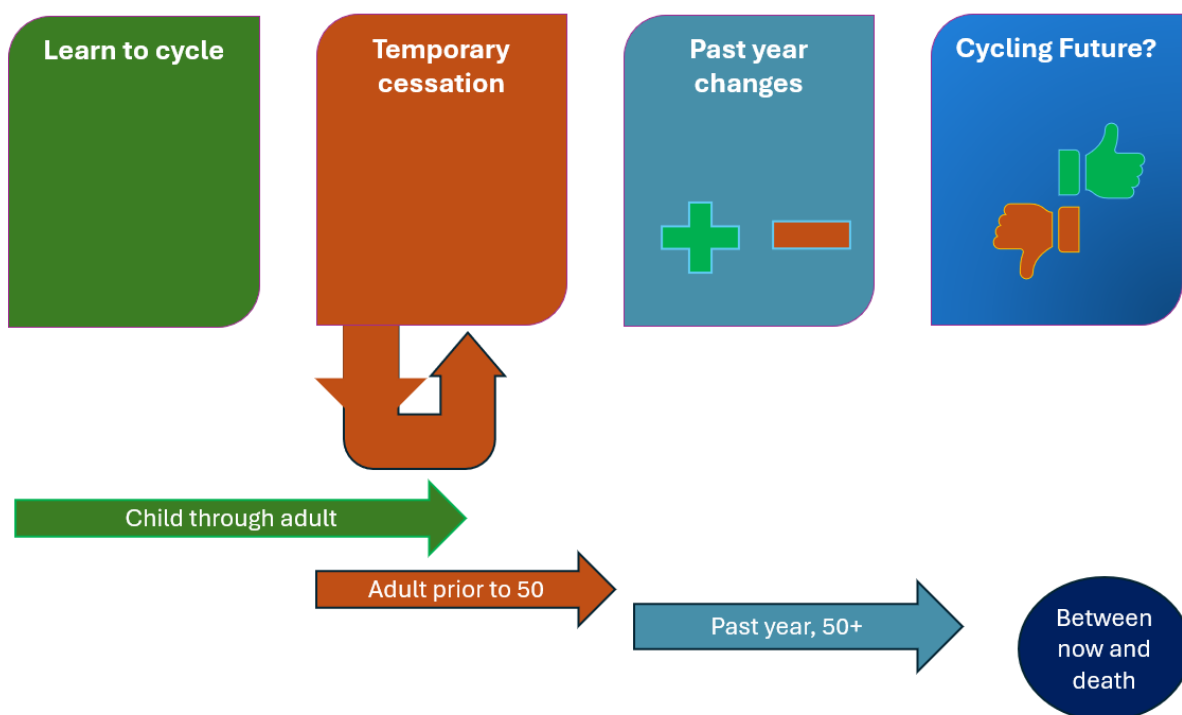




## 8. The Ebbs and Flows of Cycling over a Life Course

The survey included questions that allowed respondents to share cycling over their life course: when they started cycling; if they stopped cycling for at least a year at some point in their life and the reason for restarting; if the amount of cycling they did (frequency and distance) changed during the past year; and if they could envision cessation and why. Figure 67 diagrams these time points. By looking at responses to these questions, we gain an understanding of how age- and life-circumstance influences older adults' cycling habits. Some differences emerged between regular and non-regular cyclists, among the four types of cyclists, by gender, and by age group.

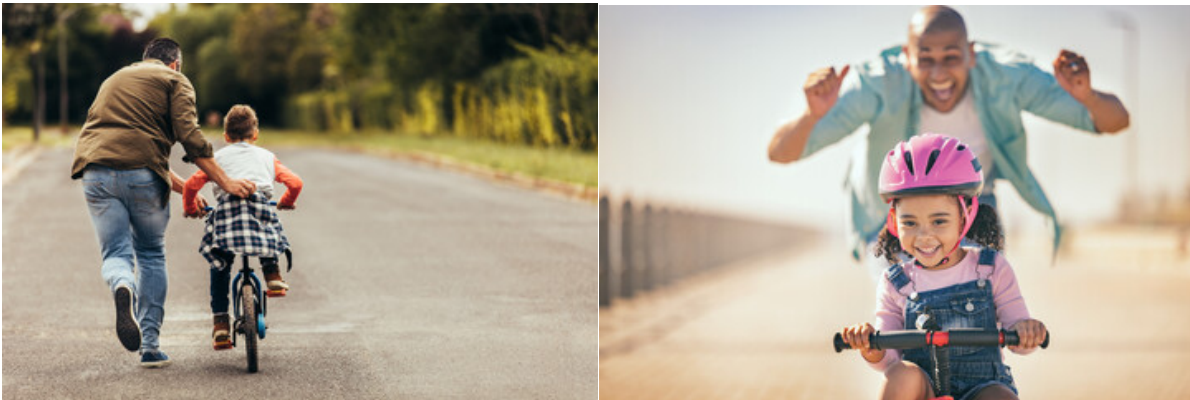
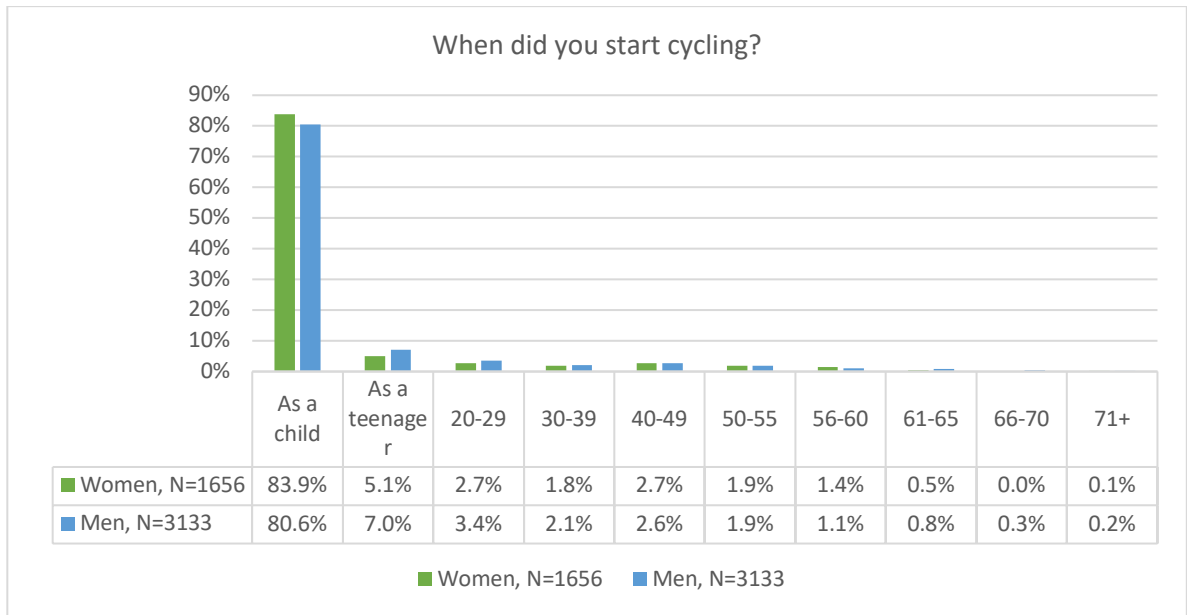
Figure 67. Cycling Life Course Diagram



### 8.1 Learning to Cycle

When a person gets her or his first bicycle and learns to ride it, they often remember that feeling of independence and accomplishment; the memory of this feeling can last for a long time. Most respondents, 82.3%, learned to cycle as a young child, with a higher percentage of women than men learning as a child. Of the remaining 17.7%, 6.3% learned to cycle as an adolescent. Just over 12% learned cycling at age 20 or older and of these 4.4% at an age beyond 50 (see Figure 68).

Figure 68. Age Timeframe when Learned to Cycle by Gender



## 8.2 Temporary Cessation

Studies of physical activity for people over the course of their life reveal changes in the level and type of movement. Based on this, the survey asked respondents if they had stopped cycling for at least a year during the past (longer than a year before taking the survey). Not surprisingly, over two-thirds of those answering this question said they did, with slightly more men than women (see Figure 69).

Reasons for stopping ranged from a change in job to care-taking responsibilities. Figure 70 shows the 15 reasons offered as answer options on offer or provided by respondents, from most often to least often cited. Differences between women and men, shown with trend lines, highlight differences in family roles, career paths, and other characteristics.

Figure 69. Past Temporary Cycling Cessation

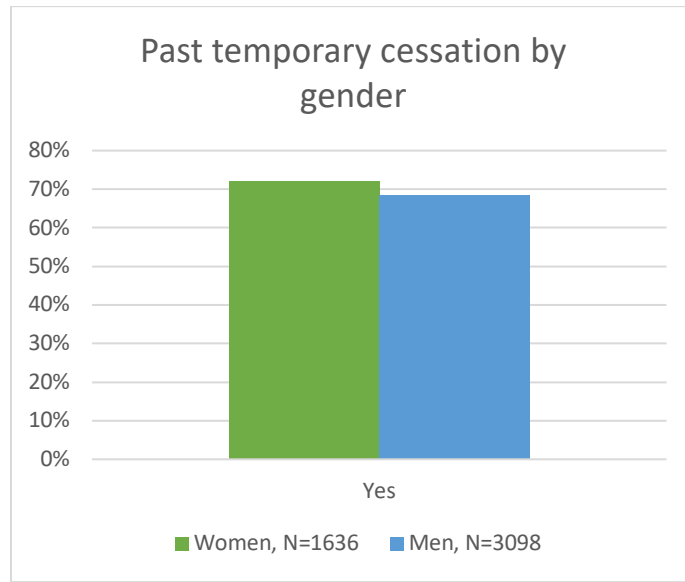
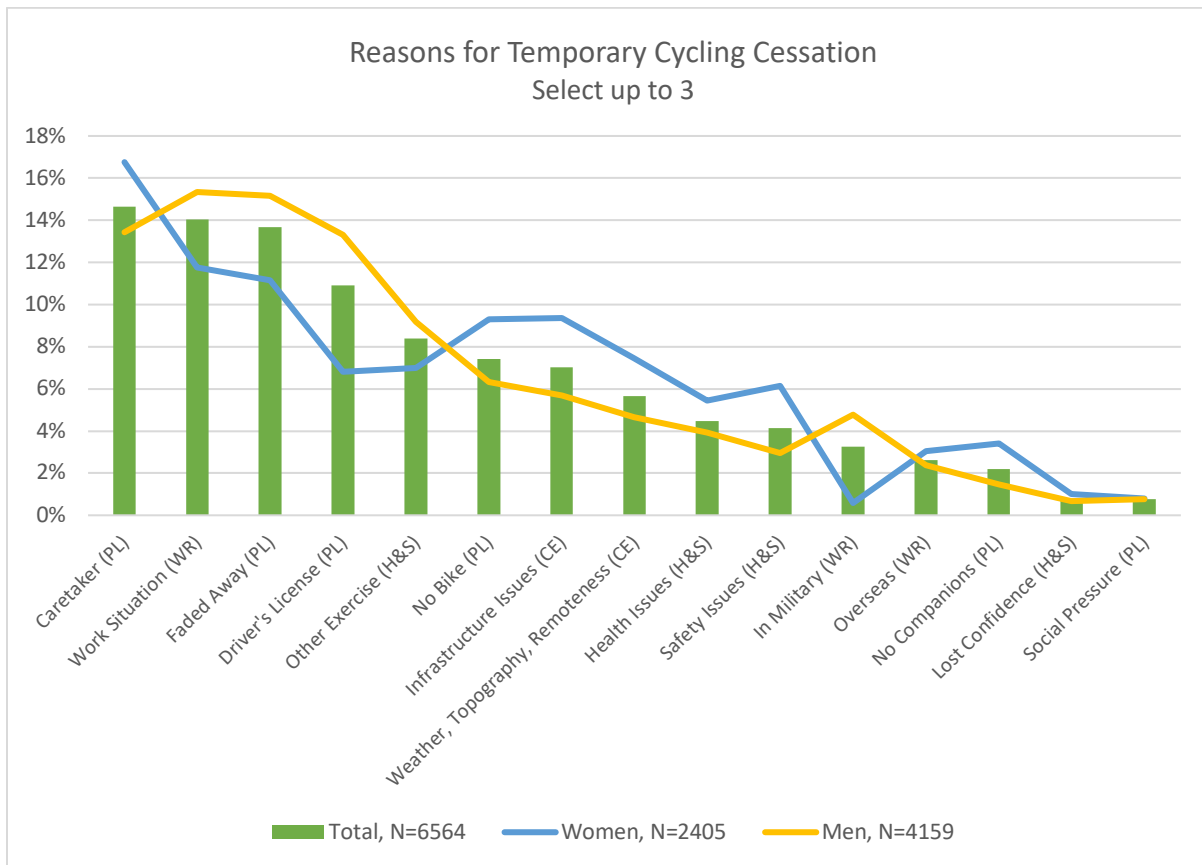
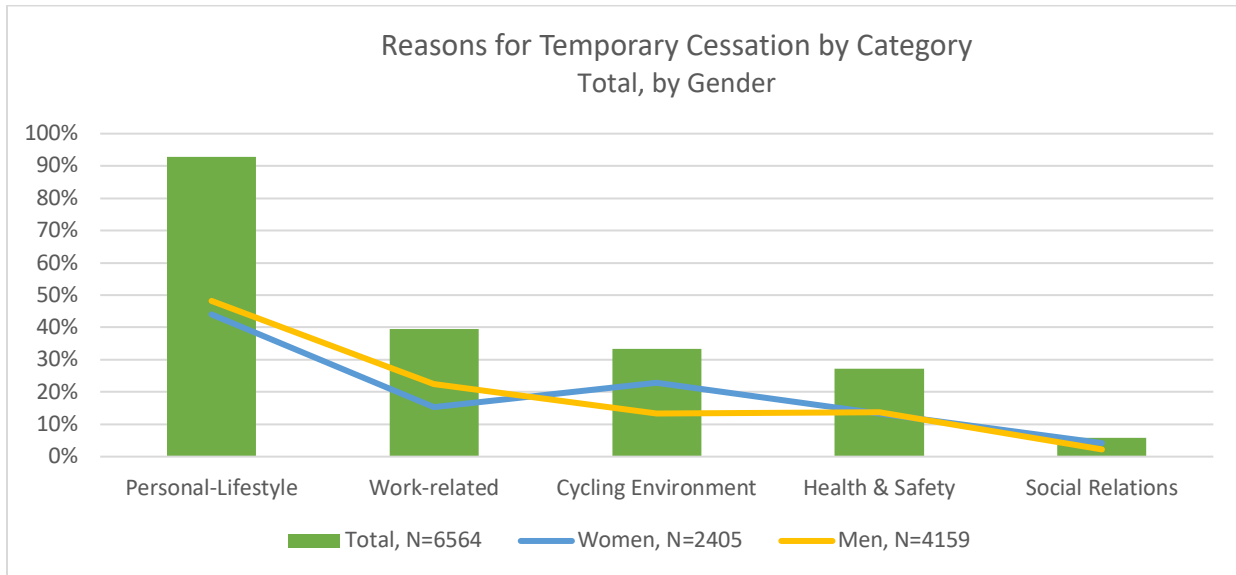


Figure 70. Reason for Temporary Cessation by Gender, Combined



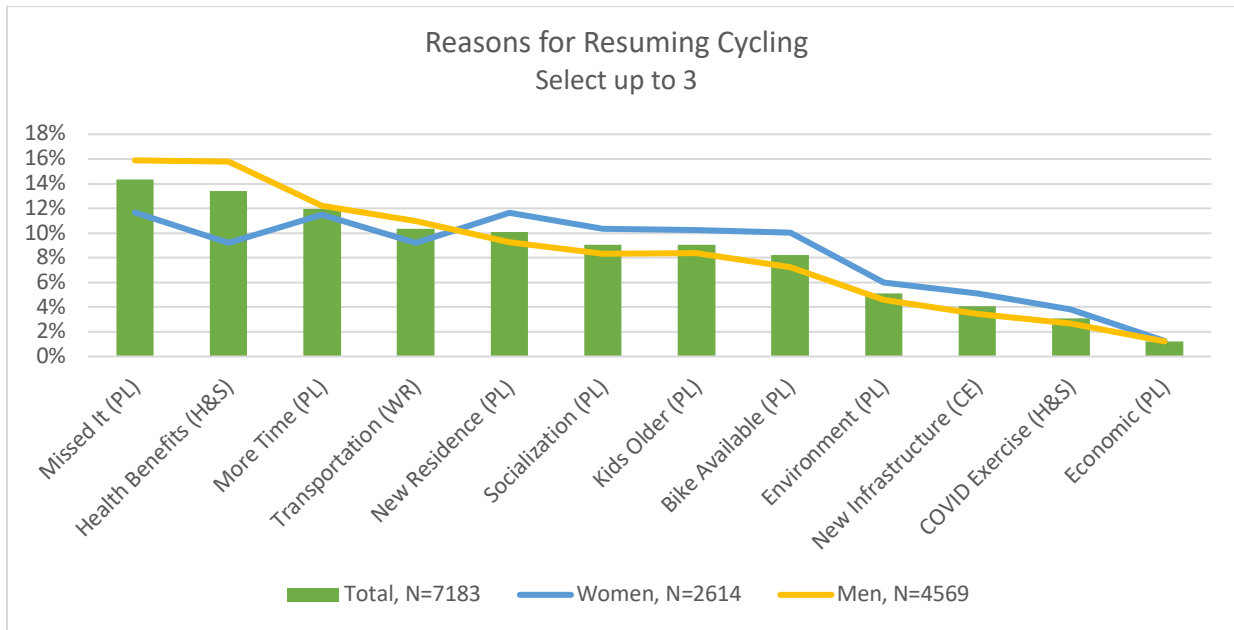
For ease of comparison, these reasons were grouped into the five categories used for other questions: *Cycling Environment* (CE), *Health & Safety* (H&S), *Personal-Lifestyle* (PL), *Social Relations* (SR), and *Work-related* (WR). Figure 71 shows the largest response rate for *Personal-Lifestyle* reasons, as shown in Figure 69 above, including just “fading away” from cycling and not having someone to ride with. Differences between women and men are greatest for *Work-related* (men at a higher rate) and *Cycling Environment* (women at a higher rate).

Figure 71. Reasons for Temporary Cessation by Category



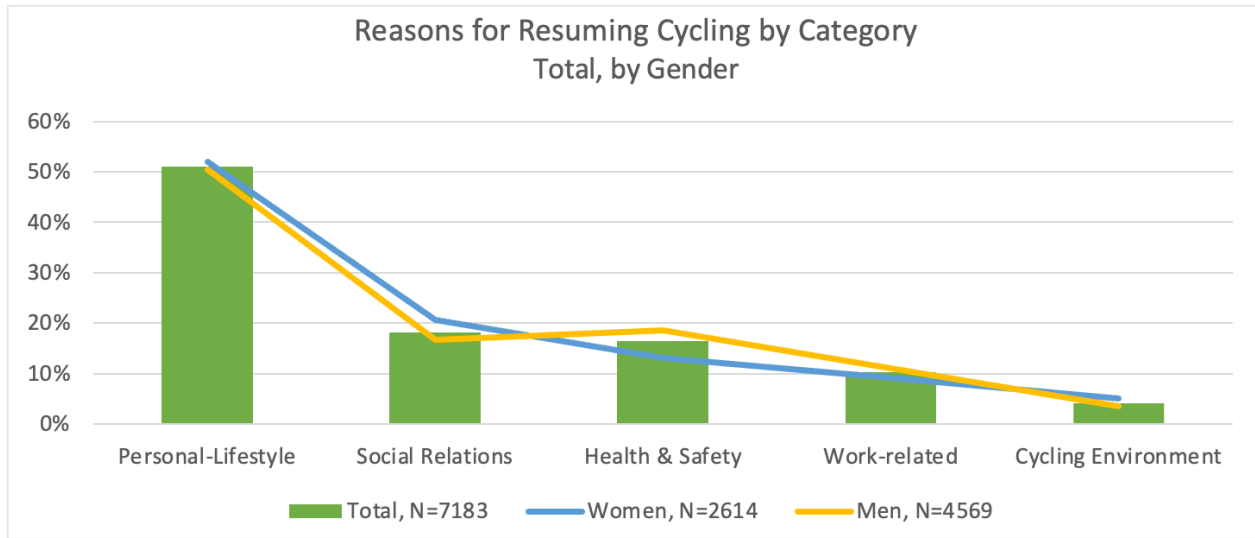
Reasons for a return to cycling are shown in Figure 72. The most often cited reason was because people missed it. A close second was for the health benefits, followed by having more time, perhaps due to retirement.

Figure 72. Reasons for Cycling Resumption



Gathering these reasons into categories shows that while *Personal-Lifestyle* remains the most common category for cycling resumption, *Social Relations* and *Health & Safety* move up to second and third, respectively. Differences between women and men are greatest for *Health & Safety*, primarily with more men than women using cycling as a primary form of exercise (see Figure 73).

Figure 73. Reasons for Cycling Resumption by Category



Figures 74 and 75 offer sequential side-by-side comparisons for both genders of reasons for cessation and resumption. Figure 76 compares cessation and resumption for both genders.

Figure 74. Comparison of Reasons for Stopping—Women and Men

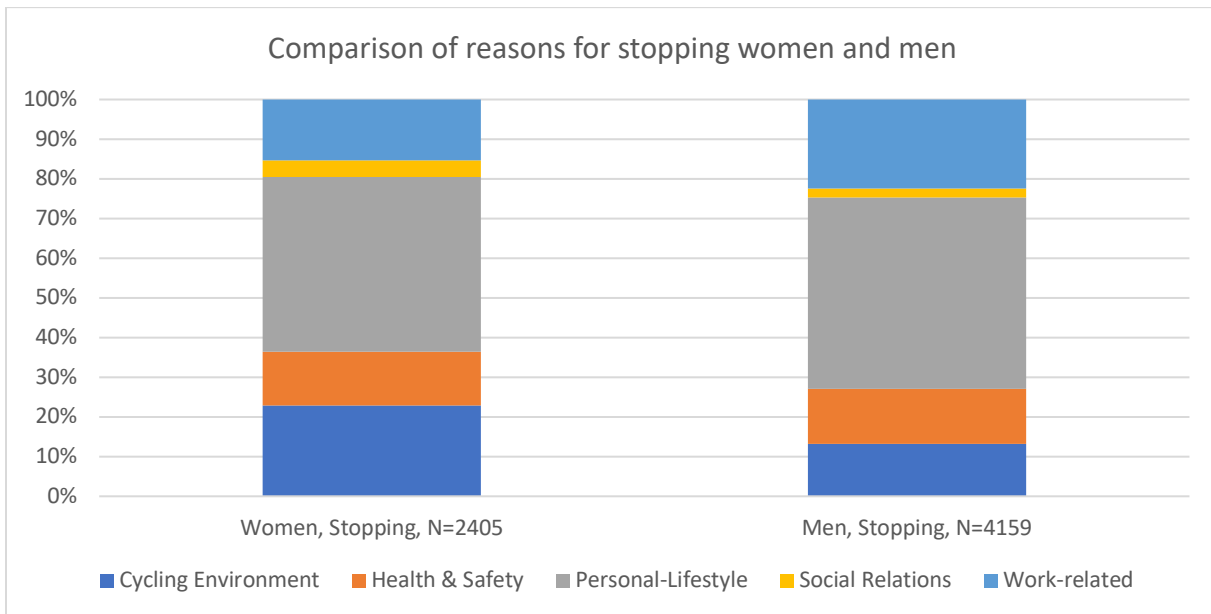


Figure 75. Reasons for Resuming Comparison—Women and Men

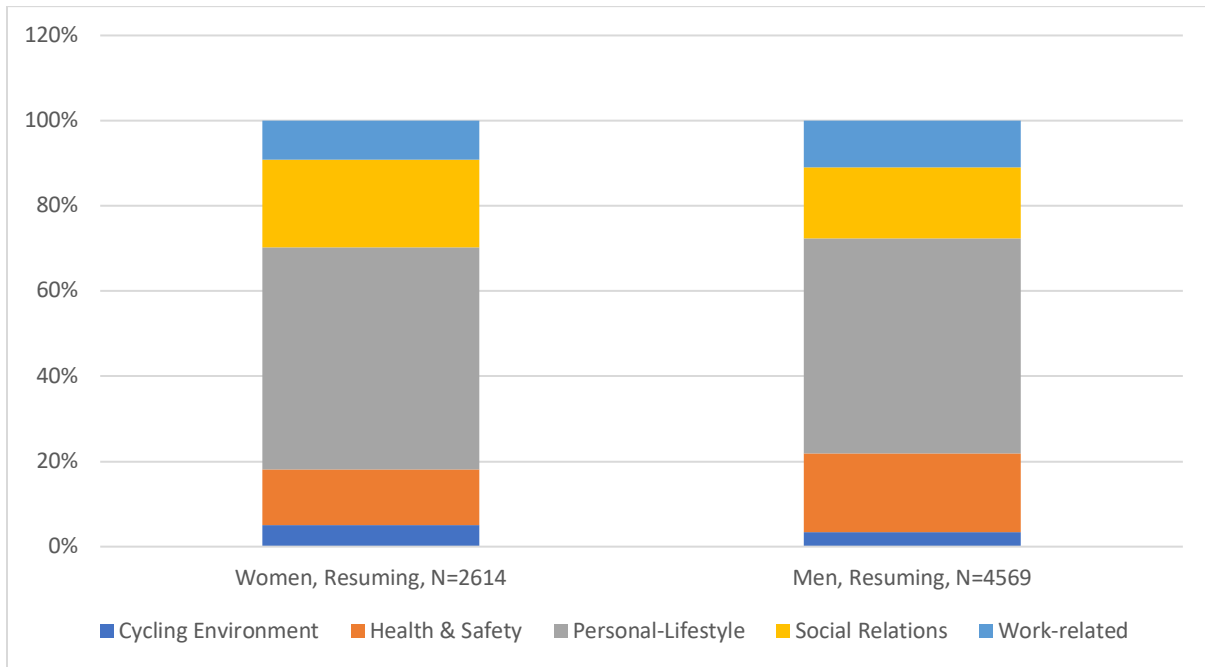
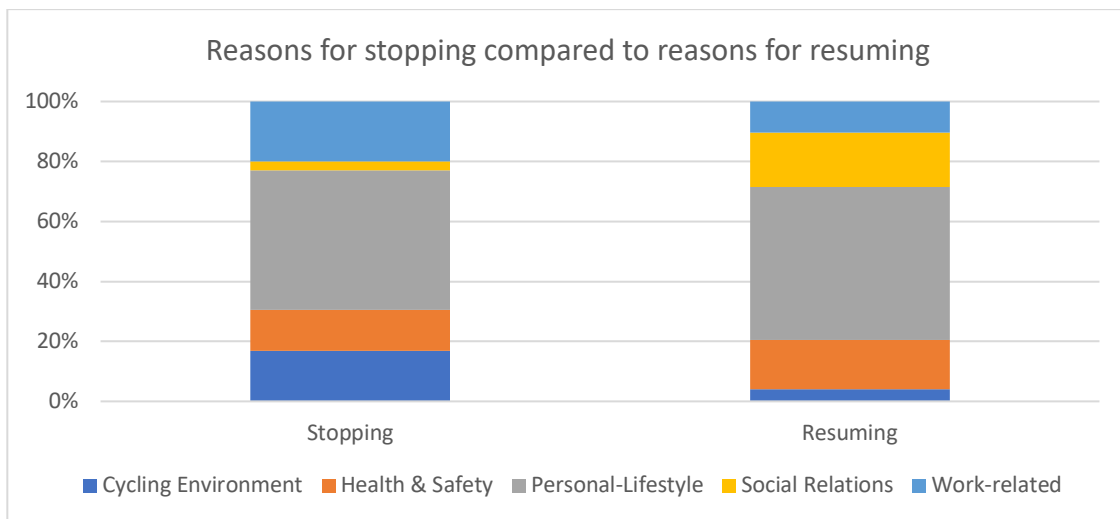


Figure 76. Comparison of Reasons for Stopping and Resuming

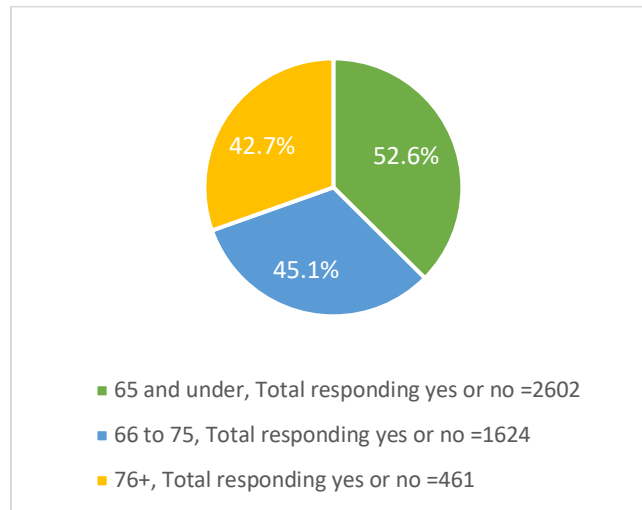


### 8.3 Past-year Changes in Cycling

The third timepoint in the life course survey questions relates to changes in cycling in the past year. The survey was open from mid-2021 to mid-2022, a time when COVID-19 still affected how and if people were physically active. Based on the questions, we distinguish changes in frequency and distance over the year before people responded to the survey, grouping responses by gender and age. We also analyzed the reasons for the changes.

Just over half of respondents, 53.2%, did not change the amount of cycling during the “past year.” Broader age groups for the remaining 46.8% whose cycling changed is shown in Figure 77. The highest percentage is for those 65 and under, perhaps due to changes in work schedules.

Figure 77. Past-year Changes in Cycling by Age Group



The next question for those indicating a change in cycling was about frequency and distance. Over 30% of respondents indicated they have cycled more often and over longer distances, while nearly 25% cycled less often and over shorter distances. In terms of gender, both women and men are about equally split among cycling distances: one-third shorter, one-third longer, and one-third no change.

There are nine combinations of cycling changes, including no change in frequency or distance. Table 12 shows percentages for each option and highlights the highest percentages for answer combinations.

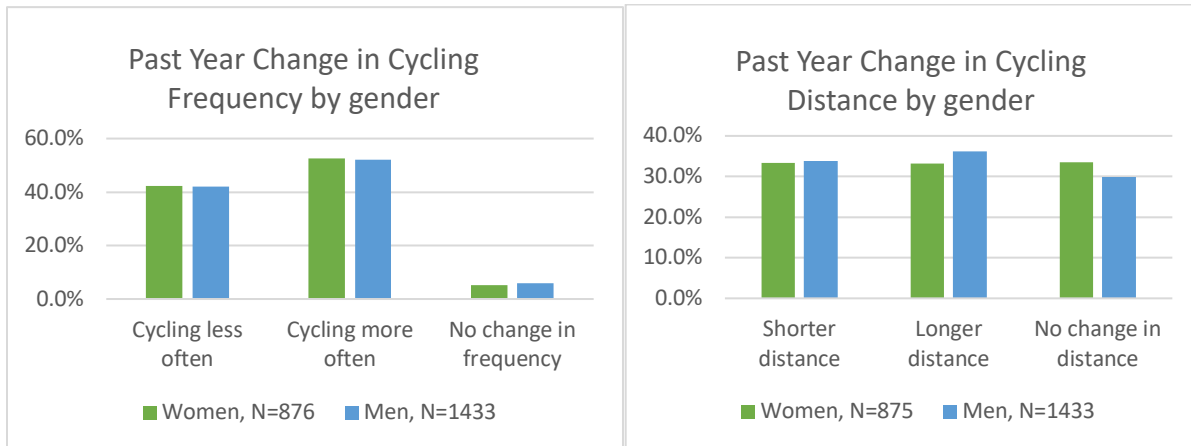
Table 12. Percentage split among nine options for past-year cycling changes

	Less often	More often	Same frequency	Row totals
Shorter distance	24.8%	1.5%	13.9%	40.2%
Longer distance	4.9%	30.6%	14.4%	50.0%
Same distance	2.5%	3.0%	4.3%	9.8%
Column totals	32.2%	35.1%	32.6%	100%



The clearest differences in past-year cycling changes are for cycling frequency, with 52% of both women and men cycling more frequently, 42% cycling less frequently, and 6% with no change in frequency (see Figure 78).

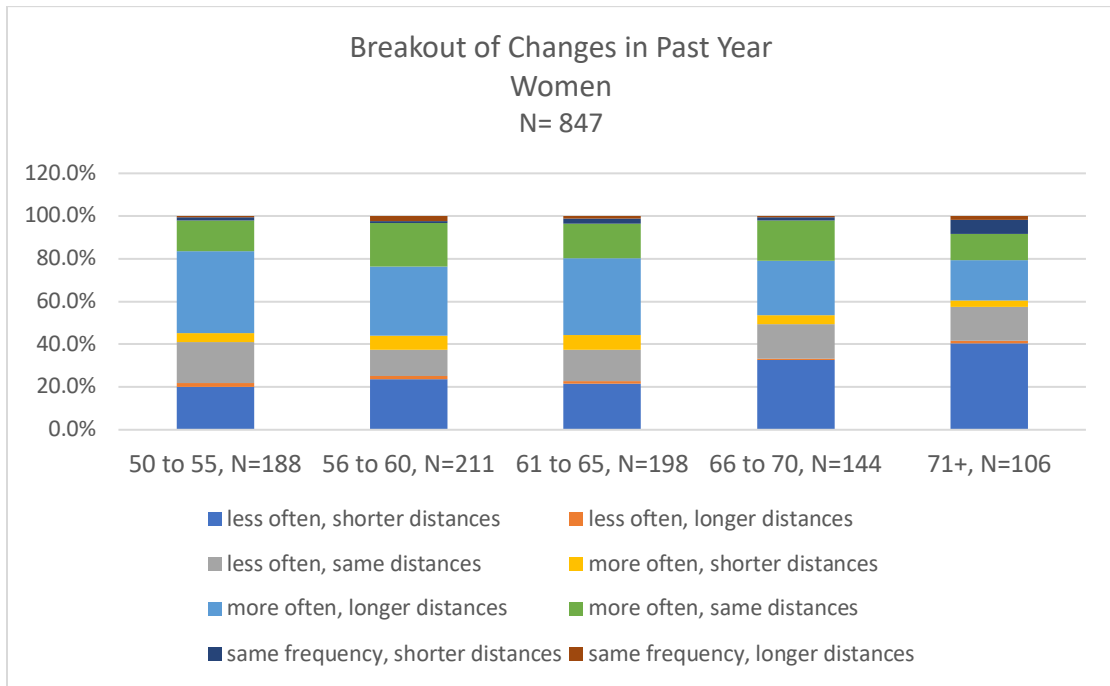
Figure 78. Past-year Changes in Cycling Distance, Frequency by Gender



### 8.3.1 Past-year cycling by age: Examples for women

We completed a detailed analysis of the 847 women who, firstly, indicated their cycling had changed in the past year, then answered the two subsequent questions regarding frequency and distance. Women cyclists between 50 and 65 rode more often for longer distances, with rates of 32.2% for those 56 to 60, 35.9% for those 61 to 65, and 38.3% for those between 50 and 55. As women continue to cycle into their later 60s through to their 80s, the highest rate of change they reported was less often for shorter distances, with rates of 32.6% for those between 66 and 70, peaking at 40.6% for the oldest women cyclists. Figure 79 shows the gradual decrease of women’s cycling frequency and distance as they age. At the same time, a substantial share of women in all older age groups continue to cycle more often, regardless of distance, showing a commitment to cycling.

Figure 79. Past-year Cycling Changes for Women by Age Group



### 8.3.2 Reasons for past-year decreases in cycling

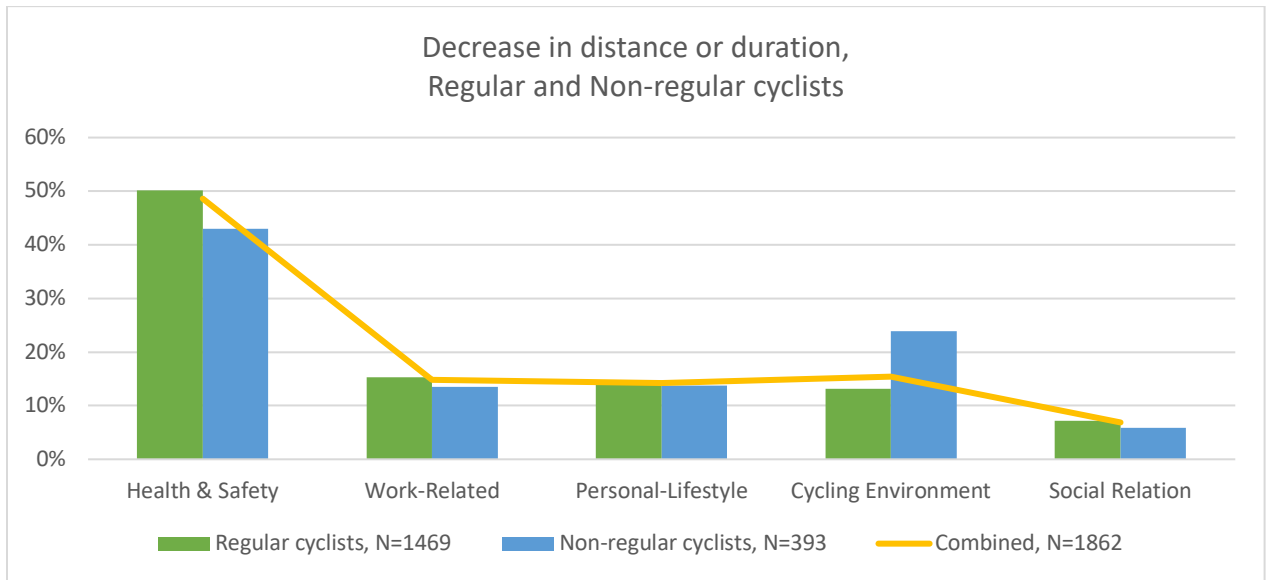
Those indicating a decrease in frequency or distance provided reasons for this change. The answers offered, plus the written-in “Other” reasons resulted in 17 reasons. Table 13 shows these reasons grouped into the five categories used for answers to other survey questions. Perhaps the most interesting one is “dog responsibilities,” possibly a result of new dog owners due to COVID-19.

Table 13. Reasons for Past-Year Cycling Decreases, Factors by Category

Health & Safety	Cycling Environment	Work related	Personal-Lifestyle	Social Relations
Lost confidence due to crash or near miss	Feel less safe on road	Increased work, volunteer responsibilities, retirement	Increased family responsibilities	Cycling partners moved or stopped cycling; cycle less than I do
No more energy, stamina, motivation, passion, depression, procrastination	Non-functioning bike or other bike-related problem	Change in job or home	Preferring different sport	
Limiting physical condition; illness, self or partner	Construction limits cycling space		Primarily lack of races; tours, met mileage goal for year	
COVID-19-related	Weather or fire (smoke)-related		Dog responsibilities	
			Traveling more and doing other things	
			Less of one; more of the other—all balances out	
48.6%	15.4%	14.9%	14.2%	6.9%

Decreases in cycling were different when comparing regular and non-regular cyclists, as shown in Figure 80. Most notably, the *Cycling Environment* affected non-regular cyclists about 80% more than regular cyclists: 23.9% compared to 13.2%. On the other hand, *Health & Safety Concerns* affected regular cyclists more than non-regular cyclists: 43% compared to 48.6%. The reasons may be because regular cyclists tend to cycle more, so circumstances that affect their cycling are more pronounced.

Figure 80. Comparison of Regular and Non-regular Cyclists for Past-Year Cycling Decreases



### 8.3.3 Reasons for increases in past-year cycling

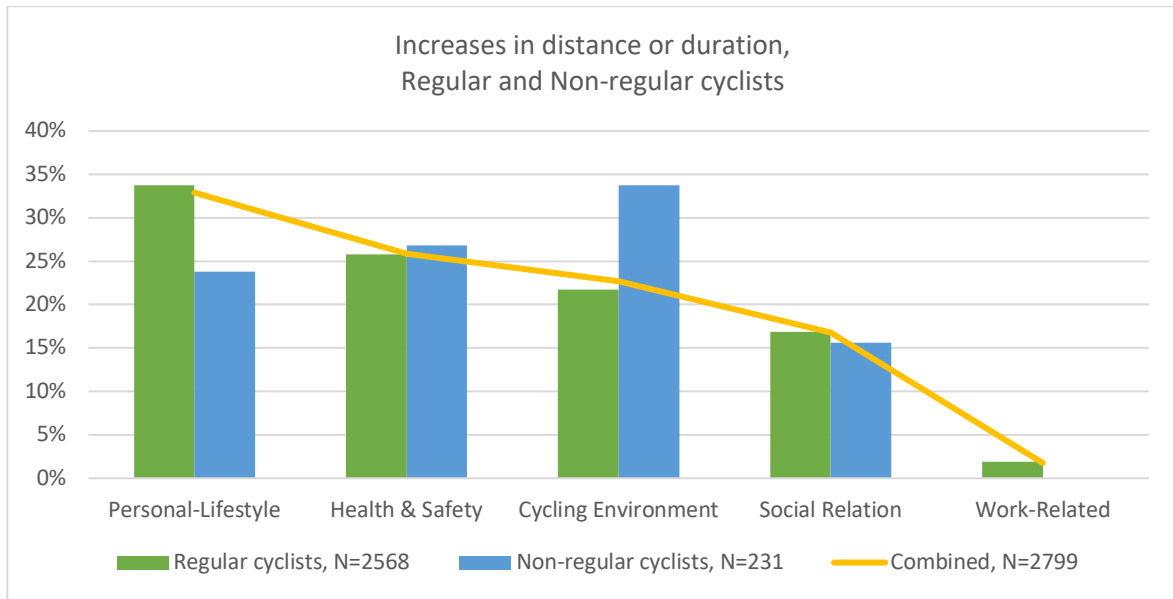
Those indicating an increase in frequency or distance provided reasons for this change. The answers offered, plus written-in “Other” reasons, resulted in 17 reasons. Table 14 shows these reasons grouped into the five categories used for answers to other survey questions. Perhaps the most interesting one is the desire to serve as a model for others by cycling (*Social Relations*).

Table 14. Reasons for Past-Year Cycling Increases, Factors by Category

Personal-Lifestyle	Health & Safety	Cycling Environment	Social Relations	Work-related
Physical exercise during COVID-19; avoids using transit or going to the gym	Training for or doing long-distance ride; training for racing	New cycling facility, on or off road, could be new or new to me	Now I have cycling partners; have someone to ride with	New job or job location allows more cycling, working from home; office reopened so commute to work again
Cycling more instead of other exercises; added cycling to exercises I do	To increase fitness; love cycling and want to keep riding; find ways to cycle; made it a priority	New neighborhood with good network, on and off road	Serve as a model for others, including for the environment, volunteer work; errands by bike	
Retired and have more time; family circumstances change and have more time	Recovered from physical problem	New neighborhood with destinations	Vaxxed so cycling more; cycling more as COVID-19 wains	
Seasonal; decided to bike in winter	Cycle for mental health benefits	New neighborhood with better cycling weather		
		Got an e-bike, new, or better bike; indoor trainer (myself or partner); found way to store or carry bike		
32.9%	25.9%	22.7%	16.8%	1.8%

Increases in cycling were different when comparing regular and non-regular cyclists, as shown in Figure 81. Most notably, an improved *Cycling Environment* affected non-regular cyclists more than regular cyclists: 33.8% compared to 23.7%. On the other hand, *Personal-Lifestyle* affected regular cyclists more than non-regular cyclists: 32.9% compared to 23.8%. The reasons may be because regular cyclists tend to cycle more and re-committed to cycling during the past year, especially due to COVID-19.

Figure 81. Comparison of Regular and Non-regular Cyclists for Past-year Cycling Increases



*Envisioning a Time without Cycling*

The fourth series of questions that help understand the life course of respondents is their sense of whether they would continue to cycle. The question, *Under what circumstances would you stop riding altogether*, was a time for people to reflect on the future. Many respondents anticipated adapting to age-related changes in their ability or desire to cycle, such as switching to a step-through bike, not using clipless pedals, purchasing a trike or recumbent bike, or purchasing an e-bike. Yet, about three-quarters of respondents expect to stop cycling at some point (76.7%).

Answer options selected, plus written-in *Other* reasons, resulted in over a dozen reasons that are grouped into the categories as seen in Table 15. The first three categories are the same as those used for other multi-answer questions; the remaining two are *Expect to continue cycling* and *Other*.



Table 15. Reasons for Permanent Cycling Cessation, Factors by Category

Cycling Environment	Health & Safety	Personal-Lifestyle	Expect to continue cycling	Other
A move to a place with few or no safe places to ride; conditions where I live became unsafe	A physical or cognitive condition that made riding difficult or impossible; I don't feel confident riding	A move to a place where the weather was not conducive to riding; weather became intolerable for cycling	I cannot envision a time or circumstances that would cause me to stop riding	
	An overall loss of energy	When caregiver responsibilities make it impossible to cycle	Death	
	Hit by a car, perhaps killed	No access to a bike (stolen, broken, cannot afford one)		
	Too old, frail	Loss of interest in cycling; no longer fun or enjoyable		
26.7%	43.8%	6.1%	22.7%	0.6%

Because of the importance of this anticipated decision, we analyzed responses by five-year age groups, with the last age group for those aged 80 and older. Figure 82 shows the results of this analysis. The *Expect to continue* percentages are shown with a line to better highlight the intent to avoid cessation. Interestingly, the percentage of those expecting to continue cycling is nearly the same for those aged 50 to 60 as it is for those 80 and older. The rate for those aged 50 to 60 may be due to the expectation that they can adapt to the aging process and continue to cycle. Perhaps the reason for the oldest group's rate is that they assume that if they are still cycling at their age, they cannot see a reason to stop. The dip in the rate for those aged 61 to 80, which is accompanied by an increase in the *Health & Safety* category as the cause for cessation, is likely due to the realization of how the aging process affects their physical and mental abilities. This age group also reported illness and joint replacements as reasons for lower cycling rates in the past year, which may affect their outlook on cycling.

Figure 82. Circumstances Influencing Permanent Cycling Cessation by Age Group

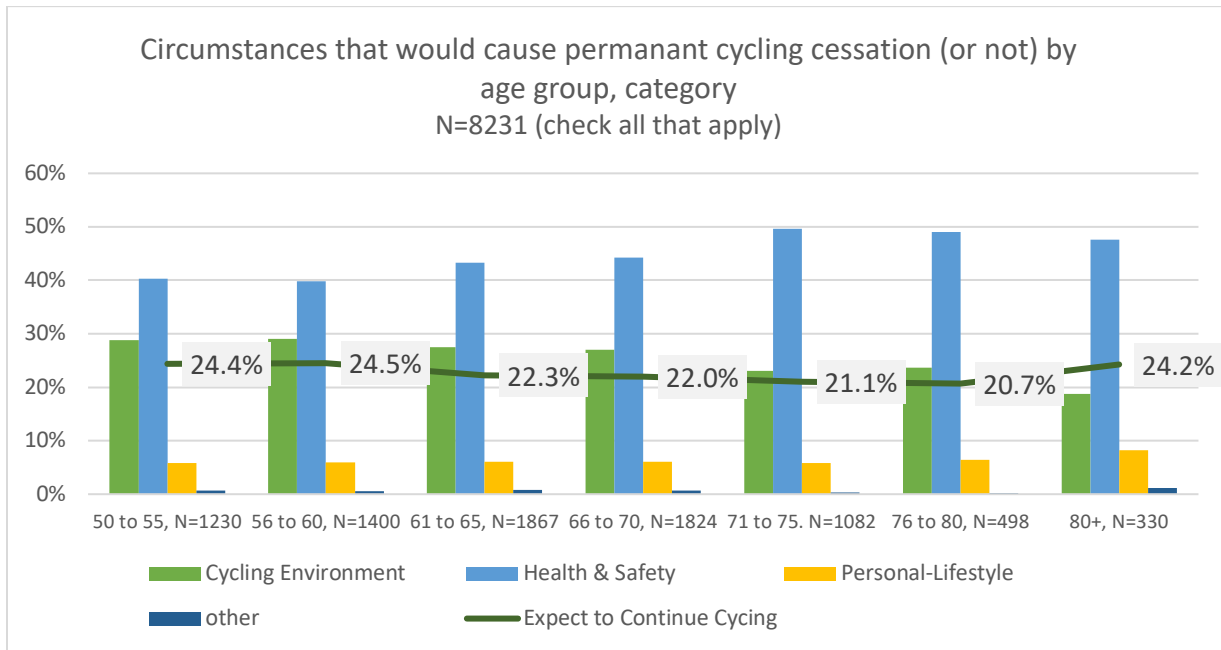
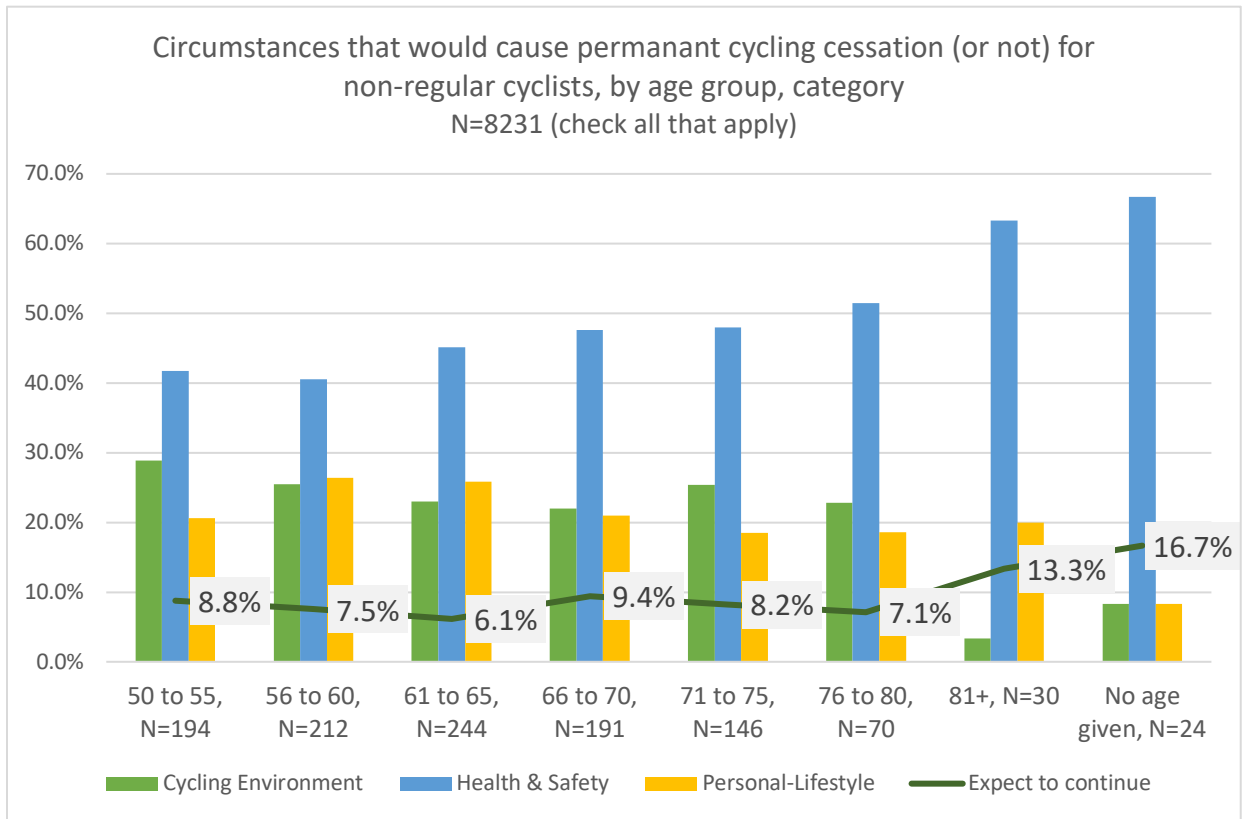


Figure 83 shows the same information for those who self-identified as a non-regular cyclist. Overall, as many as two-thirds fewer respondents expect to continue cycling. Other differences include a steeper increase in the percentage of the oldest cyclists who cite *Health & Safety* reasons for discontinuing cycling and an overall higher percentage of *Personal-Lifestyle* causes for cycling cessation.



Figure 83. Circumstances Influencing Permanent Cycling Cessation for Non-regular Cyclists by Age Group



Past cycling experiences affect a person’s expectations about continuing to cycle as they age. For example, many responses focused on the stress of cycling on streets when people who drive are less willing to share the road. Others note that falling or having an injury affects their interest in cycling. Figure 84 shows that those who expect to continue cycling are affected by a fall in the past year at about the same rate as those who anticipate stopping at some point.

Figure 84. Effect of Past-year Fall on Potential Permanent Cycling Cessation

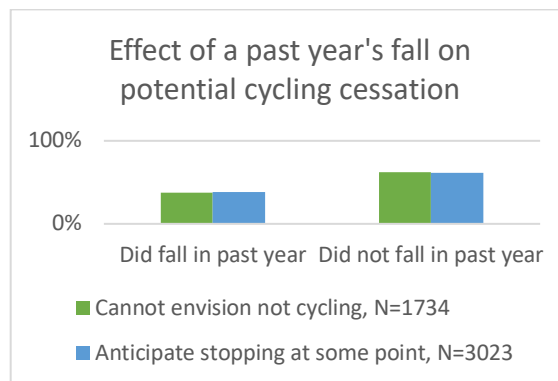
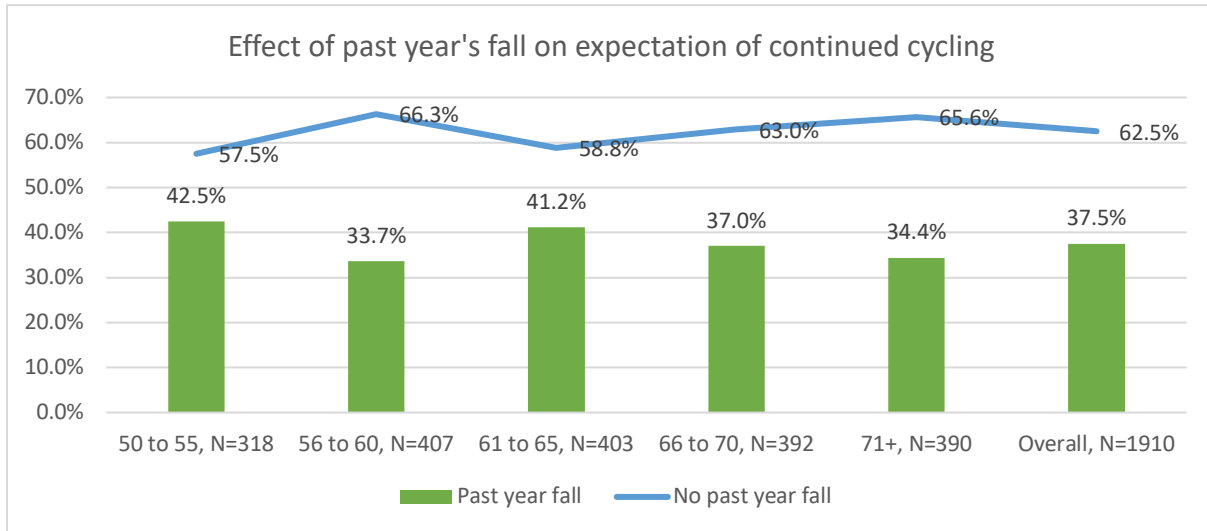


Figure 85 shows how a past-year fall affects the prospect of continued cycling for those who expect to do so.

Figure 85. Effect of Past-year Fall on Those Who Expect to Continue Cycling



There are some who are not daunted by a fall and work to get back on the bike. Some examples are in Table 16.

Table 16. Mini-profiles of Three Who Fell and Resumed Cycling

Fall description	Age and gender	Regular or non-regular cyclist	Type of cyclist	Cycling frequency
Car and other bikes are ascending. Me descending, steep, sharp inside turn on my side of the road. Fell, broke elbow. Back riding within 3 months.	76-year-old man	Regular cyclist	Experienced and confident	3 to 5 times a week
Balance and loss of flexibility. Getting older and stiffer. At times I am having difficulty mounting the bike by swinging my leg up over the seat. Once I didn't make it and lost balance falling backward. No injury.	62-year-old man	Regular cyclist	Experienced and confident	Weather dependent
A car turned in front of me and cut me off (August 1, 2020). My friend suddenly stopped in front of me (May 2021). No broken bones, but both required me to use a cane for about 1–2 months. I am back though riding events again.	58-year-old man	Regular cyclist	A mix of all	3 to 5 times a week

In addition, some found they could continue cycling with some adjustments to their bike, “I started riding at 75 and fell several times starting and stopping and then took my daughter’s advice and lowered the seat.” Knowing when to adjust the bike is important; for example, one 75-year-old said, “I’m getting shorter. My bike’s the same size.” Another tactic, providing more stability on the pedals by using clips, may not always work, “I was trying to learn how to ride with clips on my shoes. At 77 years of age, I think it was a little overwhelming for me to get my clips back on after stopping while riding on the roads. Maybe some of it was you can’t teach an old dog new tricks....”

Others now use a different bike. For example, carbon fiber bikes are lighter but may not be the right choice for people as they age, or a trike may be a better choice (see Table 17).

Table 17. Mini-profiles of Two Who Fell and Changed Bikes

Fall description	Age and gender	Regular or non-regular cyclist	Type of cyclist	Cycling frequency
Fatigue, weak arm/wrist...couldn't catch myself faltering into a turn, while on speedier all-carbon bike. Went back to my older aluminum bike for safer handling for a 66-year-old woman who's not a super athlete	66-year-old woman	Regular cyclist	A mix of all	1 to 2 times a week
Two children walking two dogs taking up the whole road downhill, and I did not start stopping in time; hit one dog fell over the bike and dog and broke 6 ribs. I spent 10 days in the hospital. They plated 4 ribs together. Bought a Tadpole Recumbent Trike.	61-year-old man	Regular cyclist	A mix of all	1 to 2 times a week

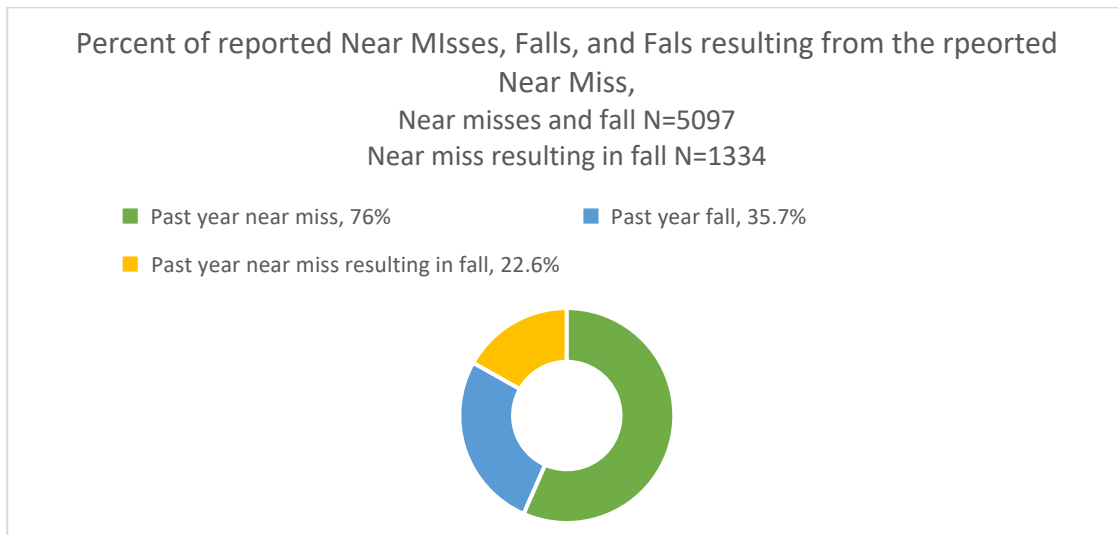
Perhaps the most popular response is purchasing an e-bike, although as the examples above show, others switched from a 2-wheeled bike to an adult trike or a tandem, especially to mitigate balance issues. Switching to a step-through bike also eases the process of getting on and off a bike for those whose range of motion is declining. Typical reasons for purchasing an e-bike are to continue cycling with someone stronger than they are, to continue to ride the way they did when they had more strength or stamina, to ride in new places such as hilly terrain, and to ride farther such as for touring. See Section 5.3.2 on e-bikes for more details.

Lastly, people adapt to cycling as they age by changing their expectations or purpose. Instead of cycling long and hard, they may opt for slower rides to enjoy the company of others or the scenery.

## 9. Near Misses and Falls

This section provides responses to questions about near misses and falls during the past year. When analyzing falls reported in the Year 3 survey, it was clear that some falls were due to a near miss. Given that, the Year 4 survey asked if the reported fall was related to a reported near miss. Figure 86 shows the percentage of near misses, falls, and the connection between the two. It is not unexpected that near misses are more than double the rate of falls.

Figure 86. Percentages of Near Misses, Falls, and Falls from a Near Miss



### 9.1 Near Misses

The survey asked about past-year near misses, offering nine potential answers, including “I have not had any near misses.” Based on the total number of responses by gender, about three-quarters of those answering the survey experienced a near miss (see Figure 87). The greatest percentage of near misses was with people driving motor vehicles, with double the rate for men than women. Near misses with other cyclists on normal pedal bikes was second highest, but at about half the rate of people driving motor vehicles. There were a number of reported near misses with people on e-bikes, as well, many of which resulted in a fall or crash (see Figure 88).

Figure 87. Percent Past-Year Near Misses by Gender

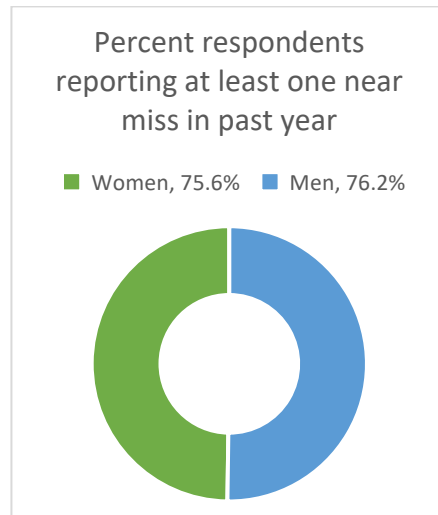


Figure 88. Percentage Type of Near Miss by Gender

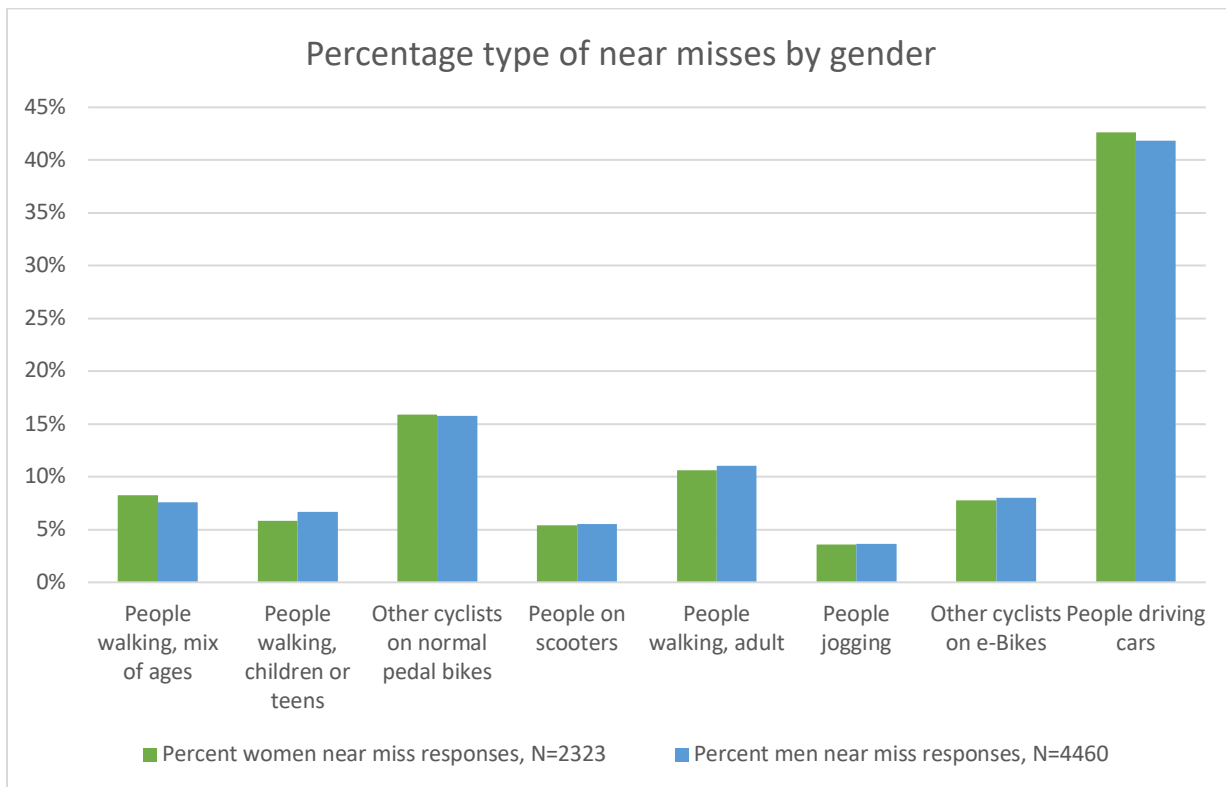


Figure 89 charts near misses by gender and age group. The accompanying data is in Table 18 (including those who did not provide an age (No Stated Age - NSA)). Differences by gender within some age groups, include:

- Women between ages 50 and 60 have higher near miss rates than men of the same ages for all types of near misses. Some are double the rate for men; others are 25% higher.
- Rates of near misses for women and men between 61 and 70 are comparable.
- Men aged 71 and older have higher near miss rates than women of the same ages for all types of near misses. Some are double the rate for women; others are three times higher.

Figure 89. Near Misses by Age Group and Gender

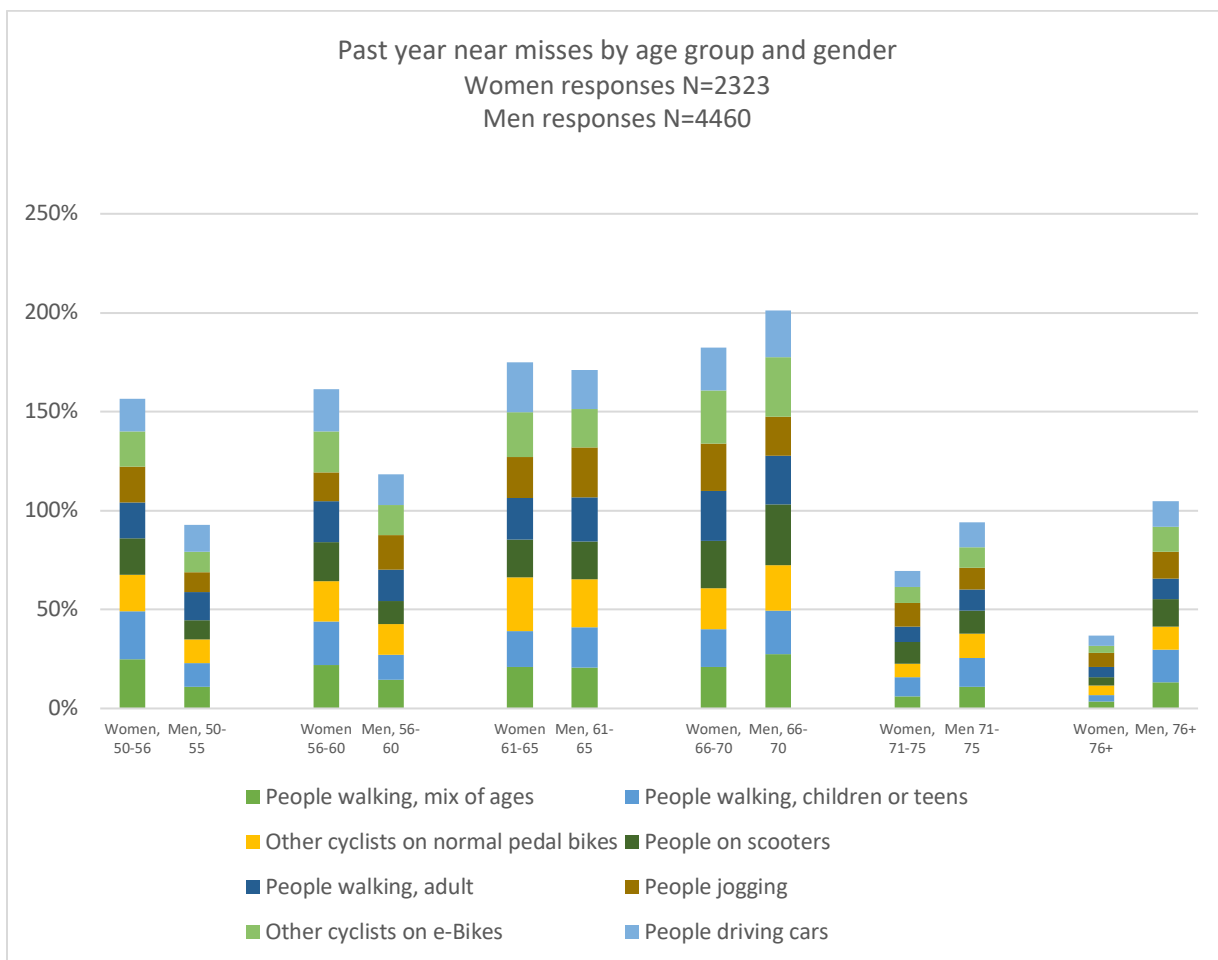


Table 18. Type of Near Miss by Gender and Age Group

	People walking, mix of ages	People walking, children or teens	Other cyclists on normal pedal bikes	People on scooters	People walking, adult	People jogging	Other cyclists on e-bikes	People driving cars
Women, 50–55	25.0%	24.3%	18.4%	18.3%	18.3%	18.1%	17.8%	16.5%
Men, 50–55	11.0%	11.8%	12.3%	9.7%	14.2%	9.9%	10.4%	13.6%
Women 56–60	21.9%	22.1%	20.3%	19.8%	20.7%	14.5%	20.6%	21.4%
Men, 56–60	14.5%	12.5%	15.7%	11.7%	15.8%	17.3%	15.4%	15.4%
Women 61–65	20.8%	18.4%	27.1%	19.0%	21.1%	20.5%	22.8%	25.1%
Men, 61–65	20.8%	20.2%	24.2%	19.0%	22.3%	25.3%	19.4%	19.9%
Women, 66–70	20.8%	19.1%	20.9%	23.8%	25.2%	24.1%	26.7%	21.9%
Men, 66–70	27.3%	22.2%	22.8%	30.8%	24.7%	19.8%	30.1%	23.6%
Women, 71–75	6.3%	9.6%	6.8%	11.1%	7.7%	12.0%	7.8%	8.3%
Men 71–75	11.0%	14.5%	12.3%	11.7%	10.5%	11.1%	10.4%	12.6%
Women, 76+	3.6%	2.9%	5.1%	4.0%	5.3%	7.2%	3.3%	5.1%
Men, 76+	13.4%	16.5%	11.4%	14.2%	10.3%	13.6%	12.4%	13.1%
Women, NSA	1.6%	3.7%	1.4%	4.0%	1.6%	3.6%	1.1%	1.6%
Men, NSA	2.1%	2.4%	1.4%	2.8%	2.0%	3.1%	2.0%	1.7%



## 9.2 Falls and Crashes

The survey asked respondents if they had fallen or nearly fallen in the past year. The overall fall rate of 35.7% by gender in Figure 90 and by *Age Group* and *Gender* in Figure 91 shows a lower rate for women (34.7%) than men (36.9%).

Figure 90. Past Year Falls by Gender

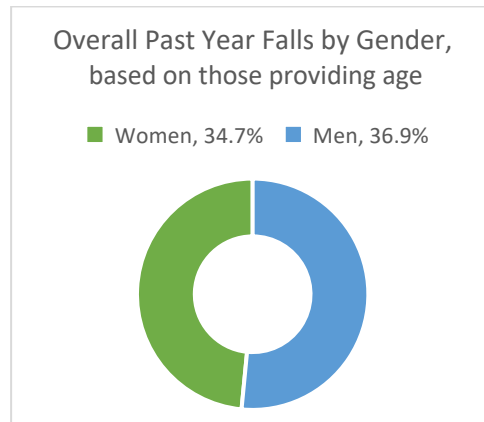
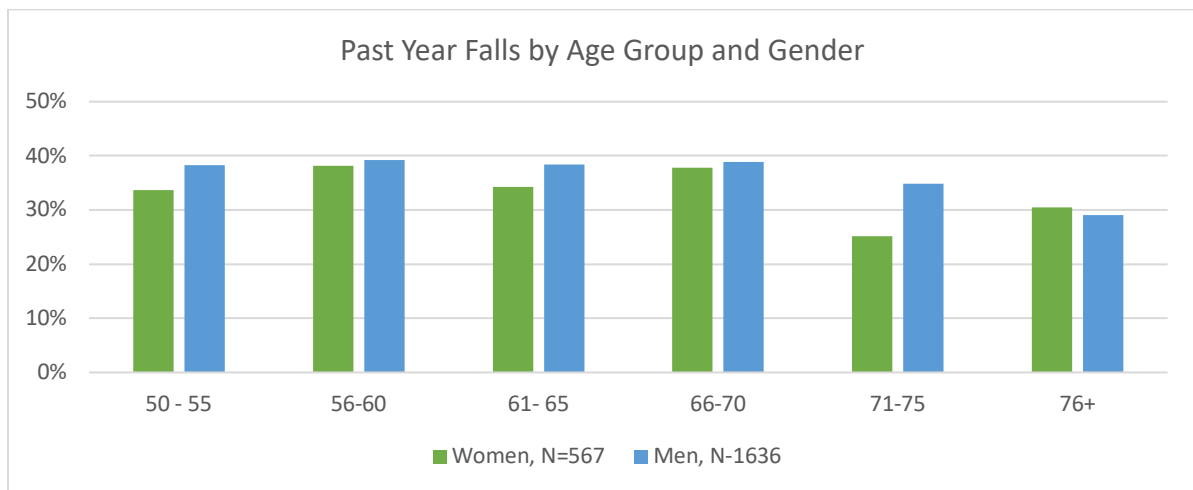


Figure 91. Past-year Falls by Age Group and Gender



Those reporting a fall or crash were asked to describe the circumstances. This series of questions is intended to identify potential changes in cycling agility and balance as people age, as well as built environment conditions that may contribute to falls, regardless of the type of cycling. Each fall description was reviewed and contributing factors captured using the coding scheme developed for the Year 3 survey. A few factors were added, along with some modifications to existing factors, for a total of 36. Factors are grouped into six categories, shown in Table 19. The factors most often noted within each category for falls by those doing non-mountain biking (MTB) and gravel cycling are listed first.

Some descriptions offer interesting stories of falls and crashes, including a self-assessment of the person's responsibility. Some described a single complex fall; where someone cites multiple incidents, only one was included in the analysis. Words used in the crash description determined the factor captured, with few if any additional factors recorded in the coding scheme based on an interpretation of the cause. For example, unless someone said they were not paying attention when they fell due to a pothole, the inattentive factor was not noted.

The category *Action of Others* includes a factor for people driving motor vehicles. While not the most numerous causes of falls or crashes, some are the most severe either due to an injury sustained by the cyclist or lack of care for another human being. Simply put, some of the *Actions of Other/Actions of Motorists* are difficult to read, given that they convey deliberate actions by someone driving a motor vehicle to harm an older adult cyclist. These appear to be criminal actions, for which too often little is done. A few of these descriptions are:

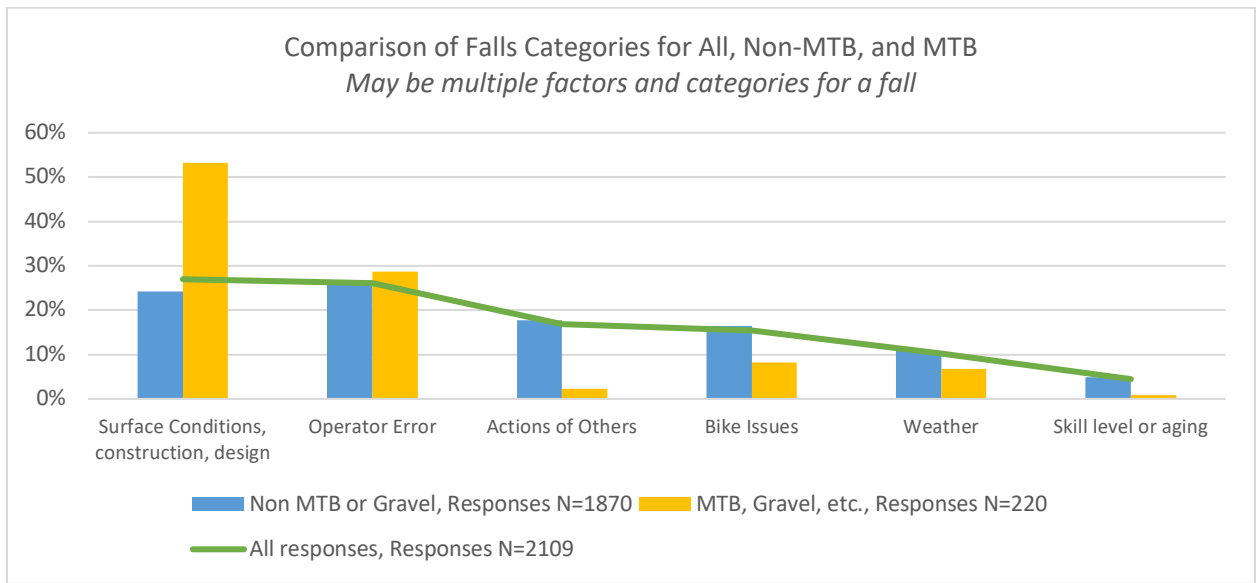
- “Car turned in front of me, catching my bike front tire, called a right hook, it was hit and run. Police were no help, and only directed traffic around me as I repaired my bike and removed it away from cars running over me again!”
- “Side swiped by driver causing me to hit a guardrail and go down. Driver slowed then took off.”
- “I had to dive for the ditch when a speeding truck was going to pass me on a narrow two-lane road with no shoulder and oncoming traffic. I likely would have been killed if I had remained on the road.”

Table 19. Factors by Category of Falls and Crashes

Weather	Surface Condition and Construction	Operator Error	Actions of Others	Bike Issues	Physical limitations, Chronic conditions, Effects of age
Ice, mud, wet surface, snow, leaves, etc., on path	Gravel, sand, soft dirt, etc., on path	Inattention or focus, poor bike handling, poor decision while riding	Actions or presence of motorist, including parked vehicles	Trouble with clips, cages, pedals in general	Balance issue, at slow speed, getting on/off bike
Rain, snow, wind, fog; bright sun	Slippery bridge	Going too fast for conditions or my skill level, cycling above my skill level	Actions or presence of another rider, scooter	Factor X (rider v. bike)	Health issue; physical strength or agility; heat; fatigue
	Potholes; depressions, ditches	Following too closely	Action or presence of pedestrian, joggers, including kids and dogs	Mechanical issue with - chain, flat, other	Effects of aging
	Cracks in pavement, between surfaces, RR tracks; transitions	Sharp turn, turning	Dooring	Weight of bike or load	
	Uneven surfaces	Trouble with hills, up or down	Factor X (mostly animals or insects)	Poor bike fit; learning new bike; relearning to cycle	
	Obstacles, debris, on pavement or pathway	Trouble with curbs			
	Construction-related	Stopped unexpectedly or swerved to avoid crash			
	Narrow passageways	Trouble stopping and starting			
	Sharp turned design; off-set pathways; steep trail access pathway	I don't know, I don't remember			
	Limited facility capacity, including lighting, sight lines	Looking back, reaching for something, etc.			
		My fault, stupidity, poor decision-making, clumsiness			

Figure 92 compares falls and crashes by category for two general types of cycling: non-mountain or gravel cycling and mountain or gravel cycling. As the chart shows, there are higher fall or crash rates for mountain and gravel cycling for the *Surface Conditions* and *Operator Error* categories, with higher rates for the other four categories. There are also separate charts for these two general types of cycling, organized by category, gender, and age group.

Figure 92. Falls by Category for Types of Cycling



### 9.2.1 By age and gender

#### *For Non-Mountain- and Gravel-Cycling Responses*

Of respondents who provided their gender and age, 1,462 people reported a fall or crash in the past year. Figure 93 shows the percentage by age group for women and men. Figure 94 shows fall categories by gender and age group, organized generally from the largest number of factors reported to the smallest: *Surface Conditions*, *Operator Error*, *Actions or Presence of Others*, *Bike Issues*, *Weather*, and *Aging*. Assuming that the average number of falls reported by each person is one (although about 5% reported 2 or 3 falls), fall rates for women aged 50 to 65 are greater than men, with fall rates for men exceeding those for women beginning at age 66.

Examples of differences between women and men are:

- Surface conditions affected more women aged 76+ than men (31.3% to 19.4%)
- The *Effects of Aging* (as noted by those responding) were more than twice that for men than women aged 61 to 65 (14.3% to 6.1%)
- Women reported more bike- and weather-related falls than men aged 71 to 75

Figure 93. Falls by Age Group and Gender

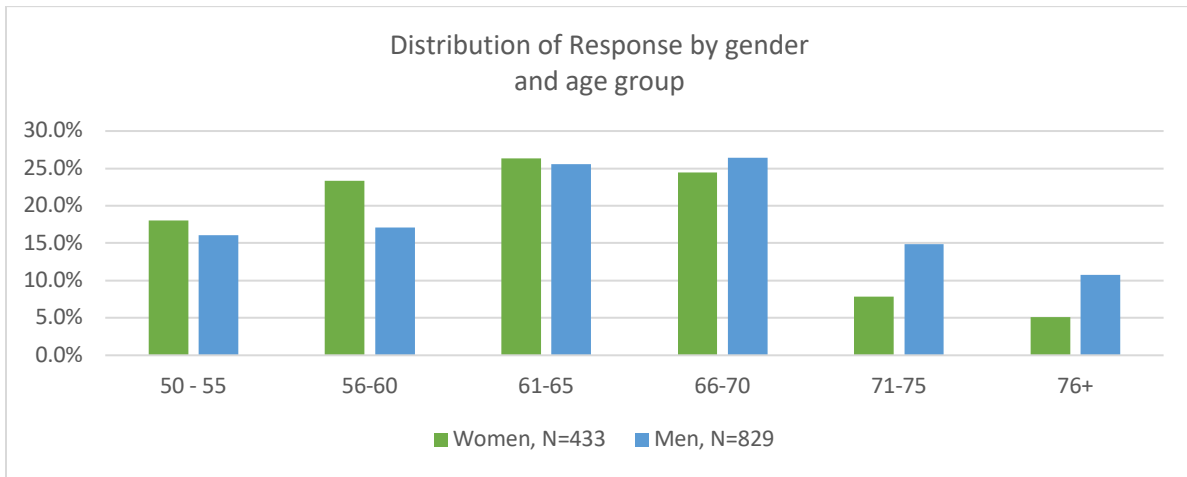
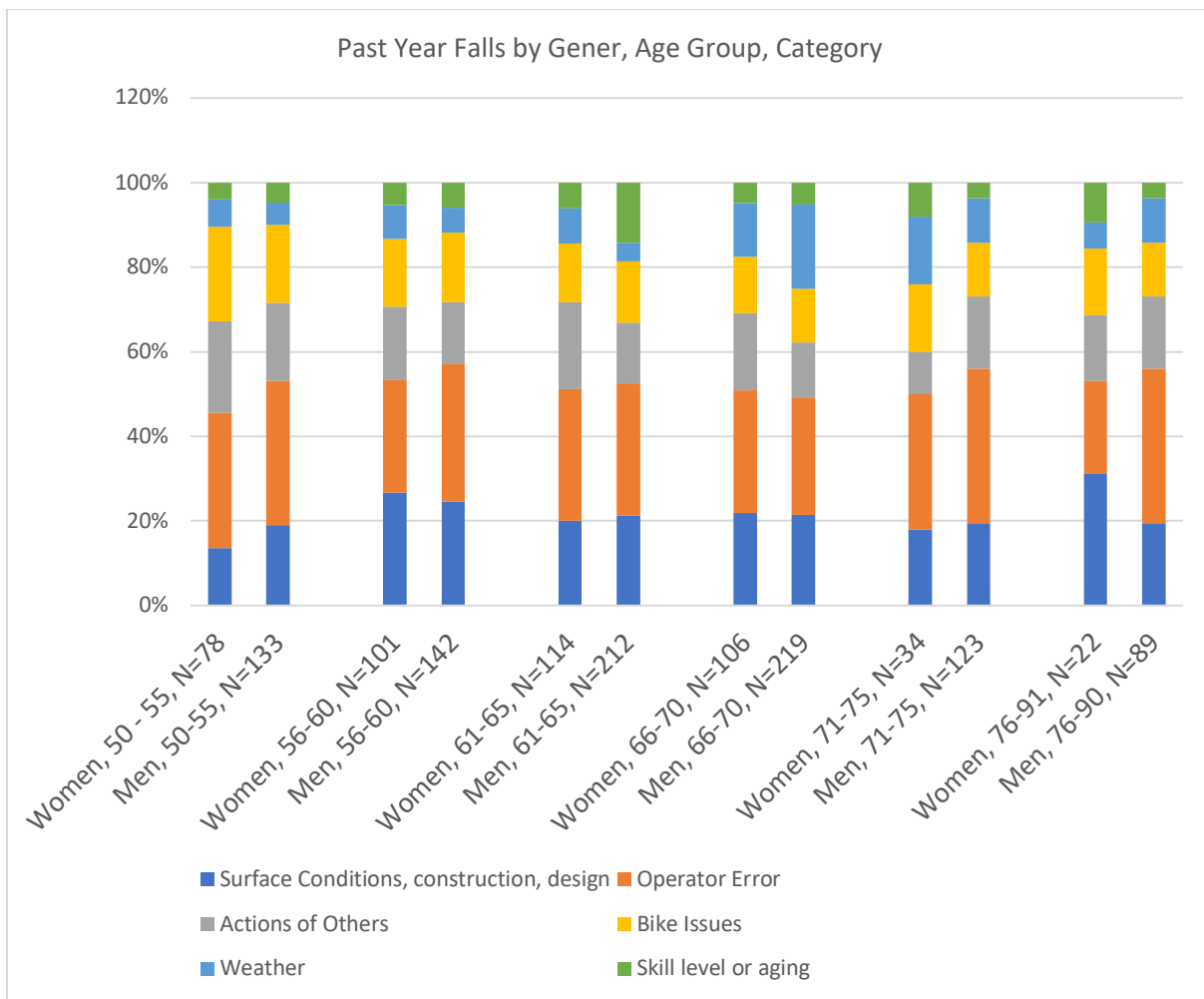


Figure 94. Past-year Falls by Age Group, Gender, and Category



Another way to look at age-based differences is shown in Figure 95. This chart assumes the 50 to 55 age group as a base line and calculates differences by each successive age group and category, regardless of gender. The following highlights increases and decreases in categories, including some speculation about why the change occurs for each age group—either as one might expect or different from that expectation.

#### Categories that increased with age:

- Surface Conditions – all subsequent age groups, but highest increase for 56 to 60 age group.
- Weather – for all age groups except 61 to 65, with highest for 66 to 70.
- Skill Level or Aging – for all age groups, with highest increase for 66 to 70. Lowest for those 71 and older. A study from the National Institutes of Health cites aging “acceleration” at ages 34, 60, and 78.<sup>3</sup> So, it may be that the 66 to 70 age group is experiencing the effects of the aging process and are still learning how to adapt.

#### Categories that did both with age:

- Operator Error – decreased for the youngest three age groups but increased for those 71 and older (2% for those aged 71 to 75; 0.4% for those aged 76+). It may be that older cyclists have learned techniques to mitigate a loss of skills or the effects of aging so they can continue to cycle.

#### Categories that decreased with age:

Bike Issues – consistently decreases with each subsequent age group. As with Operator Error, it may be that older cyclists have learned techniques to mitigate bike issues. For example, using better fitting bicycles and avoiding maneuvers on the bike that cause flat tires, dropped chains, and perhaps falls due to not being able to get their feet out of clips. Figure 96 confirms that problems with clips generally decreases with age. (Note: the percentages show the factor “trouble with clips, pedals, etc.” for each age group compared to the total in each age group.)

Surface Condition – the trend line for this category is downward for men and upwards for women. Figure 97 provides a closer look at three factors contributing to a fall: uneven surface, cracks and transitions, and obstacles.

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<sup>3</sup> <https://www.nia.nih.gov/news/aging-research-blood-proteins-show-your-age#:~:text=For%20example%2C%20the%20team%20suggests,34%2C%2060%2C%20and%2078.>

Figure 95. Changes in Falls from 50–55 Base Age Group

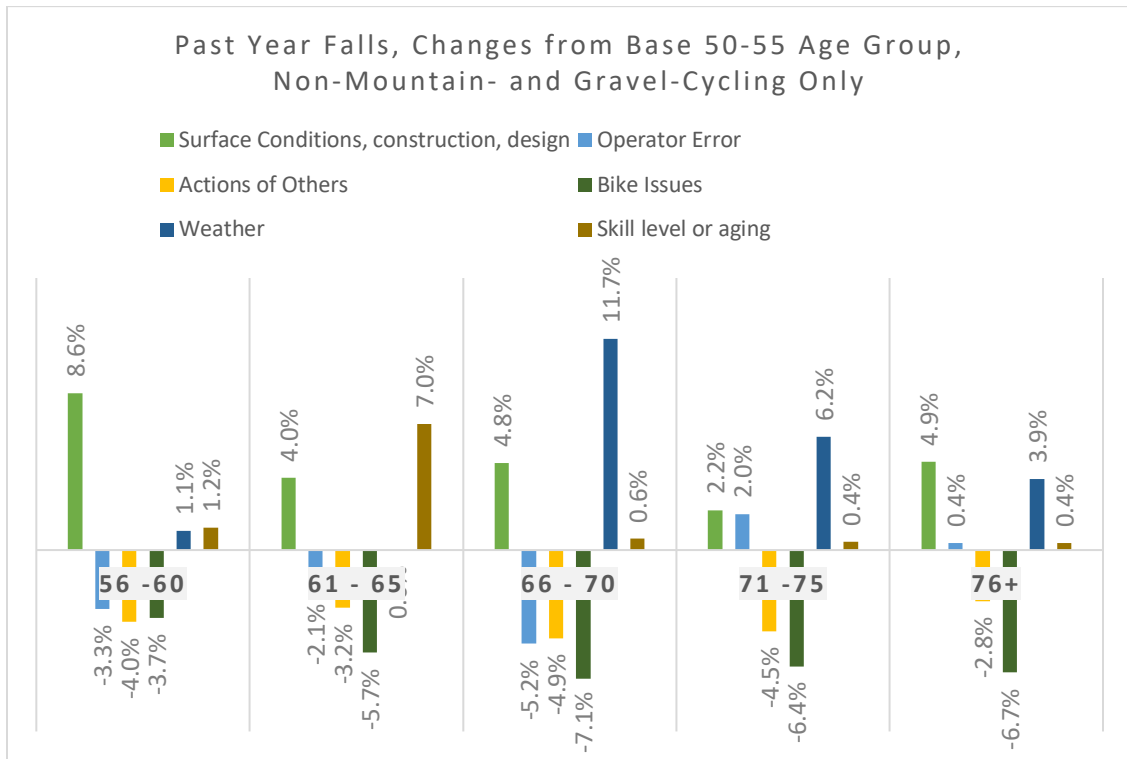


Figure 96. Change in Occurrence of Clips as a Fall Factor by Age

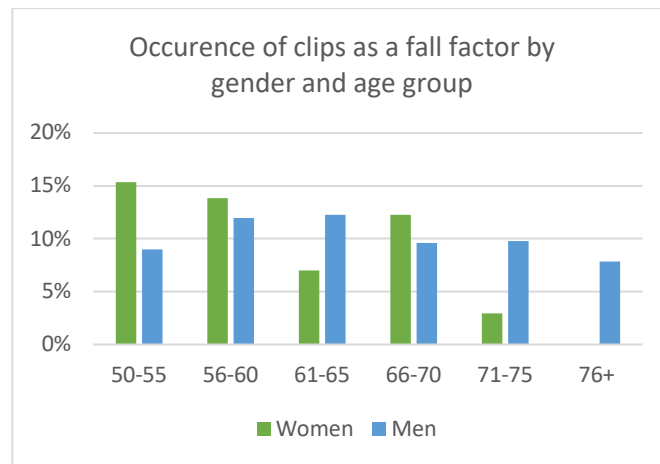
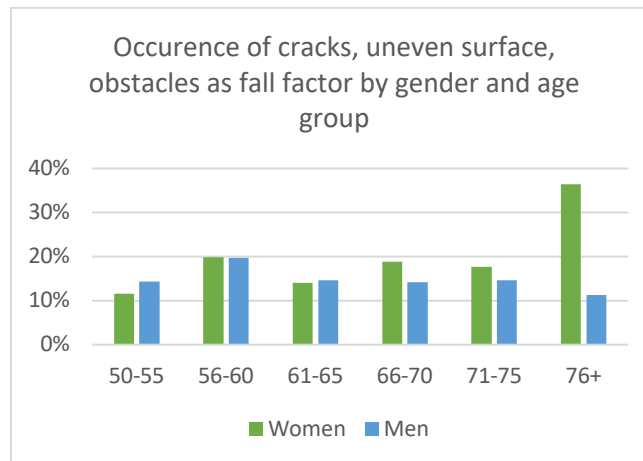


Figure 97. Change in the Occurrence of Surface Conditions as a Fall Factor by Age



### 9.2.2 Comparison with Year 3 Survey

#### *Connection to reported Near Misses with reported Falls*

This year’s survey asked if the fall or crash was related to a near miss noted in the previous question. The near-miss connection was included because of the number of fall descriptions provided in the Year 3 survey that cited it as a contributing factor.

#### *Inclusion of Mountain and Gravel cycling*

Given the different nature of mountain and gravel cycling and racing such as track and cyclocross, falls for these types of cycling are analyzed separately. As one person noted, “Mountain biking and some gravel biking leads to falling off your bike. It happens regularly because it’s a technical skill that you don’t always get right. I fell two weekends ago trying to go around a sharp corner—fell



into the corner and got a huge bruise....” Another fell after being convinced by friends to join them, “I stupidly agreed to go on a mountain bike trail with friends who said it was easy! Not! No more mountain bike trails for me. I’m good with roads, bike trails and gravel trails.” In recording contributing factors for mountain and gravel cycling, falls described as “just fell due to the technical nature of the trail” are noted as the factor, *Obstacles, Debris, etc.*, or *Cracks, Transitions*. Additionally, respondents noting that they were cycling above their skill level are recorded in the *Inattention, poor bike handling, poor decision while riding* factor.

#### *New or augmented factors*

Factors added to the analysis are based on their inclusion in enough fall descriptions to warrant being a separate factor. These include:

The weight of bike or cargo being carried.

A respondent’s assessment of their actions that contributed to the fall. In addition to “inattention” as a factor in the *Operator Error* category, a second factor, “My fault, stupidity, poor decision-making, clumsiness,” was added to reflect how the person felt about their cycling. For example, descriptions such as, “Stupidity, going up steep hill, came to complete standstill, didn’t de-clip fast enough, lost balance, fell over, muttered under breath,” were different than a more neutral note of being inattentive. In fact, the word “stupid” was included about two dozen times in fall descriptions.

A Factor X just for loose animals and insects. One respondent asked why this wasn’t included, sharing that s/he fell because “A pig ran out into the road from the forest and braking hard, my rear wheel skidded and I ended up running into the forest. Bruises and abrasions only. You should have included wild animals or loose pets in question 18.” Others cited:

- Squirrels – “A squirrel with an attitude. Missed the squirrel but slid on wet pavement.”
- Insects – “A wasp, huge menacing one flew up my pant leg. And I’ve developed a severe allergic reaction over the past ten years (multiple stings)”
- Dogs – “Two large, unleashed dogs run alongside both sides of bike. One ran in front of me almost causing an accident. I had to get off bike in middle of road and put bike between aggressive dog.”
- Deer – “Hit a deer on King’s Mt. road. Never saw it until the collision. Also, some near misses with cars on the same road. I don’t ride KM anymore.”
- Waterfowl – “Very rare – a raft of ducks – about 30 – flew into me and my tire went off trail and over corrected into the edge of trail causing fall.”

### *9.2.3 Changes for Year 5 Survey*

#### *More specific impact of e-bikes*

Given the growth of e-bikes, their pluses and minuses, and the controversy about them reflected in survey responses, e-bike-related falls may be captured separately in the Year 5 survey. E-bikes were oft-mentioned as contributing to a fall for one of three reasons:

- The weight of the bike causes the crash, captured in the “weight of the bike” factor;
- Someone was trying a friend’s e-bike or learning on their new e-bike, captured in the “poor bike” factor; or
- Someone riding an e-bike was doing so in an unsafe manner, captured in the “action of other cyclists” factor. Those whose fall resulted from someone on an e-bike expressed a general dislike for e-bikes and the people who ride them because traveling in the same space is considered unsafe by those on normal pedal bikes.

#### *Effect of a crash on a bicycle change*

Several people noted that they modified their existing bike or purchased a different bike after a crash. This is a sign of a desire to continue cycling and should be captured as part of other on-going research on cycling through a person’s life course. Some of the examples below were also cited in earlier sections of this report:

- Two children walking two dogs taking up the whole road downhill, and I did not start stopping in time; hit one dog fell over the bike and dog and broke 6 ribs. I spent 10 days in the hospital. They plated 4 ribs together. Bought a Tadpole Recumbent Trike.
- Hit some mud but did not go down. I started riding at 75 and fell several times starting and stopping and then took my daughter’s advice and lowered the seat.
- Fatigue, weak arm/wrist...couldn't catch myself faltering into a turn, while on speedier all-carbon bike. Went back to my older aluminum bike for safer handling for a 66-year-old woman who’s not a super athlete.
- I have hip arthritis & cannot throw my leg up over the bike. I finally switched to a cruiser so I can ride a step through on a “girl” bike. But the bike is too heavy & not as much fun.

#### *Things that affect older cyclists*

The question of how age affects one’s cycling ability can be better parsed from the question regarding past year falls and other questions. For example, some mentioned being startled by a

passing motor vehicle or someone cycling past them at a high rate of speed. This “startle” effect can be connected to the design features of a cycling facility, especially if research shows an increasing reaction rate as people age. Several participants mentioned poor decisions made due to fatigue; one person said they fell asleep while cycling and crashed. These falls could have been at the end of a very long ride or a multi-day tour; thus, there should be a way to understand them.

Example fall descriptions, not all of which mention age as a factor, include:

- Preparing to turn a corner while going down a hill. A car which would have crossed my path startled me and I fell while turning.
- Reacted to a car passing too closely.
- One was a slippery uphill road, another not seeing a traffic bump, another not seeing a curb at night.
- Tried to get up a 20% grade hill, failed.
- Hit a road marker. Was not paying attention. My fault as most of my crashes have been.
- Less balance, in a hurry, not as agile as before.
- Balance and loss of flexibility. Getting older and stiffer. At times I am having difficulty mounting the bike by swinging my leg up over the seat. Once I didn't make it and lost balance falling backward. No injury.

## 10. Summary and Conclusions: Things We can Learn through Further Study & Things to Share

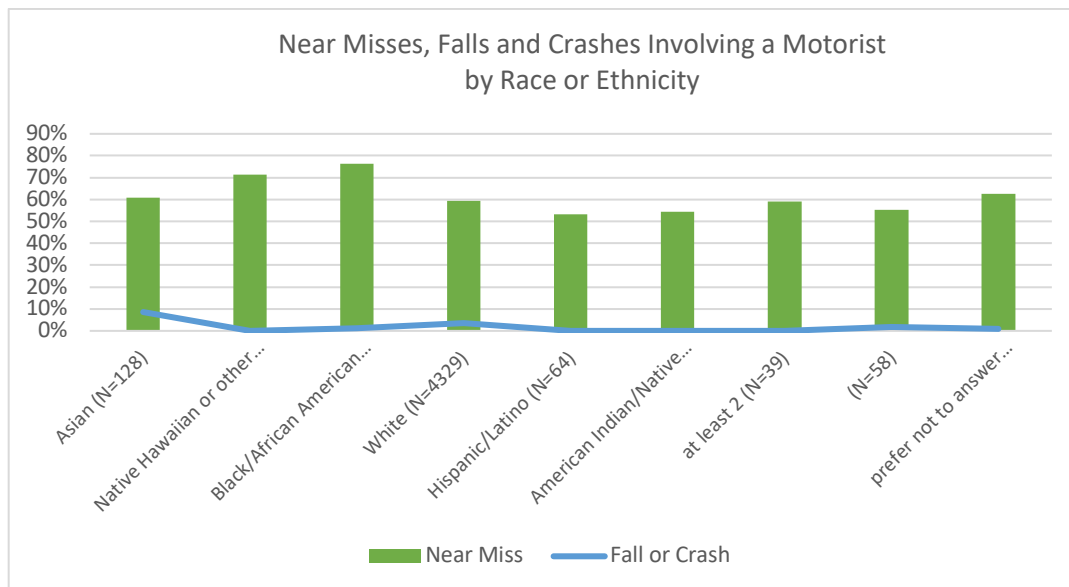
The analysis provided here demonstrates a propensity for older adults to cycle as they age through the last decades of their lives. Some choose to cease cycling; others find ways to continue. Data provided from the Year 4 survey offers many opportunities for analysis and study, as well as things to act on and things to share. A description of these topics is provided here with the intent of inspiring subsequent study, action, and sharing.

### 10.1 Cycling Risks for Older Cyclists of Color

The large disparity in the response rate for the race or ethnicity question in this year’s survey creates a challenge to completing meaningful analyses. Ownership rates were provided in Section 5.3.2 on e-bikes, but more can be done in future years’ surveys, perhaps through focus groups and interviews.

Risks for cycling by people of color is well-documented. Until the past few years, much of this work focused on African Americans and Hispanic Americans, but COVID-19 increased risks for Asian Americans: “I was always comfortable cycling alone until COVID-19 and the rise of anti-Asian bias incidents” (57-year-old man). Most studies do not include specific risks for older cyclists of color. To begin the process, we compared near misses and falls due to the presence of motor vehicles (i.e., the people driving them) between people of color and whites who answered these questions. Figure 98 shows a higher rate of near misses for people of color compared to white people, but a lower rate of falls or crashes.

Figure 98. Near Misses, Falls, and Crashes Involving a Motorist by Race or Ethnicity



## 10.2 Cycling Risks for Women or Others

Similar to cycling risks for older people of color, women and others may experience challenges to their right to cycle. While the survey provides data to compare factors such as life course, falls, and cycling distances and frequency between genders, it does not capture risks to older cyclists based on their gender. For example, one person shared that, “I cycle in different cities when I travel. I’m comfortable everywhere unless people give me threatening looks. I am female appearing, so sometimes that is a problem” (79-year-old woman). The Year 5 survey may find a way to learn about these risks.

## 10.3 Impact of Care-giving on Cycling Rates

Care-giving responsibilities affected a number of people who completed the survey. Family caregiving when raising small children resulted in a pause in cycling. As children got older or moved out of the house, cycling resumed. A similar cycle was noted for older adults who had care-giving responsibilities for older parents or a life partner. Cycling rates decreased or paused because of these responsibilities, only to increase or resume when the person being cared for died, recovered from their illness, or the caregiver purchased an adaptive bicycle so they could cycle together. This phenomenon is worthy of further research, as the benefits of cycling are lost when older adults reduce or stop cycling.

## 10.4 Impact of Age or Injury, Chronic Condition, and Avoiding Cessation

While related to the topic of encouraging older adults to re-engage in cycling (see below Section 10.7 – A Final Thought: Encouragement and Re-engagement), an injury or a chronic condition can affect someone’s desire and ability to continue cycling. A number of people responding to the survey offered their challenges and successes, such as, “Injury recovery: Not a bike change, but crash injury recovery: Skidded on mud on the road bike while clipped in. Crashed hard and cracked some ribs. September 2020. Off the bike for 6.5 weeks, substituted so much walking and (light) weightlifting program.”

Simon Cook at Birmingham City University is doing work on crash recovery. His work uses narrative interviews to understand people’s stories and practices after a crash. The older cyclists he interviewed offer an understanding of why they did, did not, or are trying to return to cycling after a crash resulting in an injury. These reflections include:

- The increased difficulty of physically rehabilitating when older and its impact on the desire, duration, and benefits of returning to cycling.
- The natural lifespan of cycling practices and the lack of value in returning to cycling (and/or investing in a new bike) after a collision in older age.

- The changing role of cycling in retirement that means it can become more or less important in someone life and affect their interest in returning to cycling after a collision.
- The awareness of what impact a collision in the future may mean for their cycling practices.

A report on Cook’s post-collision study is available online at: <https://www.open-access.bcu.ac.uk/12850/7/Post-collision%20cycling%20report.pdf>

## 10.5 Impact of Social or Cultural Pressure on Cessation

All survey respondents currently cycle, but there may be some older adults who stopped cycling due to pressure from family and friends. The push to stop cycling typically comes from a concern about the older adult’s ability to cycle safely (i.e., not to fall and injure themselves) and from a concern about falls and crashes with people driving, walking, and cycling in the same space. The Year 4 survey included a couple of answer options for the follow-up question about a pause in cycling of at least a year: getting a driver’s license and social pressure. But the survey did not include questions specific to social pressure as an older adult.

This issue is related to driving cessation which can be explored further, building on some initial work we completed in early 2023 that compares driving and cycling adaptations as people age: *Ageing and Mobility: A Look at How Ageing Impacts Driving and Cycling*.

## 10.6 Design Guidelines and Maintenance Standards

The near miss and fall descriptions provide examples of where design and maintenance guidelines and standards can be improved. Planners, engineers, and maintenance staff in many jurisdictions have experience designing and operating bikeways that reduce fall or crash risks. Examples of these should be shared with jurisdictional staff and policy makers to bring these business practices to more communities, especially in areas where older adults cycle. For example, the amount of cycling infrastructure serving older adult communities varies by jurisdictions and by developer goals. See a recent study of ten older adult communities in California for more information.

In addition, the federal Bipartisan Infrastructure Law (2021) made many positive changes to the Transportation Alternatives Program (TAP), including a new requirement that states define high-need communities and prioritize them in TAP project selection. Older adults are included in the criteria for defining high-need, increasing the potential to fund projects benefitting cycling infrastructure used by older adults. The Safe Routes Partnership has published a description of TAP funding guidelines with respect to high-need, including a compilation of how states defined and prioritized high-need communities prior to the 2021 law. Updating this information and tracking how well TAP’s high-need objectives are met is a worthwhile research effort.

Tables 20 and 21 provide examples of the types of problematic design and maintenance experienced by those responding to the survey.

Table 20. Fall Descriptions Indicating a Design Need





Fall description (all are quotes from survey responses)	Design
Regarding a trike: I might get one, but they are wide and need wider infrastructure than what we have now.	Wider bikeways for increased capacity, particularly for larger bicycles.
On the Upper Tampa Bay Trail, there is a series of underpasses with curves and limited sight lines. As I was riding, approaching a blind corner, riding in my lane, another cyclist rounded the curve riding quickly across the center line and we very nearly hitting him.	Reduce the number of blind turns and likelihood of crashes by designing out blind turns, including mirrors, or installing vertical separation to establish two-way cycling lanes. Photo is example of limited site lines and tight turns.
I was on a blind turn on a narrow bridge pathway and the other cyclist was speeding toward me.	
Ran into a rock in the shoulder (bike lane).	Include a shy space in the bikeway design to the right of the bicycle pathway, avoiding obstacles such as large rocks.
I fell on a short steep approach to a Rails to Trails trail. I wasn't paying attention to the steepness of the approach and didn't have enough momentum to climb it and didn't clip out in time to catch myself.	Design switchbacks for trail connection or entrance pathways where space is available. Where steps are used for the entrance, include a channel for people to push their bikes up. Photo is example of solution.
	Retrofit intersections with multi-modal traffic volumes to provide designed space with sufficient capacity for all modes, including time to proceed through the intersection.

Table 21. Fall Descriptions Indicating Maintenance Need

Fall description (all are quotes from survey responses)	Maintenance & Construction
<p>Tire caught in road surface fault.</p>	<p>For roads designated as a bicycling route or otherwise with established use by bicyclists, establish a threshold appropriate for bicycles (not motor vehicles). Review and repair pavement and surface conditions annually. Photo is an example of a road surface fault.</p> 
<p>Loose gravel on a construction area near a rerouted path. I hit a patch of uneven pavement in a construction zone.</p>	<p>Require temporary bikeways due to construction to be equal in capacity and surface quality to pre-construction and planned post-construction conditions. Photo is an example of problematic trail construction conditions.</p> 
<p>Wheel got caught in big gap in trestle bridge on a designated bike path.</p>	<p>Design in a fix for gaps, including resurfacing the whole bridge or designed bikeway width.</p>
<p>I was on a descent I am very familiar with. The “bike lane” was strewn with rocks from the embankment. I missed all the ones I did see. I hit one I did not see at almost 40mph. I fought to maintain control and ended up going over my handlebars...</p>	<p>Install a cover on rocks so they don’t fall onto the bike lane. Complete routine and frequent checks for rocks, including a reporting system with guaranteed response time.</p>



## 10.7 A Final Thought: Encouragement and Re-engagement

Some people give up on cycling as they age because they cannot determine how to continue or to get started if they haven't biked in a long time. Safety concerns are a strong motivator to avoid cycling; the lack of support or encouragement is another. Family and friends who cycle can help, as can bike shops and local programs.

Having a conversation with the person is a good place to start to understand why they are interested and what is of concern. There are various ways to satisfy a desire to cycle and mitigate a concern.

Find the right bike. As the results from the survey show, there are many types of bikes. Consider bikes that fit the person and their goals for cycling is the key.

Find the right place to bike. Maybe start with a calm neighborhood street or parking lot, then try a trail.

Find the right time to bike. If the desire is to avoid lots of traffic—whether it be people walking and jogging or others cycling—find a time of day with fewer people out. Designate a time of day or day of week to cycle.

Find someone to ride with. Friends and family may be good cycling companions. This list of questions offered to encourage friends and family to cycle is a good resource. There are also local programs to join. Some health departments or departments of aging have cycling programs that teach cycling, offer refresher courses, or simply offer group rides. For example, Howard County, Maryland's Department of Aging and Independence offers [Cycle 2 Health](#). Cambridge, Massachusetts' Council on Aging offers classes to learn or re-learn cycling. Called Pedal Power, the program was developed just before the outbreak of COVID-19 and had to make some changes to fit social distancing. It looks as if they are back to full steam, though.



## About the Author

### **Carol Kachadoorian**

Carol started db|Tilde CORE, Inc. in 2021, a nonprofit whose mission is to advance knowledge about and planning for sustainable mobility and wellness in communities through outreach, research, and education. db|Tilde CORE's work draws on Carol's knowledge of and expertise in transportation planning and operations, working at both the city and regional levels, including school- and community-based active transportation plans and older adult mobility. She understands the importance of both big data and personal experience to determine feasible changes to transportation systems that make travel by all modes safe, accessible, and comfortable for all ages and abilities.

Carol has spoken nationally and regionally on the need to revise long-standing perceptions of older adults through words and images. She continues to conduct research on older adult mobility and wellness, partnering with several universities. The Mineta Transportation Institute published her pioneering work, "Cycling past 50: A Closer Look into the World of Older Cyclists," and hosted the 50+ Cycling Survey Year 4.

# Appendix A

## 50+ Cycling Survey - Summer 2021 to Spring 2022

### Cycling Past 50 Survey

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**Page exit logic:** Skip / Disqualify Logic

**IF:** #1 Question "Do you agree to the above terms?" is one of the following answers ("No")

**THEN:** Disqualify and display:

Thank you for considering taking the survey. You will be exited from it because you indicated you do not agree to the terms for taking it.

**LOGIC** Show/hide trigger exists.

**ID** 165

1. Do you agree to the above terms?

- Yes
- No

### (untitled)

---

**Page exit logic:** Skip / Disqualify Logic

**IF:** #2 Question "Are you age 50 or above?" is one of the following answers ("No") **THEN:** Disqualify and display:

This survey is for cyclists 50 and older. Because you are younger than that, you are not eligible to complete the survey. However you can still be part of the survey by encouraging cyclists 50 and older to take it. Use this [bit.ly](#) or QR code to pass it on.

**LOGIC** Hidden unless: #1 Question "Do you agree to the above terms?" is one of the following answers ("Yes")

**ID** 107

2. Are you age 50 or above?

- Yes
- No

(untitled)

---

**LOGIC** Hidden unless: #1 Question "Do you agree to the above terms?" is one of the following answers ("Yes")

**ID** 232

## COMPLETING THE SURVEY

**There are three parts to the survey. Please answer Part 1, then decide if you want to continue on to Part 2 and Part 3.**

**Part 1** – Collects basic information about you and your cycling history, habits, and future.

**Part 2** – Collects your response to images featuring different types of bicycle infrastructure to gauge your comfort when using them as you cycle.

**Part 3** – Invites you to complete an online journal for at least two cycling trips you make during the next month. The writing can be done after your ride (on a home computer or tablet) or during your outing (on your smart-phone). Consider bookmarking the link for future use.

(untitled)

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**Page exit logic:** Skip / Disqualify Logic

**IF:** #4 Question "Why do you not cycle?"

*Select all that apply* **THEN:** Disqualify and display:

The remainder of the survey is for those who currently cycle. We encourage you to consider finding a way to cycle where you feel safe. For more information, please contact your local government or email us at [dbtildecollab@gmail.com](mailto:dbtildecollab@gmail.com)

**LOGIC** Show/hide trigger exists.

**ID** 167

### 3. Do you cycle?

*This means you have access to a bicycle and use it as a form of transportation, recreation, or for fitness. The frequency and amount of cycling you do can vary.*

- Yes
- No

**LOGIC** Hidden unless: #3 Question "Do you cycle?"

*This means you have access to a bicycle and use it as a form of transportation, recreation, or for fitness. The frequency and amount of cycling you do can vary." is one of the following answers ("No")*

**ID** 168

### 4. Why do you not cycle?

*Select all that apply*

- I am concerned about traffic safety
- I do not own or have access to a bicycle
- I do not know how to bicycle
- I have physical or balance limitations that make bicycling difficult
- I live in an area with few or no comfortable places to bicycle
- I want to cycle, but need encouragement and a refresher on how to ride
- Other - Write In (Required)

\*

**LOGIC** Show/hide trigger exists.

**ID** 169

5. What **type of cycling** do you to?

*Check all that apply*

- Road or trail
- Touring
- Gravel
- Mountain
- Around town
- Racing
- Other - Write In (Required)

\*

**LOGIC** Show/hide trigger exists. Hidden unless: #5 Question "What **type of cycling** do you to? *Check all that apply*" is exactly equal to ("Mountain")

**ID** 170

6. Is mountain biking the only type of cycling you do?

- Yes
- No

**(untitled)**

---

**Page exit logic:** Exit the Survey

**IF:** #6 Question "Is mountain biking the only type of cycling you do?" is one of the following answers ("Yes") **THEN:** Redirect to: [transweb.sjsu.edu/](https://transweb.sjsu.edu/)

**LOGIC** Hidden unless: #6 Question "Is mountain biking the only type of cycling you do?" is one of the following answers ("Yes")

**ID** 249

This survey is not for mountain biking so we ask that you exit the survey.

Thank you for your interest.

[Click here to exit the survey.](#)

**(untitled)**

---

**LOGIC** Hidden unless: #5 Question "What **type of cycling** do you to? *Check all that apply*" is one of the following answers ("Mountain")

**ID** 250

**NOTE: Please answer the survey for the biking you do other than mountain biking.**

**LOGIC** Show/hide trigger exists.

**ID** 172

7. What **type/s of bicycle** to you usually ride?

*Select up to two bicycle types*

- Road
- Touring
- Hybrid
- Tandem
- Recumbent
- Urban
- Cruiser
- Cargo
- Other - Write In (Required)

\*

**LOGIC** Hidden unless: #7 Question "What **type/s of bicycle** to you usually ride? *Select up to two bicycle types*" is one of the following answers ("Tandem")

**ID** 239

Please answer the rest of the survey for your experience riding a tandem.



**LOGIC** Hidden unless: #7 Question "What **type/s of bicycle** to you usually ride? *Select up to two bicycle types*" is one of the following answers ("Tandem")

**ID** 235

8. What type of tandem is it?

- Regular geared with handbrakes
- Recumbent with gears and handbrakes
- Buddy bike (designed for one person who cannot ride on their own)
- Other - Write In (Required)

**LOGIC** Hidden unless: #7 Question "What **type/s of bicycle** to you usually ride? *Select up to two bicycle types*" is one of the following answers ("Tandem")

**ID** 236

9. Who do you ride with

*Check all that apply*

- Life partner
- Good friend
- My parent
- My daughter or son
- Other - Write In (Required)

\*

**LOGIC** Hidden unless: #7 Question "What **type/s of bicycle** to you usually ride? *Select up to two bicycle types*" is one of the following answers ("Tandem")

**ID** 240

10. What promoted you to begin riding a tandem?

**Logic** Hidden unless: #7 Question "What **type/s of bicycle** to you usually ride? *Select up to two bicycle types*" is one of the following answers ("Tandem")

**ID** 237

11. For what trip purpose do you ride the tandem?

*Check all that apply*

- Recreation
- Touring
- Daily errands
- Commuting to work, volunteer commitment, etc.
- Other - Write In (Required)

\*

**(untitled)**

---

**ID** 51

## PART 1: BASIC INFORMATION, YOUR CYCLING HISTORY AND EXPERIENCES

**ID** 176

12. How old are you?

ID 3

13. Do you describe yourself as a woman, a man, or in some other way?  
*We encourage you to answer this question to help us learn of any differences between women and men.*

- Woman
- Man
- Some other way
- Prefer not to answer

ID 103

14. Please indicate your primary race

- Asian
- Native Hawaiian or Other Pacific Islander
- Black/African-American
- White
- Hispanic/Latino
- American Indian/Alaska Native
- At least two
- Other - Write In

- Prefer not to answer

ID 104

15. Please indicate your annual household income

- Less than \$25,000
- \$25,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$124,999
- \$125,000 to \$149,999
- \$150,000 or more

(untitled)

---

LOGIC Show/hide trigger exists.

ID 6

16. Since you said that you cycle, do you consider yourself to cycle regularly or not regularly?

*Cycling regularly means that cycling is a habit, rather than an occasional activity*

- I cycle regularly
- I do not cycle regularly (it is an occasional activity)

**Logic** Hidden unless: #16 Question "Since you said that you cycle, do you consider yourself to cycle regularly or not regularly?"

*Cycling regularly means that cycling is a habit, rather than an occasional activity*" is one of the following answers ("I cycle regularly")

**ID** 7

17. How often do you cycle now?

- 6+ times a week
- 3-5 times a week
- 1-2 times a week
- 1-3 times a month
- Weather dependent

**Logic** Hidden unless: #16 Question "Since you said that you cycle, do you consider yourself to cycle regularly or not regularly?"

*Cycling regularly means that cycling is a habit, rather than an occasional activity" is one of the following answers ("I do not cycle regularly (it is an occasional activity)")*

**ID** 102

18. Since you don't cycle regularly, what prompts you to cycle?

*Check all that apply*

- When I'm on vacation
- When I visit my children or grandchildren
- When the weather is right
- When someone pushes me to
- When I feel like it
- When I have someone to cycle with
- When I want to be more physically active
- When I feel cycling is safe
- When I have a working bike
- Other - Write In (Required)

\*

**(untitled)**

---

ID 114

19. When did you first start biking?

- As a child
- As a teenager
- 20-29
- 30-39
- 40-49
- 50-55
- 56-60
- 61-65
- 66-70
- 71+

(untitled)

---

LOGIC Show/hide trigger exists.

ID 10

20. Is there a time in your life when you stopped cycling for at least a year?

- Yes
- No

**VALIDATION** Min. answers = 1 (if answered) Max. answers = 3 (if answered)

**LOGIC** Hidden unless: #20 Question "Is there a time in your life when you stopped cycling for at least a year?" is one of the following answers ("Yes")

**ID** 5

21. What was the reason you stopped cycling?

*Select up to 3.*

- Parenting or other caretaker responsibilities
- My work situation or schedule changed
- I was in the military
- I moved abroad
- I got a driver's license and was more interested in cars
- I experienced health challenges or a long-term recovery from an injury or surgery
- Location (topography, weather, remote)
- Lack of cycling infrastructure
- I did not feel safe biking
- Social pressure or stigmas
- I did not have anyone to cycle with
- I switched to another form of exercise or sport
- I did not have a bicycle or anywhere to store a bicycle
- I just gradually got away from cycling; no specific reason
- I was in a crash and lost my confidence



**VALIDATION** Min. answers = 1 (if answered) Max. answers = 3 (if answered)

**LOGIC** Hidden unless: #20 Question "Is there a time in your life when you stopped cycling for at least a year?" is one of the following answers ("Yes")

**ID** 11

22. Why did you start cycling again?

*Select up to 3.*

- I moved where cycling was easier
- They built new or improved cycling infrastructure near me
- My children were old enough for me to resume cycling
- I have more free time or retirement
- Health reasons or concerns made cycling a preferred form of exercise
- For physical exercise during COVID-19 restrictions
- To join my friends cycling or for social connections and networking
- For commuting to work or other transportation
- Because of environmental concerns -- wanted to eliminate or reduce personal car usage
- Because of economic reasons -- could not afford or wanted to reduce costs associated with car ownership or transit usage
- I acquired another bicycle or had access to a bicycle and bicycle storage
- I missed it and just decided to cycle

**LOGIC** Show/hide trigger exists.

**ID** 12

23. In the past year, have you changed the amount of cycling you do?

- Yes
- No

**LOGIC** Hidden unless: #23 Question "In the past year, have you changed the amount of cycling you do?" is one of the following answers ("Yes")

**ID** 36

24. How has the frequency of your rides changed?

- I'm cycling less often
- I'm cycling more often
- The frequency I cycle has not changed

**LOGIC** Hidden unless: #23 Question "In the past year, have you changed the amount of cycling you do?" is one of the following answers ("Yes")

**ID** 160

25. How has the distance of your rides changed?

- I'm cycling shorter distances
- I'm cycling longer distances
- The distance I cycle has not changed

**VALIDATION** Min. answers = 1 (if answered) Max. answers = 3 (if answered)

**LOGIC** Hidden unless: (#24 Question "How has the frequency of your rides changed?" is one of the following answers ("I'm cycling less often") OR #25 Question "How has the distance of your rides changed?" is one of the following answers ("I'm cycling shorter distances"))

**ID** 13

26. Why has your amount of cycling decreased in distance or duration in the past year?

*Select up to 3.*

- The people I cycled with either moved or don't cycle
- I crashed and feel less confident cycling
- I feel less safe from others on the road
- I don't have the energy any more
- I have a physical condition which makes it difficult to cycle
- Family responsibilities are taking more time
- Work responsibilities are taking more time
- Change in job or home prohibits it
- Due to COVID-19-related circumstances
- A different sport works better for me
- I don't have a well-functioning or fitting bike
- There is construction along my old cycling pathways that limits safe cycling space
- Other - Write In (Required)

\*

**VALIDATION** Min. answers = 1 (if answered) Max. answers = 3 (if answered)

**LOGIC** Hidden unless: (#24 Question "How has the frequency of your rides changed?" is one of the following answers ("I'm cycling more often") OR #25 Question "How has the distance of your rides changed?" is one of the following answers ("I'm cycling longer distances"))

**ID** 37

27. Why has your amount of cycling increased in distance or duration in the past year?

*Select up to 3.*

- I now have people to ride with regularly
- A new cycling facility opened that I can use
- I moved to a place where there is good network of on- road facilities and trails
- I moved to a place where there are more cycling accessible destinations
- I moved to a place where the weather is more moderate
- For physical exercise during COVID-19 restrictions
- I stopped running and increased the amount I cycled
- I'm training for a long-distance ride
- I got an ebike
- I have someone to cycle with
- I want to better more fit
- I retired and have more time
- I got a new bike that fits and works better
- I resolved a physical problem and can now bike more
- Other - Write In (Required)

\*

ID 14

28. Under what circumstances would you stop riding all together?

*Click all that apply.*

- A physical condition that made riding difficult
- An overall loss of energy
- A move to a place with few or no safe place to ride
- A move to a place where the weather was not conducive to riding
- I cannot envision a time or circumstances that would cause me to stop riding
- When caregiver responsibilities make it impossible to cycle
- Other - Write In (Required)

\*

**(untitled)**

---

ID 15

29. Indicate any near misses you have had while cycling in the past year with...

*Click all that apply.*

- Other cyclists on normal pedal bikes
- Other cyclists on eBikes
- People on scooters
- People walking, adult
- People walking, children or teens
- People walking, mix of ages
- People jogging
- People driving cars
- People driving golf carts
- I have not had any near misses

LOGIC Show/hide trigger exists.

ID 16

30. In the past year, have you fallen or nearly fallen while cycling?

- Yes
- No

**LOGIC** Hidden unless: #30 Question "In the past year, have you fallen or nearly fallen while cycling?" is one of the following answers ("Yes")

**ID** 242

31. Was the fall related to a near miss you indicated above?

- Yes
- No

**LOGIC** Hidden unless: #30 Question "In the past year, have you fallen or nearly fallen while cycling?" is one of the following answers ("Yes")

**ID** 17

32. Thinking about the most recent incidence, briefly describe what caused you to fall or nearly fall

**(untitled)**

---

**LOGIC** Show/hide trigger exists.

**ID** 70

33. Are you comfortable biking at night, assuming you have a front and back light on your bike?

- Yes, generally
- No, never
- Sometimes depending on the circumstances

**LOGIC** Hidden unless: #33 Question "Are you comfortable biking at night, assuming you have a front and back light on your bike?" is one of the following answers ("Yes, generally", "Sometimes depending on the circumstances")

**ID** 246

34. Which conditions make it more likely you will cycle at night?

*Check all that apply*

- Where I am cycling
- My familiarity with the route
- If there is lighting (on street path or trail)
- If there are bike lanes or a shoulder to use
- If I am cycling with others
- Weather conditions, prefer no wind or precipitation
- Other - Write In (Required)

\*

**LOGIC** Show/hide trigger exists.

**ID** 71

35. Are you comfortable biking alone?

- Always
- Sometimes, depending on the circumstances
- Never



**Logic** Hidden unless: #35 Question "Are you comfortable biking alone?" is one of the following answers ("Sometimes, depending on the circumstances")

**ID** 164

36. If you answered sometimes what circumstances does this depend upon?

*Select all that apply.*

- Where I am cycling
- If there are bike lanes or shoulder to bike on
- Time of day
- Weather conditions
- My familiarity with the route
- How far I plan to cycle
- Other - Write In (Required)

\*

**(untitled)**

---

### 37. What factors affect where you ride?

*Select all that apply.*

- The presence of other cyclists
- Places to stop to eat, shop, visit
- A place to park my bike easily and safely
- Pleasant vistas, such as a park
- Benches for taking a break
- Shade for cooling off when it's hot
- Bathrooms and drinking fountains
- Few or no cars
- Roads in good condition and clear of debris
- Groups rides
- Neighborhood streets with few cars and lower speeds
- Protected bike lanes
- An overall feeling of being safe
- Time of day, primarily during the day
- Time of day, primarily avoiding morning and evening commuting hours
- Time of day, avoid cycling at night
- Convenient connections to destinations

ID 25

38. For which trip purposes do you ride and what is the average trip length?

	A few blocks	No more than 2 miles	Between 2 and 10 miles	More than 10 but fewer than 25 miles	More than 25 but fewer than 40 miles	More than 40 but fewer than 50 miles	50 or more miles	NA
To be social or for companionship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To travel to and from work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For exercise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For daily errands, including shopping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As a competitive cyclist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(untitled)

LOGIC Show/hide trigger exists.

ID 18

39. Do you own an eBike?

*An eBike, or electric bike, is a generic term used for a bicycle that uses a battery to provide assistance when pedaling.*

- Yes
- No

**LOGIC** Hidden unless: #39 Question "Do you own an eBike?"

*An eBike, or electric bike, is a generic term used for a bicycle that uses a battery to provide assistance when pedaling.* is one of the following answers ("Yes")

**ID** 243

40. Did you purchase the eBike in the past year?

- Yes
- No

**LOGIC** Hidden unless: #39 Question "Do you own an eBike?"

*An eBike, or electric bike, is a generic term used for a bicycle that uses a battery to provide assistance when pedaling.* is one of the following answers ("Yes")

**ID** 19

41. What motivated you to purchase an eBike?

*Click all that apply.*

- I don't have the strength to ride a regular bike where I like to bike
- I want to cycle farther than I do now
- I recently moved to a place where there are hills and the eBike will help keep me cycling
- I was curious and when I did a test ride, I was sold!
- It was just time. I can't be anymore specific than that
- To make it easier to ride with someone who cycles faster than me
- To make it easier to ride up hills
- To make more comfortable to ride in hot weather (I don't sweat as much)
- For commuting to work
- So I can do bicycle touring
- So I could continue to ride during recovery from a medical condition
- Other - Write In (Required)

\*

**Logic** Hidden unless: #39 Question "Do you own an eBike?"

*An eBike, or electric bike, is a generic term used for a bicycle that uses a battery to provide assistance when pedaling." is one of the following answers ("No")*

**ID** 20

42. What would make you consider purchasing an eBike?

*Select all that apply.*

- I don't envision ever getting one
- When I develop a physical limitation on the type of cycling I do now
- To keep me active while I recover from a medical condition
- When I just decide to get one
- When I can afford it
- To make it easier to ride with someone who cycles faster than me on a regular pedal bike
- To ride with someone who rides an ebike
- To say I have one
- When I lose the strength to ride a regular bike where I like to bike
- When I want to do bicycle touring
- When I decide to use it to commute to work or to volunteer
- Other - Write In (Required)

\*

**Logic** Show/hide trigger exists.

**ID** 21

43. Do you own a 3-wheel bike for adults?

- Yes
- No

**LOGIC** Hidden unless: #43 Question "Do you own a 3-wheel bike for adults?" is one of the following answers ("Yes")

**ID** 251

44. Did you purchase the trike in the past year?

- Yes
- No

**LOGIC** Hidden unless: #43 Question "Do you own a 3-wheel bike for adults?" is one of the following answers ("Yes")

**ID** 23

45. What type is your 3-wheel bike for adults, i.e, what is your sitting position when you ride?

Regular sitting up position (bike on the left) or in a recumbent position (bike on the right):

- Regular sit up position
- Recumbent position
- Other - Write In (Required)

**LOGIC** Hidden unless: #43 Question "Do you own a 3-wheel bike for adults?" is one of the following answers ("Yes")

**ID** 113

46. Is your 3-wheel bike e-assist?

- Yes
- No

**Logic** Hidden unless: #43 Question "Do you own a 3-wheel bike for adults?" is one of the following answers ("Yes")

**ID** 22

47. What motivated you to purchase a 3-wheel bike for adults?

*Click all that apply.*

- I wanted more stability when I ride
- I'm not in a hurry and having this bike helps me be more leisurely
- I like the large basket for when I go shopping
- I just decided to get one to add to my bike collection
- It's easier to get on and off than my two-wheel bike
- Purchased one for my much older parent
- More convenient for cycling with my dog
- Other - Write In (Required)

\*

**Logic** Hidden unless: #43 Question "Do you own a 3-wheel bike for adults?" is one of the following answers ("No")

**ID** 24

48. What would make you consider purchasing a 3-wheel bike for adults?  
*Select all that apply.*

- When I have some type of physical limitations on the type of cycling I do now
- When I just decide to get one
- To say I have one
- When I can afford it
- If I developed a health issue or had an injury requiring it
- When my partner gets one, I'll get one too so we can ride together
- I don't anticipate a time or reason for getting one
- Other - Write In (Required)

\*

**(untitled)**

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ID 56

49. In thinking about the information you've provided about your cycling habits, which type of cyclist are you?

*Review the four types and brief descriptions listed below, then select the type that best describes you*

- Interested but concerned - I ride a bike but am concerned about safety and my ability to ride
- Casual and Somewhat Confident - I am comfortable cycling, especially where there are good bicycling facilities
- Experienced and Confident -- I am very comfortable cycling most days and in most places
- A mix of all -- the type of cyclist I am varies by the situation

(untitled)

---

**Page exit logic:** Skip / Disqualify Logic

**IF:** #50 Question "You've just completed Part 1 of the survey. Will you complete Part 2, which includes photos of bicycle facilities?" is one of the following answers ("No, thanks") **THEN:** Disqualify and display:

Thank you for your time to complete Part 1 of the survey. While you did not complete Part 2, there is another way to provide input: Journaling one or two rides in the next few weeks. Use this link to see the online journaling form. Or you can exit the survey. Thanks again!

**LOGIC** Show/hide trigger exists.

ID 255

50. You've just completed Part 1 of the survey. Will you complete Part 2, which includes photos of bicycle facilities?

- Yes
- No, thanks

(untitled)

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**Logic** Hidden unless: #50 Question "You've just completed Part 1 of the survey. Will you complete Part 2, which includes photos of bicycle facilities?" is one of the following answers ("Yes")

**ID** 45

**Thank you for agreeing to provide more information about the conditions under which you feel comfortable cycling.**

**This part of the survey asks you to** provide information on the types of cycling facilities you would use or avoid. There are 17 photos showing a variety of cycling conditions. Review each photo to determine if you would use the facility/ies shown. Then, check the answer option below the photo indicate your how you would use the facility. You'll also be asked to indicate how safe and comfortable the facility/ies shown feel/s to you.

**(untitled)**

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ID 266



LOGIC Show/hide trigger exists.

ID 267

51. Neighborhood street with sidewalks on both sides and parking on one side.

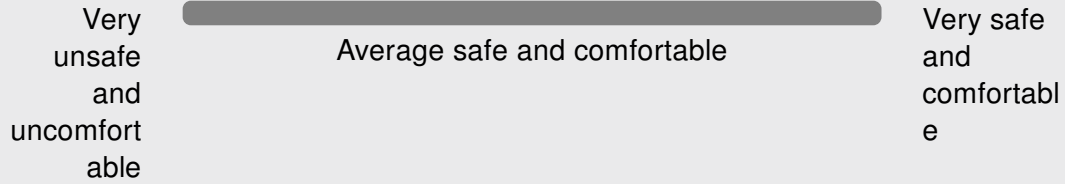
- I would cycle anywhere in the street
- I would cycle in the street, far away from the parked cars
- I would cycle on the sidewalk
- I would find another route

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #51 Question "Neighborhood street with sidewalks on both sides and parking on one side. "

ID 268

52. My level of comfort and safety on this neighborhood street is



(untitled)

---



**LOCID** Show/hide trigger exists.

53. This is an edge lane road with bicycle priority

- I would use the red bike lanes
- I would ride in the roadway portion (for motorists)
- I would use the sidewalk, if there is one
- I would find another route

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #53 Question "This is an edge lane road with bicycle priority "

ID 271

54. My level of safety and comfort using the edge lane road with bicycle priority is:

Very unsafe and uncomfortable

Average safe and comfortable

Very safe and comfortable

(untitled)

ID 272



**LOGIC** Show/hide trigger exists.

**ID** 273

55. This intersection has a bike through lane between the right turn lane and the through lane

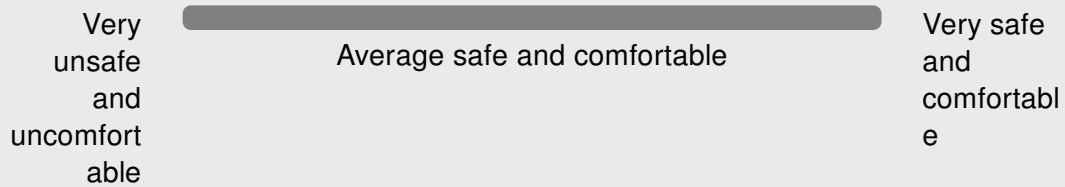
- I would use the bike lane to travel through the intersection
- I would use the through motor vehicle lane to travel through the intersection
- I would hop onto the sidewalk and use the crosswalk to travel through the intersection
- I would find another route

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #55 Question "This intersection has a bike through lane between the right turn lane and the through lane"

**ID** 275

56. My level of safety and comfort using this through bike lane is



**(untitled)**

---

ID 276



LOCID Show/hide trigger exists.

ID 280

57. This is a major urban collector with no designated bike facility

- I would cycle in the street
- I would cycle on the sidewalk
- I would walk my bike on the sidewalk
- I am not sure
- I would find another route

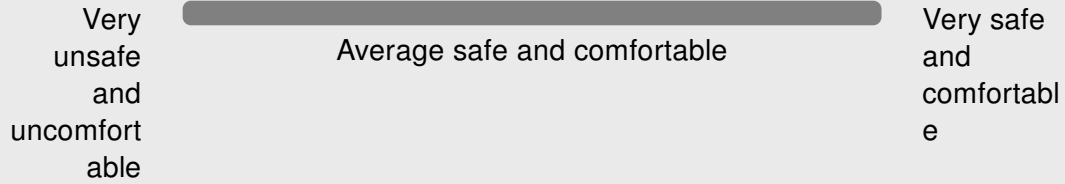


VALIDATION Min = 0 Max = 100

LOGIC Hidden unless: #57 Question "This is a major urban collector with no designated bike facility"

ID 281

58. My level of safety and comfort using this major urban collector is



(untitled)

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□



**LOGIC** Show/hide trigger exists.

**ID** 306

59. This is a rural road with no shoulder, low traffic volumes, and widely spaced out housing and other development

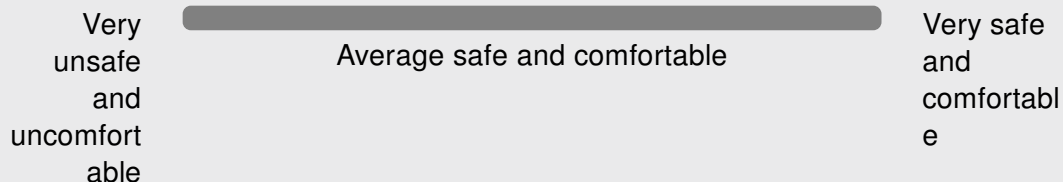
- I would use the road whether I am cycling solo or with others
- I would use the road only when cycling with others
- I would use the road during daylight only, regardless of whether I'm cycling solo or with others
- I am not sure
- I would find another route to use

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #59 Question "This is a rural road with no shoulder, low traffic volumes, and widely spaced out housing and other development" is one of the following answers ("I would use the road whether I am cycling solo or with others", "I would use the road only when cycling with others", "I would use the road during daylight only, regardless of whether I'm cycling solo or with others", "I am not sure", "I would find another route to use")

**ID** 307

60. My level of safety and comfort with this rural road is



**(untitled)**

---



LOEC Show/hide trigger exists.

61. This is a shared pathway in the road of a collector road in a low density neighborhood

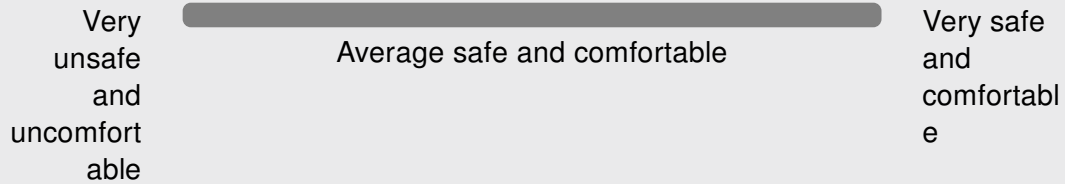
- I would cycle in the pathway, taking care to yield to pedestrians
- I would cycle in the street to avoid conflicts with pedestrians
- I would walk my bicycle in the pathway when there are pedestrians
- I would find another route to use

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #61 Question "This is a shared pathway in the road of a collector road in a low density neighborhood"

ID 282

62. My level of safety and comfort level for using this shared pathway is



(untitled)

---



**LOGIC** Show/hide trigger exists.

**ID** 284

63. This is a single lane roundabout with crosswalks and sidewalks for cyclists and pedestrians.

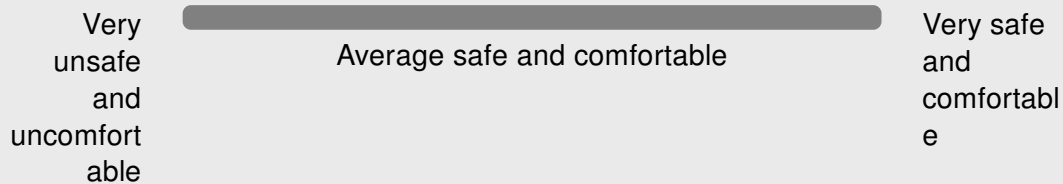
- I would use the vehicle travel lane to travel through the intersection, whether I'm cycling solo or with others
- I would use the vehicle travel lane to travel through the intersection, only when cycling with others
- I would use the crosswalks and sidewalks to travel through the intersection
- I am not sure
- I would find another route to use

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #63 Question "This is a single lane roundabout with crosswalks and sidewalks for cyclists and pedestrians."

**ID** 285

64. My level of safety and comfort using this single lane roundabout is



**(untitled)**

---

ID 287



ID 288

65. This is a one-way buffered bicycle lane on an urban collector road with a center left turn lane

- I would use the bicycle lane
- I would cycle in the motor vehicle travel lane
- I would use the sidewalk either riding or walking my bicycle
- I am not sure
- I would find another route



VALIDATION Min = 1 Max = 5

ID 289

66. My level of safety and comfort with this roadway and bicycle facility is

Very  
unsafe  
and  
uncomfortable

Average safe and comfortable

Very safe  
and  
comfortable

(untitled)

ID 290



**LOGIC** Show/hide trigger exists.

**ID** 291

67. This is a shared road where people walking, cycling, scootering, driving, etc., can travel freely without designated pathways

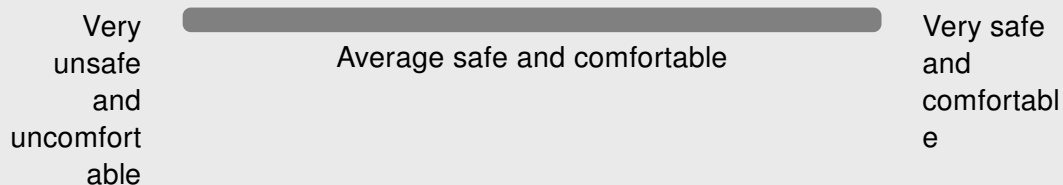
- I would bicycle in the street, but not hugging the edge
- I would bicycle close to the outside edge of the street
- I would walk my bike on the sidewalk
- I would bike on the sidewalk
- I would find another route to use

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #67 Question "This is a shared road where people walking, cycling, scootering, driving, etc., can travel freely without designated pathways"

**ID** 292

68. My level of safety and comfort cycling on this shared street is



(untitled)

---



LOGIC Show/hide trigger exists.

69. This is a diagonal crossing between a buffered bicycle lane to a multi-use trail with a bicycle signal

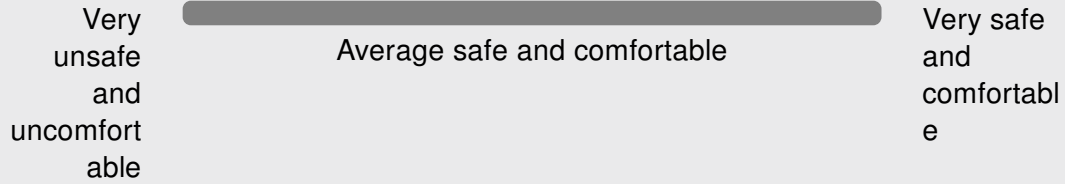
- I would use the green dashed bicycle lane
- I would use crosswalks to travel through the intersection, even though it means crossing twice
- I am not sure
- I would find another route to use

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #69 Question "This is a diagonal crossing between a buffered bicycle lane to a multi-use trail with a bicycle signal"

ID 295

70. My level of safety and comfort traveling through this intersection is



(untitled)

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□



**LOGIC** Show/hide trigger exists.

**ID** 297

71. This is a cycling pathway along a two-lane state route with wide shoulder, edge and center line rumble strips

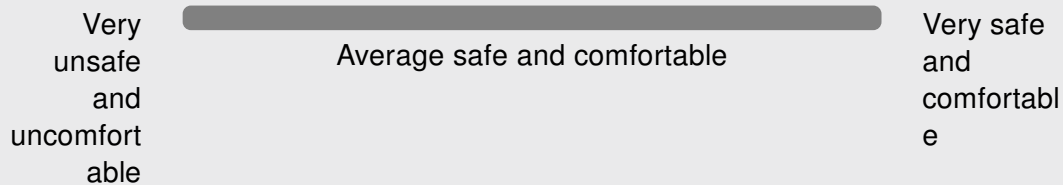
- I would use the shoulder, cycling solo or with others
- I would use the shoulder only when cycling with others
- I would use the shoulder, but ride far to the right
- I am not sure
- I would find another route to avoid noise and high motor vehicle travel speeds

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #71 Question "This is a cycling pathway along a two-lane state route with wide shoulder, edge and center line rumble strips"

**ID** 298

72. My level of safety and comfort with this road is



**(untitled)**

---



Show/hide trigger exists.

73. This is a two-way multi-use trail in parkland and a forested area

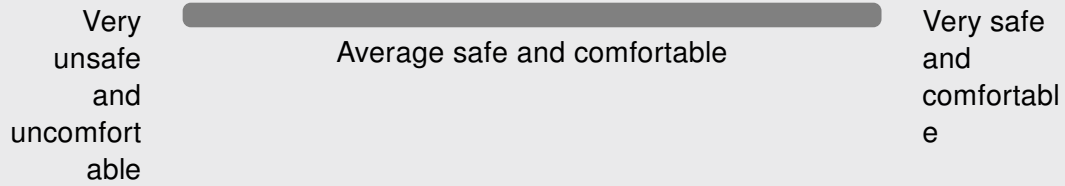
- I would use the trail whether cycling solo or with others
- I would use the trail only when cycling with others
- I would limit use to daylight hours, regardless of whether cycling solo or with others
- I would find an alternate route

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #73 Question "This is a two-way multi-use trail in parkland and a forested area"

ID 301

74. My level of safety and comfort with this multiuse trail is



(untitled)

ID 302





**LOGIC** Show/hide trigger exists.

**ID** 303

75. This is a two-way multiuse trail along a major arterial with a narrow grassy buffer

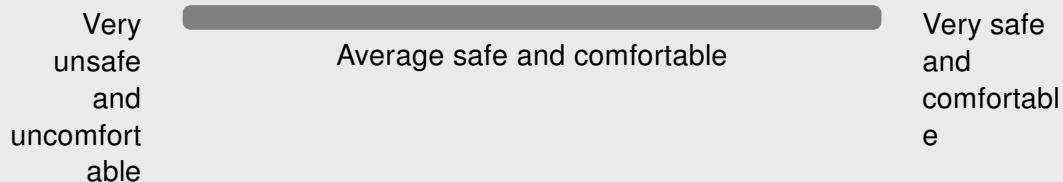
- I would use the trail
- I would only use the bicycle lane farthest from the roadway
- I am not sure
- I would find another route to avoid cycling along this noisy road with high motor vehicle speeds
- I would find another route for other reasons

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #75 Question "This is a two-way multiuse trail along a major arterial with a narrow grassy buffer"

**ID** 304

76. My level of safety and comfort on this multiuse trail is



(untitled)

---

ID 309



LOGIC Show/hide trigger exists.

ID 310

77. This is a suburban collector road with center median, a bike lane without buffer, and a sidewalk

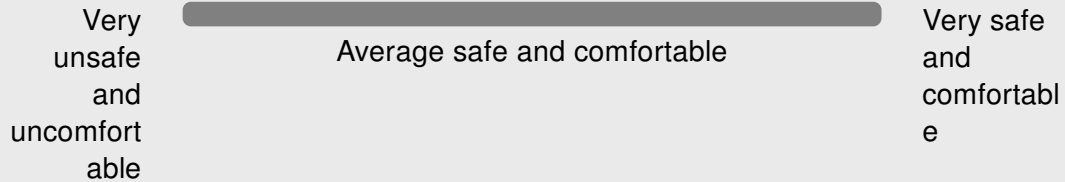
- I would use the bike lane
- I would cycle in the motor vehicle travel lane
- I would use the sidewalk
- I would find another route to use

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #77 Question "This is a suburban collector road with center median, a bike lane without buffer, and a sidewalk" is one of the following answers ("I would use the bike lane", "I would cycle in the motor vehicle travel lane", "I would use the sidewalk", "I would find another route to use")

ID 311

78. My level of safety and comfort along this suburban collector road is



(untitled)

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**LOC** Show/hide trigger exists.

79. This is a residential neighborhood street with parking and shared lane marking for bicyclists

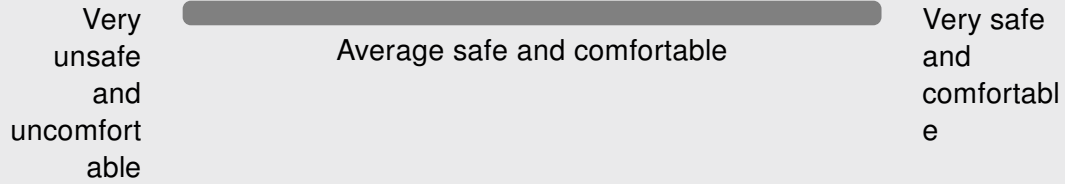
- I would cycle in the street, following the shared lane marking
- I would cycle in the street, not paying close attention to the shared lane marking
- I would use the sidewalk
- I would find another route to use

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #79 Question "This is a residential neighborhood street with parking and shared lane marking for bicyclists"

ID 314

80. My level of safety and comfort cycling on this residential street is



(untitled)

---

ID 315



[Show/hide trigger exists.](#)

ID 316

81. This is a separated two-way bicycling facility along a one-way neighborhood collector street in an urban mixed used area

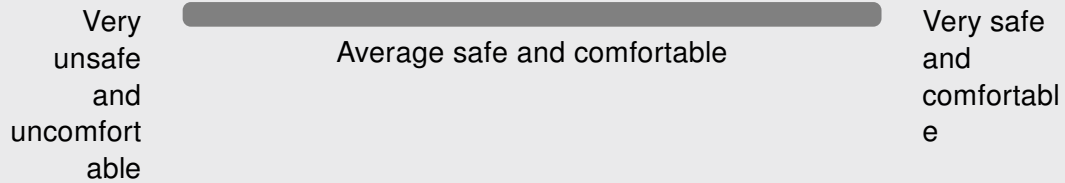
- I would use the bicycling facility
- I would use the sidewalk on the other side of the street
- I would use the motor vehicle lane
- I would find another route to use

VALIDATION Min = 1 Max = 5

LOGIC Hidden unless: #81 Question "This is a separated two-way bicycling facility along a one-way neighborhood collector street in an urban mixed used area"

ID 317

82. My level of safety and comfort with this separated bicycle facility is



(untitled)

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**LOGIC** Show/hide trigger exists.

**ID** 319

83. This is a two-lane neighborhood commercial street with shared lane marking

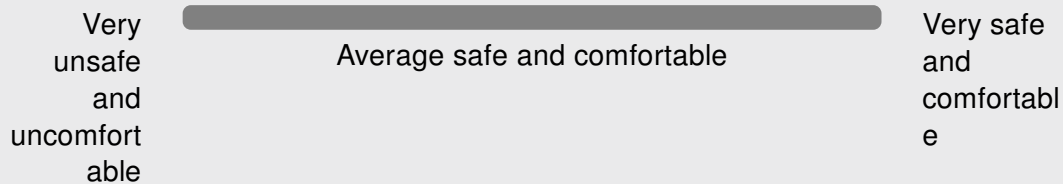
- I would cycle along the shared lane markings
- I would cycle in the roadway, not paying close attention to the shared lane markings
- I would cycle between the outside white line and the curb
- I would hop onto the sidewalk and walk or cycle, especially if there is a lot of motor vehicle traffic
- I would find another route to use

**VALIDATION** Min = 1 Max = 5

**LOGIC** Hidden unless: #83 Question "This is a two-lane neighborhood commercial street with shared lane marking"

**ID** 320

84. My level of safety and comfort with this shared lane marking roadway is



**(untitled)**

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**LOGIC** Show/hide trigger exists.

**ID** 42

## 85. **You've just completed Parts 1 and 2 of the survey.**

Could you journal at least two biking trips during the next month?

*The online journal form is designed with pre-populated answers and open-ended questions. It should take about 10 minutes to complete and is accessible on your home computer, a tablet, or smart phone. We encourage you to upload a photo from your ride, too.*

- Yes
- No

**LOGIC** Hidden unless: #85 Question "**You've just completed Parts 1 and 2 of the survey.**

Could you journal at least two biking trips during the next month?

*The online journal form is designed with pre-populated answers and open-ended questions. It should take about 10 minutes to complete and is accessible on your home computer, a tablet, or smart phone. We encourage you to upload a photo from your ride, too." is one of the following answers ("Yes")*

**ID** 101

Thank you for agreeing to journal a couple of cycling trips.

Use this link to complete the online journal: <https://survey.alchemer.com/s3/6380691/Older-Adults-Cycling-Online-Journal-Summer-2021-to-Spring-2022-copy>

We recommend you save this link so it is at hand when you're ready to journal. **NOTE:** *bookmarking may not work properly.*

**Thank You!**

---

ID 1

**Thank you for your time.** Your responses will help us better understand how to create more places for people 50+ to cycle safely and comfortably.

Please email us at [dbltildecollab@gmail.com](mailto:dbltildecollab@gmail.com) with any question. You can also review results from the survey in 2020 at this link.

**Logic** Hidden unless: ((#1 Question "Do you agree to the above terms?" is one of the following answers ("No") OR #2 Question "Are you age 50 or above?" is one of the following answers ("No")) OR #4 Question "Why do you not cycle? *Select all that apply*" )

Action: URL Redirect

Exit Survey

# MTI FOUNDER

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