



LAWRENCE BIKES



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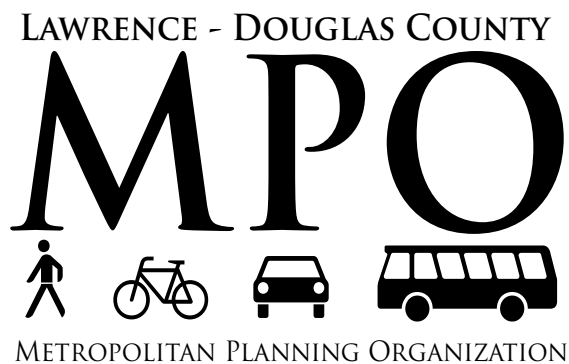
Lawrence-Douglas County MPO Policy Board

Lawrence City Commission

[Resolution No. 7299](#)

August 15, 2019

October 15, 2019



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EXECUTIVE SUMMARY

The Lawrence Bikes Plan is a guide for the City to achieve the vision of making Lawrence a safer, more comfortable bicycle network and Silver level bike-friendly city within 6 years.

The vision is supported by 5 goals:

- Improve Safety;
- Increase Ridership;
- Increase Access;
- Create a Network of Low-Stress Bikeways; and
- Bicycle Friendly Community Silver level recognition.

The Plan provides recommendations on the general location and types of bicycle facilities, projects, policies and programs that support the goals and vision. The Plan includes a vision for a bikeway network that can be developed overtime.

The plan was approved by the MPO Policy Board on August 15, 2019 and by the Lawrence City Commission on October 15, 2019 via [Resolution No 7299](#).

View the interactive Interactive Lawrence Bikes Map at this [link](#).

More information is available at: https://lawrenceks.org/mpo/bicycle_planning.



BARKER AVE.,
LAWRENCE, KS



INTRODUCTION

Lawrence is a thriving and vibrant city where new people move all the time to attend our high caliber universities (University of Kansas – KU – or Haskell Indian Nations University – HINU), retire, or relocate. Residents are looking for ways to travel beyond a personal motor vehicle. This is where the bicycle comes into play. As more high quality bicycle facilities are built more people are enticed into giving a bicycle a try for more than recreation.

VISION

A bikeway network that supports safe and comfortable riding for all

GOALS

Improve Safety

- Continue zero bicycle riders fatalities & serious injuries through 2025.

Increase Ridership

- Increase bicycle mode choice to 3% by 2025.
- Increase Bike to School percentage to 5% by 2025.

Increase Access

- Increase the percentage of population within ¼ mile of Level of Comfort 3 or below bikeway network to 89% by 2025.

Create a Network of Low-Stress Bikeways

- Increase the mileage of low-stress bikeways to 46% by 2025.

Bicycle Friendliness

- Achieve League of American Bicyclists Silver level Bicycle Friendly Community or higher by 2025.

*The Performance Measures and Targets section contains existing condition data for each goal.

THE CASE FOR BICYCLING

According to a study by Ralph Buehler and John Pucher “cities with a greater supply of bike paths and lanes have significantly higher bike commute rates”. They also found the supply of bikeways per capita is a statistically significant predictor of bike commuting. By including separate variables for paths and lanes ... our analysis is able to examine each type of facility separately and finds that they do not have significantly different associations with levels of bike commuting among cities. Buehler and Pucher report that bike commuting in cities with the most bike lanes per 100,000 residents was three to four times higher than in cities with the fewest, and twice as high in cities with the most bike paths. They also found three to four times more bike commuting in cities with the most combined path and lane mileage compared to those with the least. In other words, when the opportunity is there - whether on an off-street beaten path or a freshly painted road lane - city residents ride their bikes more often. That isn't causation, of course, but it is “consistent with the hypothesis that bike lanes and paths encourage cycling,” the researchers conclude.¹ Moreover bicycling benefits individuals and the entire community by improving personal health, the environment, mobility, safety, and the economy.



VARIOUS LOCATIONS IN LAWRENCE, KS

¹ Buehler, R. & Pucher, J. Transportation (2012) 39: 409. <https://doi.org/10.1007/s1116-011-9355-8> Retrieved April 5, 2019 from <https://www.citylab.com/transportation/2012/02/do-bike-paths-promote-bike-riding/1318>

Health

The most obvious component of bicycling for transportation is the health aspect. By bicycling rather than sitting in a motor vehicle, individuals are exerting physical effort, which helps with combating heart disease, adult-onset diabetes, obesity, high-blood pressure, and lowers stress levels. People who are physically active tend to live longer.² Making even short trips by bicycle the benefits are outstanding.

- Exercise boosts brainpower and helps to stave off Alzheimer's in the elderly.¹
- People who are active on a daily basis are 31% less likely to develop high blood pressure.²
- About 1 in 5 (21%) adults meet the 2008 Physical Activity Guidelines (at least 2.5 hours of physical activity a week).³

Environment

When people make trips on a bicycle rather than personal motor vehicles the environment is improved due to the reduced air pollution and emissions of greenhouse gases.

- 60% of pollution created by automobile emissions happens in the first few minutes of operation.⁴
- In 2016, transportation accounted for approximately 28% of total U.S. greenhouse gas emissions.⁵

Mobility

Bicycling expands the distance people who cannot or do not drive can travel, thereby expanding their mobility. This includes children, seniors, people with disabilities, and low income people.

- 1 in 16 (6.3%) Douglas County residents do not have access to a vehicle.⁶
- Safe non-motorized transportation options, combined with access to public transportation, are critical components of a transportation network that connects people - especially low-income households - with jobs, education, and essential services, providing "ladders of opportunity."⁷
- Seniors who do not drive make 65% fewer trips to visit family, see friends or go to church.⁸

Safety

High quality bike facilities increase ridership and make biking safer, not only in terms of traffic safety, but also reduces crime level. When more people are not in motor vehicles, they interact more with their neighbors. This helps to reduce crime as more "eyes are on the street".

- The risk of a bicycle rider being struck by a driver declines as the number of people biking increases.⁹

Economy

Individuals benefit from bicycling because vehicle ownership is expensive and property values increase in areas that are more inviting to bicycling. Cities benefit because there is less wear and tear on streets and less demand for parking lots.

- In 2017, driving a newer medium sized sedan costs an average of \$8,171 per year and driving a newer medium sized SUV costs \$9,451 per year.¹⁰
- Transportation costs are typically the second highest household expense behind housing. Factoring in both housing and transportation costs provides a more comprehensive way to think about housing costs and true affordability. In Lawrence, housing + transportation costs are 49% of total income.¹¹

1 Buehler, R. & Pucher, J. Transportation (2012) 39: 409. <https://doi.org/10.1007/s1116-011-9355-8> Retrieved April 5, 2019 from <https://www.citylab.com/transportation/2012/02/do-bike-paths-promote-bike-riding/1318>

2 Hurford, M. (2018, November 08). 8 Health Benefits of Cycling That Aren't Just Physical. Retrieved November 12, 2018, from <https://www.bicycling.com/training/a20029633/8-ways-cycling-will-make-you-healthier>

3 Center for Disease Control and Prevention. (2018, September 12). Physical Activity. Retrieved November 12, 2018, from <https://www.cdc.gov/physicalactivity/data/facts.htm>

4 Pedestrian and Bicycle Information Center. Environmental Benefits of Bicycling and Walking. Retrieved November 12, 2018, from http://www.pedbikeinfo.org/data/factsheet_environmental.cfm

5 United States Environmental Protection Agency. (2018, August 27). Fast Facts on Transportation Greenhouse Gas Emissions. Retrieved November 12, 2018, from <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>

6 United States Census Bureau. (2010, October 05). 2016 American Community Survey 5-Yr Estimates. Retrieved November 12, 2018, from <https://factfinder.census.gov>

7 United States Department of Transportation. (2015, January 05). Pedestrian and Bicycle Safety. Retrieved November 12, 2018, from <http://www.transportation.gov/safer-people-safer-streets>

8 Bailey, L. (2004, April). Aging Americans: Stranded Without Options. Surface Transportation Policy Project Retrieved November 12, 2018, from https://www.apta.com/resources/reportsandpublications/Documents/aging_stranded.pdf

9 National Association of City Transportation Officials. (2016, July 20). High-Quality Bike Facilities Increase Ridership and Make Biking Safer. Retrieved November 12, 2018, from <https://nacto.org/2016/07/20/high-quality-bike-facilities-increase-ridership-make-biking-safer>

10 AAA. (2017, August 23). AAA Reveals True Cost Of Vehicle Ownership. Retrieved November 12, 2018, from <https://newsroom.aaa.com/tag/driving-cost-per-mile>

11 The Center for Neighborhood Technology. (n.d.). H+T® Index. Retrieved November 12, 2018, from <https://htaindex.cnt.org/>

THE PLANNING PROCESS

The MPO Bicycle Advisory Committee (BAC) served as the steering committee for this planning process. The BAC is comprised of representatives from each of the governing bodies in Douglas County and included an ex-officio liaison from the Lawrence Transportation Commission.

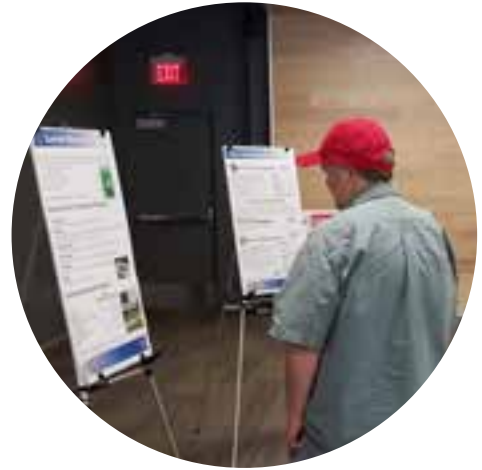
Existing plans including the Lawrence Pedestrian Bike Issues Task Force (PBITF)¹, the Lawrence Loop Alignment Study², the Lawrence Bike Parking and Amenities Policy Review with Citywide and Downtown Recommendations³, Bicycle Friendly Community feedback⁴ and the most recent Countywide Bikeway System Plan⁵ were reviewed and are included in Appendix E: Plan & Policy Review.

As a part of this review, the PBITF Bikeway Vision was discussed. This Priority Network was amended and supplemented with a secondary network. The Priority and Secondary networks are to be used in the Transportation Commission's Non-Motorized Project Prioritization matrix.⁶ They are purely to be used in selecting projects to utilize the dedicated pedestrian and bicycle funding. These networks were evaluated by the public.

The bike plan public engagement was divided into two phases. The first phase began with a survey opening on May 18, 2018 and closed on August 31, 2018. The survey, 15 mobile meetings, guided bicycle ride, and open houses held on June 14 and June 16 were focused on how comfortable people feel bicycling in Lawrence. People indicated their level of comfort bicycling on various facility types. 589 survey responses were collected for people who self-reported they either live or work in Lawrence.

The second phase of public engagement began with a survey opening on October 15, 2018 and closed on December 1, 2018. The survey, 6 mobile meetings, and an open house held on October 25 were focused on how we could make Lawrence more bicycle friendly. Various programs to implement the E's of bicycle planning were presented for public input, as well as potential bicycle networks. 406 survey responses were collected for people who self-reported they either live or work in Lawrence.

Staff and BAC members reviewed public input to make recommendations on final network alignments and prioritizing the E's of bicycle planning. The final plan was reviewed by the Technical Advisory Committee (TAC) on August 13, 2019 and was approved by the MPO Policy Board on August 15, 2019



LAWRENCE PUBLIC LIBRARY
LAWRENCE, KS

¹ https://assets.lawrenceks.org/assets/boards/pedestrian-bicycle/PBITF_Final_Report_2.29.16.pdf (link updated 8/25/21)
² <https://assets.lawrenceks.org/assets/mpo/pedbike/Lawrence-Loop-Study.pdf>
³ <https://assets.lawrenceks.org/assets/mpo/bicycle/BikeParkInvRecommendations-2016.pdf>
⁴ https://lawrenceks.org/mpo/bicycle_planning
⁵ https://lawrenceks.org/mpo/bicycle_planning
⁶ <https://assets.lawrenceks.org/assets/boards/transportation-commission/NonMotorizedPolicy.pdf>

PUBLIC INPUT: WHAT WE HEARD

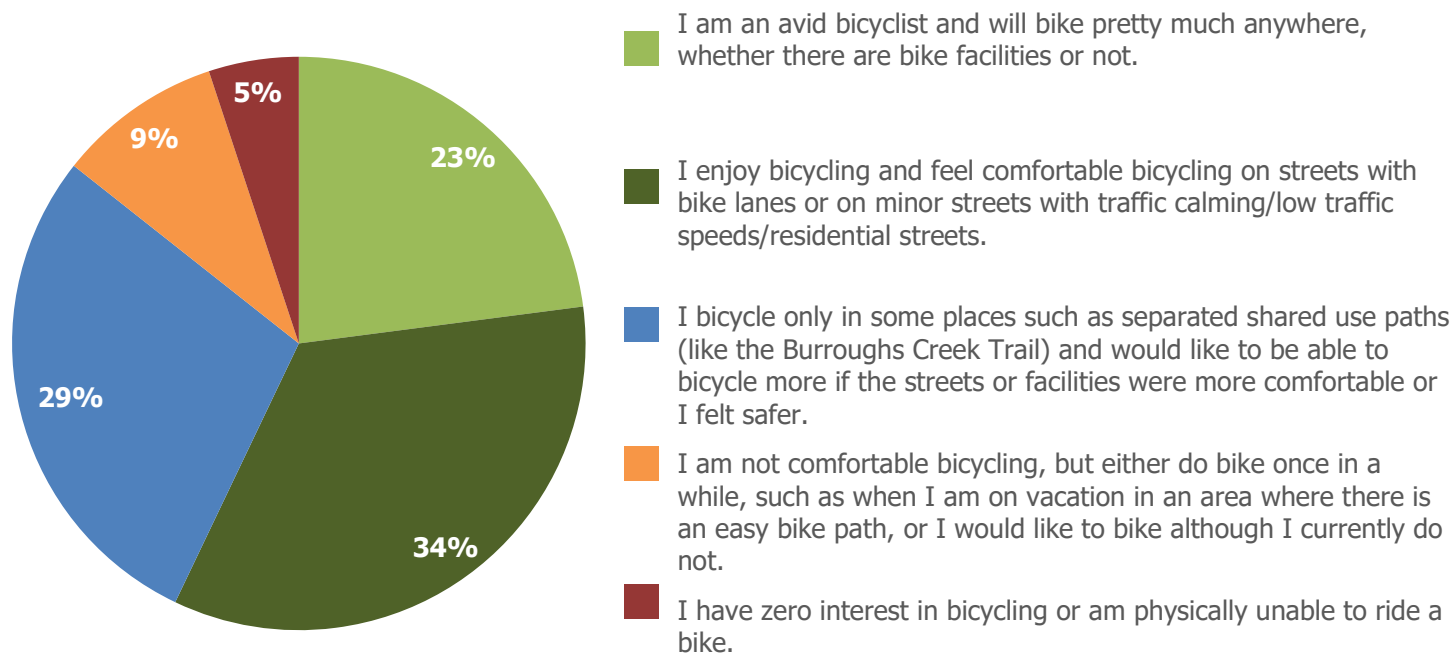
The first survey asked respondents about their level of comfort bicycling in Lawrence. For a complete report on survey responses see Appendix B: Public Input.

Concerned Cyclists self-identify as bicycling only on separated shared use paths, and would like to bike more if streets or facilities were more comfortable/safer, or are not comfortable bicycling, but would like to bicycle. As shown in Figure 1, this accounts for 38% of the total survey respondents as shown with the blue and orange colors in the pie chart. Responses were compiled for all respondents and for Concerned Cyclists for bicycling on commercial and residential/neighborhood streets (Figures 2 and 3).

Survey results were also divided by gender because women are typically more risk adverse than men, which rings true in our survey data. Men were more comfortable on various types of bicycle facilities on residential/neighborhood streets than women (Figure 4).

The results of the survey affirmed the public's desire for low-stress, comfortable, protected, and connected bikeways. MPO Bicycle Advisory Committee (BAC) members reviewed the surveys to assist in determining priorities for bikeway network and the Action Plan elements from the E toolbox found in Appendix D: Policy and Program Toolbox.

Figure 1: Type of Bicycle Rider



Number of Responses – 571

We asked kids to draw a picture of the coolest bike they could imagine. The drawings are included throughout the plan.

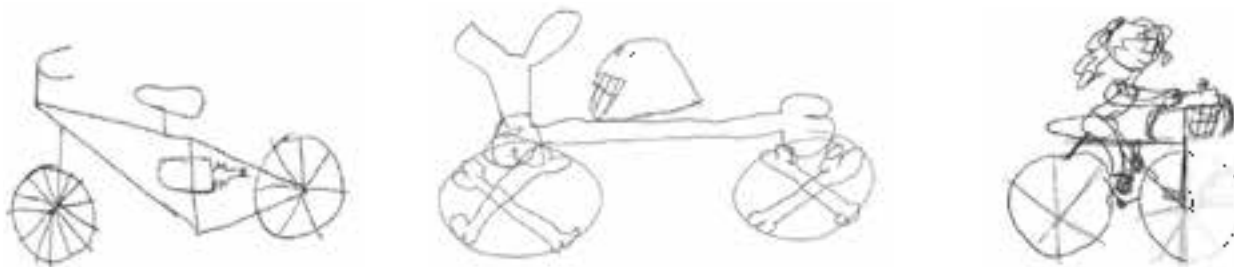
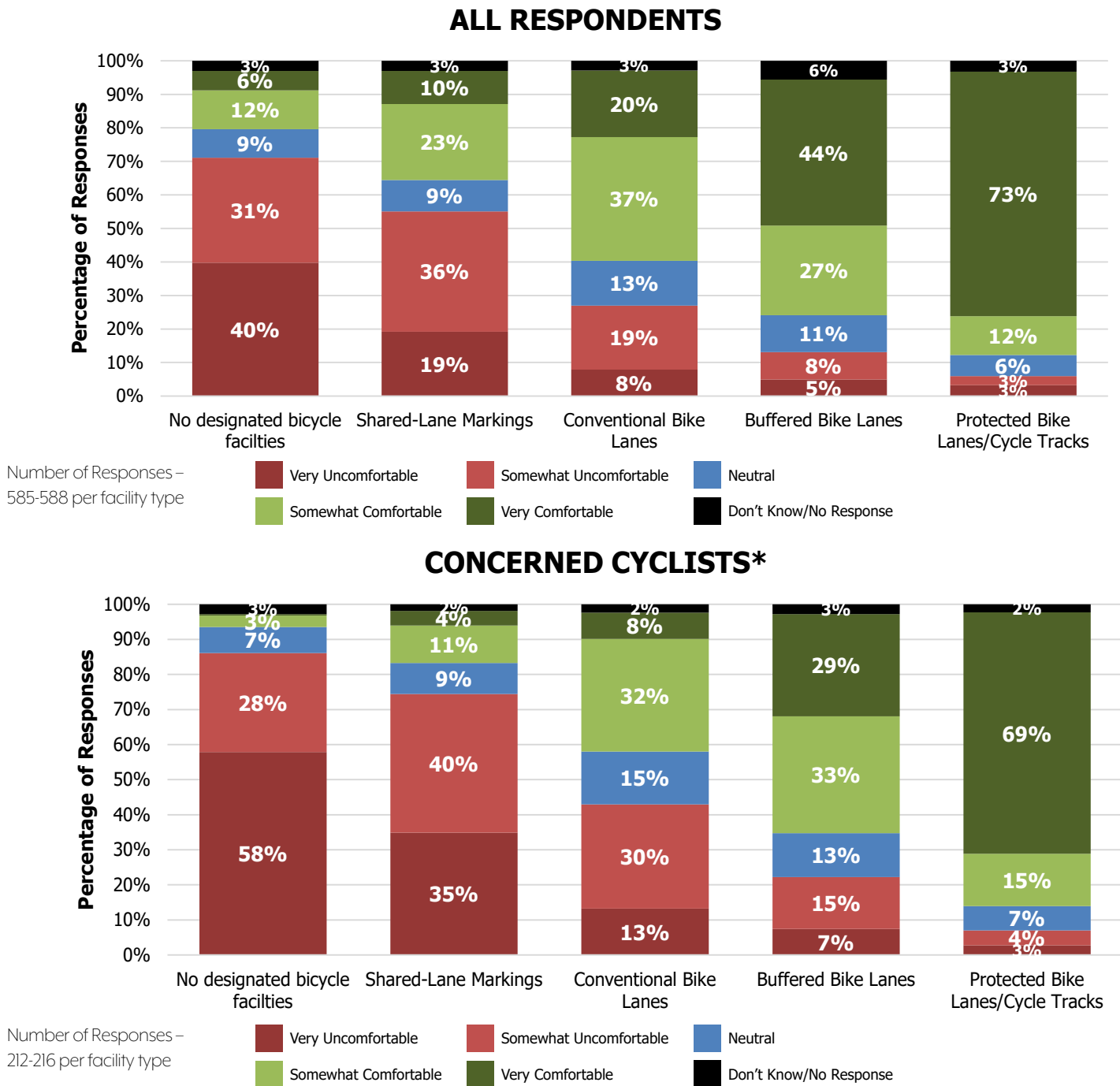


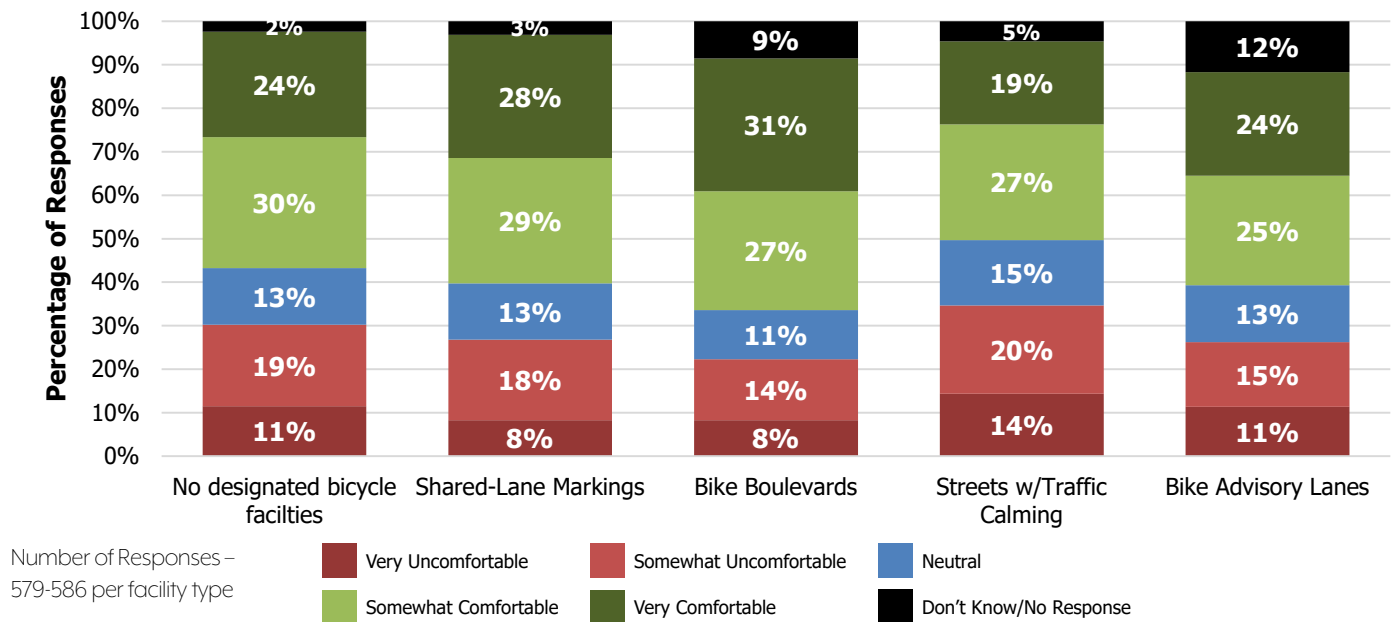
Figure 2: Comfort Bicycling On Different Forms of Bicycle Facilities on Commercial Streets



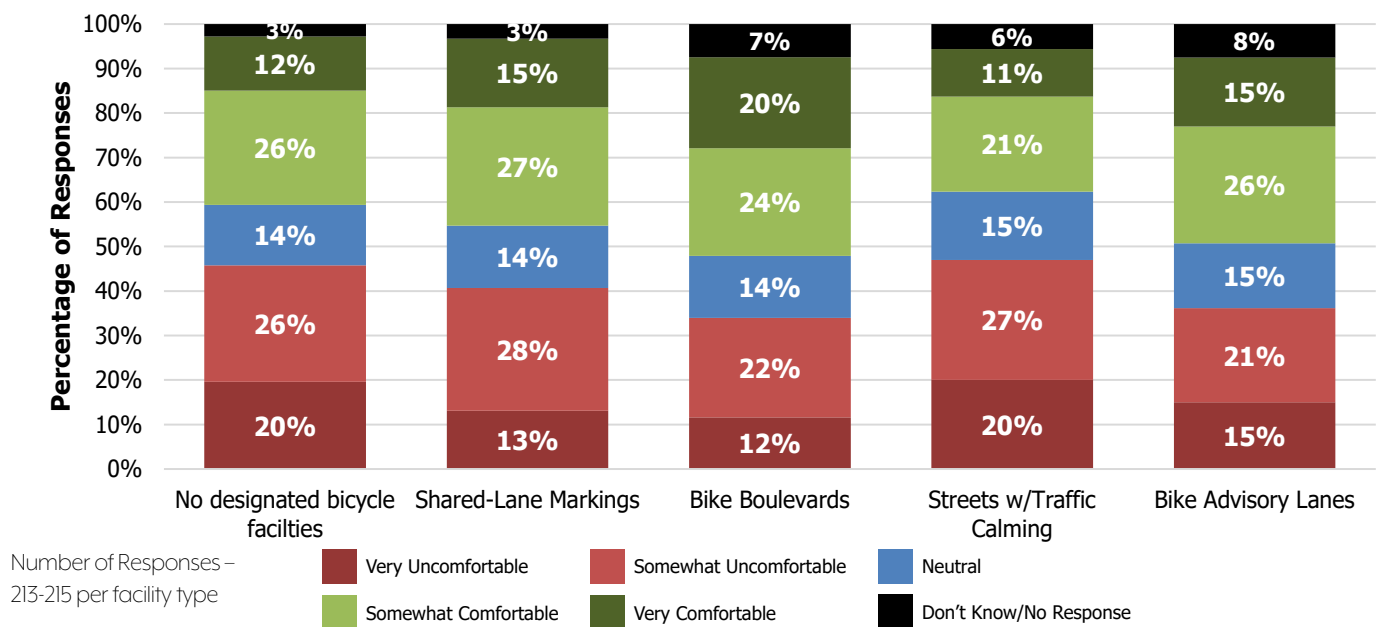
* Concerned Cyclists self-identify as bicycling only on separated shared use paths, and would like to bike more if streets or facilities were more comfortable/safer, or are not comfortable bicycling, but would like to bicycle.

Figure 3: Comfort Bicycling On Different Forms of Bicycle Facilities on Residential/ Neighborhood Streets

ALL RESPONDENTS



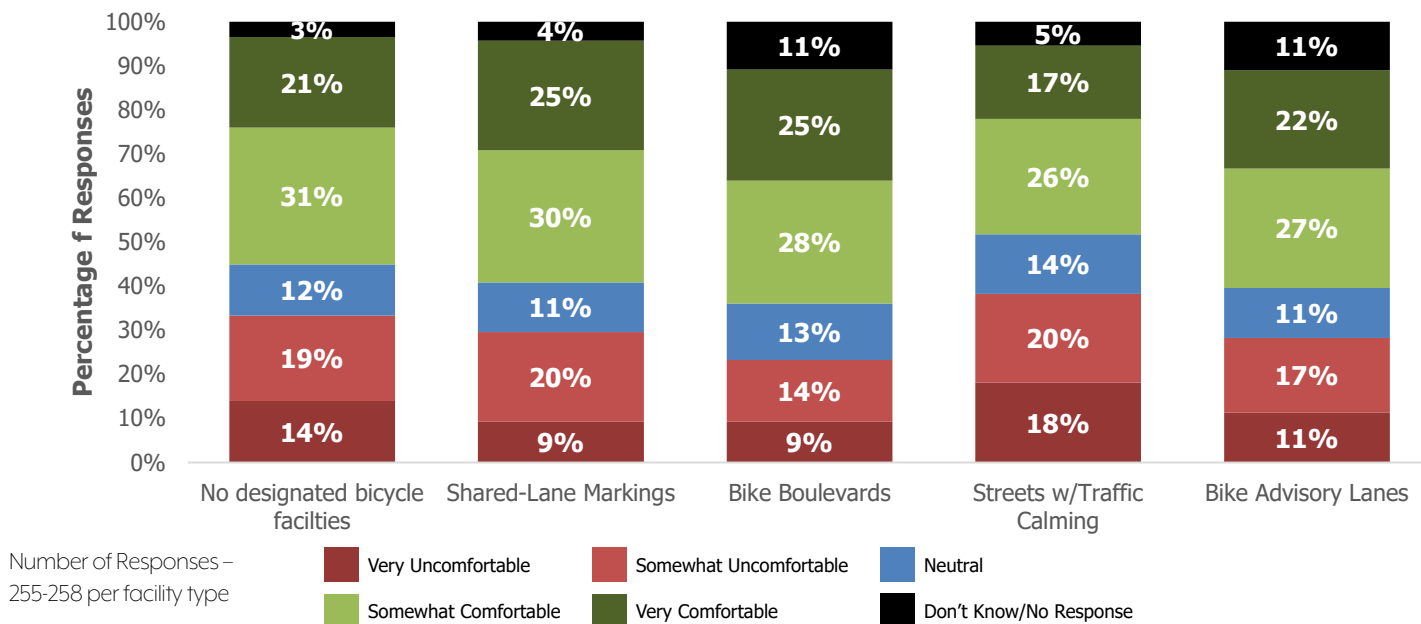
CONCERNED CYCLISTS*



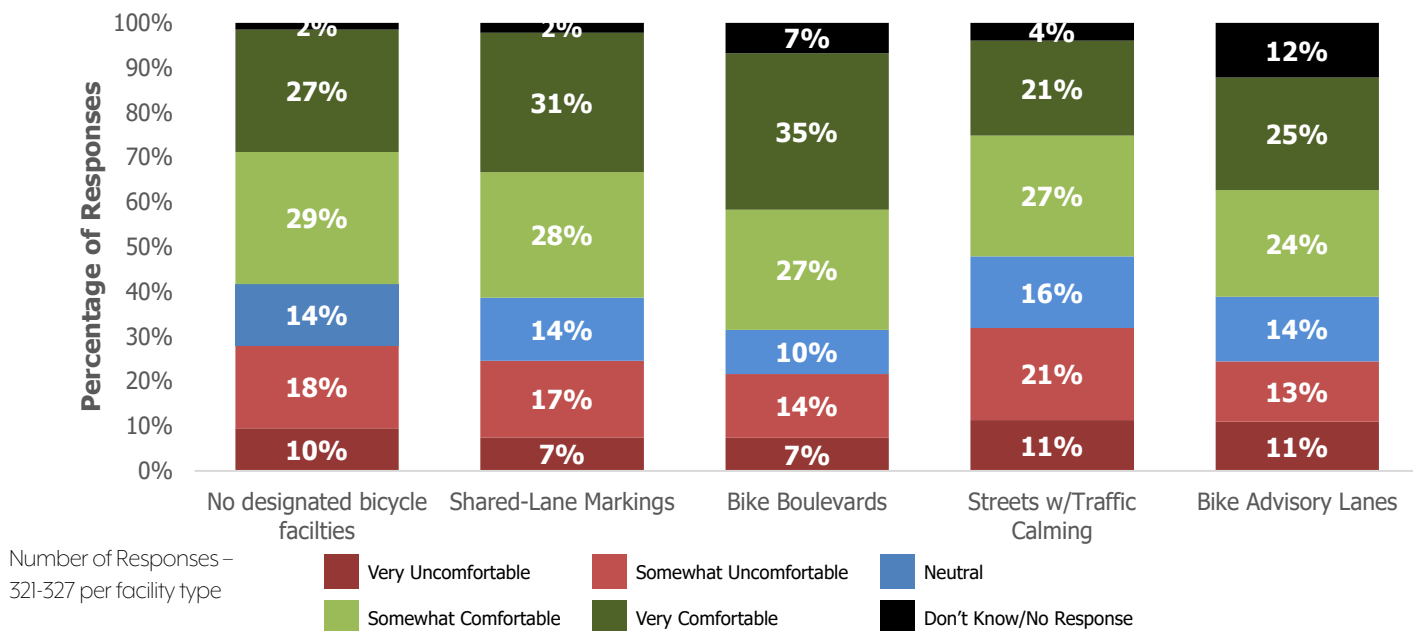
* Concerned Cyclists self-identify as bicycling only on separated shared use paths, and would like to bike more if streets or facilities were more comfortable/safer, or are not comfortable bicycling, but would like to bicycle.

Figure 4: Female vs. Male Comfort Bicycling On Different Forms of Bicycle Facilities on Residential/ Neighborhood Streets

FEMALE RESPONDENTS

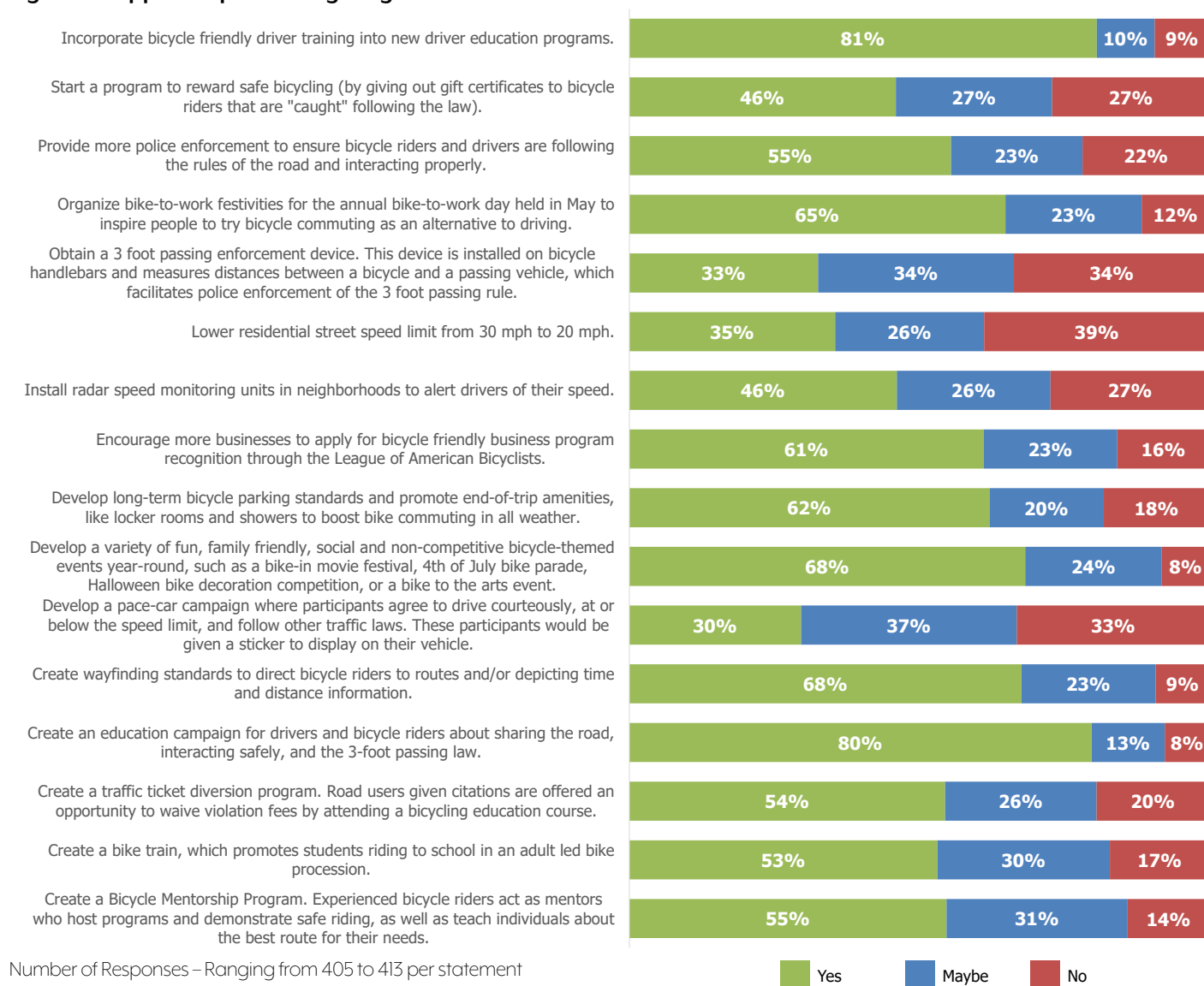


MALE RESPONDENTS



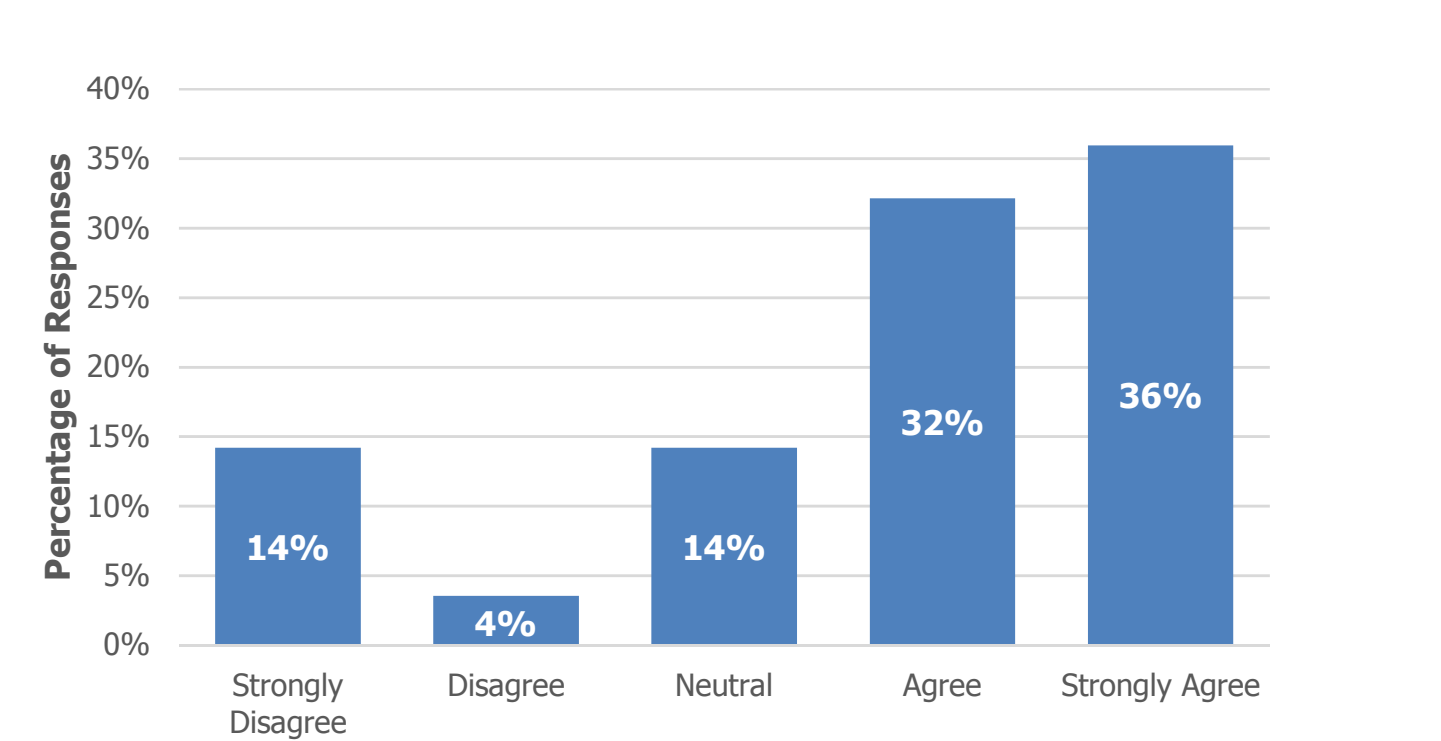
The second survey focused on how we could make Lawrence more bicycle friendly. Various programs to implement the E's of bicycle planning were presented for public input. Respondents were asked if they would support the programs listed in Figure 5.

Figure 5: Support Implementing Programs

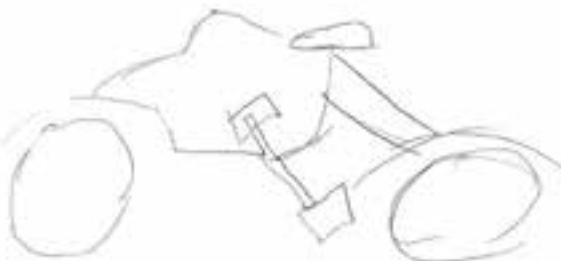


As shown in Figure 6, 68% of survey respondents agreed to the statement the proposed priority and secondary bike network will encourage more people to bike in Lawrence.

Figure 6: The Proposed Priority and Secondary Bike Network Will Encourage People to Bike



Number of Responses – 395





VERMONT STREET PARKING GARAGE LAWRENCE, KS

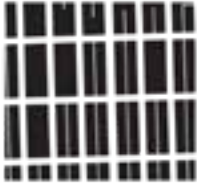
The first step in developing the low-stress bicycle network is to evaluate the existing conditions in Lawrence. This includes assessing the street network, existing bicycle facilities, bicycle mode share, bikeway demand, bicycle level of comfort, and barriers to bicycling.

EXISTING CONDITIONS




THE STREET NETWORK

Like many American cities, Lawrence originally developed in a compact grid network. But as the city grew westward the grid style of development transformed into a curvilinear or loop and lollipop style of network (shown in Figure 7). This fundamental change in neighborhood design thoroughly impacted how people move around their neighborhoods. Rather than traveling on connected streets, people have to travel to a major street to connect with others. This lack of directness interrupts travel and causes bicycle riders to traverse longer distances to reach their destination and also funnels bicycle riders to major streets including West 6th Street, Clinton Parkway, Wakarusa Drive, Kasold Drive, or others that carry significant number of motor vehicles.

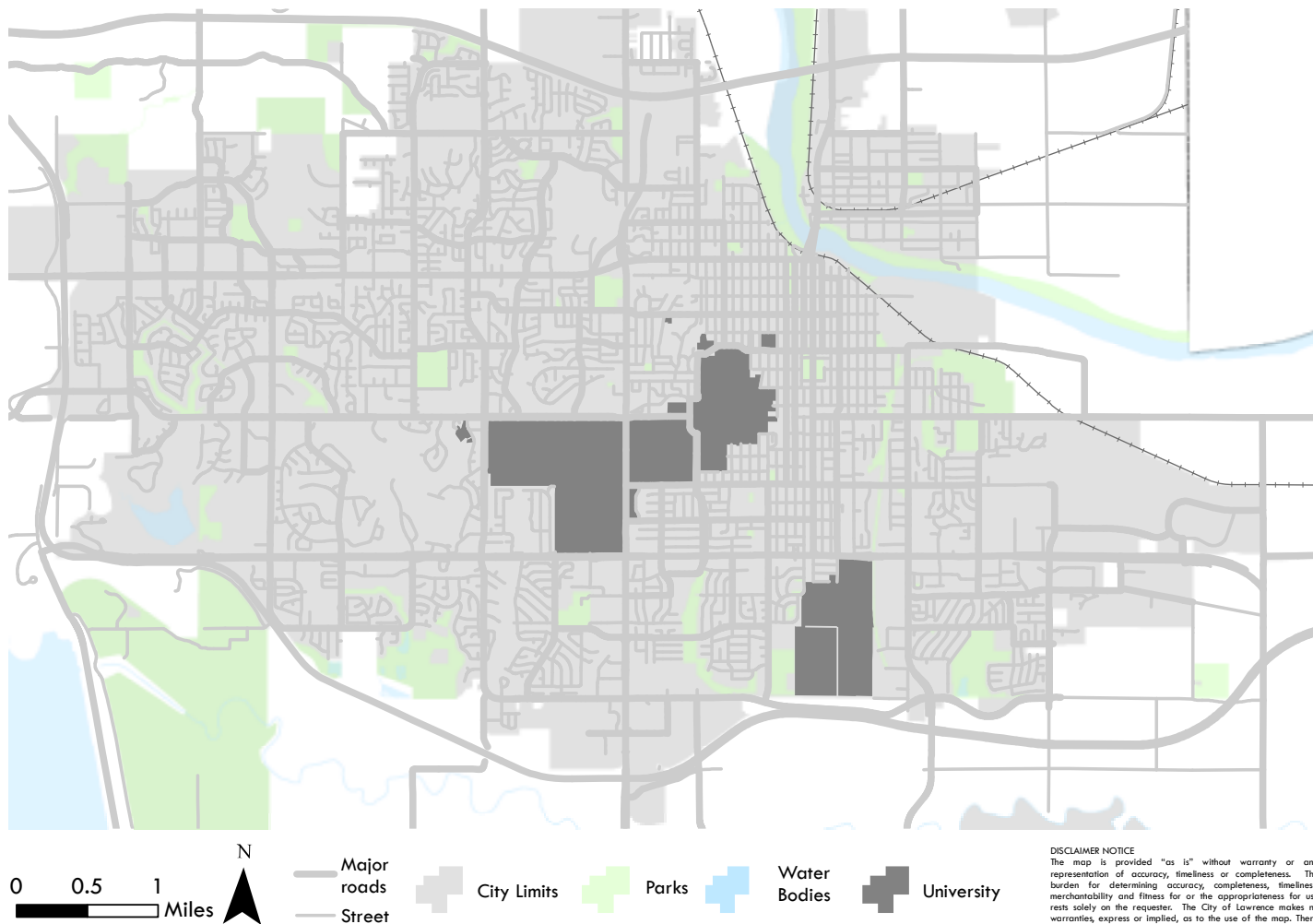
GRID


Traditional grid networks typically provide more continuous routes over long distances, provide numerous route options to destinations, and are generally easy to navigate for all modes of transportation .

CURVILINEAR


Curvilinear street patterns are good at limiting through traffic on residential streets, but often lack connectivity. Trips that are relatively short “as the crow flies” typically require a person to travel long distances just to get to a road that connects to their destination.

Figure 7: Lawrence Street Network



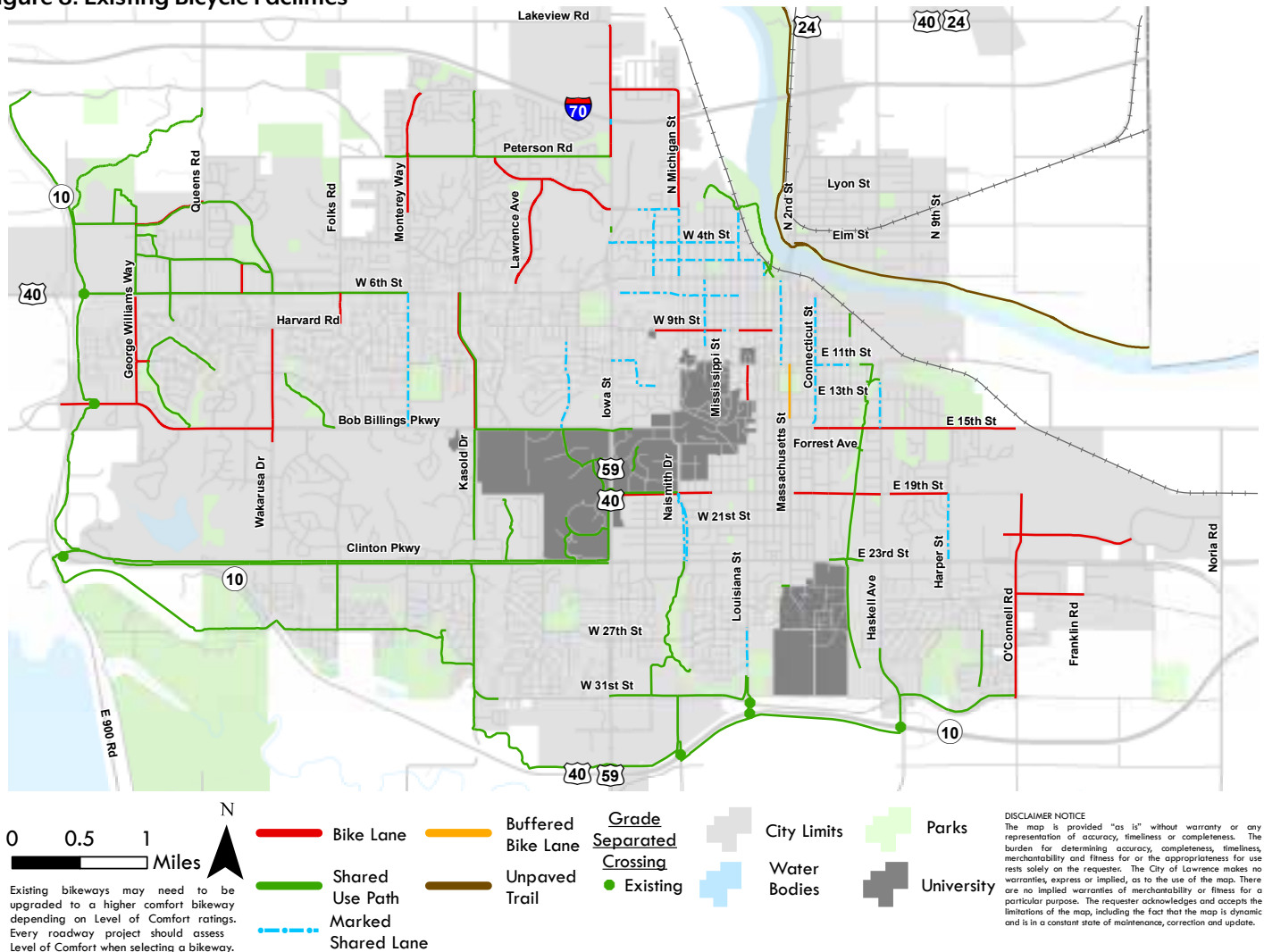
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Produced: Lawrence-Douglas County MPO (2019)

EXISTING BICYCLE FACILITIES

The existing bicycle facilities are shown in Figure 8. There are currently 17.8 miles of bike lanes, 47.99 miles of shared use path, and 0.38 miles of buffered bike lane. A majority of the current bikeway network was developed as part of other roadway projects. They are discontinuous – meaning bikeways begin and end suddenly and often do not connect to other bikeways. This is illustrated by 9th street, which has a bike lane for several blocks, then a two block gap with no bike lane, and then another bike lane continuing for half a mile. This is not a surprising situation, as it is typical of new bikeway networks, because it takes significant time and money to implement networks.

Figure 8: Existing Bicycle Facilities



Produced: Lawrence-Douglas County MPO (2019)

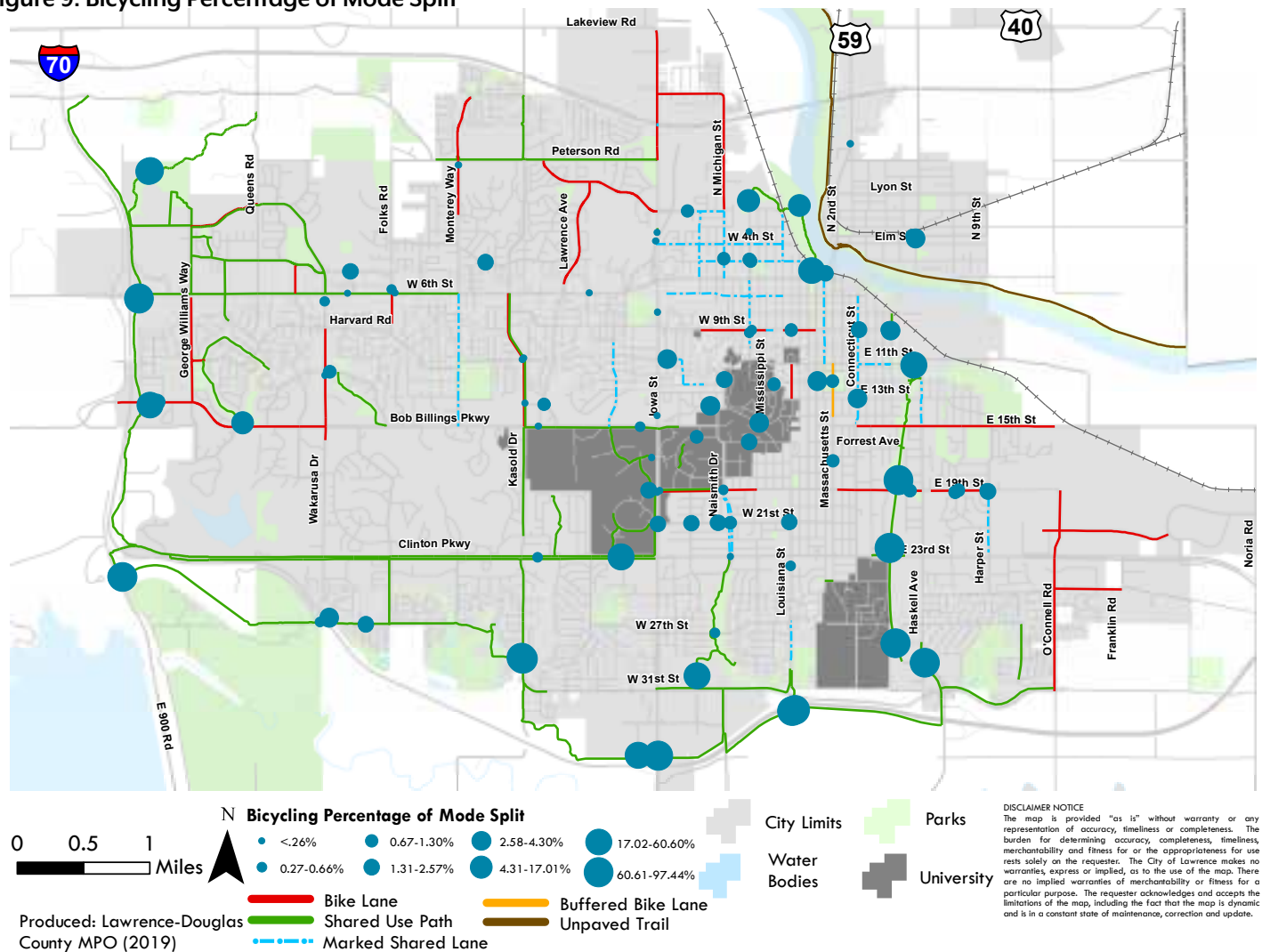
[Click above to view an interactive map.](#)

BICYCLE MODE SHARE

Bicycle rider and pedestrian counts are collected to calculate an average annual daily number of bicycle and pedestrian trips for each location. Annual average daily vehicle traffic count numbers are used to calculate the travel percentage breakdown of trips by mode.

Figure 9 shows the bicycling percentage for count locations. Locations along the Lawrence Loop have a higher percentage of bicycling compared to other areas. According to the U.S. Census 5-Year American Community Survey around 1% of workers commute by bicycle (per year between 2013-2017). This number has a margin of error of plus or minus 0.4% associated with it since the data is from a survey.

Figure 9: Bicycling Percentage of Mode Split

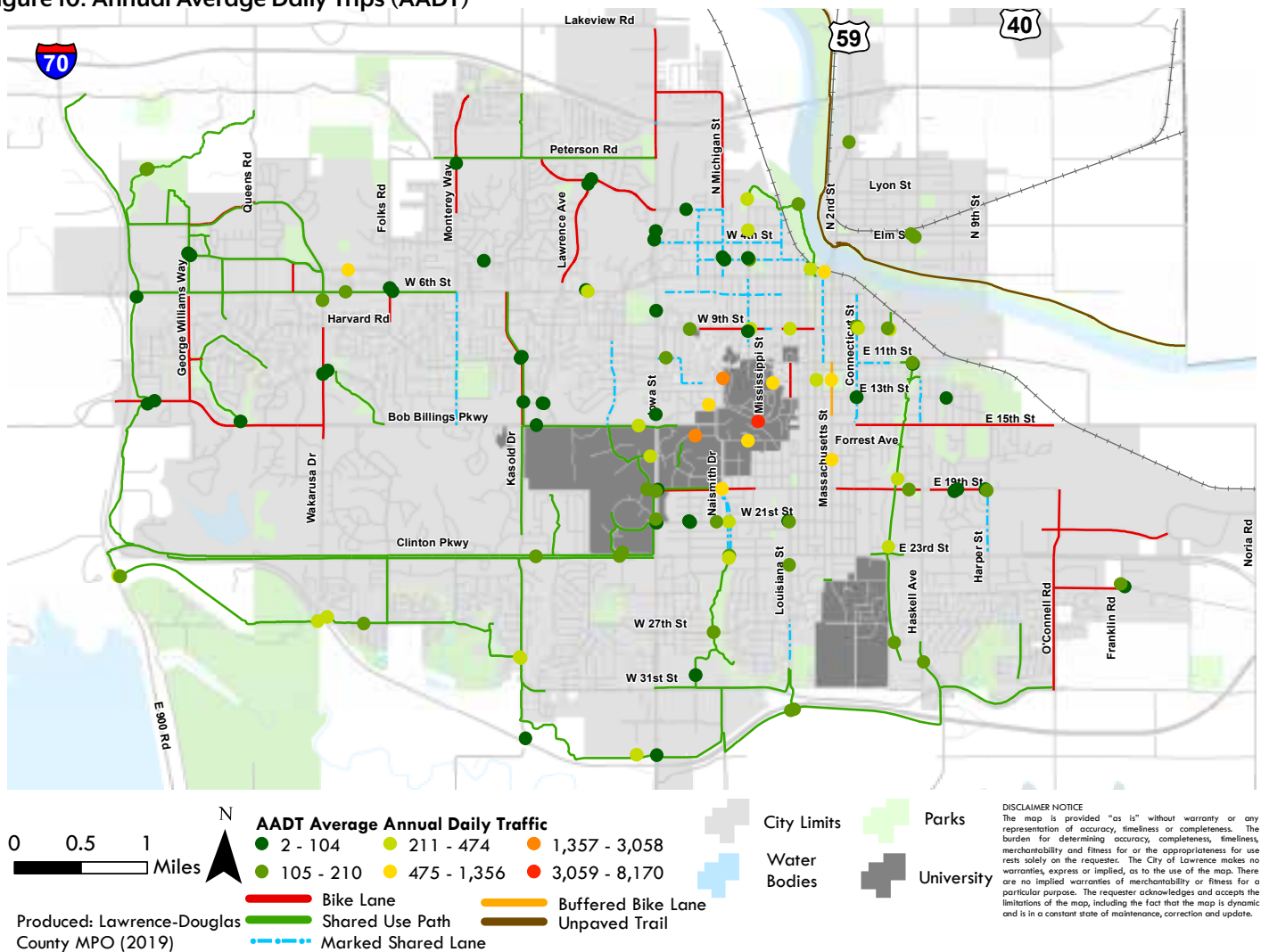


Click above to view an interactive map.

More information can be found at
<https://lawrenceks.org/mpo/bikepedcount>

Figure 10 displays the annual average daily trips (AADT) pedestrians and bicycle riders take. The warm colors are the highest annual average daily trips of bicyclists and pedestrians. The highest volume of bicycle and pedestrian trips are on the KU campus, followed by sections of the Lawrence Loop Shared Use Path. This data can be viewed in an interactive map at: www.lawrenceks.org/mpo/bikepedcount.

Figure 10: Annual Average Daily Trips (AADT)

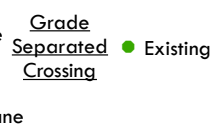
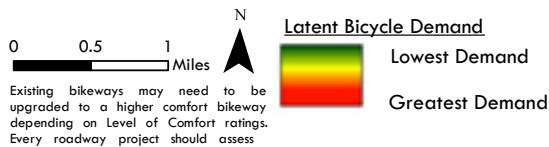
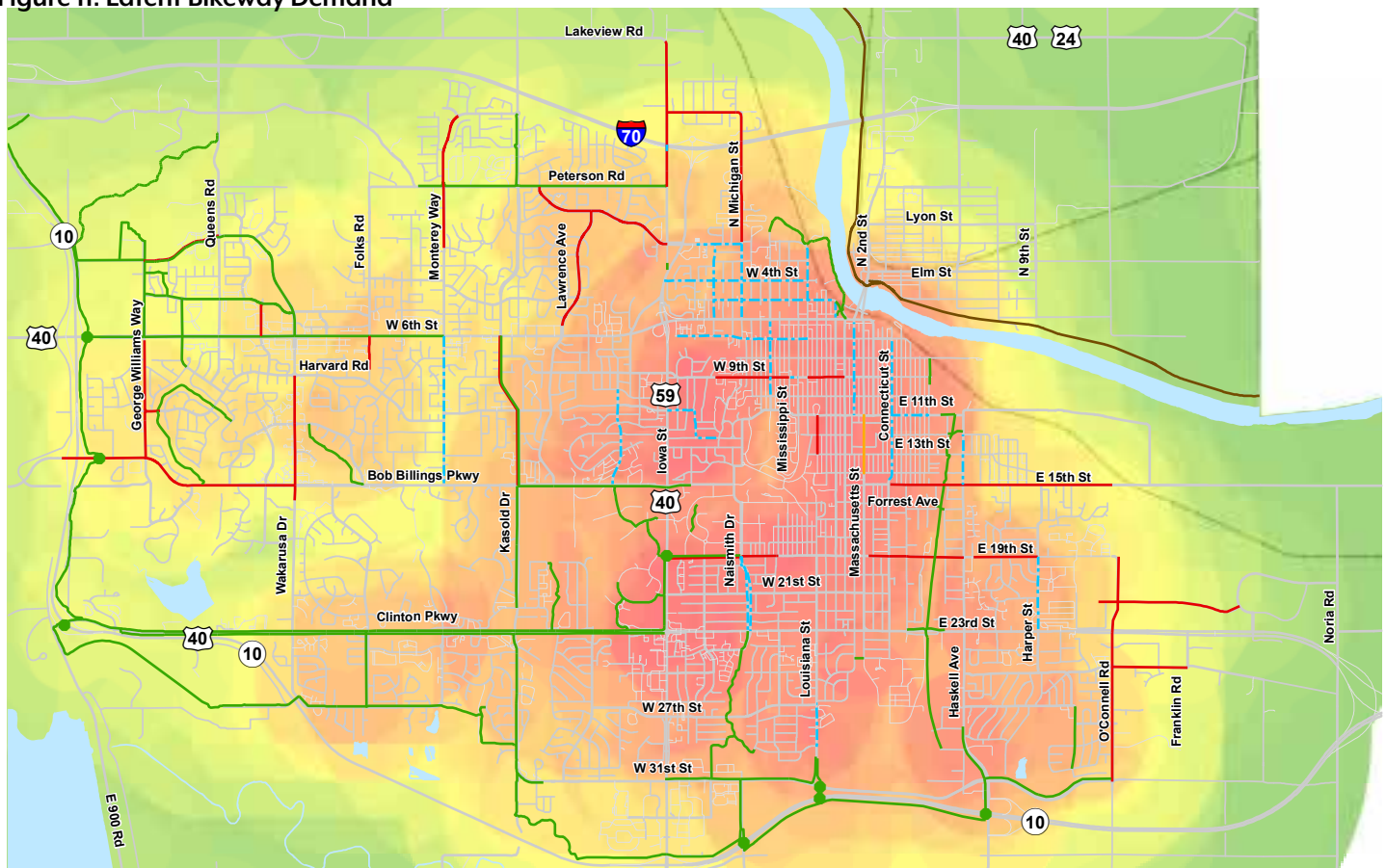


Click above to view an interactive map.

LATENT BIKEWAY DEMAND

Latent bicycle demand looks at potential trip generators and attractors and weights them according to proximity. The goal is to not project trips, but rather determine where people would ride bicycles if facilities were made convenient and comfortable. Figure 11 shows the latent bicycle demand, which takes into account high density housing, medium density housing, K-12 public and private schools, colleges/universities, community service centers, distance to existing bikeways major separation, minor separation and shared street facilities. See Appendix C: Technical Analysis to view a more complete breakdown of the scoring matrix.

Figure 11: Latent Bikeway Demand



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[Click above to view an interactive map.](#)

BICYCLE LEVEL OF COMFORT

The bicycle level of comfort analysis recognizes different bikeways (shared use path, bike lane, etc.) may have varying levels of comfort for bicycle riders based on several factors: the number of motor vehicles, the speed of the motor vehicles, and proximity of adjacent traffic. Individual bicycle rider level of comfort is also influenced by their riding experience and may change over time. To conduct this analysis, a model was created in which roads and existing bikeways were evaluated based on the number of motor vehicles which utilize the road and the posted speed limit (Figure 12).

Separation from traffic is another key factor to bicycling level of comfort and was incorporated into the model. The most comfortable bikeway type is separated with a physical barrier between motor vehicles and bicycle riders. This is called Major Separation. Shared use paths, cycle tracks, and protected bike lanes are considered major separation. The first survey asked participants their level of comfort on various facility types. 85% said they would feel at least somewhat comfortable bicycling on facilities with major separation on commercial streets.



Shared Use Path/Sidepath
(BURROUGHS CREEK TRAIL, LAWRENCE, KS)



Cycle Track/Protected Lane
(INDIANAPOLIS, IN)

The next level of separation is called Minor Separation and it consists of a designated space for bicycle riders; however, it only consists of a stripe of paint. Bike lanes and buffered bike lanes are considered minor separation. 71% of respondents said they would feel at least somewhat comfortable bicycling on facilities with buffered bike lanes on commercial streets, while 57% said they would feel at least somewhat comfortable bicycling on facilities with bike lanes on commercial streets.



Buffered Bike Lane
(BROOKLYN, NY)



Bike Lane
(MONTEREY WAY AND PETERSON RD., LAWRENCE, KS)

The least level of separation are called Shared Streets. In these facilities motor vehicles and bicycle riders commingle and share the street. There is not dedicated, exclusive space for bicycle riders. Bicycle Boulevards, streets with Sharrows, and Bike Advisory Lanes are shared streets. 58% of respondents said they would feel at least somewhat comfortable bicycling on bicycle boulevards on neighborhood/residential streets. 57% of respondents said they would feel at least somewhat comfortable bicycling on facilities with shared-lane markings (sharrow) on neighborhood/residential streets. And 49% of respondents said they would feel at least somewhat comfortable bicycling on facilities with a bike advisory lane on neighborhood/residential streets.

The survey asked about riding on streets with shared lane markings or Sharrows, but the model has these facilities renamed as Marked Shared Lanes.



Bike Boulevards
(BERKELEY, CA)



**Shared-Lane Markings
(Sharrows)**
(TORONTO, ON)

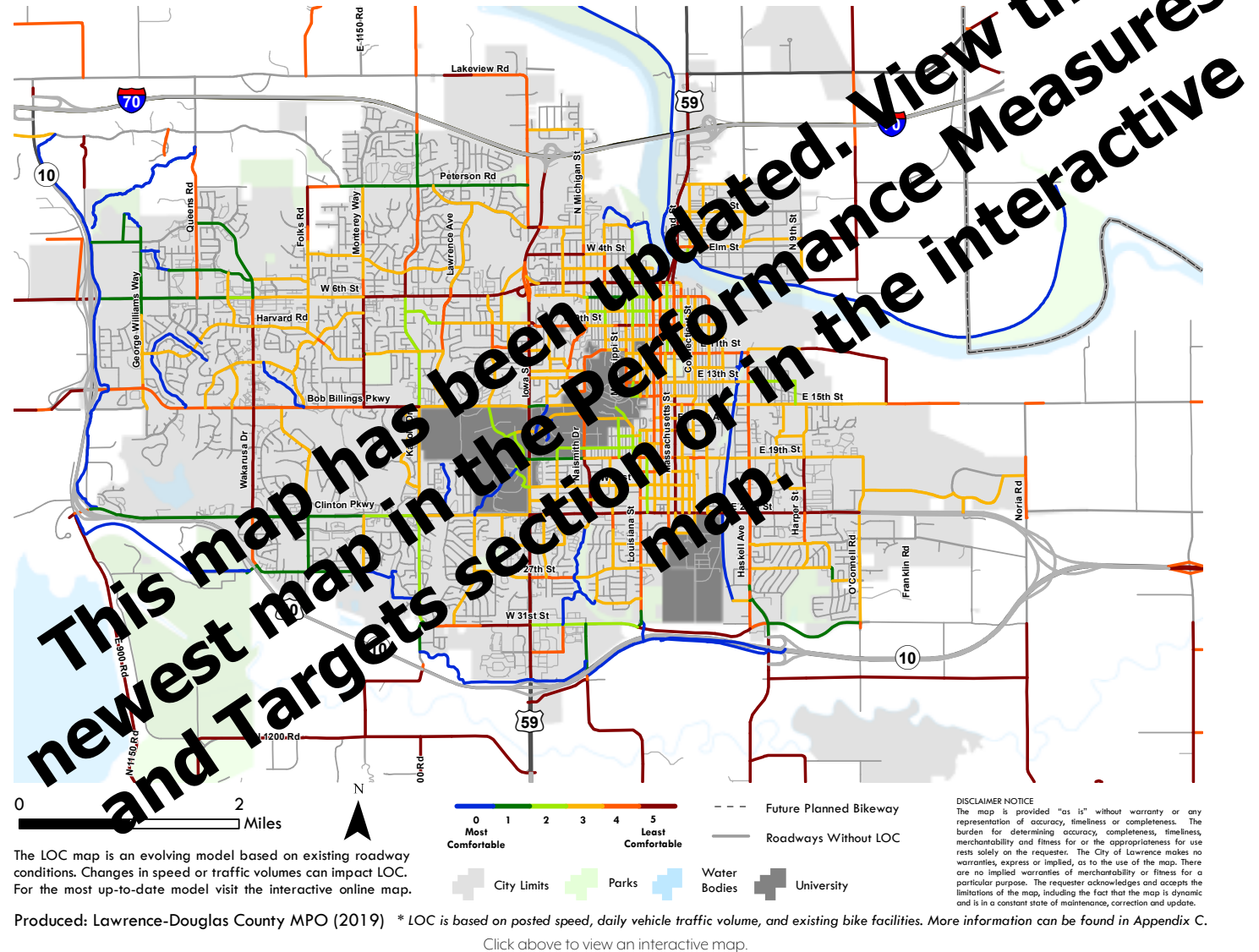


Bike Advisory Lane
(HANOVER, NH)

Thresholds were then established to identify the most to least comfortable segment (ranging from blue being most comfortable to red being the least comfortable). The most comfortable type of bikeway is a shared use path which is not near a roadway (shown in blue on the map). A good example of this is the Burroughs Creek Trail.

This analysis is not intended to reflect every bicycle rider's experience, but instead provide a baseline of current levels of comfort for the general population.

Figure 12: Bicycle Level of Comfort

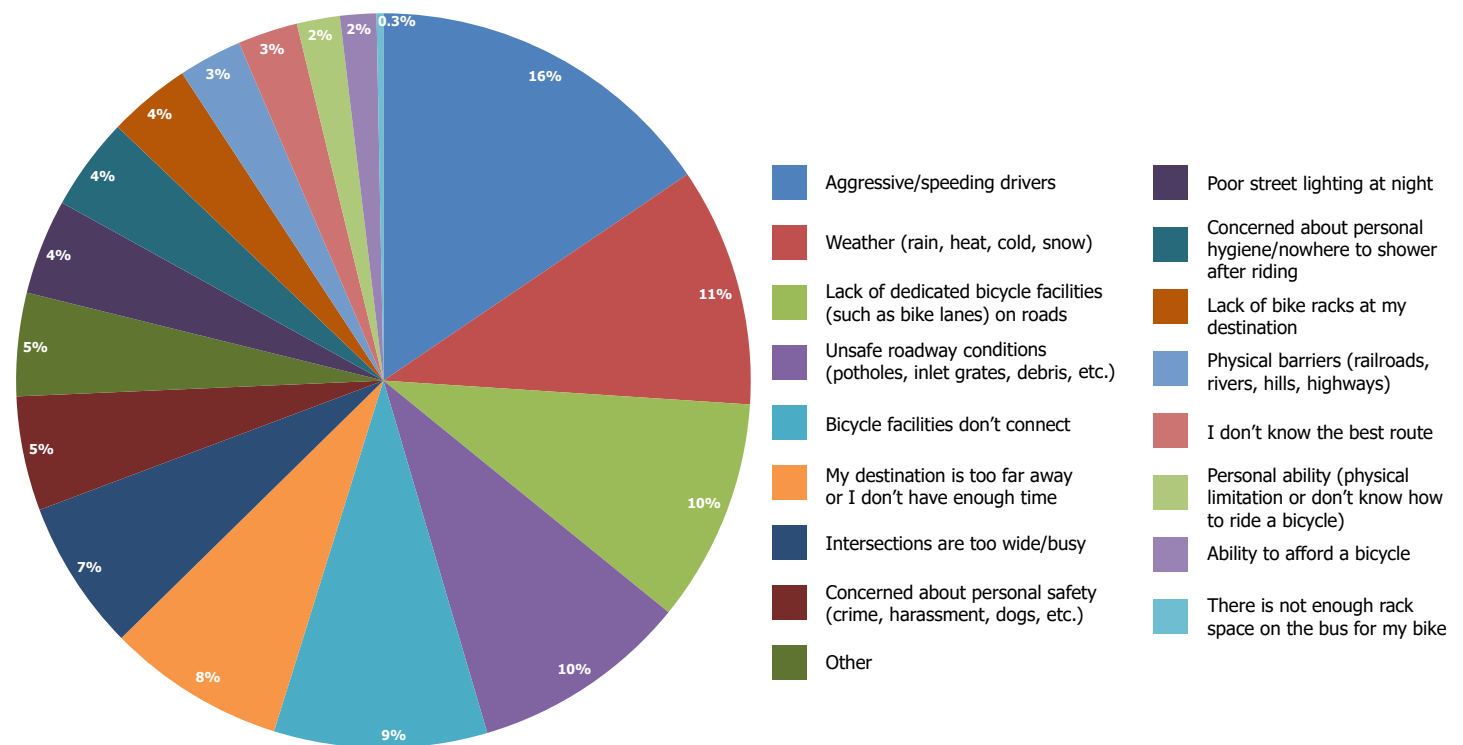


11TH ST. AND MASSACHUSETTS ST,
LAWRENCE, KS

BARRIERS TO BICYCLING

Nationally the barriers to bicycling include concerns about traffic safety, lack of routes, weather, distance, and the absence of shower and parking facilities.¹ The national data corresponds to what we heard locally from the survey conducted over the summer of 2018 (Figure 13). The number one reason people selected for what prevents them from bicycling more was – aggressive/speeding drivers. The second reason why people don’t bicycle more is weather, followed by lack of dedicated bicycle facilities.

Figure 13: Reasons not to Bicycle from Survey Responses



Number of Responses – 2,005

Weather cannot be addressed, but the other top five reasons will be addressed in the recommendations portion of this plan.

The Lawrence topography is a physical barrier. There are significant hills in Lawrence which may intimidate potential bicycle riders.



BOB BILLINGS PKWY.,
LAWRENCE, KS

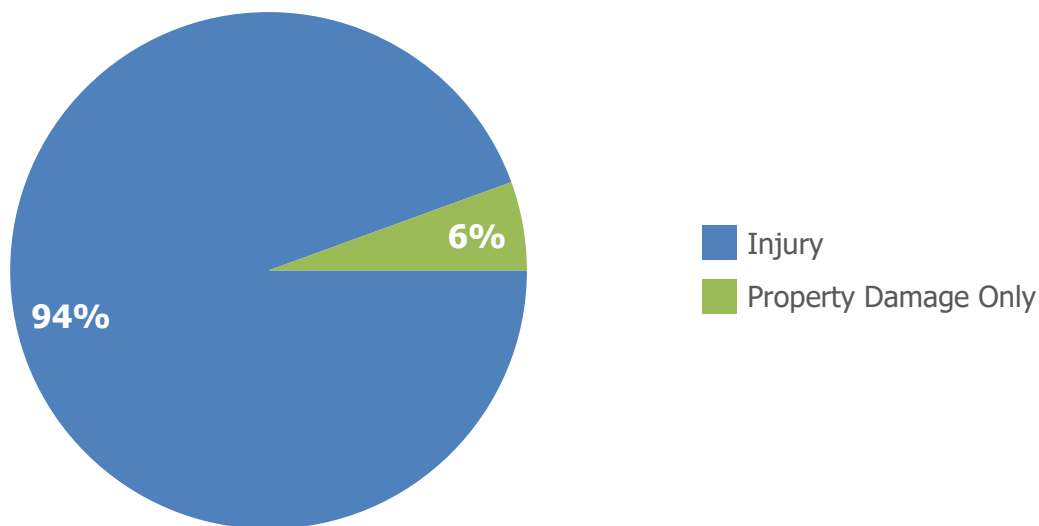
¹ Reasons Why Bicycling And Walking Are And Are Not Being Used More Extensively As Travel Modes. (n.d.). National Bicycling And Walking Study, FHWA-PD-92-041. Retrieved November 12, 2018, from https://safety.fhwa.dot.gov/ped_bike/docs/casel.pdf

BICYCLE CRASHES

An overview of bicycle crashes is provided below. For a more in depth review see Appendix F: Crash Analysis. Safety, or a perceived lack of safety is the number one concern of current and potential bicycle riders in Lawrence. 71% of survey respondents indicated they would bicycle more if they felt they could do it safely. Crashes are a visible indication of safety. The Kansas Department of Transportation (KDOT) collects traffic crashes that occur on public roadways involving property damage of at least \$1,000 or an injury or fatality on the Kansas Motor Vehicle Accident Report Form. This includes crashes between motor vehicles and bicycle riders. A fatality or serious bicycle rider injury resulted from 132 (or 4%) of all traffic crashes in Lawrence between 2013 and 2017. The City of Lawrence, Douglas County, University of Kansas, and Kansas Highway Patrol reports crashes to KDOT. Bicycle related crashes are underreported. See the pull out box for types of crashes historically not reported.

Figure 14 displays a majority of the crashes resulted in injuries. Bicycle riders are more vulnerable roads users and have a higher chance of being injured if there is a collision.

Figure 14: Severity of Bicycle Crashes (2013-2017)



Source: Kansas Department of Transportation (2019)

The word “crash” may be new to some people as a way to describe the event in which a bicycle rider collides with a motor vehicle, in a way that can result in bodily harm and/or property damage. Historically, these events were called accidents. The term accident implies heavy doses of chance, unknown causes, and the connotation that nothing can be done to prevent them. Crashes are preventable. Bicycle rider crashes are not random events. They fall into a pattern of recurring crash types and occur because the parties involved make mistakes. The mistakes can be identified and counteracted through a combination of education, skill development, engineering, and enforcement measures that can substantially reduce crash occurrences. There is a continuing need to establish the mindset that bicycle riders are worthy and viable users of our transportation system.

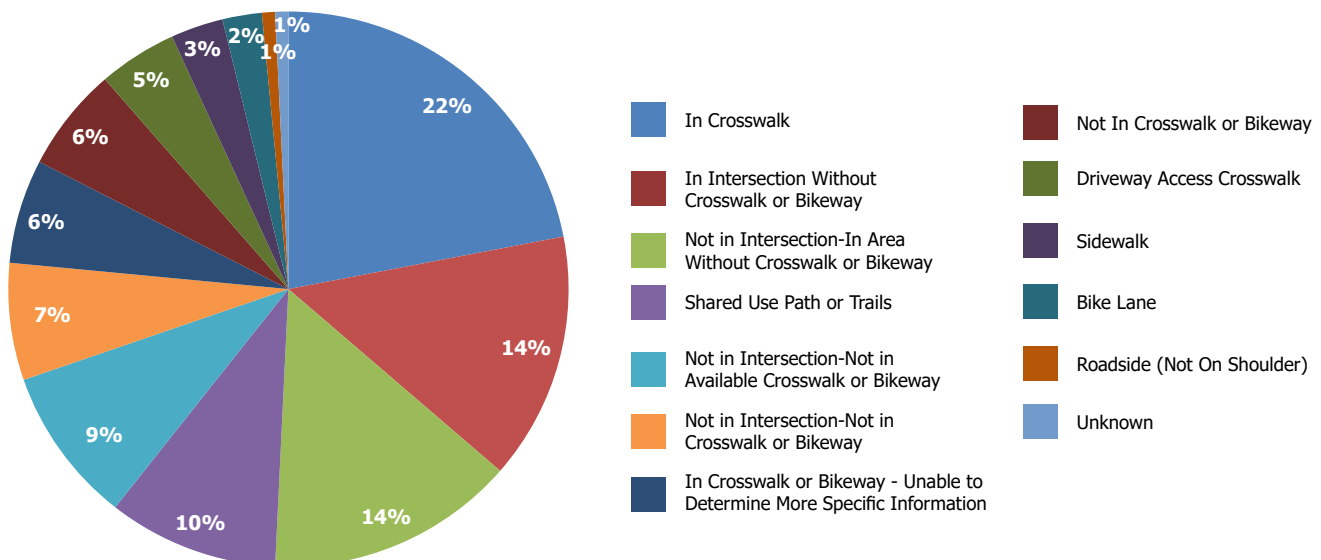


Several types of crashes according to [BikeLaw.com](https://www.bikelaw.com/) are generally not reported.

- **“No contact” crashes** – Crashes where a car runs a bicycle rider off the road, turns in front of or next to a bicycle rider and the bicycle rider takes an evasive action and crashes
- **“Minor” bodily injury crashes** – Crashes where a bicycle rider is not transported to the hospital from the scene; crashes where the cyclist or officer does not immediately identify a significant head injury; crashes where bicycle rider goes into “superman” or “superwoman” mode and reports being okay, when s/he is not and needs to be checked out
- **“Stationary” motor vehicle crashes** – “Dooring” crashes and crashes where bicycle rider hits parked—or allegedly parked—motor vehicle
- **Animal-related crashes** – Unleashed dog runs in front of bicycle rider or attacks bicycle rider; deer, squirrel and other wild animal crashes
- **Work zone crashes** – Crashes caused by unmarked hazards in a work zone and/or failure to warn of upcoming work zone hazards
- **Surface condition crashes** – Crashes caused by potholes, sand, gravel, etc.
- **“Criminal” or “intentional” crashes** – Bicycle rider harassment that results in a crash
- **“Hit” and run crashes** – Both contact and no contact “hit” and runs, meaning sometimes the motor vehicle actually hits the bicycle rider and leaves and sometimes the motor vehicle causes the bicycle rider to be run off the roadway without actually colliding with the bicycle rider and then leaves
- **“Mechanical” and/or user error crashes** – Brakes don’t work; bicycle rider loses control of bike

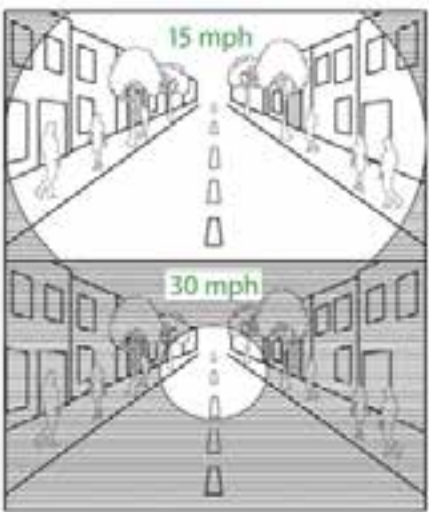
KDOT reported bicycle-motor vehicle crashes were evaluated to determine if the crashes were on bikeways or not (Figure 15). 26% of the crashes were found to be on designated facilities like bikeways, crosswalks, sidewalks, or shared use paths. 22% of the crashes occurred “in a crosswalk”.

Figure 15: Location of Bicycle Rider Crashes (2013-2017)



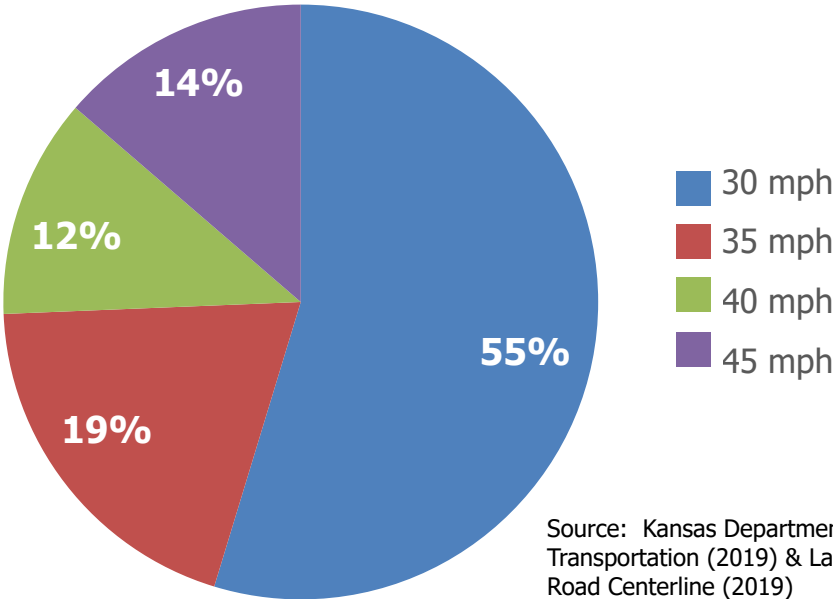
Source: Kansas Department of Transportation (2019)

All of the crashes with data, which could be mapped, were located near roadways with a posted speed limit of 30 mph or higher (Figure 16; 15 crashes were not able to be mapped due to a lack of longitude and latitude data). An important consideration about this data is there is some level of discrepancy within the mapped data. The crash many not have been recorded in the exact location the crash occurred. Thus the crash may not have occurred on the higher speed road, rather it may have been on a slower speed road which intersects the higher speed one. However, in general crashes occurring on higher speed roads is not surprising because the speed of a roadway limits the driver's field of vision. The field of vision is the amount of space a person can view while driving down the road. The faster you drive the less you can view. Thus faster speeds lead to more crashes as drivers are not able to view bicycle riders (and pedestrians) soon enough to avoid a crash. According to the AAA Foundation for Traffic Safety the average risk for death of a pedestrian increases as the speed of the vehicle increases (Table 1).



Source: Institute of Transportation Engineers. (n.d.) Speed as a Safety Problem. Accessed on March 27, 2019 from <https://www.ite.org/technical-resources/topics/speed-management-for-safety/speed-as-a-safety-problem/> Original Source: Walkable City Rules, <https://islandpress.org/book/walkable-city-rules>

Figure 16: Road Speed of Bicycle Rider Crashes (2013-2017)



Source: Kansas Department of Transportation (2019) & Lawrence Road Centerline (2019)

Table 1: Average Risk of Pedestrian Severe Injury or Death Based on Vehicle Miles per Hour Speed

| | Severe Injury | Death |
|-----|---------------|--------|
| 10% | 16 mph | 23 mph |
| 25% | 23 mph | 32 mph |
| 50% | 31 mph | 42 mph |
| 75% | 39 mph | 50 mph |
| 90% | 46 mph | 58 mph |

Source: AAA Foundation for Traffic Safety. Impact Speed and a Pedestrian's Risk of Severe Injury or Death.

*Note: Risks vary significantly by age. For example, the average risk of severe injury or death for a 70-year-old pedestrian struck by a car traveling at 25 mph is similar to the risk for a 30-year-old pedestrian struck at 35 mph.

Although the AAA Foundation for Traffic Safety evaluated pedestrians, it can be extrapolated the data is also applicable to bicycle riders since bicycle riders are vulnerable users like pedestrians.¹

Unfortunately the current data provided by KDOT does not include user behavior, so we are unable to evaluate the human contributing factor to the crashes (e.g. was there a failure to yield or stop by either the bicycle rider or driver).

Reviewing the bicycle crash data indicates a majority of crashes occurred in either crosswalks/an intersection or roadway without a crosswalk/bikeway and the roadway speed is equal to or greater than 30 mph. They occur during the daylight, on clear weather days with dry surface conditions. This indicates speed concerns should be addressed and education about safe driving and bicycling behaviors is necessary. However, further analysis is needed. This review of bicycle crashes only provides a baseline of crash information. This data should be reviewed and evaluated in future years.

¹ Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death. AAA Foundation for Traffic Safety. Accessed on March 26, 2019 from <https://aaafoundation.org/impact-speed-pedestrians-risk-severe-injury-death/>



ROTARY ARBORETUM,
LAWRENCE, KS

Developing a connected low, stress bikeway network involves building the necessary infrastructure, maintaining it, and ensuring there are end-of-trip amenities to truly enable traveling by bicycle.

OPPORTUNITIES TO BUILD THE BIKEWAY NETWORK



INCORPORATING BIKEWAYS INTO ROADWAY PROJECTS

In Lawrence, bicycle and pedestrian infrastructure projects have historically been incorporated into larger road projects budgets, unless they were funded through grants or special allocations. This integration of bicycle and pedestrian elements in roadway projects is consistent with the Lawrence Complete Streets Policy. Capital Improvement Projects and Roadway Maintenance projects should implement bikeway improvements appropriate to the scope of the project.

When Capital Improvement Plan (CIP) projects are planned, engineers and designers need to consult the Bikeways Map to determine if the corridor has been identified for a future bikeway. If a project is identified it should be completed as part of the roadway project. The exact type of bikeway within major or minor separation or shared street will be determined through context sensitive designs and consulting the Facility Selection Criteria Chart in the Design Guide and considerations with the Level of Comfort desired.

The pavement maintenance program uses a variety of techniques to maintain the roadways including mill and overlay, asphalt area patching (microsurface prep), and internal street maintenance. Since 2015, the Comprehensive Street Maintenance Program has consulted the Bikeway Map when determining projects for the year to determine if sharrows or bike lanes should be included with a project. With this new Bike Plan, engineers will utilize the Bikeway Map and the Facility Selection Criteria Chart in the Design Guide to determine the appropriate bikeway type based on the speed and number of motor vehicles. Context sensitive solutions will be utilized. There are times the desired bikeway type is not feasible due to limited funding and/or scope of the maintenance project, thus streets should be retrofitted with next best facility for the time being. Then in the future, when there is a major roadway project or a standalone bicycle/pedestrian project the facility can be improved to the ideal bikeway. The idea is it is better to do something and create a connected bikeway network than to do nothing, e.g. the next best facility. (See the Design Guide for more information.)

STANDALONE BIKEWAY PROJECTS

Dedicated funding has expanded the ability to implement a connected bikeway network. The first set aside funding for standalone bicycle and pedestrian projects in Lawrence was established in 2016. The sales tax referendum which was passed in November 2017 allocated a portion of the funding towards non-motorized projects for the 10-year life of the sales tax, which will sunset in April 2029 and will need to be renewed by the voters.

Table 2 displays the anticipated set aside sales tax funding per year for bicycle and pedestrian. Over the ten year time horizon, it is projected there will be over to \$7 million available for bicycle and pedestrian projects. The Lawrence Transportation Commission allocates the yearly funding towards pedestrian and bicycle facilities.

Table 2: Dedicated Bicycle and Pedestrian Funding (Sales Tax)

| 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|-----------|-----------|-----------|-----------|-----------|-------------|
| \$600,000 | \$500,000 | \$675,000 | \$675,000 | \$675,000 | \$675,000 |
| 2025 | 2026 | 2027 | 2028 | 2029 | Total |
| \$675,000 | \$675,000 | \$675,000 | \$675,000 | \$675,000 | \$7,175,000 |

GRANTS AND PRIVATE FUNDING

There are additional sources of bicycle and pedestrian funding including public and private grants. Lawrence has been fortunate to be awarded KDOT Transportation Alternative (TA) grants and private grants include the Sunflower Foundation and LiveWell Community Wellness Grants. Grants and private funds should be pursued to fund the bikeway network.

PRIVATE DEVELOPMENT

When private development occurs developers consult the Bikeways Map to determine if the corridor has been identified for a future bikeway. If a project is identified it should be completed as part of the development or roadway project. The exact type of bikeway within major or minor separation or shared street will be determined through context sensitive designs and consulting the Facility Selection Criteria Chart in the Bikeway Design Guidelines (Appendix A) and considerations with the Level of Comfort desired.

SAFE ROUTES TO SCHOOLS AND BIKEWAYS

Historically Safe Routes to School (SRTS) infrastructure projects have focused on walking routes and sidewalk routes for kids bicycling. However, older students could bike to school on appropriate bikeways. When SRTS infrastructure projects are considered the Bikeways Map should be consulted to determine if bikeway network improvements can be coordinated with SRTS projects.



PINCKNEY ELEMENTARY SCHOOL,
LAWRENCE, KS

MAINTENANCE OF BIKEWAYS

Two types of maintenance apply to bikeways. First, is clearing of debris, leaves, sand, snow, and ice. The Municipal Services and Operations Department (MSO) uses a street sweeper to sweep all city streets twice a year. MSO also clears snow and ice from on-road facilities including bike lanes and buffered bike lanes. The Parks and Recreation Department clears snow and ice from all 10 foot shared use paths. Parks and Recreation also clears leaves several times in the fall to keep paths clear.

Second is general upkeep and maintenance of projects. Concrete, asphalt, pavement markings, or flex posts are not built to last forever. Potholes, general wear and tear, and surface defects happen over time and with weather events. Parks and Recreation conducts a windshield survey every spring to determine which sections of shared use path need to be replaced due to heaving or other issues. Between 2015 and 2018, Parks and Recreation spent on average \$15,375 per year maintaining shared use paths. Other maintenance costs for on road bikeways, such as pavement maintenance, striping and or sign replacement has not been tracked separately for bike infrastructure and instead is included in roadway maintenance.

A systematic approach to evaluating bikeway infrastructure and pavement markings condition should be used to assess needed maintenance. Work is underway to develop asset management strategies to better assess the needs and costs associated with maintaining city infrastructure.

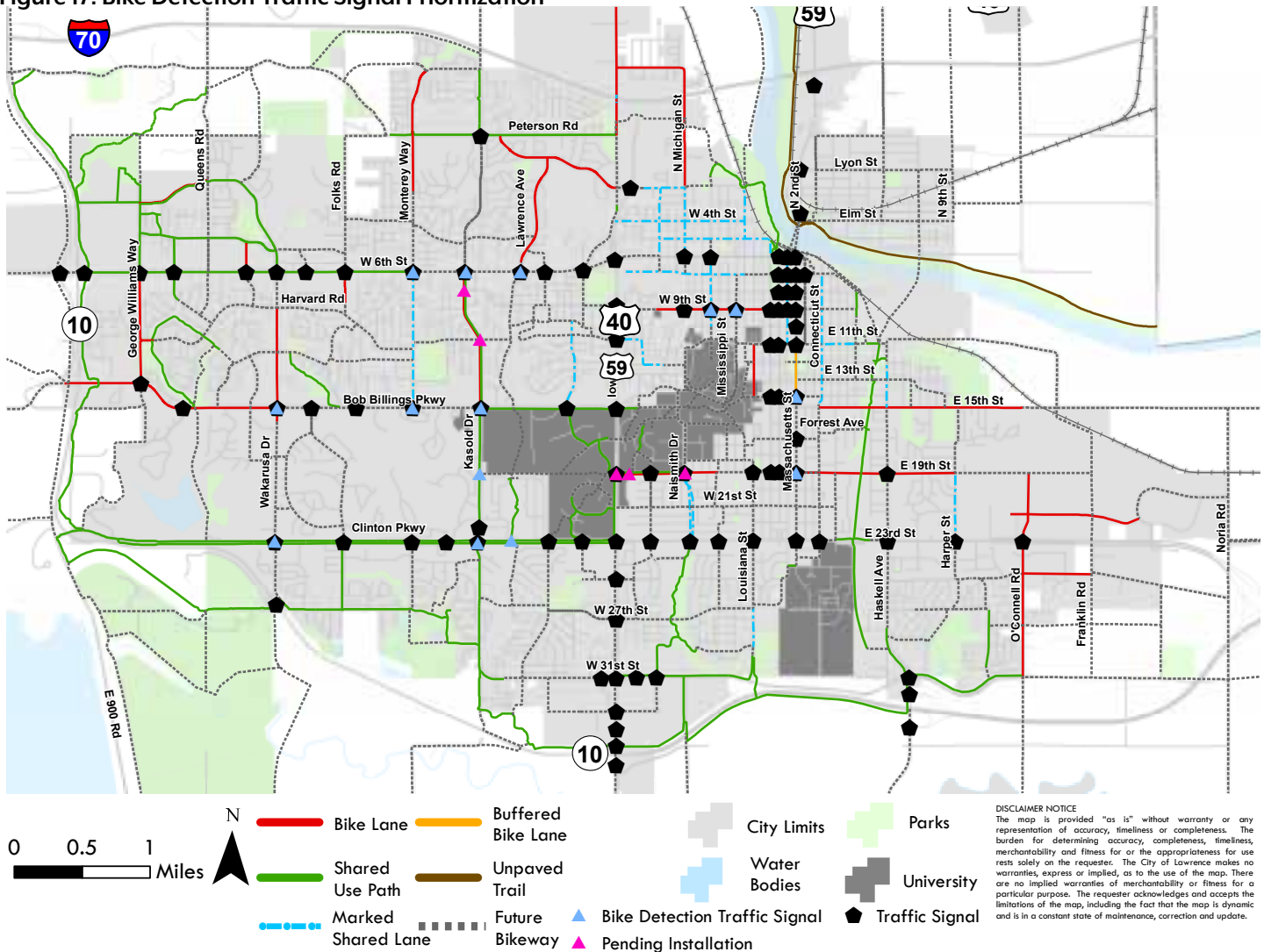


VARIOUS LOCATIONS IN LAWRENCE, KS

TRAFFIC SIGNAL PRIORITIZATION

Another component of the bikeway network is traffic signal prioritization. This technology detects when a bicycle rider is stopped at a traffic signal and provides the rider a green phase to cross the intersection or provides a protected left turn (even when the signal phasing may not normally provide this phase). This technology is currently deployed in 15 intersections (Figure 17). Three intersections along 19th Street will be completed as part of the 19th Street reconstruction and bicycle and pedestrian undercrossing projects. Improving future traffic signals to include bicycle detection is important in improving efficiency, reducing delay, increasing safety, and discouraging red light running by bicycle riders.

Figure 17: Bike Detection Traffic Signal Prioritization



Produced: Lawrence-Douglas County MPO (2019)

BICYCLE AMENITIES

Bikeways are only one component in creating a bicycle friendly community. End-of-trip amenities like short-term bicycle parking, long-term bicycle parking, personal lockers, changing rooms and showers, courtesy equipment (basin and mirror, benches, hairdryers, iron and ironing board, washing machine and dryer, towel service, clothing hooks, fan, electric outlet, etc), and bicycle repair equipment help encourage people to commute by bicycle.¹

Short-term bicycle parking – Short-term parking is designed to meet the needs of people making quick stops typically lasting up to two hours. Short-term parking needs to be located in highly-visible locations and have two anchor points where bicycles can be secured using U-shaped locks. Inverted U's, post and ring, and corrals are good short-term bicycle parking types.

Temporary bike parking at special events should be encouraged. Some special event attendees would prefer to ride their bicycle to the event. Bike parking needs to be provided in designated locations. Preferably, bike parking or bike valets should be located in highly visible places near main entrances. Bike parking should be placed within temporary barriers to direct bicycle riders to a single entrance and exit; this prevents theft and pedestrian traffic interference.

Long-term bicycle parking – Long-term parking is designed to meet the needs of people (commuters, residents, and others) needing to lock their bike for longer than two hours. Long-term parking provides security and protection from weather. Long-term parking can take a variety of forms, including a room within a residential building or workplace, a secure enclosure within a parking garage, or a cluster of bike lockers at a transit center. Some long-term parking is open to the public—such as a staffed secure enclosure at a transit hub—and some of it is on private property with access limited to employees, residents, or other defined user groups.²

Personal Lockers – Personal lockers provide a secure place for cyclists to store helmets, other riding gear, and a change of clothes. When possible, personal lockers are best placed within changing or locker rooms, but they are also well-used when located near bicycle parking. Lockers come in a variety of sizes to accommodate cyclists' storage needs. At least one locker should be provided for each long-term bicycle parking space.³

Changing Rooms and Showers – Adequate changing and shower facilities are a powerful incentive for people considering bicycling to work. Showers require more management than bicycle parking or personal lockers but are essential if employees must meet a professional dress code after commuting long distances or in extreme weather. Bicycle amenities should be incorporated into development projects and be deployed across the community.



8TH ST. AND MASSACHUSETTS ST.,
LAWRENCE, KS

¹ Cycle Note, Queensland Transport. (2006, June). End-of-trip facilities for bicycle riders. Retrieved November 12, 2018, from https://www.bikeleague.org/sites/default/files/BFB_Queensland_End_of_trip_facilities_for_bicycle_riders.pdf

² Association of Pedestrian and Bicycle Professionals. (2015). Essentials of Bike Parking. Retrieved November 12, 2018, from https://cdn.ymaws.com/www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FINAL.pdf

³ Houston-Galveston Area Council. (2015). End of Trip Facilities: A Planning Guide for the Houston-Galveston Region. Retrieved November 12, 2018, from <https://www.h-gac.com/community/livablecenters/publications/End-of-Trip-Facilities11-02-2015.pdf>

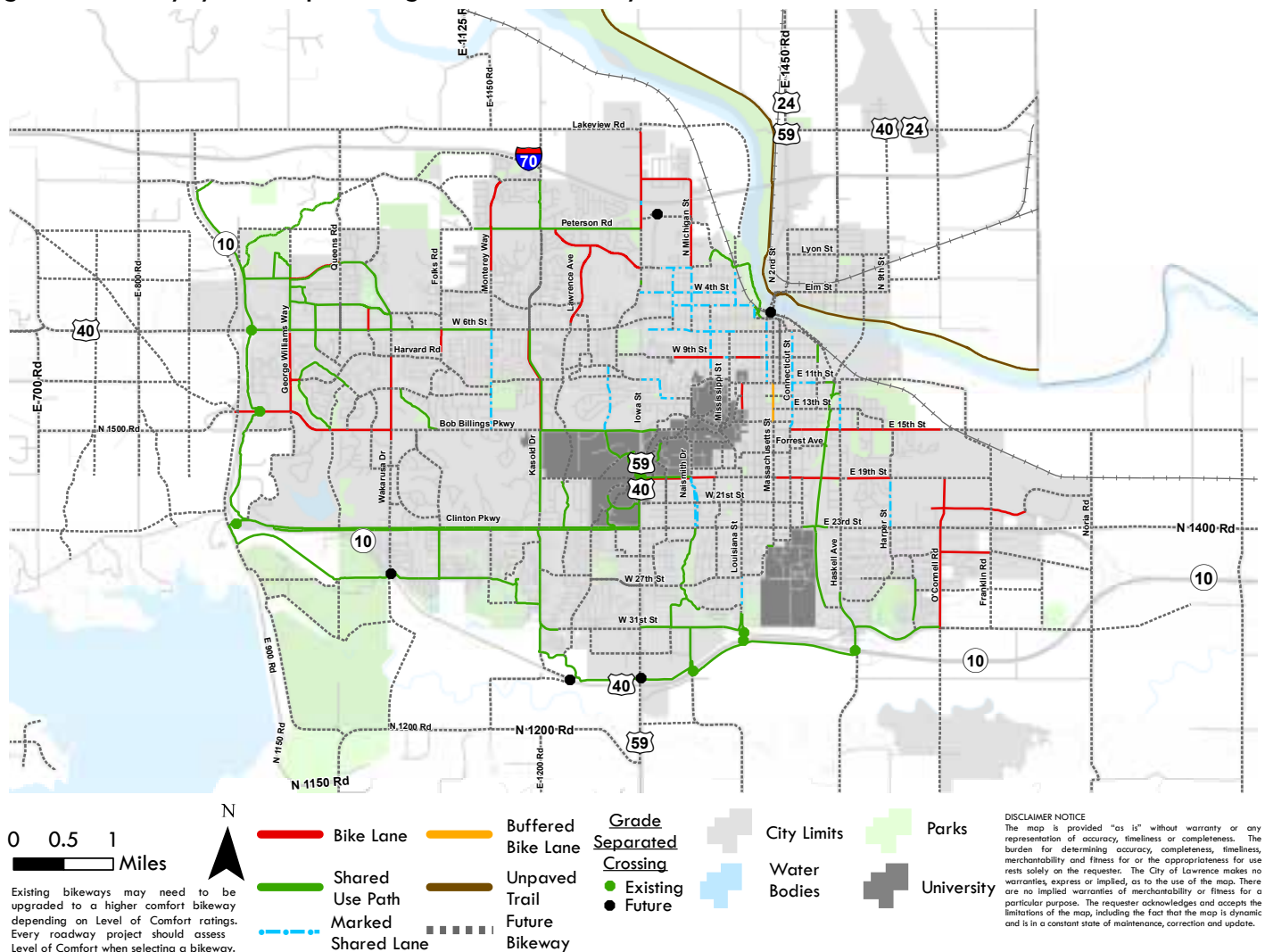
The Lawrence Bikes Plan has the potential to provide significant benefits to people who bike through development of a well-connected low-stress bikeway network that serves a broader range of people who bicycle all over the city. Development and implementation of the plan also has significant benefits including health outcomes, mobility, and overall quality of life for all Lawrencians, including those who don't bike. After evaluating public preference, crash history, and bicycle level of comfort it was determined providing low-stress, comfortable bikeways is the best way to encourage people to bicycle. To achieve a bicycling mode share of 3% by 2025 low-stress bikeways should be constructed.

ACTION PLAN

BIKEWAY SYSTEM MAP

The Bikeway System Map shown in Figure 19 was created to connect areas of latent bicycle demand, provide facilities where there are currently none to improve safety, and provide physical separating when practical to improve bicycle riders' level of comfort. Building out the entire bikeway network is necessary to create a connected bikeway system. The gray dashed lines in Figure 19 illustrate future bikeways. There are currently five grade separated projects identified for the future. They are located at US-59/Iowa St. and the SLT Shared Use Path (SUP); McDonald Dr. near the I-70 access ramps; Massachusetts St. and 6th St.; Kasold Dr. and K-10; and Wakarusa Dr. and K-10. All are locations where existing or future bikeways cross heavily traveled roads.

Figure 19: Bikeway System Map (Existing and Future Bikeways)



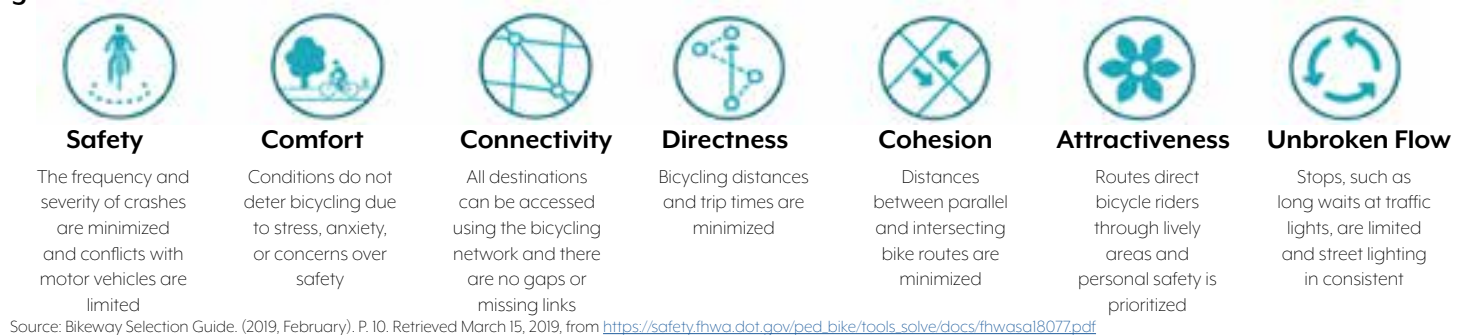
Produced: Lawrence-Douglas County MPO (2019)

[Click above to view an interactive map.](#)

However, building out the entire bikeway network is not financially feasible in the short term. Thus Priority and Secondary Funding Networks were identified. The funding distinctions are to prioritize dedicated bikeway funding for standalone projects. The priority network, shown in blue, and the secondary network, shown in yellow, on Figure 21 prioritized networks for standalone bicycle and pedestrian funding. The dashed future bikeways are network links to be built as private development or road construction/maintenance occurs.

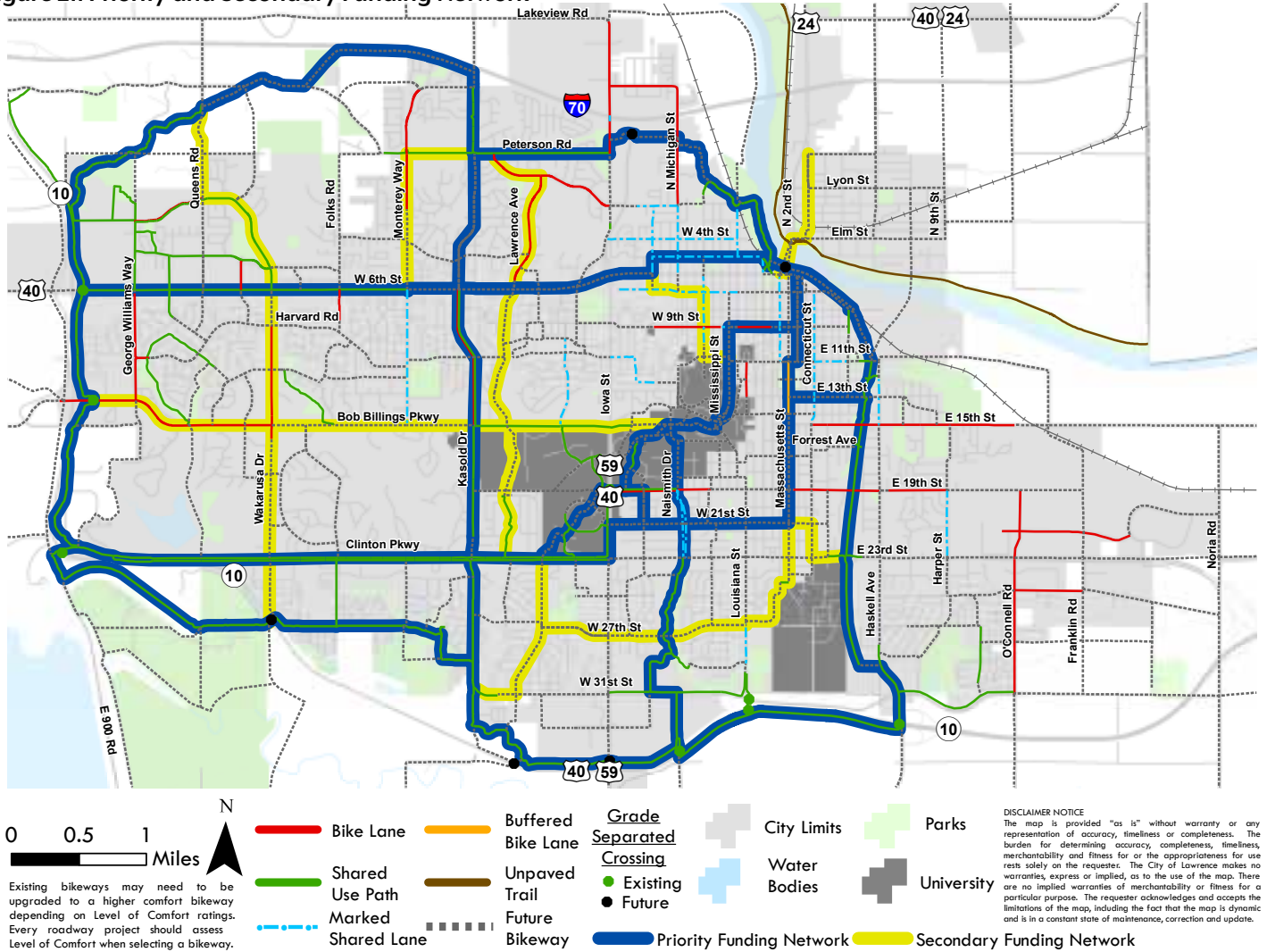
The Priority and Secondary Funding Networks were developed utilizing the seven principles of bicycle network design, which include safety, comfort, connectivity, directness, cohesion, attractiveness, and unbroken flow (Figure 20). These principles lead to a successful bicycle network which enables people of all ages and abilities to safely arrive at their destination.

Figure 20: Seven Principles of Bicycle Network Design



MASSACHUSETTS ST LAWRENCE, KS

Figure 21: Priority and Secondary Funding Network



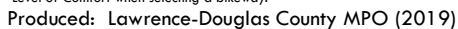
Produced: Lawrence-Douglas County MPO (2019)

[Click above to view an interactive map.](#)



VARIOUS LOCATIONS IN LAWRENCE, KS

Figure 22: Latent Bikeway Demand and Funding Networks



41

Individual projects are not prioritized because the Lawrence Transportation Commission has purview over making programming bicycle and pedestrian projects recommendations utilizing their Non-Motorized Project Prioritization matrix to the City Commission.¹ The Transportation Commission will use the Non-Motorized Project Prioritization matrix to select projects within the Priority and Secondary Funding Networks to be funded with the dedicated bicycle and pedestrian projects sales tax funding. This plan does not commit the Transportation Commission to selecting and funding any specific projects. MSO will maintain a list of projects as part of the Non-Motorized Project Prioritization matrix.

When a private or public development occurs developers, engineers, and planners should consult the Bikeways Map (Figure 19) to determine if the corridor has been identified for a future bikeway. If a project is identified it should be completed as part of the development or roadway project. The exact type of bikeway within major or minor separation or shared street will be determined through context sensitive designs and consulting the Facility Selection Criteria Chart in the Design Guide (Appendix A) and considerations with the Level of Comfort desired.

The Next Best Facility should be considered when building out the low-stress network. The Bikeway Design Guidelines details low cost design treatments like paint and flex posts which can be used to establish a minimum network. The idea is it is better to establish a minimum network of connected bikeways as quickly as possible and then improve the bikeway as funding becomes available. Additionally, there are times when the preferred bikeway separation type is not feasible within a project. When this occurs other bikeways which maximize safety and comfort should be considered. The inability to provide the preferred bikeway should not immediately result in the dismissal of other options. Although the facility may not be as comfortable or appealing as desired; it is still better than no bikeway facility and should improve the safety of riders. The actual type of Next Best Facility should be considered based on the context and constraints of the project. However, after evaluation it may be necessary to consider alternative parallel routes, rather than install a bikeway along the original corridor.



VARIOUS LOCATIONS IN LAWRENCE, KS

¹ <https://assets.lawrenceks.org/assets/boards/transportation-commission/NonMotorizedPolicy.pdf>

IMPLEMENTING POLICIES AND PROGRAMS

The existing non-infrastructure policies and programs will continue, but more needs to be done to make Lawrence truly bicycle friendly. Throughout the implementation of the bike plan, it is important to ensure equity is considered in all programming, policy and implementation actions.

Education and Enforcement

- Continue and expand the Lawrence Safe Routes to School (SRTS) programs to improve education and encouragement strategies for walking and bicycling to school, and expanding programming for learning safe traveling behaviors for walking, biking, and driving.
- Develop a bicycle friendly driver education program and work to incorporate the curriculum into driver training.
- Produce and maintain a Rideability Map to assist bicycle riders in choosing routes.
- Support programs, like the Bicycle Friendly Businesses, bicycle cooperative, bike share, community bike events, and weekly club rides, which increase access to bicycles, provides education about proper riding behaviors, and promotes a bicycling culture.

Engineering and Enforcement Operations

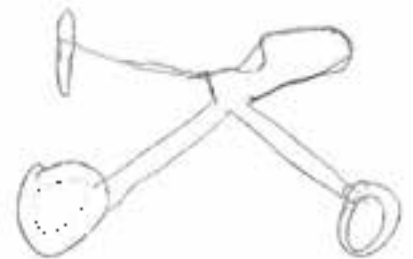
- Establish data driven processes to support decision-making including asset management, conducting multimodal counts (active users and parked bikes), Bikeway Level of Comfort model, and crash report analysis.
- Construct and install bikeways, consistent with the bikeway plan and the complete streets policy, during public and private roadway construction, reconstruction, maintenance and standalone projects. Include wayfinding.
- Continue to plan and budget to incorporate bikeway maintenance into City operations. Bikeway maintenance includes: the general upkeep of pavement markings, concrete or asphalt condition, flex posts replacement, signage, and other maintenance elements; and maintaining operable bikeways cleared of debris and leaves, sand, snow, and ice.
- Enforce the rules of the road for bicycle riders and drivers to improve the safety for all road users. Utilize all technology available including the 3 ft passing enforcement device and speed monitoring devices to enforce regulations consistently.
- Modify development code to support bicycle friendly end-of-trip amenities and bike parking. Apply regulations to retrofit existing developments.

Equity in this context references two main concerns that relate to the essential elements of an equitable bicycle friendly community. The first challenge is spatial equity, which seeks to ensure resources, programming, infrastructure, and network amenities are equally distributed throughout the community in a way which ensures no exclusionary gaps exist. The second concern regarding equity pertains to a resident's ability to own and maintain a bicycle despite a wide range of setbacks, whether it be due to a financial constraint or physical barrier. A successful bicycle network must be appropriate and accessible for all ages and abilities. Many of the existing bicycle facilities are only suitable for extremely confident riders, which tend to be adult men, and exclude people who might otherwise ride. Poor or inadequate infrastructure – which has disproportionately impacted low-income communities and communities of color – forces people to choose between feeling safe and following the rules of the road, and induces wrong-way and sidewalk riding.

Evaluation

- Collect data to develop counts and participation data (including SRTS travel tally data, manual and automatic bicycle and pedestrian counts).
- Coordinate with the Neighborhood Traffic Management Program (NTMP), which is designed to improve the environment and quality of life in Lawrence's existing neighborhoods through driver awareness, management and control of traffic on neighborhood streets. Track bicycle safety issues as it relates to the program.
- Track plan performance through plan specific annual performance measures and measures from Transportation 2040.
- Apply to national 3rd party organizations to evaluate bicycle progress including Bike Friendly Communities, People for Bikes, STAR Communities/LEED for Cities & Communities program.

When a private or public development occurs developers, engineers, and planners should consult the Bikeways Map (Figure 19) to determine if the corridor has been identified for a future bikeway. If a project is identified it should be completed as part of the development or roadway project. The exact type of bikeway within major or minor separation or shared street will be determined through context sensitive designs and consulting the Facility Selection Criteria Chart in the Design Guide (Appendix A) and considerations with the Level of Comfort desired. When the preferred bikeway separation type is not feasible within a project, other bikeways which maximize safety and comfort should be considered. The inability to provide the preferred bikeway should not immediately result in the dismissal of other options. Although the facility may not be as comfortable or appealing as desired; it is still better than no bikeway facility and should improve the safety of riders. These instances are called the Next Best Facility. The actual type of Next Best Facility should be considered based on the context and constraints of the project. However, after evaluation it may be necessary to consider alternative parallel routes.



POLICY AND PROGRAMMING ACTION PLAN

| | Recommendation | Champion | Municipal Partners | Other Partners |
|--|---|---|---|---|
| Education and Encouragement | Continue and expand the Lawrence Safe Routes to School (SRTS) programs | Safe Routes to School Team | | |
| | Develop a bicycle friendly driver education program to be incorporated into driver training. | Parks & Recreation | Metropolitan Planning Organization, Health Department | USD 497 |
| | Produce and maintain a Rideability Map. | Metropolitan Planning Organization | Municipal Services & Operations, City Manager's Office | MPO BAC |
| | Support programs, like the Bicycle Friendly Businesses, bicycle cooperative, bike share, community bike events, and weekly club rides, which increase access to bicycles, provides education about proper riding behaviors, and promotes a bicycling culture. | Parks & Recreation | Municipal Services & Operations, Metropolitan Planning Organization | MPO BAC, Lawrence Central Rotary, Lawrence Bike Club, Lawrence Mountain Bike Club, Lawrence Unchained |
| Engineering and Enforcement Operations | Establish data driven processes to support decision-making including asset management, conducting multimodal counts (active users and parked bikes), Bikeway Level of Comfort model, and crash report analysis. | Municipal Services & Operations | Metropolitan Planning Organization, Parks & Recreation, GIS | Transportation Commission |
| | Continue to plan and budget to incorporate bikeway maintenance into City operations. | Municipal Services & Operations, Parks & Recreation | | Transportation Commission |
| | Enforce the rules of the road for bicycle riders and drivers to improve the safety for all road users. | Police | Municipal Services & Operations | |
| | Modify development code to support bicycle friendly end-of-trip amenities and bike parking. Apply regulations to retrofit existing developments. | Planning & Development Services | Metropolitan Planning Organization, Municipal Services & Operations | Developers |
| Evaluation | Collect SRTS travel tally and bicycle/pedestrian counts. | Metropolitan Planning Organization, Health Department | Municipal Services & Operations | USD 497, Volunteers |
| | Coordinate with the Neighborhood Traffic Management Program (NTMP). Track bicycle safety issues as it relates to the program. | Municipal Services & Operations | Metropolitan Planning Organization | Transportation Commission |
| | Track plan performance through annual performance measures. | Metropolitan Planning Organization | Municipal Services & Operations, Health Department | |
| | Apply to national 3rd party organizations to evaluate bicycle progress. | Municipal Services & Operations & Sustainability | Metropolitan Planning Organization, GIS, Parks & Recreation | Transportation Commission, MPO BAC |

Legend for Policy and Programing Action Plan

Lawrence City Manager's Office = City Manager's Office

Lawrence GIS Department (within the IT Department) = GIS

Lawrence Municipal Services & Operations Department = Municipal Services & Operations

Lawrence Parks & Recreation Department = Parks & Recreation

Lawrence Police Department = Police

Lawrence Public Schools = USD 497

Lawrence Transportation Commission = Transportation Commission

Lawrence-Douglas County Health Department = Health Department

Lawrence-Douglas County Metropolitan Planning Organization = Metropolitan Planning Organization

Lawrence-Douglas County Planning & Development Services Department = Planning & Development Services

Lawrence-Douglas County Sustainability Department = Sustainability

Metropolitan Planning Organization Bicycle Advisory Committee = MPO BAC

Safe Routes to School Team = Health Department, Metropolitan Planning Organization, Municipal Services & Operations, USD 497, Sustainability

PERFORMANCE MEASURES AND TARGETS

Performance measures are used to assess progress toward meeting goals and objectives, and are integral to implementing a performance-based plan. The results of the performance measures advise the outcomes of the implemented projects and strategies. The region's Long Range Transportation Plan – Transportation 2040 – has four bicycle related measures, which will be reported as part of the Bike Plan. Additional measures were gathered from the Bike Friendly Community of Places for Bikes metrics and from input provided on the second public engagement survey.

1 – Percentage of people who have access within a ¼ mile to the Level of Comfort 3 or below bikeway network

| | Marked Shared Lane | Bike Boulevard | Bike Lane | Buffered Bike Lane | Protected Bike Lane | Shared Use Path | Total Bikeway Network |
|------|--------------------|----------------|-----------|--------------------|---------------------|-----------------|-----------------------|
| 2019 | 16% | - | 29% | 4% | - | 54% | 79% |
| 2020 | 27% | 4% | 34% | 4% | - | 56% | 85% |

Source: L-DC MPO LOC Map, Bikeway Map, Lawrence Population Model using 2019 and 2020 population estimates (2019 & 2020, Updated 10.29.21)

Goal
Increase the percentage of population within ¼ mile of Level of Comfort 3 or below bikeway network to 89% by 2025.

2 – Percentage of public streets with bikeway network

| | Marked Shared Lane | Bike Boulevard | Bike Lane | Buffered Bike Lane | Protected Bike Lane | Shared Use Path | Total Bikeway Network |
|------|--------------------|----------------|-----------|--------------------|---------------------|-----------------|-----------------------|
| 2019 | 3% | - | 5% | 0.1% | - | 7% | 14% |
| 2020 | 3% | - | 5% | 0.1% | - | 7% | 14% |

Source: L-DC MPO (2019 & 2020, Updated 5.17.21)

3 – Number of bicycle rider fatalities and serious injuries

| | Fatalities | Serious Injuries | Total |
|------|------------|------------------|-------|
| 2011 | 0 | 1 | 1 |
| 2012 | 0 | 2 | 2 |
| 2013 | 0 | 1 | 1 |
| 2014 | 0 | 2 | 2 |
| 2015 | 0 | 1 | 1 |
| 2016 | 0 | 0 | 0 |
| 2017 | 0 | 0 | 0 |
| 2018 | 0 | 2 | 2 |
| 2019 | 0 | 0 | 0 |
| 2020 | 0 | 0 | 0 |

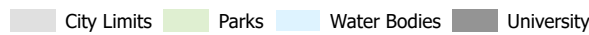
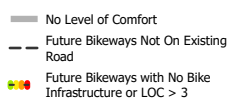
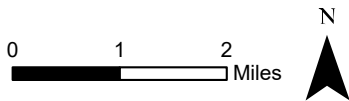
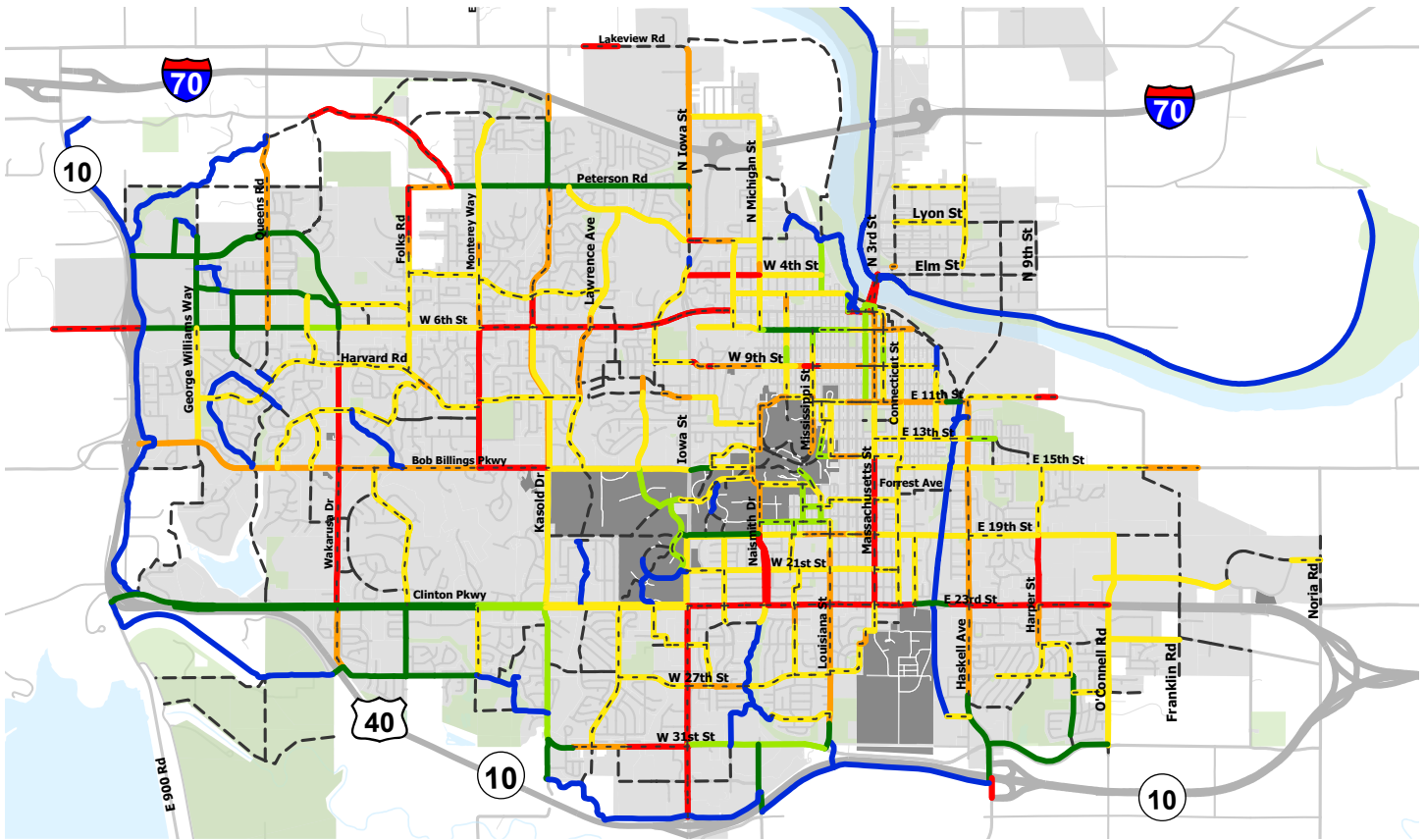
Source: KDOT (2020, updated 10.29.21)

Goal
Continue zero bicycle riders fatalities & serious injuries through 2025.

| | | | | | | | | |
|--|---|---|----------------------|---------------------|--|---------------------|-----------------|-------|
| 4 – Percentage of bicycle mode choice | Bicycle Mode Choice | | Margin of Error | | <div>Goal</div> <div>Increase bicycle mode choice to 3% by 2025.</div> | | | |
| | 2013 | 1.6% | ± 0.5 | | | | | |
| | 2014 | 1.3% | ± 0.4 | | | | | |
| | 2015 | 1.0% | ± 0.5 | | | | | |
| | 2016 | 0.9% | ± 0.4 | | | | | |
| | 2017 | 1.0% | ± 0.4 | | | | | |
| | 2018 | 1.0% | ± 0.4 | | | | | |
| | 2020 | 1.1% | ± 0.4 | | | | | |
| | Source: ACS 5-year estimates (S0801, Updated 5.17.21) | | | | | | | |
| 5 – Miles of high speed (> 35 mph) roads with bike facilities | | Wide Paved Shoulders | Bike Lanes (≥4 feet) | Buffered Bike Lanes | Protected Bike Lanes | Raised Cycle Tracks | Shared Use Path | |
| | 2016 | - | 3.1 | - | - | - | Not collected | |
| | 2019 | - | 3.5 | - | - | - | 13.8 | |
| | 2020 | - | 3.5 | - | - | - | 14.0 | |
| | 2021 | - | 4.2 | - | - | - | 14.9 | |
| | Source: L-DC MPO (2019 & 2021, updated 5.17.21) *Note: This measure utilizes centerline miles. **Note: Massachusetts St. is 30 mph, thus the Buffered Bike Lane doesn't meet the criteria for this measure. | | | | | | | |
| 6 – Percentage of transportation budget spent on bicycling | | Annual % on bike infrastructure | | | | | | |
| | 2016 | 1.7% | | | | | | |
| | 2017 | 8.7% | | | | | | |
| | 2018 | 2.0% | | | | | | |
| | 2019 | 20.5% (includes the 19th & Iowa Tunnel) | | | | | | |
| | 2020 | 1.6% | | | | | | |
| Source: City of Lawrence MSO CIP (2021, updated 6.20.21) These percentages were updated to reflect actual expenditures. | | | | | | | | |
| 7 – Miles of each facility type per year | | | | | 2017 | 2018 | 2019 | 2020 |
| | Protected bike lanes | | | | 0.00 | 0.00 | 0.00 | 0.00 |
| | Buffered bike lanes | | | | 0.00 | 0.39 | 0.39 | 0.39 |
| | Conventional bike lanes | | | | 16.02 | 16.57 | 16.90 | 17.25 |
| | Marked bike boulevards | | | | 0.00 | 0.00 | 0.00 | 1.30 |
| | Streets with traffic calming features and speed limits of 20 MPH or less (not including anything listed above) | | | | 0.69 | 0.94 | 0.94 | 0.94 |
| | Off-street paved trails or paths within city limits | | | | 40.30 | 49.77 | 47.99 | 51.00 |
| | Off-street natural surface trails or paths within city limits | | | | 25.85 | 25.85 | 25.85 | 25.85 |
| | Shared lane markings (not listed above) | | | | Still calculating | | | |
| | Source: L-DC MPO (2021, updated 8.10.21) | | | | | | | |

| 8 – Number of public bike parking spaces per year | <table><tr><th colspan="2">Public Bike Parking Spots</th></tr><tr><td>2017</td><td>4,621</td></tr><tr><td>2018</td><td>5,030</td></tr><tr><td>2019</td><td>5,070</td></tr><tr><td>2020</td><td>5,070</td></tr><tr><td colspan="2">Source: City of Lawrence GIS (2021)</td></tr></table> | Public Bike Parking Spots | | 2017 | 4,621 | 2018 | 5,030 | 2019 | 5,070 | 2020 | 5,070 | Source: City of Lawrence GIS (2021) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---------------------------|------------------------------|------|----------|------|----------|-----------|------------------------------|--|-------|-------------------------------------|-------|---------------------|------|------|-------|---------------|-----|-----|-----|--|--|--|--|-------------------------------|--|--|--|------|--|--|--|--|----------|-----------|------------------------------|------------------|------|------|-------|---------------------|------|------|-------|---------------|-----|-----|-----|--|--|--|--|-------------------------------|--|--|--|
| Public Bike Parking Spots | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2017 | 4,621 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2018 | 5,030 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2019 | 5,070 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2020 | 5,070 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source: City of Lawrence GIS (2021) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 – Bike share usage | <table><tr><th colspan="2">Bike Share Usage</th></tr><tr><td>2018</td><td>37,144 *</td></tr><tr><td>2019</td><td>40,606</td></tr><tr><td>2020</td><td>No longer in operation</td></tr><tr><td colspan="2">Source: VeoRide (2019 & 2020, Updated 5/17/21)</td></tr></table> <p>(*VeoRide was launched on April 18, 2018. Thus the 2018 numbers are from the launch until December 31. In winter 2020, VeoRide was transitioning towards e-scooters, but with the COVID-19 pandemic VeoRide stopped the program and left Lawrence.)</p> | Bike Share Usage | | 2018 | 37,144 * | 2019 | 40,606 | 2020 | No longer in operation | Source: VeoRide (2019 & 2020, Updated 5/17/21) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bike Share Usage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2018 | 37,144 * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2019 | 40,606 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2020 | No longer in operation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source: VeoRide (2019 & 2020, Updated 5/17/21) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 – Low-stress bikeway (level of comfort of 3 or less) | <table><tr><th colspan="4">2019</th></tr><tr><th></th><th>Priority</th><th>Secondary</th><th>Existing and Planned Network</th></tr><tr><td>Miles 3 or below</td><td>38.9</td><td>10.9</td><td>116.3</td></tr><tr><td>Total miles planned</td><td>52.0</td><td>20.7</td><td>198.1</td></tr><tr><td>% Comfortable</td><td>75%</td><td>52%</td><td>59%</td></tr><tr><td colspan="4">Source: L-DC MPO LOC Map (2019, updated 8.10.21 - This data was recalculated after missing segments and future bikeways were added.)</td></tr><tr><td colspan="4">* View map on following page.</td></tr></table> <table><tr><th colspan="4">2021</th></tr><tr><th></th><th>Priority</th><th>Secondary</th><th>Existing and Planned Network</th></tr><tr><td>Miles 3 or below</td><td>40.8</td><td>11.5</td><td>143.2</td></tr><tr><td>Total miles planned</td><td>52.2</td><td>20.7</td><td>199.5</td></tr><tr><td>% Comfortable</td><td>78%</td><td>56%</td><td>72%</td></tr><tr><td colspan="4">Source: L-DC MPO LOC Map (8.10.21 - This data reflects the residential streets speed limit reduction)</td></tr><tr><td colspan="4">* View map on following page.</td></tr></table> <div><p>This goal was based on the previous 2019 data. The 46% goal was a 4% increase from the 2019 data. The revised data has a 13% increase.</p></div> <div><p>Goal Increase the mileage of low-stress bikeways to 46% by 2025.</p></div> | 2019 | | | | | Priority | Secondary | Existing and Planned Network | Miles 3 or below | 38.9 | 10.9 | 116.3 | Total miles planned | 52.0 | 20.7 | 198.1 | % Comfortable | 75% | 52% | 59% | Source: L-DC MPO LOC Map (2019, updated 8.10.21 - This data was recalculated after missing segments and future bikeways were added.) | | | | * View map on following page. | | | | 2021 | | | | | Priority | Secondary | Existing and Planned Network | Miles 3 or below | 40.8 | 11.5 | 143.2 | Total miles planned | 52.2 | 20.7 | 199.5 | % Comfortable | 78% | 56% | 72% | Source: L-DC MPO LOC Map (8.10.21 - This data reflects the residential streets speed limit reduction) | | | | * View map on following page. | | | |
| 2019 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Priority | Secondary | Existing and Planned Network | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Miles 3 or below | 38.9 | 10.9 | 116.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total miles planned | 52.0 | 20.7 | 198.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| % Comfortable | 75% | 52% | 59% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source: L-DC MPO LOC Map (2019, updated 8.10.21 - This data was recalculated after missing segments and future bikeways were added.) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| * View map on following page. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2021 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Priority | Secondary | Existing and Planned Network | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Miles 3 or below | 40.8 | 11.5 | 143.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total miles planned | 52.2 | 20.7 | 199.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| % Comfortable | 78% | 56% | 72% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source: L-DC MPO LOC Map (8.10.21 - This data reflects the residential streets speed limit reduction) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| * View map on following page. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

2019 Level of Comfort - Performance Measure 10



DISCLAIMER NOTICE
The map is provided "as is" without warranty or any representation of accuracy, timeliness or completeness. The burden for determining accuracy, completeness, timeliness, merchantability and fitness for or the appropriateness for use rests solely on the requester. The City of Lawrence makes no warranties, express or implied, as to the use of the map. There are no implied warranties of merchantability or fitness for a particular purpose. The requester acknowledges and accepts the limitations of the map, including the fact that the map is dynamic and is in a constant state of maintenance, correction and update.

The LOC map is an evolving model based on existing roadway conditions. Changes in speed or traffic volumes can impact LOC. This map is an updated version from 2019 after missing segments and future bikeways were added.

Produced: Lawrence-Douglas County MPO (2021) *LOC is based on posted speed, daily vehicle traffic volume, and existing bike facilities. More information can be found in Appendix C.

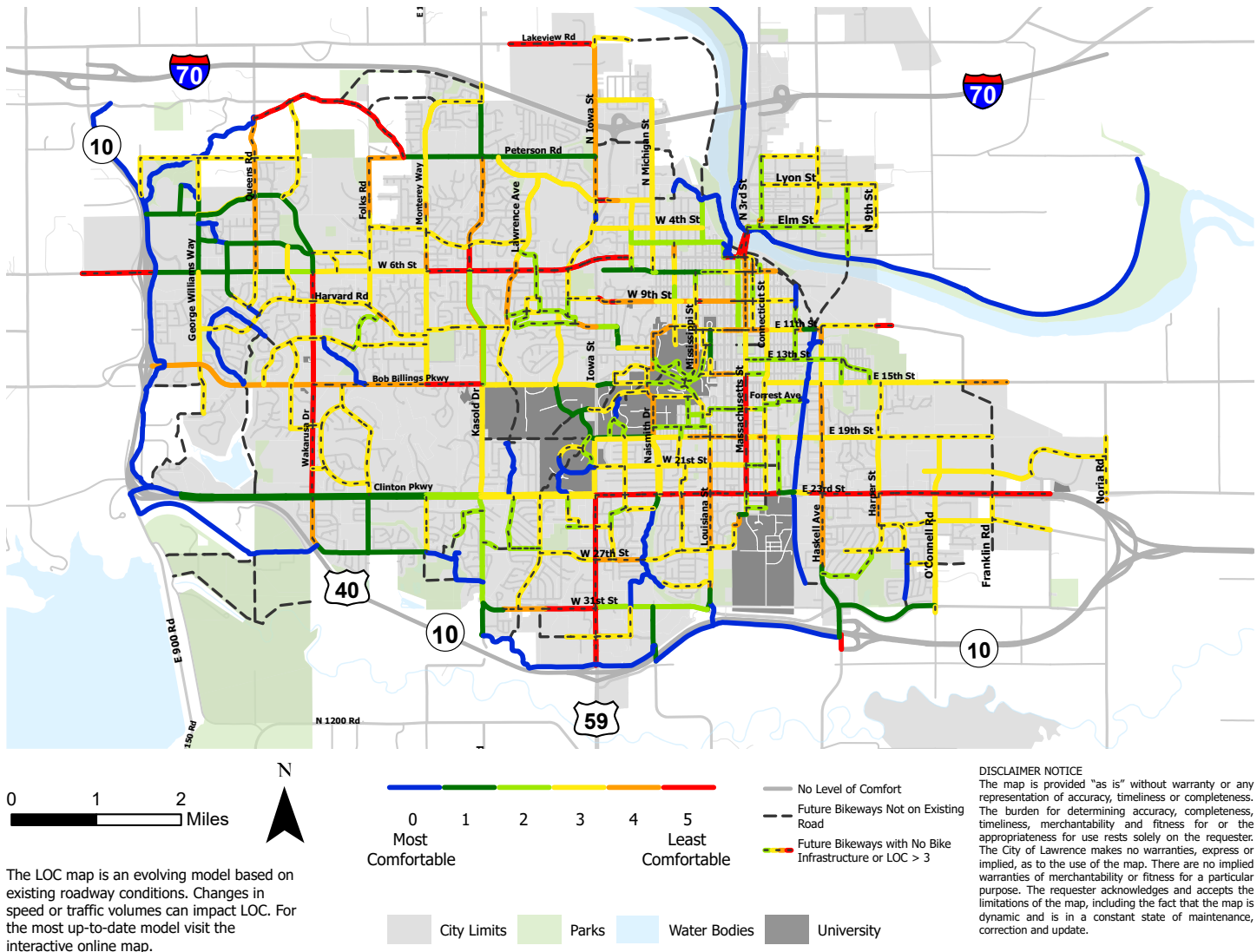
Level of Comfort

Goal <=3

| 2019 - Existing Facility Type – LOC Values in Miles | | | | | | |
|---|--------------------|-----------|-----------|--------------------|---------------------|-----------------|
| Level of Comfort | Marked Shared Lane | Bike Blvd | Bike Lane | Buffered Bike Lane | Protected Bike Lane | Shared Use Path |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 21.2 |
| 1 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 18.9 |
| 2 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 3.9 |
| 3 | 5.3 | 0.0 | 12.0 | 0.4 | 0.0 | 7.2 |
| 4 | 1.3 | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 |
| 5 | 3.1 | 0.0 | 0.9 | 0.0 | 0.0 | 0.0 |

Source: L-DC MPO LOC Map (8.10.21)

2021 Level of Comfort - Performance Measure 10



Produced: Lawrence-Douglas County MPO (2021) *LOC is based on posted speed, daily vehicle traffic volume, and existing bike facilities. More information can be found in Appendix C.

The level of comfort model was updated to reflect the residential streets speed limit reduction after the City Commission approved [Ordinance No. 9812](#) at its October 6, 2020 meeting.

Level of Comfort
Goal <=3

| 2021 - Existing Facility Type – LOC Values in Miles | | | | | | |
|---|--------------------|-----------|-----------|--------------------|---------------------|-----------------|
| Level of Comfort | Marked Shared Lane | Bike Blvd | Bike Lane | Buffered Bike Lane | Protected Bike Lane | Shared Use Path |
| 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 22.4 |
| 1 | 1.0 | 0.0 | 0.3 | 0.0 | 0.0 | 18.2 |
| 2 | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 4.2 |
| 3 | 7.8 | 1.3 | 12.7 | 0.4 | 0.0 | 5.6 |
| 4 | 0.1 | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 |
| 5 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 |

Source: L-DC MPO LOC Map (8.10.21)

11 – Bicycle and pedestrian counts

| Before and After Bikeway Projects | | | | | |
|-----------------------------------|---------------------------|------|-------|------|-------|
| Street Name | Project | Pre | | Post | |
| | | Year | Count | Year | Count |
| 12th St @ Tennessee St | Lighted Pathway* | 2011 | 46 | 2012 | 174 |
| Kasold Dr @ Harvard Rd | Shared Use Path/Bike Lane | 2017 | 39 | | |
| 21st St @ Ousdahl Rd | Bike Boulevard | 2017 | 63 | | |

*Count time was adjusted to 9 pm to 11 pm to reflect the lighted pathway project.

| Counts Over Time | | | | | | | | | | | |
|--------------------------|-------|------|-------|------|------|------|------|------|------|------|------|
| Name | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| North 2nd St Bridge (#9) | 722 | 440 | 845 | 612 | 464 | - | 852 | - | - | - | 513 |
| Massachusetts St (#10) | 1,044 | 816 | 1,042 | 930 | - | - | 944 | - | - | 643 | - |
| Naismith Dr (#7) | 838 | 752 | 849 | - | 971 | - | - | - | - | 757 | - |
| West 27th St (#3) | 354 | 451 | 475 | 345 | - | - | 369 | - | - | 178 | - |


Source: L-DC MPO (2018 & 2019, Updated 5.17.21)

12 – Bike to school participation

| Semester | Bike % |
|-------------|-------------------|
| Fall 2014 | 3% |
| Spring 2015 | 3% |
| Fall 2015 | 4% |
| Spring 2016 | 3% |
| Fall 2016 | 3% |
| Spring 2017 | 3% |
| Fall 2017 | 4% |
| Spring 2018 | 3% |
| Fall 2018 | 3% |
| Spring 2019 | 3% |
| Fall 2019 | 4% |
| Spring 2020 | COVID-19 No Count |
| Fall 2020 | COVID-19 No Count |
| Spring 2021 | 4% |

Source: Lawrence Public Schools (2021, Updated 6.21.21)

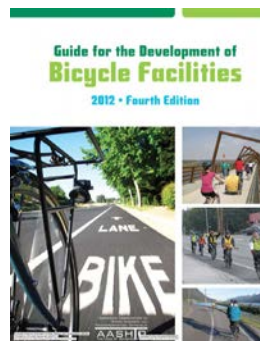
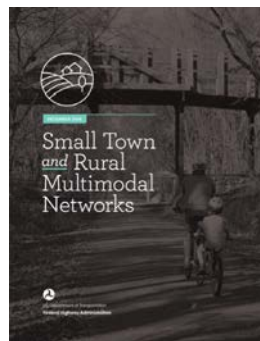
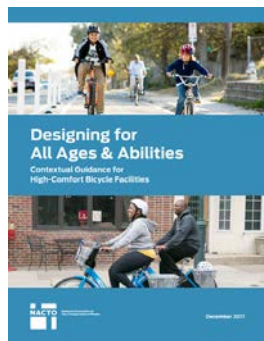
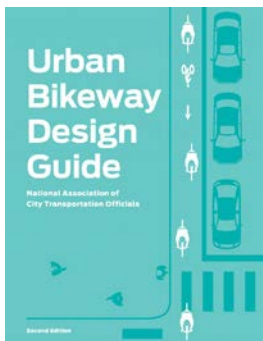
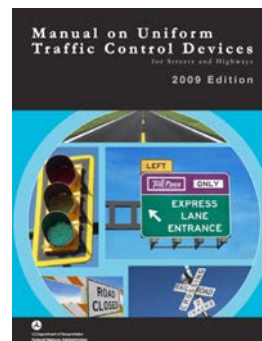
Goal
Increase Bike to School percentage to 5% by 2025.



APPENDIX A: BIKEWAY DESIGN GUIDE



Fundamentals of Bicycle Boulevard
Planning & Design
July 2009



American Association of State Highway and Transportation Officials (AASHTO)

- AASHTO Guide for the Development of Bicycle Facilities

Alta Planning + Design

- Fundamentals of Bicycle Boulevard Planning & Design

Federal Highway Administration (FHWA)

- Small Town and Rural Multimodal Networks
- Manual on Uniform Traffic Control Devices
- Separated Bike Lane Planning and Design Guide
- Achieving Multimodal Networks

National Association of City Transportation Officials (NACTO)

- NACTO Urban Street Design Guide
- NACTO Urban Bikeway Design Guide
- NACTO Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities
- NACTO Don't Give Up at the Intersection

Massachusetts Department of Transportation

- Separated Bike Lane Planning & Design Guide

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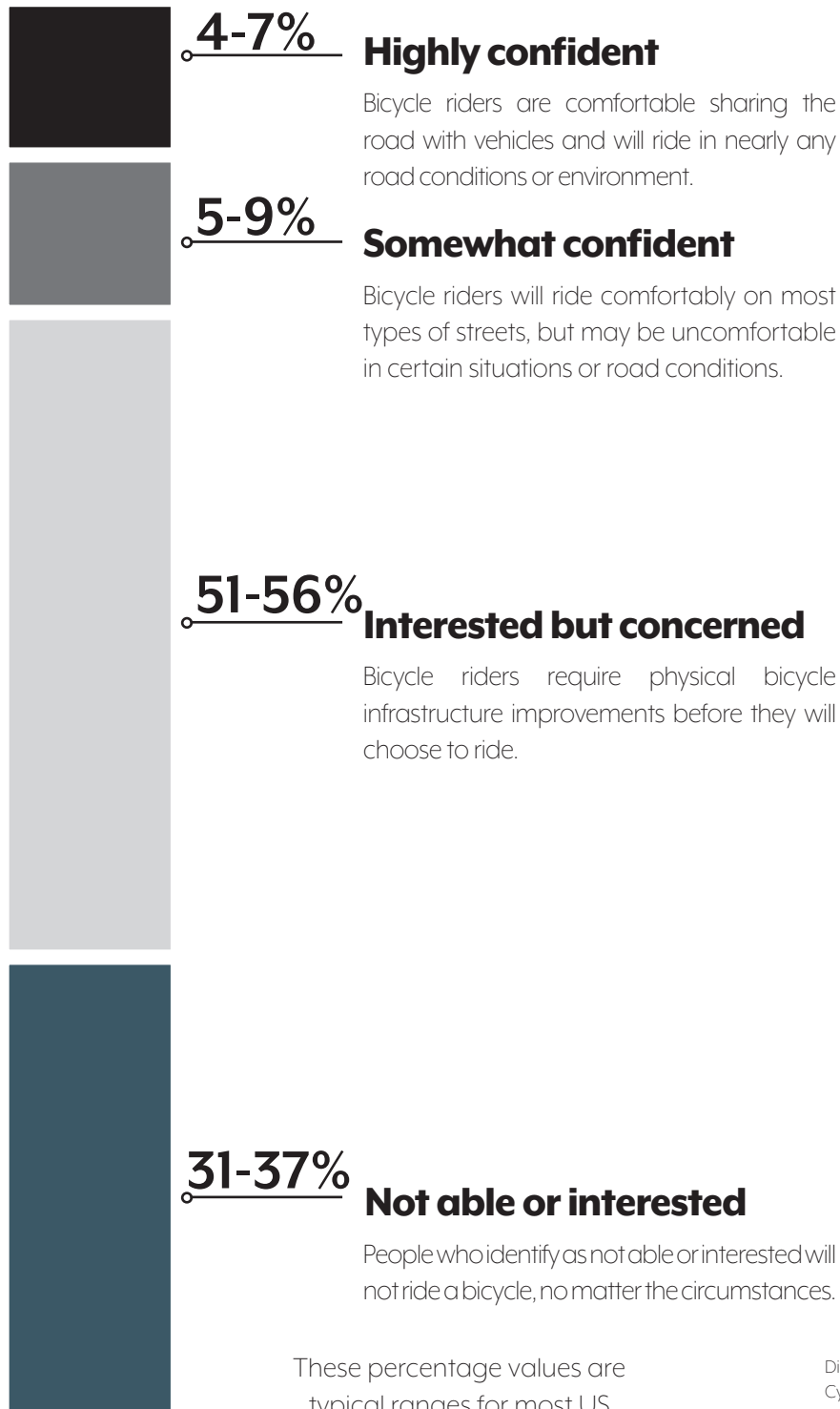
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GUIDE PURPOSE

The purpose of this guide is to provide a toolbox of available bicycle related facility and treatment options. This guide is not intended to create a standard, warrant, or mandate or supersede the City of Lawrence design criteria, codes, or standards. Application of bike guide elements should be accompanied by appropriate public involvement and engineering study. Final bicycle elements and design features will be approved by the City Engineer. This guide provides a supplement to the Lawrence Bike Plan in an effort to create a more bikeable city.

TYPES OF BICYCLE RIDERS

Lawrence is a diverse community composed of urban, suburban, and rural roadways. This diversity makes bicycle facility design complex and requires special attention to the abilities of each resident. In order for a bikeway to successfully serve the needs of all residents, it is important to take into consideration the varying skill and confidence levels that comprise each community. Different facility types will naturally appeal to different types of riders, and create opportunities that helps make riders feel more confident which each trip they take.



These percentage values are typical ranges for most US communities.

Dill, Jennifer and McNeil, Nathan, Revisiting the Four Types of Cyclists: Findings from a National Survey, Transportation Research Record: Journal of the Transportation Research Board, January 1, 2016.

DESIGNING FOR ALL AGES AND ABILITIES

To achieve growth in bicycling, bikeway design should meet the needs of a broader set of potential bicycle riders. Many existing bicycle facility designs exclude many people who might otherwise ride, favoring very confident riders.



PEOPLE WITH DISABILITIES

High comfort bicycle facilities provide comprehensive mobility options, have positive health impacts, and ensure full independence. A high quality bicycle network is designed to accommodate adaptive bicycles, which may include tricycles or recumbent handcycles that typically operate at lower speeds, are lower to the ground, or are wider than other bicycles.



SENIORS

A safe, well-designed bicycle network allows seniors to make more trips and provides a higher degree of mobility. Bikeway design should take into consideration those who have poor eyesight and incorporate features which are suitable for slower riding speeds.



WOMEN

For some women, concerns about personal safety often go beyond traffic stress and separation, although the share of women riding does increase in correlation to better bicycle facilities.



CONFIDENT CYCLISTS

Confident cyclists are often very experienced and comfortable riding in mixed motor vehicle traffic, although they make up a small percentage of the bicycling population. They may still choose to ride in mixed traffic, but all ages and abilities facilities provide more safe route options.



LOW-INCOME RIDERS

Low-income bicycle riders often rely heavily on bicycles for a wide variety of essential transportation needs.



PEOPLE MOVING CARGO

Bicycle facilities that are designed with minimal design standards do not adequately accommodate bicycle and tricycles that are outfitted to carry multiple passengers or cargo. However, high quality facilities increase the amount of trips that can be made by bicycles.



CHILDREN

Bicycles can provide a greater sense of freedom and mobility for school-age children, who are an essential part of the cycling demographic. Children face unique risks compared to adults because they are smaller and less visible from the drivers seat, and often have less of an ability to negotiate conflicts.



BIKE SHARE USERS

Bike share users range in ability level and stress tolerance, and typically prefer to ride in high visibility networks.

DEVELOPING A CONNECTED NETWORK

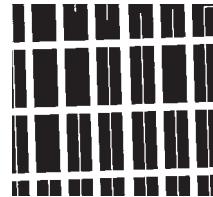
No matter how many great bikeways are developed, if they are not connected, the network is not useful for riders. To develop a connected network the following actions need to be taken.

- Bikeways should be included on all new and reconstructed arterial and collector streets. The bikeway type should be determined based on the number and speed of vehicles during final design and engineering for the project (a chart is shown on the next page). Context sensitive solutions should be developed to provide comfortable bikeways. Even if a shared use path/side path is included with the project an on-street bikeway should also be included. Side paths are a good bicycle facility for some bicycle riders; however, they can present conflicts at intersections and driveways.
- Intersections should be addressed in project development. If intersections are not safe and comfortable, people will not use the bikeway. There are various treatments to improve intersections: bicycle/pedestrian overpasses/underpasses, path crossing with high visibility markings or signs, raised path crossings, refuge islands, and many others.
- Projects should be evaluated by the Complete Streets policy and checklist to ensure streets appropriately accommodate motor vehicles, bicycle riders, and pedestrians. [Lawrence, KS Complete Streets Policy](#).
- When a development project occurs developers should build bikeway connections identified as future bikeways in the Lawrence Bikes Plan (Figure 19, page 38). This process will expand the bikeway network as developments connect into the wider network.
- While the most comfortable bikeway is desired, sometimes streets need to be retrofitted with quick and easy projects during a maintenance or striping project to at least expand the network. See the **Retrofitting Streets with the Next Best Facility** section for more information.

CONTEXT MATTERS

Street patterns greatly influence which bicycle facility is the most suitable for a given location. Typically development patterns fall into either “the grid” category or the “suburban/ cul-de-sac” category.

GRID



Traditional grid networks typically provide more continuous routes over long distances, provide numerous route options to

destinations, and are generally easy to navigate for all modes of transportation .

CURVILINEAR



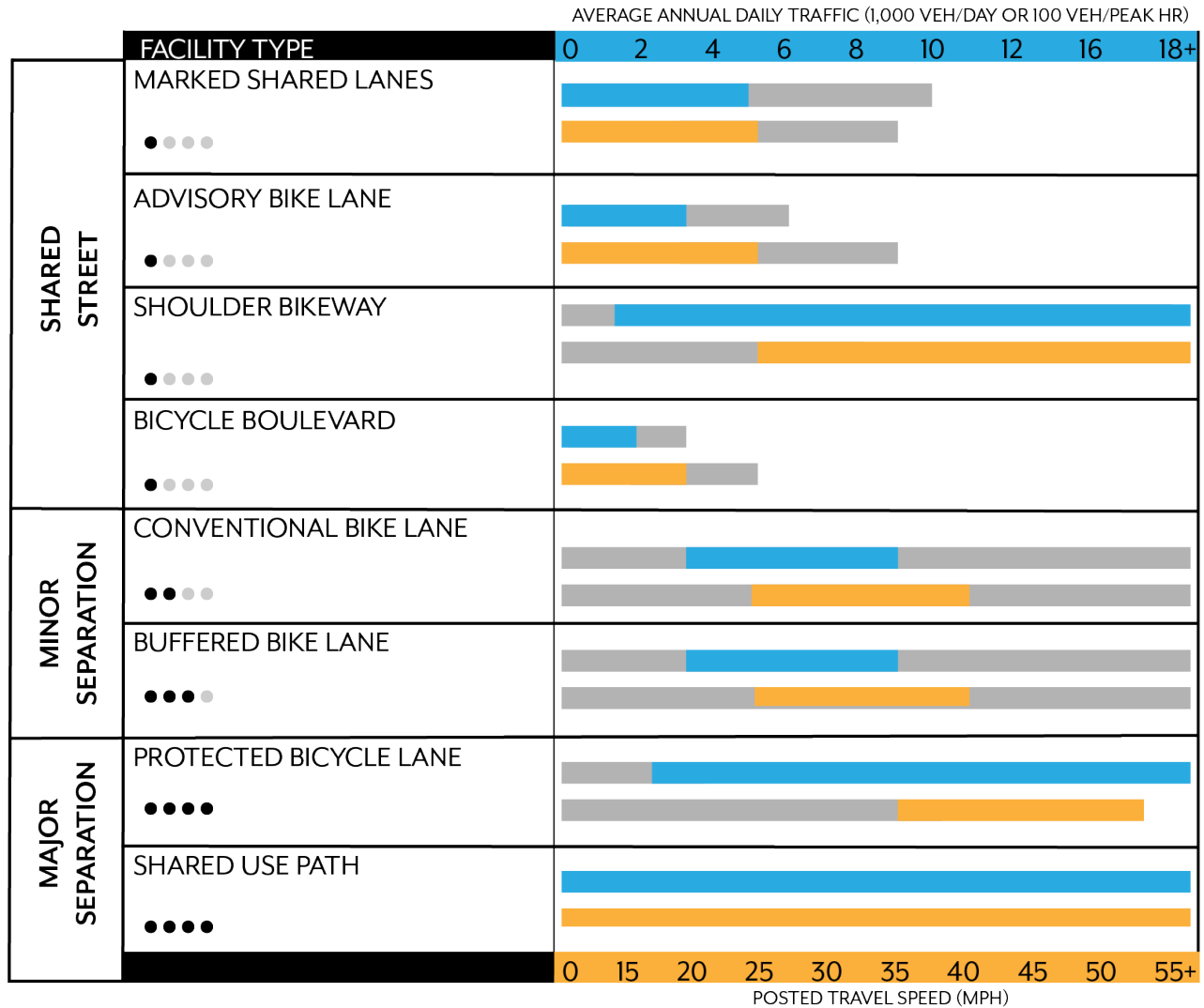
Curvilinear street patterns are good at limiting through traffic on residential streets, but often lack connectivity. Trips that are relatively short “as the crow flies” typically

require a person to travel long distances just to get to a road that connects to their destination.



5TH ST, LAWRENCE, KS

FACILITY SELECTION CRITERIA



● ● ● ● = Minimum Level of Separation
 ● ● ● ● = Maximum Level of Separation

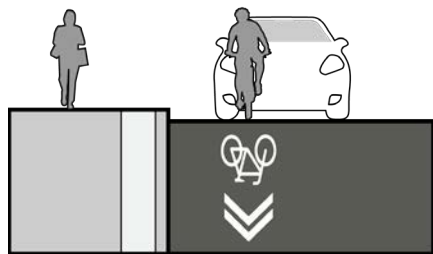
Proximity to motor vehicle traffic is a significant source of stress and discomfort for bicycle riders. There is no “one size fits all” criteria for bikeway design decisions, as user preference varies with bicycle rider’s skill level, trip purpose, and individual characteristics. Motor vehicle operating speeds and traffic volumes are key factors to consider when deciding on an appropriate bicycle facility along a particular roadway. Typically, bicycle riders are less comfortable in areas with high motor vehicle volumes and faster speeds. In general, the greater the speed and volume of motor vehicle traffic, the greater the amount of separation that is required for a comfortable bicycle trip. It is possible that streets which have low speeds and low volumes require less separation. This guide is intended to

select the facility that will provide the greatest amount of protection within the existing roadway context. To use the chart above, identify the appropriate daily traffic volume and travel speed on the existing or proposed roadway, and locate the facility types indicated by those key variables. Other factors beyond speed and volume which affect facility selection include traffic mix of automobiles and heavy vehicles, the presence of on-street parking, intersection density, surrounding land use, and roadway sight distance. These factors are not included in the facility selection chart below, but should always be considered in the facility selection and design process.

BICYCLE FACILITY CLASSIFICATIONS

The level of comfort is often dependent on the degree of separation from adjacent traffic.

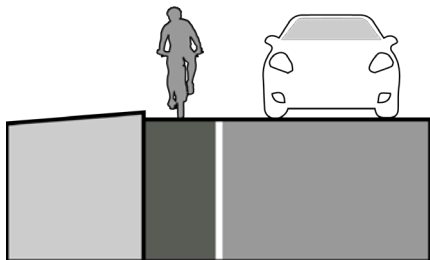
LEAST



MARKED SHARED LANE

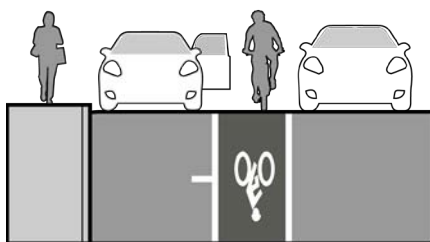
Shared Streets can take many forms: Shared-lane markings (Sharrows), Bike Advisory Lanes, and Bicycle Boulevards. Sharrows help position bicycle riders and provide visual cues to drivers. Bike Advisory Lanes have a single motor vehicle lane shared by vehicles going in both directions. When two oncoming vehicles meet, drivers yield to bicycle riders before merging into the bike lane. Bicycle Boulevards are streets with low motorized traffic volumes and speeds designated and designed to give bicycle riders and neighborhood motor vehicle traffic travel priority.

SEPARATION FROM TRAFFIC



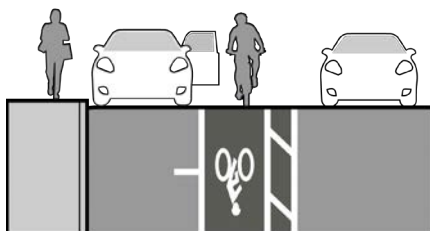
ROADWAY WITH PAVED SHOULDER

Paved shoulders are often used by bicycle riders. Because the portion of the roadway accommodates stopped vehicles and emergency use, it can require more caution than other elements of bicycle infrastructure.



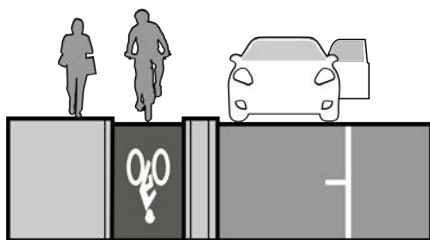
CONVENTIONAL BIKE LANE

A bike lane is a pavement marking located adjacent to motor vehicle travel lanes and flows in the same direction as travel, unless it is designed as a contraflow bike lane where bike traffic flow in the opposite direction of vehicle traffic on a one-way street.



BUFFERED BIKE LANE

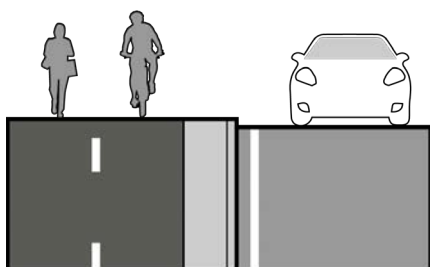
Buffered bike lanes are nearly identical to bike lanes, however they have a wider, striped buffer zone between the bike lane and the adjacent travel lane to establish a greater degree of separation.



PROTECTED BIKE LANE/CYCLE TRACK

Protected bike lanes and cycle tracks incorporate a combination of buffer space and vertical separation to alleviate many of the stressors of on-street bicycling.

MOST



SHARED USE PATH

Shared use paths provide a continuous corridor for bicycle riders and pedestrians that is separate from vehicular roadways. Paths work best when connected to an on-street network which meets robust safety and design standards.

RETROFITTING STREETS WITH THE NEXT BEST FACILITY

When the preferred bikeway facility type is not feasible within a project, temporary treatments like paint and flex posts can be used to establish a minimum network and maximize safety and comfort. The inability to provide the preferred bikeway should not result in the dismissal of other options. Although the facility may not be as comfortable or appealing as desired; it is still better than no bikeway facility. In the future, when there is a major roadway project or a stand alone bicycle/pedestrian project, the facility can be improved to the ideal bikeway. The idea is it is better to do something to connect bikeways than to do nothing waiting for full funding. The actual type of Next Best facility should be considered based on the context and constraints of the project including maintenance. It may also be necessary to consider alternative parallel routes.

There are several modification strategies to be used when roadways have surface projects to retrofit streets with the Next Best facility.



LAWRENCE, KS

LANE RECONFIGURATION

- + Reduce lanes and/or width of lanes
- + Adds room for bicycle amenities
- + Add/remove turning lane



LAWRENCE, KS

PARKING

- + Remove on-street parking when not warranted
- + Consider diagonal parking
- + Consider reverse angle parking



LAWRENCE, KS

PAINT

- + Green paint (Lawrence has interim FHWA approval)
- + Paint mixing/conflict zones
- + Stripe bike lanes/buffered bike lanes
- + Bike boxes at intersections



JOSE, BEN. MARCH (2018). SFMTA. VALENCIA
AT 18TH STREET SAN FRANCISCO, CA

FLEX POSTS

- + Inexpensive vertical barrier between motor vehicle traffic and bicycle riders
- + Prevents drivers from crashing into bicycle riders
- + Can be used to shorten crossing distances

REVERSE ANGLE PARKING

In areas with high parking demand and sufficient street width, diagonal parking is sometimes used to increase parking capacity and reduce travel speeds on streets that are excessively wide. Bike lanes should normally not be placed adjacent to conventional front-in diagonal parking, since drivers backing out of parking spaces have poor visibility of bicycle riders in the bike lane. The use of back-in diagonal parking can help mitigate the conflicts normally associated with bike lanes adjacent to angled parking. There can be numerous benefits to back-in diagonal parking for all roadway users¹:

- Improved sight distance between exiting drivers and other traffic compared to parallel parking or front-in angled parking.
- No conflict between bicycle riders and open car doors.
- Passengers (including children) are naturally channeled toward the curb when alighting.
- Loading and unloading of the trunk occurs at the curb, not in the street.

When bike lanes are placed adjacent to back-in diagonal parking spaces, parking bays should be long enough to accommodate most types of vehicles.



Lawrence Standards for 60 Degree Reverse Angle Parking:

15' depth perpendicular to curb, including 2' minimum behind curb for bumper overhang, (a 5' sidewalk on back of curb would need to be 7').

Minimum width of stall of 9.5'

¹ Guide for the development of bicycle facilities [4th Edition]. (2012). American Association of State Highway and Transportation Officials Retrieved November 12, 2018, from <http://imentaraddod.com/wp-content/uploads/2017/07/AASHTO-GBF-4-2012-bicycle.pdf>, page 4-17.



PHOTO SOURCE: SACHS, DAVID. (2017). EYES ON THE STREET 11TH AVE. BIKE LANE AND ROAD DIET.

RETRIEVED FROM: [HTTPS://DENVER.STREETSBL0G.ORG/2015/11/17/EYES-ON-THE-STREET-11TH-AVENUE-BIKE-LANE-AND-ROAD-DIET/](https://denverstreetsblog.org/2015/11/17/eyes-on-the-street-11th-avenue-bike-lane-and-road-diet/)

DENVER, CO

USE OF NARROW TRAVEL LANES

The potential to add bike lanes by widening streets increases greatly when streets are reconstructed. However, to add bike lanes to an existing street, adequate width must be available. Many streets in Lawrence can accommodate bike lanes by re-striping the existing roadway, but some streets would require 10 or 11 foot wide travel lanes. Traditionally, 12 feet is the desired standard for motor vehicle travel lanes. Narrower lane widths have been avoided in the past due to concerns about vehicle occupant safety, congestion, and emergency vehicle access especially on arterial roadways. The only substantial research effort published which documented safety benefits were attributable to 12-foot lanes on rural two-lane highways. However, research on suburban and urban arterials has shown that 12 feet is not always needed for safety and capacity and lane widths between 10 feet and 11 feet on arterials and collectors do not negatively impact overall motor vehicle safety or operations. A summary of safety and capacity-related research is provided below.

Safety of Narrow Travel Lanes

A study by the Midwest Research Institute entitled Relationship of Lane Width to Safety for Urban and Suburban Arterials concluded, "That there is no indication that crash frequencies increase as lane width decreases for arterial roadway segments or arterial intersection approaches."¹ The study compared 408 miles of urban and suburban arterials under state and local jurisdictions in two states. The types of roads in the analysis included the following arterial roadway types:

- Two-lane undivided arterials
- Three-lane arterials (one lane each direction + center turn lane)
- Four-lane undivided arterials
- Four-lane divided arterials
- Five-lane arterials (two lanes each direction + center turn lane)

According to the study, "A safety evaluation of lane widths for arterial roadway segments found no indication, except in limited cases, that the use of narrower lanes increases crash frequencies." Further, the study found, "The lane width effects in the analyses conducted were generally either not statistically significant or indicated that narrower lanes were associated with lower rather than higher crash frequencies." Similarly, the study found no indication, except in limited cases, that the use of narrower lanes for arterial intersection approaches increases crash frequencies.

It is important to note this study highlighted three situations in which the observed lane width effect was inconsistent including: lane widths of 10 feet or less on four-lane undivided arterials; lane widths of 9 feet or less on four-lane divided arterials; and lane widths of 10 feet or less on approaches to four-leg STOP-controlled arterial intersections. According to the study, these inconsistent findings do not mean that the use of narrower lanes must be avoided in these situations, but rather, "It is recommended that narrower lane widths be used cautiously in these situations unless local experience indicates otherwise."

The study also provides a caveat, "Lane widths less than 12 feet should be used cautiously where substantial volumes of bicycle riders share the road with motor vehicles, unless an alternative facility for bicycles such as a wider curb lane or paved shoulder is provided." This statement is intended to suggest bicycle riders' comfort and safety should be accommodated on projects where lanes are narrowed to add additional roadway capacity for drivers.



19TH ST, LAWRENCE, KS

¹ Harwood, D. W., F. M. Council, E. Hauer, W. E. Hughes, A. Vogt. (2000, December). Prediction of the Expected Safety Performance of Rural Two-Lane Highways. Report FHWA-RD-99-207. Federal Highway Administration Potts, I., Harwood, D. and Richard, K. (2007). Relationship of Lane width to Safety for Urban and Suburban Arterials. Washington, D.C. Transportation Research Board.

BIKEWAY FACILITY TYPES

SHARED STREET

- Marked Shared Lane
- Advisory Bike Lane
- Roadway with Paved Shoulder
- Bicycle Boulevard



OMAHA-COUNCIL BLUFFS
METRO AREA

MINOR SEPARATION

- Conventional Bike Lane
- Buffered Bike Lane
- Contra-flow bike lane



OMAHA-COUNCIL BLUFFS
METRO AREA

MAJOR SEPARATION

- Protected Bike Lane & Cycle Track
- Shared Use Path & Sidepath



CHICAGO, IL

SHARED STREETS

MARKED SHARED LANES

ADVISORY BIKE LANES

ROADWAY WITH PAVED SHOULDER

BICYCLE BOULEVARD

MARKED SHARED LANES

A key component of shared roadways is the presence of markings and signage that indicates to drivers the rights that bicycle riders have on the road. Shared-lane markings (sharrows) are used on streets where bicycle riders and motor vehicles share travel lanes. Sharrows help position bicycle riders and provide visual cues to drivers. They can be configured to offer directional and wayfinding guidance.

BENEFITS

- + Encourages bicycle riders to position themselves safely in lanes too narrow for a motor vehicle and a bicycle to comfortably travel side by side within the same traffic lane.
- + Alerts drivers to the potential presence of bicycle riders.
- + Indicates a proper path for bicycle riders through difficult or potentially hazardous situations, such as railroad tracks or “door zones” of parked cars.
- + Advertises the presence of bikeway routes to all users.
- + Requires no additional street space required.
- + Reduces the incidences of wrong-way bicycling and sidewalk riding.



PAVEMENT MARKINGS, LAWRENCE BICYCLE BOULEVARDS INFORMATIONAL WEBSITE

UNKNOWN LOCATION

WHAT ARE SHARROWS?

COMPATIBLE FEATURES



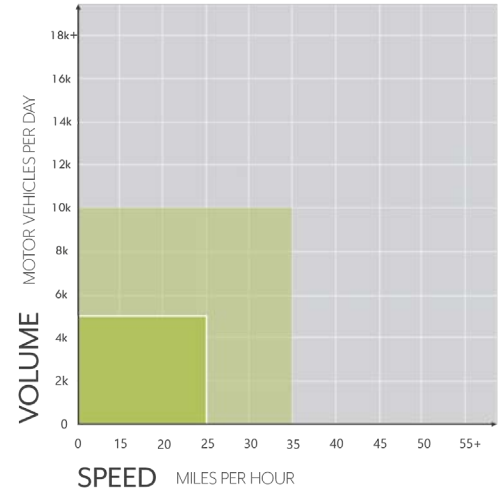
PAVEMENT MARKINGS

- + Sharrows
- + Place after intersections and no more than 250 feet apart after



SIGNAGE

- + Bike Route/Wayfinding
- + Bike May Use Full Lane
- + Share the Road



SOURCE: NACTO URBAN BIKEWAY DESIGN GUIDE
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
(2012).
AASHTO GUIDE FOR THE DEVELOPMENT OF
BICYCLE FACILITIES (2012).

POTENTIAL
PREFERRED



LAWRENCE, KS



ADVISORY BIKE LANE

Advisory bike lanes or dashed bike lanes are a type of a shared roadway which provide space for biking on low-volume, low-speed streets that are too narrow for conventional bike lanes. A single motor vehicle lane is established, where drivers share the single lane with oncoming vehicles. When two vehicles meet they yield to bicycle riders before merging into the dashed bike lane. This treatment is currently experimental and has to be approved by FHWA for each location or corridor rather than an agency wide basis.

BENEFITS

- + May reduce some types of crashes due to reduced motor vehicle travel speeds.
- + Increases predictability and clarifies desired lateral positioning between people bicycling or walking and people driving in a narrow roadway.
- + Functions well within a rural and small town traffic and land use context.
- + Supports the natural environment through reduced paved surface requirements.
- + Provides a delineated but nonexclusive space available for walking and biking on a roadway otherwise too narrow for dedicated shoulders.
- + Minimizes potential impacts to visual or natural resources through efficient use of existing space.
- + May function as an interim measure where plans include shoulder widening in the future.



ADVISORY SHOULDER. SMALL TOWN AND RURAL MULTIMODAL NETWORKS (2016).

HANOVER, NH



FUNDAMENTALS OF BICYCLE NETHERLANDS
BOULEVARD PLANNING AND DESIGN (2009).

ADVISORY BIKE LANE

COMPATIBLE FEATURES

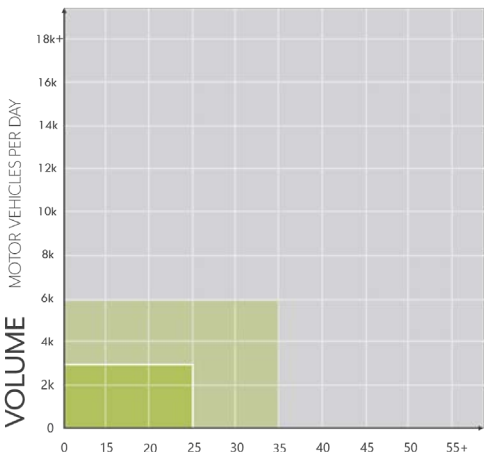


CLEAR PAVEMENT MARKINGS AND SIGNS

- + A broken line should consist of 3 feet segments and 6 feet gaps.
- + Solid white lines may be used when additional edge definition is needed.
- + Warning or explanatory signs.

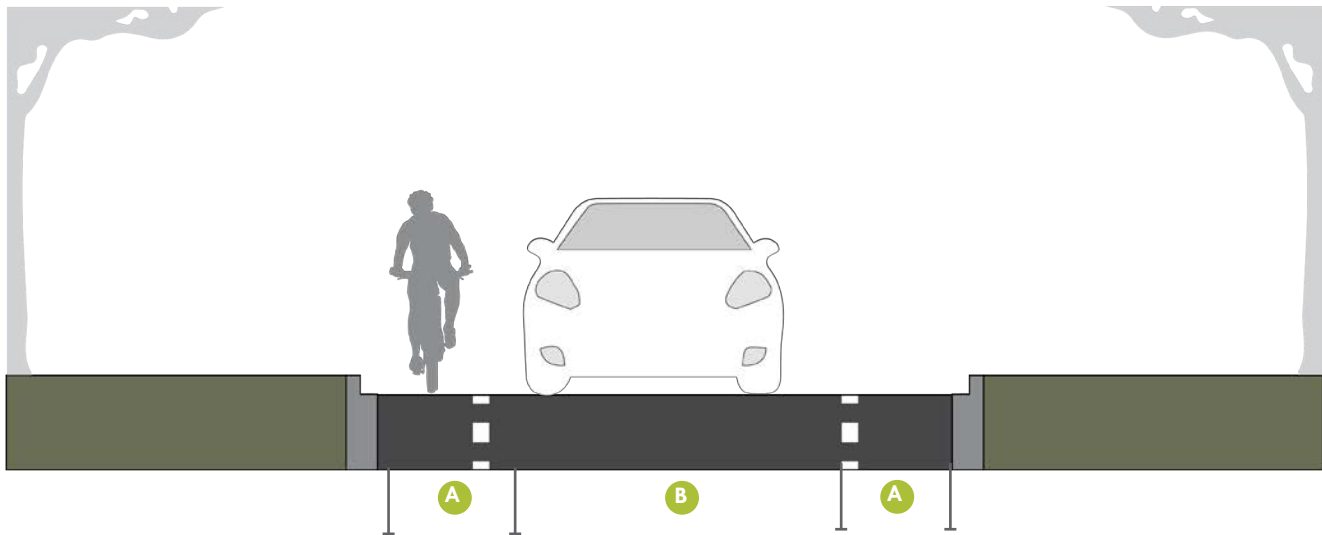
ADEQUATE SPACE

- + To promote safe passing.
- + 6 feet width is preferred with a minimum of 4 feet when no curb or gutter is present.



SOURCE: FHWA SMALL TOWN AND RURAL MULTIMODAL NETWORKS

POTENTIAL
PREFERRED



- A Shoulder Area
- B Travel Lane

ROADWAY WITH PAVED SHOULDER

Paved shoulders are most often used on rural roadways. Paved shoulders extend the service life of the road by reducing edge deterioration, and provide space for temporary storage of disabled vehicles. It is important to understand the differences between paved shoulders and bike lanes. Bike lanes are travel lanes, whereas in many jurisdictions, paved shoulders are not (and can therefore may be used for parking).

BENEFITS

- + Can reduce crashes where bicycle riders are struck from behind.
- + Improves bicycle riders' experiences on higher speed or volume roads.
- + Provides a stable surface off the road for pedestrians and bicycle riders when sidewalks are not present.
- + Provides more space for all road users including drivers, bicycle riders, and pedestrians.
- + Can provide safe bicycle connections to and from town centers and other attractions.



LECOMPTON, KS

ROADWAY WITH PAVED SHOULDER

COMPATIBLE FEATURES

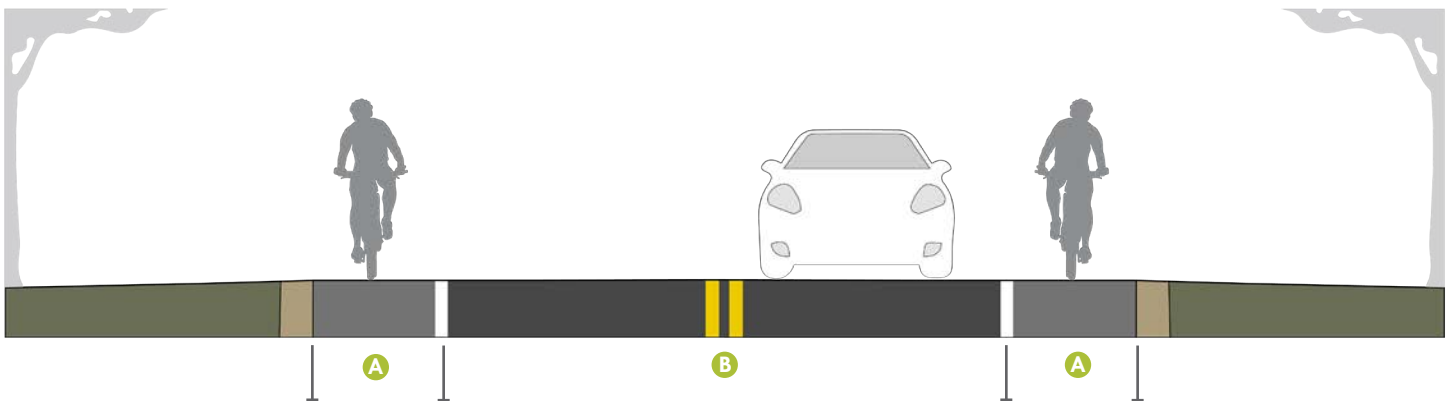
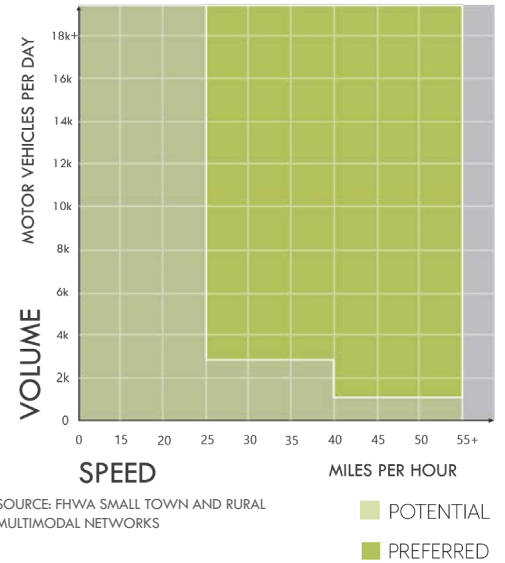


CLEAR MARKINGS AND SIGNS

- + 1.5 - 4 feet optional buffer.
- + Rumble strips.
- + Contrasting paving materials.
- + No required signs, but could be used to identify the route as a bicycle boulevard signs.

ADEQUATE SPACE

- + To promote safe passing.
- + 5 to 7 feet required depending on the speed of the vehicle travel lane.



A Shoulder Area

- Minimum width: 5 to 7 feet depending on speed of adjacent travel lane

B Travel Lane

BICYCLE BOULEVARD

Bicycle Boulevards are streets with low motorized traffic volumes and speeds, designated and designed to offer low-stress bicycle travel for all ages, safe crossings for pedestrians, placemaking opportunities, as well as allow for motor vehicle travel at low speeds. Bicycle boulevards use signs, pavement markings, and speed and volume management measures to discourage pass-through motor vehicle trips and create safe, convenient bicycle crossings of busier streets.

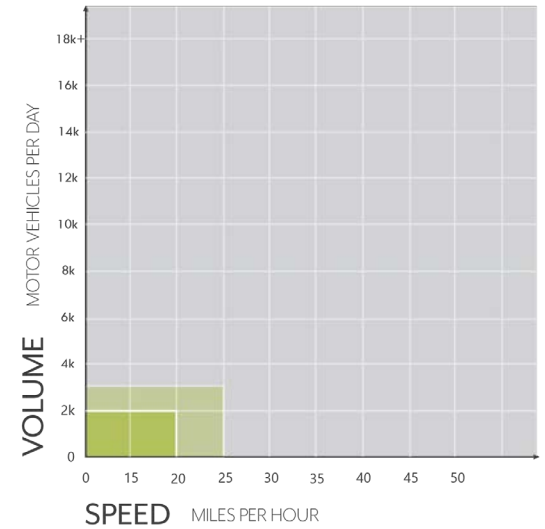
BENEFITS

- + Provides direct access to destinations with minimal bicycle rider delay.
- + Easy to find and follow.
- + Slow motor vehicle speeds.
- + Reduced motor vehicle volumes.
- + Provides proper path and safe navigation.
- + Alerts drivers and prioritizes bicycle.
- + Reduces the incidence of sidewalk riding.



BICYCLE BOULEVARD

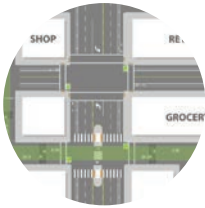
A key component to the success of a bicycle boulevard is the application of design flexibility. There is no one-size-fits-all application. Instead, it's important to apply specific design features which are most suitable to the needs of a specific roadway.



SOURCE: FHWA SMALL TOWN AND RURAL MULTIMODAL NETWORKS

POTENTIAL
PREFERRED

COMPATIBLE FEATURES ¹



ROUTE PLANNING

- + Continuous and direct route along low-traffic streets
- + Sensible patterns to ensure traffic flow



SIGNAGE

- + Identification Signs
- + Wayfinding Signs
- + Warning Signs



PAVEMENT MARKINGS

- + Bicycle Boulevard
- + Colored pavement
- + Sharrows
- + Conflict areas



SPEED MANAGEMENT

- + Raised pavement
- + Lane reconfiguration
- + Reduced speeds



VOLUME MANAGEMENT

- + Street narrowing
- + Curb extensions
- + Diversers



MINOR STREET CROSSINGS

- + Raised crosswalks
- + Pavement markings
- + Crossing islands



MAJOR STREET CROSSINGS

- + Bike Box
- + Two-Stage Turn box
- + Signal Phasing
- + Bicycle Detection



GREEN INFRASTRUCTURE

- + Bioswales
- + Infiltration basins
- + Permeable pavement
- + Street trees

¹ [Lawrence Bike Boulevards](#)



MASSACHUSETTS ST,
LAWRENCE, KS

MINOR SEPARATION

CONVENTIONAL BIKE LANE
BUFFERED BIKE LANE

CONVENTIONAL BIKE LANE

Conventional Bicycle lanes designate a portion of the roadway to be used by bicycle riders. Typically, they are one way facilities that carry bicycle traffic in the same direction as adjacent motor vehicle traffic, while safely separating each mode. Although separate, properly designed bike lanes encourage bicycle riders to operate in a manner consistent with the legal and effective operations of all vehicles. Contra-flow bicycle lanes can be implemented on one-way streets. Contra-flow bicycle lanes convert one way streets into two-way streets: one direction for bicycle riders and one way for drivers.

BENEFITS

- + Increases bicycle rider comfort and confidence on busy streets.
- + Creates separation between bicycle riders and automobiles.
- + Increases predictability of bicycle rider and motorist positions and interaction.
- + Increases total capacities of streets carrying mixed bicycle and motor vehicle traffic.
- + Visually reminds drivers of bicycle riders' right to the street.
- + Contra-flow bike lanes reduce dangerous wrong-way riding and allow bicycle riders to use less trafficked streets leading to increased connectivity.



Photo Source: Dan Burden for PeopleForBikes

UNITED STATES

CONVENTIONAL BIKE LANE

COMPATIBLE FEATURES



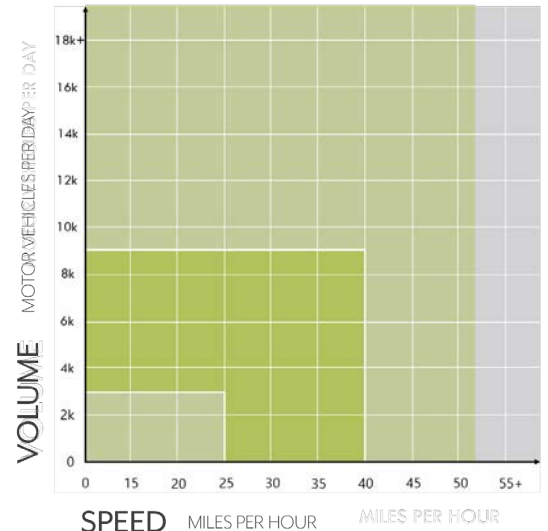
SIGNAGE

- + “BIKE LANE” signs may be placed at the beginning of a marked lane on bike lanes adjacent to a curb.
- + “NO PARKING” signs may be used to discourage parking inside the bike lane.



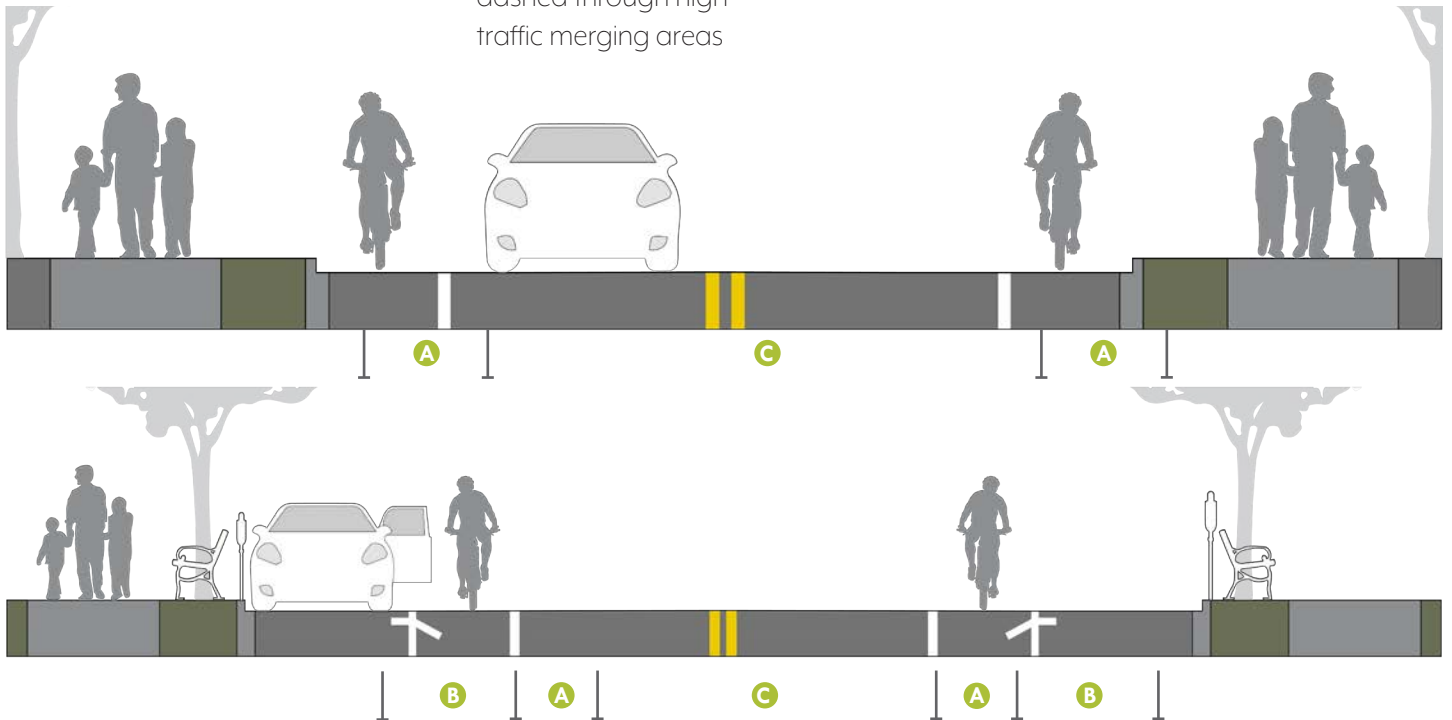
PAVEMENT MARKINGS

- + Bicycle lane word and/or symbol.
- + Arrow markings.
- + Solid white line of 6 to 8 inches in width should be used to separate vehicle travel lanes
- + Lane stripping should be dashed through high traffic merging areas



SOURCE: FHWA SMALL TOWN AND RURAL MULTIMODAL NETWORKS

POTENTIAL
PREFERRED



A Bicycle Lane

- Bicycle lane symbol and arrow markings should be used to define the bike lane
- Minimum width: 5 to 7 feet wide depending on adjacent land uses
- Bicycle lane should be placed adjacent to curb
- A bike lane shall not be positioned to the right of a right turn only lane or to the left of a left turn only lane

B Parking Lane

- If located adjacent to a parking lane, the bicycle lane should be placed between the parking area and the travel lane

C Travel Lane

BUFFERED BIKE LANE

Buffered bike lanes are essentially conventional bicycle lanes with the added benefit of a designated buffer space that creates further separation between the bicycle lane and the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes should be considered wherever a conventional bike lane is being considered and on streets with high travel speeds and volumes.

BENEFITS

- + Provides greater distance between motor vehicles and bicycle riders.
- + Provides space for bicycle riders to pass without encroaching into the adjacent vehicle lane.
- + Encourages bicycle riders to ride outside of the door zone.
- + Appeals to a wider variety of bicycle users.
- + Contributes to the perception of safety among users of the bicycle network.



Photo Source: Adam Coppola for PeopleForBikes

CHICAGO, IL

BUFFERED BIKE LANE

COMPATIBLE FEATURES



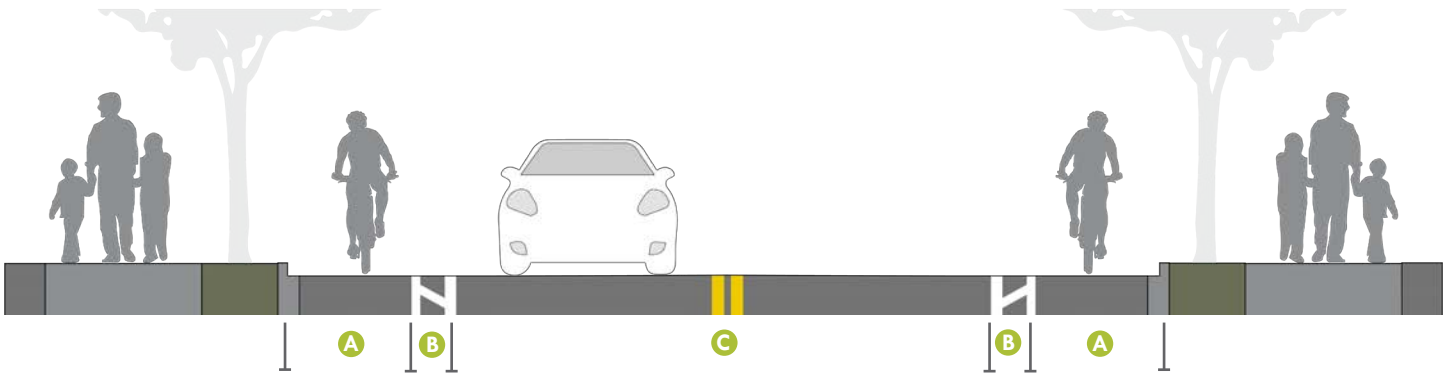
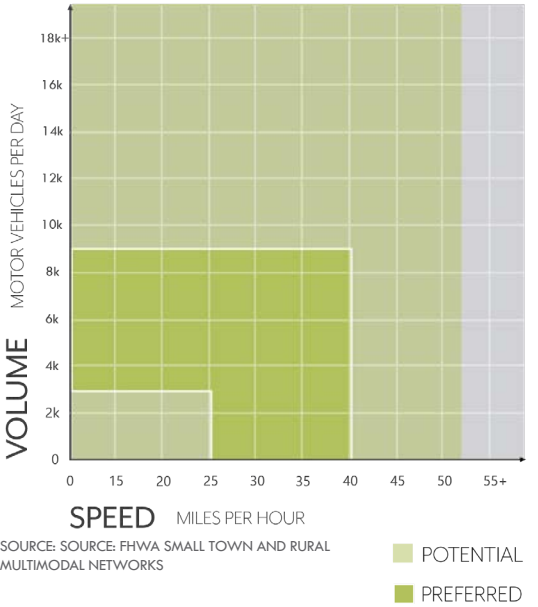
SIGNAGE

- + Standard bicycle lane signs in clear visibility of drivers.



PAVEMENT MARKINGS

- + Bicycle lane word and/or symbol and arrow markings.
- + Two solid white lines with diagonal hatching when the width is 3 feet or more.
- + White lines on both edges mark where crossing is discouraged.
- + Colored pavement at beginning of each block discourage drivers from entering the lane.



A Bicycle Lane

- Minimum width: 5 to 7 feet depending on adjacent land uses
- Follow same marking placement criteria as conventional bike lane

B Buffer

- Minimum width: 18 inches
- Diagonal cross hatching are recommended for buffers that are 3 feet or wider
- Buffer may be located on the parking lane side of the bike lane, the travel lane side of the bike lane, or on both sides of the bike lane.

C Travel Lane



CLINTON PKWY,
LAWRENCE, KS

MAJOR SEPARATION

PROTECTED BIKE LANE & CYCLE TRACK
SHARED USE PATH & SIDE PATH

PROTECTED BIKE LANE & CYCLE TRACK

Protected bike lanes, also called cycle tracks, are exclusive bicycle facilities which have features which establish physical separation between the bicycle lane and adjacent motor vehicle lanes. Protected bike lanes isolate bicycle traffic through the use of concrete barriers/raised medians, landscape buffers (trees and lawn), flex posts, planter boxes, bollards, or a variety of other measures. Protected bike lanes can be one-way and placed on each side of the road, or two-way and installed on one side of the road, but if a vertical element of separation is not included then the facility cannot be considered a protected bike lane/cycle track. Pedestrians are provided sidewalks separate from protected bike lanes/cycle tracks to travel and are not supposed to use the dedicated bicycle facility for walking.

BENEFITS

- + Dedicates and protects space for bicycle riders to improve comfort and safety.
- + Eliminates the risk of collision with over-taking vehicles.
- + Eliminates the risk of dooring.
- + Attractive option for bicycle riders of all levels and ages.
- + Encourages proper use of bikeway and discourages/reduces sidewalk riding.
- + Offers a higher level of security than bike lanes.

FORMS OF SEPARATION

DELINEATOR POST



BOLLARDS



CONCRETE BARRIERS



PLANTERS



BIKE RAILS



TWO-WAY



Adam Coppola for www.pedbikemages.org

SEATTLE, WA

ONE-WAY



UNITED STATES

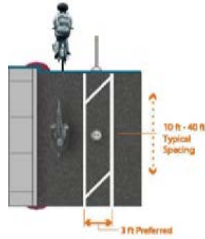
PROTECTED BIKE LANE & CYCLE TRACK

COMPATIBLE FEATURES



SIGNAGE

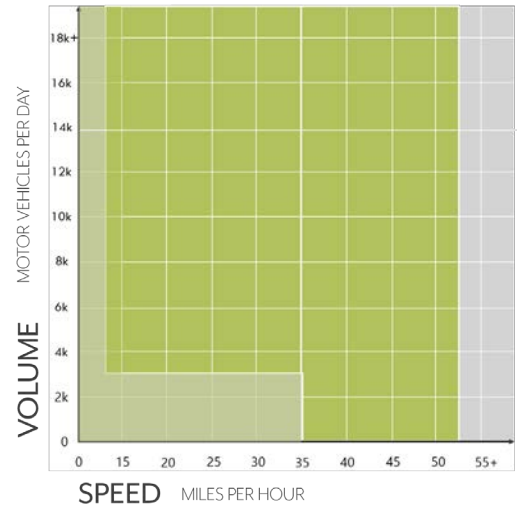
- + When a separated bike lane ends at an off-street trail or sidepath, markings and signage should be placed to emphasize the connection and enforce space designations for different users.
- + Wayfinding signs should be added to the end of the separated bike lane.



Source: FHWA, *Forms of separation. Separated bike lane planning and design*, Bicycle and pedestrian program.

MARKINGS AND SEPARATION

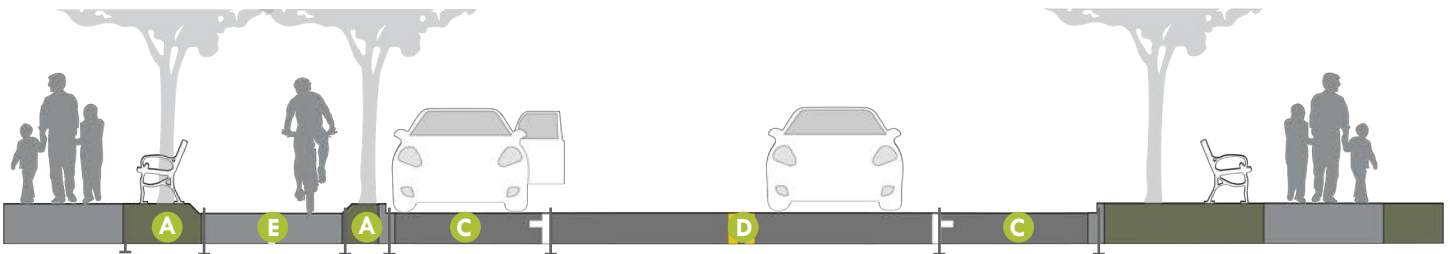
- + If at sidewalk level, a curb or median is used to separate bicycle riders from drivers, and colored pavement and texture can separate the track from the sidewalk.
- + If at street level, tracks can be protected with raised medians, on-street parking, or bollards.
- + Bicycle lane word, symbol, and/or arrow markings.



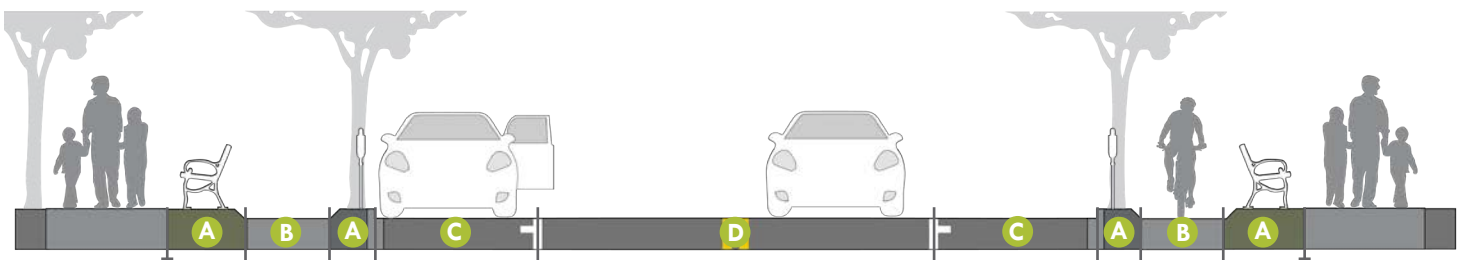
SOURCE: FHWA SMALL TOWN AND RURAL MULTIMODAL NETWORKS

POTENTIAL
PREFERRED

TWO-WAY



ONE-WAY



- A** Buffer/Form of Separation
 - If located adjacent to on-street parking, a minimum buffer width of 3 feet should be placed between parking and travel lane
- B** One-Way Cycle Track
 - Width: Minimum 6.5 feet
- C** Parking Lane
 - Buffer may be located on the parking lane side of the bike lane, the travel lane side of the bike lane, or on both sides of the bike lane.
- D** Travel Lane
- E** Two-Way Cycle Track
 - Width: Minimum 10 feet (preferred 14 feet)
 - At transit stops, protected bike lanes should be routed between the passenger waiting area and the sidewalk to reduce conflicts while passengers are boarding.

SHARED USE PATH & SIDEPATH

A shared use path is an off-street bicycle and pedestrian facility that is physically separated from motor vehicle traffic. SUPs can be located in independent right-of-way such as a park, greenway, along a utility corridor, an abandoned railroad corridor, or adjacent to a street. When SUPs are adjacent to a street they are called sidepaths. SUPs are used by other non-motorized users including pedestrians, skaters, wheelchair users, and joggers.

BENEFITS

- + Provides a dedicated facility for users of all ages and abilities.
- + Provides, in some cases, access to areas that are otherwise served only by limited-access roadways.
- + Completes networks where high-speed roads provide the only corridors available.
- + Provides non-motorized transportation access to natural and recreational areas, which can especially help low-income people obtain access to recreation.
- + Provides, in some cases, a short-cut between cities or neighborhoods.
- + Supports tourism through convenient access to natural areas or as an enjoyable recreational opportunity itself.



NAISMITH VALLEY PARK TRAIL, LAWRENCE, KS



CLINTON PKWY, LAWRENCE, KS

SHARED USE PATH & SIDEPATH

FACILITY FEATURES



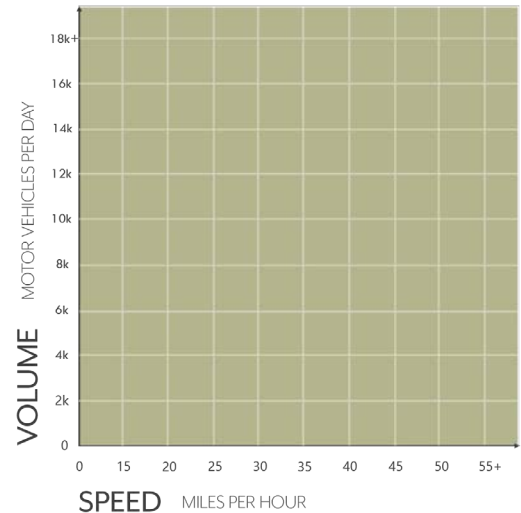
SIGNAGE

- + BIKE YIELD TO PEDS signs may be used at entrances of path to remind bicycle riders of this requirement.
- + Crossings sign assemblies should be used to warn users of the crossing location.
- + Signs may be used to remind bicycle riders to pass on the left and give verbal warnings.



PAVEMENT MARKINGS

- + When striping is required, use a 4 inch broken yellow center line may help organize the flow of traffic.
- + Solid center lines can be provided on tight corners or approaches to roadway crossings.
- + Edge lines should be marked on paths expecting evening use.
- + “LOOK” pavement markings should be placed when paths cross driveways.



CONSIDERATIONS

- + Typically the widths range from 10 to 14 feet with narrower widths acceptable when physical constraints are present such as bridges or fences.
- + Wider paths are needed to provide an acceptable level of service on pathways frequented by pedestrians, wheeled users, steep grades, and higher use in general.
- + All pavement markings added should be retro-reflective.
- + The speed of the pathway should be at least as high as the preferred speed of the fastest common user, and should consider the type of the user’s equipment, the purpose and length of the trip, the condition and grade of the path, and the number of other users.



BURCHAM PARK TRAIL, LAWRENCE, KS

INTERSECTION & CONFLICT ZONE TREATMENTS

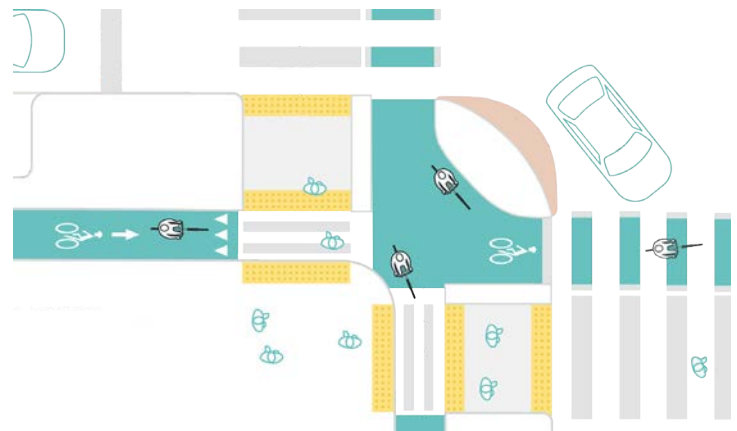
**PROTECTED INTERSECTION
RAISED DRIVEWAY CROSSING
SEPARATED BIKE LANE MIXING ZONES
CONVENTIONAL BIKE LANE AT INTERSECTIONS
CROSSING TREATMENTS**

PROTECTED INTERSECTION

Maintaining physical separation, protected intersections eliminate shared spaces with turning and merging vehicles and bicycle riders. This separation limits bicycle riders' exposure to a single point where the motorist turns across the bike lane and meets the pedestrian crossing. Separated bike lanes and side paths at intersections should manage conflicts with turning vehicles and increase visibility for all users. Protected intersections are compatible with one- and two-way separated bike lanes. Contraflow bicycle movements may require signal-phasing. See [NACTO Don't Give Up at the Intersections](#) for more details.

BENEFITS

- + Controls speed of turning vehicles at conflict points.
- + Minimizes exposure to conflict areas.
- + Communicates right-of-way priority.
- + Provides increased sight distance.
- + Forward bicycle queuing areas allow stopped bicycle riders to wait in direct sight of drivers and enter the intersection before them.
- + High level of comfort



NACTO DON'T GIVE UP AT THE INTERSECTION, 2019

CONSIDERATIONS

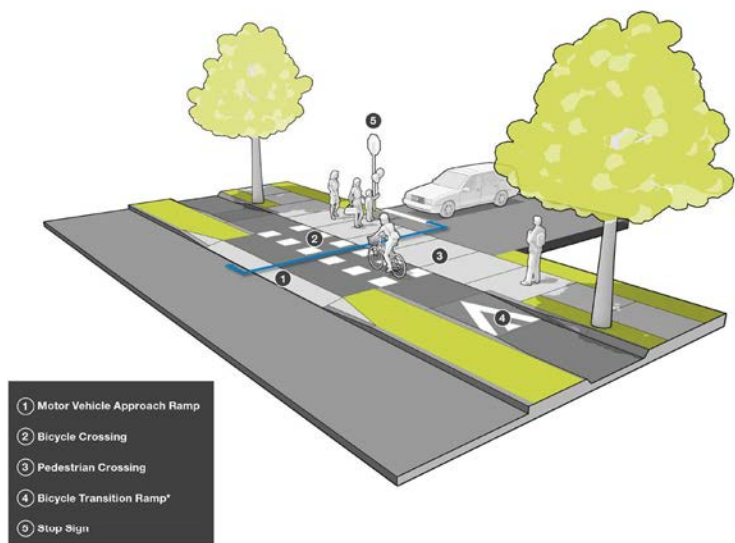
- + Consider restricting right turn on red at protected intersections to reduce vehicle encroachment into the crossings.
- + Colored pavement and/or shared lane markings can supplement short dashed lines to distinguish the bike lane through the intersection.
- + Consider warning signs or raised intersections or crosswalks at non-signalized intersections.
- + Truck aprons can be used to slow turning vehicles while accommodating large vehicles. The aprons should have a maximum height of 3 inches.
- + Bike yield pavement markings
- + Pedestrian islands reduce crossing distances and improve visibility
- + A modified TURNING VEHICLES YIELD TO BIKES AND PEDS sign is recommended
- + Detectable warning surfaces to alert pedestrians as they enter the conflict zone

FACILITY FEATURES

- + Forward bicycle queues should be at least 6.5 feet long to fit a typical bike. Enlarging corner islands can increase this space.
- + The smallest feasible curb radius should be selected for corner designs requiring vehicles to turn no faster than 10 mph which is typically 10 - 15 feet.
- + The crossing may be bound by white 12 inch (perpendicular) and 24 inch (parallel) pavement dashes known as elephant's feet.
- + When separated bike lanes are provided at roundabouts, they should be continuous around the intersection and parallel to the sidewalk. Separated bike lanes should generally follow the contour of the circular intersection.
- + A motorist waiting zone creates space between the vehicle lane and the crossbike provides a place for cars to wait before turning across the bike rider's lane of travel.
- + The setback determines the amount of room available for drivers to wait and yield and the angle they cross the bikeway. Setbacks should be 10 feet and 14 - 20 feet where practical. Larger setbacks create more visibility but may increase turning speeds if larger than 20 feet.

RAISED DRIVEWAY CROSSING

Most bicycle riders will need to cross a street, driveway, or alley during their route, often at multiple locations. Raised driveway crossings help encourage yielding behavior and increase visibility of bicycle riders at crossings. This facility is appropriate on minor road crossings and designate a clear path for bicycle riders through an intersection.



BENEFITS

- + Increases visibility of bicycle riders and pedestrians.
- + Increases yielding behavior of drivers.
- + Slows turning and crossing speed of motor vehicles.

MASSDOT. BIKE LANE PLANNING AND DESIGN GUIDE (2015).
CHAPTER 4.

CONSIDERATIONS

- + Collector streets and local street crossings.
- + Yield lines can be used to indicated priority for bicycle riders and may be used in advance of unsignalized crossings at driveways.
- + Green colored pavement may be utilized within the crossing to increase visibility especially where vehicle sightliness is low or turning speeds exceed 10 mph.
- + Raising bike lanes to intermediate or sidewalk level going into the crossing could increase visibility and avoid to many transition ramps.

FACILITY FEATURES

- + Pavement should be elevated 4-6 inches above the street.
- + Approach ramps should be at a 5-15 percent slope at driveways and a 5-8 percent slope at street crossings.
- + Crossing should be at least 6 feet wide for one-way travel and 10 feet for two-way.
- + Surface materials should extend through the crossing maintaining visual continuity encouraging drivers to yield.
- + The crossing may be bound by white 12 inch (perpendicular) and 24 inch (parallel) pavement dashes known as elephant's feet.

SEPARATED BIKE LANE MIXING ZONES

When drivers have to turn across a separated bike lane at an intersection a mixed zone is required. A mixing zone design limits bicycle riders' exposure to vehicles by defining a limited merge area for the turning motorist, unlike a standard bike lane where a motorist can merge across at any point. Mixing zones are only compatible with one-way separated bike lanes.

BENEFITS

- + Increases visibility of bicycle riders and drivers in advance of the intersection.
- + Reduces the risk of "left or right-hook" crashes with turning drivers.
- + Cost efficient.

CONSIDERATIONS

- + When there is a right turn lane, the bike lane must go around the lane and be marked with either solid or striped green pavement.
- + Tactile warnings or pavement markings should be used on slopes from raised bike lanes to slow bicycle riders before the transition out of the protected bike lane.
- + Where speeds are 35 mph or higher, or at locations where it is necessary to provide storage for queued vehicles, consider providing a deceleration/storage lane in advance of the merge point.

FACILITY FEATURES

- + Parking should be prohibited 30 to 50 feet before the cycle track buffer ends to increase visibility.
- + When the cycle track ends the intersection should provide a bicycle facility to receive cycle track users.
- + Minimize the lengths of left turn lanes.
- + Provide BEGIN RIGHT (or LEFT) TURN LANE YIELD TO BIKES signs at the merge area and throughout the facility.
- + Restrict parking within the merge area.



CONVENTIONAL BIKE LANES AT INTERSECTIONS

Protected intersections preserve the separated bike lane up to and through the intersection. Physical separation eliminates shared spaces with turning vehicles, which limits bicycle riders' exposure to a single point where the motorist turns across the bike lane and adjacent pedestrian crossing. Protected intersections are compatible with one- and two-way separated bike lanes; however, contraflow bicycle movements may require signal-phase separation in some situations.



SEATTLE, WASHINGTON. INTERSECTION CROSSING MARKINGS, NACTO URBAN BIKEWAY DESIGN GUIDE.

BENEFITS

- + Controls speed of vehicle turns through geometric design.
- + Improves sight distance by recessing the crossings.
- + Reduces conflict areas with vehicles and bicycle riders.

CONSIDERATIONS

- + Consider restricting right turns on red at protected intersections to reduce vehicle encroachment into the crossings.
- + Forward bicycle queuing areas allow bicycle riders to wait in direct line of sight of drivers.
- + Mountable truck aprons can be used to slow turning vehicles while accommodating large vehicles.
- + Pedestrian crossing islands reduce crossing distances, allow pedestrians to manage bicycle and motor vehicle conflicts separately, and discourage pedestrians from queuing in the bike lane.

FACILITY FEATURES

- + A bicycle crossing offset of 6- to 16.5 feet from the parallel roadway provides the greatest safety benefit.
- + Forward bicycle queues should be at least 6 feet long to fit a typical bicycle.
- + Bike lanes markings, including green-colored pavement, shared lane markings, dashed lane markings, and signage may be provided through the intersection.

CROSSING TREATMENTS

Designs for intersections with bicycle facilities should reduce conflict between the bicycle riders, and other vulnerable road users, and vehicles and increase comfort among bicycle riders. Intersection treatments should achieve these goals by heightening level of visibility, denoting clear right-of-way, and facilitating eye contact and awareness with competing modes. The level of treatment required for bicycle riders at an intersection will depend on the facility type, whether bicycle facilities are intersecting, the adjacent street function and land use.



Median Diverter



Bicycle Box with Lead-In Bike Lane



Pedestrian Hybrid Beacon



Two-Stage Turn Queue Box

CONSIDERATIONS

- + Median islands can offer protection in the center of the street to facilitate bicycle and pedestrian crossing.
- + Adjustments to traffic control such as implementation of a pedestrian hybrid beacon or adjustments to stop signs may require a traffic study.
- + Colored pavement in bike boxes and queued turn lanes increase visibility and clearly mark bicycle facilities.
- + Install a median island or centerline hardening on the receiving street to prevent corner cutting.

FACILITY FEATURES

- + Medians should be a minimum of 6 feet in width, but 8 feet is preferable.
- + Unsignalized crossings of arterial or collector streets with high volumes and speeds as well as offset intersections where the bike boulevard route makes two turns in short succession
- + Bike boxes should be considered where a left turn is required to follow a designated bike route, access a shared-use path, when the bicycle lane moves to the left of the street or when the dominant vehicle traffic flows right and bicycle traffic continues straight.

IMAGE SOURCES: NACTO URBAN BIKEWAY
DESIGN GUIDE

PEDESTRIAN CROSSING TREATMENTS

When determining crossing treatments for increased pedestrian safety the number of lanes and medians must be considered. Alta Planning + Design provides guidance for selecting crossing treatments.

PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE

At Unsignalized Intersections

| | Local Streets 15-25 mph | | Collector Streets 25-30 mph | | | Arterial Streets 30-45 mph | | | | | | | |
|---|----------------------------|--------|--------------------------------|---------------------------|--------|-------------------------------|---------------------------|--------|--------|---------------------------|--------|--------|---------------------------|
| FACILITY TYPE | | | | | | | | | | | | | |
| | 2 lane | 3 lane | 2 lane | 2 lane with median refuge | 3 lane | 2 lane | 2 lane with median refuge | 3 lane | 4 lane | 4 lane with median refuge | 5 lane | 6 lane | 6 lane with median refuge |
| Crosswalk Only (high visibility) | ✓ | ✓ | EJ | EJ | X | EJ | EJ | X | X | X | X | X | X |
| Crosswalk with warning signage and yield line | EJ | ✓ | ✓ | ✓ | ✓ | EJ | EJ | EJ | X | X | X | X | X |
| Active Warning Beacon (RRFB) | X | EJ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | X | ✓ | X | X | X |
| Hybrid Beacon | X | X | EJ | EJ | EJ | EJ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Full Traffic Signal | X | X | EJ | EJ | EJ | EJ | EJ | EJ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Grade Separation | X | X | EJ | EJ | EJ | X | EJ | EJ | ✓ | ✓ | ✓ | ✓ | ✓ |

| Legend | |
|-----------------------|----|
| Most Desirable | ✓ |
| Engineering Judgement | EJ |
| Not Recommended | X |

ALTA PLANNING + DESIGN

CROSSWALK



CROSSWALK WITH WARNING



RRFB



HYBRID BEACON



TRAFFIC SIGNAL



GRADE SEPARATION



LAWRENCE, KS

IMAGES FROM NACTO URBAN BIKEWAY DESIGN GUIDE

TRAFFIC CONTROL & SIGNS

BICYCLE SIGNALS, DETECTION, AND ACTUATION

RECTANGULAR RAPID FLASHING BEACON

HYBRID BEACON (HAWK)

BICYCLE ROUTING/WAYFINDING

SHARED LANE MARKINGS

BIKE BOX

TWO-STAGE TURN QUEUE BOX

CONFLICT AREA MARKINGS

TRAFFIC CALMING

LANE RECONFIGURATION

BICYCLE SIGNALS, DETECTION, AND ACTUATION

Bicycle movements may be controlled by several methods at signalized intersections - the same lights as motor vehicles, pedestrian signals, or specific bicycle traffic signals. They can reduce conflicts between motor vehicles, transit vehicles, bicycle riders, and pedestrians. Traffic signal design, which includes detection, phasing, timing, and equipment, should provide a safe and predictable environment for all users, especially the most vulnerable.

CONSIDERATIONS

- + Pedestrian comfort, safety, and needs must be considered when designing traffic signals.
- + Alternate signalization should be considered where bicycle riders cannot see vehicle signal faces, or where bicycle riders have a separate directional movement, phase, or interval.
- + Video detection, microwave, and infrared detection can be alternative to loop detectors. Detection is important to trigger a green light when lights are not automatically timed to complete a full light cycle for each intersection leg.
- + Another strategy in signal timing is providing a “green wave” where bicycle riders will receive a green indication as they reach each signal.
- + Consider installing advanced bicycle detection on the intersection approach to extend the phase, or prompt the phase and allow for continuous bicycle through movements.

BENEFITS

- + Makes crossing intersections safer for bicycle riders by clarifying when to enter an intersection.
- + Restricts conflicting vehicle movements.

FACILITY FEATURES

- + The BIKES USE PED SIGNAL sign may be used where the crossing of a street by bicycle riders is controlled by pedestrian signal indications.
- + A bicycle signal is more suitable as it can be timed for bicycle speeds increasing the time a bicycle rider may legally enter the roadway compared to a pedestrian signal.
- + The MUTCD instructs that 8-inch circular signal indications may be used “in a signal face installed for the sole purpose of controlling a bikeway or a bicycle movement” and can be installed without requesting approval.
- + A bicycle signal face may only be used with a protected phase. Designers should request permission from FHWA before installing a bicycle signal face.
- + Leading Bike Intervals (LBI), Lagging left turn signals, or the Split LBI can be used to direct bicycle and vehicle traffic separately at busy intersections. See [NACTO Don't Give Up at the Intersection](#).

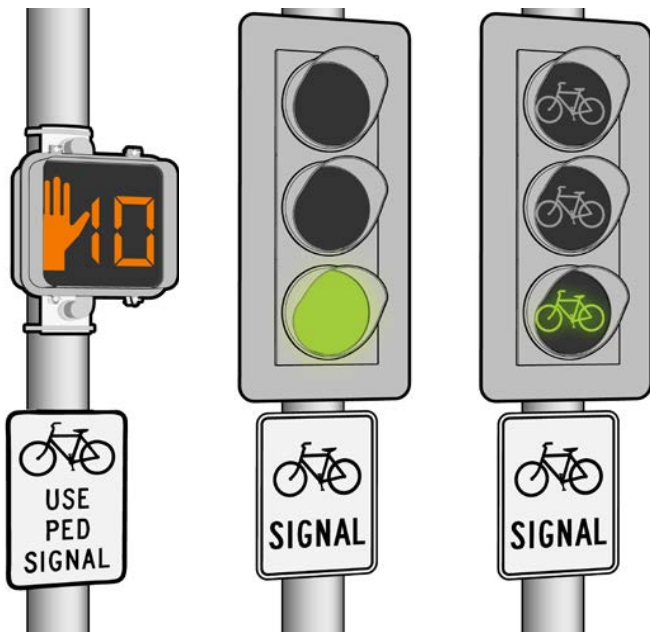


IMAGE SOURCE: SIGNALIZED INTERSECTION. FHWA ACHIEVING MULTIMODAL NETWORKS (2016).

RECTANGULAR RAPID FLASHING BEACON

RRFBs are used in combination with a pedestrian, school, or trail crossing warning sign to improve safety at an unsignalized marked crosswalks and mid-block crossings by increasing driver awareness. RRFBs can be activated manually by a push button or by a detection system and use an irregular flash pattern similar to emergency flashers on police vehicles. RRFBs can be installed on two-lane or multi-lane roadways.



RECTANGULAR RAPID FLASHING BEACON SEQUENCE AT CROSSWALK. MUTCD.



EXAMPLE PUSHBUTTON AND SIGN. MUTCD.

BENEFITS

- + Lower cost alternative to traffic signals.
- + Increases driver yielding rates than traditional overhead beacons.
- + Increases effectiveness of other safety treatments like yield markings and signs.

FACILITY FEATURES

- + Two rectangular-shaped yellow indications that flash in a rapid “wig-wag” (left light on then right light) sequence when activated.
- + RRFBs are particularly effective at multi-lane crossings with speeds less than 40 mph.
- + RRFBs should be placed on the left and right side of a crosswalk.
- + On a divided highway the left-hand beacon should be placed on the median if practical.

CONSIDERATIONS

- + Can be powered by standalone solar panel units or a traditional power source.
- + Flashing beacon may be activated by a push button or video or infrared detection.
- + RRFBs can be placed on pedestrian islands or medians for assisted guidance across larger intersections.
- + For roads with higher speeds consider the Pedestrian Hybrid Beacon.

HYBRID BEACON (HAWK)

A hybrid beacon is also known as a High-intensity Activated Crosswalk (HAWK) and has two red lights above a yellow light. These beacons were designed specifically to enhance non-motorized crossings of major streets. When not activated, the beacon displays no indication.

BENEFITS

- + Can significantly improve bike routes, particularly along bicycle boulevards.
- + Can be modified to specifically include bicycle movements.
- + Creates a gap for bicycle riders and pedestrians to cross.
- + High driver compliance.
- + Creates more flexibility for bicycle riders as they do not have to activate if they find ample crossing opportunity.

FACILITY FEATURES

- + Two red lights above one yellow light.
- + Should be installed where side-street volumes do not support installation of a traffic signal (or where there are concerns installation of a traffic signal would encourage more traffic).
- + Where off-street bicycle or pedestrian facilities intersect major streets without traffic signals or at mid-block crossings of major roadways with high bicycle or pedestrian volumes.
- + When activated, the beacon flashes in a “wig-wag” red that allows drivers to stop and proceed when clear like a stop sign.

CONSIDERATIONS

- + Consider supplementing the hybrid beacon with bike signal and signal detection for minor street approaches to facilitate bike crossings.
- + Maintain signage and painting to help users understand the traffic control.

Sequence for Coordinated HAWK, Bicycle and Pedestrian Signal.

| Interval | Motor Vehicle | Bicyclist | Pedestrian |
|----------|---------------|-----------|------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 1 | | | |

HAWK SEQUENCING. NACTO URBAN BIKEWAY DESIGN GUIDE.

BICYCLE ROUTING/WAYFINDING

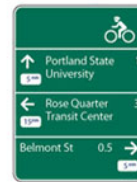
The purpose of signage on bicycle boulevards is to identify routes to both bicycle riders and drivers, provide destination and distance information, and warn users about changes in road conditions as needed. In addition to serving these roles, signage also helps to “brand” the bicycle boulevard network, fostering familiarity among cyclists and drivers with traffic conditions that are to be expected on these facilities. Wayfinding can improve bicycling in an area because it helps identify the best routes to destinations, helps overcome a barrier of not knowing where to ride, and reminds drivers to watch for bicycle riders.

BENEFITS

- + Helps bicycle riders navigate within and between a variety of destinations in urban, suburban, and rural areas.
- + Can provide guidance and connectivity between two or more bike facilities and in gaps between existing sections of a bikeway.
- + Can increase drivers’ awareness of bicycle riders sharing the road.



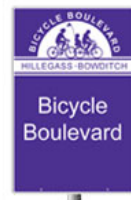
Oakland, CA



Concept



Portland Metro Cities, OR



Berkeley, CA

BIKEWAY SIGNING & MARKING, NACTO
URBAN BIKEWAY DESIGN GUIDE

CONSIDERATIONS

- + Wayfinding should coordinate with bicycle route maps.
- + Fingerboards are long skinny signs that tell riders how far you are from a short list of destinations and what direction they’re in.
- + Decision and confirmation assemblies consist of Bike Route identification and optional fingerboard signs placed where routes intersect or at the beginning of bike routes. These signs can serve as breadcrumbs helping riders know directions and where the bike route is.
- + Signs can be customized to add community branding, but clarity and accuracy should remain the top priority.
- + Be mindful to avoid “sign clutter” that can diminish the effectiveness of signage.

FACILITY FEATURES

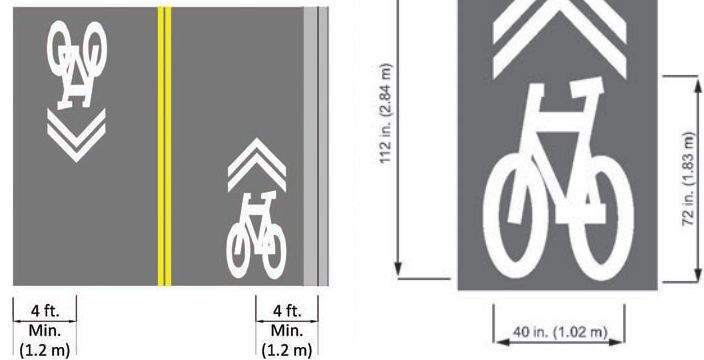
- + Signs should be made of retro-reflective material to remain visible at night.
- + Colors reserved for regulatory and warning road signs (red, yellow, orange, etc.) are not recommended. Colors commonly used for bike boulevards include green and purple.
- + Install wayfinding signs in advance of turns at a distance great enough to allow cyclists to recognize, prepare for, and safely execute a turn.
- + Letter size should be no less than 2 inches in height.
- + Install ahead of or at the beginning of the bicycle boulevard and ahead of major intersections or connections with other bikeways.
- + Ensure that signs are not obscured by vegetation through regular monitoring and maintenance.

SHARED LANE MARKINGS

Shared lane markings (or “sharrows”) are pavement markings that denote shared bicycle and motor vehicle travel lanes. Shared lane markings can be useful in locations where there is insufficient width to provide bike lanes. These markings also alert road-users to the possible presence of bicycle riders. In general, this design solution should be used in areas with low traffic speeds and volumes as a part of a signed route or bicycle boulevard.



SLOW STREETS, AASHTO ACHIEVING MULTIMODAL NETWORKS (2016).



DESIGN OF ON-ROAD FACILITIES, AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (2012).

BENEFITS

- + Increases driver awareness of possible bicycle riders.
- + Provides guidance for bicycle riders to ensure they are on the correct path.
- + Cost efficient and does not require construction of the roadway.
- + Can be a short- or long-term solution.

CONSIDERATIONS

- + Sharrows may be used as a temporary solution on constrained streets with up to 10,000 vehicle trips per day where the maximum street limit is 35 mph until a more appropriate bike facility can be implemented.
- + Provide signs such as BIKES MAY USE FULL LANE.
- + Sharrows may be used at transit stops to provide visual cues to drivers and bicycle riders on the correct path to follow.

FACILITY FEATURES

- + On streets with on-street parallel parking, shared-lane markings should be placed at least 11 feet from the face of the curb, or edge of the traveled way where there is no curb.
- + On streets without on-street parallel parking, shared-lane markings should be placed at least 4 feet from the face of curb, or edge of the traveled way where there is no curb.
- + Where lanes are too narrow for side-by-side operation of a bicycle or motor vehicle, shared-lane markings can be placed farther into the lane than the minimum distance shown above.
- + Should be used on streets with speed limits of 25 mph or lower and less than 5,000 vehicle trips per day.
- + The markings are two chevrons above a bicycle symbol placed where the bicycle rider is anticipated to ride.
- + Shared-lane markings should be placed immediately after an intersection and spaced at intervals of no more than 250 feet after.

BIKE BOXES

A bike box is a designated area at the head of a traffic lane at a signalized intersection that allows bicycle riders with a safe and visible way to get ahead of queuing traffic during a red light. Bike Boxes are typically used at signalized intersections with high volumes of bicycles and/or motor vehicles, especially with frequent bicycle rider left-turns and/or motorist right-turns and where there is a desire to better accommodate left turning bike traffic.

BENEFITS

- + Increases visibility of bicycle riders.
- + Reduces signal delay for bicycle riders.
- + Facilitates left turn positioning for bicycle riders at intersections and the transition from a right-side bike lane to a left-side bike lane during red signal indication.
- + Helps prevent 'right-hook' conflicts with turning vehicles at the start of the green indication.

FACILITY FEATURES

- + Boxes should be 10 to 16 feet deep. Deeper boxes show less encroachment by motor vehicles.
- + Stop lines should be used to indicate where motor vehicles are required to stop.
- + Pavement markings should be used between the crosswalk line and the stop line to designate the space as a Bike Box.
- + NO TURN ON RED signs should be installed overhead to prevent vehicles from entering the Bike Box.
- + Colored pavement should be used within the Bike Box to encourage compliance and visibility for drivers.
- + An ingress lane should be used to define the bicycle space with 25 to 50 feet colored to guarantee bicycle access.
- + An egress lane should be used to clearly define the potential conflict areas in the intersection when the light is green.



BIKE BOXES, NACTO URBAN BIKEWAY DESIGN GUIDE



BIKE BOXES, NACTO URBAN BIKEWAY DESIGN GUIDE

PORTLAND, OREGON

CONSIDERATIONS

- + WAIT HERE or STOP HERE may be marked before the bike box to further instruct drivers and discourage encroaching.
- + Right turns on red must be prohibited, though exceptions may be made for cyclists (EXCEPT FOR BIKES).
- + Bicycle Boxes may not be compatible at intersections with a high volume of right-turning vehicles.
- + A YIELD TO BIKES sign should be mounted in advance of an egress lane to reinforce bicycles have the right-of-way through the intersection.

TWO-STAGE TURN QUEUE BOX

Two-stage turn queue boxes designate a space for bicycle riders to wait while performing a two-stage turn across a street outside the path of traffic. Two-stage turn queue boxes offer bicycle riders a safe way to make turns at multi-lane signalized intersections from a cycle track or bike lane. This facility should be considered where separated bike lanes continue up to an intersection and a protected intersection is not provided.



TWO-STAGE TURN QUEUE BOXES, NACTO URBAN BIKEWAY DESIGN GUIDE

FACILITY FEATURES

- + Pavement markings should include a bicycle stencil and a turn arrow to clearly indicate bicycle direction and positioning.
- + The queue box should be placed in a protected area like within an on-street parking lane or between the bike lane and pedestrian crossing.
- + The queue box should be positioned laterally in the cross-street to promote visibility of bicycle riders.
- + Colored pavement should be used inside the box to define the bicycle rider space.
- + “No Turn on Red” restrictions should be applied to prevent vehicles from entering the queuing area.
- + A minimum width of 10 feet and a width of 6.5 feet is recommended.

BENEFITS

- + Helps prevent bicycle riders from merging into traffic to turn.
- + Increases bicycle comfort and safety when making left turns.
- + Prevents conflicts arising from bicycle riders queuing in a bike lane or crosswalk.
- + Separates turning bicycle riders from through bicycle riders.

CONSIDERATIONS

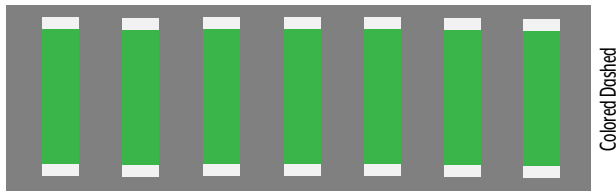
- + Dimensions of two-stage queue boxes will vary based on the street operating conditions, the presence of a parking lane, traffic volumes and speeds, and available street space.
- + A bicycle signal, with a leading bicycle interval may be used in conjunction with the two-stage turn queue box.
- + Guideline, pavement symbols and/or colored pavement can be used to lead bicycle riders into the queue box.
- + At mid-block turning locations the queue box may be integrated into the sidewalk space. This configuration is known as a “jug-handle.”

CONFLICT AREA MARKING

Conflict area markings improve bicycle riders' visibility, alert roadway users of expected behaviors, and reduce conflicts with turning vehicles. The appropriate treatment for conflict areas depends on the desired emphasis and visibility. Dotted lines may be sufficient for guiding bicycle riders through intersections; however, the addition of green colored pavement enhances visibility and awareness for both drivers and bicycle riders.



MASSACHUSETTS ST, LAWRENCE, KS



BENEFITS

- + Improves visibility of bicycle riders to drivers.
- + Increases bicycle riders' level of comfort at intersections.
- + Facilitates more accurate positioning of bicycle riders.
- + Increases driver awareness of potential bicycle riders.

FACILITY FEATURES

- + Green pavement can be added behind the word, symbol and arrow markings, but cannot replace them or the required lane barrier markings.
- + Green pavement may be used through an intersection, driveway, or ramp to guide the bicycle rider and increase turning drivers' awareness.
- + The green pavement may be dotted to match the pattern of the dotted lines, filling in only the areas directly between a pair of dotted line segments that are on opposite sides of the bicycle lane extension.

CONSIDERATIONS

- + Green pavement may be retroreflective for increased visibility in the dark.
- + If paint is applied to roadways to simulate green pavement, consider selecting traction losses when selecting materials.
- + Symbol placement within an intersection should consider vehicle wheel paths to minimize maintenance needs from wheel wear.
- + Driveways with higher volumes may require additional pavement markings and signage.

See the [FHWA Interim Approval for Optional Use of Green Colored Pavement](#) for more details and specifications on luminance.

TRAFFIC CALMING

Horizontal traffic calming reduces speeds by narrowing lanes, creating a sense of enclosure and additional friction between passing vehicles. Narrower conditions require more careful maneuvering around fixed objects and when passing bicycle riders or oncoming motor vehicle traffic. Vertical traffic calming can add protection for bicycle riders in the form of bike rails, curb extensions or medians, or cause drivers to slow down with speed tables, humps rumble strips etc..

GUIDANCE

- + Horizontal treatments are most effective if they deflect drivers mid-block or within intersections with neighborhood traffic circles.
- + Mid-block curb extensions known as pinch points or chokers may include cut-throughs for bicycle riders.
- + Curb extensions used as gateways to minor streets are known as neckdowns.
- + Chicanes are offset curb extensions that force vehicles to move laterally in a serpentine alignment and reduce speed.
- + Traffic circles allow bicycle riders to maintain momentum through intersections. They offer a better alternative to stop signs as bicycle riders often ignore these signs on neighborhood streets.
- + Bike rails create a physical barrier between bicycle riders and drivers and can be used to create other traffic calming configurations temporarily to ensure functionality or permanently.
- + Speed humps or dips slow drivers.
- + Speed tables slow drivers and increase visibility of pedestrians and bicycle riders.

CURB EXTENSION



1

**NEIGHBORHOOD
TRAFFIC CIRCLE**



1

BIKE RAILS



2

CHICANE



3

SPEED HUMP



3

MEDIAN CHANNELIZER



4

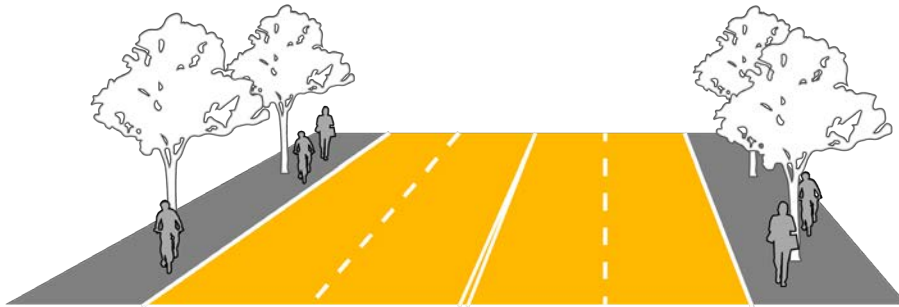
1: FUNDAMENTALS OF BICYCLE BOULEVARD PLANNING & DESIGN (2009)

2: DESIGNLINE.COM

3: URBAN STREET DESIGN GUIDE, NACTO

4: LAWRENCE, KS

LANE RECONFIGURATION



(Before Lane Reconfiguration)

A common misconception is the best way to alleviate traffic congestion is to build additional travel lanes and provide additional road space. Wider roadways actually generate worse traffic conditions by encouraging more vehicle trips. Instead, a street network with fewer travel lanes and smaller intersections functions more efficiently because it processes more turning traffic, shortens pedestrian crossings, and provides more route options for all modes of transportation (FHWA)¹. For existing streets, lane reconfigurations are one strategy to reduce the width and provide a denser street network that contributes to a robust multimodal transportation network. Lane reconfigurations allow right-of-way to be allocated to other beneficial uses, such as turn lanes, bus lanes, pedestrian refuge islands, bike lanes, sidewalks, bus shelters, or landscaping amenities.

A lane reconfiguration provides a low-cost solution that addresses safety concerns and benefits users of all modes of transportation. One reason lane reconfigurations are often a cost effective solution is because they can be initiated in tandem with reconstruction or simple overlay projects, meaning the safety and operational benefits are achieved essentially for the cost of re-striping. A typical lane reconfiguration involves converting a four-lane roadway segment into a three-lane segment consisting of two through lanes, a center, two-way left-turn lane, and bikeway. Another version of a lane reconfiguration is to eliminate parking and turning lanes on roads that do not warrant them and convert the newly available space to bikeways.

¹Knapp, K. K. (2014). Road diet informational guide. Washington, DC: United States Department of Transportation, Federal Highway Administration. Retrieved January 24, 2019, from https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/



(After Lane Reconfiguration)

BENEFITS

- + Improved safety
- + Operational benefits
 - + Separating left turns
 - + Side-street traffic crossings
 - + Speed differential reductions
- + Pedestrian and bicycle rider benefits
- + Livability benefits

Source: FHWA Road Diet Guide

BEFORE



AFTER



PEDESTRIAN BIKE INFORMATION CENTER, "ROAD DIETS" TRAINING MODULE, 2009

The FHWA Road Diet Guide should be used when determining if a roadway is eligible for a lane reconfiguration.



1

PARKING

- + Remove parking when not warranted
- + Consider diagonal parking
- + Consider reverse angle parking



2

TURNING LANES (IMPLEMENT OR REMOVE)

- + Narrow existing
- + Remove when not warranted
- + Implement new



2

REDUCE LANES

- + Number of lanes
- + Width of lanes

Parking Warrants:
Parking studies should be completed to better understand parking demand and land use in the area. Studies can help determine where unwarranted parking occurs and could be removed.

PHOTO SOURCES:

AASHTO. GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES (2012). CHAPTER 4.
NACTO. URBAN STREET DESIGN GUIDE, NEIGHBORHOOD MAIN STREET.

Glossary Resources

American Association of State Highway Transportation Officials (AASHTO)

Federal Highway Administration (FHWA)

Manual on Uniform Traffic Control Devices (MUTCD)

Massachusetts Department of Transportation (MassDOT)

National Association of City Transportation Officials (NACTO)

National Center for Safe Routes to School

National Cooperative Highway Research Program (NCHRP)

Transit Cooperative Research Program (TCRP)

Amenities – Elements such as benches, kiosks, bicycle parking, points of interest displays, or trash receptacles that are placed on a sidewalk, pedestrian mall, or at transit stops in order to improve the convenience and attractiveness of the facility. (AASHTO)

Average Daily Traffic (ADT) – The total volume of traffic on a street during a given time period divided by the number of days in that time period. (AASHTO)

Bicycle Boulevard – Bicycle boulevards, sometimes also called neighborhood greenways, are streets with low motorized traffic volumes and speeds designated and designed to give bicycle riders and neighborhood motor vehicle traffic travel priority. Bicycle boulevards use signs, pavement markings, and traffic calming features such as traffic circles, medians, speed humps, and diverters to slow traffic and discourage through trips by motor vehicles. Street crossing improvements like supplemental signs or refuge islands are implemented to create safe, convenient bicycle crossings of arterial streets. Bicycle boulevards benefit neighborhoods by reducing cut-through traffic and speeding without limiting access by residents.

Bicycle Box – Designated area on the approach to a signalized intersection consisting of an advanced stop line and bicycle symbols. Bicycle boxes should be primarily considered to mitigate conflicts between through bicycle riders and right-turning drivers and to reduce conflicts between drivers and bicycle riders at the beginning of the green signal phase.

Bicycle Signal – Traffic control device used to improve intersection safety and operations for bicycle riders. Bicycle signal heads can be installed at signalized intersections to indicate bicycle signal phases and other bicycle-specific timing strategies. (FHWA)

Bike Advisory Lane – Bike advisory lanes have a single motor vehicle lane shared by motor vehicles going in both directions. When two oncoming motor vehicles meet, motorists yield to bicycle riders before merging into the bike lane.

Bike Route – A signed route that is preferred for bicycling due to low traffic or access to destinations. Does not necessarily have a delineated or dedicated space for bicycling.

Bikeway – Any type of bicycle facility, including paths in separate rights-of-way and on-street bikeways. Includes bike lanes, paved shoulders, signed bike routes, and sidepaths.

Buffered Bike Lane – Buffered bike lanes are created by striping a buffer zone between a bike lane and the adjacent travel lane. Some buffered bike lanes also offer a painted buffer between the bike lane and the adjacent parking lane. Buffered bike lanes should be considered at locations where there is excess pavement width or where adjacent traffic speeds exceed 35 mph.

Colored Bike Lane – All of the above bike lanes may have green color applied to them to highlight the presence of the bike lane. Colored lanes are typically used in high-conflict areas such as through complicated intersections, in areas where traffic is merging across the

bike lane, or in areas where traffic frequently turns across the bike lane. In 2011, colored bicycle lanes received interim approval from the FHWA to be used on streets, thereby making way for their ultimate inclusion in the Manual of Uniform Traffic Control Devices in its next update.

Conflict Areas – A two-dimensional zone within which potential travel paths cross and crashes could occur between users of the same mode or users of differing modes. Typical conflict areas include approaches to intersections, intersections, and driveways.

Contra-Flow Bikeway – A bikeway (usually a bike lane) in the opposite direct of motor vehicle traffic on a one-way street. Contra-flow bikeways require careful consideration of traffic control and conflicts with motor vehicle traffic.

Conventional Bike Lane – A bike lane is a pavement marking that designates a portion of a street for the use of bicycles. Bike lane markings are typically dashed where vehicles are allowed to cross the bike lane, such as right turns or at bus stops. The bike lane is located adjacent to motor vehicle travel lanes and flows in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge, or parking lane.

Crossing Island – Raised islands placed on a street at intersections or mid-block locations to separate crossing pedestrians from motor vehicles. Also known as refuge areas, refuge islands, center islands, pedestrian islands, or median slow points. (FHWA)

Crosswalk – Legal crosswalks exist at all intersections, whether marked or unmarked. Mid-block crosswalks must be marked in order for pedestrians to legally have the right-of-way.

Curb Extension – Treatment or application designed to visually and physically narrow the roadway in order to create safer and shorter crossing distances for pedestrians while increasing the available space for street furniture, benches, plantings, and trees. (NACTO)

Curb Ramp – The transition for pedestrians from the sidewalk to the street. ADA Standards require all pedestrian crossings to be accessible to people with disabilities by providing curb ramps at intersections and mid-block crossings as well as other locations where pedestrians can be expected to enter the street.

Design Speed – Design speed is a selected speed used to determine various geometric design features of the roadway. The assumed design speed should be logical with respect to the topography, anticipated operating speed, adjacent land uses, and the functional classification of the roadway. (AASHTO)

Flexible Delineator Posts – Flexible delineator posts, also called flex posts or flex stakes, are used to provide vertical demarcation of a roadway feature, including some bike lanes. These posts are typically made of plastic with an internal spring mechanism mounted to a base plate. Flexible delineator posts can be secured to the pavement using bolts, epoxy, or other techniques. The color of the plastic post

should match the color of the pavement marking or striping with which it is associated.

Horizontal Deflection Treatment – Traffic calming techniques that compel drivers to reduce their travel speed by changing the width or directionality of travel lanes at defined locations along a street. Examples include narrow lanes, chicanes, neckdowns, traffic circles, and curb extensions.

Lane Narrowing – A design strategy used for traffic calming effects and for reallocating existing pavement width to create designated space for other uses, including bicycle lanes.

Lane Reconfiguration – Reconfiguring a roadway to remove lanes in order to provide more space for pedestrians and bicycle riders. Lane reconfigurations are most typically performed on roadways where traffic volumes do not necessitate the existing number of lanes.

Level of Comfort (LOC) – The bicycle level of comfort analysis recognizes different bikeways (shared use path, bike lane, etc.) may have varying levels of comfort for bicycle riders based on several factors: the number of motor vehicles, the speed of the motor vehicles, and proximity of adjacent traffic. Individual bicycle rider level of comfort is also influenced by their riding experience and may change over time. To conduct this analysis, roads and existing bikeways were evaluated based on the number of motor vehicles carried on the road and the posted speed limit.

Mid-Block Crossing – Designated crosswalks away from an established intersection provided to facilitate crossings at places where there is a significant pedestrian desire line such as bus stops, parks, and building entrances. (NACTO)

Mixing Zone – A mixing zone requires turning drivers to merge across a protected bike lane at a defined location in advance of an intersection. Unlike a standard bike lane, where a motorist can merge across at any point, a mixing zone design limits bicycle riders' exposure to motor vehicles by defining a limited merge area for the turning motorist. Mixing zones are compatible only with one-way protected bike lanes.

Mountable Curb/Curb Apron – Mountable curbs with curb aprons deter passenger vehicles from making higher-speed turns but accommodate the occasional large vehicle without encroachment or off-tracking into pedestrian areas.

Neighborhood Traffic Circles – Raised islands typically built at the intersections of local residential streets to reduce motor vehicle speeds. They may be operated without stop control, or as two-way or all-way stop-controlled intersections. Neighborhood traffic circles frequently do not include raised channelization to guide approaching traffic into the circulatory roadway. (FHWA)

Offset Intersection – Offset intersections are locations where two segments of a street connection do not directly align where they meet another street. These configurations are most challenging for bicycle riders when offset local streets serving as bike routes or bike boulevards intersect with larger collector or arterial streets.

Path – Short for “shared use path” and often synonymous with the word “trail”, a path is a protected facility, typically in an independent right-of-way such as a green belt of abandoned railroad. See Shared Use Path.

Protected Bike Lane/Cycle Track – A protected bike lane/cycle track is an exclusive bike facility that is physically separated from both the street and the sidewalk. A cycle track may be constructed at street level using street space, or at the sidewalk level using space adjacent to the street. Cycle tracks designed to be level with the sidewalk should provide a physical separation from pedestrian space. Cycle tracks can be one way for bicycles on each side of a two-way road, or two-way and installed on one or both sides of the road. Cycle tracks are typically used on large multi-lane arterials where higher vehicle speeds exist.

Rumble Strip – A textured or grooved pavement treatment designed to create noise and vibration to alert drivers of a need to change their path or speed. Longitudinal rumble strips are sometimes used on or along shoulders or center lines of highways to alert drivers who stray from the appropriate traveled way. Transverse rumble strips are placed on the roadway surface in the travel lane, perpendicular to the direction of travel. Rumble strip dimensions vary depending on their purpose and jurisdiction. (AASHTO)

Shared Lane Markings – Shared-lane markings (sharrows) are used on streets where bicycle riders and motor vehicles share travel lanes. Sharrows help position bicycle riders and provide visual cues to motorists. They can be configured to offer directional and wayfinding guidance. Sharrows are not appropriate on streets with speed limits greater than 35 mph.

Shared Roadway – Roadway that is open to both bicycle and motor vehicle travel.

Shared Use Path – A shared use path is an off-street bicycle and pedestrian facility that is physically separated from motor vehicle traffic. Typically SUPs are located in an independent right-of-way such as in a park, stream valley greenway, along a utility corridor, or an abandoned railroad corridor. SUPs are used by other non-motorized users including pedestrians, skaters, wheelchair users, joggers, and sometimes equestrians.

Shoulder – The portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of the subbase, base, and surface courses. Paved shoulders are often used by bicycle riders. (AASHTO)

Roadway with Paved Shoulder – Signed bike routes on busier roads should provide a paved shoulder for bicycle riders to use. In addition to benefiting bicycle riders, paved shoulders increase the longevity of the roadway, reduce pavement maintenance, provide safety benefits to motorists, provide additional space for agricultural equipment and other slow moving vehicles, and provide a number of other benefits to all users of the roadway.

Side Path – A side path is a shared use path located adjacent to a street. It is designed for two-way use by bicycle riders and pedestrians.

Side paths are sometimes created by designating a wide sidewalk for shared use, or they may be a segment of a longer trail or network of trails. Side paths are sometimes provided to facilitate connections to on- and off-street bicycle facilities. A side path is not generally a substitute for on-street bicycle facilities, but may be considered in constrained conditions, or in addition to on-street facilities. Side paths may not be appropriate in areas of high pedestrian activity unless there is space to separate pedestrians and cyclists and to successfully manage conflicts. Side paths may also not be appropriate along streets with numerous driveways or intersections, particularly in commercial areas with high traffic volumes.

Sight Distance – Sight distance is the visually unobstructed distance required to execute a stopping maneuver (stopping sight distance), pass another vehicle (passing sight distance), perform an unexpected maneuver (decision sight distance), or execute a movement at an intersection (intersection sight distance). Sight distances depend on roadway geometry, travel speeds, deceleration rates, and reaction times.

Signal Timing/Phasing – The process of selecting appropriate values for timing parameters implemented in traffic signal controllers and associated system software. (NCHRP)

Signalized Intersection – Intersection between two traveled ways (roadway/roadway or roadway/shared use path) where user movements are regulated by a traffic control signal.

Speed Hump – Parabolic vertical traffic calming devices intended to slow traffic speeds on low-volume, low speed. streets. (NACTO)

Street – A public corridor designed to provide access to businesses, housing, parks, and civic buildings within a city. The entire right-of-way, including sidewalks, the roadway, vegetated buffers, etc. is considered part of the street.

Traffic Calming – Traffic calming techniques are employed to reduce traffic to a “desired speed” by incorporating physical features, such as chicanes, traffic circles, speed humps, and curb extensions, medians, pinch points, lane shifts, diverters, and on-street parking.

Traffic Control – Devices such as traffic signals, warning signs, stop signs, yield signs, and other regulatory signs.

Traffic Diversion – A traffic calming technique in which raised areas are constructed to redirect motor vehicle traffic to alternate routes but permit passage of bicycle riders and pedestrians. Traffic diverters are common treatments on bicycle boulevards.

Traffic Volume – The number of vehicles passing a given point over a specific period of time.

Transit Stop – Location where public transportation vehicles (bus or rail) will stop to allow passengers to board or alight the transit vehicle.

Two-Stage Turn Queue Box – Two-stage turn queue boxes are areas set aside for bicycle riders to queue to turn at signalized intersections outside of the traveled path of motor vehicles and other bicycles. In

addition to mitigating conflicts inherent in merging across traffic to turn, two-stage bicycle turn boxes reduce conflicts between bicycles and pedestrians and separate queued bicycle riders waiting to turn from through bicycle riders moving on the green signal. (MUTCD)

Vertical Deflection Treatment – Traffic calming techniques that compel drivers to reduce their travel speed by changing the elevation of the roadway at defined locations along a street. Examples include speed humps, speed tables, and raised crosswalks.

Wayfinding – A system of directional signs along streets or paths that assist people in finding major destinations. Wayfinding can be designed specifically for drivers, bicycle riders, or pedestrians.



6TH ST AND KASOLD DR,
LAWRENCE, KS

APPENDIX B: PUBLIC INPUT

LAWRENCE - DOUGLAS COUNTY

MPO



METROPOLITAN PLANNING ORGANIZATION

OVERVIEW

The Transportation 2040 (T2040) plan completed in March of 2018 included planning for people who bicycle, walk, ride transit, and drive vehicles. The plan reflects the regional values and priorities, which are shifting towards non-single occupancy motor vehicle modes of travel. The public engagement process identified the desire for improved bicycle safety and additional bikeway design options. There is a need to update the Countywide Bikeway System Plan, which was approved in March of 2014, to better reflect the community's vision.

The first phase of public engagement began in late May and ended on August 31st. It consisted of open houses, guided bicycle rides, mobile meetings, and a survey to better understand comfort levels for bicycle riders. 589 survey responses were collected for people who self-reported they either live or work in Lawrence. All together there were 638 responses when the Baldwin City, Eudora, Lecompton survey is included in the survey responses (these responses are included in a separate survey summary).

Prior to the beginning of the second phase of public engagement it was determined the Countywide Bike Plan would be developed in two pieces – the Lawrence Bike Plan and the Douglas County/Eudora, Baldwin City/Lecompton plan. The MPO is anticipating to conduct Safe Routes to School (SRTS) planning in Eudora and Baldwin City in 2019 and realized the best way to achieve momentum for the bike plan is to incorporate it into facilitating kids safely walking and bicycling to school. Thus the Douglas County/Eudora, Baldwin City/Lecompton portion of the plan was paused to match up with the SRTS planning occurring in 2019.

The second phase of public engagement for the Lawrence focused plan began on October 15th and ended on December 1st. It consisted of an open house, mobile meetings, and a survey to understand how people thought we could improve the bicycle friendliness of Lawrence. 406 survey responses were collected for people who self-reported they either live or work in Lawrence.

The draft plan was available for public comment May 15 to June 14, 2019. 14 residents provided 25 comments either through email, or the MPO Tell Us Portal.

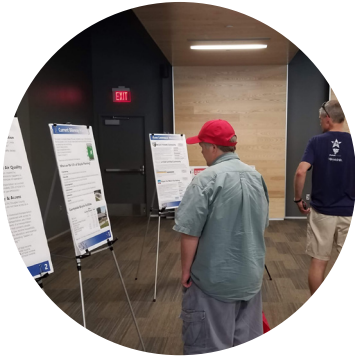
A full record of survey responses and public comments are found in this Appendix.

OPEN HOUSES

There were 5 open houses held during the first public engagement phase.

- » Baldwin City Public Library – June 12th, 5:00 – 6:00 pm
- » Lawrence Public Library – June 14th, 5:30 – 7:30 pm
- » Aunt Netters Café – June 15th, 11:00 am – 1:00 pm
- » Lawrence Public Library – June 16th, 10:00 am - Noon
- » Eudora City Hall – June 19th, 5:30 – 6:30 pm

The second phase of public engagement included one open house on October 25th, from 4:00 – 6:00 pm in the Lawrence Public Library.



GUIDED BICYCLE RIDES

Three guided bicycle rides were held during the first public engagement phase.

- » Baldwin City Public Library – June 12th, 6:30 – 7:30 pm
- » Lawrence Public Library – June 16th, 10 am – Noon
- » Eudora City Hall, June 19th, 7:00 – 8:00 pm

MOBILE MEETINGS

Mobile meetings were held at locations people were already gathering or passing through. This enabled planners and MPO Bicycle Advisory Committee (BAC) members to engage the public in the planning process inviting them to participate in the surveys.

Phase 1

- » Just Foods, 1000 E. 11th St, Lawrence, June 4th, 1:00 - 3:00 pm
- » Sports Pavilion Lawrence, 100 Rock Chalk Ln, Lawrence, June 7th, 5:00 - 7:00 pm
- » Lawrence Library, 707 Vermont St, Lawrence, June 7th, 11:00 - 1:00 pm
- » Lawrence Mountain Bike Club, North Lawrence River Trails, June 8th, 6:15 - 6:30 pm
- » Lawrence Farmers Market, 824 New Hampshire St, Lawrence, June 9th, 7:00 - 11:00 am
- » Kaw Valley Kickball, Hobbs Park, Lawrence, June 17th, 8:30 - 10:00 pm
- » Downtown Lawrence, Inc Board Meeting, Watkins Museum of History, Lawrence, June 22nd, 8:30 - 9:30 am
- » Cottin's Farmers Market, 1832 Massachusetts St, Lawrence, June 28th, 4:00 - 5:30 pm
- » Final Fridays, Watkins Museum of History, 1047 Massachusetts St, Lawrence, June 29th, 5:00 - 8:00 pm
- » League of Women Voters of Lawrence-Douglas County Board Meeting, Community Room at Pioneer Ridge Independent Living, 1000 Wakarusa Dr #10, Lawrence, July 10th, 7:00 - 8:00 pm
- » Lawrence Community Bike Ride, Rotary Arboretum, Lawrence, July 21st, 8:30 am
- » Eudora Family Fun Night, CPA Park - 9th & Main St, Eudora, August 3rd, 7-8:30 pm
- » Lawrence Community Safety Fair, South Park, Lawrence, August 11th, 9:00 am - 1:00 pm
- » 3rd Friday Artwalk at the Lumberyard Arts Center, 718 High Street, Baldwin City, August 17th, 6:30 - 8:30 pm
- » Back 2 School Picnic, Baker University, Baldwin City, August 18th, 5:00 - 7:00 pm
- » Kansas Union, 1301 Jayhawk Blvd, Lawrence, August 30th, 11:00 am - 12:30 pm
- » KU New Student Off Campus Bike Ride, Downs Hall, 1517 W 18th St, Lawrence, September 13th, 6:00 pm

Phase 2

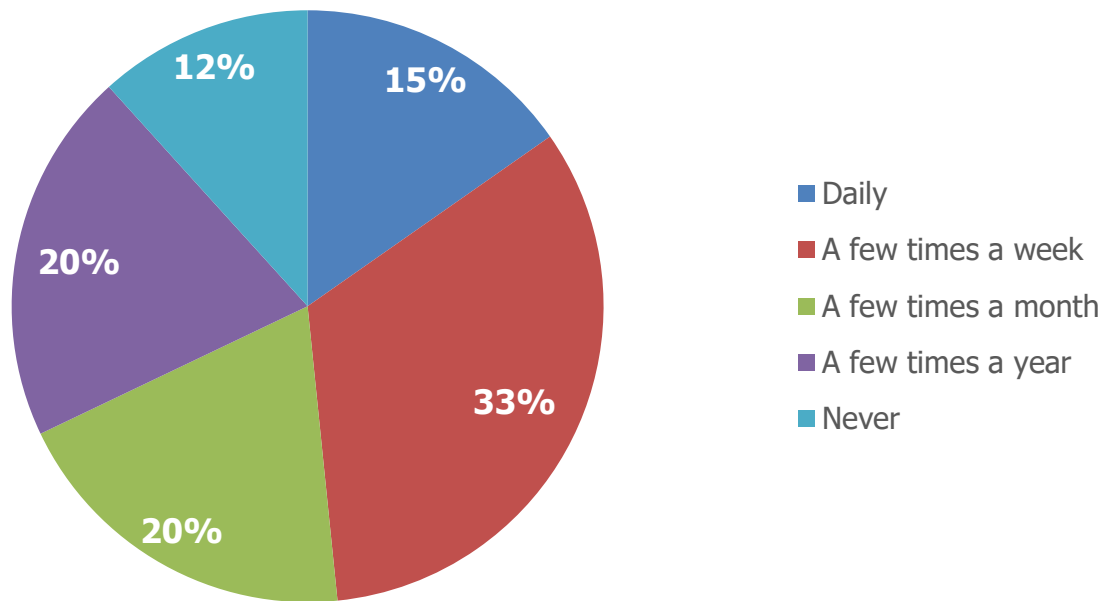
- » Lawrence Public Library, 707 Vermont St, October 22nd, 11 am - 1 pm
- » Just Food, 1000 E. 11th St, October 29th, 12:30 pm - 2 pm
- » Farmer's Market, 824 New Hampshire St, November 3rd, 8 am - Noon
- » Sports Pavilion Lawrence, 100 Rock Chalk Lane, November 12th, 6 pm – 8 pm
- » Cottin's Farmer's Market - Indoors, 1831 Massachusetts St, November 15th, 4 pm – 6 pm
- » Lawrence Public Library, 707 Vermont St, December 1st, 10:30 am - 1:30 pm

The following survey results only include responses who self-reported they either live or work in Lawrence.

SURVEY 1

When asked “ How often do you ride a bicycle (in good weather)? (Select one)”
Respondents indicated:

Figure 1: Frequency of Bicycle Riding



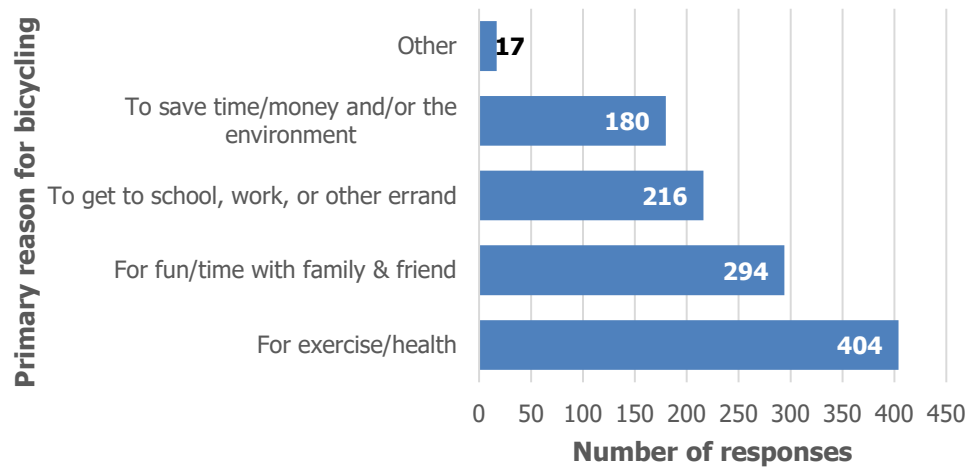
Number of Responses - 589



MASSACHUSETTS ST.,
LAWRENCE, KS

When asked “What is your primary reason for bicycling? (Select all that apply)” Respondents indicated:

Figure 2: Reason for Bicycling



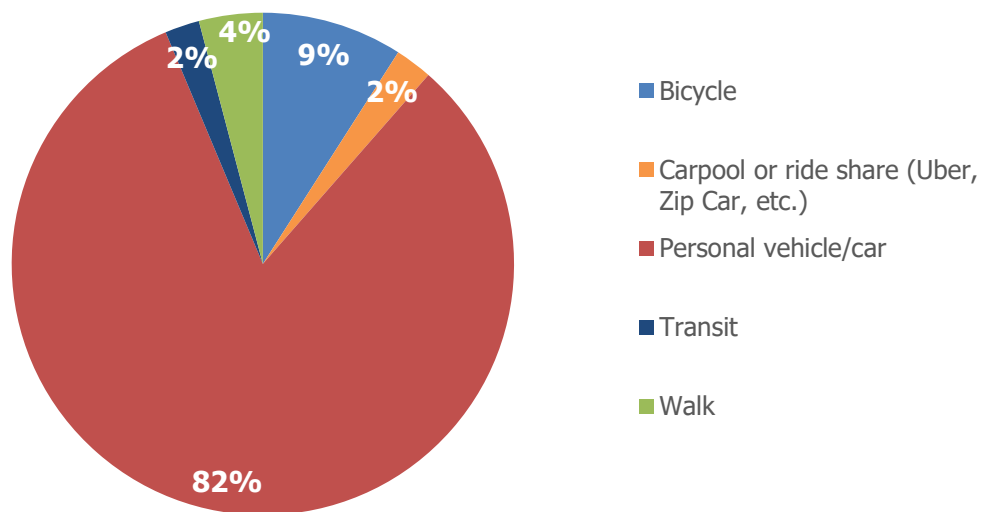
Number of Responses - 1,111

Other responses:

- All of the above (5)
- Biking is good for you.
- Competition
- Daily bike riding during the other seasons of my life.
- Easier to find bike parking downtown. Faster sometimes.
- I don't bike.
- Improve health of the community by reminding them cycling is a viable option.
- I've enjoyed riding a bike since I was a kid. I prefer to get my exercise outside and as a part of daily errands.
- Just to be outdoors! The paths allow this to be done peacefully.
- No car
- Riding creates a positive mood, increases focus and energizes me.
- Sight seeing
- To be clear, I WOULD bike to work but find bikeing on Lawrence streets too dangerous.

When asked “What is your primary mode of transportation? (Select one)” Respondents indicated:

Figure 3: Primary Mode of Transportation



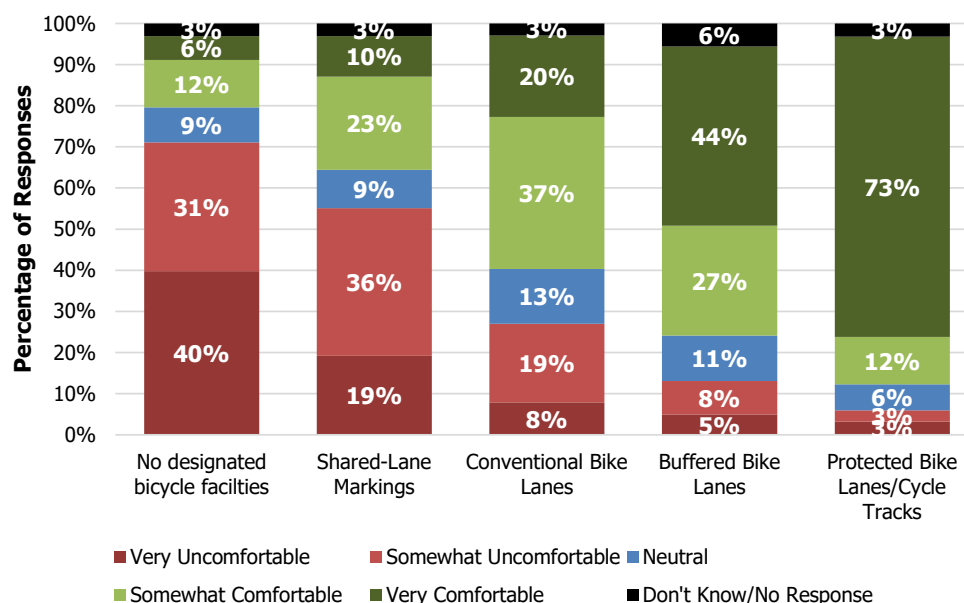
Number of Responses - 585



JAYHAWK BLVD.,
LAWRENCE, KS

When asked “How comfortable do you feel bicycling on different forms of bicycling forms of bicycle facilities on commercial streets?” Respondents indicated:

Figure 4: Comfort Levels on Commercial Streets



Number of Responses - 588

Additional Comments about Bicycling on Commercial Streets:

ROADS ARE NOT FOR BIKES -

- I was raised to either ride with traffic coming towards me and or on the sidewalk and move for those who are on foot. We didn't have these nice bike lanes or laws that let the person on a bicycle impede traffic by not keeping the minimum speed n a street. Bicyclists are not motorists and do not belong riding in lanes as motor vehicles for they hardly if any at all obey basic traffic laws.
- I would like to see questions about how MOTORISTS feel about bicycling in Lawrence. There are plans to put bicycle friendly areas where motorists are the primary (or only) users of the neighborhood streets, which is a supremely bad idea for the neighborhood residents, as well as the people who have to use those streets to get to work, drop off children at school, etc.
- “Keep bicycles and pedal-powered vehicles off public streets. Allow them only on pathways and other areas where cars and trucks do not go. They create traffic hazards and are dangerous to regular cars and trucks. Bicycles and tricycles are for recreation, they interfere with work vehicles such as cars and trucks which have jobs to do.
- Improve the roads for cars. Let bicycles be relegated to parks and pathways.
- Keep the darn bikes off street. There are bike paths all over Lawrence and that is where the bikes should be. Streets are for motorized vehicles not bikes which are too slow and dangerous.
- My concern is that if you're going to continue to reduce the number of streets where cars can go, then you need to time the traffic lights, for example on 6th Street. After putting in about 20 speed humps on Trail Road last year, it is impossible to travel on, so I go to 6th Street, which I assume was your intent. However, if you don't want to accommodate CARS ON STREETS THAT WERE BUILT FOR CARS, then you NEED TO TIME THE TRAFFIC LIGHTS SO THAT WE DON'T HAVE TO STOP AT EVERY STOPLIGHT. PARTICULARLY BAD are CHAMPION LANE THAT DOESN'T NEED a LEFT TURN SIGNAL, THE LIGHT AT 6th & FOLKS, WAKARUSA and particularly on WEST TO K10. IT IS MISERABLE TO TRAVEL ON THAT STREET. HOW MANY CARS ARE THERE IN LAWRENCE VS BICYCLES??? WHY NOT ACCOMMODATE CARS MORE? PEOPLE WILL NEVER TRAVEL MUCH ON BICYCLES - THE WEATHER HERE IS AWFUL FOR MOST OF THE YEAR. PLEASE ACCOMMODATE CARS ON OUR STREETS THAT WERE BUILT FOR CARS.

- Use the million miles of sidewalks that very few people use. The curbs are already wheelchair accessible. So much safer than in the streets with traffic at your back!

AVOID COMMERCIAL STREETS -

- I rarely bicycle on commercial streets.
- I rarely ride on commercial streets. I usually ride on low traffic areas or at slow traffic times. I do not have enough experience to feel comfortable riding on commercial streets.
- I routinely plan. Alternate routes to avoid commercial areas.
- I try not to do commercial streets. I am a senior citizen.
- I try not to.
- I try to avoid except during less busy times.
- I try to ride on the sidewalks whenever possible.
- I use sidewalks as much as possible.
- I usually ride on sidewalks if I am not downtown. I don't feel safe, especially on our major traffic ways: 9th St., Iowa, Tennessee, Kentucky.
- I was hit by a car, hit and run driver who left me and my bike crumpled in the middle of a busy intersection--and no, I did not run a stoplight or stop sign, I was on the through street, the car had a stop sign and either didn't stop or didn't see me. It could have been worse, it wasn't going that fast when it hit me, threw me up over the top of the car, road rash from top to bottom and a severely broken wrist. The bike was destroyed. I had two friends who also were hit by cars and were in hospital for months with severe internal injuries and since I've moved to Lawrence, I've had one friend killed while riding a bike and seen two people I didn't know hit by cars (I was walking). I still cannot make myself ride on streets with cars unless it is very early and a very short stint between trails that are completely separate from traffic. If there were a way I could ride to work without being in traffic, I would. I walk the 1.5 miles (3 round trip) most of the time, but when I have to be in a hurry, being able to ride my bike would be a wonderful alternative to driving.
- I was never comfortable enough to ride on commercial streets when I had my bike. I avoided them and took side streets. I see motorists drift into bike lanes pretty often.
- I won't do it if can be avoided. I always use the sidewalk.
- I would be fine, but I wouldn't. Let my kids.
- I'd rather ride on the sidewalks if they are in good shape.
- It is a hazard. Fighting with trucks, emergency vehicles, other bikes is troubling! That's why I don't bike. Ban the cars.

DRIVER AWARENESS/ATTITUDE -

- “Conventional bike lanes” are useless, and probably worse. They give auto drivers a false sense of complicity.
- Cars don’t respect bikes, especially around Lawrence. Most people are fine, but I’m riding any major street it’s rare to go for a ride without getting (unnecessarily) buzzed by car or cut off. Dedicated bike lanes demand visibility and respect from motorists. Many motorists think bikes “shouldn’t” or “aren’t supposed to” be on the road. A dedicated lane makes sure they know bikes are welcome.
- Concern about drivers awareness.
- Drivers are very distracted and often on cell phones. It’s dangerous and we need less people in cars and more on foot and bike.
- Drivers in Lawrence do not seem to be looking out for bicycles. They tend to be younger less-experienced drivers driving too fast and distracted. I think not only a buffered bike lane - but better signage and normalcy of biking on the road will be vital. I work on campus. I live 2 miles away in east Lawrence near downtown. I frequently walk instead of drive, but NEVER bike, because I am too fearful to ride my bike up the streets near campus. There are no clearly marked safe routes for me. Whatever bike lanes are around there, are not marked well enough that they are recognized by an average driver. I have tried a few times and found it felt far too dangerous.
- I actually love bicycling but never do it in Lawrence because there are too many reckless automobile drivers here (especially with a new crop of 18 year old students coming in each year) and I don’t feel safe doing so. If I could do so safely, I’d bike everywhere.
- I always feel like motorists are irritated, don’t know the rules, or are driving while distracted which makes it hard to feel safe.
- “I find the times I feel mostly to not be seen or recognized as having the same rights as a car are the bike lanes that cars can come up next to me so that we reach a corner at the same time and they want to turn and I am going straight.
- I also find this on trails, like on Kasold, if you ride on the sidewalk instead of the roadway, it feels more dangerous sometimes at the intersections getting recognized by turning vehicles or pulling out vehicles.
- And while I say I am comfortable with all of these situations, I still have hesitation about cars in terms of them treating me like another vehicle the way they should. Sometimes they are overly cautious and other times they are not as aware or considerate as they should be and both of these cause need to be a good defensive bicyclist.”
- I have been surprised by the level of animosity toward cyclists in Lawrence, on occasion. I feel like many drivers think cyclists should stay off the commercial streets. I generally try to ride on paved trails, when possible.
- I have had glass bottles thrown at me when I used to bike all the time, had people try to run me over, or accidentally turn where I was turning without stopping or being attentive to my signaling...and yes I signaled. Now that I have children who would have to travel behind me in a covered canopy bike attachment I am extremely, extremely uncomfortable with biking in Lawrence. When it was just me risking it, that was different. Now I cannot.
- Many car drivers do not respect bike lane markings.
- Many non-bicyclers are unaware of the legal requirement that allows 3 feet on the right for bicyclers.
- Most commercial streets in Lawrence are great for cycling and drivers are mostly responsible and respectful. That said, distracted drivers are generally my largest concern, especially on large commercial streets around KU campus where I tend to observe the most distracted drivers.
- My comfort level improves as more vehicles see and are accustomed to bikes also being on the road.
- Streets in Lawrence are VERY busy and much of the traffic is very FAST! Stop signs are run through frequently and the proliferation of hand helds makes the situation even more dangerous. I have seen several instances of both ... STOP signs ignored WHILE driver was looking at phone. Also driver pulling into the crosswalk area while looking at phone.
- There’s a shocking number of drivers texting at any given time I happen to take a look.
- Too many people are texting and driving. It’s dangerous to ride bikes on any streets with these people.
- Too many speeders

- Two comments: 1) I am uncomfortable on narrow commercial streets with lots of very large vehicles, tractor trailers, etc. 2) I am uncomfortable when drivers of any vehicle are speeding on any street with bike lanes. Cars need to be responsible and obey the law, especially speed limits when near bike lanes. Fines should be doubled near bike lanes because bicycle riders can be severely injured if hit by a car.
- Vehicles are non-compliant in crosswalks.
- Very variable whether or not drivers will be aware of bikes.

EDUCATION -

- Bicycling is growing in popularity quickly. However, it seems motorists lag in bike awareness on commercial streets and roads. Much like motorcyclists' experience. Increasing street marking and signage indicating bicycling is present could help.
- Bicyclist need to take a course before they ride on commercial streets. Sometimes they act like they are cyclists and sometimes like they are a car.
- BOTH motorists and cyclists need to be better informed of traffic laws that allow everyone to safely share the road. In Lawrence, it is VERY common to see cyclists riding on sidewalks. This confuses drivers, who then seem to think that is where we belong. When I cycle on marked, shared roads, motorists seem confused, hesitant, and--sometimes--hostile. They seem to think that I do not belong on the road. Even when I am on a designated bike lane (for instance, on 9th street) motorists slowly follow closely behind me rather than safely passing me, causing stress and frustration for everyone involved. Furthermore, drivers and cyclists both seem not to understand that cyclists are law-bound to follow the rules of the road. For instance, drivers often stop when they have the right-of-way, as if they have been conditioned to assume that any cyclist is going to ride heedlessly out in front of them, likely based on previous experiences with cyclists who fail to follow traffic laws. In addition to infrastructure, better public information might help to alleviate some of the tension between cyclists and motorists. Perhaps in addition to "share the road" signs, signage could indicate that cyclists DON'T belong on sidewalks (with the exception of shared-use greenways), and/or signs could encourage drivers to be courteous of cyclists and pass when it's safe to do so. If EVERYONE knows and follows the rules, we'll all be safer and have smoother travels through Lawrence!
- I think most people don't understand how to safely drive a vehicle around bicyclists, it makes me very uncomfortable and I feel unsafe most days that I ride on streets.
- I think the majority of drivers (and some riders) don't know the meaning of sharrows so, while I definitely think sharrows are a good idea it's still important to be wary of driver behavior. There are also some difficulties with the bike lanes adjacent to parking, especially when lane markings begin to wear off (for example, Lawrence Avenue between 6th and Princeton). I've seen many cars driving down the parking lane not aware that they're both driving in the parking lane and in the bicycle lane. This is not as much an issue where lots of cars park in the parking area.
- In my experience, drivers on actual commercial streets (Wakarusa rather than Mass.) tend to view cyclists as a nuisance - that it is THEIR road, and cyclists are just in the way and should take a different route. This attitude, which I've overheard expressed in numerous conversations, makes it dangerous for cyclists which is the main reason I rarely use my bike as a mode of transportation.
- Instruction on safe cycling and bicycle maintenance suggested
- It seems that motorists are still very unaware of cyclists. Two cyclists were hit right outside of my house on Iowa.

EDUCATION CONTINUED . . .

- More people should be made aware of the 4' leeway rule...
- There is some level of discomfort feeling that these lanes are not well understood by the general public.
- There needs to be a greater push to educate drivers as well as cyclists regarding safety/safe practices
- There should be a concerted effort to educate drivers about shared lane markings.
- Traffic calming devices like that make cars go to a single lane are dangerous for biking. Drivers think you are wrong if you take the whole lane and drive dangerously. They don't slow down for bikes.

EFFICIENCY -

- As a cyclist, I understand that cars are the first priority. They are the reason the roads are there in the first place. The more efficiently that cars can get around, the kinder the drivers become, especially toward cyclists. More speed bumps, roundabouts, and inefficient traffic lights on main thoroughfares only force more angry drivers onto neighborhood streets. An easy and cost-free solution is to improve the efficiency of the lights on main roads. This will allow more cars to use those streets and leave the neighborhoods safer for cyclists. Win-win.

ENFORCEMENT -

- Bike laws are not enforced which makes it unsafe for bike drivers.
- Drivers are not aware enough of their surroundings in general and bikes in particular. Most of them don't know that biking is illegal on many sidewalks or that it's required to give 3 feet when passing. Pulling people over for doing that might be helpful. Enforcing no texting and driving would also make me feel much safer.
- Drivers suck regardless of lanes. More punishment & policing of drivers is just as important.
- The issue is drivers not respecting the bike lanes. I've even seen police drive in the bike lanes! It seems that any time a bicyclist is hit by a car, the driver of the car has no consequences.
- There are few consequences for hitting bicycles. It's scary to interact with vehicles outside protected lanes. Attitudes towards bicyclists is poor.
- There should be some law enforcement for bicyclists running stop sign, traffic lights, and blocking traffic.

FACILITIES -

- 1. If we're serious about supporting bicycle use, then there has to be continuous bike lanes of some kind (not just sharrows) on all arterials ("commercial streets") or on *immediately neighboring* streets. Those routes have to go through (e.g. there is no bike route at all E to W from downtown - we are forced to follow a disappearing bike lane on 9th and then detour up Emory etc etc. 2. Also, consider truck traffic. Banning trucks on 9th Ave would be a good idea. 3. All arterial re-dos should be required to include some kind of bikelanes (not sharrows). The city missed an opportunity with the "new" Bob Billings Pkwy, which has no bike lanes and uneven/sharp-turn sidewalks completely unsuited for bicycles.
- Any additional bicycle lanes of appropriate width would be a great improvement.
- As dangerous as having no bike facilities seems, I would argue that unprotected/dedicated bike lines may be the most dangerous to cyclists. They create a false sense of security for all, and enable cars to drive faster than they would if there were confusion over where the bikes can go. Additionally, the danger of opening doors on parked cars cannot be overstated - this is the only way I have ever crashed.

- Better bike systems are good for Lawrence.
- Bicycling should be discouraged on busy commercial streets due to lack of respect by too many drivers. Safer routes should be encouraged. This thinking would change if Lawrence would provide protected bike lanes on all selected commercial bike route streets. Of course to reach this goal will require dedicated spending of about \$2 million a year for new construction plus ongoing maintenance.
- Bike lanes seem to randomly sort-of start and stop on some streets. This is worse than not having one at all, because eventually you have to merge back into a traffic lane especially on commercial streets.
- Bike lanes tend to be cluttered (sticks, leaves, sand, gravel, trash) and also have bad pavement, asphalt/concrete seam, etc.
- Bike lines come and go, e.g. 9th and Mississippi
- Commercial street size greatly affects the applicability of these designs. Designing a walk-able community with limited main feeder streets is the best overall design. Combined with walk-able shopping and school areas greatly improves the overall plan. Even a highly commercial area like Boston, MA has bikeable commercial roads because it also uses walkable (high walk score) community design to manage traffic levels.
- Even with bike lanes, the hills in Lawrence shield views of bicyclists.
- Having a small green sign to indicate a shared bike lane isn't adequate, which is what Lawrence has in place. Additionally, bike lanes that do exist merely end at random places, indicating a disregard for the safety of those riding bikes. It's disappointing how much more support other cities have offered cyclists with dedicated commuting bike lanes.
- I am scared to death riding on streets with parked cars
- I am. Afraid of cars.
- I avoid biking on commercial streets in Lawrence. If there is no sidewalk or rec. path I can use, I just find another route.
- I avoid busy city streets, unless I plan a ride for a low-traffic time of day.
- I avoid commercial streets as much as possible. Downtown Vermont Street isn't bad.
- I avoid commercial streets at all costs in Lawrence. I go through residential streets when possible. For instance, my route to work would require biking on North 2nd Street, but I bike through North Lawrence to get to my job near the I70 turnpike exit - having to use sidewalks for the end of this route.
- I avoid commercial streets without bike lanes or other bike friendly accommodations if I can find a secondary street to ride on. It is more peaceful not to deal with traffic.
- I avoid it as much as possible.
- I avoid it. Too easy to use lower car traffic residential streets.
- I believe it is very important to have designated areas for bicyclists on the road.
- I currently only ride on sidewalks on commercial streets.
- I don't ride a bike because of the lack of bike lanes in the city
- I don't really have any experience with most of these options, but I would prefer the protected bike lanes. I ride on the sidewalk on 6th St. and in the street the rest of the time. There's not too many bike lanes in my area at all to help me decide.
- I feel uncomfortable biking on most downtown streets even though I am a very experienced cyclist. Too many cars, including parked ones. Because it is a busy area, drivers have too much to pay attention to. This makes it unsafe without areas restricted to cyclists, like clear bike lanes, at minimum. At least a few streets should have protected bike lanes. Then I could just walk my bike in the busier areas.
- I feel very uncomfortable biking on the bike lanes on 19th st and anywhere around the high school, but especially during high volume traffic times. The quieter side streets are ok.

FACILITIES CONTINUED. . .

- I have been riding my bike all my life. A sharrow is the least effective because no one knows what they are. The safest way to ride is a buffered bike lane but you still have to be seen crossing the street. I am more risk averse these days, so I'd rather be on a shared use path with minimal interaction with cars.
- I have visited many large cities in Scandinavia where bicycling is a way of life. They have dedicated bike lanes separate from walkers and cars due the high number of cyclists. People ride bikes to work every day because it is safe to do so. Safe bike paths will produce more bike riders. New residential and commercial areas should have bike lanes planned as well as the roads and sidewalks.
- I know that there are many advantages to bicycling for the riders and the general public - however there is just too much danger to bicyclists and motorists when they share the roads without bike lanes on streets such as Kentucky (one way), Tennessee (one way) and Massachusetts.
- I might consider it with enough protection from traffic.
- I moved from DC and used the buffered bike lanes daily. They were wonderful and really helped people feel safe on their bikes-- at stoplights during rush hour, there would often be dozens of riders. I bike with my daughter in a seat on the back of my bike. When she's with me, I avoid commercial street that don't have some sort of designated lane for bikes.
- I nearly selected "don't know" for both #3 and #4, because we don't have those in Lawrence, at least not on the east side of Lawrence. Eastern Lawrence is where I live and work, and therefore the only place I bike regularly. Any other bicycling I've done outside of Lawrence has been recreational, and has been on a recreational track/ route. I'd be open to trying both of those kinds of bike lane solutions, and giving feedback, but I feel it's easy to say that a protected bike lane would make me feel very comfortable biking.
- I only bike on bike trails so I just thought of how comfortable I would be.
- I prefer to ride on the Burroughs Trail for safety and efficiency. I prefer not to cross intersections or ride on streets with automobile traffic. More isolated trails like Burroughs Trail and the SLT trail would likely increase the number of bicycle commuters.
- I tend to ride against the traffic in bike lanes - as when walking without sidewalks. I don't equate cars and bikes as equals. Cars kill, in more ways than one.
- I think protected bike lanes are unnecessary. Buffered or conventional bike lanes are good.
- I think that if you want to really encourage people to use bikes as a primary mode of transportation, you need to offer them a safe way to travel. I think protected bike lanes is the only real viable option listed above. You need a physical barrier or cars will always come over into the bike lane. I've seen it happen multiple times on 19th Street and pretty much every other Street that has bike lanes or other supposed "bike-friendly" infrastructure. Better yet, make a set of bike and pedestrian only paths through town that actually go somewhere, and aren't just for the super athletic types with a ton of time on their hands for exercising. I'd love to feel comfortable letting my kids go places on their bikes. No way would I let them ride most places in town right now, it's not even remotely safe enough for that. The current system we have for bikes isn't even safe enough for experienced bicyclists.
- I would be much more inclined to ride to work and around town on marked or buffered bike lanes. But, I would only be inclined to bring or allow my kids to ride around town on the fully protected bike lanes. Moreover, infrastructure would change the culture of bike riding in Lawrence a few key fully protected would signal to the town that this is a priority.
- I would definitely ride a bike to work if I could feel safe doing so. Drivers have no respect for bicyclists. And as a motorist, I see too many bicyclists not obeying traffic laws and getting in the way of the flow of traffic. The two need to be separate for the safety of the bicyclists.
- I'm uncomfortable riding my bike on busy streets unless there is a bike lane or other designated bike area (i.e., multi-use path). Just rode in Wichita from Old Town to river trail (and back) on busy streets with designated buffered bike lanes and felt very comfortable. That made it more comfortable than simply a solid white line, although that is better than nothing.

- I'm very comfortable on 9th and on Mass, but not on 6th. I always ride on the sidewalk on 6th.
- In addition to potential lanes for bike, signage for drivers as a warning regarding biking would be very helpful.
- It is far safer to ride on the street, in a normal street lane, than it is to ride on a path or sidewalk that crosses entrances and exits to businesses or houses. This is especially true for those that ride on the side of the street that is opposite the flow of regular traffic. Why? It is a visibility issue. If you are seen you are safest.
- It is good to bike on those roads
- It is very dangerous riding bikes on Lawrence commercial streets. The amount of traffic and intensity increases every year. Protected pathways on commercial streets is a good idea, but protected bike paths should be designed and enforced to encourage drivers of motor driven and human driven bikers. How will it be enforced? In addition to fines, I would recommend education like these kind of activities in completing safety courses.
- It should be continuous
- It would be nice if there were more bike repair services (or even pop up bike repair shops) sprinkled throughout the city.
- I've been bicycling in Lawrence since I was a child, and have seen the overall quality of multi-modal planning increase tremendously. Particularly in the past 15 years, the advent of bicycle lanes and shared-use paths has improved my overall sense of safety. That said, my expectations have changed, so that I have become more uncomfortable on unmarked commercial streets.
- I've just seen too many drivers who don't pay attention while they are driving that it would make me nervous. The buffered bicycle lane would be a lot better.
- Lawrence is doing well to provide protected lanes for recreational cyclists. Lanes for commuters are sorely lacking.
- Lawrence lacks protected infrastructure, but I have ridden on these in many other communities. It is great!
- Most biking lanes are still unsafe, as a vehicle driver, I think the lanes need to be wider.
- Most times, I feel that you're taking a risk on unmarked commercial streets and even shared lanes due to the lack of responsibility that can be very present on the road. Buffered and Protected lanes would make riding for fun or just commuting exponentially more fun the more safe one feels.
- Motorists open car doors into bike lanes without even thinking about whether a cyclist is there. Protected bike lanes truly support bicycle safety by helping to prevent bike/door accidents.
- My experience is that perception of distances changes with protected track. Can cruise much longer distances with less effort.
- Need more buffered bike lanes please!
- Not enough space on streets like 9th St to feel comfortable as cars come so very close to you.
- Painting a bike on the street, the "shared lane markings" does nothing but make the road a bit more bumpy for my bike. Useless.
- PLEASE build physically separated infrastructure for cyclists exclusive from other traffic or pedestrians. This has been proven to be safer for cyclists and to increase ride share. I strongly recommend the book "Copenhagenize" for relevant county/city staff.
- Protected are nice to keep people from parking and blocking them
- Protected bike lanes are great provided there is enough space that an open car door does not protrude into the bike lane and the car occupant has adequate room to exit the vehicle without entering the bike lane.
- Protected lanes and dedicated paths are the way to go. Sharrows are a joke. The City doesn't know how to place them on streets (look at Lawrence Ave b/t Harvard and 15th, and also Wisconsin b/t 3rd and 2nd. The sharrows show the cyclists riding down center lane, even almost overlapping with other direction). The Public doesn't know what they are. They look like dead cyclist markers.
- Ride one block over. Don't try to force commercial streets and bikes together on the same street. Not all traffic has to share the exact same path. Make sure bike safe paths to everything exist, but don't force the two incompatible modes to share the same space at the same time. As long as the bikes aren't second class citizens and are allowed to make reasonable progress, they don't have to coexist in the same space - trucks on one street, bikes and other similar traffic on the next street over. A great example is using 21st instead of 23rd.

FACILITIES CONTINUED . . .

- Right now, I am most comfortable riding quiet streets without any bike lane, but I would love to get more comfortable with better bike infrastructure.
- Saw the dedicated bike lane in downtown Lincoln NE, would use that.
- Solid separation between cars and bikes would get more people out riding
- Streets like 6th, 23rd, & Iowa Streets need bike lanes on both sides because they are busy commercial streets that everyone shops on. Also, 6th St, 23rd btwn Mass, & Iowa south of 23rd are relatively flat, which makes them good for bikers.
- The “conventional bike lanes” I have seen in Lawrence are usually pushed to the sides of the road...which collects a lot of debris and trash (particularly after snow plowing). This takes away space for bikes and it makes the traction of the bike-tires unstable.
- The more protection for the bicyclist the better!
- “What about bike boxes at lights?”

OTHER -

- Being tolerant of other folks mistakes will build respect and cooperation on the streets. Maybe?
- Bicycling through a busy roundabout (Wakarusa) sounds terrifying and I’m not sure what the solution is since Lawrence loves its roundabouts.
- Biking on commercial streets is key to biking for errands/commuting, not as key to biking for fun and family time. Both types of biking are important.
- Car drivers need to be more aware and bicyclists need to pay attention. Make 23rd and Iowa more friendly for bicyclists. Bicyclists should be treated as a car”
- Cars and trucks rule and I am not confident trying to share road on a bicycle
- Cycling on major streets like S. Iowa, 23rd, Haskell and 6th Street is very uncomfortable for me.
- Downtown Massachusetts Street (20 mph or less) is very different than 6th or 8th where speed limits are 35 to 45 mph
- Have to ride them at times to continue on bike paths. Requires much more defensive riding. Flashing lights or other lights day and night seem to help keep drivers aware. Difficult intersections to cross include 6th and Mass to get to bike path after leaving it at 11th street. Trying to ride back west from downtown is difficult.
- I am from the country but am in Lawrence for the summer. I usually ride my bike on the Lawrence Kansas river trail
- I definitely like the conventional bike lanes that we have. Some streets---Iowa, 23rd---simply are not going to be safe for bicycling.
- I feel that bikes should not be on commercial streets. I have biked for years and too many bike riders take safety for granted!
- I have a 9 yr old, who is a skilled cyclist, that is really scared to ride on commercial streets. I feel it’s imperative for youth to feel safe in order to keep them outside exploring and experiencing life not being fed by someone else electronically.
- I think that it is great. I would bike more if I wasn’t a student. I am very interested in the new biking programs where you can borrow bikes and pay through mobile apps.
- I was recently hit by a car on a business street in the down town area while bicycling and my answers may be effected by that recent experience.
- It seems very dangerous to bike on streets in Lawrence. Many drivers are not paying enough attention to driving or looking for bikers and the streets are made for one lane of traffic in each direction generally which makes passing bicyclists dangerous.
- It’s a lot of fun, but it’s sometimes a little scary
- It’s something everyone should do
- Many of us bike around Lawrence and making it safer and increase education and awareness. Having a shared bike program would be great downtown.

- Most bicyclists I encounter are polite and follow traffic rules, but a significant portion drive and ride so that both their safety and that of those walking or in vehicles near them are in jeopardy.
- My experience has been that most motorists in Lawrence are very aware and accommodating of bicycle traffic.
- Nice push poll. This is designed to elicit a response suggesting more “facilities” will make things better. It will not. The attitude of city, county and the general public is such that the roads are not safe.
- Not too interested in commercial streets.
- Opening car doors and large trucks are concerning and require constant attention. This focuses too much on street cross section and not enough on intersections. Little details make a huge difference. How fast are cars going? Does Overland drive between Trail and Wakarusa fit in this category? I don’t see how sharrows help there. Prefer to be on sidewalk there with so many cars speeding by.
- Overall, I do not find Lawrence a bike friendly town for commuting/running errands. I have been riding a bike in town for over 30 years. I have had more near collisions with cars than I care to think about.
- Please implement more lights and signage for safety. Also, please consider adding mandatory cycle and car share lane educational training into current driver education.
- Remind riders that sidewalks are an option
- “Riding on commercial streets is particularly uncomfortable at intersections and an Idaho Stop rule would be preferred: https://en.wikipedia.org/wiki/Idaho_stop
- That way as a rider, I can get through the intersection before other cars and get into my lane while they are waiting at a stoplight or stop sign.”
- Sweden has bike lane intersections figured out.
- • Thank you so much for the improvements in the past five years. We have made huge strides to improve safety and fun
- Thanking the universe for your concentrated efforts
- The overall road condition and gutter/drainage design has a measurable impact on safety. Regardless of whether or not bicycle specific features are in the budget or space available, consideration should continue to be given to cycling traffic.
- There are some streets in town that I feel very uncomfortable on (Clinton Parkway/23rd, 6th Street, Iowa, Bob Billings, Kasold, etc.).
- Too many cars.
- Too much traffic.
- Why are we wasting money on this stuff?
- Wildly differs based on speed, traffic volumes, parking/no, etc.

POTHOLES/MAINTENANCE -

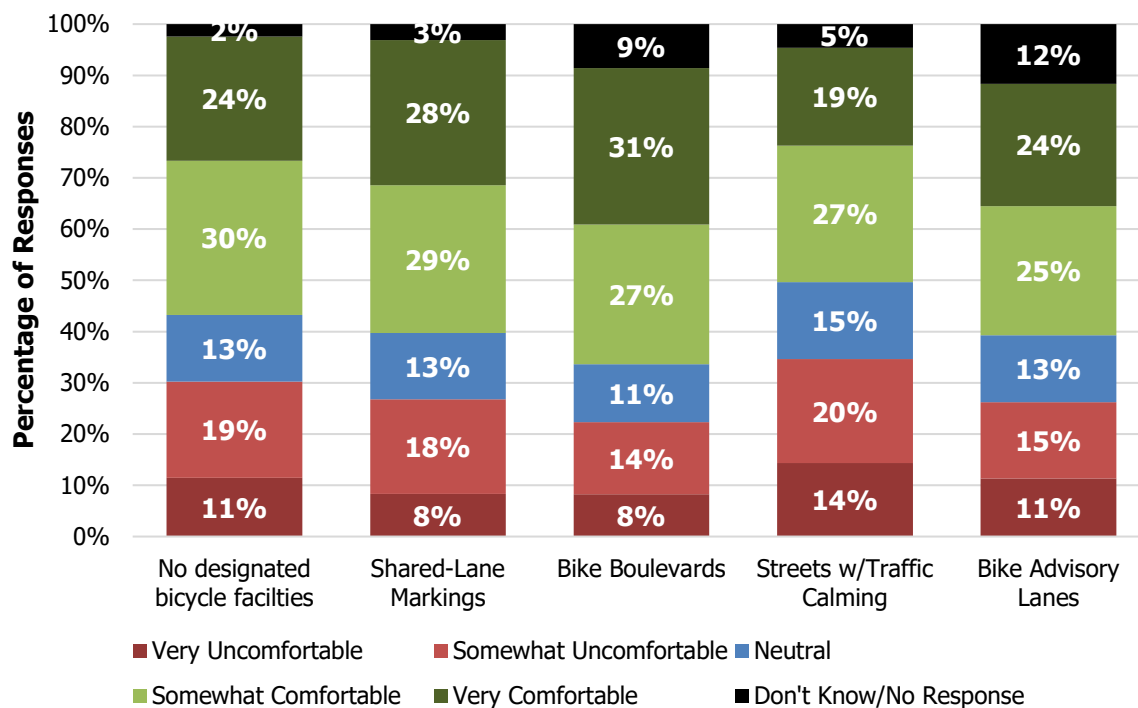
- A major problem with commercial streets in Lawrence is the condition of the streets. Potholes and even large cracks and bumps can be dangerous.
- Consider the state of repair the pavement is in and how frequently it will need to be upgraded. Lawrence's potholes may not phase drivers in trucks and SUVs but when you're riding on two wheels with the pavement rushing by beneath you, you realize how poor road maintenance could mean a bad smash-up if you can't manage to avoid some of the craters in the streets here. Whatever you all are planning to build, MAINTAIN IT. Please.

SAFETY -

- I generally do not feel bikes should be allowed in the road on commercial streets (with the exception of Massachusetts Street where biking on the sidewalk is not allowed). Streets such as Wakarusa and W 9th street generally already have wide, level, smooth, well-maintained sidewalks that can easily accommodate both pedestrians and cyclists in both directions. Riding a bicycle in the street on these roads needlessly inconveniences drivers and endangers cyclists.
- My mother was a pedestrian fatality at a signaled crosswalk on a commercial street, so my responses lean toward uncomfortable due to that history.
- My safety depends more on changes in altitude and road conditions [pot holes] more than bike lanes.
- Pedestrians and bikes going east/west on 6th street at Mass/Vermont are put in serious peril any time they attempt to cross on the north side of those intersections. Vehicles turning north at 6th and Mass either do not understand the concept of the pedestrian cross light or choose to ignore it and vehicles coming off of the bridge from the north and turning west onto 6th street have the same problem - many of them actually speed up which makes it interesting when trying to cross.
- Promote safety night reflectors
- Scared of getting "doored" by a parked driver.
- Sharrows come off as suggestions. Too many drivers hang over in traditional bicycle lanes. And will you ever get serious about bicycle safety along Iowa street? Cyclists basically have no choice but to ride on sidewalks and this is dangerous, too.
- Speeding by motorists raises my fear. There is no time to react.
- There are certain busy roads (Iowa/Mass) That I only feel comfortable riding on the sidewalks. However I feel like drivers pay less attention to bicycles on the sidewalks and makes it more dangerous at busy times.
- These would be great on busy main streets. Makes me feel much more comfortable.
- We ride on the bike path that runs from the movies to the lake, not really on commercial streets, we cross K-10 & the intersection at 27th & K-10 needs more bike safety.
- You take your life in your hands daily!

When asked “How comfortable do you feel bicycling on different forms of bicycling forms of bicycle facilities on Residential/Neighborhood Streets?” Respondents indicated:

Figure 5: Comfort Levels on Neighborhood/Residential Streets



Number of Responses - 583

Additional Comments about Bicycling on Residential/Neighborhood Streets

ROADS ARE NOT FOR BIKES -

- Again, bicycles and tricycles should be kept off public streets.
- Bike compete with big trucks on all roads. That's dangerous and stupid
- Don't try to make things too complicated or restrictive. Bikes want to be comfortable on the street but automotive confusion can be even more dangerous. Also streets are a very expensive public investment that should not be wasted on a few bicycles.
- I think streets should be for cars and bicycling is too dangerous for streets. It is too much to expect cars to look out for other cars and bikes!
- I would like to see questions about how MOTORISTS feel about bicycling in Lawrence. While cyclists do have a right to share the streets with motorists, the plans should be made for areas where there is a high volume of cyclists, which the city commission doesn't seem to be doing.
- My concern is that if you're going to continue to reduce the number of streets where cars can go, then you need to time the traffic lights, for example on 6th Street. After putting in about 20 speed humps on Trail Road last year, it is impossible to travel on, so I go to 6th Street, which I assume was your intent. However, if you don't want to accommodate CARS ON STREETS THAT WERE BUILT FOR CARS, then you NEED TO TIME THE TRAFFIC LIGHTS SO THAT WE DON'T HAVE TO STOP AT EVERY STOPLIGHT. PARTICULARLY BAD are CHAMPION LANE THAT DOESN'T NEED a LEFT TURN SIGNAL, THE LIGHT AT 6th & FOLKS, WAKARUSA and particularly on WEST TO K10. IT IS MISERABLE TO TRAVEL ON THAT STREET. HOW MANY CARS ARE THERE IN LAWRENCE VS BICYCLES??? WHY NOT ACCOMMODATE CARS MORE? PEOPLE WILL NEVER TRAVEL MUCH ON BICYCLES - THE WEATHER HERE IS AWFUL FOR MOST OF THE YEAR. PLEASE ACCOMMODATE CARS ON OUR STREETS THAT WERE BUILT FOR CARS.
- Stay on the designated trails as possible
- Use sidewalks! They are already built!

AWARENESS -

- As residential neighborhoods are not very active with cars, my safety level is higher except when cars are not aware of you so vigilance is always necessary for clear way.
- Generally somewhat safer, but STILL subject to abuses ... cell phones distracting, narrow streets with cars not giving way to bikes, danger at intersection with cars turning right while cyclist is WALKING bike on crosswalk.
- Motorist awareness needs to be improved in some way.
- Too many people are looking at their phones trying to find an address.

BICYCLE ADVISORY LANE -

- Advisory lanes sound hopeful, but the devil is in the details, esp. conflicts between bikes and cars meeting in the middle.
- Bike advisory lanes look like a car accident waiting to happen.
- Bike Advisory Lanes will not work. People cannot drive in Lawrence. They cannot even grasp the basic concepts of a roundabout... this would blow their mind, and as soon as an oncoming automobile came at them, they would swerve into the bike lanes.
- Have never had the experience of advisory lanes, as far as I can recall.
- I have never seen or ridden on a bike advisory lane style road.
- I honestly can't comprehend what's going on in the image for the bike advisory lane, even with the context provided. I've never seen this type of street in person and I doubt many Lawrence residents have either. Unless it was marked EXTREMELY well with signage, I would not trust that this is a reasonable solution for a Lawrence streets.
- I would think many drivers wouldn't know what a "bike advisory lane" is and that would add to the hazard.
- My comments on question four apply to both residential and commercial streets.
- Also, Lawrence's residential streets--especially those on marked bike routes are relatively bike-friendly with the exception of the motorist confusion I mention above. It seems to me that Bike Advisory Lanes as described above would cause MORE confusion and problems, rather than addressing the larger issues of misunderstanding and misinformation.
- Sharing a lane with oncoming traffic is the worst idea ever.

BICYCLE BOULEVARD -

- Bicycle boulevards are dangerous, as again, they will create angry car drivers. Cyclists and drivers need to remain separate from each other, not clogged together. We should not be treating these two modes of transportation as if they are the same thing. They cannot go at the same speeds, and should not be blended together. Boulevards like this will create dangerous situations, especially in a Midwestern town that hasn't seen them before, and in a city where cyclists like us are few and far between to begin with. The boulevards are a solution in search of a problem.
- If Connecticut Street is considered a bike boulevard then I'm not at all comfortable with the concept. Vermont Street is ok because it is wider and slower.
- In my personal experience, "bicycle boulevards" create a dangerous situation on popular residential streets where motorists speed up to pass cyclists before reaching the median
- Some bicycle boulevards make a big difference (e.g. total restriction of through traffic between collectors). On these I feel somewhat comfortable.
- The Bicycle Boulevard as described here is counterproductive when it comes to bike/motorist relations. From experience will those curbed dividers in Lawrence, they actually antagonize motorists because it forces bikes to be in their way. In fact motorists will tend to speed up around bikes in order to make it through the "curbed" portion of road before a bike. I've been severely cut off in this way and nearly run off the road by motorists.
- The narrow areas with medians on bike boulevards cause problems for cyclists because motorists can be ignorant about the space needed to squeeze in their vehicles.

BIKE BEHAVIOR -

- About half of the bicyclists I meet while walking are riding on the sidewalk; some share that with me, some don't.
- Cyclists are no problem when they follow the rule of the road.

DEBRIS/ROAD CONDITION

- "I don't believe anything listed previously needs to be done to improve bicycling on residential/neighborhood streets. You would help us more by keeping the streets well maintained unlike the current situation.
- Like commercial streets, poor conditions (bumps, cracks, potholes) can be dangerous.
- Make sure they are wide enough or have a wide sidewalk. The bumps on Trail Street are somewhat of a hazard to bicyclists. Hard to see the ride through area and hitting the side of the bump could be a real hazard. Make sure the paths and streets are cleaned periodically so you can avoid lose gravel that may be on the street.
- Similar to "conventional bike lanes" bicycling through "residential/neighborhood streets": I have seen in Lawrence are usually pushed to the sides of the road...which collects a lot of debris and trash (particularly after snow plowing). This takes away space for bikes and it makes the traction of the bike-tires unstable.
- Streets are not always in the best condition and with constant construction it's harder to maneuver around on a bike.

EDUCATION/ENFORCEMENT

- A bicycle boulevard doesn't leave enough room to pass. In Lawrence, people don't know how to use traffic circles. I've never seen a bike advisory lane before, so I don't know if people would understand how to use it. None of these things will make me safer if they are not being used properly, which would require education. People also get really resentful about change, and resentful drivers are not always safe.
- Cars still move pretty quickly on residential streets. Car driver education has to be part of the conversation!
- Drivers' attentiveness, alertness, and respect for bicycles are the biggest influence on my sense of safety on residential streets. Markings and calming measures are great, but only insofar as drivers understand how to interpret them. That is why I'm never more than "somewhat comfortable" with any markings on streets without bike lanes.
- Drivers who speed through these neighborhoods or distracted drivers are my concern.
- Enforcing traffic laws for vehicles or physical barriers to speeding along with separated infrastructure would make me more comfortable.
- I feel like the rules of streets with "bicycle facilities" are not well understood by drivers or bicyclists. Again there needs to be stricter enforcement of vehicle regulations, especially speeding near bike lanes. Fines should be doubled.
- I generally plan my bike route on the slowest residential streets. Let me just say, as a general rule, motorists are so rude! People are impatient and don't want to slow down behind a bike, so the fewer cars there are on a street, the more comfortable I am biking it. Not sure if the designated lane business matters as much. And, roundabouts are the devil. There is absolutely no way I am taking a roundabout on my bike. Like, I try to avoid them in the car -- again, people are so impatient and rush into the intersection and fail to yield, etc -- so there's not a chance I'd try to take one on my bike. The bicycle boulevard piece gives me heart palpitations as well. The drawing reminds me of Barker. If I had a dollar for every time a motorist nearly ran me down on Barker, between my home and Dillons, well, I'd have plenty of dollars to spend at Dillons if I ever got there. As I said above, people are impatient, and don't want to slow down and wait behind a cyclist. So, the cars creep along behind a cyclist during the segments of street where the medians are, you know, they can't pass, but then the cars shoot around the cyclists just as quickly as possible after they reach an open area, before the next median. But, there isn't a lot of room between the medians. Not enough distance for a car to safely, at a reasonable distance and speed, get around a cyclist before another median. Near death. Numerous times. The last question here, #5, I also have trouble gauging my feelings, because we don't have any of those in eastern Lawrence, so I've never encountered them.

- I really only feel comfortable biking on designated paths. All these options improve on traffic calming, but it's the mentality of the drivers that makes it feel unsafe, especially with kids. There needs to be more education of motorists about what sharing the road means.
- "I will mark somewhat uncomfortable on all questions due to lack of respect by too many drivers. Lawrence should consider doing 24/7 advising
- Drivers of bicycle right of way and bicycle rights perhaps using a variety of public media such as newspapers, radio etc etc etc. Signage is helpful but not enough.
- Education is key even in Lawrence, Kansas.
- Just because the markings are there, doesn't mean Lawrence motorists acknowledge them.
- My only concern is unattentative drivers texting while driving. And of course, elderly drivers that are senile.
- My son complained to me that sometimes and anywhere cars would make him ride his bike in the gutter and often the gutter was in need of renovating and risky riding in.
- Never certain drivers of vehicles see or understand rules of road for bicyclists.
- No consideration. For older residences. And their reaction time
- Same as in city traffic, often car drivers in residential areas don't respect bike lane markings.
- The drivers of the cars, will they follow the rules?
- These streets are not the problem for me but are very important for children. Enforcing speed limits or other traffic calming would help. Traffic circles are not built for bicyclists
- This would seem to require educating riders and driver a lot since it is not common use at all in Lawrence. I suggest focusing on building upon "Bikes may use full lane".
- Traffic calming circles... Wow. Want to talk about how many times I've almost been plowed on one? HUGE negative for bikes. I also don't think advisory lanes will work. Our police already don't enforce cars parking in bike lanes (marked no parking)... Without enforcement, the abuse will make advisory lanes worse than nothing at all.
- We have a bad problem with speed violations in my area
- What is a bike boulevard? Just paint on the street? That is too much like the ineffective sharrow. Center lane for both directions for cars? What, are we in Europe? Trucks are too wide for that here. We need education, not paint. Teach car and truck drivers to pay attention. Roundabouts are tough because no one knows what they are doing and cars don't like to follow bicycles.

FACILITIES -

- Again, I am pretty comfortable riding in Lawrence but I prefer having bike lanes to not having.
- Again, you need to have physical barriers or it doesn't count. This community, in particular, has a number of drivers coming in from out of town that are totally unfamiliar with these types of road systems. If you have people driving the wrong way down Kentucky and Tennessee, do you think they will really understand not to drive in a white dashed lane on the street? They'll have no clue what it is and completely ignore it.
- I frequently use east 13th street as my bike route uptown from my home in far east Lawrence. It is a fairly wide street with low traffic. I understand the city is considering traffic calming devices on this street. I think that is unnecessary as the street is fine for biking as it is. Use that money somewhere else.
- I like the street signage in Topeka for their bicycle boulevards. It sets a tone for drivers that if they just can't stand having to deal with bicycles, then perhaps they should select a different neighborhood road to use as their cut-through route.
- Need wider lanes.
- Neighborhood streets in old Lawrence are OK, but the new suburban community designs in west Lawrence are less effective for bicycling. The large streets are too large and the traffic is too high because no one can walk anywhere. A car is needed for all errands exponentially expanding the number of cars on the streets as well as the size of the roads and therefore, the distance between destinations.
- On Mass many people bike on sidewalk even in residential areas, even adults.

- The more protections for cyclists, the better! Not just for safety, but for comfort reasons - the more protected cyclists are, the more we'll all ride our bikes. And that's good for everybody - good for traffic, good for the environment, good for health, and cheaper on infrastructure!
- The shared lane seems same as boulevard; I guess there are fewer traffic calming devices on "shared lane" and more on "boulevard"? The markings would have to be very frequent, to remind drivers. Drivers need to expect cyclists in the middle of "their" lane so they look out for bikes and drive slowly. It is a problem in Lawrence because drivers don't expect many cyclists. Once it is more convenient and safer to ride in Lawrence, the "shared lanes" may be safer because drivers will expect cyclists and hopefully look out for them better.
- Very comfortable with no designated bicycle facilities except in my neighborhood where certain individuals want to kill me. Very comfortable with humps not with roundabouts.

NEIGHBORHOOD STREETS -

- If traffic is light enough on residential streets, I am comfortable. I am always vigilant. The bike advisory lane looks like trouble, but maybe it works.
- I'm pretty comfortable on most neighborhood streets that have little traffic in Lawrence.
- I'm very comfortable on neighborhood streets even without a bike lane
- In my experience, most neighborhood/residential streets in Lawrence have little traffic and it's rare that I can't just hug the curb or stay close to parked cars and feel safe and at ease.
- In neighborhoods where the posted speed limit is 20 miles per hour, I feel comfortable riding my bicycle. On streets with speed limits exceeding 30 miles per hour, I feel it can be dangerous to ride my bicycle.
- It's better in residential with no cars
- It's better to bike in a neighborhood cause the streets are more calm
- It's the default way to ride through Lawrence, given the absence of flow through alternatives.
- There are lots of cars parked on residential streets which needs to be taken into account and changes the flow of bikes lanes and traffic in general.
- There are many residential streets in Lawrence that I feel experience commercial-heavy traffic. I.e. Tennessee, Kentucky, Connecticut.
- There are some residential streets that are brick that I avoid as they are very bumpy and with holes. I'm more concerned with the condition of the street with a lack of cracks, holes and trash obstructions.

OTHER -

- An Idaho Stop rule is particularly important on residential streets where I can keep my momentum and get out of intersections quickly, rather than stopping at stop signs and leaving myself exposed in the middle of an intersection having to ride from a complete stop. https://en.wikipedia.org/wiki/Idaho_stop
- Biking on residential streets is so important. For family/fun time, for commuting, for creating a sense of neighborhood, for encouraging physical activity. Its *healthy* in so many ways for people to be riding bikes in their neighborhoods. I'm open to the idea of a bike advisory lane, but there is a large learning curve for that. I like the idea of bike boulevards, but I'm not hugely in favor of the locations you chose. The location should connect to other bike-friendly streets, to create bike-friendly routes. The one on Lawrence Ave, in particular, is extremely isolated, not useful.
- Feel more comfortable than on major thoroughfares.
- I am not a skilled cyclist, so even on neighborhood streets, the combination of my own lack of skill and the issue of distracted drivers is nerve-racking.

- I don't believe Lawrence has the knowledge necessary to build effective Cycling routes. I know you are up against retrofitting old infrastructure and that makes it difficult. In Kansas and in Lawrence there are too many drivers who think they own the road. I don't want to ride in a situation where I hope the other driver will do the right thing. Painting stripes or dead cyclists on roadways gives a false sense of security. Even putting obstacles out when drivers don't know how to deal with them. Parents don't let their kids cycle through roundabouts, they take to the sidewalks when approaching them. And get off and walk through the crosswalks if there are any, and hope that the cars see them and will stop. Hope is not a solution!
- I like to encourage biking as a healthy and environmentally friendly mode of transportation for my children. We bike to town often and I hate for them to use the sidewalks in town, but I don't know what a safer alternative is. There have been too many close calls. Thank you for taking the time to find safer solutions.
- I live in North Lawrence and mainly head to the levee as quickly as I can on the residential streets. I don't enjoy pedaling over the bridge, so it's rare that I go across the bridge. I would like to get more comfortable using the bridge on my bicycle.
- I try to only bike at off hours when vehicle traffic is at a bare minimum.
- I was moderately comfortable bicycling in residential neighborhoods. I tried to stick to streets that had very little traffic.
- I will avoid busy neighbor streets without bike lanes if quieter secondary streets are available.
- In Lawrence, from Wisconsin to Indiana both 4th and 5th are marked as sharrows. Avoid riding on 4th, west of Michigan because people drive too fast and will heckle if forced to wait for a left turning cyclist. After the city added curb and gutter in the 90s, making it too appealing to speed and wound up raising the speed limit! These questions don't distinguish a good cycling street, 5th, from a bad one, 4th. It only takes one driver to make it uncomfortable. Advisory lane photo has a car lane that is much wider than typical. Visually it helps, like on 19th.
- Like to use sidewalks
- Mostly ok.
- Pretty good bicycling spots
- same notes as above
- See above, re being hit by a car.
- See Question 4 answer.
- So much of cycling with traffic is about slowing down vehicle traffic. The closer you can get vehicles and bicycles traveling at the same speed, the more comfortable cyclists will be with sharing traffic lanes with vehicles.
- The amount of traffic and the time of day are the two biggest factors on how comfortable I feel riding on the street
- Where I do get a helmet that fits?

SAFETY -

- Always worried about my 3rd grader, bikes, and cars. We bike way less because of it
- I believe "thoroughfare" residential streets should have reflective safety designations for enhanced awareness of cyclist/runners due to random condition of most sidewalks.
- I feel safer riding my bike on residential/neighborhood streets than on commercial streets.
- Intersection visibility would be my largest concern among Lawrence residential streets.
- Much better than commercial streets. Less direct but less worry about getting hit from behind.
- Safety first

TRAFFIC CALMING/ROUNDBABOUTS -

- Cars are more dangerous around constrictions like traffic calming and roundabouts. I think it is safer to have a full width lane and contend with a passing vehicle than it is to get cut off when the car races to get around me at the constriction.

- Could we quit making traffic hazards in the middle of streets already. Roundabouts are great, especially if they are large enough for an easy entrance/exit flow. Misc. obstructions to scare traffic into going slower is simply a mess. None of them are attractive and most cause more damage to vehicles than if the road was left alone.
- I think the bike boulevard being built are a old idea. Not all “traffic calming” is comfortable for cyclists, though. Roundabouts will need protected infrastructure for people to feel comfortable.
- People don't seem to know how roundabouts work. I have had cars pass me in them while I am on bike. They have gone as far to go up on the inside curb to pass me IN the roundabout.
- Roundabouts are scary residential or not, drivers get angry when cyclists take up an entire lane and cannot pass (or try to pass anyway!) and it is unsafe for cyclists to not take up the whole lane.
- Roundabouts effect a dangerously blind merging of cars and cycles. The bike lanes disappear and cars go whipping around them, not looking for cyclists.
- “Roundabouts often feel very uncomfortable as some cars drive up on you and others wait unnecessarily. They often feel like death traps to me.
- I'm not familiar with bike advisory lanes. Not sure we currently have any in Lawrence, but they look to me like you are exposed to traffic and don't have a good defensive position.”
- Speeding is a serious issue in my neighborhood. Traffic calming devices scare me to death. I hate the islands the most!!
- The extra signage at the Barker roundabout has helped me feel more comfortable when riding home from the Burroughs Creek trails.
- The landscaping in some roundabouts obscure pedestrians and bicyclists like the one on Monterey Way and Harvard please have sensible regulations about visibility and roundabouts! Please NO bike advisory lanes.
- The signage in roundabouts advising that bicycles take the lane is very helpful.
- There are a lot of speed humps on my area and if no one else is on the road, I like to use the cut outs for emergency vehicles, but I can't do that when there are cars behind me, so I have to hit them. I wish they had a consideration for bicyclists.
- Too many drivers AND bicyclers don't know how to safely negotiate a roundabout.
- Traffic calming circles do NOT allow vehicles to see cyclists with tall vegetation or walls. I've nearly been hit twice in calming-circles and had to lay my bike down to avoid being hit by an incoming car on GW Way and Harvard.
- Traffic circles are not the only examples of traffic calming, and for bikes they are distinctly dangerous as drivers often have no clue how to use them (unless they're from DC or Europe). Other non-aftermarket traffic calming measures, like close-in street trees, street parking, blind intersections, and potholes make it much more likely that cars will drive slower in a straight line.
- Traffic circles are so scary on a bike-- cars often don't yield until the last second and cars behind a cyclist don't always yield to let the cyclist take the lane before entering the circle.
- Traffic islands are DEADLY! You provide a protected lane, and then force all vehicles into a crunched space with a hard curb. They DON'T work. Louisiana is un-ridable.

When asked “Do you have children currently under 18? (Select one)” Respondents indicated:

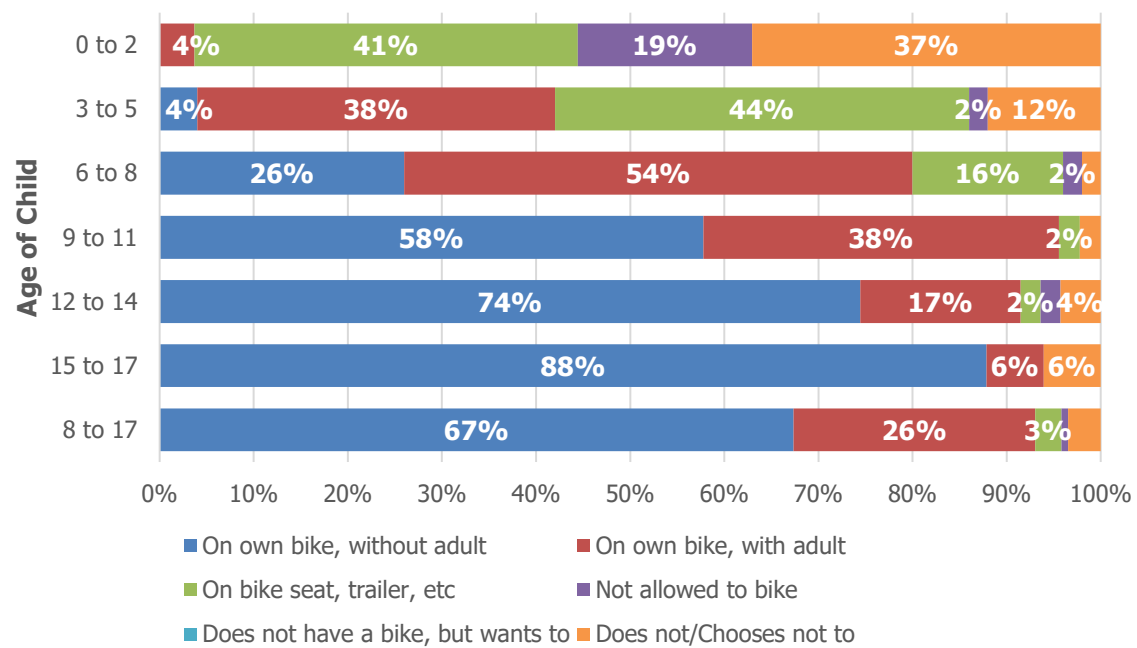
Figure 6: Comfort Levels on Neighborhood/Residential Streets



Number of Responses - 588

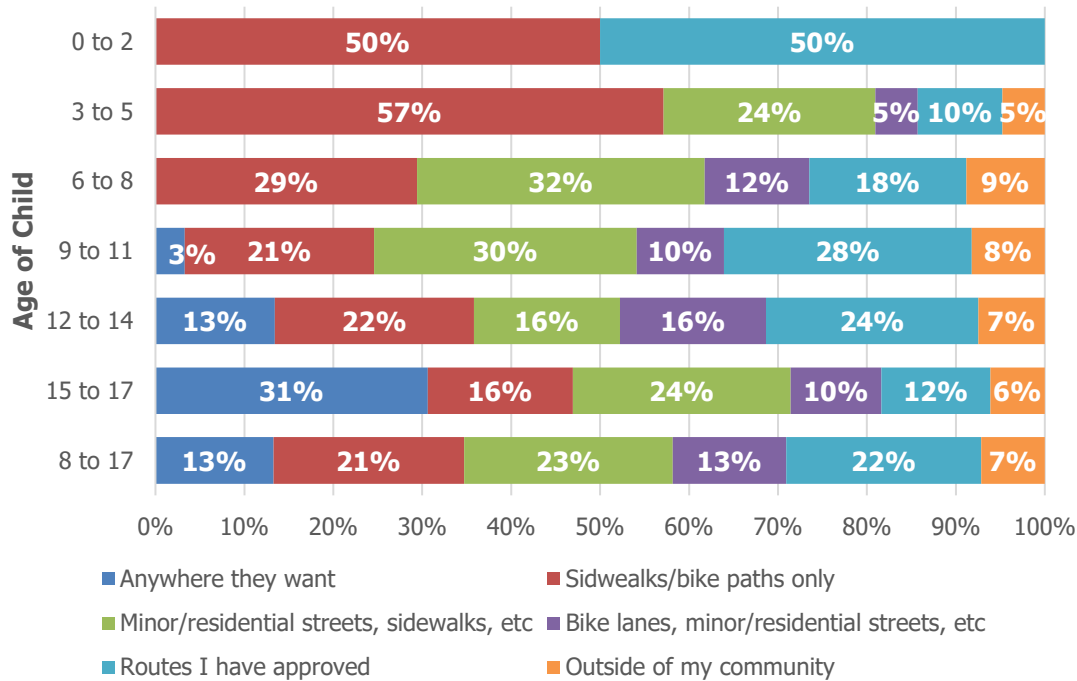
When asked “Do you bicycle with your children or do your children bike?” Respondents indicated:

Figure 7: Do Children Bicycle



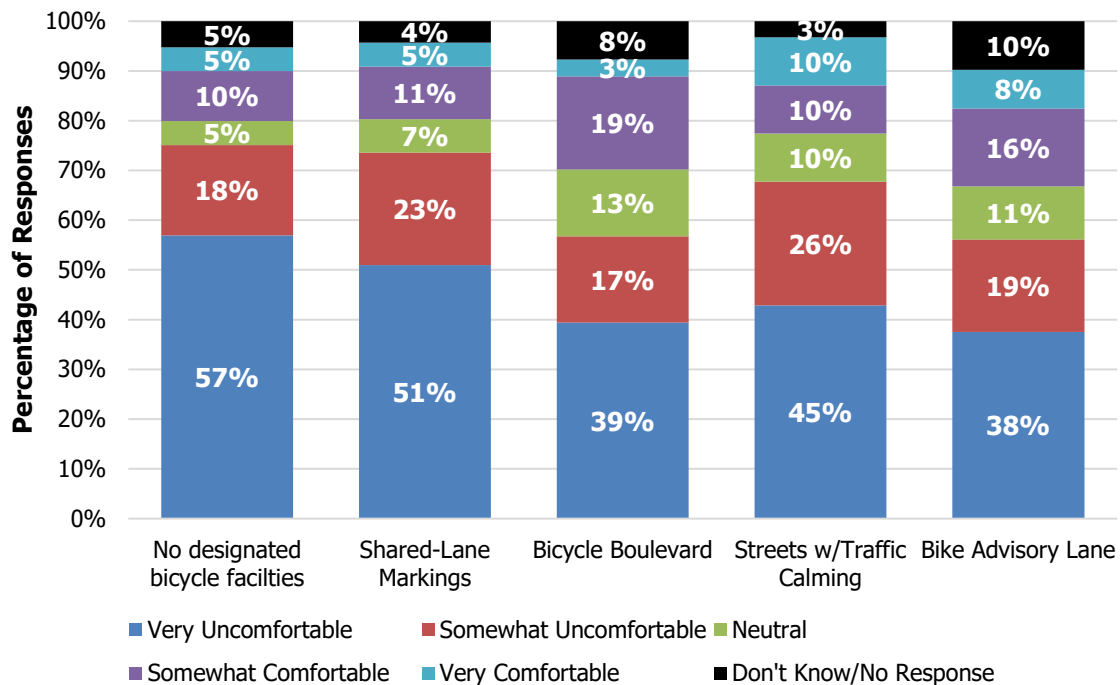
When asked “If your child does bike without an adult, where do they bike?” Respondents indicated:

Figure 8: Where Do Children Bicycle?



When asked “How comfortable do you feel about your children bicycling with different bicycling facilities on residential/ neighborhood streets, without an adult?” Respondents indicated:

Figure 9: Comfort Levels about Children Biking Without an Adult



Additional Comments about Children Bicycling without an Adult

DRIVER BEHAVIOR -

- I cannot ask my nine-year-old to make better decisions than the adults around him, so basically he can't have the freedom I did as a kid. Most drivers are on their phones now...constantly.
- I do not trust cars are paying attention or see bicyclists/pedestrians so I always prefer for my child to be on the sidewalk.
- In these cases, I trust my child more than I trust drivers. In particular, traffic circles and "bike advisory lanes" seem like invitations to aggravation when bikes and cars mix.
- Lots of kids in the neighborhood that I see on bikes, especially riding to school. But then, not everyone observes the school zone, so how can I expect them to observe bike lanes?
- My 6 year old daughter is actually very cautious and competent on her bike. She's certainly not old enough to be riding around on her own, but in terms of on the road dangers it's motorists that make me "Very Uncomfortable", not her.
- Too many people looking at their phones. Period.
- Very uncomfortable regardless. Lanes mean less with cell phones & speeders.
- We live on Inverness and even though it is only a few miles from the school i will not allow my younger children to ride alone because people drive too fast and the sidewalk is only on one side and they have to cross the busy street several times. Also have to cross Clinton Pkwy.

FACILITIES -

- Again if there is no physical barrier at least some cars, and probably, from what I have personally witnessed, a large portion of cars will simply ignore the markings. No way would I let my kids ride on a street without me unless I know a car won't drift over into them, and I mean even when they are fully capable bike riders as teenagers. Not just when they're little.
- "As stated previously... Lawrence drivers have difficulty understanding basic driving concepts, and have trouble with simple things like roundabouts. I would never allow my child to ride their bicycle in this town without an adult. I would allow them to ride solo on designated trails, but not roads.
- Buffered bike lanes, please. And also some public education about cars yielding to pedestrians (including kids pushing bikes) at crosswalks-- more often than not, cars in Lawrence don't yield to pedestrians in crosswalks.
- For very quiet residential streets (e.g. bicycle boulevard that blocks through traffic, dead ends) my comfort level goes up.
- I would prefer a buffered/separate bike lane for my children to ride in
- I would prefer them to only ride on bike paths where cars are not allowed, but that is not a reality. They ride their bikes to school daily which is nerve racking, but our only option at the moment. They ride on the street, on the sidewalk.
- Must have some protection - marked lanes at a minimum.
- Signage and speed bumps
- Sorry to be repetitive, but seeing a child riding without an adult makes me happy. That's *good* for kids, and the sign of a healthy neighborhood. The "Sharrow" markings are almost irrelevant, IMO. What matters is the volume of traffic, the space for cars to pass bikes safely, and similar.
- The speed of cars using these streets is the most important. I don't know the solution. Speed tables, speed enforcement, partial closures...?
- There are residential streets and then there are residential streets. Low traffic residential streets that will get the rider from Point A to Point B are our preferred routes whenever possible, regardless of markings on the street. On busier streets, we try to stick to streets with wide bike lanes or dedicated paths. The problem is often finding safe routes for getting to where one needs to go - not just recreational routes.

OTHER -

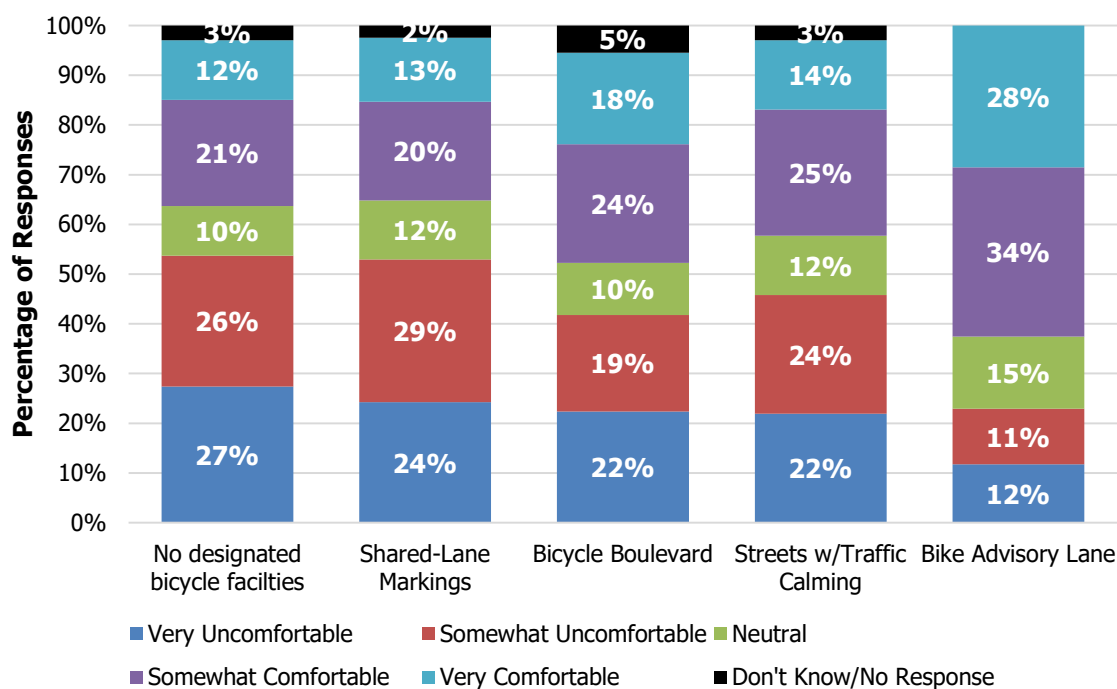
- All of these questions are dependent on the child's age. Because I have young children who cannot yet ride a bike independently, these situations make me uncomfortable. In a few years once they can navigate safely with a bicycle I will feel safer with the more protected options.
- I don't have kids, but I would teach them to ride the way I do, and I would ride with them until I felt confident about them on the road.
- I LOVE to see children on bikes cruising around the neighborhood. I would love to see children safe on all streets.
- I think you really need some actual cyclists working on this. I can't for the life of me figure out who's got these ideas, but it's NOT a real cyclist.
- My child is just too young to be bicycling without an adult, so my answers are hypothetical.
- My children are currently too young to bike without adult supervision.
- My children are now adults
- My son is 11. He has been raised and trained to ride responsibly.
- No comment on this at this time: my child shows no desire to use a bicycle, but that may change in the future.
- Same comments. this is actually a bit sad
- My child is not really able to manage cycling in the street. Their size and strength make the poor conditions of the streets in our neighborhood a major obstacle, so it's mostly sidewalk/path riding for now.

SAFETY -

- Dangerous in the streets!
- He is afraid to ride where there is risk of injury.
- I advise my older child on the best/ safest routes to their destination when they are biking alone. In those scenarios, the route I suggest is usually on slow residential streets, and in the street. I'm not really comfortable with the wee one biking alone at all. They are a very small 12 years old, and not a very confident cyclist. If they did insist on biking alone somewhere, I would request that they use sidewalks. This is problematic as well though, because eastern Lawrence sidewalks are not consistently in the best condition. So, again, I advise the best route. When my youngest child bikes with me, we take slow residential streets and ride in the street, with my child on the curb side, me riding directly next to them.
- I don't feel comfortable with my 4 year old cruising. Along the street,
- I'm barely comfortable biking on my own as an adult. Little will make me comfortable letting my kids do it.

When asked “How comfortable do you feel about your children bicycling with different facilities on residential/ neighborhood streets, with an adult?” Respondents indicated:

Figure 10: Comfort Levels about Children Biking With an adult



Additional Comments about Children Bicycling with an Adult

DRIVER BEHAVIOR -

- Again, Lawrence drivers are horrible. I would not trust drivers around children.
- Honestly, I generally feel safer riding with my kids than without because motorists are generally more forgiving when there are kids present. However, if motorists treated us the same as when it was just me riding, I wouldn't let them ride anywhere but in an empty parking lot or trail.
- Phones are a problem for people driving because they aren't looking for bicyclists.
- Usually, children with adults seem more contained but I see drivers are more critical with less patience.
- When I ride with my kids, I put myself behind them, and further into the street, so that I am in the path of any inattentive driver and where they are.

FACILITIES -

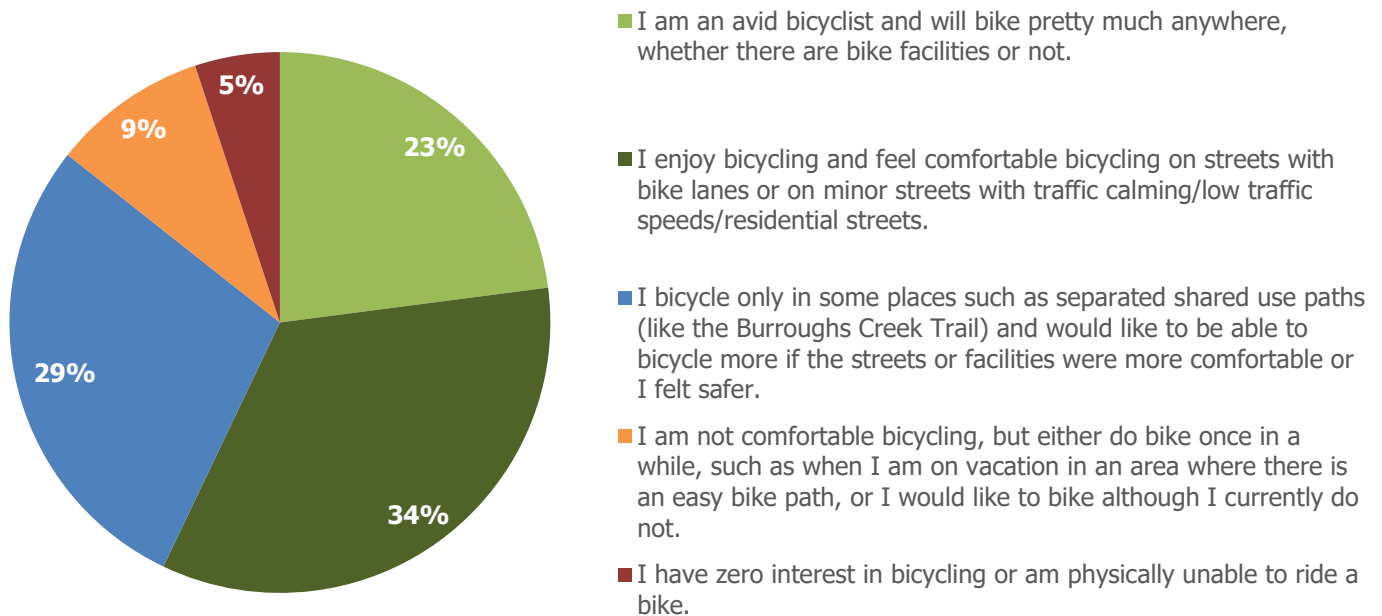
- Again, calming circles are very dangerous for cyclists, and I think lack of enforcement and understanding will make advisory lanes worse than no markings at all. My brother lives in a city about 1/2 the size of Lawrence where cars just try to squeeze into the advisory lane or think they can park there.
- I think a bike advisory lane is a terrible idea.
- Not all streets are alike, so it depends on which street you're talking about would be my better response for all of the above. Painting bike route markings on a narrow and relatively active street, for instance, doesn't make me feel much safer.
- Separation of bike traffic from vehicle traffic is what would make me feel comfortable. The presence of an adult does not keep a texting driver from hitting a cyclist.
- Sharrows are a bad idea. As a cyclist I never knew what they symbolized and neither do drivers. Waste of money and time
- The bike advisory lane looks like an accident waiting to happen.
- We LOVE biking as a family and enjoy when the sidewalks are wide enough to ride on the sidewalks and will happily ride on quiet residential streets.

OTHER -

- Don't like her around cars
- Everyone on a bicycle should be on the sidewalk if there is one!
- I don't have children
- I don't have children
- My child owns a bike but does not ride it.
- My youngest rides in a trailer when biking with me. The older boys mainly ride in our cul-de-sac or on the south lawrence bike path. Keeping both boys safely to the right on medium traffic roads to the path is stress inducing for me.
- Parent should be wearing helmets and gloves as well.
- Same comments
- Why does this survey ask if i have kids or not, and when i say no, proceed to ask me about my kids?
- "Your question on bicycling child with an adult fails specify if child is independent or in/on an attached carrier/bike.
- I answered as if they were independent.
- It's safer but still scary at times

When asked "What type of rider would you classify yourself as?" Respondents indicated:

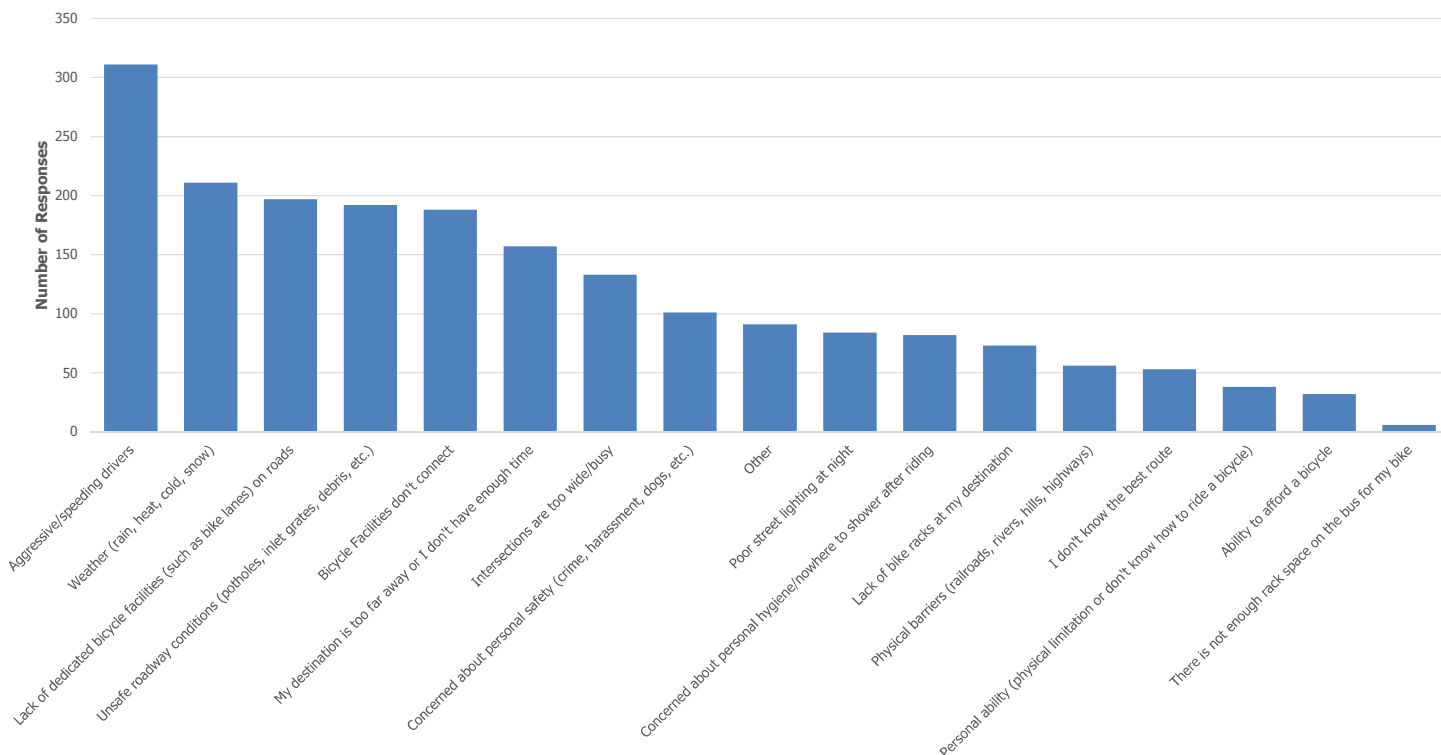
Figure 11: Type of Bicycle Rider



Number of Responses - 571

When asked “What prevents yo from bicycling more? (Select all that apply)” Respondents indicated:

Figure 12: Reasons Not to Bicycle



Other Reasons Not to Bicycle -

CARGO -

- I am usually transporting multiple children further distances than they can bike

DON'T -

- Don't want to (2)
- Don't care to ride a bike
- Don't own a bike.
- I don't have a helmet that fits
- I don't like to bike at night. And sometimes I just prefer to walk.
- I don't care about biking
- I don't like to ride my bike.
- I have a bicycle but have not ridden it in more than 30 years. I want to, but need practice.
- Lack of interest (4)
- Need to buy bike rack
- No
- Not having my bike ready
- Nothing
- Other fitness activity (working out at Genesis South)

DRIVER BEHAVIOR -

- Cars with texting drivers are scary. They will nearly hit you and never look up to even realize it and before you can process it they are gone.
- Distracted drivers
- Distracted drivers on phones (i see them when I drive, walking or running)
- Distracted drivers. Also, need to transport goods.
- Drivers texting
- Hwy 40 west of town far too dangerous. No shoulder, blind curves and hills, aggressive and inattentive drivers.
- I was hit by a motorist at 4th Street and Maine. It was my turn to cross the intersection but the driver didn't see me. It has left me afraid to ride in Lawrence because of inattentive drivers.
- Inattentive drivers
- Phone use by drivers
- Primarily, it is distracted or hostile drivers, and road designs that give them opportunity to cause havoc.
- Some people just have no respect for other people.
- Too many people texting. Just look around at some point. It is really disturbing.

FACILITIES -

- lack of *covered* bike racks
- lack of dedicated bike paths
- Lack of effective dedicated bike facilities. Bike route designation doesn't help.
- Narrow lanes
- Used to bike a lot more on county roads with light traffic, but then county used chip and seal to resurface my best routes for long rides and I can't use my bike because the chips cause flats and ruin tires, i.e. unbikeable roads due to chip resurfacing

OTHER -

- Amount of road debris in bike lanes/lack of street sweeping
- Attitude of some local bike riders and due to having been attacked by frisbee throwers in Centennial Park. Limited signage may be a problem.
- Bike needs a tune up
- Biking with child in bike. Trailer is a no-go almost everywhere.....
- Having a 2 year old :)
- I bike for exercise and live by the rec paths and use those all the time. I occasionally bike for transportation, but only if I can plan a route where I can stay off busy streets.
- I need to get a bike lock and become familiar with the bike racks downtown.
- I ride a lot.
- I was recently ticketed by the police for not coming to a complete stop at a stop sign (!) - that's made me less likely to ride lately.
- I'm afraid to park my bike anywhere because I fear it will be stolen. It was very expensive, to me.
- Lack of detours around construction
- My bicycle projects. Are. All. Broken
- My job requires a car at work.
- Planning ahead
- Prefer to walk or drive
- Responsibilities
- The seat on my bike is uncomfortable and I'm too lazy to bike.
- Too lazy
- Transporting my dogs.
- Trucks (2)
- Unable to bike for work - drive all over DG County
- We live in the country so I have to load up the bikes to get to a trail.

PHYSICAL LIMITATIONS -

- Having issues with physical limitations at the moment.
- Not cool or svelte enough.
- Physical problems
- Poor hearing, and old age
- Sports injury
- Weight - I weigh too much!

SAFETY -

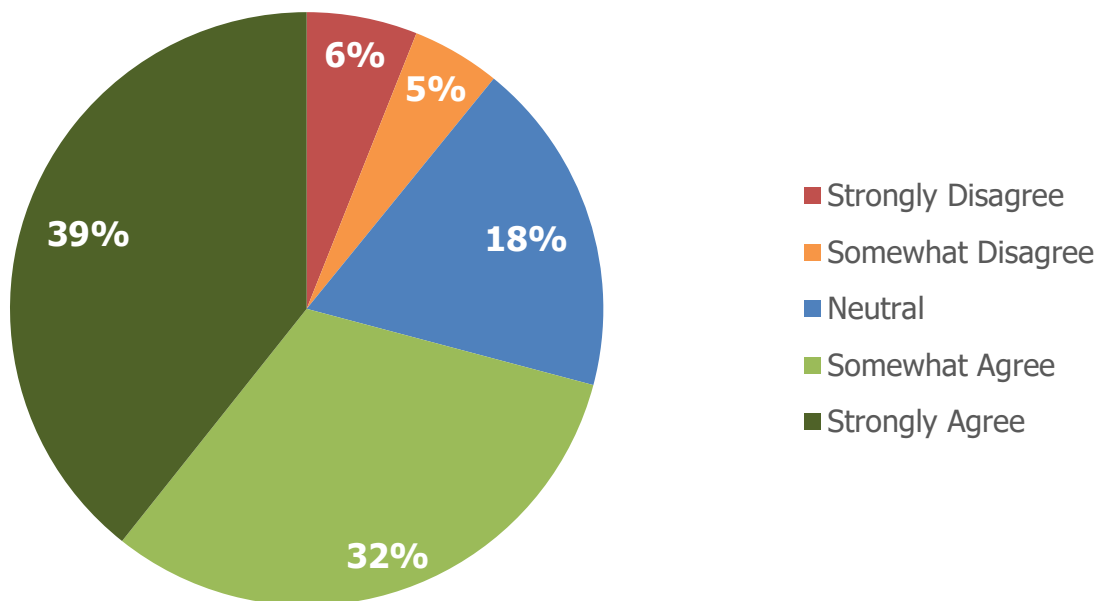
- Bicycling on public streets is inherently dangerous
- Except on quiet neighborhood streets, I'm afraid of being hit by a car
- Fear
- Heavy traffic at big intersections.
- Hills on Bob Billings. Crossing Iowa.
- My mom, she says no because it's dangerous
- Not allowed biking by myself
- Safety in bike reliability

TIME -

- I love my bike, my work schedule makes it tough
- I try to bike to work several times a week, but whenever I have to get a child somewhere before going to work, I tend to drive, to save myself time and to not have to cycle so much extra that I would arrive at work sweaty or disheveled.
- Not enough free time. Broken bike.
- Not enough hours in the day.
- Raising four children in middle and high school, just not enough time.
- Time (6)
- Time, note, even avid riders have difficulty with the hills in town. 15th is a killer for most.
- Time. I have to work. And I need to arrive at work not sweaty and gross. I also don't feel the need to bike at night. Seems like asking for trouble.
- Time. And bike condition

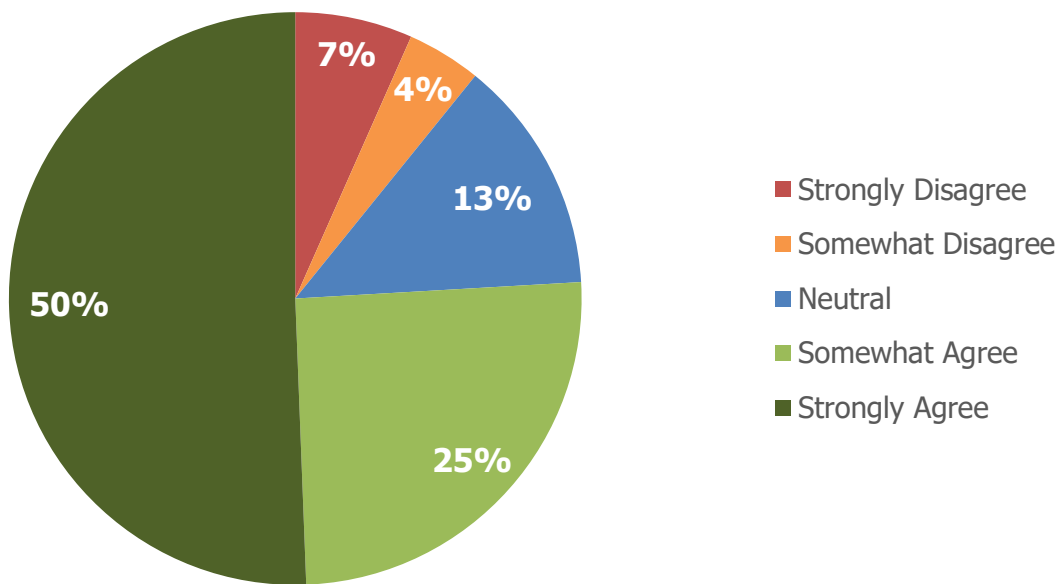
When asked "What is your level of agreement with the following statements?" Respondents indicated:

Figure 13: I would ride my bicycle more often if I felt I could do it safely



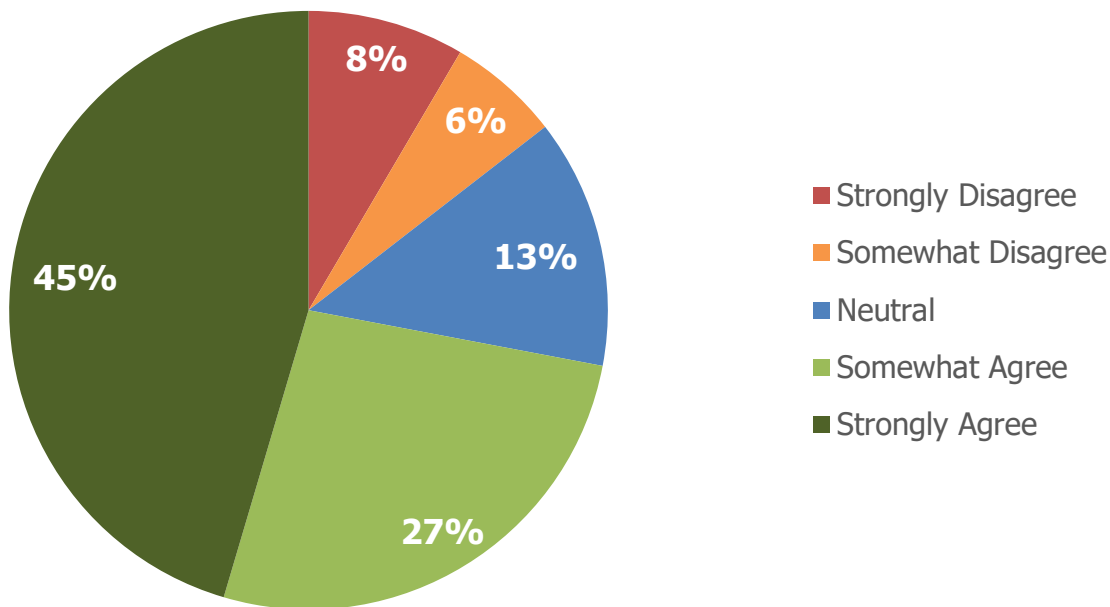
Number of Responses - 580

Figure 14: Lawrence & Douglas County's transportation network should equally prioritize the needs of people who bicycle with other travel modes



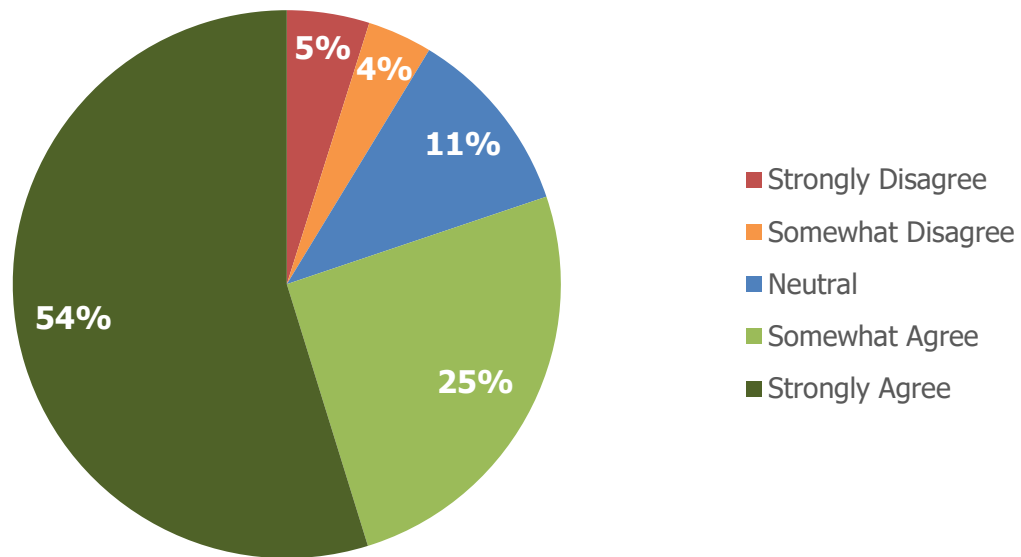
Number of Responses - 573

Figure 15: On-street bike lanes, buffered bike lanes, & protected bike lanes should be considered for more city roadways even if it means removing parking



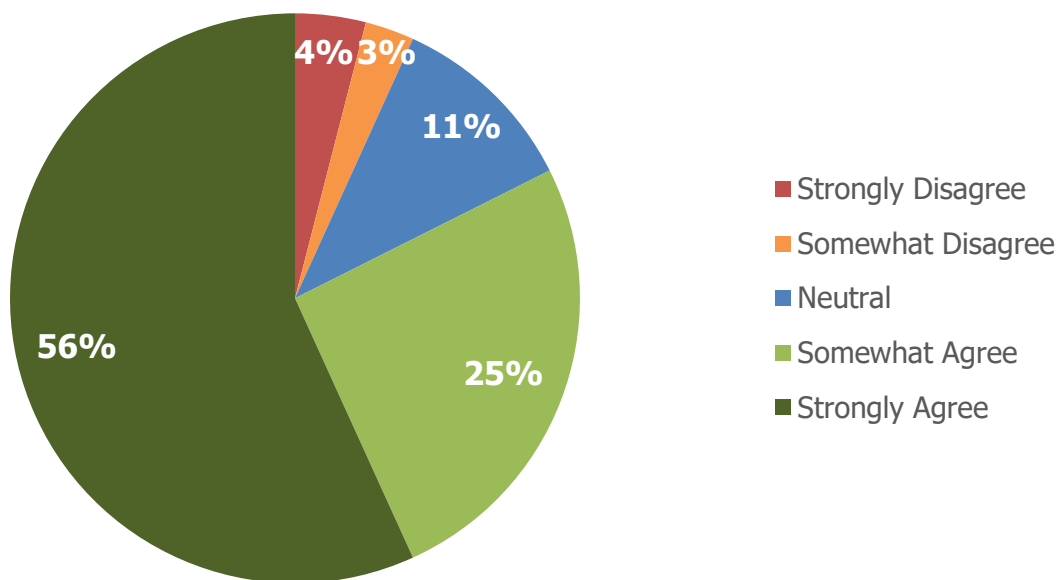
Number of Responses - 579

Figure 16: Providing safe bicycling alternatives for people who cannot or choose not to drive is critical



Number of Responses - 575

Figure 17: The bicycle network should provide options for people of all riding abilities



Number of Responses - 574

Anything else they want to share with us about bicycling in our community -

FACILITIES -

- (Bike lanes should be considered on nonresidential streets even if it means removing parking). = edit
- A way to bike from 23rd and Haskell to the trail not on 23rd St but not all the way on 28th would be helpful
- Apart from connecting the Lawrence Loop and other bicycle routes, cyclists' comfort levels can be most effectively increased by providing dedicated routes across town. Philadelphia did this on two east-west streets in the late '00s to great effect, and the Burroughs Creek trail is a great example of this in Lawrence. Basic concept: if you want to get people biking, think like northern Europeans and allocate appropriate funding and engineering efforts to infrastructure. And make driving/parking miserable, so people will actually pushed to bike instead of opportunistically doing so.
- As a retired individual I enjoy riding for health an exercise. Being able to ride in areas that are designated for cycling is my preferred option. Motorist awareness on streets and roads make me uncomfortable. I'm confident in my bike skills. Just not as confident that a motorists awareness of bicyclists could be present. The existing bike paths are wonderful and I look forward to the completion of the Lawrence Loop. Please continue the work being done.
- Bike boulevards, or other amenities unfamiliar to Lawrence bicyclists and motorists should be created on a temporary, experimental basis, to let us try them out. This could be done with traffic cones and temporary signs. Given several options to drive/ride through or practice with, the public could weigh in more intelligently on how/why/if it works.
- Bike paths should be linked. Protected bike lanes are preferred to other types of bike lanes.
- Get the loop completed and when streets are repaired or new ones built, include SEPARATE biking/walking that do not force bikes into traffic.
- I am grateful for the Lawrence Loop and other recreational cycling trails in the city. I just wish there were more designated bike paths or bike lanes across and through the city for commuters. My route to work requires me to ride on Iowa for a brief stretch. I am used to it, but wish there were better north-south lanes in the middle of town. A protected bike lane in some parts of the city (perhaps a north-south route and an east-west route) would be nice.
- I feel cyclists in Lawrence are too encouraged to ride in the street on openly dangerous roads. Main thoroughfares such as Tennessee, Kentucky, and 23rd street are high-traffic streets in which a single cyclist riding in the road can cause drivers to react in unexpected ways that can cause dangerous incidents in ahead of, abreast of, AND behind the cyclist. Adding bike lanes to these streets would only further congest the the already heavy traffic in this areas. These streets should either a) be off limits to cyclists, or b) be significantly renovated to have wide, level sidewalks that cyclists are encouraged to use.
- I have been yelled at, threatened, passed/riden down aggressively, and been made to feel like I do not have the right to utilize public resources on my bike. This has happened in front of cops, but no one has stepped in to help me. Downtown, people pull out of parking spots without looking, but riding on the sidewalk is not permitted-what am I supposed to do to keep myself safe? Also, Mass st between 11th and 19th is marked shared use, but it is not a safe place to ride (it's too fast and narrow and people pass very aggressively, but the sidewalk is narrow and poorly maintained and there are cars in driveways blocking the sidewalk). Also, there are many places that are not too far away, but there are no safe roads to take (for example, getting between 19th and 6th, or getting to the south of town).
- I know they are expensive and difficult to build but having crossings go under or over busy roadways are awesome (15th St and 6th St on the bike path) having to stop and cross at Iowa St is a pain because of people turning off the highway onto Iowa St not paying attention to the crosswalk sign. Having a complete or mostly uninterrupted way around Lawrence would be great for those uncomfortable with riding on roads.

FACILITIES CONTINUED -

- I look forward to more connected loops and safe routes to the trails, it will highly increase how often we bike.
- I love the biking trails because it affords my country children (who don't have boundaries) to have safe boundaries and freedom to ride at their pace. I think more playgrounds along the way would be nice. Also, at the south end of the Haskell campus, the trail uses a city Street, would love the trails to all connect.
- I LOVE the rec path system in Lawrence and the area. It's really my favorite thing about living here. I use them multiple times a week for walking and biking. Also, really like very much that it is legal to ride on sidewalks in this town. That has helped me get around when my vehicle is in the shop, and I had to bike places that I feel are dangerous on the streets. (like 6th, Iowa, or 23rd)
- I see both bikers and drivers make poor decisions when trying to share the road. Providing separate areas when at all possible seems much safer for everyone involved.
- I strongly believe that we need more dedicated bike paths. I do not feel safe on a bike on the street even with a dedicated bike lane. Too many vehicle accidents happen from not paying attention. When bikes are on the street, they are very vulnerable to vehicles. Bike paths offer much better protection and also gives pedestrians a better placed to walk.
- I think cycling facilities are important to EVERYBODY's quality of life, even if they don't use them.
- I think improvements to sidewalks are also needed. The bike paths along Clinton Parkway can be quite dangerous when drivers who are turning right on red don't look both ways.
- I very much believe in encouraging bike riding in our community, both for pleasure and to reduce vehicle congestion. However, I think the efforts that have been made to-date are poor at best and often a waste of money/time. There are "token" initiatives (a few streets with short segments of marked bike lanes or, even worse, these proposed "bike boulevards" that will cost big money but only go a few blocks) but nothing that truly makes it easier to ride a bicycle for any distance in Lawrence. Please stop wasting your time and our money on such meaningless programs. Study what has been done to promote biking in cities such as Washington DC and Portland. Learn the best practices. If it can be done in a big city, it surely can be done in Lawrence. But, please do it RIGHT or don't do it!
- I would like to see more connectivity of bike routes across the city. Also, I used to enjoy taking the Lawrence Loop from west to east Lawrence, but now with the opening of K-10, the bike/walk crossing near the Lawrence Rotary Arboretum is very busy and scary, so I rarely use it.
- I would LOVE to see more shared-use lanes and/or more paths exclusively for non-motorists in Lawrence.
- I would rather see money spent on improving or creating bike trails, than spend money on mass transit. But I do not like the idea of creating bike routes on city streets. Keep the bikes on designated trails.
- I'm strongly in favor of trails built to transportation standards that can function both as transportation corridors and as recreational facilities. Completing the Lawrence Loop is a great example. The city's current budget structure doesn't seem to easily accommodate facilities that have both transportation and recreation purposes. There ought to be a way to use some Public Works funding and some Parks and Recreation funding to accomplish one high-priority project that serves multiple needs.
- Increased wayfinding signage along the Lawrence Loop, or a way to know while biking where the trail connects to other bicycle infrastructure would be helpful, especially for someone who may be new to cycling.
- Inspection for. Safety and reliability
- It would be great if Lawrence devised paved and connecting bike trails throughout the city. This is one of the main reasons I don't bike more in Lawrence, and I was an avid bike rider for years when I lived in other cities (Des Moines, IA; Iowa City, IA; Santa Fe, NM) because of their better biking trails and bike-friendly areas. Trails through Lawrence could also connect to networks in the country and to outlying towns, like Eudora and Baldwin City. I highly recommend the city look at Des Moines, Iowa's bike trails for innovation and consideration. They are amazing, help residents get across town without having to use city streets (something for which drivers and bikers are thankful), and connect to smaller towns outside Des Moines, which has created an economic boost to these small communities. Numerous riding groups and friends get together weekly to ride trails to specific business

locations in smaller towns, not to mention the heavy use trails get daily from families and individuals. Check out Des Moines/Central Iowa's extensive trails here: <http://dmampo.maps.arcgis.com/apps/webappviewer/index.html?id=c48776f60395490eb3029f5b29fc7b88>. You can see that they are amazing! I believe a lot of them were constructed on former train tracks, as they were level, connected towns/cities, and revitalized areas that were no longer used. Something Lawrence and Douglas County should definitely look into. I've been considering moving because Lawrence is so bike un-friendly (drivers are aggressive and dangerous and bike trails don't connect and/or aren't paved). My opinion of Lawrence would change a lot if there were better bike trail systems here.

- It would be great to have more connected trails that are for walking/biking and that actually go somewhere that people want to go.
- "It's safer to keep bicyclists separate from motorists. It's also incredibly frustrating to be stuck behind a bicyclist on the roadway because you can't safely pass them.
- Thanks for taking the time to research this problem, because I would really love to bike places. It just scares me too bad with the way things are right now. "
- Just emphasize connecting routes so one can safely use a bike for transportation to get stomped Point A to B. Current setup has some nice stretches often leading to nowhere.
- More bike lanes everywhere especially ones that. Connect and. Cross with. The Lawrence loop
- More bike lanes that are actually safe and expedient.
- More parking meters downtown with the ability to lock up a bicycle would be great. Due to the threat of theft, I want to be able to keep an eye on my locked bicycle from the business I am patronizing. The bike corrals are well-intentioned, but if they are up the street, or around the corner, I can't see my bike, and I'm uncomfortable locking up there. Several friends have had their cable locks cut, and I want to avoid that fate.
- Please put some sort of bike lane along Iowa street. There is NO bicycle infrastructure on the busiest street in our city.
- Protected bicycle lanes on busy streets would encourage me to ride more. I tend not to ride to work because I'd have to take major traffic ways which seem unsafe.
- Repurpose utility right-of-ways to include paved bike paths
- School zones and roads leading to schools should have protected bike lanes better sidewalks. Let's get children out of motorized transportation. Self-propelled transportation is better for everyone.
- Separated shared use paths, such as the Burroughs Trail, are the best. I look forward to "spokes" from the Lawrence Loop to destination areas.
- The old part of Lawrence is easy to bicycle in because secondary streets that connect to each other are available. I'd like to see all neighborhoods connected with bike passage ways between them so that a bicyclist isn't required to get on major roads in order to get somewhere.
- The only places in the world where people ride bikes as a major form of transportation are places where they physically separate the traffic, car from bike. It just never increases bike ridership unless you really go for it and make it safe. The vast majority of people who want to bike for their commute or for fun are not the hardcore cyclists that will ride anywhere no matter what. Those are the only people I know that are comfortable riding in streets that so not have a physical separation from cars. If you really want the community to have a safe pedestrian or bicycling option, then you have to make it so that anyone would feel comfortable riding/walking there, not just the experts. Otherwise you're just wasting money.
- The trails in Lawrence are great, but they are not practical for any kind of utility cycling, and are only useful for recreation/exercise. Bike lanes and other accommodations are needed for Lawrence to be in any way a bike-friendly city.
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- There was a recent article in the Lawrence newspaper about making 21st street a bike boulevard from Iowa street all the way to Massachusetts Street. I think that is a great idea. But consideration must be taken into account about what the cyclist does when he gets to either end of that boulevard. For example if I am traveling east on 21st street on my bicycle and get to mass street, I want to then be able safely cross mass street so that I have access to the Barker neighborhood streets or be able to easily get to the Burroughs Creek Trail. A push button activated pedestrian cross walk light at 21st and Mass street would be great. Mass street at 21st street is not a safe place for bicyclist
- Want to. Have the loop around Lawrence. Need safer county roads. There are not good shoulders
- We keep choosing major roadways for bicycles to use. A seasoned cyclists stays off the busy routes and takes the less traveled route. Examples = bike route down 2nd street from Hospital to 2nd and IA street. 3rd street is much better. Same with 8th and 10th street over 9th street in E. Lawrence. We need transportation corridors for bikes, not recreational paths.
- You've got to get all in. A paint strip doesn't keep cars out of a bike's way. I'm sorry, I know you'd like to think it works that way, but it doesn't. Protected lanes, or at the very least buffered. And parallel parking on the inside of a bike lane is the WORST idea ever. We just call it "getting doored".

OTHER -

- A "five star," community that attracts high quality businesses (employment opportunities) provides for amenities such as outstanding Parks and Recreation opportunities, excellent K-12 public education, sponsorship of the arts, EXCELLENT maintenance of facilities (litter/landscaping/safe lighting/repair of community assets (potholes/street lights, etc.) Lawrence has the potential ... but has quite a way to go.
- Are bicyclist increasing grid wrt their % of road usage?
- Bicycling is one reason this community is great
- Bike riders smile more.
- Bikes in county are for recreation, in city for transport. Different priorities. What about bike drivers, not riders, responsibility to other vehicle drivers. Irresponsible bike drivers are a hazard in America!
- Bikes should not be ridden on downtown sidewalks. Its pretty hazardous as a walker.
- Car traffic flow is important, especially if we continue to build high density housing. Our population is increasing, our existing streets not so much.
- Complete the Loop!!!
- Do not waste anymore money with this. Lawrence has real problems that need fixing and this is just petty
- Help people that don't farming wheels idea about them
- I appreciate living in a community that is prioritizing these discussions.
- I appreciate that the Lawrence community and planning commission considers bicycling a priority and that you are asking the community for feedback. I would very much appreciate safer routes for bicyclists across and around Lawrence. Thank you for your time and consideration.
- I enjoy seeing them riding around , but I'm always afraid of what will happen re: insane drivers
- I equate the ability to bike in town with the livability of the city. Have traveled in Europe where biking is an every-day routine. Would love to see more people of all ages riding their bikes in Lawrence.
- "I feel comfortable biking in East Lawrence, but would never ride in West Lawrence-- streets like 6th, Wakarusa, and Kasold are so unpleasant to ride on.
- Oh, and I got a "ticket" once for locking my bike to a parking meter on Mass St. As a rider, I found that really discouraging-- there's plenty of room for bikes by the parking meters on Mass St. And my bike takes up a lot less space than a car-- why wouldn't the city encourage people to bike there? More business for local shops and restaurants without taking up any street parking. And it's inconsistent-- just a half a block in any direction, the meters just off Mass St. have built-in bike racks. "
- I have gotten three bikes stolen in the past four years....

- I live out in the country by Lone Star Lake, thirty minutes from town. The best route to drive home is also a popular bike ride for cyclists. There have been some fatal accidents involving cyclists. To fix that problem, the road has been repaved, widened for bicyclists, and the curves in the road have been adjusted to be less sharp. I believe that has really helped the cyclists who bike out there. I just want you to know that Lawrence has been doing work on that road, and I definitely see more cyclists out there.
- I rarely see anyone bicycling on Lawrence streets, and most of those that are do not obey laws and safety rules. The bike trails are not marked and newcomers do not know that is what they are. I often see people on Clinton Pkwy. riding in the street right next to the bike trail.
- I recently had my car stolen, I have because of funds been forced into the bicycling/bus world. My bike ride to work is 3+ miles and easily done in 10-15 mins. As I'm slowly becoming better at commuting through Lawrence, I see way too often drivers running red lights, not looking both ways, and honestly pissed when I start to cross when it's my walk signal. I have liked the bike and then bus route as well, like the hot days that are coming up right now, though Route 29 which I take, I either have to get off before Iowa or off on Campus and my work is right between the 2. I've also noticed that Sundays are really hard on me now that I have no car to get around because I play soccer and play kickball in the adult leagues and those fields are in every corner of Lawrence but no easy transportation but from my bike to get around. I hope someday that can be fixed.
- I think that the transportation network should prioritize needs based on population of usage. That said, if safe bike routes are increased the Lawrence bike population will absolutely increase.
- I use sidewalks where I feel uncomfortable riding with vehicle traffic. I always yield to pedestrians but worry about being struck by a car or truck in streets. Love the Lawrence bicycle loop and only concerns are in areas where I must deal with heavy traffic (e.g. thru downtown, across Iowa).
- I would like to see a few police on bicycles.
- I would like to see community air. Stations. Around. For. Pumping up tires.
- Individuals with disabilities should be considered users of many bicycle infrastructure as well.
- It would be a good idea to keep adult riders off sidewalks
- It's horrible.
- Just got back from Boulder. They should be our model.
- Keep in mind that most bikers are also drivers, and traffic in town already sucks. If you sacrifice drivability for bike access there will be backlash against bikers (think road rage).
- Lawrence has very good bike paths for leisure not necessarily for commuting
- Lawrence is a great city and is going in the right direction on bicycle issues. Physical facilities like bike lanes are awesome, but encouraging responsibility and courtesy behind the wheel might help as well.
- "Lawrence is likely the most bicycle friendly city in the area. Between the main trails in the city and the general community awareness, the situation is quite good.
- That said, if improvements are to be made, I'd suggest utilizing cycling heat maps (Strava, Garmin, etc all record this aggregate data) to see commonly ridden routes through town and working to optimize cycling on these streets. Cyclists will avoid high traffic streets to take slightly less direct, safer route (example: I will avoid riding on Massachusetts St. and instead ride on Vermont or New Hampshire, and ideally streets with fewer stop signs (Connecticut) when riding through town.
- The new maintenance/tool/air stations along the trails are especially helpful to casual riders who don't carry tools.
- The only lack of trail is an east/west route south of the river between where the South Lawrence Trafficway trail ends (NI750 Rd) and downtown Lawrence. "
- Lawrence simply has too many hills for safe, easy bike riding. Flatter, off road bike paths are essential. The bike paths need to be well lighted and equipped with cameras to ensure safety for all. The paths should be connected throughout the entire city.

- Love all the bike paths we have. Just wish there were a better connection on the North side to get from East to West and vice versa. To avoid 6th street one has to take 5th or 4th to Michigan, Michigan to 2nd, 2nd to Princeton, Princeton to Lawrence Ave, Trail to Folks, Folks to Overland and then home on 6th. Very easy on South end to get from 6th to Clinton Lake, Cross at 27th then all the way to O'Connell Rd. Then back to path on 27th, path to 11th street. Then it is difficult to get back West! Hope this makes sense. Ride this route a lot for 25 miles.
- Love the helmet give aways. There is not enough infrastructure and incentive to get a critical mass of folks riding their bikes and that's kind of a shame. Spray painting bike logos on the edges of large roads does not make me feel it all safe about riding my bike on those streets. If anything it gives a few bikers and unsafe sense of security that causes more problems than it helps
- Most people that have a vehicle will most always drive to and from work, no matter what. Americans love their vehicles.
- My parents live in Olathe and this is where my 6 year old learned to ride without training wheels. We live in North Lawrence and it is neither safe nor easy (no sidewalks or treacherous bumps) to ride where we live.
- Need a bike rack
- Will be bicycling for exercise/health
- Have a bike need to get back to using in town
- One of the reasons we retired here is the comfortable size of the town and amenable to making most errands and activities available by bike.
- On-street parking reduces car traffic speeds and often helps biking safety. They can co-exist.
- Parking is already scarce in some areas.
- Please adopt an Idaho Stop Policy: <http://holzeredwardsinjurylawyers.com/2014/10/idaho-stop-law-makes-the-roads-safer-for-cyclists-and-motorists-alike-s/>
- Please finish the loop!
- Questions 12 and 13 are biased and manipulated. What about recreational cyclists who don't believe that more traffic calming devices/bike lanes are needed, and cars are their most-used and most important form of transportation? It seems like the opinion of car drivers is purposely being avoided in this survey because it doesn't fit the narrative that this survey is pushing. This entire survey was created in order to manipulate a specific outcome, that more bike lanes and traffic calming is needed. This is a very biased survey and I am disappointed by its manipulation.
- Realistic planning, signage and mandatory education programs.
- Roads and boulevards are different than streets. Streets should be designed primarily for people, by designers not traffic engineers and car traffic should be secondary to pedestrians, bicycles, scooters, etc. Roads and boulevards should be designed with equal considerations for cars, people and bicycles. Engineers are not qualified to make these considerations.
- Serious dedicated funding is overdue.
- Since Lawrence has so many hills, very few casual riders can get around comfortably. Either provide a map that shows how steep each route is or promote e-biking?
- Since we do not provide driving lanes for all driving abilities multiple lanes for bicycling abilities would be too much to expect the public to support.
- So far this survey is off the mark. Too many people (that think cycling is cool but don't ride much) believe that if you don't have a shared use path you can't ride. Ride in the street. Pay attention. Recognize good streets to ride on and bad streets. Make bicycles the norm, and give them unshared access to streets sometimes. Do more about bike infrastructure that gets cyclists somewhere than recreational paths. Make one lane on Tenn and Kenucky for bicycles only. That is a transportation corridor.
- Thank you & Good luck!
- Thank you for doing this survey and anything you can do to improve the City's environment for bicyclists' comfort and safety!
- Thank you for giving attention to this issue! It is so important.

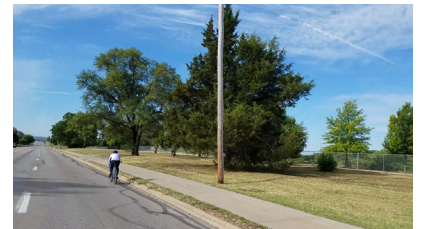
- The city has made tremendous progress in speeding up the amenities for bicycles. I really appreciate the Commission agreeing that the timetable for the Lawrence Loop needed to be accelerated. The Loop is a critical component to improving connectivity with other routes in the city. I also appreciate the solicitation of public input into priorities.
- The hills, curves, and age of Lawrence streets make it a poor network for bike transportation. Off street trails and paths are best and what I use.
- “The law limiting electric bicycles to 750 watt needs to be revised upward. A 750w will not adequately propel a bike to 30mph to keep pace on streets nor with a loaded bike trailer. I realize it is not heavily enforced but needs to be modified to increase law abiding citizens to use and reduce the liability.
- More public education is needed for walkers/runners/bikers on ear bud audio and portable video use. They cannot hear or are distracted when faster travelers approach even with warning bells. Bus riders are VERY bad about this. These “zoned out” users are then startled, some becoming angry due to their oblivion or ambivalence. Busy student bus stops are also bad about standing on bike paths in groups, not yielding to people traversing either by bike or running.
- The Lawrence Loop around the city is wonderful. Please continue to maintain it.
- These facilities are so much cheaper than car /truck facilities. Also, it often seems that bike /pedestrian facilities are designed and built by people who do not walk or ride bikes, which makes for ineffective designs and implementation. The city needs to have a traffic engineer or at least a consultant whose primary mode of transport is by foot or bicycle (I'll volunteer).
- What about off road biking? More trails? Not just roadways but more recreational off road biking as well!
- When I get on my bike I treat it like a war
- While cyclists should have good opportunities for safe roadways, this should be thought out a bit better so not as to PUNISH motorists.



9TH ST. AND VERMONT ST.,
LAWRENCE, KS



LAWRENCE AVE./MARVONNE RD.,
LAWRENCE, KS



WAKARUSA DR., LAWRENCE, KS

PRO BIKING -

- “Bicycling needs to be promoted, along with mass transportation. Along with these should be encouraging serious reduction in car usage, including restricting cars from core areas, thus a need for more parking outside of core areas, as well as better bike and pedestrian pathways leading to core areas, as well as more user friendly mass transit. Mass transit between cities and regions is also critically needed. Car culture is killing us in numerous ways and yet most people are still either clueless or in serious denial.
- Bikes were here before cars. So were walkers, joggers, and runners. Prioritizing cars has done so much damage to our society. It should be harder to move thousands of pounds of steel than a bicycle. We’ve made the opposite seem normal. I’m sorry you want to move that at such a high rate of speed, but it shouldn’t impair my ability to walk across the street or get to work on my bike.

PRO BIKING CONTINUED. . .

- I am glad to hear of this study. If there were better safety ordinances/facilities in place, I would ride my bike to work most days of the week because I believe in a healthy lifestyle and different pace of life. It seems silly that I am genuinely too afraid to bike 2 miles to work, in a town that I have heard always touting about being bike-friendly. I think Lawrence WANTS very much to be bike-friendly, but is not at all. I would love to see some changes. I also think my neighborhood (Warehouse Arts District) is very pedestrian, as opposed to West Lawrence. I think some better routing from this neighborhood would be heavily utilized. As it stands, I'll just keep walking and driving!
- I fell away from biking about 10 years ago, when my office moved within walking distance of my home. My family also purchased a second car. As a result, I had neither consistent nor incidental reasons to get on a bike. Just this summer (2018), I discovered the Lawrence Loop, and it has transformed my riding habits. Now, I ride the full Loop (improvising the northern stretch) about once per week. I feel like a case study for improving the convenience and accessibility of well-planned, INTERCONNECTED bike-friendly paths, and I highly support "closing the Loop."
- I just rode my bike around downtown Chicago on vacation and was thrilled that it was possible. Once I got used to the traffic I felt safe. It is just accepted there that bikes will be a part of traffic. There are also places in Lawrence where due to the hills, biking is HARD. I love the circle around the city and am thrilled that it is almost completed. Your multipurpose trails are also outstanding.
- I like the. Double wide. Sidewalks along Clinton parkway and biking through campus. I plan on buying a "gravel bike" to explore the country side. Overall I enjoy biking in Lawrence
- I don't notice many other bike commuters, which would be nice for the sense of comradery.
- I rode my bike to a downtown class last week. I was pleasantly surprised by the number of people who seemed to be riding bikes as commuters (even on a hot day). People want to do this! Lawrence could be known as a great place to bike. We need to make it more bike-friendly and create *routes* to and from common destinations. Also, a comment about traffic-calming devices. The photo showed roundabouts, and I'm uncomfortable with roundabouts for kids. I suppose my answers might have been different if I was imagining speed humps. Yes, making drivers slow down makes me more comfortable with kids riding.
- I would like to see people in our communities find alternatives to driving a motor car to get around town especially commuting to work and school each day. So anything we can do like promoting bicycling is something that I strongly support.
- I would love and be proud to see Lawrence become even more of a bicycle-friendly town.
- Lawrence could be much more bike-friendly, but any measures which do not make bike friendliness also car friendly will die of backlash. Not only are motor vehicle drivers the majority, but they are even the majority of cyclists. Account needs to be taken of the attitude of drivers to cyclists, and there is a difference between the way drivers see purely recreational cyclists (the guys in the day-glo spandex) and the transportation cyclists and the 5-year-old with training wheels. Even though spandex folks are the most skilled and fastest moving, they are also seen by some as the most annoying.
- I am 76 years old and have been riding for most of those years. For probably 20 years a bicycle was my basic transportation, and I probably put 5 or six times as many miles on my bike as on my motor vehicle. Changes in circumstances made this impractical, and for perhaps the last 5 years I have used my bike very little. Now that I'm retired, I've got the bike out again and am getting in shape to use it again as basic transportation. I also ride for exercise and just for the joy of it. At 76 I am not the rider I used to be, nor am I as bold. Where I used to ride on any road any time (including a 500 mile highway trip) I now feel much better on the quiet streets, and very much appreciate any move to segregate auto traffic from bike traffic, and, for that matter, from pedestrian traffic. We sometimes hear drivers tell us to ride on the sidewalks. If we do, what do the pedestrians do? Not to mention that many of the sidewalks are not fit to walk on, leave be ride on.

- Please adopt the NACTO All Ages and Abilities Guidelines Dec 2017 (<https://nacto.org/2017/12/06/designing-for-all-ages-and-abilities/>) Please focus more on intersections as they tend to be the most dangerous part. Can be very confusing when forced to go between a two-way-path to road intersection (e.g. Wakarusa and Overland) (Rock Chalk Dr and Queens Rd where there are both wide sidewalks and bike lanes, seems a wasteful cross section that could have been done much better with cycle tracks next to sidewalks). On the Lawrence Loop crossings as a pedestrian seems, odd. Cyclist takes much less time to cross, tempting not to push button or wait. 31st and Haskell, 6th and Mass. as the most notable in this regard. New bike lanes through Links complex already have lots of debris. Any chance for bike lockers downtown? With quick release wheels I worry about leaving it out for very long. And while I can detach the front wheel and get a U-lock through frame and both wheels it doesn't work on all racks and is a hassle. Lawrence is too car dominant. Parking probably needs to get more expensive. Measures to make driving less appealing will be difficult but ultimately beneficial. Car infrastructure as we build it now is too expensive. The Queens Rd headache is the result of this. As our city grows there are more destinations to go to but slightly further away. Building at the same density means increasing vehicle miles per resident and the infrastructure costs reflect that. Thanks to the staff and volunteers for all their work.
- Please create more bicycle opportunities!!!! (2)
- Restricted to bike only days in certain areas in Lawrence.
- Stick with promoting bike lanes - you'll get a lot of blowback (look how we heard for ten years about the "emp-T" bus, and now it's a huge, ever-expanding success: the same can be done with encouraging cycling (commuting, errands, and recreational). Promote the health aspects of cycling (especially for the teenage and over-50 demographics). Consider incentivizing bicycle commuting and bicycle shopping.
- We rule our roads on two wheels

ROADS ARE NOT FOR BIKES -

- Bikes belong on bike paths not the city streets.
- Build bike paths in parks, not on public streets.
- Get the bikers off the roads designed for cars and trucks.
- My concern is that if you're going to continue to reduce the number of streets where cars can go, then you need to time the traffic lights, for example on 6th Street. After putting in about 20 speed humps on Trail Road last year, it is impossible to travel on, so I go to 6th Street, which I assume was your intent. However, if you don't want to accommodate CARS ON STREETS THAT WERE BUILT FOR CARS, then you NEED TO TIME THE TRAFFIC LIGHTS SO THAT WE DON'T HAVE TO STOP AT EVERY STOPLIGHT. PARTICULARLY BAD are CHAMPION LANE THAT DOESN'T NEED a LEFT TURN SIGNAL, THE LIGHT AT 6th & FOLKS, WAKARUSA and particularly on WEST TO K10. IT IS MISERABLE TO TRAVEL ON THAT STREET. HOW MANY CARS ARE THERE IN LAWRENCE VS BICYCLES??? WHY NOT ACCOMMODATE CARS MORE? PEOPLE WILL NEVER TRAVEL MUCH ON BICYCLES - THE WEATHER HERE IS AWFUL FOR MOST OF THE YEAR. PLEASE ACCOMMODATE CARS ON OUR STREETS THAT WERE BUILT FOR CARS.
- This is a commuter town with few jobs. tailoring the roads to the few who ride is wasteful and pretentious
- Utilize the sidewalks that your determined to have residents make like new!
- We have a shortage of parking now! I don't want to spend our tax dollars on bikes!
- Adding more bicycle support (bike lanes, etc.) is good but cyclists will still not be respected by motorists. There needs to be more education and signage for motorists to respect cyclists, but there should also be more education for cyclists about the rules of the road and etiquette. I have heard from friends and colleagues grievances about cyclists and most of the time these are in regards to uneducated and dangerous cyclists who give all cyclists and bad reputation.
- Any plan should also include education about safe riding and driving for both car and cyclist. There seem to be a lot of both who do not know or abide by the rules of the road. This includes both drivers of cars who are not attentive to bicycle traffic and bicyclists who do not obey rules of the road and leave drivers guessing what they will do next.

ROADS ARE NOT FOR BIKES CONTINUED. . .

- Bicycling, either in the city or on county roads will never be safe and comfortable until drivers of motorized vehicles are provided education about sharing roads with bicycles and then held responsible for violations of road laws. There should be laws/policies detailing expected motorized vehicle driver behavior and they need to be held responsible for following these.
- Educating motorists about how they should drive when bicyclists are present should be a priority. Right of way in cross walks, proper passing distance, check before opening doors, how vulnerable bicyclists are with big vehicles around, that bicyclists are people too, etc.
- Enforcing Existing traffic laws would be my first priority
- Following cycling rules of the road would also create a safer environment for cyclist, pedestrians and cars.
- I find most car drivers in Lawrence to be aware of bicyclists and friendly. Outside of the city limits, drivers seem to be more aggressive and unfriendly to bicyclists.
- I think the police should become more involved in ticketing both car and bike drivers when they break the law. It would be nice if the school system did more to encourage students (especially at Middle and HS) to ride bikes. Looking forward to the route around Lawrence being completed.
- I want bicyclists to be safe and feel safe, but many act without regard for traffic rules. Drivers of vehicles sometimes act like this as well. I want bicyclists to be respected, but I think they often fail to respect pedestrians, and act as though traffic rules don't apply to them.
- I would support cycling if laws were enforced on cyclists.
- It would be nice if on trails or when I am walking on Mass. if bikers knew rules. For example letting a walker or biker know that they are coming up behind them.
- More ticketing of bicyclist breaking the law. Those who ride two or more across and do not move to single file. A car should be the primary mode of transportation on streets and highways.
- One of the things I love about Lawrence is being close enough to work (KU) to commute by bike, but sharing the road with confused or aggressive motorists and seeing misinformed fellow cyclists breaks my heart, since I know that better information--coupled with expanded infrastructure--could make an enormous difference and make our city even more green!
- Perhaps educate the public that three feet to pass is the law. Signs. The inclusion in the water bill hand out was nice. Connectivity is a large issue. Here are two examples. It was nice that there was a bike lane installed on 19th, but it ends sporadically. When it ends and pushes riders in the streets, it is unsafe. More unsafe than having no lane in the first place. Secondly, I occasionally ride the 21st street bicycle boulevard to campus. Bikes are permitted to cross Iowa going west, but not going east. HOW AM I SUPPOSED TO GET HOME????????? Please install a bicycle island in this area. In general, THIS TOWN IS HORRIBLE FOR BIKES. I commuted everyday to work for almost a decade before moving here and then stopped because it is so unsafe and unconnected.
- Share rows are not the end all solution. Drivers have very little respect for them. Dedicated lanes are, however, the only real way to ensure that cyclists of all ability, and parents of children, feel safe letting their kids out to cycle. A City-wide commitment to an infrastructure of dedicated lanes would cultivate a culture of biking that is inclusive and therefore inter-generational and sustainable. We do have the limitation of having winter here, though. I don't bike much in the winter. It's too cold and ice is treacherous. So, dedicating significant tax dollars to cultivating an enduring biking culture would only be fruitful eight months out of the year. That's a thing to consider. A final thought is that a public funds campaign to educate motorists on how to help keep driver's safe is necessary. I like to think that drivers would be more considerate of cyclists if they knew what the rules are and methods and protocols for interacting with bikes on the road. Some people are just jerks and will always be inconsiderate, but I hope that a lot of the drivers who have nearly killed me just didn't know what they were supposed to do, didn't know that they were supposed to be aware of bikes.

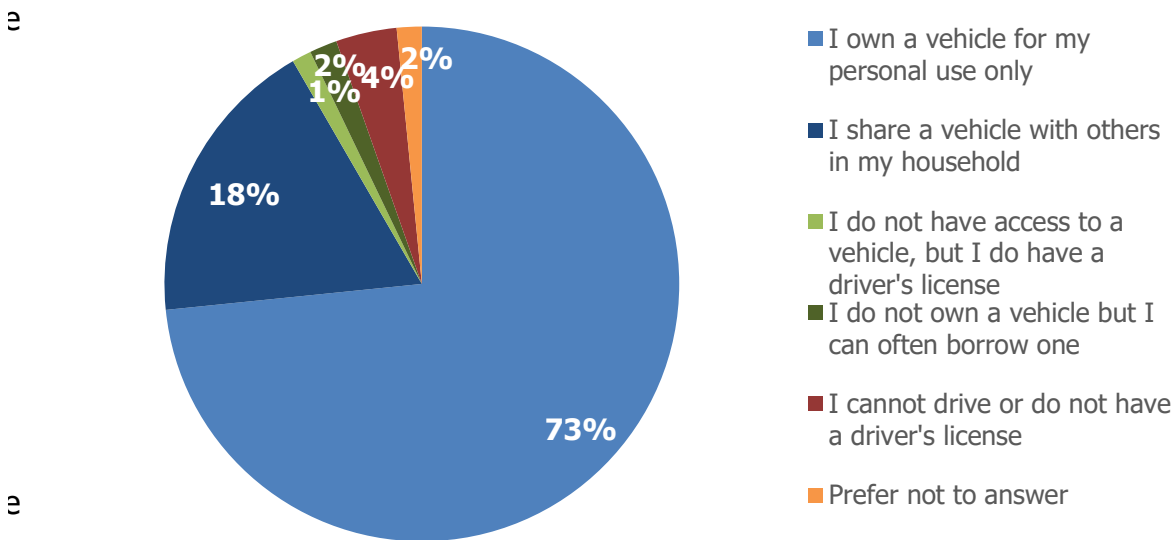
- The biggest hurdle for me is the average driver's attitude regarding cyclists. I frequently see drivers too close when passing cyclists (<3 feet). On a near daily basis, I see numerous cars ignoring the lines separating motorist and bike lanes. I have no idea how the laws apply to driving in bike lanes, but perhaps if it could be enforced, drivers would take cyclist safety more seriously.
- The more that drivers are aware of the rights of bicycles on roadway
- We need to do more around encouragement, education, etc. as well as improving infrastructure. We do need a network of more connected, protected infrastructure as well.

SAFETY -

- I use my bike very much and would like to see more people do so. But, asking for Lawrence/Douglas County to equally prioritize bikes with other travel modes, is probably asking too much. Many more people will continue to use cars over bikes for many reasons. BUT, I think that putting more resources than we currently do into biking facilities is a very important for everyone. I know that many more people would use bikes in this city, at least some of the time, IF the facilities, especially related to safety, were improved. And, then it would be a safer and more comfortable for all current cyclists. There is a lot of data demonstrating that getting more cyclists on the road is one of the most important ways to improve safety for cyclists.
- Connecticut St, I feel is unsafe for bicyclists
- I appreciate how pro-bicycle Lawrence is. I am concerned with the number of people riding on sidewalks though - it is demonstrably unsafe for cyclists and pedestrians alike. Perhaps some outreach would be good to educate riders about safety.
- I find the bulb outs on cross walks and intersections to be dangerous to navigate on my bike.
- I know many people who have been seriously injured by cars while biking so riding my bike makes me nervous and I feel even more nervous about my child riding his bike.
- I really want to. I'm terrified of getting hit. Anything that would make it easier to bike in this town would be awesome!
- I ride a lot of gravel out in the county and the number one concern is the dogs. I've been charged, surrounded, and everything short of actually bitten. There should be a leash law everywhere.
- "I used to be an avid cyclist riding just about anywhere at any time. However, I feel that traffic has become less "forgiving" and it is no longer safe to ride the places I used to ride. An example are Kentucky and Tennessee streets. Thirty years ago in the early 1990's I would use those streets to go across town. I don't feel that is safe any more.
- There are thoroughfares, such as 23rd street, Iowa Street and 6th street that block safe cycling. It would be nice to have safe alternatives to riding on those busy streets."
- Promote more safety for children riding to school!
- The most dangerous thing I encounter is people walking dogs on bike lanes. Dog will be on one side of surface, human on the other with lead across the path and no where to go but off the path some of which are somewhat high. This has happened to me on several occasions over the years.
- The safer it is to ride, the more people will want to use this great option for transportation.
- There needs to be something done about the high numbers of bicycles that are stolen. I won't leave my bike anywhere, which means I can't go to the store or out to eat or where ever on my bike because I'm afraid it will be stolen. My son's bike has been stolen. My friend's bike has been stolen.
- When our children were younger (<8 years) we were much less comfortable with them biking in town.

When asked “Do you own or have access to a car/vehicle? (Select one)” Respondents indicated:

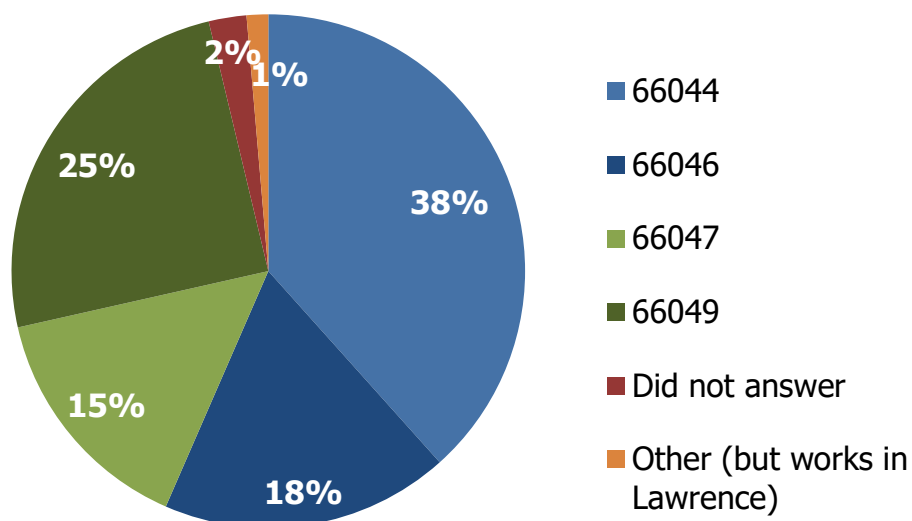
Figure 18: Car/vehicle Access



Number of Responses - 575

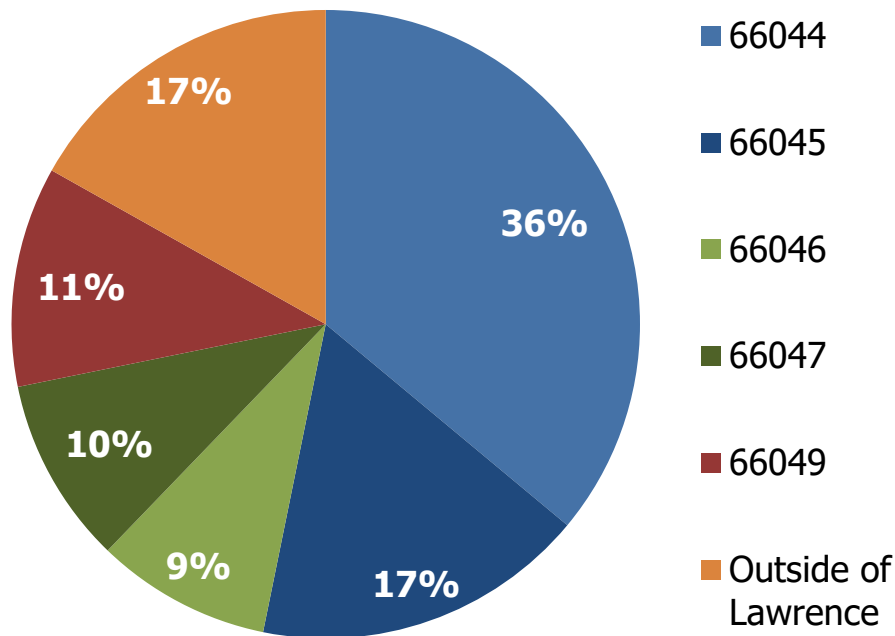
When asked “What is your zip code: Home?” Respondents indicated:

Figure 19: Home ZIP Code



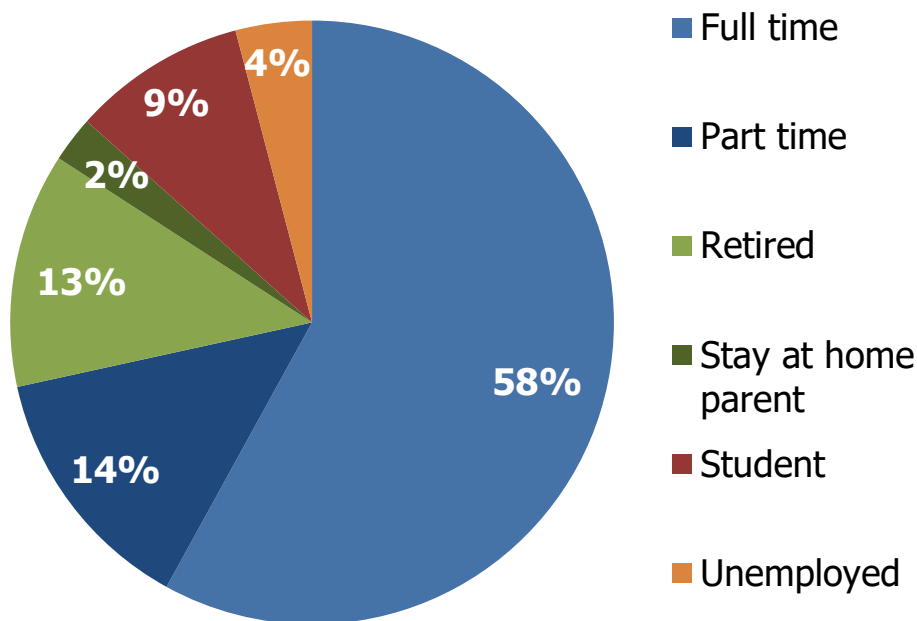
When asked “What is your zip code: Work?” Respondents indicated:

Figure 20: Work ZIP Code



When asked “What best describes your employment status? (Select all that apply.)” Respondents indicated:

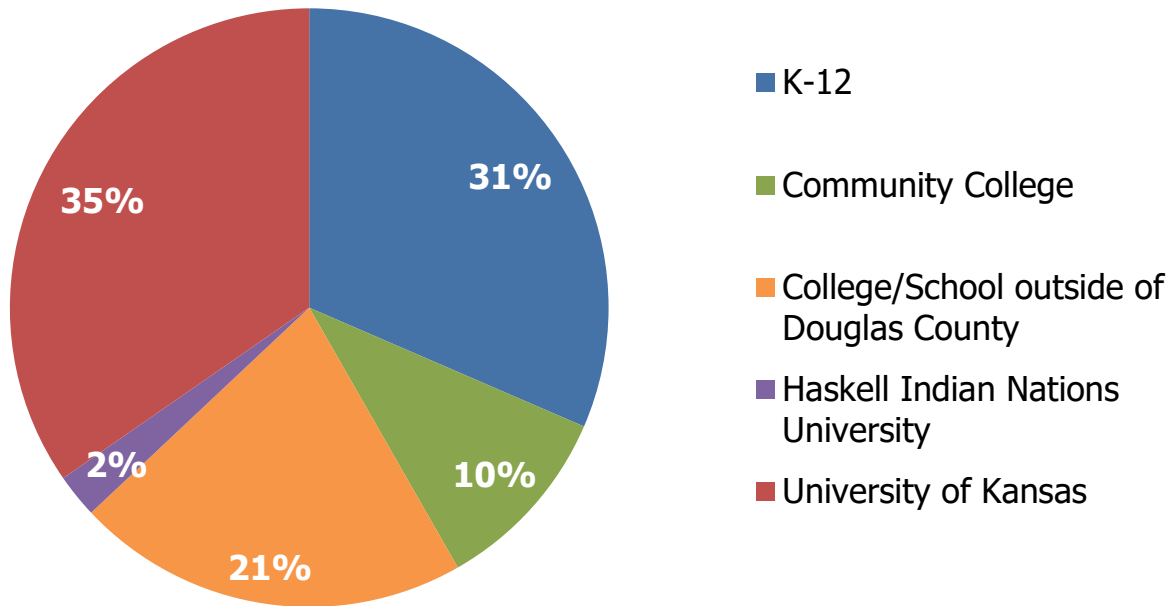
Figure 21: Employment Status



Number of Responses - 612

When asked “If you are a student, where do you go to school? (Select all that apply)” Respondents indicated:

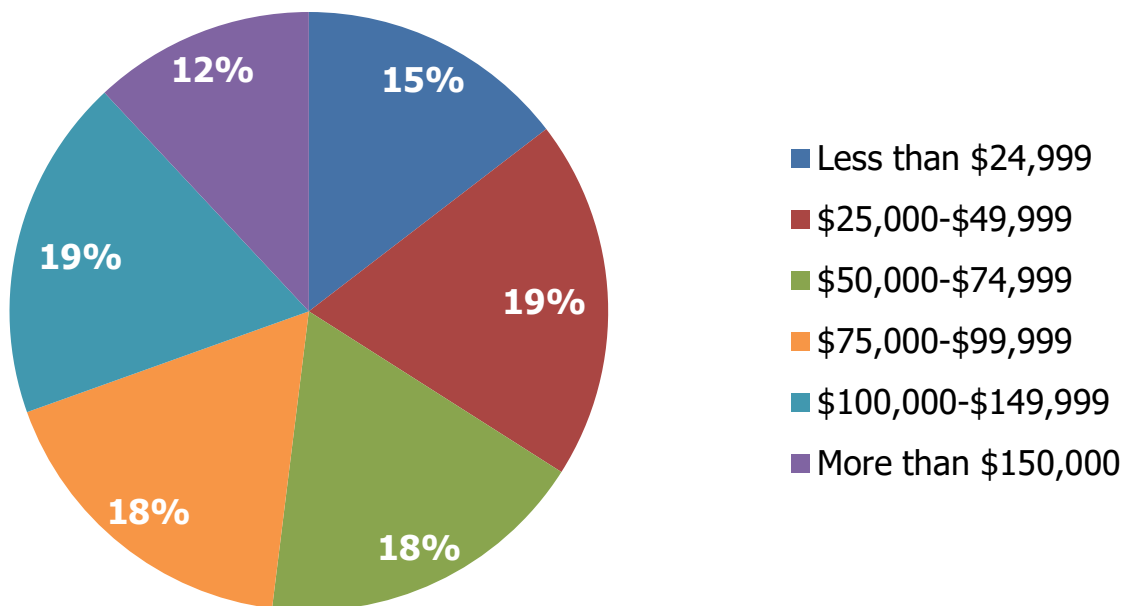
Figure 22: Schools



Number of Responses - 127

When asked “What is the approximate average household income? (Select one)” Respondents indicated:

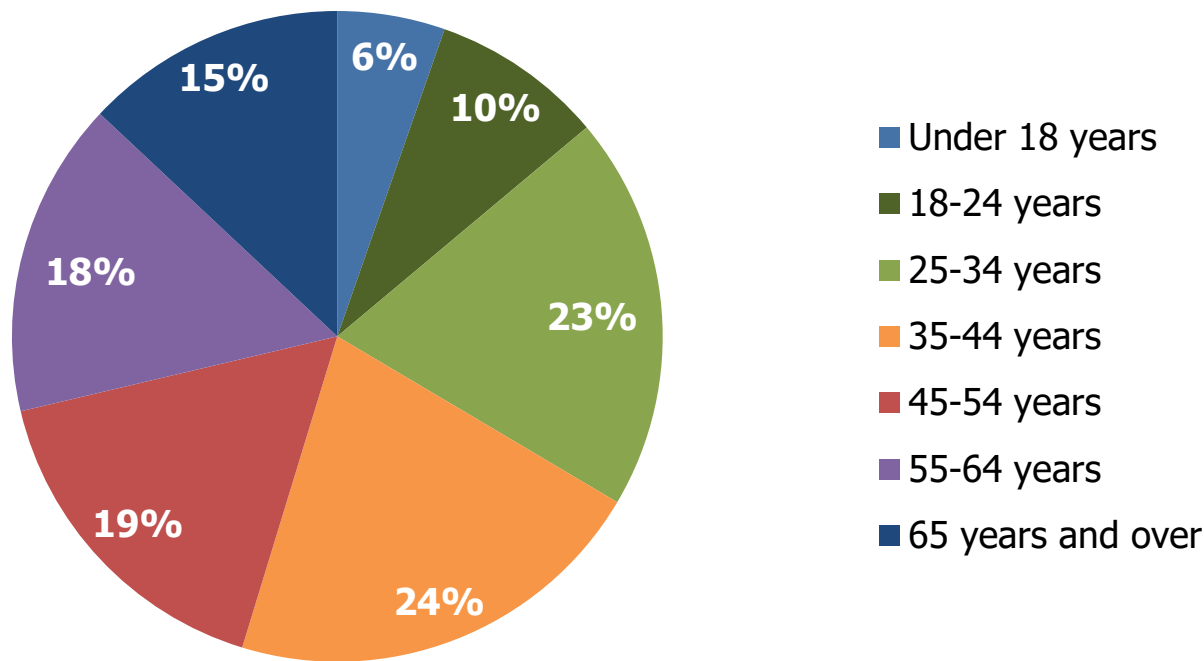
Figure 23: Income



Number of Responses - 535

When asked “What is your age? (Select one)” Respondents indicated:

Figure 24: Income



Number of Responses - 488

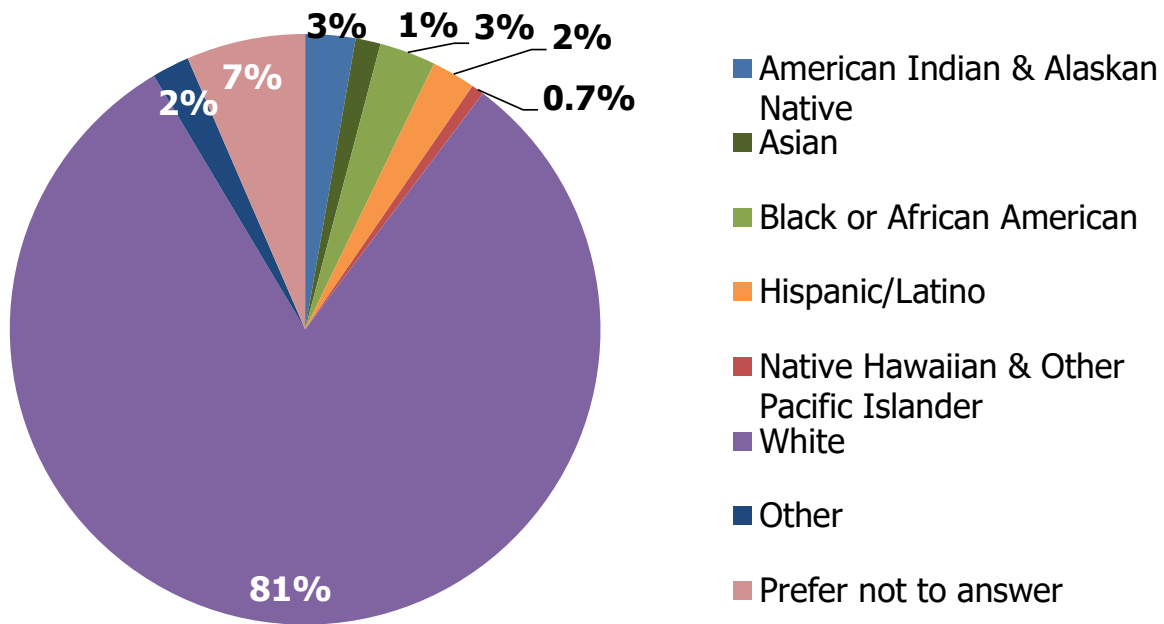
When asked “What is your sex? (Select one)” Respondents indicated:

Figure 25: Sex



When asked “Which race/ethnicity best describes you? (Select all that apply)” Respondents indicated:

Figure 26: Race/Ethnicity



Number of Responses - 584

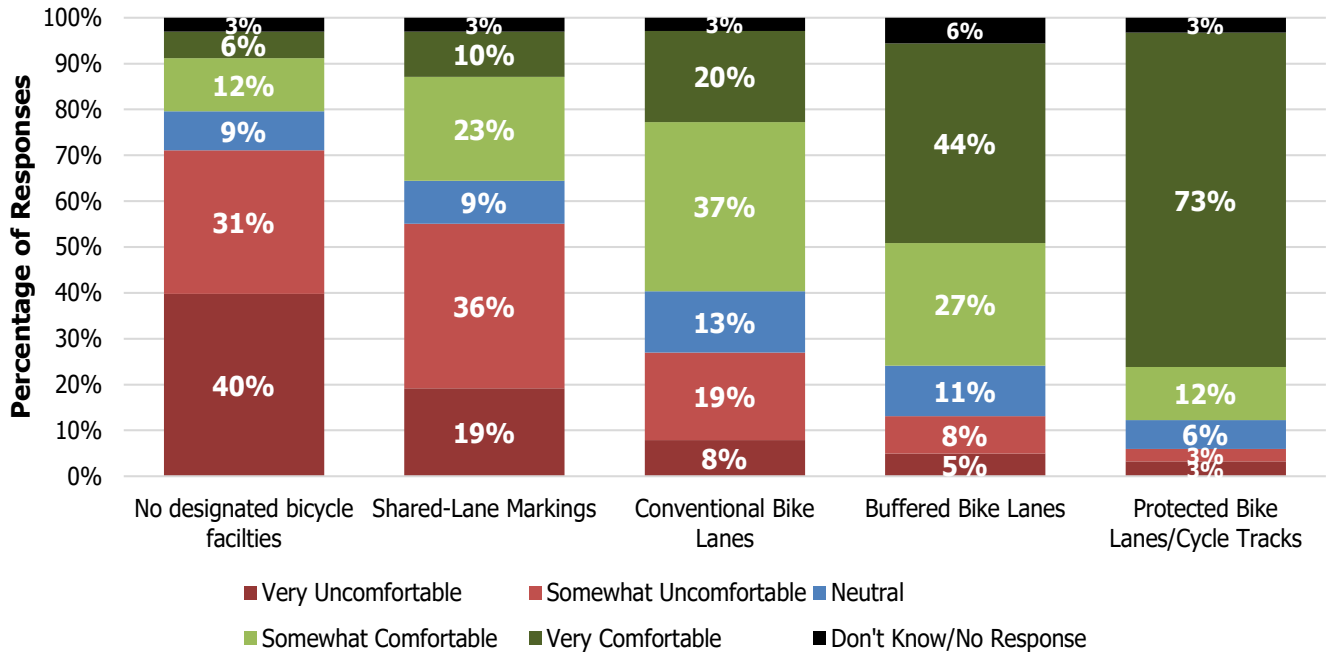
Other responses:

- Human (5)
- I am “Brown” Latinx.
- Middle Eastern
- Mixed race
- Multiple
- South Asian
- US Citizen
- White

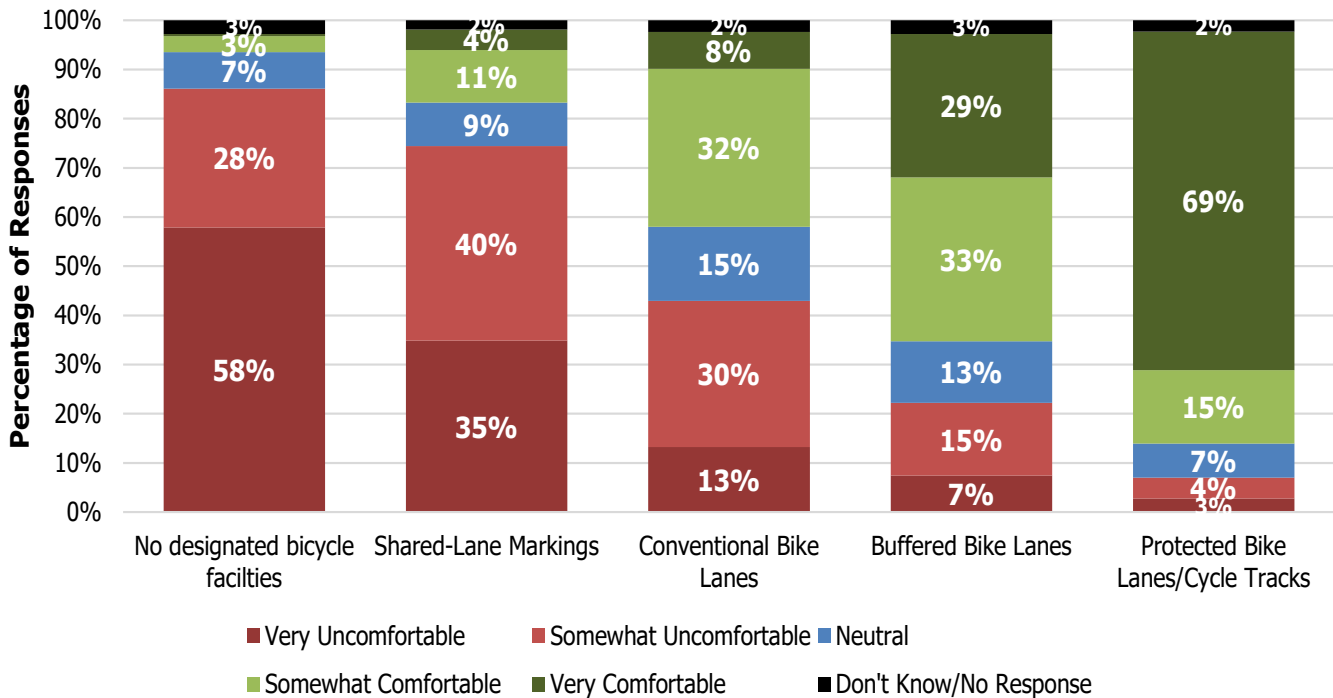
SURVEY 1 COMPARISONS

When asked “How comfortable do you feel bicycling on different forms of bicycle facilities on commercial streets?” Respondents indicated:

ALL RESPONDENTS



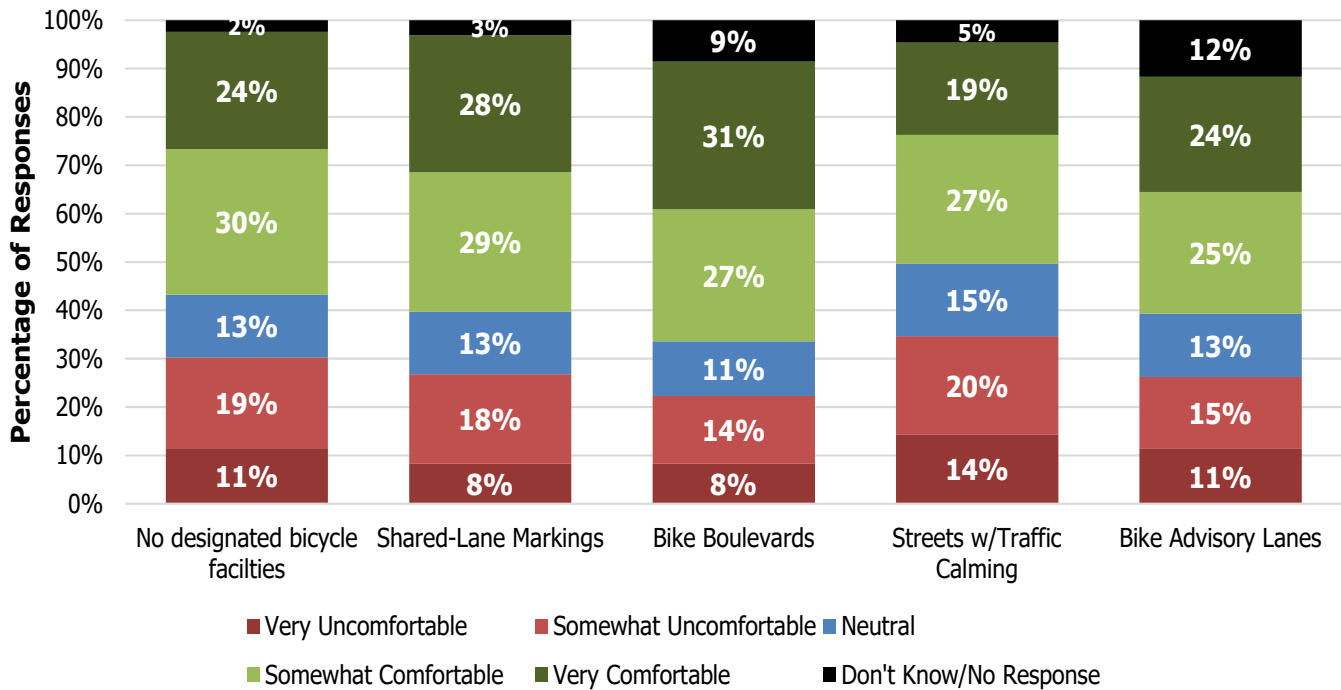
CONCERNED CYCLISTS*



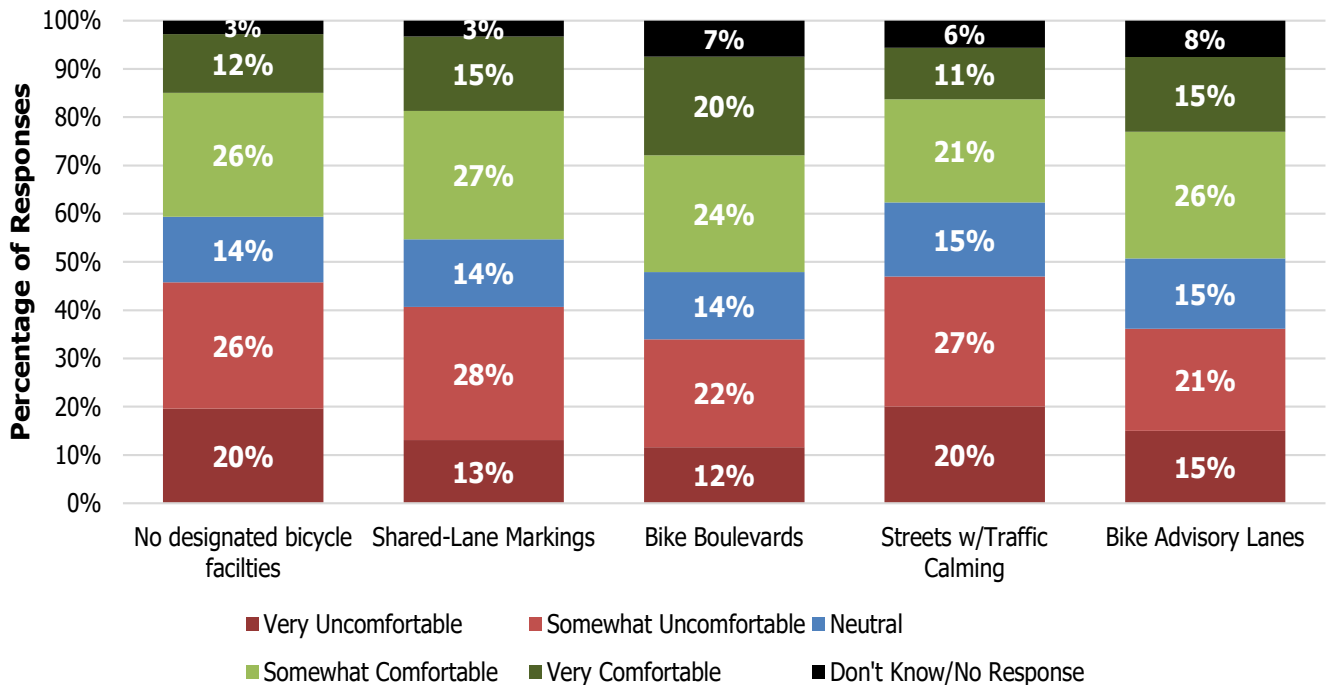
* Concerned Cyclists self-identify as bicycling only on separated shared use paths, and would like to bike more if streets or facilities were more comfortable/safer, or are not comfortable bicycling, but would like to bicycle.

When asked “How comfortable do you feel bicycling on different forms of bicycle facilities on Residential/Neighborhood Streets?” Respondents indicated:

ALL RESPONDENTS



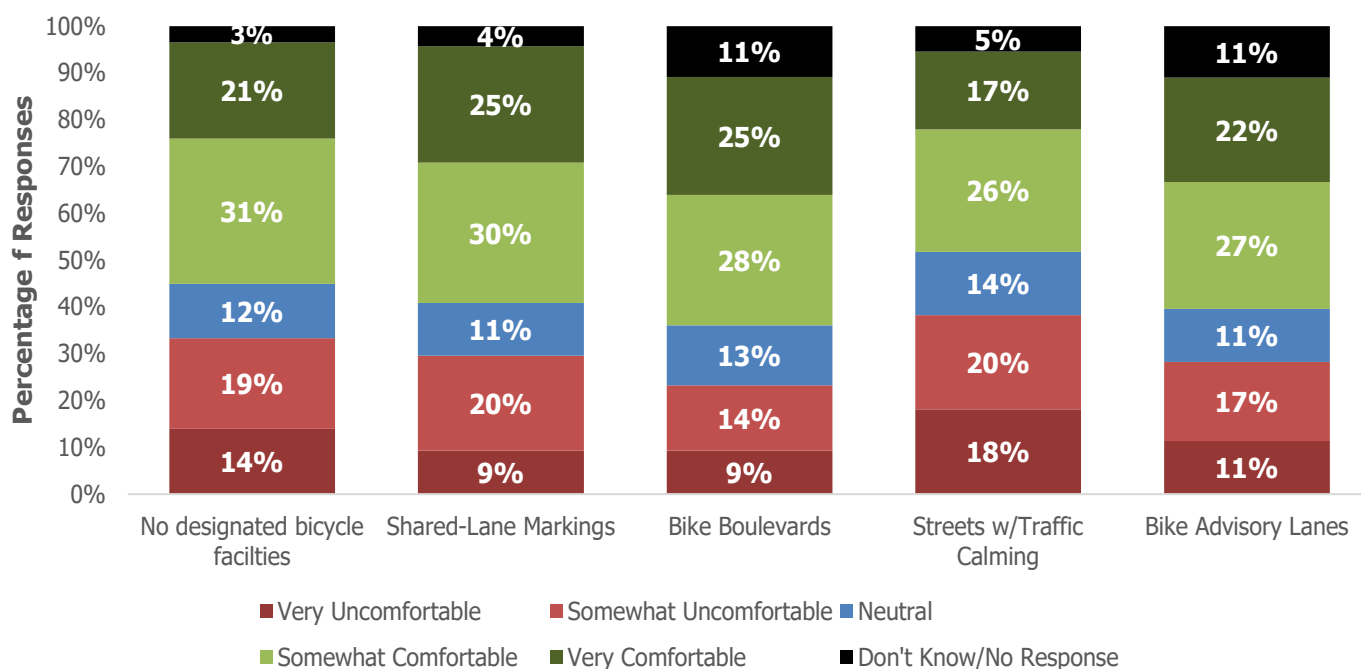
CONCERNED CYCLISTS*



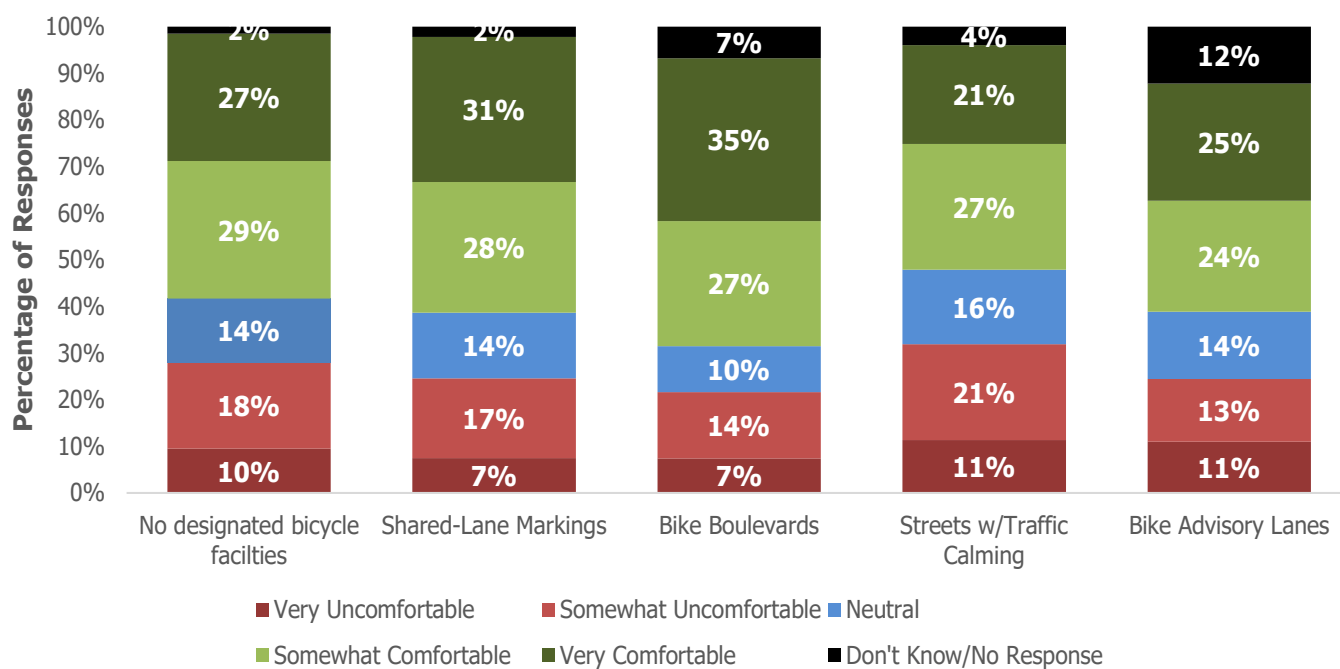
* Concerned Cyclists self-identify as bicycling only on separated shared use paths, and would like to bike more if streets or facilities were more comfortable/safer, or are not comfortable bicycling, but would like to bicycle.

When asked “How comfortable do you feel bicycling on different types of bicycle facilities on Residential/Neighborhood Streets?” Respondents indicated:

FEMALE RESPONDENTS



MALE RESPONDENTS

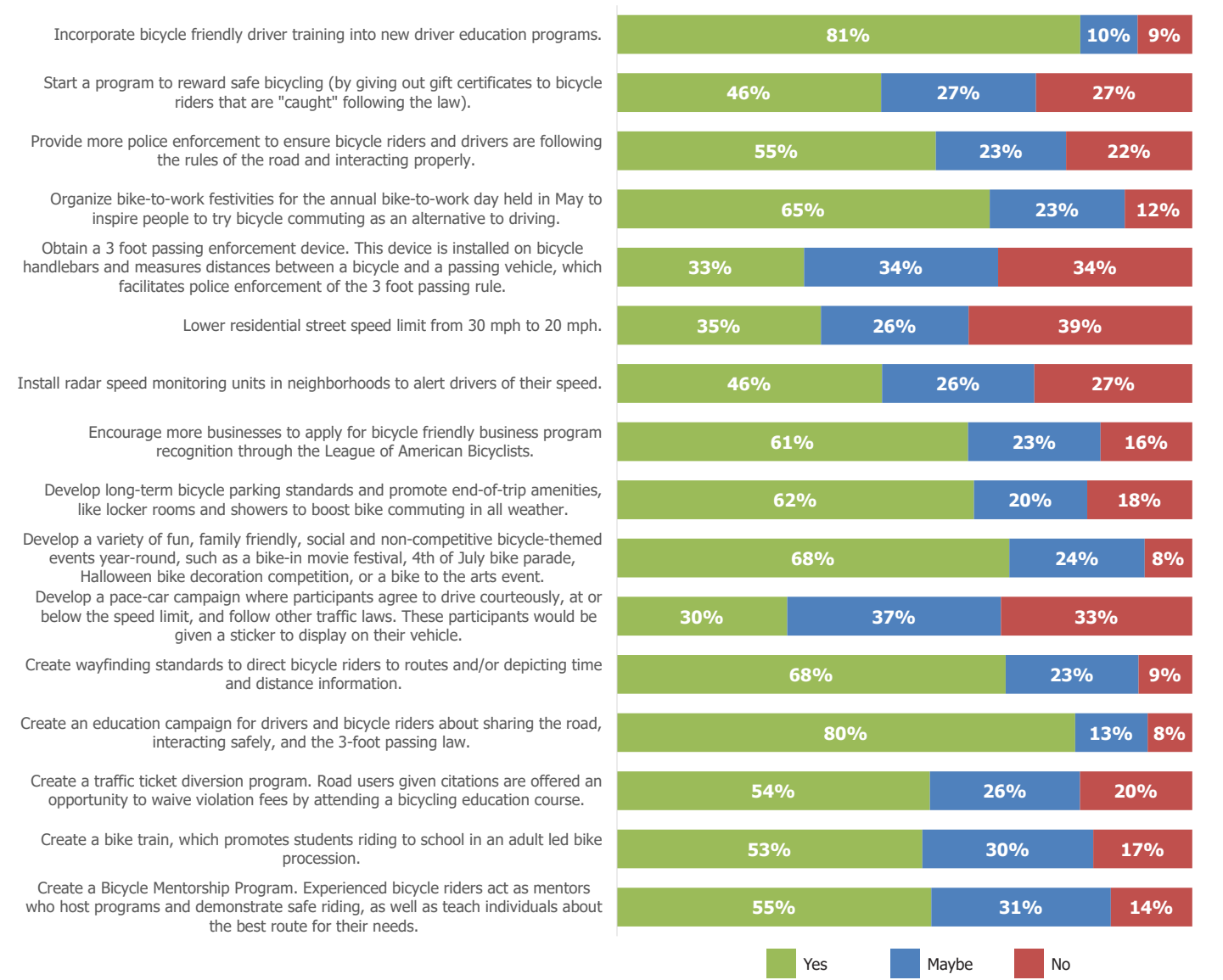


SURVEY 2

The second survey focused on how we could make Lawrence more bicycle friendly. Various programs to implement the E's of bicycle planning were presented for public input. Respondents were asked if they would support the programs listed in Figure 5.

When asked “Would you support implementing the following programs (Circle onr answer per statement)” Responses indicated:

Figure 27: Support Implementing Programs



Number of Responses – Ranging from 405 to 413 per statement

Other responses:

EDUCATION/ENCOURAGEMENT

- “sharrow” education, and education about interaction with bicycles in traffic circles
- Bike Security Education (think bike locks and good spots to lock the bike)
- Develop a multi-faceted county-wide educational/law enforcement campaign to train motorists on the rules of the road as it applies to cyclists. I understand that some of the above programs are aimed at this but, a comprehensive and highly visible strategy is needed; one that does not require motorists to opt-in but rather, one that implements a “cultural shift approach to educating motorists and cyclists.
- Develop specific bike components (including routes) for Safe Routes to School program
- Develop suggested “easy routes” maps for various neighborhoods that encourage practical trips (to grocery store, coffee shop, etc.). Create bike registration program with RFID chip to locate stolen bikes.
- Educating both cyclists and drivers about the rules/laws is crucial. Starting a program at the elementary school level would be great. Educating everyone about respectful use and laws of multi use trails is also important.
- Emphasize the need for lights or at least reflectors on bicycles ridden at night, whether on streets or trails. Have had several close calls as a pedestrian nearly run down by dark bikers and as a driver narrowly missing bike riders in dark clothing without any reflectors on the bike or rider--one was riding the wrong way on a one-way street and when I stopped to talk with him said he thought that was how bikers were supposed to ride--facing traffic.
- Encourage better rider visibility, esp lighting. Consider boat lighting model with indicator colors for lDing direction of travel. Maybe develop a similar bike system..
- Help educate the Police about investigating cycling incidents
- I believe strongly in educating drivers about bike-friendly driving. Teaching driving about how to be kind to cyclists and pedestrians, and helping them understand that driving is a privilege that not everyone has.
- Last one is the most important! Drivers really don't know the laws on bike safety
- Most dangerous areas we encounter is Right turn lane or left turn on green vehicles no seeing/honoring bikes on major ways like 23rd/CP and commercial drive cuts. Signage for vehicles to look before turning?
- Need education for cyclists, have seen many blow through stop signs, pass stopped cars in gutter to get at the beginning of the stop light line
- Offer bicycle riding lessons for all ages that includes safety training. Also, provide more (more options and more frequency) and much cheaper public transportation with incentives for using it to reduce the number of cars on the road.
- Start educating children about rules of the road (all modes of transportation) when they first start school and gradually increase the complexity of information provided as they get older. Look to the Netherlands for examples of that type of program. (2)
- Teach anyone who rides a bike the rules of the road and fine them if they don't follow them. Have anyone who has or buys a bike take a test just like a person who drives a car and give them some type of card that says they know the rules and fine them if they break them.
- Training bike and car drivers in the safety rules/traffic laws is most important. Most people don't know about the “dead red” law: K.S.A. 8-1508 is hereby amended to read as follows: (4) The driver of a motorcycle or a person riding a bicycle facing any steady red signal, which fails to change to a green light within a reasonable period of time because of a signal malfunction or because the signal has failed to detect the arrival of the motorcycle or bicycle because of its size or weight, shall have the right to proceed subject to the rules stated herein. After stopping, the driver or rider shall yield the right-of-way to any vehicle in or near the intersection or approaching on a roadway so closely as to constitute an immediate hazard during the time such driver or rider is moving across or within the intersection or junction of roadways. Such motorcycle or bicycle traffic shall yield the right-of-way to pedestrians lawfully within an adjacent crosswalk and to other traffic lawfully using the intersection.



11TH ST. AND MASSACHUSETTS ST.,
LAWRENCE, KS

ENFORCEMENT -

- Better enforcement of current laws for cyclists and motorists.
- Bicycle registration, licensing, safety and road law events, training focused on children.
- Bring those who hit bike riders to justice and make them pay medical insurance for the rider plus to serve time in jail. If rider (God forbid) are killed to make driver serve a long time in jail.
- Comments on some of the things I marked "no" on above. Particularly the ones that involve enforcement. I think we're getting the cart in front of the horse here. Clearly LPD already has resources challenges as it is. Adding more laws and programs that cannot be enforced is worse than not having them at all. Lowering speed limits and/or adding radar units cannot be enforced. 3' enforcement devices will only work if action is taken on violations. Example: In my neighborhood, cars are often parked or standing in bike lanes. LPD needs to enforce, or the city needs to remove the bike lanes. I'm not trying to be negative, but we can't or won't enforce what we have... adding more rules we cannot enforce won't help.
- Cyclists need to START following road rules (STOPPING at stop signs and going the posted speed limit). Yet cyclists should get gift certificates for actually following the law?? Do you do the same for drivers? Cyclists need to stop getting treated like they are better than anyone else on the road with their own privileged, golden rules and yet not have to live up to the same standards as cars do. If the road is unsafe for cyclists it's because cyclists are not safe drivers. I have NEVER seen a cyclist stop at a stop sign - which they should and never do, get a ticket for. You need to educate cyclists on how to properly operate their bike on the road and ticket them when they do not, which is often. They cut across cars, they don't obey lights, don't yield to pedestrians in walks, they go 4 miles an hour in the middle of the road when it's 35 mph! Cyclists are the ones making the roads unsafe because they are not going by the same road rules as drivers, who hardly know them either. An enormous amount of education needs to begin at the elementary and high school levels of the rules of the road for both drivers and cyclists. Road safety/driver's ed should not be an optional course.
- Enforce no cell phone use while driving. I don't feel safe biking when all it takes is one swerve from a car to take out a bicyclist.
- Enforce the law on bicycle infractions like running stop signs and traffic lights. Require lights on bicycles. Register bicycles and require licenses.
- Enforce the law strictly as to drivers in heavy bike/pedestrian traffic with signs followed by camera enforcement, e.g., by the SLT
- Enforce traffic laws on bicycle riders. Stop practice of riders weaving between sidewalks and roads to bypass traffic control and constantly running stop signs and red lights.
- Get the cops to actually give tickets for speeding & running stop signs, esp at 21st & Ousdahl.

ENFORCEMENT CONTINUED . . .

- Give tickets to bicyclists who do not follow the rules of the road.
- I would like for rules to be enforced on bicyclists. I regularly encounter bicyclists who totally disregard stop signs, signals and yield signs. It is very rare that I see a rider obey these laws. Many come across as if it's the responsibility of the vehicle driver to look out for them.
- More bike riding police officers setting examples of safe riding.
- Provide more police enforcement to ensure BICYCLE RIDERS are following the rules
- Pull people over for driving in the bike lane. Create safe routes among arterial streets for cyclists (Iowa, 23rd streets).
- The biggest problem with making Lawrence more bike friendly is making the bikers more road friendly - just in the past 2 weeks I have seen 4 bicyclists run red lights. By road users ----- who does that question pertain to? The car drivers or the bicyclists? I think it is the bicyclists who need the education about sharing the road and obeying traffic laws. if I ever accidentally bum into a bicyclist, I don't feel like I as a car driver would be given a fair trial. Screw the lawless bicyclists in this town.
- Ticket bicyclists who do not follow traffic laws. I have seen too many bicyclists run stop signs and ride side by side on streets where there are bike lanes.
- We don't enforce rules for bike riders now nor are a lot of riders very courteous to people walking. Many adult riders seem too think/act like they are the privileged few with how they operate their bike both on roads and sidewalks.

ENGINEERING/BUILT ENVIRONMENT -

- Add dividers on selected streets to create bike lanes protected from autos. For example, the lane on Bob Billings west of Wakarusa is great, but I often see drivers that do not respect the lane.
- Better bike storage at rental apartments (covered, secure, no stairs, works for cargo bikes and such too)
- All of these ideas are good, but they do not address the existing infrastructure. The fact is, if the roads themselves are not safe, no amount of educating will help.
- Build and maintain more bike paths around town. A painted lane on a main road is not a safe bike path. Build more paths & maintain the existing ones around town.
- Build more bike infrastructure; separated bike lanes on major roads; complete the loop around Lawrence; require bike/pedestrian accommodation on any new road construction or significant work on existing roads; plenty of bike parking; Idaho stop for bikes (rolling stops when conditions permit); more bike work stands throughout community;
- Create more bike lanes on major streets in Lawrence (i.e. Massachusetts)
- Create MORE bike lanes that are actually SEPARATED from vehicles, CONNECT the bike lanes from NAISMITH PARK to other routes which has been ignored with new construction!
- Create more bike lanes, and those that are protected from traffic - flip the parking area and bike line as they are currently on Lawrence Ave between 6th and Peterson. This way the bike riders are riding between parked cars and the sidewalk.
- Create more truly bike-and-walk-able paths throughout Lawrence by actually biking and walking common routes to destinations. Planning often ignores best routes for cyclists and pedestrians, forcing them to cross at awkward times, not providing paths that make the most sense for important destinations.
- Created guarded bike lanes. No more two block "bike lanes" like those that exist on 9th just west of downtown. Create more multi-user bike/pedestrian pathways that are independent of street system. For new and future bike lanes create physical barriers such as standing stick barriers and curbs in addition to the painted street markers you all seem so fond of.
- Get rid of the painted lanes, they are not safe and actually present a hazard themselves. Do the responsible action and make wider and new/old sidewalks that bicycles and pedestrians can share. Ticket those that ride abreast and create a traffic hazard.
- Give us safe infrastructure for bicycling and most of us can figure out how to use it well. Spend the money on infrastructure.

- I appreciate the bike rideability map. I believe money is best spent making roads safer for cyclists and creating bike lanes and paths. That is, I support investments in infrastructure more than education and encouragement.
- I think there should be more bicycle lanes.
- I'd prefer more neighborhood traffic calming devices (speed bumps or medians, for example) to expensive speed monitoring devices. Those just tell drivers they are speeding; better to make them slow down.
- Install more bicycle parking and bicycle maintenance stations (such as the one at the Merc.) Incentives to bike-and-ride the city bus, such as a punchcard that gives a free ride when filled.
- Install proper bike lanes on roads. More bike paths.
- Larger signs (or other means) to indicate to drivers they need to yield to cyclists in crosswalks. Example: K-10 exit to North on Iowa
- Make corners and ending of bike lanes safer by doing the small things like paving the small shoulder or a rideable storm drain
- Make more bicycle lanes!!!
- Make sure that bike paths are well-lit and have safety features (such as alarm boxes, air pumps that work, hydration stations). Connect to bike shops along the routes and provide incentives for people who use the paths.
- Make sure that official bike lanes are wide enough to accommodate adult tricycle types of bikes.
- Marked bike lanes. Unfortunately, many of the streets in Lawrence are too narrow to accommodate, especially with parking on the streets.
- More and better bike lanes, like what was implemented on Mass St. near South Park.
- More bike lanes!!!
- More continuous bike. Lanes & better signage for existing lanes
- Need more bike infrastructure (bike lanes) - connected in a logical system.
- Protected and separate bike lanes out of the door zone of parked cars and away from car traffic and pedestrians
- Provide shoulders for cycling on frequently cycled roads, as was recently completed on highway 458. Provide more restricted bike lanes Lawrence thoroughfares to get safely around town
- Regular (2-3 times/year) inspection of bike routes and paths for safety and usability--look for potholes, pavement/sidewalk heaves, crumbling, etc.
- Safety signage indicating watch for bicycles and pedestrians at crosswalks where accidents cyclists have been struck.
- Signage on public streets indicating to watch for bikes, and signs reminding drivers that the 3 foot rule applies on ALL streets. This may be the ONLY way to reach some drivers with this education. Keep curb areas free of dangerous deep potholes!!
- Your focus should be on safety such as at intersections. Much of the above is feel good stuff with little impact. Unless the police enforce both bicycle and car adherence to the law, nothing much is going to happen.

MULTI-COMMENTS -

- 1) Have speed limits for speed riders in neighborhoods. 2) Educate riders about neighborhood features like no sidewalks and poor visibility. 3) Provide rules for cyclists using sidewalks (i.e. 23rd Street). Should they stop at each corner? Give pedestrians the right of way? 4) Enforce proper turns for autos. Turns are a major hazard for cyclists.
- 1) Integrate the Lawrence Loop with bike routes in the county, e.g. Farmer's Turnpike, 458, 1400 Rd to Eudora. 2) Improve safety at side road/bike path interface. Auto drivers don't look both ways and roll forward to the street rather, so if I am approaching from their right I get hit. 3) Bike riders might be on the street, on the sidewalk, on the bike path, riding against traffic flow on the bike path--too many possibilities for auto drivers to account for.
- I do not support putting more money and time into bicycling in Lawrence. I especially do not support the proposed changes to 21st St. I feel the city is catering to a small number of bicyclists compared to the number of drivers.

NO BIKES -

- Bicycles are not safe on the roads with traffic. They don't follow the laws. They don't stop at lights or stop signs. They think they have the automatic right of way. They ride around downtown and don't follow any of the traffic laws. They ride in between cars they hit cars with their bikes. Bikes shouldn't be allowed downtown. Police need to be more vigilant and give them tickets for not obeying the traffic laws.
- Bikes are a micro minority issue in this community
- Biking in Lawrence is absolute trash. All the sidewalks are garbage. All the streets that say they have a bike line clearly do not have enough room. No one knows proper bike safety in Lawrence. There are no public bike racks anywhere (or in places that are actually safe to keep bikes) getting around Lawrence is so car focused that traffic is terrible and alternative modes of transportation are discouraged. If we want to reduce traffic, road maintenance costs, promote community health- large bike lanes must be developed, potholes must be filled, sidewalks rebuilt (let's at least make them connect y'all and a usable width for walkers and uncomfortable cyclists cuz you know they are on them) y'all need to do less infrastructure for cars and more for bikes. I've biked across the country and Lawrence is one of the worst towns I've been in.
- How about we ask bicycles to stay on the sidewalks with pedestrians and enforce the bicyclists to pass pedestrians by 3 feet.
- I am strongly against increasing bike use of city streets, but would support making parks more bike friendly. Bikes belong in parks. Not on busy streets.
- People on bikes act like they own the road now maybe its time we took the streets back for cars and stop letting them have so much power
- Please outlaw riding bikes on the downtown sidewalks. It is too dense and I have seen near hits by bike drivers and have seen very shaken older folks who are beginning to refuse to go to downtown Lawrence. Not only is this a safe practice it is common courtesy.

OTHER -

- Add motorized scooters to increase the need for multi-modal transportation options.
- Bus routes that go to rural areas just outside of Lawrence and accommodate bicycles / youth cycling teams (competition/non-competition) block off main street to only bicycles and disabled
- Encourage the scientific community to invent a time-machine to go back to inform the first city planner designers to include streets super-wide to include future mega-traffic and side traffic for bicycles. And what genius thought up the 21st street bike lane proposal?? Probably from the same think-tank that most of these questions came from.....geez!
- Give back the public bicycle parking to the public! The KU bikes are taking a large percentage out of the bicycle parking spaces. Have KU build their own bike racks and stations around town instead of using ours.
- Have a license for riding a bicycle that includes property taxes.
- Hills are too steep
- I am totally pro-biking but I'm reluctant to support programs that offer reward to those simply doing what they are supposed to do.
- I checked items calling for more adherence to existing regulations. All the other items require resources and/or buy-in, so one risks backlash and failure. I just don't know enough to feel strongly about those items.
- I worry more about hazards to pedestrians, especially areas with no sidewalks or severely damaged sidewalks. What are the actual numbers for bikers compared to walkers?
- In general, I'm more in favor of the MPO focusing attention on policy and enforcement changes vs programs that are costly to run and/or may only attract small numbers of participants. Leave the programming to volunteer groups.
- Keep the damn police cars off the bike trails! They don't fit, they don't belong. Get out of the cruiser.

- Locker rooms and showers for bike riders??? Can they be used by homeless or under houses individuals/families?
- More sensible bicycle rules of the road, mainly, implement the “Idaho stop”.
- NOT AT ALL FOR THIS: Create a traffic ticket diversion program. Road users given citations are offered an opportunity to waive violation fees by attending a bicycling education course.
- Nothing to add. Good stuff.
- Pop up bike shops
- Some of these I don’t understand, like the 3-foot enforcement device--potentially a good idea, but I can’t picture it. Also, I know that 20mph is the speed limit at which injuries and fatalities for walkers and cyclists drops wildly, but it seems like a proposal that will just make people angry so I wonder about 25 instead.
- Support the completion of the future bikeways shown on the map below. If we have a more adequate network of bike paths that minimize encounters with cars, cycling will be encouraged and safety will be maximized.
- Tell cars not to use the bicycle lane for turning.
- The biggest issue is bike lanes outside of town toward lone star and Perry lakes
- The majority of these ideas are just plain silly. The central problem with biking in Lawrence is the lack of cohesive bike routes. I bike about 3 miles from my house to campus. You would think that in that short of a distance, I would be able to find a cohesive bike path (i.e., bike lanes, shared use paths, etc.), but bike lanes in Lawrence end abruptly (often in the middle of a road), and this causes confusion for both drivers and cyclists. Lawrence should take cues from cities such as Madison, WI, where biking is supported with dedicated, and separated bike lanes that actually connect with one another.
- This is a non-problem. Lawrence has 80,000 people and only a couple of hundred even looked at your survey. Yet you wish to reduce the speed for cars in neighborhoods, fine people for not protecting bike riders on the city streets and change the streets to make them more bike friendly. You are trying to penalize people for using cars, when virtually no one wants bikes on city streets.
- You should give away bicycles!



7TH ST. AND MASSACHUSETTS ST.,
LAWRENCE, KS

When asked “Is there anything you think we should measure?” Respondents indicated:

ACCESS -

- How does someone get the 1/4 mile to a network? Street with no bike lane? Sidewalk? How easy/safe is it to travel that 1/4 mile?
- The percentage of people who have access to continuous bikeways with dedicated lanes.

BEHAVIOR -

- Percentages of the appropriate use of turn signals. Do cars come with turn signals anymore? Sometimes I wonder if they do because they sure aren't used much. As a bicycle rider I always indicate I intend to turn unless I need to keep both hands on the handlebar to stay upright (going down a hill, etc.)
- Percentage of bicyclists who disregard stop signs and traffic signals.
- Start measuring the amount of cars who still use the bicycle and parking lanes as another lane (especially on Lawrence Ave and Princeton). You will find this especially being done by cars making a right hand turn at the 3 way stop of this intersection. If true here is most likely true at other similarly marked streets/intersections. Also, start watching cyclists who do not follow the rules of the road (not signaling, not stopping for right hand turns - basically acting as though they always have the right of way).
- The number of people who have quit riding or reducing bicycling because of motorist harassment.
- Would be interesting to survey drivers to discover attitudes about bikes/autos sharing the road. (Are drivers in our area supportive of bikes on the road, or are they resistant/irritated/bitter toward cyclists? Why?) Might uncover opportunities for education.
- Would you be more likely to bicycle if bike lanes were separated from auto traffic by a barrier, elevation or different surface?

BEHAVIOR/ATTITUDE -

- Bicyclists that go through red lights.
- Driver attitudes towards cyclists. The problem is not the cyclists, but aggressive drivers who don't believe that cyclists have a right to be in the road.

BIKE NETWORK -

- Make sure that official bike lanes are wide enough to accommodate adult tricycle types of bikes. I'm sure there are lots of seniors in Lawrence who ride three-wheelers like me to help with balance.
- Mileage of largest FULLY CONNECTED network of bike lanes and shared use path. Essentially, what is the largest web of paths that one can travel seamlessly, without having to ride on a shared street.
- Bike lane and path sweeping of leaves and snow, frequency and time to complete
- Linear feet of paved, off-road, shared-use bike/ped trails constructed.
- Miles of trails which can be ridden safely by people of any age,
- Number of miles of public streets with bikeways.
- Percentage of public sidewalks that are accessible for bikes, strollers, wheelchairs, wheels in general.
- Show bikeways that are not part of a street or close to traffic. Riding in bike/car shared routes are too dangerous.

BIKE PARKING -

- 1. Connections and safe waiting areas between city bus, the Jo, Amtrak, bike share, bike facilities/shops, and the current routes. 2. Safe, dry places to park bikes when using public transportation. For example, is it safer to carry my bike on the JO and park it at JCCC or to leave it at the Haskell Shopping Mall parking lot while I am at work?
- Measure the number of bikes not on racks- around Lawrence bro ride pollution.
- Bike parking availability and utilization

BIKESHARE -

- Usage of the VEOcycles
- Use the data from use of bike sharing program.

BUSINESSES -

- Percentage of public businesses within 1/4 mile of bike network

COMFORT -

- Bike comfort rating per street

CRASHES -

- Heat map of cyclist (and pedestrian) crashes with motorists
- How many accidents and of what type have occurred on the Lawrence Loop?
- Need to measure and analyze where the accidents occur locally and nationally using, for example, the CPSC data base. You will find accidents with bikes are at intersections. Consider installing the 'green' space that disallows cars in that space at intersections.
- Number of accidents where the bicyclist failed to obey the rules of the road
- Number, percentage and frequency of car on bicycle accidents; Location, time, date, environmental conditions of these accidents to identify trends to focus prevention efforts.

CROSS K-10 AT KASOLD -

- The number of people who cross K-10 at Kasold and somehow provide safe passage for cyclists riding south toward Lone Star. A flashing light or crossing guard during specified hours or a bike path tunnel or bridge would be nice. Thanks !!

DEBRIS -

- Amount of debris that collects in bike lanes.

DEMOGRAPHICS -

- Household cars per adult, multiple, single, or no car households
- How experienced are the riders?
- Age considerations (ex: number of children using bikes to get to school)

DESIRES -

- What percentage of Lawrence population wants or needs bike lanes ?
- What percentage of Lawrence population wants to pay more taxes to have streets congested with bikes?
- How many people want to see the speed limits lowered to 20 mph ?

DEVELOPMENT/CONSTRUCTION/MAINTENANCE -

- Set specific development/construction/maintenance goals and measure progress live and online to promote public awareness, enthusiasm, support of MPO's accountability/transparency, and gather "success data" to include in state/federal grant proposals.

DISTANCE -

- Distance to their work or school
- Distance traveled by typical cyclists, and start and end points of travel (where are people traveling to and from, typically). Do these paths vary by time of day, do cyclists choose safer, longer routes at times when there is higher road traffic, or do they always choose the same route, regardless?
- Percentage of trips less than five miles taken by car and bike.
- What is the realistic projection of how many residents would profit from these changes versus the number of drivers who would be disadvantaged

ENFORCEMENT -

- Enforcement measures, e.g. how many tickets were written for unsafe behavior by bike riders or drivers
- Enforcement of auto drivers (tickets, warnings, stops, etc.)
- Number of tickets issued to cyclists and/or automobiles in bicycle related incidents/accidents.
- Traffic citations within the bikeway network.

ENGINEERING -

- Bike-friendly intersections.
- Length of time spent waiting at intersections
- Average speed
- Average speed of passing automobiles

ENVIRONMENT -

- Percentage of air pollution in roads. This will help bicycle choose healthier-air bicycle paths.
- Environmental impacts

FUNDING -

- Percentage of transportation funds spend on cycling

IMPROVEMENTS -

- Regarding the last bullet point, measure the percentage of people who would use biking or walking networks if conditions were “improved”.
- Regarding the last bullet point, the percentage of people who would choose biking or walking over other modes if those networks were improved.

MODE CHOICE -

- Frequency of mode choice -- e.g., how often (or how many hours per week) individuals choose different modes.

NUMBERS -

- % completion of proposed bike network; bike to school #s, utilization of amenities like bike corrals; estimate of number of cycling commuters
- 1. Location, Number, and Time/Day of accidents involving a bicycle. Then map them. 2. Number of vehicles per household compared to number of drivers per household 3. Location and Number of stolen bikes, and percentage returned stolen bikes. 4. Distances commuted and at what times of day. 5. Number and locations of bike-locking options (racks, etc). 6. Percentage of public streets with bikeways and street lights 7. ADA accessible ramps and sidewalks 8. Number and location of electric vehicle charging stations. 9. Reasons why people do or do not commute on a bicycle.
- Why don't you measure what's already broken and not being fixed? Like the number of cars who never stop at pedestrian walks? The lack of proper street lights to make walking or biking in neighborhoods safe? The

number of sidewalks that are missing or in poor shape that kids can't walk on and have to walk in the dangerous street? Percentage of cyclists who don't wear helmets? Percentage of cyclists who are unaware of proper road procedures like signaling left or stopping at stop sign? The number of KU bikes laying in yards making everywhere look trashy? The number & severity of bicyclist & pedestrian crashes caused by cyclists not following proper road rules?

OTHER -

- Cross-reference bicycle usage (mode choice metric) with demographic data - figure out who is actually biking. The city could use this disaggregated data to try and promote cycling among wealthier citizens. This sounds like stereotyping, but wealthy people are much more likely to have influence in local politics and business, and therefore would be ideal advocates for increased cycling infrastructure and law enforcement (against cars, not bikes).
- Efficiency of connecting routes to public facilities, to high volume facilities for high school and college students, to community amenities and retail. For example, how effective are bike routes for access to the downtown Library; to KU campus and specific classroom facilities, to parks? How do locations in Lawrence based on demographics (where income and/or preference might limit options to own a vehicle) likely connect to more public accessed facilities?
- "Bikeway" needs to be defined. A white stripe on a busy street does not offer me real safety, so I do not consider it a legitimate bikeway. Maybe you define what "Low-stress bikeway" means, and then track that.
- How to keep bicyclist off the major roadways using the SUP (shared use paths) that are available on several major streets. Do away with bike lanes as they detract drivers and give the cyclist a persona of safety that is not there. Also, ticket those bicyclist that don't obey the traffic laws which are most of them
- I am more concerned with CYCLISTS following rules of the road, particularly on campus. We need an education program surrounding when to use crosswalks or sidewalks and how to behave at stop signs and traffic lights. It's a serious problem in this town that bikers route through traffic and pedestrians like there are no rules for them and it's terrifying as a driver! Please, please help with this.
- Health & wellness

PUBLIC AWARENESS -

- Measure public awareness and perceptions. Too many drivers I know don't want to see bicyclists on roads because of "that one bicyclist who doesn't follow the rules" (and never applying the same thinking to bad drivers). What is the 'bicycle climate' of our city?

ROADS -

- Percent of streets that don't have deep potholes that are dangerous for cyclists.
- Surface quality, smooth, bumpy
- Percentage of streets where there is no room for three feet on either side plus a car on each direction keeping within its lane or its half of the roadway (ie not necessarily safe to bike on roads where cars cannot provide 3 feet of distance and maintain their lane. This would likely include Naismith southbound, which is currently dangerously narrow.
- Streets that are not safe for cyclists. (Cyclists use sidewalks instead.)

SAFETY -

- % of people who think biking in Lawrence is not safe.
- Automobile traffic infractions occurring within bike lanes.
- Bicycle accidents per roadway. Seeing this number may encourage cyclists to use safer routes.
- Bicyclist & pedestrian deaths

SAFETY CONTINUED. . .

- Also, be sure to differentiate between types of crashes: bike vs car, car vs pedestrian, bike vs pedestrian. You'll quickly note that cars are significantly more dangerous to pedestrians than bikes, and hopefully use that justification to relax bike law enforcement and ramp up car traffic violation enforcement.
- Demographics of drivers involved in crashes, this information could be helpful in who to target in safety campaign.

SCHOOL KIDS -

- Percentage of area within the boundaries of each school where kids can access that school safely using biking and walking. Do this for each elementary, middle and high school.
- Percentage of Lawrence public school students who have access to a bike way to travel to school

SOCIAL -

- Create a fun family app so citizens (or citizen teams) can measure “bike hours” or “walking hours” and compete for prizes or recognition. Use the data collected for state/fed grant proposals.

SPEED -

- Actual speeds in the proposed bicycle highways as well as how fast cars turn on the shared use passways. I think the committee should actually ride the proposed bicycle highway. I think you will find that it does not feel safe riding on 6th street and many other placed on the proposed plan. Then imagine riding on it with a while lane or bicycle symbol there. I'd guess it would still feel dangerous? If speeds are 2X what a bicycle actually travels, its too fast to add some white bicycle signs and call it a safe bicycle highway. If cars do not have turning lanes and cross over the Shared use passways at high speeds, then it is also not safe.

STATISTICS -

- Number of people, number of times, riding a bicycle outside of city limits. On county roads.
- Perhaps if people are using their bikes for transportation recreation or other. How often they bike etc.

STOLEN BIKES -

- Percentage of bikes reported stolen, and found, and maybe factors that influence both

THEFT -

- Bicycle thefts including stealing parts off parked bikes. In an attempt to circumvent theft/educate how rude it is to steal from someone biking as transportation.

TRANSIT -

- How many use public transport to get to the trails either to walk or bike?



31ST ST. AND IOWA ST.,
LAWRENCE, KS

USAGE -

- Actual use of assigned routes -- I find that I will never ride on high traffic routes, such as mass st, even if they are marked for bicyclists. It seems a shame to devote the majority of resources to those routes and the funds could be better dedicated to driver education.
- Rider demographics such as age and gender
- Percentage of people who bike X times a week.
- Year-round use of bicycles
- Bicycle usage is for business or pleasure
- Bike and pedestrian counts. I know that some group in Lawrence does these, but you could include these in your metrics.
- Could you have some counts of numbers of bikes, etc at certain locations?
- I rarely see season ridership studies, they all seem to be lumped together. Seasonal #'s may influence some decisions. You would think it would be obvious, but is it?
- I think the nature of use of the multi-use paths should be measured, and consider more signage or education on the use of them. Dog walkers who cannot adequately control their dogs (long retractable leashes), pedestrians/ joggers with headphones on who cannot hear me calling a pass, etc... To be honest, I often avoid the multi-use paths and ride in the street and even the shoulder of K10 because I'm less likely to have problems there than using the multi-use paths. I also think the city should measure the "value" of input it receives based on use/experience of those providing input.
- The actual use of all this bike stuff. Let's face it, how many days a week do you really see people biking to their location. This is not a case of "if you build it they will come".
- What type of rider is riding around Lawrence? For exercise, for transportation, families

STATEMENTS -

- If the city wants to show that it really supports bicycles in the future, then more dedicated bike lanes need to be installed. Drivers are only going to pay attention to the three foot rule if the space is there and the line is painted to see. Take away unneeded busy street parking (Barker St. and Connecticut St. come to mind) and install a dedicated bike lane. New road construction should be engineered and funded with a bike lane in mind.
- The intelligence (IQ) of the planners...and the 'think-tank peeps.
- Trying to retrofit a city for bikes is very difficult. It might be wise to pick areas, like Mass St, and have it be no autos, like Boulder CO and Madison WI. I am not a fan of mixing autos and bikes. We have lots of published science indicating how difficult it is for humans to "see" something they are not expecting, like a bike.
- Work on a trail from to Lawrence to Baldwin. There is one in the works from Ottawa to Baldwin. Have them connect to each other if possible. I would love to ride from Ottawa to Lawrence, safely.
- Focus should be on drivers for education and enforcement, as they present the potential for greatest harm
- Work on a trail from to Lawrence to Baldwin. There is one in the works from Ottawa to Baldwin. Have them connect to each other if possible. I would love to ride from Ottawa to Lawrence, safely.
- Focus should be on drivers for education and enforcement, as they present the potential for greatest harm
- Yes they need less areas of town as they ride down the middle of the road no turn signals and basically think we are the issues it takes me 30 mins to get to work because i have to worry about hitting them
- Bicycles need to be visible with lights, turn signals, and brakes, and slow moving vehicle signs.

NON-MEASURABLE ITEMS -

- You need. More buffered bike lanes.
- Hills
- Place more bike racks on Mass Street.
- Watch the weather
- Tell drivers about the rules in the county, where cyclists ride 5-10 wide.

NON-MEASURABLE ITEMS. . .

- Realistic walking and biking routes. As mentioned above, while Lawrence has some decent sidewalks and paths, the actual walkability/bikeability often puts cyclists and pedestrians in danger, either at odd/out of the way crossings or where paths/sidewalks end or cross a street to continue on a side that is much less convenient. We need repeated walkability and bikeability tests in this town to reduce danger to folks who want to move about the city in these ways.
- Lower the speed limit. People drive fast.
- More safe side walk for bikes
- Start actively ticketing bicyclists who break the law and do not stop at stop signs!

DON'T MEASURE -

- While all these are well intentioned, we have too many important community issues to become fanatical about promoting biking and too paternal about enforcing bike safety.
- Measure the number of people who think this is a silly idea and a waste of money.
- Waste no more time nor effort on bikes

NO THOUGHTS/NO ADDITIONAL MEASURES -

- All good!
- N/a
- No (25)
- No. Good measures.
- No. There are not enough people who bike in this town that we need to do anything.
- Nope your good
- Nope.
- Not particularly
- Not really (2)
- Not that I can think of!
- Sounds all good!
- Probably, but other people would know better.



9TH ST. AND VERMONT ST.,
LAWRENCE, KS

When asked “Are there connections you think should be added to the bikeway network?” Respondents indicated:

1130 Rd -

- I live on 1130 Rd between Peterson and Folks. Since I have lived there I have been amazed at how many bicycles, walkers and joggers use it even though it is quite dangerous. Martin Park is on it. Martin Park is little used and is quite lovely. It could be a wonderful bike path if it was developed. 1130 road as it stands now is narrow, wooded and has blind curves and people drive way too fast on it. It needs a bike path or more warning to slow down signs at the very least.

1250 Rd -

- In southeast Lawrence, between O’Connell Road and Haskell, south of the South Lawrence Trafficway / K-10, there is no connection to the K-10 path. It would be nice if 1250 Rd were a designated bikeway, and a connection made to the new path south of K-10 for riders coming traveling north on Haskell into Lawrence.

6TH ST -

- The proposed bikeway still lacks optimal connectivity. I’m not certain what additions would most improve connectivity. I think 6th from Monterey Way east to Wisconsin should be added, to reflect City of Lawrence plans to build a shared use path along that roadway. Similarly, there SHOULD (even if there is not) be plans to develop a shared-used path along Bob Billings from Wakarusa to Kasold to enhance the bikeway network. Are the proposed bike boulevards reflected on the map? There are also segments entirely disconnected from anything else, or that end abruptly. Think about how to revise the plan to ensure those segments get connected to SOMETHING or else they have very limited utility as part of the “network.” Maybe it would even be appropriate to REMOVE some segments for which there are no plans to create connected routes.
- Widen and expand one of the 6th street sidewalks (north or south side) to become cycle/pedestrian path to Tennessee. Make the surface of cycle/pedestrian path flat, thus no need for accessibility ramps. Add control features for motorists entering 6th street to alert them to potential cycle/pedestrian traffic such as speed bump, color coding of path, “rumble” strips to alert motorists that they are about to cross a bike/pedestrian path.

9TH ST -

- It would be nice to have a bike lane continue on 9th street. I’m sure there’s others, but this one I see daily. As it is, bikes have a safe place to travel east of Iowa but west of Iowa they are suddenly left in the (narrow) lane. It seems that having more complete routes would be safer for bicyclists and drivers alike. I would love to bike to work and I don’t have that far to go, but I wouldn’t ride on 9th St in this area as it’s already congested with school traffic in the mornings and constantly gets backed up (morning and evening) due to people trying to turn into the Merc when headed west on 9th.

19TH ST -

- Please improve bike infrastructure on 19th. LHS students are not safe to bike to school.
- Probably down 23rd / 7 19th st!

ALTERNATIVE ROUTE TO EUDORA BESIDES 15TH ST -

- I’d like to see bikeway path along or alternative to 15th street from Eudora to Lawrence. That is a nice flat ride, but can be pretty busy with motorists (who are not always very polite on the road).
- Link in Eudora and get the group riders on old K-10 to obey the cycling laws (i.e. not ride 3 wide the entire length of the road.)

BIKE LANES -

- I would like to see more bike lanes marked as such. This map is actually a little hard to read on a computer screen.

CAR FREE ZONE -

- Mass St should be opened to pedestrians and bicyclists only from South of South Park to City Hall. More streets should become bicycle safe zones like that. Cruising should be totally shut down. Currently people cruise Mass St and yell “white power” “faggot” and other right wing terrorist language at pedestrians and bicyclists.

CONNECT MARY’S LAKE TO 31ST SIDEWALK -

- Mary’s Lake bike path connection to 31st street sidewalk is Low-hanging fruit, ready for concrete ASAP! Last week I saw 10 year old boy have bike accident and broke his wrist because current connector is muddy and slick.

CONNECTIONS TO OTHER MUNICIPALITIES –

- In addition to completing the northern part of the loop, I would like to see a bikeway determined between Lawrence and Ottawa to access the rail-to-trails there. May be not depicted on the map, but that would be huge. Regarding the northern part of the loop, posting some signs on E1130 road would be very helpful in the short term. There are few cars but they sometimes drive faster than I’d like...
- The Burroughs Bike Path should extend on its old rail corridor through the countryside to Baldwin City or Douglas County fishing lake. Connections like this should be made West to Topeka and East to Eudora, De Soto, and Johnson County. The connection to Baldwin City should actually connect to the Flint Hills Nature trail in Ottawa. A connection to the rail trail going between Topeka and Overbrook should be created, and should likewise be for bicycles and hikers only (no shoulder or sidewalk near vehicles).
- Outside town towards Lecompton and Line star
- Routes out of town, bus routes out of town that will accommodate bicycles

COUNTY -

- Identify Bikeway network in unincorporated areas of County

DOWNTOWN -

- Safe path through the down town area. I dread the part from Burroughs trail to riverfront area as I ride completely around Lawrence. All other bike path areas are acceptable.

EAST/WEST CONNECTION -

- It would be good to have some east-west route near 6th street that has better pathways for bikes that aren’t on 6th itself, particularly from Kasold to Louisiana streets.

ENTIRE CITY -

- I think the entire city of Lawrence should be connected and accessible for bike travel from all directions and areas of Lawrence...North, West, East and South.

IOWA ST -

- Iowa St! What is the point in encouraging biking but many places people might travel to on Iowa or 23rd are not marked for safer travel.
- More connections between east of Iowa and west of Iowa. More shared use paths.
- YES! There is NO WAY to get from east Lawrence to main or west campus on a bikeway unless you ride south down to the 10. That’s insane! Please create a passway across Iowa. If 21st is a proposed bicycle highway, or part of the “priority bike network” then allow it to connect. Place something in the road for bicycles to wait so that they do not have to travel 5 lanes at once. That’s too many for a street of 40 or 45 MPH. And allow bicycles to cross the

street going east (which is currently not an option). Its dangerous here and I see lots of weird/dangerous bicycle and pedestrian behavior in this space because of it.

LAWRENCE AND CRESTLINE -

- Lawrence and Crestline

LAWRENCE LOOP -

- One of the most important things that could happen is to complete the Lawrence Loop by using the proposed path that runs up the Kansas River and under the turnpike bridge and then out to Lakeview Road. There are only 3 property owners in this section and it would significantly lower hurdles to completing that section of The Loop. One of the major benefits of running the Loop there is that it would allow a lot of people to bike to work if they chose, since there are so many employers out there. Loop could extend on Farmers Turnpike as proposed and reconnect at Rock Chalk Park down Queens Road. If you didn't want to do the public process again you could just call it the "Outer Loop" with the idea that some day when hurdles were lower and time and money allowed you could complete one of the inner connectors.
- Yes: the planned ones. The fact that Rock Chalk Park does not yet have a bike path behind it is pretty silly, especially considering it would be the easiest place to gain right-of-way access and is a huge missing chunk of the Lawrence Loop. Otherwise, this is a good comprehensive [planned] network.
- You need to complete the loop. Use that as a rim system for spokes leading into areas - business and shopping.

MASS. ST -

- There needs to be a safe bike path across Mass St. and safe bike paths from campus to downtown.

NAISMITH PARK -

- Naismith Park is not linked appropriately to the existing bike paths. When bike lanes are not connected appropriately, they become useless. I avoid road with bike lanes b/c they ultimately stop when it's inconvenient.

OTHER -

- So all of Lawrence can be circumnavigated and it is bisected
- The day in the near future will arrive in which mini-mopeds and small electrics will be sharing bike lanes. All planning must take this into account.
- The very beginning paragraphs talk about this being Lawrence/Douglas County plan. But the map above show only Lawrence or very close to Lawrence.
- This seems focused on routes in town though this is the 'Lawrence - Douglas County Metropolitan Planning Organization'. I would like to see longer rural routes developed wherever possible. (2)
- Those are the main access points
- We should develop a plan for dedicated express bike roads for bikes that allow safe paths to destinations.
- Well, this map has a future bikeway on practically every street, but I think the priorities would be to close the loop and to make the downtown more accessible to West Lawrence.
- When I bike around town I intentionally avoid busier roads, like 6th. I do so by piecing together through residential areas - the intersection at McDonald Dr and W 2nd is not ideal - and the bike lane drops you off into that intersection. Taking W 2nd to Michigan, Michigan to 7th, and 7th to Mississippi (campus) or downtown. You've noted this in some questions above, but encouraging these routes makes biking around town more approachable for me and those I know.
- So to answer your question - yes, I do think there are connections that ought to be added, and they ought to relate to neighborhoods getting to places of common employment or leisure, using routes that have speed limits no higher than 20-30. I know some of the main roads say the speed limit is 30, but that really just means 45 with an attitude.

OTHER...

- While I appreciate the Shared Use Paths, they can be a challenge on a bike if you are really going for it - the pace of a bike and those strolling with a dog are not easily coordinated. Not an all-the-time issue, but it can be a thing.
- I'm not sure exactly what is meant by the terms "priority bikeway network" and "secondary bikeway network." I have read of possible plans to close off existing streets so that they are used only by bike traffic. If so, I think that could cause problems for other kinds of traffic flow, as well as issues accessing closed-off parking lots in Lawrence High School that have very few entrances. (Many students have to get to jobs after school and using a bike isn't feasible for them. If 21st street is closed off to car traffic, how will cars/buses get into the LHS back parking lot?)
- In general, I would prefer more shared use paths through linear parks or bicycle boulevards (on streets that are not through streets) with attention paid to topography/elevation.
- I recommend that all new developments contribute to or include linear parks with bike/ped access.
- Less hills
- More lighting
- More Smart Streets (like the new 9th between Emory and Mississippi)

QUEENS RD -

- I would really love to see a rec path extended down Queen street, north of Wakarusa, to connect to the trail off of Queens road leading to the Rock Chalk Trails. Many bicyclists and pedestrians currently use that route, and the narrow street with limited visibility is very hazardous.

RIVER -

- I see that the route along the rivers south/west side is proposed, but not priority or secondary. I'd like to see that route prioritized.
- Suggestion: May sound strange but have always thought to if. Lengthen the river trails starting from where the park starts almost at the beginning of the Levee and connecting the new trail to the current LRT.

ROUTE TO DOWNTOWN FROM WEST LAWRENCE -

- I'd like to see it be easier to get downtown from west of Iowa. And back. Both involve a steep hill, which is dangerous for cyclists going both up and down. Currently, I either: 1) cross 6th street, ride Rockledge to McDonald to 4th, or 2) cross Iowa, head to Jayhawk Blvd or Memorial Drive. Or I ride up and down 9th street which is only appropriate for experienced cyclists.
- If you provided bike lanes and/or accommodations on Harvard (from Wakarusa) and Monterey way streets, it would provide an in-city pathway for safe access from the West Lawrence area to the center areas including downtown

SAFETY -

- Tennessee and Kentucky need to be safer. Or at least surrounding streets- some of these are cobblestone. Biking between 23rd and 10th is impossible and dangerous. People's lives are at stake every day.

SCHOOLS -

- Safe connections to schools.
- Every park, playground, school, larger employer, and public area must be easily accessible.

SLT -

- When the west SLT gets built have a dedicated protected path over the SLT at the Wakarusa crossing to connect to 458/1200 Rd. Connect the Shared use path northwest corner to the Farmer's Turnpike/1800 Rd.

VERMONT ST -

- Vermont street through at 14-15th streets

YES -

- Yes
- Yes, as many as possible. Having been hit by a car, I do not ride my bike to work because I cannot do it without being in motorized vehicle traffic, something I now find very difficult to do and avoid if at all possible.
- Yes, but I have no idea how to properly convey this information in this survey.

LOOKS GOOD/NO COMMENT/NO -

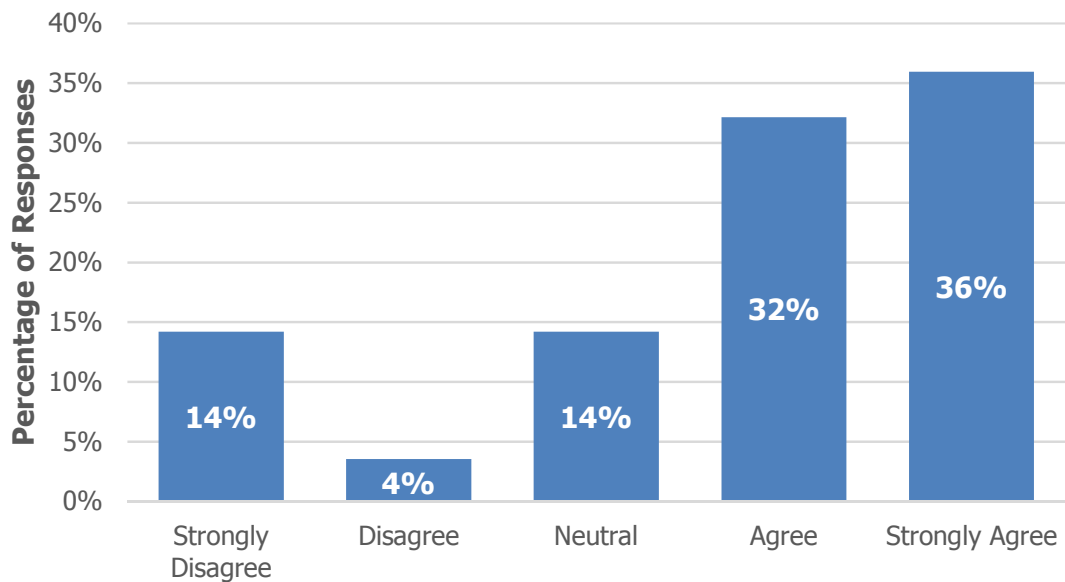
- It's all good
- It looks great if the future bikeways are constructed.
- Looks ok.
- N/a
- No (26)
- No there are too many now.
- No, not if the river connection to downtown is completed
- No. I ride a bike. I can get from my home to the Clinton damn easily enough. We don't need to waste money on sidewalks for the small percentage of people who will theoretically benefit.
- None they dont need any more they need less
- Nope
- Not at this time
- Proposed connections appear AWESOME.
- The future bikeways look good. Build them.
- The future bikeways look very promising. The more the better.

DISAGREE -

- Really, "Future Bikeway" is every major street in town? Are you high?
- The ONLY connections for (safe) bicycle travel in this town is alleys, back streets, sidewalks (except downtown and dismounting for pedestrians elsewhere). It takes a little longer and is so safe one could die of boredom! I have been riding my rules for years! I would not think of getting out on a major traffic street in this town with a bicycle.... and you want to make the narrow main traffic streets bicycle-friendly? Anyone with any common sense will not try to compete with 4000#+ per vehicle traffic unless they have the "evil Knievel syndrome" I have been observing the so-called bike lanes in this town for years and seldom see anyone using them. GIVE IT UP and save our tax dollars to simply fix the pot holes at crossings if you would make it safer for me to ride a neighborhood street or alley crossing. And for heavens sake realize that we are a first world automobile culture NOT a third world bike culture and it 'ain't gonna change because you wave your magic tax-wand.!

When asked “I believe constructing the proposed priority & secondary bike network will encourage more people to bike in Lawrence. (Select one)” Respondents indicated:

Figure 28: The Proposed Priority & Secondary Bike Network Will Encourage People to Bike



Number of Responses - 395

When asked “Are there connections you think should be added to the priority network (shown in blue)?” Respondents indicated:

9TH ST -

- 9th Street all the way from Downtown west to Lawrence Avenue (or a nearby alternative). Harvard Rd. from Lawrence Ave to Wakarusa Dr.

15TH ST -

- 15th St. should be primary (2)
- If you want to encourage biking, particularly to campus, 15th from Kasold to Iowa should be priority
- Make the 15th street route a priority instead of secondary.

19TH ST -

- 19th Street from Naismith to O’Connell Rd. where many bicyclists take their lives in their hands already because fast and inattentive traffic makes the bike paths unsafe, and Bob Billings Parkway.
- A connection from our neighborhood (at Atchinson Ave and W 19th St) to the path behind Peppertree Apartments that runs along the creek would be really nice. A lot of people in our neighborhood use the path, but it is inconvenient to get to so it gets used less than it would if there was a connection there. The best place for the connection would be to extend the 19th St sidewalk westward across the creek there.
- Yes. 19th Street from Massachusetts to O’Connell should be priority, not secondary or “future bikeway.” 19th between Harper and O’Connell is in particularly horrible condition and has been for a long, long time--years. This is an important bike route because lots of people bike to work out in the industrial park area east of Lawrence (Venture Park and the area east of there, out to Noria Road). 19th to O’Connell to Noria is the safest way to get there from the middle of town. (15th to Noria is also a popular way, but less safe due to high traffic and narrow

roads.) It's also a safer way for recreational cyclists to access routes to Eudora, DeSoto, etc. I'm guessing regular road construction/repair on 19th is tied up in squabbles over whether to open the connection at the corner of 19th & O'Connell for vehicle traffic. However, this should NOT prevent road construction/repair to create a better BIKEWAY on 19th (Thank you, by the way, for opening a bike/pedestrian access from 19th to O'Connell and at least putting wood chips on the path through there.) Ideally, also--for bikes, the cul-de-sac at the end of 19th should be paved, and the bike access connecting 19th and O'Connell should be paved rather than wood chips.

- Downtown to riverside and to Iowa Street via ninth street corridor

21st St -

- Connect 21st across Iowa st. (a light?)
- You haven't defined what primary v. secondary network means so I'm not sure what that means. But I think that 21st Street east of Louisiana should be secondary. It's very narrow, and bikes just need to be in the lanes with cars, not prioritized and there shouldn't be any additional traffic slowing between Louisiana and Mass St. People know they need to go slow and be courteous on that stretch--its one area in town where drivers are very reasonable.

BICYCLE AND PEDESTRIAN BRIDGES -

- Bicycle and pedestrian bridges for busy roads. Because cars make turns at high speeds on intersections and busy roads.

BOB BILLINGS PKWY -

- A connection of the 6th Street route and Bob Billings, somewhere between Kasold and Wakarusa. Probably Monterey Way. Also: Maybe make Bob Billings primary instead of secondary.
- Bob Billings Wak to Kasold

BOB BILLINGS PKWY AND WAKARUSA DR -

- Bob Billings and Wakarusa need to be looked at for off the road routes and should be a primary route

BURROUGHS CREEK TRAIL -

- Burroughs Creek Trail going north with a bicycle bridge across the river to create a North Lawrence loop with the Levee Trail.

CLOSE THE GAPS -

- Network exclusive, address that giant gap between Clinton and Sixth, Kasold and K10. And the one above it, north of Sixth. And the one east of Kasold. Is this supposed to be for recreational cyclists or to actually get people on bikes more??? CLOSE THE GAPS.

CONNECT EXISTING NETWORKS -

- The main priority should be to connect existing networks.

CONNECT THE ENTIRE CITY -

- I think the entire city of Lawrence should be connected and accessible for bike travel from all directions and areas of Lawrence...North, West, East and South.

CONNECT TO THE SLT PATHS -

- Connect the path behind Peppertree Apartments to the South Lawrence shared bike path. There is a greenway extending all the way from Clinton Parkway to Kasold. The culverts under both Kasold and Clinton are very large and could be adapted for bike underpasses similar to how Boulder, CO has done. Shared use paths and parkways behind residential areas are generally very popular once implemented and this would be a really nice north/south connection that would deconflict cars/peds/cyclist completely. I prefer this over Kasold because it is less hilly to follow creeks and biking along a riparian area is a much nicer experience than a busy road (less noise, less risk of getting run over, and less air pollution).

CONNECTION TO LAKEVIEW ROAD -

- Also, on the other side of town, I would like to see a higher priority on the future bikeway plans to connect the shared use path that parallels K-10 north/south with N. 1800 Rd (Lakeview Road). Lakeview Road is also a very popular route, to Lakeview and to Lecompton and Perry. I would very much like to NOT have to ride my bike on K-10 between 6th St. and Lakeview Road, which is currently the only real option for getting to Lakeview Road without going way out of the way. From where I live, I ride west/north on the shared use path to 6th, where it's very awkward access to get onto K-10 to continue north to Lakeview Rd. I would love to be able to continue riding north on the shared use path beyond the present end point, all the way to Lakeview Rd.

COUNTY -

- County roads.
- To e.1150 road
- Currently, the only priority route in West Lawrence is the city loop. While it's a safe way to go out for a ride, it does not provide for safe or riding to the businesses located on the west side. Both Wakarusa and Bob Billings are important thoroughfares, for West Lawrence, and neither are on the priority funding list.

EAST LAWRENCE -

- All of the East side of Lawrence needs to be included. If they are going to open up McConnell to massive car traffic and undermine neighborhoods along 19th St, then they should at least extend the Lawrence Loop around all that development. There should be bike trails around the commercial park and neighborhoods. It would also be great to have more nature parks on that side of town with bike paths.
- There needs to be more in old west and east Lawrence, where it is flat and the distances are short.

EAST-WEST TRAVEL -

- East-west travel through Lawrence seems both in practice and in the map to be more difficult than north-south travel. A lot of that is the terrain and features of Lawrence, but it seems that the ability to cross the major north-south streets, particularly Kasold and Iowa, creates an unnecessary barrier that could be mitigated by emphasizing routes to cross easily and safely.
- There needs to be a better way for cyclists to get out to west 6th street from the downtown area. For some of us, that Dillons is the closest grocery store.

I-70 -

- I guess we can't go from Kasold to Michigan along I 70? That would be nice.

IOWA ST -

- Iowa St! what is the point in encouraging biking but many places people might travel to on Iowa or 23rd are not marked for safer travel.
- Iowa Street.

KU -

- I see most of priority perimeter loop at serving recreational riders...there are few destinations along the south bypass or north to Rock Chalk park that really do much to build more of a habit into the daily trips. The Burroughs Creek priority at least gets people to Haskell on one end and close enough to downtown on the north end. The priority route that crosses the KU campus beginning is Clinton Parkway and going north is manageable to Iowa... and has the potential to higher volume on a daily basis than most miles on the perimeter loop. Probably better if it took people to the bridge crossing at Daisy Hill and then to campus along Emery Road on less congested residential streets. And you get the easier climb on the West District side of Iowa Street. There is an absolute need for design/engineering any section of priority routes to and across the KU campus...while it's an easy route to designate, on the ground it's an absolute maze of transit, parking, pedestrian and hopefully, efficient bike connections. But if these sections can be engineered and implemented effectively, for every \$\$\$ spent on those connections, the number of riders safely served on a daily basis will be a better investment than nearly any sections of the perimeter network.

LAWRENCE LOOP -

- I think that the city and county should come together to finish the section of the Loop from Burcham Park to the Queens Road trail head by taking the trail north from the boathouse, going under the I-70 bridge and turning west to connect with the Farmers Turnpike at the point where it starts on its east end. Choosing this alignment solves the issue of what to do at Michigan St. It also allows homeowners living along and having driveways along the current north side alignment to breathe a bit easier and makes the route much, much safer for cyclists.
- The "Future Bikeway" along the Kansas River under the I-70 bridges and then then through Westar Property connecting to Lakeview Road should be made a priority. It would allow for people to complete a loop and does not pose the same hurdles as trying to buy property and right of way to get it completed as currently proposed. It would get to a major employment area which would make it more useful for commuters. It is more feasible than many of the other proposed network paths because there are only 3 property owners to work with. Connecting it from O'Malley Beverage to Queens along the Farmers Turnpike would be valuable, scenic, and has lower hurdles to completion. There can be north south connectors to the Peterson Road trails to the Lakeview Road/Farmers Turnpike on Michigan, Iowa, Kasold and Queens.

MAIN ARTERIALS -

- Parts along main arterial streets are concerning (6th, 23rd, Kasold) Noise and exhaust are certainly at stressful levels and I avoid them if possible. Many side streets and driveways lead to conflicts with turning vehicles. West side of 6th is very slow to traverse with the many lights in a short stretch.

MARY'S LAKE -

- Mary's lake to 31st street

MULTIPLE STREETS -

- 15th Street, Wakarusa Road, 19th Street, all of Peterson Rd.
- The area of O'Connell Road, 31st, Haskell and 23rd need better access to the main bike paths.

NEED TO MAKE CURRENT FACILITIES USEABLE -

- I really think the city is missing the point. It's not about putting more down until the ones we have are useable. Slapping down a white line or making the sidewalk wider and calling it a bikeway at best work for casual riders. It takes more than that to make a meaningful impact, and if the city doesn't understand this, you need more cyclists providing input. I'm not trying to be negative, I just don't think we're taking the right approach as a community. I feel like our support of cycling isn't really that serious because we're not doing the whole job.

NORTH LAWRENCE -

- Need to have loop availability in north Lawrence as a priority.
- North Lawrence
- North Lawrence routes to I70
- North 2nd street in North Lawrence. Can't leave them out of the bike plan...
- The bridge to north Lawrence
- Through north Lawrence !!

NO BIKES -

- Build bike paths in parks, not on city streets.
- I doubt crating more paths will increase the number of bike users.
- No there are too many now.
- None they need less not more
- Several should be removed.

NOT PRIORITY -

- I don't think 6th and 23rd should be priority. Due to the very high volume of traffic, those would not be preferred routes to use on a bicycle. I guess you're trying to tackle the most dangerous roads first? Most cyclists I know would rather use 15th, 9th, etc. where they don't have to deal with so many cars or large trucks. Plus, working on those roads wouldn't have such a huge impact as would working on a large arterial road like 23rd.

OTHER -

- Also, I'm worried about order of answers for question 4. I expected first option to be "Strongly agree" and initially picked first instead of last option. People in a hurry may skim and miss it.
- I would remove some and add other options. WHY would you make Mass St. part of the bike network. Or 6th street? These are major streets with huge traffic and/or high speed limits. They are dangerous to bike on, I would never encourage people to bike on them, even if you painted a bicycle symbol on the street (which I am guessing is all you will do to create this bicycle network). It's like the creators of this plan have never ridden a bicycle in the real world. Perhaps you should allow some bike riders on your committee. Please encourage MORE streets with MPH 30 or less to be included as alternative bicycle highways. Perhaps instead direct bicycle highways through neighborhoods.
- Idk
- Proposed area would be my suggestion (in yellow)
- see above
- see above and use your native intelligence to figure out a way to get from point A to B without risking life and limb by getting out into major traffic on a narrow road and exercising your 'entitlement' rights....gee whiz folks this 'ain't' macro-cosmic science!
- Sure
- This survey shows that you do not want public comment. You word your questions to show that you have already made up your mind. There are nearly 90,000 citizens of Lawrence and you have only 66 response to your questionnaire.
- You plan to alter Lawrence's street pattern to inconvenience the many for the aristocratic few. Shame on you !
- What exactly does "priority network" mean? I think that you should start this survey with a definition of terms so that respondents can be informed of what is actually meant by the alternatives before they answer.

RIVER -

- I see that the route along the rivers south/west side (from Burcham to N 1800) is proposed, but not priority or secondary. I'd like to see that route prioritized.

SAFETY -

- Two important intersections for bikers (particularly children) are very dangerous and require consideration for safety mitigation: 1) Inverness between Bob Billings and 27th, particularly at Clinton Parkway; and 2) the infamous K10 crossing to the Soccer Fields and Arboretum. Whether they should be part of the proposed priority bike network is an open question, but there needs to be traffic calming or possibly an over/under ramp for the K10 crossing.

TURN SECONDARY INTO PRIMARY -

- I'm not sure why some secondary routes (like Bob Billings from K-10 to Wakarusa and Wakarusa between 6th and Clinton Parkway) are not included in the primary network, given their current or proposed bike lane amenities, and why Bob Billings from Kasold to Iowa is not included given the presence of a shared use path. Adding these segments would greatly enhance the "priority network" on the west side of town.
- Yes, everything on the proposed secondary bike network.
- Yes, I want the yellow secondary to be implemented immediately. I used to bike freely and frequently in Ancaster, Ontario. I HATE biking here in Lawrence b/c there are NO CONVENIENT paths or routes near my home. Frankly, I don't see the city do enough in terms of scope or speed.

WAKARUSA DR -

- Along Wakarusa from Clinton Pkwy to 6th Street;
- I think the Wakarusa route (currently a secondary network) should be updated to priority.
- Wakarusa
- Wakarusa Drive from 6th to 27th should be priority.
- The Wakarusa pathway should be a priority (blue). This will help round-out the spoke system that is currently proposed.

WAKARUSA DR OR INVERNESS DR -

- I think that prioritizing Wakarusa or Inverness would be helpful. When you consider the north-south options, while Kasold is a great choice, giving riders another option to travel north that doesn't include a substantial hill would be helpful. I would think many riders could potentially be turned off by that hill and the fact that the next option is all the way out to the Loop trail - which could include another large hill depending on the route taken/starting point.

WAKARUSA DR/SLT INTERSECTION -

- The south traffic way K-10 near Wakarusa has increased traffic with rush hour and games in the sports complex. I am hoping this intersection can be assessed for better. Drivers can become impatient and reckless.

WEST LAWRENCE -

- Need more low-stress connections in west Lawrence going both east-west and north-south. Unprotected bike lanes on Wakarusa and Bob Billings should not be considered bikeways. They only serve a minuscule segment of the city's population: very confident adult cyclists. They are not welcoming to new riders, children and seniors. It is unlikely that these or any new unprotected bike lanes are going to attract more citizens to riding a bike. If that is the goal, you need to create a different type of facility.
- There are significant gaps in the western neighborhoods. East west is only 6th, Harvard, Billings and Clinton. Clinton west of Wakarusa doesn't connect to neighborhoods. Billings has lanes but speed limits are excessive for cars with turns in front of bikes frequent. George Williams Way at Billings isn't triggered by bikes, a significant short coming here and throughout town. This forces bike riders to break the law. This becomes the culture. Re-tune the cameras and add ones where now magnetic fields trigger the lights. Most bikes don't have steel in them and carbon can't trigger. Again, this forces breaking the law.

COMMENT -

- n/a (3)
- No (34)
- Nope.
- not at this time
- Yes (2)

SUPPORT -

- The title “priority” network makes me think the plans are to focus time and funds for it. But it generally defines roadways that I would want to avoid with my bike, particularly K-10 portions which wrap around the city limits. Even if there are separated paths for cars and cycles, the car traffic will be fast AND there will be many cut-throughs. Much of the priority network looks like routes to avoid the city. Cyclists will primarily want to travel between points within the city, so they will be more interested in the secondary network and proposed future bikeways. However, some portions of the priority network -- in the core of Lawrence and KU campus, are critical for allowing cyclists to commute within Lawrence; so I fully support these portions.
- I cannot look to anything specific, but I love the idea of the Priority Bike Network being one that folks can use for a direct route, as well as an opportunity to get miles in before/after their commute. Using the secondary network to get folks from the residential areas, avoiding the main roads (like 6th, mentioned above), can encourage commuter groups to/from school, work, dinner out, etc.
- I think the priority network hits most of the high points - I think that providing access to grocery stores, medical care facilities, the public library/courthouse/downtown are a high priority.
- I think you start here and add more as it grows
- I think you’ve chosen good paths; any further expansion will hopefully come to mind once bicycling becomes more active; “gaps” will become noticeable.
- It looks good
- Looks good.
- The more the better but the proposed priority network is a very good start.
- This plan looks good.
- This would be fantastic as proposed.
- Whatever it’s good
- We’d all love the network to connect us from our homes to places we work and visit, but I think the proposed network is fine.

When asked “Are there connections you think should be added to the secondary network (shown in yellow)?” Respondents indicated:

19TH ST -

- The rest of 19th Street, more 15th Street.

BOB BILLINGS PKWY AND WAKARUSA DR -

- Bob Billings and Wakarusa need to be looked at for off the road routes and should be a primary route

CHANGE FROM 19TH ST TO BROOK CREEK NEIGHBORHOOD -

- A connection from the SE yellow area thru the Brook Creek Neighborhood to 11th street. It is more comfortable to ride on than 19th street.

CONNECT AS MANY STREETS AS POSSIBLE -

- As many streets as possible so the city is as accessible as possible (2)
- I think the entire city of Lawrence should be connected and accessible for bike travel from all directions and areas of Lawrence...North, West, East and South.

CONNECTION TO EUDORA -

- Improved 15th street or alternate connection to Eudora.

CONNECTIONS -

- Connect the secondary network to the high schools.
- Again, gaps in safe passage through the city may come to mind once these pathways are active
- It would be nice to get to Clinton Parkway from Bob Billings. Also, would be nice to continue under K10 to athletic fields and arboretum.
- To all middle and high schools.

COUNTY -

- County roads.
- Yes 1130 road.

CROSSGATE -

- Crossgate, 23rd to 27th.

EAST LAWRENCE -

- Throughout east Lawrence entirely all the way out to O'Connell Road.

HARPER ST -

- Harper from 27th to 15th street.

HARVARD RD -

- Harvard
- Harvard Rd
- Harvard, from George Williams to Monterey Way
- East-west traffic routes have long been a difficult for cyclists in Lawrence. The map shows the Bob Billings Pkwy has been chosen a major component of addressing this need. But, it is a terrible route for cyclists. Its undulating course is likely to be unusable for most new cyclists; and even for daily riders like myself, we generally look for alternatives. To get from Lawrence Avenue to Wakarusa on a bike via Bob Billings is not fun. Harvard Rd. is much more enjoyable (even with the short steep climb up Lawrence to Kasold). It is probably too late to change this ... However, incorporating Harvard Rd into the secondary network would be a good addition.

INVERNESS DR -

- Inverness would be safer than Wakarusa. Have you actually ridden on Wakarusa. Now with the roundabouts, cyclists are at terrible risk. I live out there and cycle through them. Cars don't yield to pedestrians much less cyclists. What a safety boondoggle. City engineers distorted

IOWA ST -

- Bike lane on Iowa from 59 to I70

KU -

- Campus is growing to the west, but it doesn't seem as if there are bike lanes are planned to connect with this part of campus.
- More and safer (separate path from dangerous car streets) connections to KU campus for numerous walkers and cyclists.

LAWRENCE AVE -

- Lawrence Avenue between 27th Street and 31st Street, then east toward Iowa Street.

LAWRENCE LOOP -

- Make the perimeter network -- the loop around Lawrence -- a secondary network. And focus on priority routes that link higher density housing to primary destinations primarily for students, faculty and staff at KU and other high traffic areas in community, like Lawrence public library, the pool and downtown. These will be shorter routes, with higher ridership, that require safer biking solutions...that's the goal. And those should be designated priority routes.

LOUISIANA ST -

- Louisiana Street from 19th to 31st.

MAKING EXISTING INFRASTRUCTURE USABLE -

- I really think the city is missing the point. It's not about putting more down until the ones we have are useable. Slapping down a white line or making the sidewalk wider and calling it a bikeway at best work for casual riders. It takes more than that to make a meaningful impact, and if the city doesn't understand this, you need more cyclists providing input. I'm not trying to be negative, I just don't think we're taking the right approach as a community. I feel like our support of cycling isn't really that serious because we're not doing the whole job.

MONTEREY WAY -

- Along Monterey Way from 6th to Bob Billings
- Monterey Way from 6th to Bob Billings should be included. Currently that route only has signage and could benefit from shared lane arrows or other markings.

MULTIPLE STREETS -

- Folks Road, Louisiana, East 15th Street, Rockchalk Road (north and south of 6th)
- There are big blocks of neighborhoods that are difficult to get through that would benefit from designated secondary networks. In particular, west of Kasold Ave, along Monterey Way should be a secondary route, and Inverness from Bob Billings to Clinton Parkway. On the southeast side, Prairie Park is isolated by Haskell Avenue, and it would ideal to create easy ways to cross, not just at 23rd Street and the proposed crossing at 29th, but also in between at 27th or 28th Streets.
- Yes: 1) 15th Street from Oak Hill Cemetery, past East Lawrence Rec Center, past (and connecting) Burroughs Creek Trail and the Community Orchard, past Sunrise Project, to Central Middle School and connecting to the new bike lanes on Mass St. 2) 19th Street from the trailer parks past the Humane Society, past the commercial center at Haskell and 19th (connect to bus lines on Haskell), past (and connecting) Burroughs Creek Trail, past KU/Naismith Drive, to Iowa St.

NO BIKE -

- No there are too many now.
- None as they need less
- Parks not streets

NORTH LAWRENCE -

- North Lawrence!!
- Possibly the other bridge to north Lawrence
- We need another way to cross the river from North Lawrence to either downtown or the hospital area.

OTHER -

- I don't have specific recommendations, but are there ways to think about how priority destinations like schools can be linked to the network? I noticed very little in North Lawrence, for example, and having at least a secondary route that went to Woodlawn school should be a goal.
- It would be nice if there was a program to encourage land owners to donate or voluntarily sell rights to easements that would improve bicycle and pedestrian access throughout the city. Having to drive an extra mile to get around cul de sacs and dead ends is not a big deal, but having to bike or walk an extra mile can make the difference of deciding to drive or not.
- Please encourage MORE streets with MPH 30 or less to be included as alternative bicycle highways.
- Related to my response for item 5, I think the "secondary" network would be of greater utility and importance to cyclists than the "priority" network.
- same as above.
- See above. We need to stop considering unprotected bike lanes on busy streets as bikeways.
- Small and big food stores. Ex: Checkers, La Estrella Mexican Food Market, Mediterranean Market, etc. That way folks can stop by for food and water if they need to on their ride.
- The blue paths as well.
- The north end of East 1000 Rd is really steep, this will be interesting and challenging.
- What exactly does "secondary network" mean? I think that you should start this survey with a definition of terms so that respondents can be informed of what is actually meant by the alternatives before they answer.
- literature data to justify those roundabouts.

NO COMMENT -

- ?
- ldk –
- n/a (4)
- No (36)
- None. (3)
- Not at the moment.
- not at this time (2)
- Sure
- Yes (2)
- Yes, I mentioned above.

SUPPORT -

- Looks good
- Looks good to me.
- It looks good
- Nope, looks good
- Wonderful plan

When asked “Do you have anything else you want to share with us about bicycling in our community?” Respondents indicated:

9TH OR 19TH STREETS -

- Currently the city commission is considering spending an enormous amount of money on “traffic calming” on already calm streets, e.g., 13th and 21st. The biking blocs have spoken that they want 9th Street in the past. I would support 9th or 19th Streets for biking and traffic calming.

BICYCLE BOULEVARDS -

- Bicycle boulevards were planned without neighborhood input.

BICYCLISTS SHOULD BE TREATED/ACT LIKE CAR DRIVERS -

- Bicyclist need to have insurance for when they cause damage to vehicles or are the cause for an accident.
- Bicyclist should not drive down the center of the road when driving downtown. They should not pass a vehicle either on the left or right side. They need to follow the rules of the road which includes getting off your bike when crossing in a cross walk. They should stop at all stop signs and stop lights. When the light says don't walk, that doesn't mean you can ride your bike across the intersection. They need to remember right on red and if you come up on someone who is turning you need to stop and not try to pass them. Cars so have blind spots and if you are on the right side of a car, they might not see you. If you are riding a bike, you need to be aware of your surroundings at all times and listening to your phone or whatever device you have makes you less likely to hear or see other vehicles. Don't wear dark clothing at night. Drivers can't see you if you are all in the dark. I understand people are going to ride bikes, but everyone must understand the type of damage that can happen by careless people - whether you are riding a bike, driving a car or motorcycle, or just walking. And everyone needs to learn to pull over when there is an emergency vehicle on the road.
- Bikers should be cited when they break traffic laws. I have never seen a biker stopped by law enforcement.
- Cyclist on the road way is great and fine by me. However, not everyone follows the rules of the road as I have to obey being in a vehicle. Like, I see a lot of cyclist running stop signs or red lights. Not signaling or straight up doing things to get them hurt by not obeying the rules of the road. If you are on the street, you should follow the same rules I do. I think that some sort of license for being on the street should be considered and tickets issued for not following the law.
- How much will the bike riders pay for all these amenities? Why should we automobile drivers with all the taxes we pay subsidize cyclists? How many riders in Lawrence? What's the cost of all this stuff per rider?
- I'm surely in favor of whatever it takes to increase bicycle riding in Lawrence. I'm happy to take increased responsibility and care when driving on roads with bicyclers. BUT, one of the big problems with same is the small number of bikers who fail to obey the ordinary rules of the road, i.e., running stop signs, failing to pause at cross

streets and watch for cars turning right across their path, riding at night without lights, etc. Let's require bicycle riders to register bikes and display a license plate so that they can be reported to police for violations. I don't like the extra hassle and expense for bicyclers but with as many as we already have in Lawrence we need bicycle licensing.

- Bike riders are going to claim a right to the road don't they also need to accept licensing responsibility. Otherwise there leaves almost no motive for good
- Road behavior and leaves open the route to more road accidents and fatalities.
- Yes obey the traffic laws and quit giving the finger to drivers who honk at you because they see you breaking those laws.

BIKE PARKING -

- Could we install bicycle racks around bus stops so that people can bike to their nearest bus stop, then leave their bike locked up while they utilize the bus to take them across town? Some European cities have been very successful with this as a way to reduce car traffic.
- Encourage more bike parking so we don't have to use sign posts for locking bikes, throughout the city, not just downtown. And keep roads and parking driveways maintained. The one by Dillon's at 6th and Wakarusa is in dangerously poor shape, for example.
- There are some bike racks around, but if I buy an ebike, which I would like to do, I currently don't have much faith in my ability to lock it up on or off campus for much time without it eventually getting stolen. Set up some more secure stations - maybe even have a weather protected area. I hate to bring money into this but if all of this is going to cost money, why not set up bike shelters that people can pay to park their bike, not unlike a parking pass (but way cheaper).
- Bike rack installation standards aren't adequate. Lawrence Beer Co. in the 800 block of Pennsylvania has new racks but they are too cramped between a wall and sidewalk.
- The main problem for me is finding safe, dry places to lock up my bike and safe places to cycle. We need lights and alarm boxes as well as security to protect ourselves at night when locking and unlocking our bikes if we're biking to and from public transportation. The bike program needs to network with the current city transportation system.

BIKESHARE -

- I love the new bicycle share program with KU and City of Lawrence.

CONNECT COMMUNITIES -

- Are there any more rails-to-trails opportunities in the area? I think it would be great if Topeka, Lawrence, Eudora, etc were connected by trails.
- I think the entire city of Lawrence should be connected and accessible for bike travel from all directions and areas of Lawrence...North, West, East and South.
- It is impossible to cycle safely on the main east/west and north south thoroughfares. This means neighborhood riding. That's OK. I can get downtown from Inverness/Wakarusa using neighborhood roads, crossing sixth at Folks and then moving over to Lawrence, down to Princeton. But, there is no convenient way to get south except through the golf course. I can go west to the bike path crossing the roundabout. You should think of the routes that keep people nominally on the ridge forcing them only to climb once. Routes like Billings won't be used with significant hills at Kasold, Monterey Way, Bob White as you move west. Sure, roadies on recreation rides will use them, but commuters will try to avoid the climbs until necessary. Climb once and the route will be better used. So, for example, going to campus from the west, no climbs are necessary Folks, Schwartz, Harvard. That should be the commuting planning.

CREATE SHARED USE PATHS -

- As sidewalks are added to new construction or reconstruction, they should be shared pathways. Getting bikes off the streets will make it much safer for bike riders & for vehicle users. Make more trails like loop that is being planned. Then make entry paths to those shared bike paths from neighborhoods. Bike lanes are better than nothing, but still too close for comfort when you are on a bike. It is scary enough to be in a car!

DEDICATED SPACE FOR BICYCLING -

- Getting people on paths without cars is critical. Once people have a place to learn to bike safely on a dedicated path they will gain confidence about cycling on the road with cars.

DOG -

- I commute every day and ride the gravel roads and the biggest problem are the dogs. Look into protecting cyclists outside the city limits (I've been attacked even within them, on the outskirts).

DRIVER BEHAVIOR -

- I try to minimize my time on roads due to dangerous drivers and harassment. I'm really interested in completely separated paths where no drivers can yell and intimidate cyclists.
- I understand that the standard is 3 feet separation, but that still leaves me frightening close to larger SUVs and trucks. The bike lanes are often strewn with debris, and aren't always safe to ride in. Drivers do not seem to understand or care about bicycles in roundabouts. Driver education or larger signage may be needed.
- The biggest risk to bicyclists and the biggest deterrent to riding is the number of cars and trucks on the road and the lack of care the motorists display to bicyclists. This is partly the fault of bicyclist who refuse to follow the rules of the road. Bicyclists should be ticketed for traffic violations far more often. Unfortunately, many motorists are just too impatient to share the road. Adding bike lane without making the road wider to actually accommodate both vehicles is ridiculous. It won't make things better. It will just tick off motorists. Make the roads wider, reduce motorized traffic through the use of public transportation (incentivize its use), and actually invest in this project. Expand it. Become a model for the rest of the nation.

EDUCATION -

- Bicycle education must improve. Yes, I see cars driving dangerously but cyclists seem to only follow the laws that are convenient. I've seen them fly across traffic in the wrong direction, fly up on the sidewalk when traffic gets backed up to try to pass using crosswalks, etc. It very much adds to the negative attitude of drivers causing hostility between the two groups. I have an older daughter who used to bike everywhere and people were shocked when she followed traffic laws or waited her turn at a four-way stop for example. As a mom of beginning-to-drive teens, I think everyone should be taught the proper rules of the road including bicycles.
- Driver education about best practices for passing cyclists, especially approaching intersections.
- Greater educational focus toward riders taking into consideration their clothing and lights to be more visible. So much focus on helmets that try to minimize injury, lets prevent the accident!
- Bus rider and walker education on wearing ear buds! They cant hear a bell or verbal if they are tuned out to the environment.
- I don't think that most drivers understand the outline of a bicycle on the street means bicycles have the right of way. Those icons also are fading off busy streets.
- I think we have so many cyclists in this community, but we still have so many drivers that don't understand how terrifying it can be on the road as a cyclist. Drivers also don't understand that they need to treat cyclists as vehicles for example, not passing people at or before intersections. I think that there is a lot of aggression towards cyclists from drivers. There is a real lack of understanding and empathy from drivers, and maybe it's because they themselves have never rode a bike on the street before.
- I worry about the shared pathway along Clinton Parkway ... this can create confusion for some novice bike riders. Overall I notice a lot of cyclists riding on the sidewalks, which is unsafe for pedestrians, cyclists and motorists. I

think this is a huge area of education and by creating more safe lanes/safe motorist behaviors for cyclists, that hopefully fewer cyclists will ride on sidewalks.

- It is simply dangerous to ride bikes when drivers aren't generally alert that they SHARE the road. I strongly feel signage stating the obvious should be placed around town, and even moved every few months. IE written OR graphic depiction of: "Maintain 3 feet between your car and bicycles" and "Be alert to Cyclists"
- Just generally speaking there needs to be a lot more education about what things mean so that drivers understand what they're supposed to do. I'm delighted with the new layout on Mass from 14th to 11th, but I think a tiny percent of people in Lawrence have any idea what the green paint means. So as this gets expanded, you'll really need to work on education. If there's a way to do a road sign near the 14th Street intersection for southbound drivers that explains visually or with few words what the green stripe in front of them means when they're stopped at the intersection, that would be great.
- Just to continue to educate all people about the possibilities that bicycling add to everyone's lives. It's not just the people riding bikes that need to be concerned.
- Lawrence is getting there. The new bike lanes on Mass are great - well done! Getting bathrooms installed at Burroughs Creek Park to serve Burroughs Creek Trail users and west-to-east-biking/walking teens heading from Brook Creek/East Lawrence Rec Center to Central Middle School will be great. Driver education about sharing the road with cyclists (and enforcing this by giving out tickets) will increase biking a lot once people feel safer.
- More education to drivers about cycling laws and how to communicate with cyclists they observe who break the law or conduct themselves inappropriately.
- PLEASE help teach about dangers of weaving through traffic, blowing stop signs, cutting off cars, etc. It's so dangerous and scary!

ENFORCEMENT -

- Bicycle safety will be non-existent until we start enforcing traffic laws.
- Enforce the rules of the road for both cars and bicyclists alike. Both must stop at stop signs and stop lights and bicyclists should move over for faster traffic.
- I would like to see bicyclists and drivers be equally held accountable for adhering to traffic signs, lights, etc.
- My major concern is the lack of prosecuting or even ticketing of people who are driving and texting.
- In the past year I have witnessed less than 5 bicyclists actually following the rules of the road all the others acted like they didn't even know such a thing existed. If we implemented a program where the police would give tickets to bicyclists who were not following the rules of the road we would probably lower the amount of bicycle related traffic accidents and injuries every year. Even if the first ticket wasn't a monetary fine but a court ordered bicycle education course it would have a positive impact. I am tired of seeing bicyclists almost getting hit with an automobile because they cannot follow the rules of the road. In all reality how hard is it to use your hand to signal lane changes and turning, come to a complete stop at a stop sign or even look for oncoming traffic when you are merging? I can understand a child but a full grown adult? Someone is going to end up paralyzed or dead if we don't start teaching them the rules of the road.
- I have been nearly run over several times near the ballparks by the SLT (where the young woman was killed by the car). Cars do not stop at the stop signs and do not yield to pedestrians or bicycles. Much stronger driver education and law enforcement, including bigger signs, flags, notice of cameras, and fines for running stop signs is necessary in this area of high pedestrian/bicycle/car interaction. Thank you!
- In the past I rode to work every day. I rode an average 50 miles on weekends. I rode the side roads, less traveled, watched for traffic, wore bright colored clothing, and obeyed the traffic laws. I was never involved in an accident. I witnessed numerous of my fellow bicyclist ignore traffic laws. From my perspective they want to use the road but not following the rules of the road. Before any more money is spent on improving conditions for cyclists the city should begin a program focusing on the enforcement of traffic laws on cyclists, stop signs, yield signs, lights, turn singles, lane changes, and on. FYI I had to stop cycling years ago due to an illness.
- Instead of bothering with lowering speed limits, enforcing driving violations in neighborhoods (if/when police resources become available for that), or bike education, let's first focus on slowing down drivers naturally.

ENGINEERING -

- A major concept that seems to be forgotten by city planners around the US is that people will drive the speed they feel comfortable. If a road is straight, has wide lanes, and no parked cars on the side, people will naturally drive faster. On the other hand, a more tortuous road (using perhaps bump-outs, speed bumps, or just not being totally straight) encourages safer, slower driving. Since accidents are more likely to be fatal at higher speeds, this is a huge concern.
- Here's the idea: don't design neighborhood streets like highways. They do not need to fit a highway engineer's "level of service" or "sightline distance". Using these metrics prioritizes drivers over pedestrians, which is rather backwards in neighborhoods. Really only 6th, 23rd, Iowa, and Bob Billings should be designed like this. Everywhere else should be narrowed, and street parking should be encouraged. You'll notice pretty quickly that speed limit signs are unnecessary when roads are designed appropriately.
- Thank you for adding a bike lane on Mass. It makes me feel much safer, but it needs to be longer and there needs to be better ways to get on that road as a cyclist, like a stoplight at 15th and mass or a motion sensor on the light at 17th and mass. 21st and Louisiana is also just a mess.

FACILITY TYPES/MAINTENANCE -

- I think that painting bicycles on a street and calling it shared usage is a waste of paint.
- I would like for all bicycle lanes to be buffered.
- If bike lanes were built, more people would bike. Just putting a white stamp on the ground doesn't make
- In my 8 years of bicycling to work (at KU), I see improvements every year that make my rides safer. Another improvement is the Iowa/23rd St intersection. It's now very easy, and low stress to cross, even at 5pm rush hour. Whoever designed that intersection should be commended for saving lives of cyclists and pedestrians. The shared paths around Menards and Baker Wetlands are nice. On weekends, whenever I need something from a hardware, I bike to buy stuff at Menards. There remains some nasty intersections on my route. Kasold/Clinton Pkwy during rush hour is dicey. Mainly, from fear of right hook from cars. Another danger spot is Hartford/Clinton Pkwy going south -- vehicles will inch forward to see traffic on Clinton, and block the zebra crossing for cyclists on the shared path. The crossing on Iowa at the theater is a bad idea and an accident waiting to happen. That should have been a tunnel. I only cross that thing on Sunday mornings when traffic is minimal. The culprits are the drivers from K-10 who make a right on Iowa. I'm pretty sure you wanted to put a tunnel in there but ran out of money. Please, don't paint anymore bike lanes. They are useless in bad weather and night time. Build protected bike paths. Build bike infrastructure that you would let your 10 year old kids bike.
- In the 7 years that I have been bicycling year-round to my work at KU via Clinton Parkway shared path, my ride has become better and safer each year. The rebuilt Iowa/23rd St intersection is now less stressful to cross even during rush hour. Crossing Kasold (on Clinton) remains stressful. Crossing Hartford Ave is particularly stressful at rush hour because drivers block the zebra crossing (yes, despite that white painted line where cars are supposed to stop at red) while waiting to make a right into Clinton Parkway.
- In time the coalition may want to consider installing traffic lights and signs to guide cyclists through high-traffic areas to ensure safer cycling.
- Increase bicycle lanes
- More shared use paths through the middle sections of the city and up the hill to KU from all sides would be ideal.
- Need more shared use paths
- Not a road biker, but enjoy the shared use paths. Frequently ride the path on 27th street to Clinton Lake and to the south Iowa retail shops.
- One of the primary barriers to safe bicycling in Lawrence is the lack of bike-safe intersections. Some intersections with traffic lights have cameras that don't detect cyclists, and others (such as at Mass and 15th) could be made much safer with a marked and/or signaled pedestrian/bicycle crossing.
- People will ride if they feel safe, we need to provide facilities that show people 'You will be safe if you ride here'
- Road maintenance needs to be improved as potholes are much more treacherous for the cyclist than for the

motorist

- The intersection of 6th Street and Mass and the surrounding area is particularly dangerous and difficult to navigate. Traffic southbound over the bridge often does not pay attention to bike traffic. Top priority should be given to providing an alternative route for cyclists (finishing this portion of the loop). Other portions of the loop are dangerous as well. The intersection at Iowa and K-10 drivers often fail to yield to cyclists when turning north onto Iowa. And E-900 Rd. and Clinton Parkway (out near Clinton Lake) drivers fail to yield to riders in the cross walk (the crosswalk there is almost completely worn off).
- Unmarked bike lanes aren't very useful and feel dangerous to ride on.

FAMILY BIKING -

- Focus on family bicycling ideas and policy. It's more complex for folks who have children, to bike to work. Parents often have to take their children to school, do errands, etc. Think about that life style when building the bikeway structures

INCENTIVES TO BIKE -

- I strongly support the construction of streets with clearly marked bike lanes, or bike lanes that are separate from the road. I do not support closing off existing streets to somehow force more people to bicycle. Incentives always work better than directives and are less likely to turn the community against the idea of sharing the road with bicyclists.
- I think Lawrence and Douglas County need to incentivize bike riding. We all know the two lane roads, with parking allowed on both sides, with narrow sidewalks, and impatient drivers....is a thing. But what about working with employers to allow those who commute not-by-car to have additional time to get to work, or arrive before/after the typical vehicle rush? Yes, I am suggesting working an abbreviated day as a consideration of the time it takes to arrive. It is 2018, we can figure this out.

INFRASTRUCTURE NEEDED -

- A lot of infrastructure is needed to make our busier streets, such as Haskell and south Mass. St. more bikeable. It is impossible to bike to carpool meetup spots at both I70 ramps. Bike lanes should be extended all the way to an intersection, rather than ending ~100ft prior.
- I noted above and I will re-state here - the bike lanes are in the wrong place. The space is already there - just have cars park next to moving traffic and have the bike lane between the parked cars and the sidewalk.
- I think the money spent would be better used keeping our existing roads (which bicyclists like me still have to use) safely maintained instead of building new bike stuff and leaving the non-bike roads in unsafe conditions (e.g. see south Lawrence Ave. which is supposed to be a bike route)
- What appears to connect on the map may in fact not. A curb is enough to cause problems. From West 29th Terrace to get to the Loop on the East side of Louisiana isn't as simple as it looks on the map.

KEEP BIKE LANES CLEAN -

- Debris tends to collect in curbside bike lanes, like those along Ninth Street. A bike lane that is full of debris is worse than no bike lane at all, since it forces cyclists to ride further out in the road than they would otherwise, to avoid flats and other hazards. If the city is going to go to the effort & expense of putting in bike lanes, then it also needs to follow up by sweeping them on a regular basis.
- In my somewhat limited experience current cycle lanes tend to accumulate a lot of debris and often require careful navigation.

LAWRENCE LOOP -

- I would like for completing the downtown portion of the Lawrence Loop to be the number 1, TOP priority.
- Some stop/yield signage along the Loop is confusing. 27th and Sawgrass Dr is a prime example.

NO BIKES -

- Come on down to reality (and earth). Is all this worth the cost with nobody using it. Please, let's be honest with ourselves and really consider the actual usage.
- Forget this silly waste of time and money. The public should not be forced to see streets turned into bike lanes just because 67 people out of 80,000 want to ride their bikes on streets. Let them ride in the parks, not on streets.
- Let the biking morph on its own, do not spend time money and resources
- Stop riding bikes in Lawrence. You are not above the traffic laws in your bike.
- There are miles of bike lanes already in Lawrence and they are called sidewalks. There is not enough walking traffic to justify not allowing cyclists to be on the sidewalk. The speed at which someone rides a bike is much closer to a walking speed than the speed of a vehicle. According to Livestrong.com the average biking speed is 11 to 12 mph, the average walking speed is 3 mph and I would guess that the average speed limit in Lawrence is 30 mph. There is a much greater difference in vehicle speed to biking speed than there is to biking speed vs walking speed. Plus, there are almost always cars on the road and almost never pedestrians on the sidewalk. Does it make sense to allow cyclists on the sidewalks downtown, no, and that's already against the law. But the rest of the city, absolutely. The paragraph above states, "In general, people said they feel more comfortable when there is greater physical separation between bicycle riders and vehicles." The grass area between the sidewalk and the street is an extremely acceptable physical barrier since most people feel comfortable using it to walk on. I would say on average I see about 2 cyclists a month in town. It is hard to imagine that justifying tax dollars towards bicycling paths that will be used by such a small minority of citizens serves the greater good of the community.
- They need to learn a cars bigger and can't be just darting here and there with no signals given
- This community does not need to spend money a bike paths. We can't keep up with the normal costs on everything else. You all think raising taxes is an easy way out "build it and they will pay for it" should be your motto. There must be one or two people who think thousands of people ride a bike. If so, you're foolish. Just get off the bicycle kick and stick fixing the more important issues that will benefit a higher volume of residents.
- Too many tax dollars are being given to the bicycle plans verses the number of people using bicycles. That money could be used for the majority of people.

OREGON STOP -

- It should be legal for bikes to yield but not stop at a stop sign, like in the state of Oregon. The Wakarusa roundabouts are dangerous: the striped bike lane ends just before the roundabout and you are squeezed into the car lane.

PEDESTRIANS -

- Joggers are becoming a dangerous obstacle as many have head phones and can't hear you coming, even with a warning call out.

OTHER -

- Help the various work. Shop. Areas understand the benefits of the complete streets document. Healthy customers. Lower health insurance costs more frequent visit. Etc.
- I love cycling here, inattentive drivers can make it a challenge though. Most of the time I find drivers to be courteous
- I love it. I'm from Dallas. Lawrence rules!
- (With new gender identities, I think you need to add more than M/F as sex choices. It's easy for me being a girl, but it's now a complicated issue for many.)
- Can Naismith from 23rd to 19th become like Princeton Blvd and Lawrence Ave around Deerfield school?
- Is a bicycle friendly community also a pedestrian friendly community?

- Kasold/31st Street doesn't have many natural crossing that are safe. The Pedestrian activated lights are in ill-logical places.
- Lawrence already has far too many traffic obstacles. There are no major streets that allow efficient movement of traffic. Instead of trying to slow traffic down, Lawrence should be trying to figure out how to make traffic flow more efficiently. Instead of spending our tax dollars to create new bicycle lanes, the city should spend our tax dollars fixing all of the streets in Lawrence that in a poor state of repair.
- Like so many communities, we must find a way to humanize cyclists and decrease the animosity towards them in order to be successful in encouraging more people to bike. Reading the comments on any bike-related story brings out so much impatience and anger towards cyclists that I would not be surprised to find that many novice cyclists or people who be interested in trying to travel more by bike could be afraid. Yes, cyclists do sometimes break the law. As do motorists. I'm guessing likely in similar proportions. But how do we make the community more friendly in general towards others?
- Make sure it's incorporating health equity as a framework. Don't just increase bike lanes, but increase them in areas that have limited access to cars, and where people are more dependent upon where they can walk and bike to safely.
- Make the city engineers try to bicycle around town to get to actual destinations and see how they like the experience
- Minimize the regulatory rhetoric, maximize the pleasure and health benefits. Simple quick fix stations with air would be of great value.
- More dedicated paths like what was recently created on Mass between 11th and 14th instead of "share the road" signs. Greater law enforcement of the 3ft rule/law, and general bike v. motorist laws. More/better city or university oversight for the veoride bike share program to improve rider/renter education and less veobike abandonment in random spots around town and campus.
- More frequent bus service and more locations (2)
- More trails and a BMX type park would give younger riders an alternative to street riding.
- My personal experience demonstrates that an interconnected network of primary and secondary bikeways directly influences bicycle use. In the past several months, I have gone from biking a few times a year to a few times a week, after discovering improvements to the Lawrence Loop such as the Rock Chalk Park trail and the eastern SLT connector. I strongly believe that improvements to the bicycle network are worth the investment.
- My wife and I own Go Driving School. We discuss bicycles in our classroom education, and train students about sharing the road with (and looking out for) bicyclists. I also ride a bicycle in Lawrence and know streets to avoid on a bicycle (Massachusetts, Iowa, and 9th between Mississippi and Iowa). Viable and realistic alternatives to these areas must be offered.
- NOT AT ALL FOR THIS: Create a traffic ticket diversion program. Road users given citations are offered an opportunity to waive violation fees by attending a bicycling education course. This potentially creates the image of bicycle education as a punishment. Further, it could be completely related to the original infraction, therefore you are not educating a driver on what they actually did wrong.
- not at this time.
- Please have the different neighborhood organizations' emails at staff's fingertips to alert everyone as soon as a bike/transportation item is added to lists for the future, when an idea for a route, traffic calming, any transportation related item is being discussed at the Transportation Commission or Planning Commission, etc. When Projects are moved up the list without the neighborhood being alerted it looks sneaky and patronizing as if the Transportation Commission and City Transportation Planners know what's good for neighborhoods rather than working with the neighborhoods and creating goodwill, educating the neighbors and getting buy in on projects. We realize this is perceived as stirring up the citizens but long experience tells us that transparency and widely disseminated info will pay off in trust and community support later. It is simple courtesy.
- Rural ppl who do most of their work, errands, school in Lawrence need more bike accommodating bus routes... and bike lanes!

OTHER CONTINUED. . .

- See above.
- Shared use paths...are these shared with pedestrians or with the vehicular traffic??? I'm all for the shared paths, sidewalks with the pedestrian traffic. But when you try and use the shared painted lines with automobiles in the same road it is inherently dangerous. These areas with the automobile/vehicular shared areas are not working never had and never will. Whomever came up with this suicidal idea is not helping.
- Shortest way is not always the fastest or easiest. Some people may prefer to commute a longer distance and avoid hills - so maybe add a grade rating to the route.
- The city has spent - and is planning to spend - more money per person on bicyclists than on pedestrians which include a much larger percentage of the population. No more programs and amenities for bicyclists until sidewalks are improved for pedestrians.
- The city of Lawrence can do better. Building a safe and well-connected bike network can reduce traffic, improve health, and create a better quality of life for the people who live here.
- The easier it is to bike the more bikes there will be on the streets and that will encourage others to bike...it will build on itself and we will end up being the Portland of the Midwest !!!!
- The narrow streets movement seems incompatible with a bicycling community unless they are paired with separate bicycle lanes. There are many streets that, especially with cars parked on both sides of the street, are just too unsafe to bike on and that is compounded when those streets are brick. While I appreciate the nostalgia of brick streets, and the esthetic, they are not good for bikers and they are slick when wet for bikes and walkers (hate the brick sidewalks for the same reason as I walk to work nearly every day).
- The proposed Bike Boulevards is a tremendous waste of taxpayer's money. That money could best be used to educate ALL our citizens on bike safety using some of the ideas above.
- The roads and sidewalks are difficult to bike on in a majority of places
- The shared use path absolutely makes biking to work on campus from west Lawrence a reality. I would be excited to see the priority bike network connected through campus.
- To have more "Social" rides on the weekends for those who don't go away on weekends.
- To keep on a helmet on
- Traffic lights don't always change for cyclist (17th and Mass). KU campus cycling and near campus is very difficult. The entrance to the Jayhawk trail by the Burge union is poorly placed.
- Who are these bicyclists and how often will they be using city streets? In winter? For recreation or for work?
- Widen streets
- Yes, a bike crash trap was reestablished on 15th st. near the rec center just east of Haskell. The pedestrian avenue unprotects bicyclists. I have had many cars race me to the bottleneck. Please remove the island.
- The light at 17th and Massachusetts cannot be changed when on 17th st. You have to wait for a car to come, or cross on red. This problem has been known for over a decade when I visited with Terese Gorman about it, who was not willing to change this problem; so I occasionally cross Massachusetts on red light.
- You may read the comments above. I don't ride nearly as much as I would like in Lawrence b/c the paths are inconvenient, unsafe, and don't connect easily to fun areas e.g. parklands.
- I answered Maybe to most of the items in #1 b/c I generally don't believe these are a priority for limited funds, but if there is a demonstrated need or demonstrated real benefit than I would support them. Mostly I believe money should be spent making roads safer for cyclists and developing bike lanes and paths. I LOVE the new green stripes on Mass. Thank you to everyone involved and please do more of that! It's a small change, but I felt much safer.
- I'm familiar with the "counts" the city does to decide whether to put in a crosswalk or similar. I wish these weren't done on rainy days; I hope you take weather into account. Also, I strongly believe that counting *before* the safety feature is added is not a good way to judge travel *after* adding the safety feature. Ex: A crosswalk near Raintree School. It's not safe for kids to cross b/t the school and the terrific bike path, so parents don't allow that. But more kids would if there was a crosswalk. I strongly believe this.

- I don't own a bike any longer so being able to provide more access to bicycles or bicycle storage areas might help increase usage.
- I ride on sidewalks when I can.
- At this point I am throwing spaghetti at the wall to see what sticks. But something needs to stick because Lawrence drivers can be jerks, and Lawrence bikers can be jerks.
- I would like to see more accessible riding possibilities. Talk to and involve folks with mobility issues.
- I would like to see more attention to bicycling AND walking as preferred modes of transportation in Lawrence.
- Is there some ordinance against using automatic sprinklers to water the sidewalk?

PHYSICALLY SEPARATED BIKE LANES -

- Consider physically separated bike Lanes, separate from sidewalks. For example, instead of two lines to denote the bike lane on Mass, add curb structure or other physical separators. You need more protected bike lanes b/c it's scary as hell when folks get hit regularly.
- It takes more than putting white lines on the road and marking a bike lane. More than widening a sidewalk and calling it a bikeway. Because of my job, I travel to a LOT of university towns around the country. I make it a point to observe their bicycle infrastructure and note what works and what doesn't as I have time. Bike lanes and so-called "buffered lanes" don't really make the necessary impact to make cycling a suitable alternative on roads with any significant amount of traffic (motor vehicle on the road, pedestrians (dog walkers and headphones in particular) on bikeways. PROTECTED lanes, and ensuring they are actually interconnected (not just randomly starting and stopping) and providing equal protections at intersections are what is effective. The places I see that do this have a much higher number of cyclists using bicycles for utility and not merely recreation.
- Separated and protected infrastructure has been proven globally to increase cycling. Separate it from car traffic and pedestrians!
- Stop building unprotected bike lanes. They do not accommodate all ages and abilities and in many cases, eg Wakarusa, are a waste of money. Focus resources on building shared-use paths, cycle tracks and bike boulevards that really are low-stress.

PLANNING -

- A more comprehensive effort with the planning for multi-modal options at the University of Kansas and probably at Haskell seem like the type of transportation planning for the bicycling demographic that delivers the most ridership for the investment. The challenge is that many of these connecting sections, when you're on the ground, take integrated approaches to looking at very specific conflicts and larger, longer term solutions that integrate routes with points of origin on one end and routes with efficient bike storage on the other. And in the case of access to KU, minimize the amount of grade changer over the length of the ride.

RIVER -

- Would love another spot to cross the river

SAFETY -

- All streets should be made as safe as possible. Also, where there are brick streets, there should be concrete sidewalks. If the sidewalks are brick, the streets should be concrete/asphalt.
- Always dress to be seen. So much of what our wardrobes consist of blend in beautifully with our surroundings HOWEVER that makes pedestrians and cyclists not as easily noticed. Bright eye catching colors or the bright pea green colored vests.
- Also feel that flashing lights front and back day and night make for safer cycling because drivers are surrounded by factory installed blind spots.

SAFETY CONTINUED. . .

- Don't try to perfect every street. Focus on SAFE crossings of major routes (Iowa). Leave 21st alone. It works, don't mess it up! Also, don't even contemplate stopping people for 'good' behavior. Lawsuit. I will file if stopped. Highly counter productive. Unreasonable.
- Drivers here are horrible. We need less cars on the road, better public transport, and more incentives for residents to choose alternate forms of transport rather than the mindless driving of their cars. We also need a complete ban on cell phone use for car drivers. Pull over or keep your phone put up!
- Emphasize safety gear, especially visibility aids for night riding.
- I am concerned about using 6th Street and parts of 23rd Street as part of the primary network due to the high volume of car and pedestrian traffic.
- I have been hit on 6th street twice and on Iowa once by cars not looking before entering traffic from parking lots. The last hit has left me with bodily injury and extensive bicycle damage. All three times I was cautious and courteous. People tend to pull up as far as they possible can instead of minding sidewalk / bike lane traffic.
- I am very reluctant to ride my bicycle within the Lawrence city limits due to the high number of motor vehicle violations I see. For instance, because of where I live, I frequently use 6th St. between Iowa and Kasold. Almost every time I am on 6th St I see drivers speeding and running red lights at the various intersections. I understand the Lawrence Police have to prioritize their activities, but until safe driving is enforced more stringently, I don't believe Lawrence will ever become a truly bike-friendly community.
- I would bike to work every day down 15th from Wakarusa to KU if there was a safe bike lane. Shared use streets with cars doesn't work at 40-45 mph. Just not safe enough right now.
- Getting around the north end of downtown by the bridges and city hall is slow and feels dangerous with the slip lane. Really looking forward to some improvements here and expect them to make the beautiful Burcham park trail even more popular.
- It's dangerous! I was hit once and almost hit a few times. It has changed my bicycle behavior from riding daily to work to only riding for pleasure in the safe places like the Burroughs trail. Super lame, Lawrence.
- It's dangerous, but I bike every day. I'd say Lawrence is more bike-able than it gets credit for, though.
- It is currently not safe for children. I hope these changes help.
- Theft of parts and bicycles keep me from wanting to commute these days. If I was to commute to work, I'd need to build up a beater bike that won't get messed with while parked on campus. I love riding my expensive bike, but not to campus.

SIGNAGE -

- Lawrence does a good job of being bike friendly. Connecting the K10 trail to downtown (and thus the levee trails) should be first priority. Adding significant signage on E1130 road would go a long way to making the current route safer. Thanks!

SNOW -

- When snow removal happens, often the snow gets piled right on the sidewalk/bike path access point of intersections. Couldn't it be pushed a few feet away from the intersection along the curb?

SOUTH LAWRENCE -

- I live south of Lawrence, less than mile west of highway 59. For several years now I've ridden to work (KU) at least a 100 days a year. The bridge of highway 10 going over highway 59/Iowa, there is no room on Iowa/59 to ride a bicycle under this bridge. No sidewalk, no shoulder to ride on. And the access across highway 10 at Kasold, is closed. There is no decent access for a cyclist to go south of Lawrence between Wakarusa and Michigan. I am very fearful of what will happen to my access on a bicycle to Walmart and Target with that new shopping center coming to the southeast of highway 59 and Michigan.

No -

- Na
- No (21)
- No I'm good!
- No thanks
- enuff said.....

SUPPORTS -

- grateful that Lawrence is finally adding bicycling and pedestrian accessibility throughout our city. the groundwork laid now will hopefully create new generations of cyclists, biking throughout our city for work, school, and personal enjoyment.
- Great idea, great cause! Weather might be an issue though!
- I appreciate the efforts of the City and the MPO to improve cycling in Lawrence, and I look forward to seeing these future improvements and facilities.
- I appreciate the work Lawrence does to make the city bike friendly.
- In spite of the nitpicking that you sometimes get from cyclists, I think that you all have done a good job of planning for bike needs. I am proud of the progress Lawrence has made in meeting cyclists' needs.
- I would be happy to help implement some of those programs. They sound great!
- I would bicycle a LOT LOT more if there were safe paths that I didn't have to share with fast traffic in my area.
- If implemented as proposed, I could function without a car.
- looks good. more bike boxes, more helmet fairs.
- Bicycling has become much safer and more fun in Lawrence over the last 10 years. I think the current plans will vastly improve accessibility to all parts of town.

THANK YOU -

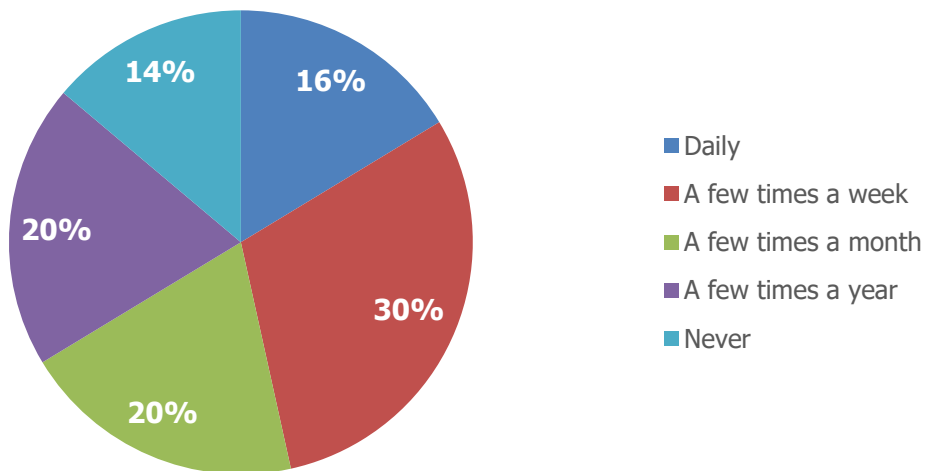
- Thank you for committing resources to this topic
- Thanks for doing this! (2)
- Thanks for taking the time to work on this
- I'm thankful to live in a community where this subject is cared about, discussed, and these questions are asked! Thanks so much for all your work.



9TH ST. AND VERMONT ST.,
LAWRENCE, KS

When asked “How often do you ride a bicycle (in good weather)? (Select one)” Respondents indicated:

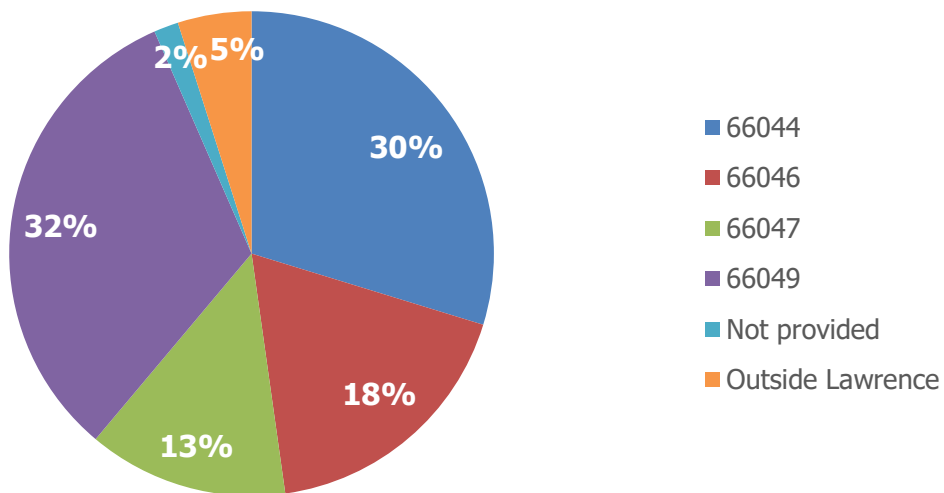
Figure 29: Frequency Bicycling



Number of Responses - 404

When asked “What is your zip code: Home?” Respondents indicated:

Figure 30: Home ZIP Code

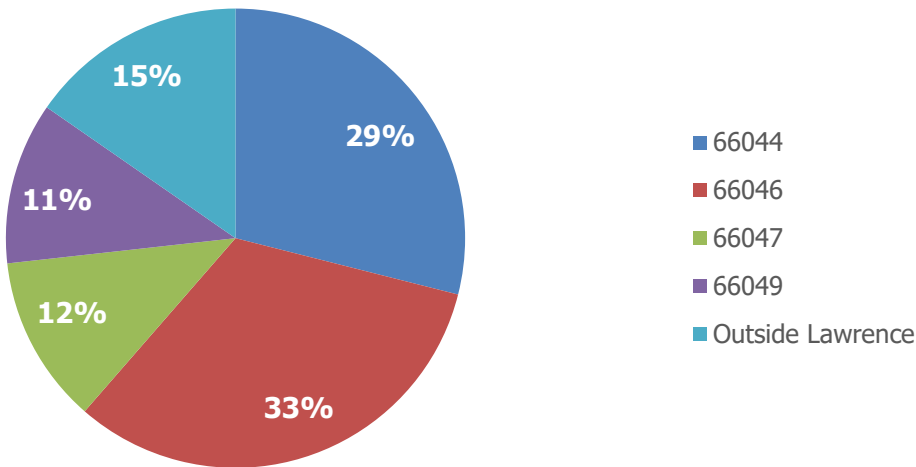


Number of Responses - 427

*Note: Respondents who identified as living outside of Lawrence, but working in Lawrence were included in the overall analysis. People who do not live or work in Lawrence were not included.

When asked “What is your zip code: Work?” Respondents indicated:

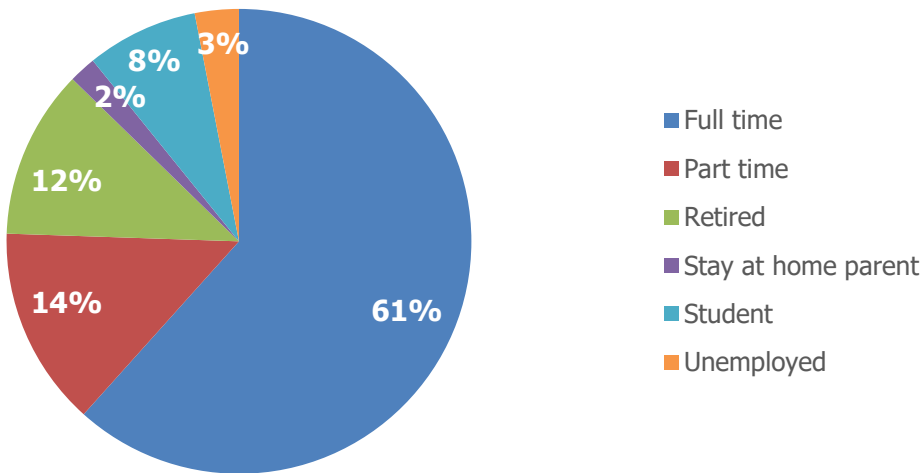
Figure 31: Work ZIP Code



Number of Responses - 228

When asked “What best describes your employment status? (Select all that apply)” Respondents indicated:

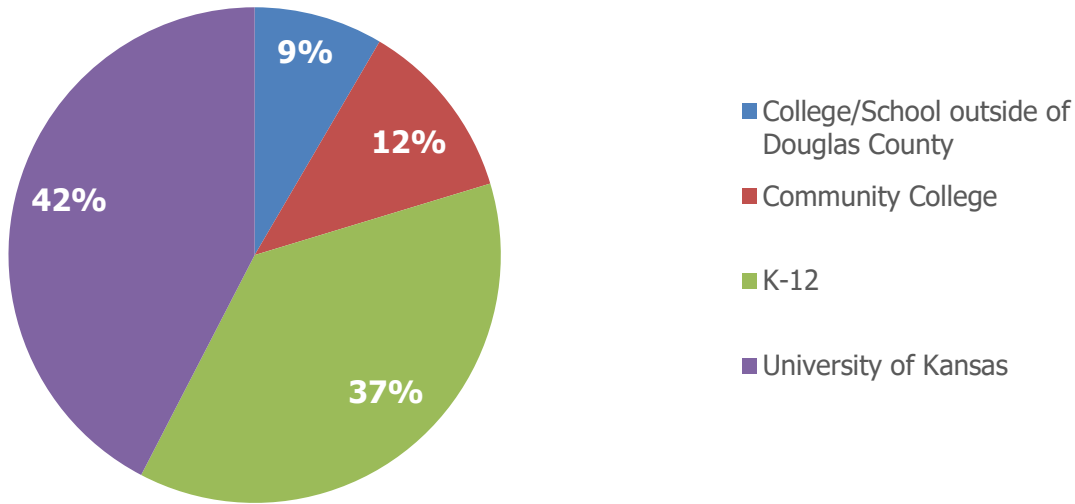
Figure 32: Employment Status



Number of Responses - 425

When asked “If you are a student, where do you go to school? (Select all that apply)” Respondents indicated:

Figure 33: Schools

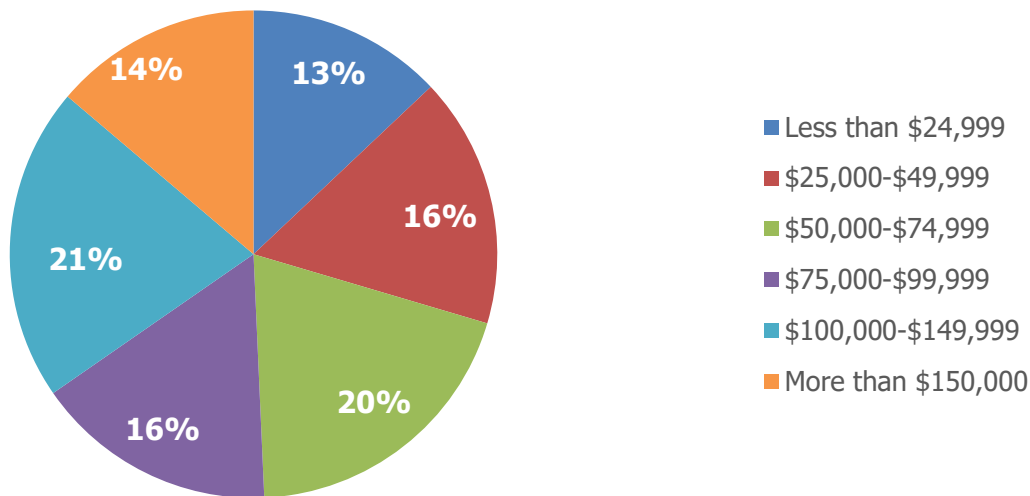


Number of Responses - 59

*Note: No respondents identified themselves as students of Baker University, Haskell Indian Nations University, or Peaslee Technical Training Center

When asked “What is the approximate average household income? (Select one)” Respondents indicated:

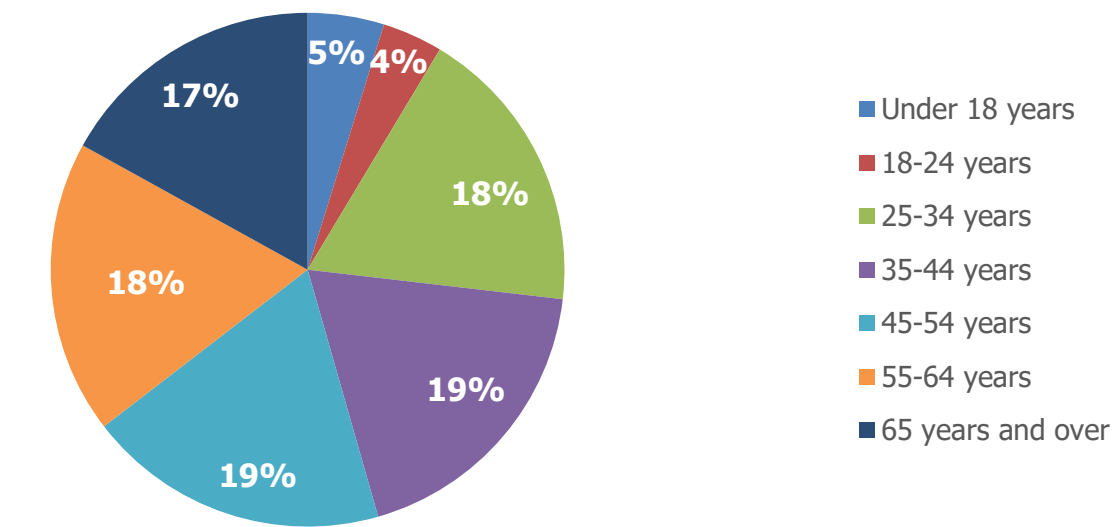
Figure 34: Income



Number of Responses - 355

When asked “What is your age? (Select one)” Respondents indicated:

Figure 35: Age



Number of Responses - 395

When asked “What is your sex? (Select one)” Respondents indicated:

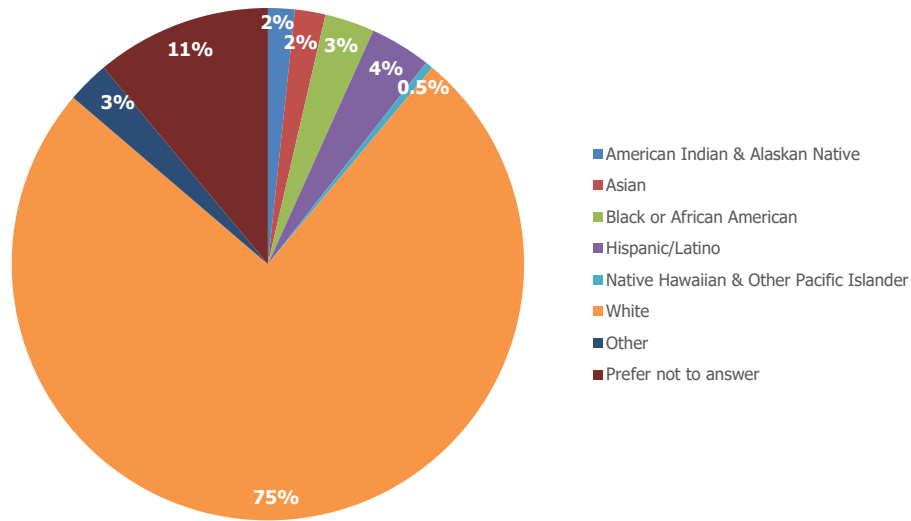
Figure 36: Sex



Number of Responses - 399

When asked “Which race/ethnicity best describes you? (Select all that apply)” Respondents indicated:

Figure 37: Race/Ethnicity



Number of Responses - 415

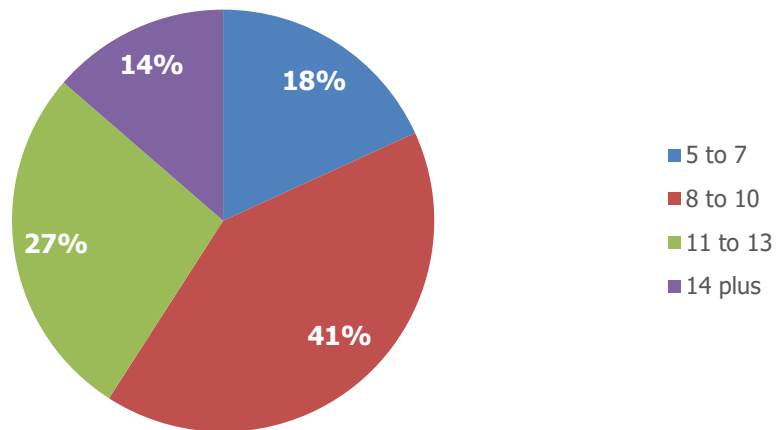
Other responses:

- American (2)
- Brown
- Many
- Mixed race (2)
- Mutt
- my race should have no impact on this questionnaire
- Native American % not known
- other
- White/American Indian

CHILDREN SURVEYS

When asked “How old are you?” Respondents indicated:

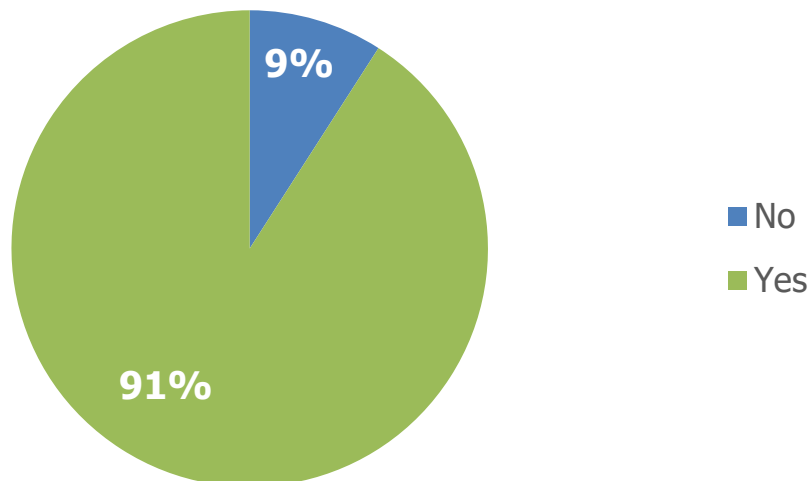
Figure 38: Age



Number of Responses - 22

When asked “Do you know how to ride a bike? (Select one)” Respondents indicated:

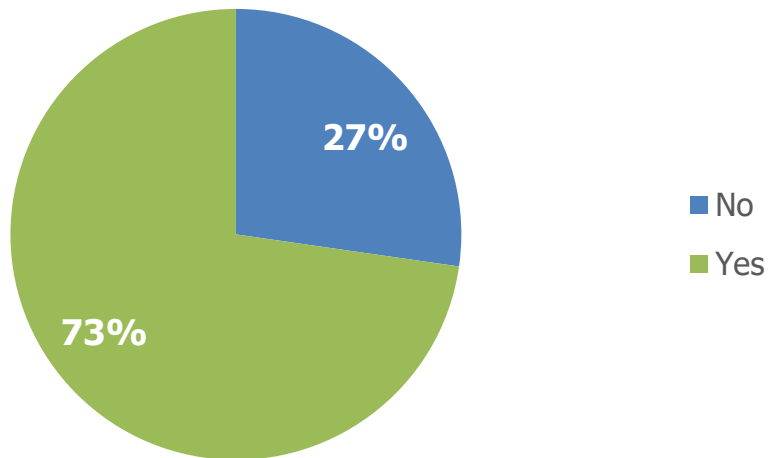
Figure 39: Do you know how to ride?



Number of Responses - 22

When asked “Do you use training wheels? (Select on)” Respondents indicated:

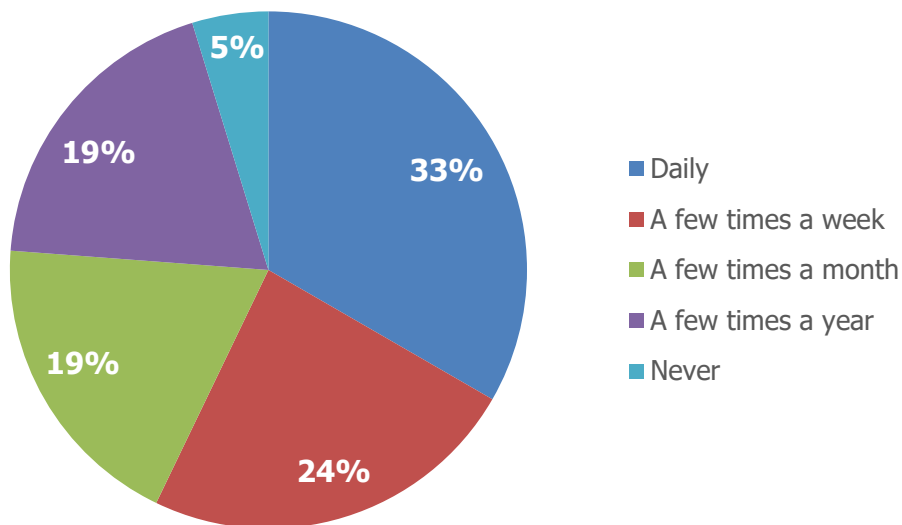
Figure 40: Training wheels



Number of Responses - 22

When asked “How often do you ride a bike (in good weather)? (Select one) Respondents indicated:

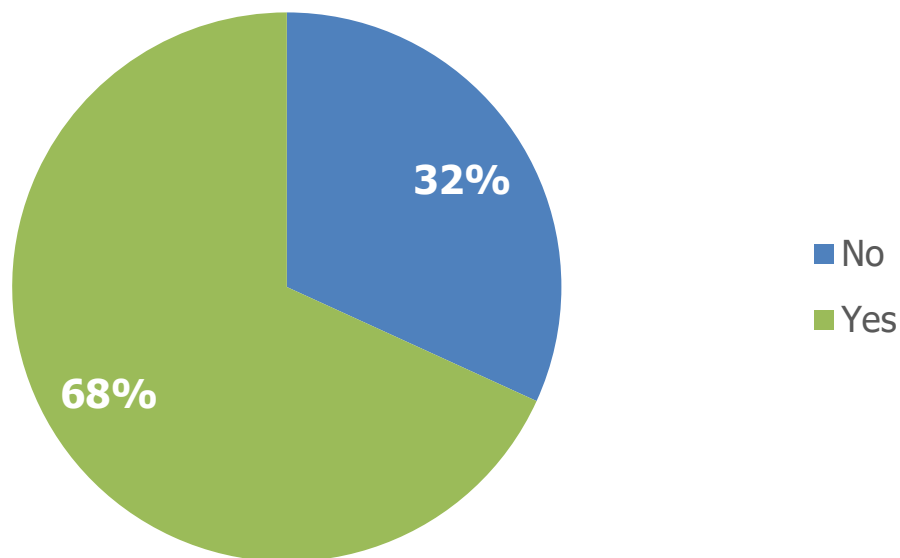
Figure 41: Bike riding frequency



Number of Responses - 21

When asked “Does your parent/guardian ride a bicycle? (Select one) Respondents indicated:

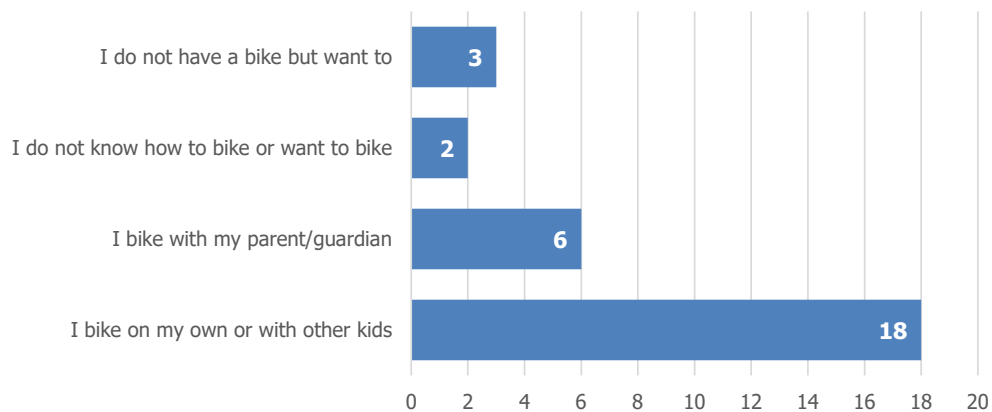
Figure 42: Parent/guardian bicycle



Number of Responses - 22

When asked “Do you bicycle alone or with a parent/guardian? (Select all that apply)” Respondents indicated:

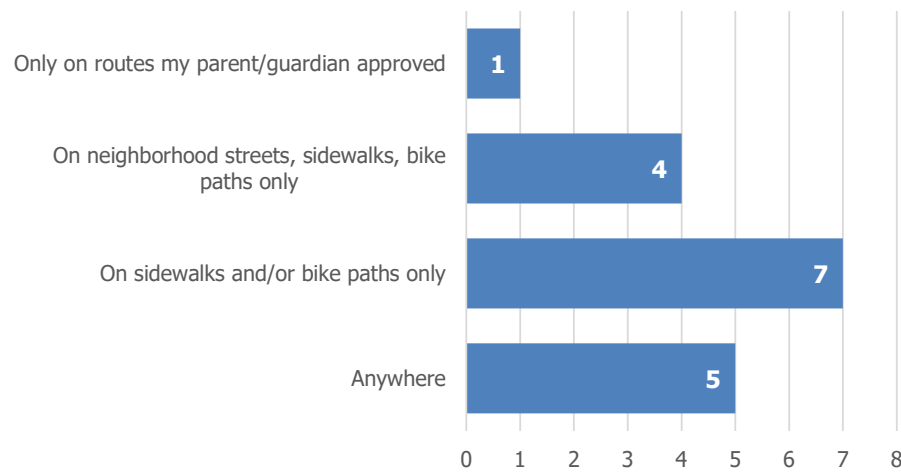
Figure 43: Alone or with parent/guardian



Number of Responses - 22

When asked “Where are you allowed to ride a bicycle without an adult? (Select one)” Respondents indicated:

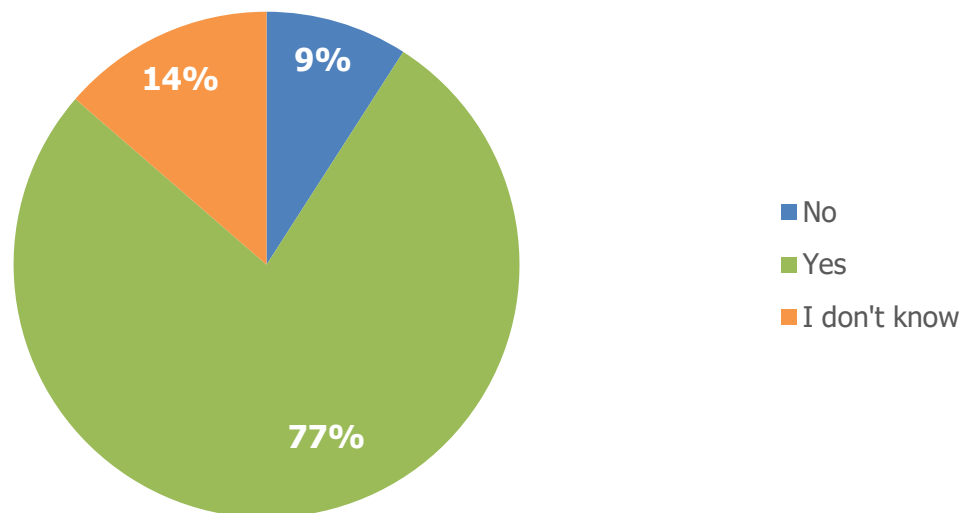
Figure 44: Riding without an adult



Number of Responses - 19

When asked “Are you comfortable biking alone? (Select one)” Respondents indicated:

Figure 45: Comfortable biking alone



Number of Responses - 22

30-DAY PUBLIC COMMENT PERIOD COMMENTS

The Lawrence-Douglas County Metropolitan Planning Organization (MPO) released a draft Lawrence Bikeway Plan called Lawrence Bikes. The plan was available for public comment May 15 to June 14, 2019.

The Lawrence Bikes draft document was available at the following locations.

- Online at: https://lawrenceks.org/mpo/bicycle_planning
- Lawrence-Douglas County Metropolitan Planning Organization, City Hall Riverfront - Planning and Development Services Office, City Hall Riverfront, 1 Riverfront Plaza, Suite 320
- Lawrence Public Library, 707 Vermont St, Lawrence, KS 66044

Comments could be submitted in writing via:

- Email: mpo@lawrenceks.org
- Mail: Lawrence-Douglas County Metropolitan Planning Office, PO Box 708, Lawrence, KS 66044-0708
- Web: www.lawrenceks.org/mpo/tellus

EMAILED COMMENTS

Pattie Johnston - There have been numerous discussions concerning the proposed bike boulevards. Addressing the 21st street ideas, it is obvious that the ones proposing this are not aware of the actuality of the street and the traffic on it. It is an arterial from Iowa to Massachusetts streets with minimum “low traffic” times. It is an older street, in a residential neighborhood, narrow with driveways that require backing out from these driveways. Numerous past construction projects on 19th and 23rd streets have forced drivers to find other routes. They found 21st street and have continued to use it.

The answers that have been received expressing these concerns, when an answer has been received, have been in the nature that traffic will diminish after the project is completed. The design of no left turns and street narrowing devices may make it less desirable but also complicates those who live in this neighborhood, especially those of us who live directly on 21st street. Funneling more traffic onto 19th & 20th streets is the most likely result. Even that is not exactly a good practice idea.

Though the city has provided meetings and other opportunities to express concerns and issues on this proposal, it is highly unlikely that any of those directly impacted will have any effect on the decision. It can be said that input was asked for from the community but is it really input that is being considered or are these public information opportunities only to show what will be occurring regardless of residents’ opinions? It would be nice to be proven wrong but past experience is a good teacher.

John Gascon - With the pending release of the MPO Lawrence Bikes Plan I’m writing to inquire how we might include the concept of the Idaho Stop Rule into the plan and to forward the issue to the Transportation Commission. As a refresher, I included the email thread from last July below.

I look forward to your input.

Chris Tilden, on behalf of Friends of Lawrence Area Trails - Thank you for the opportunity to comment on the proposed “Lawrence Bikes” plan. Bicycling infrastructure benefits individuals and the community in many ways, including improving personal and population health, protecting the environment, enhancing personal mobility, and promoting economic vitality. This plan is a positive step in promoting the continued development of cycling infrastructure and encouraging cycling as an important form of transportation (as well as recreation) in Lawrence. We agree with the premise of this report that, as more “high quality” bicycle facilities are built, more people will choose to use bikes for recreation and transportation to priority destinations.

We are particularly interested in a robust network of bicycle and/or shared trails separated as much as possible from the roadway system, since these facilities are generally the safest/most comfortable of all bicycling infrastructure. We recognize that trails are but one piece of the system (that -- by necessity -- will need to link with other segments of the bike network), but we do believe they are essential to the network as a whole. We appreciate the attention provided to the trail network in this plan. In particular, we recognize and support the inclusion of the Lawrence Loop (both existing and proposed sections), and connections to the Loop, in the priority bike network.

While supporting the overall proposed plan, we do offer the following comments for consideration:

1. **Add an additional grade-separated crossing for the Lawrence Loop across K-10 in the 27th Street/Wakarusa Drive area to the priority bike network.** This plan proposes three “high priority” grade-separated crossings for the future bikeway network. We believe these are very important projects, but a grade-separated crossing for the Lawrence Loop in the area of the Wakarusa/27th intersection with K-10 highway is equally (or more) so. A grade-separated crossing at that location (being considered as part of K-10 future reconstruction) should be included in the plan.

2. **Enhance connections to the Lawrence Loop in east Lawrence.** Given the high latent demand for cycling in the eastern part of Lawrence identified in the plan, we believe there should be:

- **A segment included in the priority bike network between Massachusetts Street and the Burroughs Creek section of the Lawrence Loop between 13th and 23rd Streets.** Currently the only identified cycling connections between Massachusetts and the eastern Lawrence Loop are 15th and 19th Streets. These streets have discontinuous bike lanes that do not represent the type of continuous “high comfort” facilities we believe should link the Loop to our city center. There is also a proposed “secondary” connection near 23rd Street. This very large gap needs a priority bikeway segment to enhance access to the Burroughs Creek Trail and Haskell Rail Trails, some of the most heavily used sections of the Loop.
- **A bikeway segment going east from the Loop (towards Venture Park and East Hills Business Park) somewhere between 15th and 31st Streets.** This segment should be included on the priority network – or at least the secondary network -- to create access to employment opportunities in the eastern part of Lawrence. There are existing plans to develop bike infrastructure along both 19th and 23rd Street east of the Burroughs Creek Trail, so one or both could be included in the secondary or priority network.

3. **Add the proposed trail along the western bank of Kansas River to the secondary and/or priority network.** The bikeway system map has a proposed bikeway (we assume a paved trail) running north from Burcham Park and ultimately connecting to Lakeview Road. We propose this bikeway be included in the secondary, if not the primary, bike network. We envision this trail would be highly utilized as a transportation corridor as well as a recreational amenity. There are several large business concentrated north of town that currently are connected to the bikeway network only by the bike lanes on Michigan Avenue, Riverridge Road, and N. Iowa Street. These are high-speed roadways that are not comfortable for many cyclists. This trail would be a present a great opportunity for people who work in that area north of town to commute by bike on a “high comfort” bike facility, and would draw even more residents and tourists to the Kansas River

for recreational purposes.

4. ***Include “protected” bike infrastructure on Naismith Drive from 23rd to 19th Street.*** The Naismith Trail is an extremely important connector to the Loop. In order for that trail to be part of a “high comfort” corridor all the way to the University of Kansas, it is important that there is a protected bike lane, shared use path, or other bike infrastructure on the 23rd to 19th Street segment that is separated from the roadway.

Thank you once again for the opportunity to provide comment. Should you want any clarification regarding our comments, please feel free to contact me.

Clark Coan - Please accept these comments on the Bikeway Plan Update:

Please add the following:

1. Extend the Heatherwood Trail north to Bob Billings Parkway. Currently, the trail is just too short at only .5 mi. and extending it north would increase usage and connectivity.
2. Create a protected bikeway along old US 56 by utilizing an existing shoulder and building additional shoulders. This appears the best way to link Lawrence with the Ottawa to Baldwin trail which is going to be built.
3. Indicate a proposed tunnel or other grade-separated crossing for the Lawrence Loop across the South Lawrence Trafficway near 27th Street/Wakarusa Drive to improve rider safety).
4. Include the proposed trail along the western bank of the Kansas River, running north from Burcham Park to connect to Lakeview Road, in the priority or secondary funding network.
5. Include a protected bikeway on Naismith Drive from 19th to 23rd Street to provide a safe connection between the KU campus and the Naismith Valley Trail (an important connection to the Loop).

Thank you for paying attention to my comments.

Marlene Merrill - I am thinking that the proposed bike way on 13th and 21st is a waste of city tax resources. Neither bikeway connects with anything. It would be a better use of resources and a better plan to encourage the use of the bike trails that circle the city. I would rather city use funds to take care of traffic and road maintenance in the city. I am not in favor of setting up so called traffic devices in one block of a city street.



Healthy Built Environment Work Group

June 13, 2019

Metropolitan Planning Organization

Dear Friends at MPO;

We appreciate the opportunity to comment on the proposed “Lawrence Bikes Plan.” Improving our community’s infrastructure for people who ride – or would like to ride – bicycles benefits our communities in many ways. It will improve the health of Lawrence residents and the environment, and create opportunities for many people to get to priority destinations such as schools, employment, recreation, culture amenities, places of worship and many more through means other than a private automobile.

We believe this plan lays out a compelling vision for the bicycling network in Lawrence, and we are optimistic that it will help promote the ongoing development of a connected system of bicycling infrastructure that will encourage cycling as a safe and efficient local form of transportation and recreation. We appreciate the development of a “Priority and Secondary Funding Network” to highlight those segments of the proposed bike network that are the highest priority for future funding. We are particularly interested in seeing robust development of a “high comfort” bike network that provides connections that separate bikes from automobiles to the greatest extent possible. While we recognize the entire network cannot be “protected,” the goal to increase ridership in our community is likely to happen only when people have access to a network they see as safe. For many riders this means using facilities that are largely separated from cars: shared use paths, multi-use trails, protected bike lanes (lanes with physical barriers separating them from the roadway), etc.

Our thanks to the Metropolitan Planning Organization (MPO), the MPO’s Bicycle Advisory Committee, and the advocates and community members whose participation and input formed the basis for this plan. We look forward to supporting the implementation of this important plan!

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Webber", written in a cursive style.

Gary Webber, on behalf of Healthy Built Environment Work Group
LiveWell Douglas County



Transportation Planners
Metropolitan Planning Office
P.O. Box 708
Lawrence, KS 66044

14 June 2019

re: Lawrence Bikeway Plan Update 2019

Ms. Mortinger and Ms. Myers:

We have been following the development of the County-Wide Bikeway Plan and the Lawrence Bikeway Plan (LBP) since early 2018. We generally like how the plan has progressed. We do have a few requests that I hope you will incorporate into the plan.

Shared Use Path on 23rd St., Iowa to Haskell Ave.

The most recent bikeway plan which is currently in effect calls for a shared use path (SUP) along 23rd St. from Iowa St. to Haskell Ave. There now exist two SUPs west of Iowa along Clinton Parkway. And the upcoming East 23rd St. multi-modal corridor plan will include a SUP (or equivalent) east of the Haskell viaduct.

Unwisely, the draft LBP has eliminated the Iowa-Haskell SUP along 23rd St. Please reinstate it. I understand that you have reasons to think otherwise, but please consider the importance of a SUP on this section of 23rd St.

- It is at the heart of the MPO identified Bikeway Demand Map (see attached)
- It would complete a bikeway corridor spanning the entire width of Lawrence, on flat terrain (other than the very west and very east ends).
- It would provide a convenient and safe way for cyclists to get to restaurants and stores along 23rd St.
- Bicycling on 23rd St. itself is dangerous, and bicycling on the sub-standard sidewalks is dangerous for pedestrians, and a disincentive for cyclists.
- There are fewer driveways on the south side of 23rd St. than the north side to pose conflicts, and they can be addressed by design (such as green pavement paint, and/or automobile turning radii).
- It's a false assumption that either 21st St. or 25th St. will provide access to 23rd St. stores, because once on 23rd, cyclists still must travel along the street.
- It's a false assumption that the 21st St. bicycle boulevard will be the through route, because coming from the west, very few will bike north 1/2 mile to 19th St., then 1/4 mile back south to get on 21st St.; and coming from the east, 21st St. doesn't connect to either the Burroughs Creek Trail or Haskell Ave.

Shared Use Path on Naismith Dr., 23rd St. to 19th St.

This 1/2 mile section of Naismith Dr. is a conspicuous gap in a very important spoke of the Lawrence Loop. Except for the Naismith Dr. gap, there now exists a 2 mile SUP corridor connecting K.U. at Sunnyside Dr. with south Lawrence apartment complexes, with the Loop, and with regional shopping. As part of the Priority Network, the 23rd - 19th section of Naismith Dr. should be designated a separated SUP. The Public Works idea for on-street bicycle lanes is problematic for several reasons.

- A forced transition from a SUP to bicycle lanes at 23rd St. and back again to a SUP north of 19th St. would be awkward and an unnecessary inconvenience.
- 95% of the east side of Naismith Dr. has adequate right of way for a SUP.

- There is already a detailed design proposal in the (2019) C.I.P. for a SUP.
- With the increased motor vehicle traffic from the K.U. Central District and the proposed 18th & Naismith parking garage, Naismith Dr. should remain a four lane street, widened to 12 foot lanes, south of 19th St.
- This added volume of motor vehicle traffic would pose a danger to on-street bicycle lanes along Naismith Dr.
- K.U. has designated Naismith Dr. at 19th St. it's "Southern Gateway".

Engineering as the most important of the five E's

The five E's toward achieving greater ridership are Engineering, Education, Enforcement, Encouragement, and Evaluation. The Lawrence Bikeway Plan should strongly emphasize that engineering gains the greatest return on investment and subsequently the greatest increase in ridership. The Plan soundly sets the goal of creating a network of bikeways comfortable for all ages and abilities of cyclists. Comfortable equates to safe and convenient. Engineering accomplishes this best.

A focus on educating motorists in responsible and respectful driving is desirable, but it has slow and partial reach to the public. There will always be a large proportion of uneducated and oblivious drivers who will pose a threat.

Enforcement of traffic laws for those dangerous drivers is at best a scatter shot approach. Money spent on enforcement has very little lasting effect, so must be continually replenished. As for effectiveness, patrol officers cannot be present on all streets 24/7/365 without breaking the budget, so the vast majority of dangerous traffic violations goes unseen.

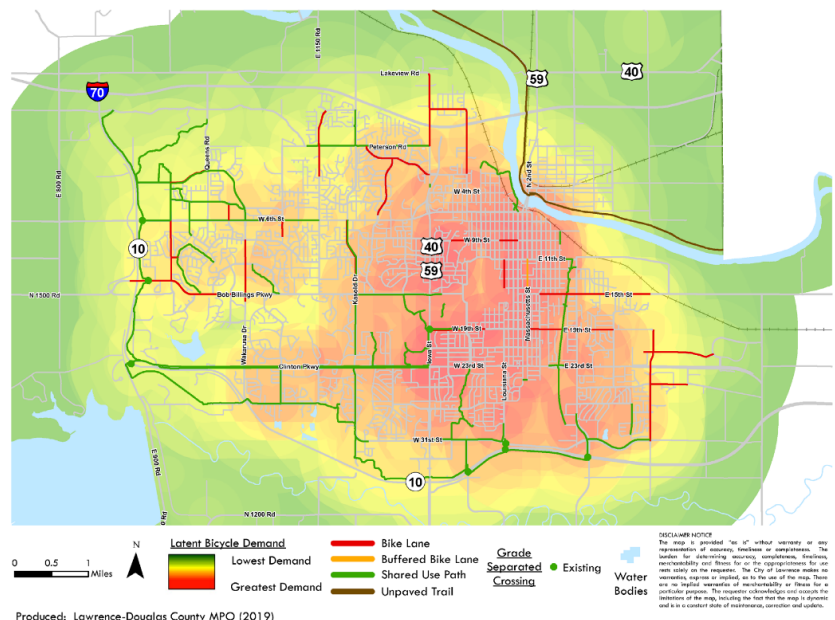
Safe bikeways by means of engineering achieves the function of education in place, on the ground, every day. By creating physically safe bikeways, engineering also allows enforcement to be more targeted and effective. And of course, well engineered and safe bikeways will attract and encourage a wider range of cyclists of all ages and abilities.

Thank you for developing a good Lawrence Bikeway Plan, and we hope our requests will enhance its effectiveness.

Sincerely,

Michael Almon
Multi-Modal Director

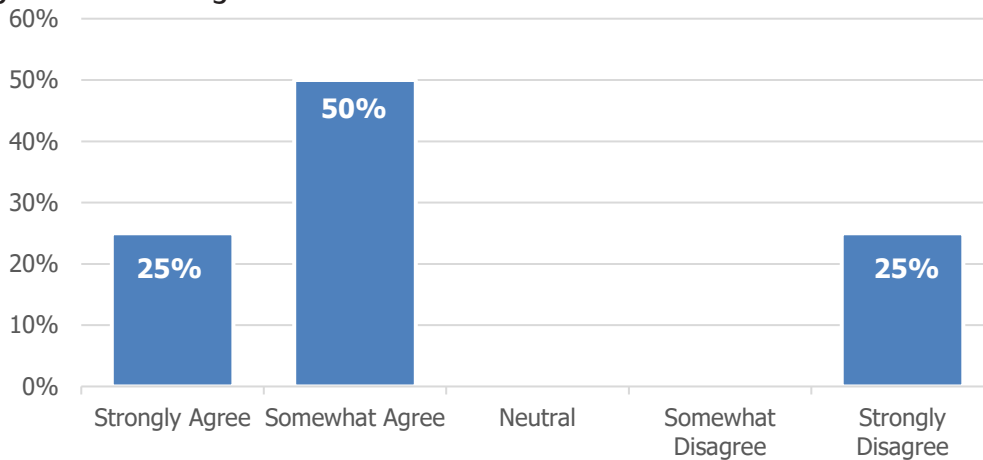
Figure C.3: Bike Demand Map with Existing Bikeways



TELL US COMMENTS

When asked “Indicated your level of agreement with the Bike Plan goals” Respondents indicated:

Figure 46: Level of agreement



Number of Responses - 8

When asked “Do you have any comments about the draft bike plan you’d like to share with us” Respondents indicated:

Name not shown - It would be nice to be able to zoom into the maps. Some of them are hard to read.

Pattie Johnson - Lurved it! I’m on board!

Arly Allen - Your goals set out for the bike boulevards in Lawrence focus only on the bike riders, of which there are very few, and not on the effect on the car riders, of which there are many. If you wish to improve bike paths, build bike paths. But don’t mess up the streets so that the cars are restricted. That will only make things difficult for both bike riders and car drivers.

Who came up with this nutty idea anyway ?

Name not available - I see very few bicyclists regardless of what time of day I’m out or where I’m driving. Spending vast sums of tax dollars on bicycle-centric street improvements is not a good use of our money considering the few people this benefits.

Name not available - The intersection of 13th and Connecticut seems to be not well thought out. That intersection is dicey even for east-west automobile traffic trying to see if cars are coming from north-south. Add bicycles and pedestrians trying to get across and it’s a miracle that there haven’t been more accidents there. Why not add the flashing signal there? The proposed fixes for that intersection don’t seem to take the north-south traffic volume and visibility into account.

Deborah Snyder - I will start by quoting the draft plan's own conclusion: ""Reviewing the bicycle crash data indicates a majority of crashes occurred in either crosswalks/an intersection or roadway without a crosswalk/bikeway and the roadway speed is equal to or greater than 30 mph. They occur during the daylight, on clear weather days with dry surface conditions. This indicates speed concerns should be addressed and education about safe driving and bicycling behaviors is necessary.""

How will Lawrence move from a bronze designation to silver if, as indicated in the conclusion, residents cannot accommodate intermodal transportation even under the most optimal of road conditions?!?

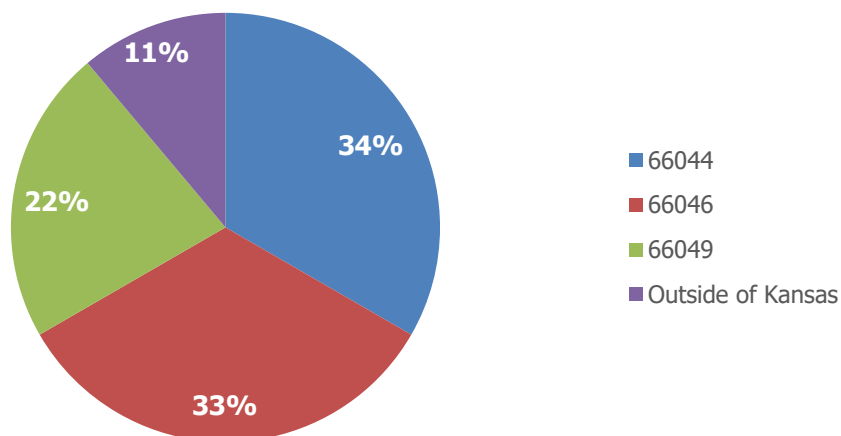
The recent upheaval and vandalism caused by both auto drivers and neighborhood residents to changes made at the intersection of 13th and Connecticut Streets demonstrates broad public hostility to limiting vehicular access in order to provide equally safe intermodal passageways for *anything* not cars.

Unless the city is prepared to reconstruct the proposed neighborhood streets (13th east of Massachusetts and 21st West of Massachusetts) with cemented barrier access similar to the ongoing 9th Street project, complete with meridians and speed bumps to impair automobile speeding, bicyclists and pedestrians will not be able to make use of these two streets with any sense of *more safety* than they have now.

Name not shown - The goals are fine, although goals mean little without concrete empiricism and action plans designed to measure/enact said goals. As a regular bike rider in Lawrence, these goals don't directly address the ongoing issues. Riding in town is pretty simple. Riders should stay off of heavily trafficked roads (bike lanes here are an insane idea), and the City should strongly enforce traffic violations for drivers who block intersections/crosswalks/do not fully stop at lights/signs, do not yield properly/use excessive speed in roundabouts. All I need is for drivers to be safe (both while bike riding and driving myself), the roads to be relatively free of potholes and drainage issues (they aren't which is dangerous for biking), and roads to be free of ridiculous pavement markings and/or bike "projects" that only serve to confuse drivers and riders. The roads are primarily for cars and should be treated as such with biking a secondary consideration. Trying to increase ridership when anyone who lives here and bikes knows what roads to avoid due to congestion/speeds/dangers is a lofty goal. Let's support and enforce what we already do, rather than complicating the issue with more money that doesn't need to be spent for "improvements" that will be used by a very small minority of citizens but will inconvenience the majority (as seen in the most recent bike project off of Connecticut & 13th). Also, keep those "professional riders" off of heavily trafficked roads and highways. They don't own those roads but certainly act as though they do.

When asked "What is your zip code: Home?" Respondents indicated:

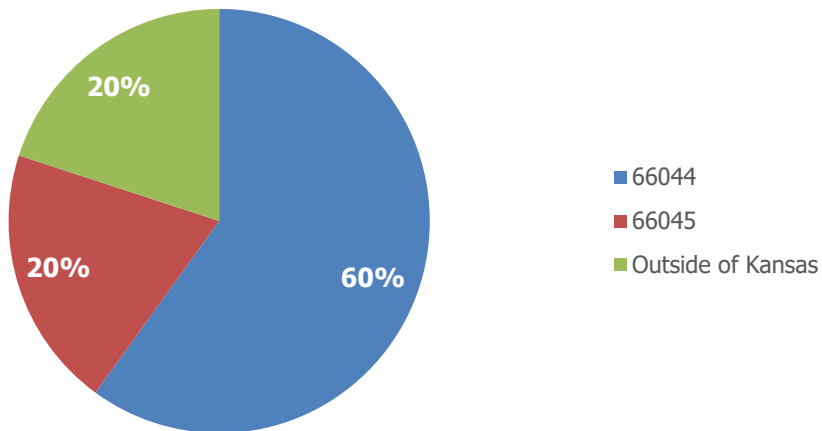
Figure 47: Home ZIP Code



Number of Responses - 9

When asked “What is your zip code: Work?” Respondents indicated:

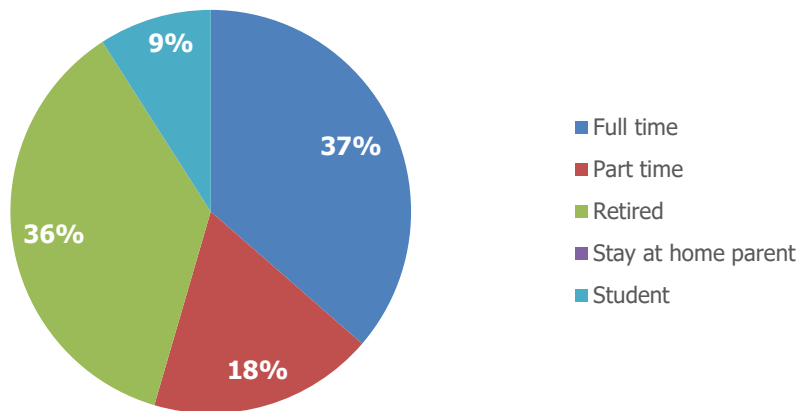
Figure 48: Work ZIP Code



Number of Responses - 5

When asked “What best describes your employment status? (Select all that apply)” Respondents indicated:

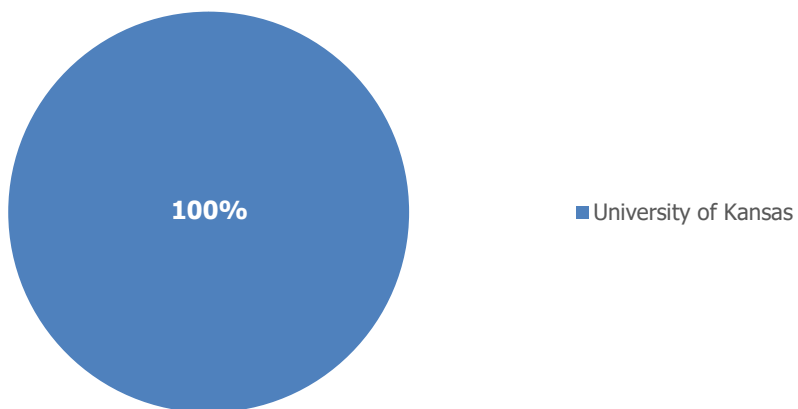
Figure 49: Employment Status



Number of Responses - 11

When asked “If you are a student, where do you go to school? (Select all that apply)” Respondents indicated:

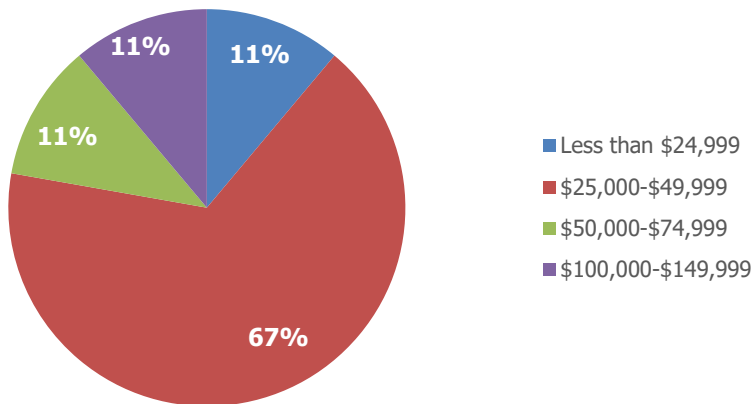
Figure 50: Schools



Number of Responses - 1

When asked “What is the approximate average household income? (Select one)” Respondents indicated:

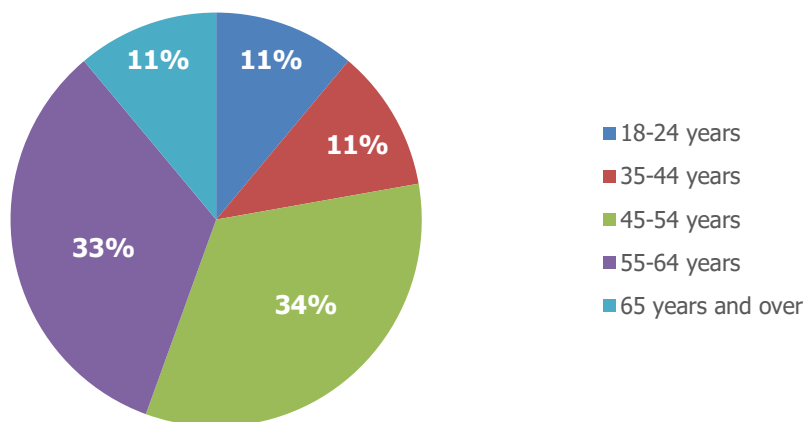
Figure 51: Income



Number of Responses - 9

When asked “What is your age? (Select one)” Respondents indicated:

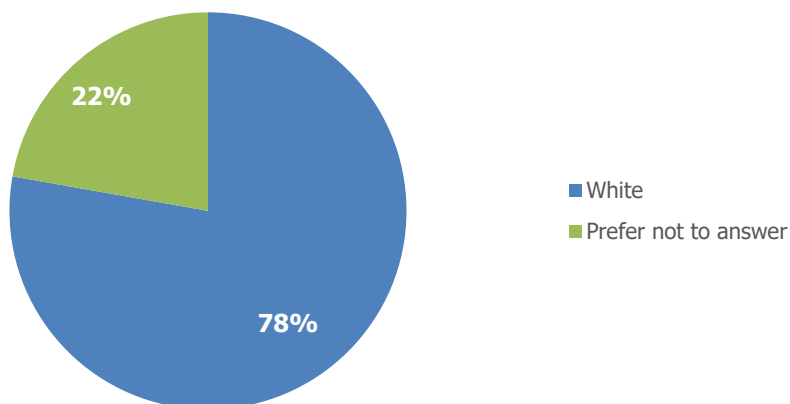
Figure 35: Age



Number of Responses - 9

When asked “Which race/ethnicity best describes you? (Select all that apply)” Respondents indicated:

Figure 37: Race/Ethnicity



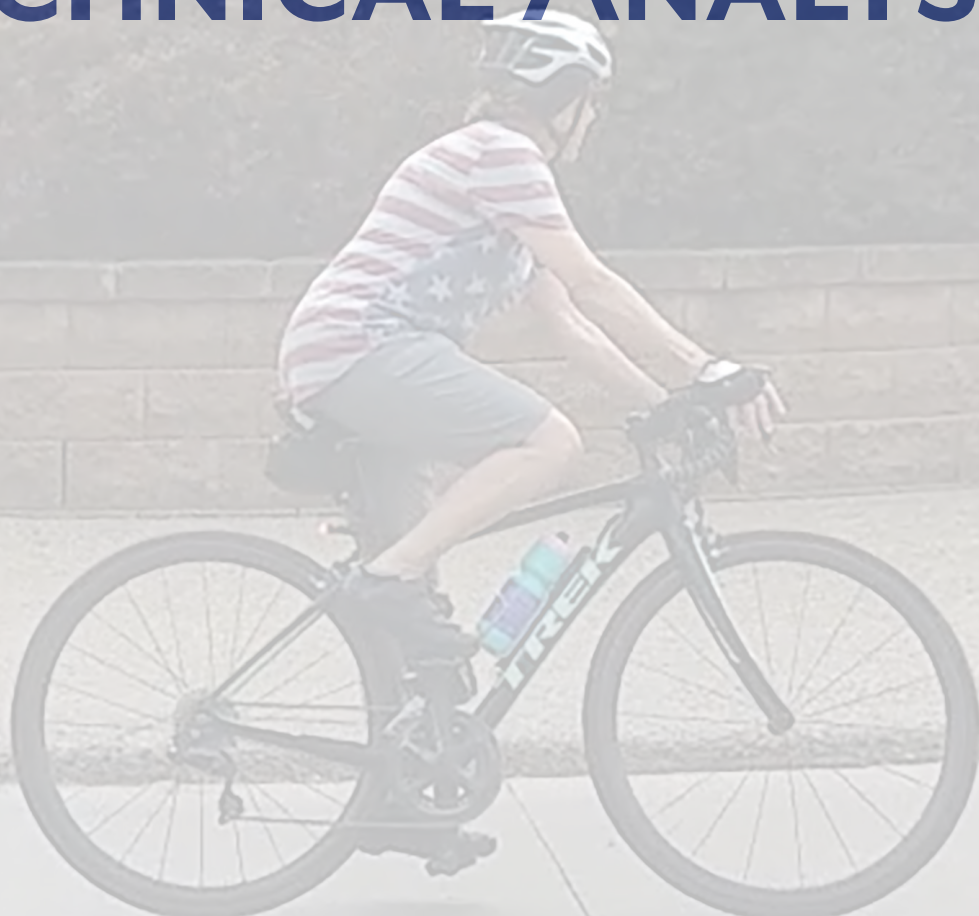
Number of Responses - 9



6TH ST. AND MASSACHUSETTS ST.,
LAWRENCE, KS

APPENDIX C:

TECHNICAL ANALYSIS



LATENT BIKEWAY DEMAND

The Lawrence Bikeway Demand model is used to analyze the spatial need for Bikeway Infrastructure. Bicycle demand is calculated based on a scoring system which ranks areas based on 6 proximity factors: high density housing, medium density, K-12 schools, college/university, community service centers, and existing bike infrastructure. These factors impact the demand for bicycle transportation throughout Lawrence.

DATA SOURCES AND MODULE COMPONENTS

Several proximity factors have been taken into consideration for the Lawrence Bike Demand model. The following explains these factors including why they are used in calculating bike demand. The score table, or scoring weight each proximity factor holds, can be found in the score breakdown (Table C.1).



BURROUGHS CREEK TRAIL,
LAWRENCE, KS

HIGH-DENSITY HOUSING

Several proximity factors have been taken into consideration for the Lawrence Bike Demand model. The following explains these factors including why they are used in calculating bike demand. The score table, or scoring weight each proximity factor holds, can be found in the score breakdown (Table C.1).

SCHOOLS K-12

A buffer distance from the property boundaries of public and private schools, kindergarten through 12th grade. K-12 schools are considered in the Bike Demand model because students often ride bikes to and from school.

COMMUNITY SERVICE CENTERS

Community Service Centers in this model are considered to be TAZ zones with retail employment greater than 75. This represents 26 of 108 TAZ zones or 24%. TAZ retail zones are included because with more retail employment comes more retail and therefore more bike trips. Community Service Centers also include all Lawrence park entrances. Parks are a common destination for bike riders.

MEDIUM-DENSITY HOUSING

A buffer of medium-density housing. Medium density housing, as defined in the updated comprehensive plan, is greater than or equal to 7 people per acre and less than 16 people per acre. Medium-Density Housing is included as a factor because higher densities of people result in more bike trips being made. Medium-Density Housing does not weigh as high in scoring as High-Density housing.

COLLEGE / UNIVERSITY

A buffer distance from college/university boundaries. College/University students often use bikes to get to and from class or around the city.

EXISTING BIKE INFRASTRUCTURE

Existing bike infrastructure in Lawrence has been separated into three categories: major separation, minor separation, and shared street facility. Major separation includes shared use path and protected lanes. Minor separation includes bike lanes and buffered bike lanes. Shared street facilities include bike boulevards and road segments with sharrows.

DATA MANAGEMENT AND GIS PROCESSES

ArcGIS and ArcGIS Pro were used to create the model. The Lawrence Bike Demand model places multiple run buffers around the six proximity factors. Each buffer ring distance is assigned a specific score based on what proximity factor it is associated with. Table C.1 provides a breakdown for this scoring. The scores for each of these proximity factors for each buffer ring overlap area are then added together in a Total Score field. This score represents the total Bike Demand. Figure C.2 and Table C.2 give an example of a buffer overlap area, and the fields/scores assigned to this area. The lowest Bike Demand score an area can earn is 0 and the highest is 101. The higher the Bike Demand score, the higher the bike demand.

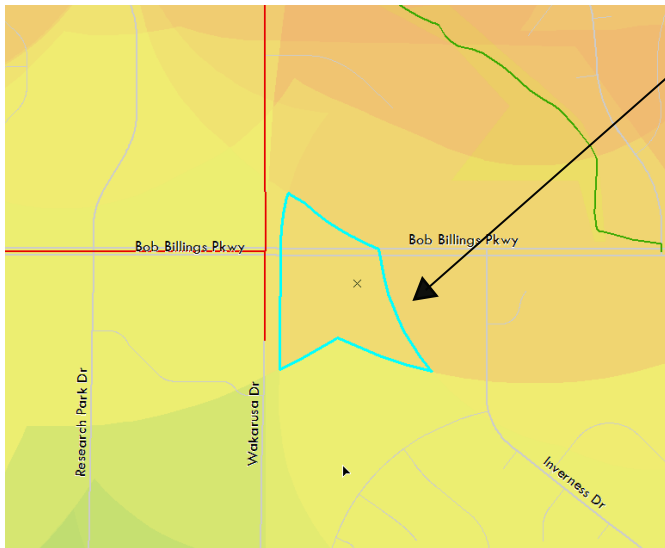
Table C.1: Breakdown of Proximity Factor Scoring System

| | | | |
|--|----|-------------------------------|----|
| High Density Housing | | Medium Density Housing | |
| Within ¼ Mile | 16 | Within ¼ Mile | 9 |
| ½ Mile | 12 | ½ Mile | 7 |
| 1 Mile | 8 | 1 Mile | 3 |
| 2 Miles | 4 | 2 Miles | 2 |
| Schools K-12 (Public and Private) | | College or University | |
| Within ¼ Mile | 18 | Within ¼ Mile | |
| ½ Mile | 14 | ½ Mile | |
| 1 Mile | 6 | 1 Mile | |
| 2 Miles | 2 | 2 Miles | |
| Major Separation | | Minor Separation | |
| Within ¼ Mile | 18 | Within ¼ Mile | 14 |
| ½ Mile | 14 | ½ Mile | 10 |
| ¾ Mile | 10 | ¾ Mile | 6 |
| Community Service Centers | | Shared Street Facility | |
| Within ¼ Mile | 20 | Within ¼ Mile | 10 |
| ½ Mile | 18 | ½ Mile | 6 |
| 1 Mile | 15 | | |
| 2 Miles | 7 | | |



VERMONT ST.,
LAWRENCE, KS

Figure C.2 and Table C.2: Buffer Overlap Area Example, and the Fields and Scores Associated with the Area



| Buffer Overlap Area Example | |
|-----------------------------|----|
| HIGH DENSITY SCORE | 0 |
| MEDIUM DENSITY SCORE | 3 |
| SCHOOL SCHOOL | 14 |
| UNIVERSITY SCALE | 7 |
| CSC SCORE | 20 |
| BIKE SCORE | 14 |
| Total Score | 58 |

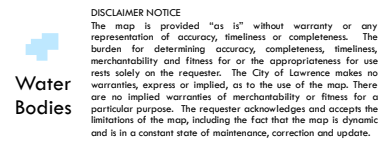
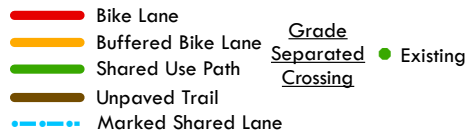
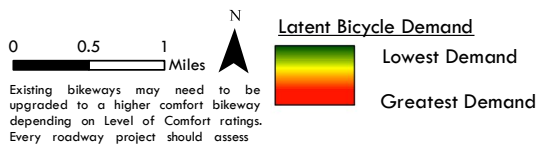
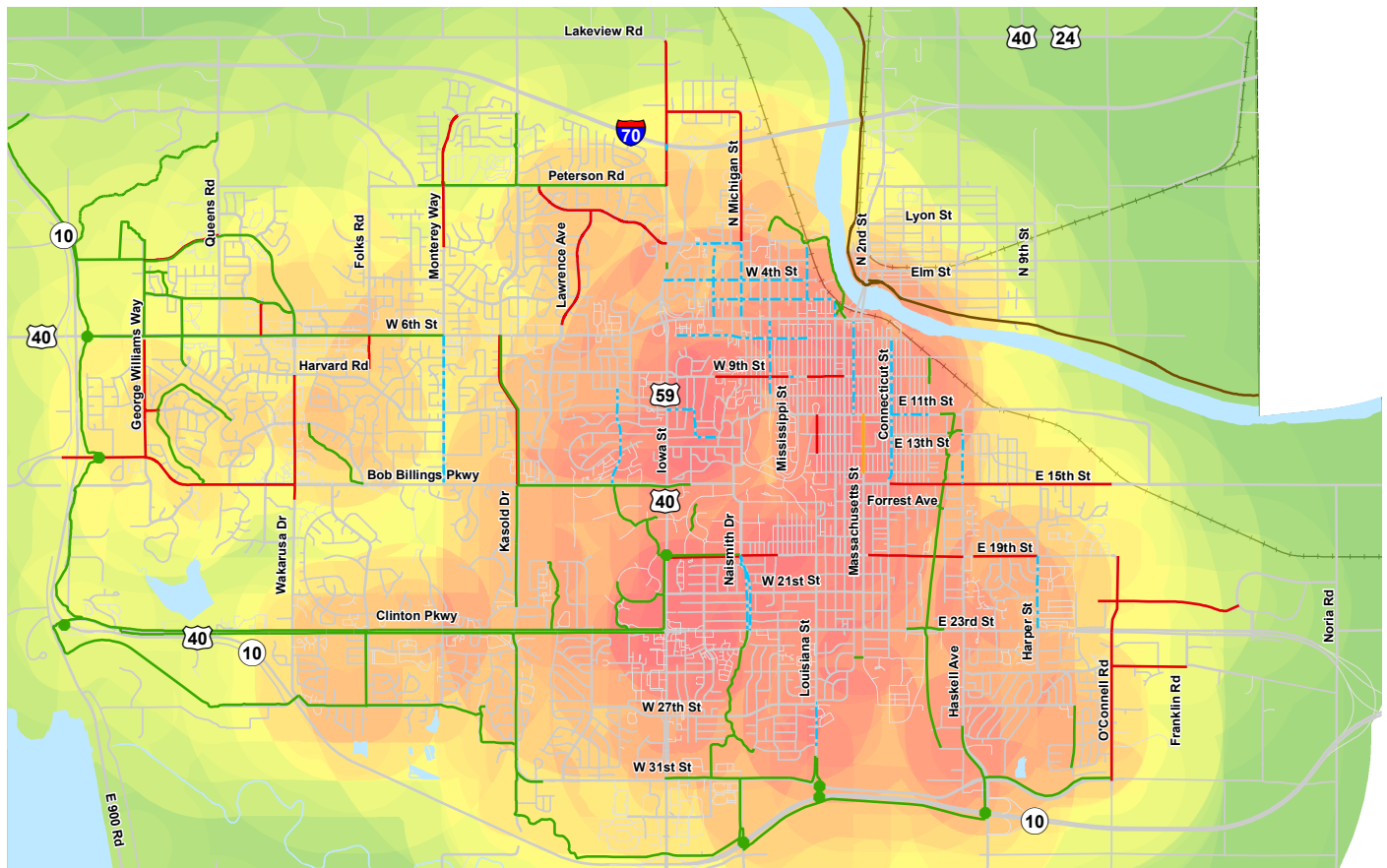
RESULTS OF THE MODEL

Priority and Secondary bike networks have been considered. Building the priority and secondary networks will provide a continuous bikeway network linking key destinations including downtown, neighborhoods, the Lawrence Loop, the University of Kansas (KU) and Haskell Indian Nations University (HINU) campuses, Lawrence parks and recreation centers, and retail outlets.

The resulting latent bike demand map without Priority and Secondary bike networks and future bikeway is shown in Figure C.3. The resulting bike demand map with priority and secondary networks and future bikeways is shown in Figure C.4.

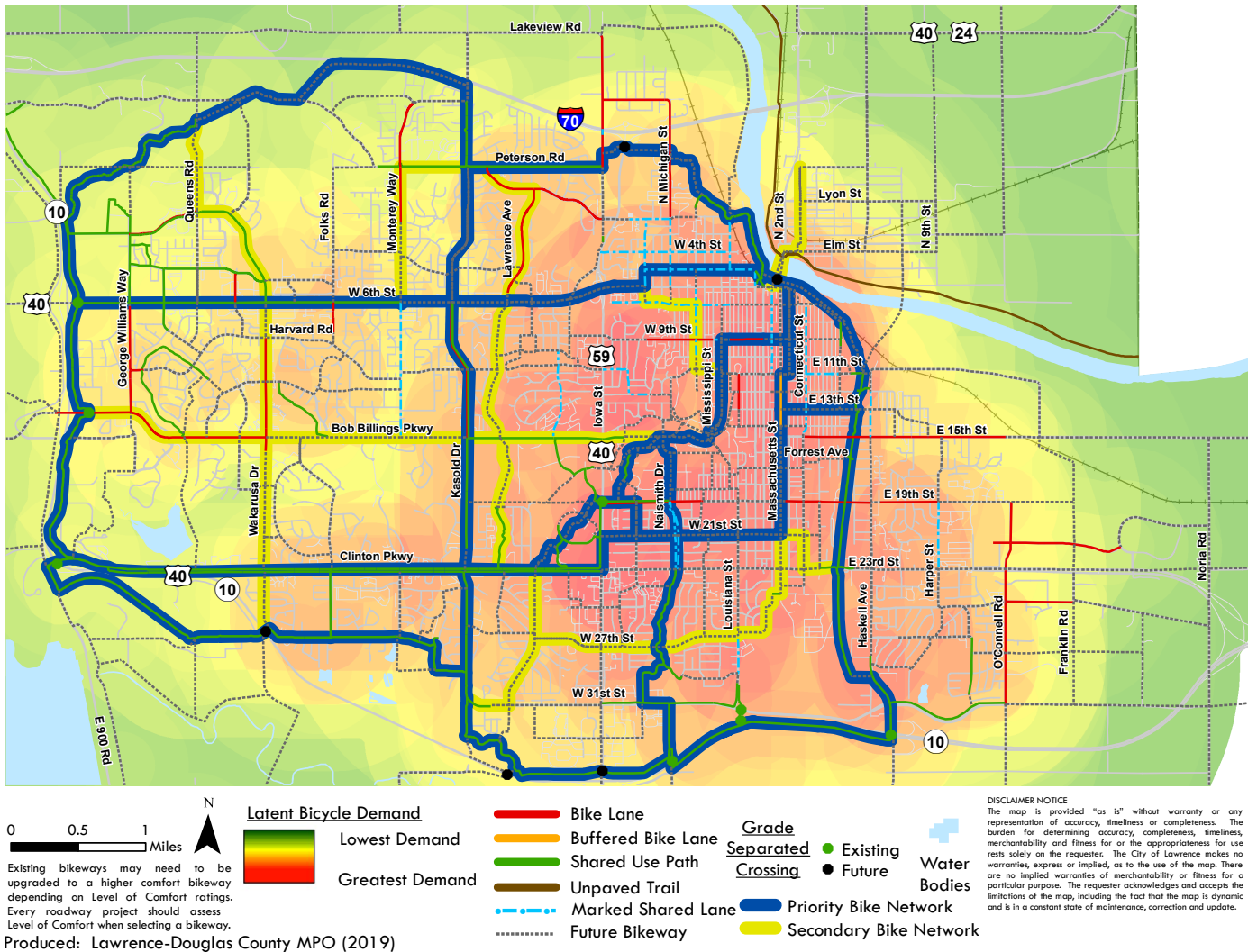
The priority and secondary networks align with the latent bicycle demand. The greatest latent bikeway demand, shown in the warm colors, are concentrated near the KU and HINU's campuses. Therefore, portions of the funding networks are concentrated east of US 59/Iowa St.

Figure C.3: Bike Demand Map with Existing Bikeways



Produced: Lawrence-Douglas County MPO (2019)

Figure C.4: Bike Demand Map with Priority and Secondary Networks



MODEL EVALUATION

The Bike Demand for the City of Lawrence is a working model, meant to be updated and used for implementing the bikeway plan; as new data becomes available, the dataset can be updated and the model rerun. The model provides a baseline level of bike demand information.

BICYCLE LEVEL OF COMFORT

Bike Level of Comfort (BLOC) is used to analyze the safety and comfort of bicycle riders in an area. This method of analysis uses objective data (e.g., daily traffic averages, speed limits, lanes to cross, bike facility type, etc.) rather than subjective data (e.g. how bike riders feel riding on a street). This analysis is not intended to reflect every bicycle rider's experience, but instead provide a baseline of current levels of comfort for the general population based on analytical data. The City of Lawrence developed a Bicycle Level of Comfort model patterned on a model developed for the City of Cambridge, Massachusetts.¹

The City of Lawrence BLOC model classifies road segments by bikeway facility type and varying levels of speed and volume thresholds that are assigned comfort scores shown in Table C.3.

¹ A PDF of the Level of Comfort for Cambridge, MA can be found at: https://www.cambridgema.gov/-/media/Files/CDD/Transportation/Bike/Bicycle_Comfort_Levels_20140612.pdf?la=en

Table C.3: Parameters for Each Level of Comfort

| | Existing Facility Type | 0 (most comfortable) | 1 | 2 | 3 | 4 | 5 (least comfortable) |
|------------------|---------------------------------|----------------------|--|--|--|------------------------------|------------------------------|
| major separation | shared use path | not side path | side path, <=13,000 vehicles, <=45 mph | side path, <=20,000 vehicles, <=45 mph | side path, > 20,000 vehicles OR > 45 mph | | |
| | protected bike lane/cycle track | | <=13,000 vehicles, <=45 mph | <=20,000 vehicles, <=45 mph | >20,000 vehicles OR >45 mph | | |
| minor separation | buffered bike lanes | | <=4,000 vehicles, <=30 mph | <=6,000 vehicles, <=30 mph | <=13,000 vehicles, <=30 mph | <= 20,000 vehicles, <=45 mph | >20,000 vehicles OR >45 mph |
| | conventional bike lanes | | <=4,000 vehicles, <=25 mph | <=8,000 vehicles, <=25 mph | <=13,000 vehicles, <=35 mph | <= 20,000 vehicles, <=40 mph | >20,000 vehicles OR > 40 mph |
| shared street | bicycle boulevards | | <=1,500 vehicles, <=25 mph | <=3,000 vehicles, <=25 mph | | | |
| | marked shared lanes | | <=1,500 vehicles, <=25 mph | <=5,000 vehicles, <=25 mph | <=8,000 vehicles, <=30 mph | <= 13,000 vehicles, <=35 mph | |
| | no facility type | | | <=3,000 vehicles, <=25 mph | <=6,000 vehicles, <=30 mph | <=13,000 vehicles, <=40 mph | >13,000 vehicles OR > 45 mph |

SOURCE: DETERMINED BY THE CITY OF LAWRENCE BASED ON NATIONAL GUIDELINES

DATA SOURCES AND MODEL COMPONENTS

This model includes bikeway facility types, which are the existing bikeway type on each road segment. The City of Lawrence recognizes several types of bikeways facility types: shared use paths, protected bike lanes/cycle tracks, buffered bike lanes, conventional bike lanes, bicycle boulevards, and roads with sharrows.¹ Roads without designated bikeways are classified as no facility type.

Traffic volume, from the travel demand model, is estimated flow for each segment of the modelled road network in Lawrence and Douglas County. The model is statistically valid; however the accuracy and precision of this dataset vary across the network. Review and adjustments were made based on traffic counts collected by the Kansas Department of Transportation (KDOT) and the City of Lawrence. Official posted speed limits for each road segment were used for the speed portion of the model. An example street segment and its attributes is shown in Table C.4.

¹ View definitions of these bikeway types in Appendix A: Bikeway Design Guide

Figure C.3: Bike Demand Map with Existing Bikeways

| | |
|---|-------------|
| TOT FLOW (Daily traffic volume) | 21082.56822 |
| FF SPEED | 40 |
| SPEED 85 (85th Percentile Speed) | <Null> |
| Facilities | Shared Use |
| Side Path (is the SUP along a road) | 1 |
| Bike Lane Type | <Null> |
| Boulevard | 0 |
| Sharrows | 0 |
| Level of Comfort (final comfort rating) | 3 |
| Highway or Ramp (is the segment a highway or ramp) | 0 |
| ART or COL (is the segment an arterial or collector street) | 1 |
| Tracker (has the segment been updated with traffic counts and 85th percentile speeds) | 0 |

DATA SOURCES AND MODEL COMPONENTS

ArcGIS and ArcGIS Pro were used to create the model. The base for the model was the road centerline geometry from the travel demand model, which had official speed limits for the road segments. The shapefile was altered to indicate which bike facility type (roadway with no bikeway facility, side path shared use path, bike lane, bike boulevard, streets with sharrows) were along the road segment. These fields were binary (yes/no) to indicate if the segment had the corresponding facility. Then the segments were designated if the road segment was a part of the priority or secondary bike networks. This classification determines if the segment would be included in any calculations.¹ Lastly a field was added to determine if the segment is a highway or ramp so they could be filtered out in the final visualization. Most of the data in these fields (besides Level of Comfort) were assigned manually based on visual comparisons of existing data sets.

An ArcGIS model was built to calculate the level of comfort for each road segment in the network. The model incorporated the various parameters and calculated the level of comfort. The general process is shown in Figure C.6 and an example query (used in the model) is shown in Figure C.7. This process was conducted for each comfort level.

¹ The overall road geometry for Lawrence was reduced to only priority and secondary bike network streets. This contrasts with the Cambridge example which calculates comfort levels for nearly every road segment in the area. The City of Lawrence made this decision based on the land area of the city (nearly 35 sq. miles, Cambridge MA is just over 7 sq. miles), the prevalence of data (accurate traffic volume data mostly exists only for the major streets in Lawrence), and city resources.

Figure C.6: General Level of Comfort (LOC) Model Process

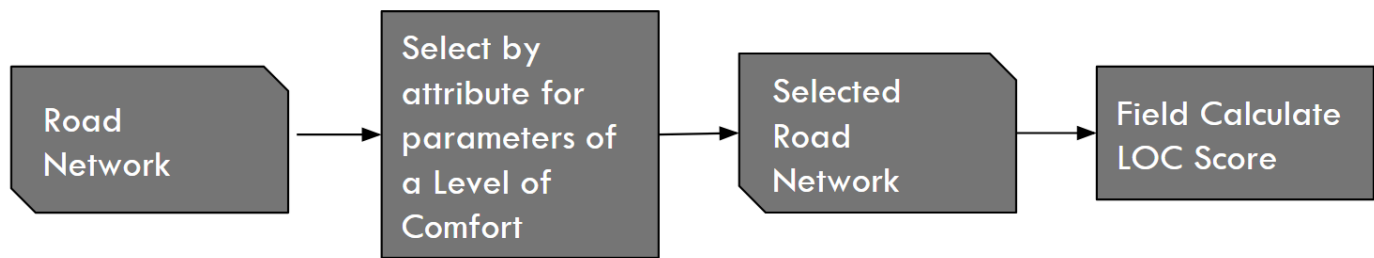


Figure C.7: Example SQL Query to Select Segments Within a Level Of Comfort

Facilities IS NULL And (TOT_FLOW <= 3000 And FF_SPEED <= 25) AND

Sharrows = 1 And TOT_FLOW <= 5000 And FF_SPEED <= 25 AND

Boulevard = 1 And TOT_FLOW <= 3000 And FF_SPEED <= 25 AND

BikeLaneType = 'Bike Lane' And TOT_FLOW <= 8000 And FF_SPEED <= 25 AND

BikeLaneType = 'Buffered' And TOT_FLOW <= 6000 And FF_SPEED < 30 AND

BikeLaneType = 'Protected' And TOT_FLOW <= 20000 And FF_SPEED < 45 AND

SidePath = 1 And (TOT_FLOW < 20000 AND FF_SPEED < 45)

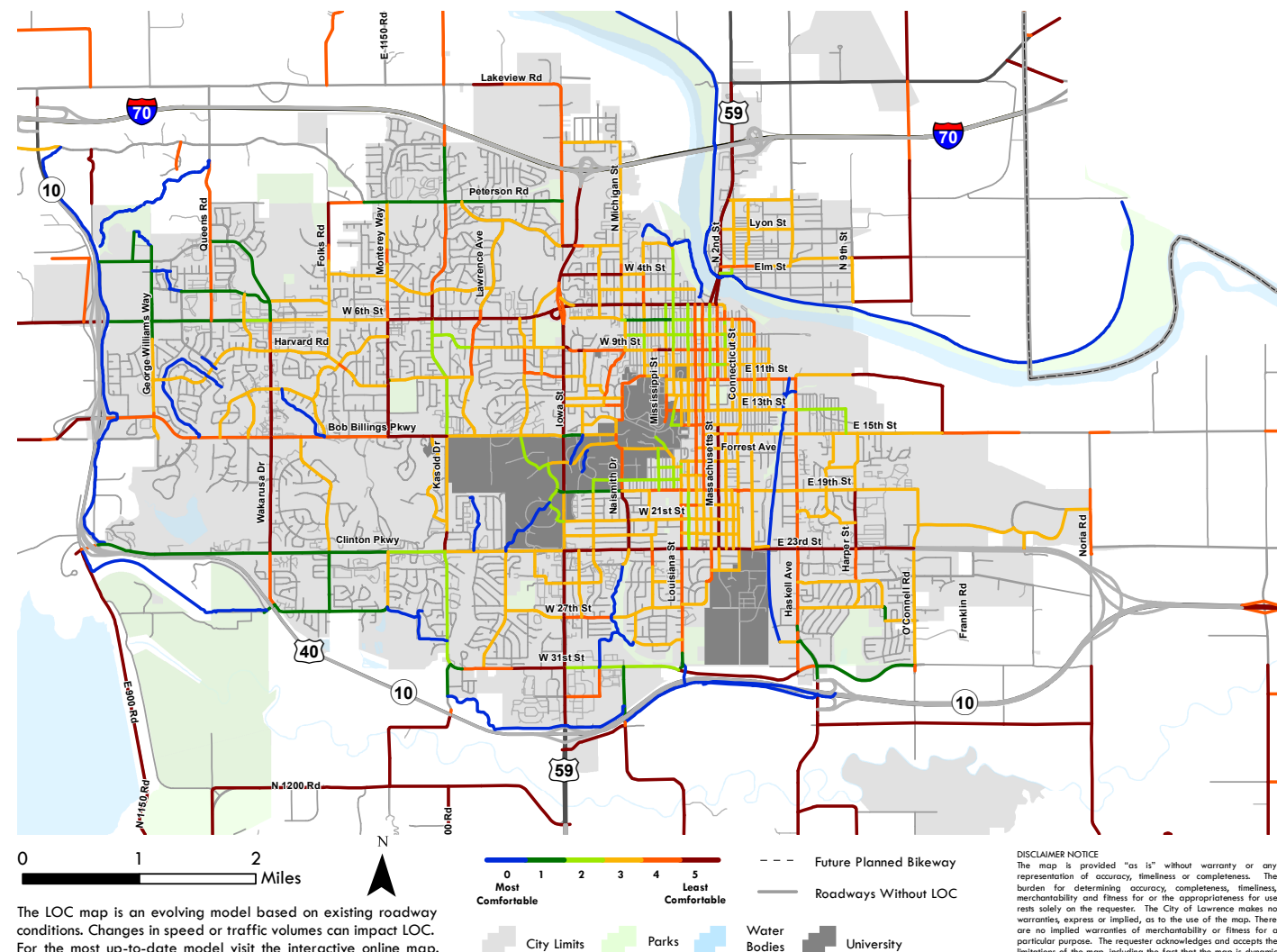
Note: This example is a comfort level of 2 in this model.

For each level of comfort, the corresponding road segments were selected; once all suitable segments were selected a field calculate was performed to change the Level of Comfort to the appropriate score. The model operates in reverse order of Table C.3; it begins with comfort level 5 and ends with level 0. If the model performed in the other direction, segments would not receive accurate scores – a segment which is a Level 1 may also be calculated as a Level 2, 3, and so on in this order.

RESULTS OF THE MODEL

The resulting map is shown in Figure C.8. Many of the streets in the City of Lawrence scored a 3 (moderately uncomfortable/comfortable) to 5 (very uncomfortable).

Figure C.8: Visualization of the Bicycle Level of Comfort model



The LOC map is an evolving model based on existing roadway conditions. Changes in speed or traffic volumes can impact LOC. For the most up-to-date model visit the interactive online map.

Produced: Lawrence-Douglas County MPO (2019) * LOC is based on posted speed, daily vehicle traffic volume, and existing bike facilities. More information can be found in Appendix C.

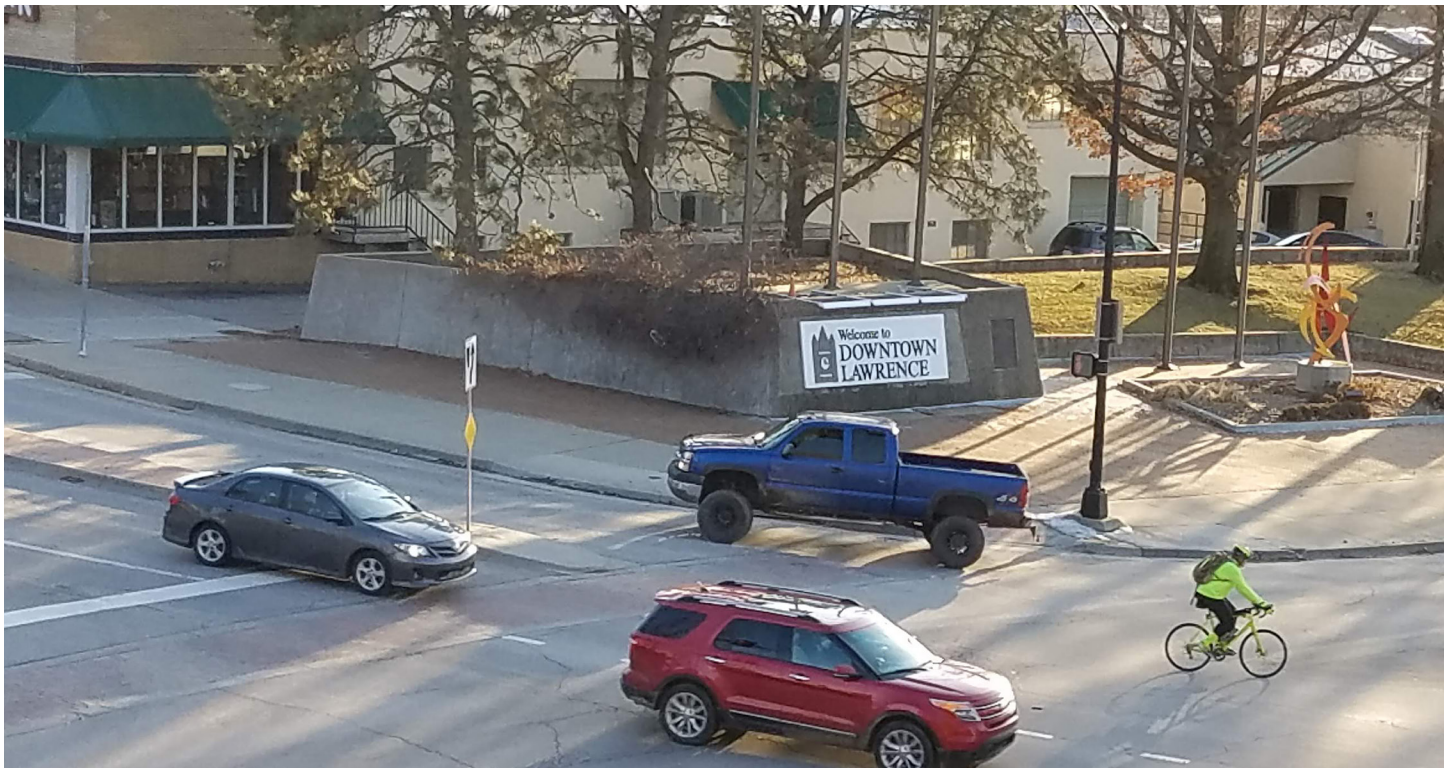
A complete breakdown of the streets is shown in Table C.5. Of the streets that scored a 3, many of these have shared use paths (side paths) associated with them. The Bicycle Level of Comfort for the City of Lawrence is a work in progress and will more accurately represent the real life conditions of the road segments as more screen-line traffic counts are acquired.

Table C.5: Breakdown of Mileage for Each Comfort Level

| Level Score | Mileage | Percent |
|------------------|---------|---------|
| Shared Use Paths | 27.5 | 14.8% |
| 1 | 14.4 | 7.8% |
| 2 | 11.7 | 6.3% |
| 3 | 76.0 | 41.0% |
| 4 | 28.4 | 15.3% |
| 5 | 27.2 | 14.7% |
| Total | 185.2 | 100.00% |

MODEL EVALUATION

The Bicycle Level of Comfort for the City of Lawrence is a working model, meant to be updated and used for implementing the bikeway plan. It is acknowledged the model could be improved because the posted speed limit does not accurately portray real life conditions. We know people drive faster than the posted speed limit, utilizing 85th percentile speed will provide a more accurate description of conditions. However, at this time not enough 85th percentile speed data is available; thus the posted speed limit data was used. This is an evolving model, which as more data is available, will more accurately represent real life conditions. As new data becomes available, the dataset can be updated and the model rerun. The model provides baseline level of comfort information. Future model runs will continue to use the most current traffic count information and incorporate 85th percentile speeds instead of posted speeds (as available).



6TH ST. AND MASSACHUSETTS ST.,
LAWRENCE, KS

The background image shows a park scene with large, leafless trees in the foreground and middle ground. A paved path leads from the bottom center towards the background. Two people are riding bicycles away from the viewer on this path. In the distance, there are several large, rectangular storage containers or trailers, some yellow and some orange, parked in a lot. The sky is a clear, pale blue.

APPENDIX D: POLICY AND PROGRAM TOOLBOX

Becoming a truly bicycle friendly community requires more than engineering. Non-infrastructure policies and programs are necessary to achieve the goal of becoming more bicycle friendly. Responsibilities are included with the item if the tool is already occurring in Lawrence. These tools are not prioritized. The Action Plan displays the tools selected for implementation; however, tools not included in the Action Plan can be implemented.

Safe Routes to School

The Lawrence Safe Routes to School (SRTS) initiative is a collaborative effort between the Lawrence-Douglas County Health Department, Lawrence Public Schools, the City of Lawrence, and the Lawrence-Douglas County Metropolitan Planning Organization to improve the health and wellbeing of children by enabling and encouraging them to safely walk and bicycle to school. The SRTS initiative began in 2015 and includes regular data collection regarding student travel patterns and parent concerns, identification of safe routes to school for all 18 public elementary and middle schools in Lawrence, supporting annual walk and bike to school celebrations, creating pedestrian and bicycle safety curriculum, and revising the school crossing policy.

To truly create momentum around Safe Routes to School the program needs to encourage walking and bicycling. There are many ways to do so including: bicycle trains, Bike Lesson and Safety Training Program (BLAST), the crossing guard program, helmet & safety fairs, how to ride classes and bike clinics/rodeo, non-competitive bicycle-themed events, traffic garden, trips for kids local chapter, and youth bike clubs and teams.

Bicycle Train

Bike trains enable students to get to school while enjoying the outdoors and the company of other bicycle riders. Best suited for children in upper elementary and middle school grades, bike trains are led by adults - one at the front and one at the rear of the train - that accompany students as they bike to and from school. Bike trains can be a great way to instill a love of bicycling while developing life-long safety skills¹. More information about developing a bike train can be found at http://www.walkbiketoschool.org/wp-content/uploads/2017/01/SRTS_BikeTrain_final.pdf

Level of Support: 53%
of survey respondents
said they would
support this program

Bike Lesson and Safety Training Program (BLAST)

Lawrence Public Schools offers the Bicycle Lesson and Safety Training program to all fourth and fifth grade students as part of the physical education curriculum. In four classes, students learn about proper helmet fit, rules of the road, bicycle safety checks, road hazards and how to safely navigate through an intersection. Some students learn how to ride a bike.

Bike and Walk to School Day

The annual National Bike to School day occurs during early May. While the National Walk to School day happens in early October.

Crossing Guard Program

Adult crossing guards can lead to more parents feeling comfortable about their children walking or bicycling to school, and allow for expanded independence for children. The City of Lawrence funds and locates crossing guards at locations that fit the criteria outlined in the City of Lawrence School Crossing Control Policy². Crossing guards can be a quick solution to improve crossing conditions for difficult roads or intersections where engineering solutions may be out of the discussion.

Helmet & Safety Fair

Helmet fairs can be used to create awareness around bicycling and allows leaders and ambassadors to establish a

¹ National Center for Safe Routes to School. (n.d.). Bicycling to School Together: A Bike Train Planning Guide. Retrieved November 12, 2018, from http://www.walkbiketoschool.org/wp-content/uploads/2017/01/SRTS_BikeTrain_final.pdf

² https://assets.lawrenceks.org/assets/public-works/pdf/school_crossing_control_policy.pdf

presence in the community. A helmet fair is an event designed to distribute helmets to children that do not already own one, while providing accurate information on how to properly adjust the straps to fit accordingly. There is often simple safety instruction involved with the helmet distribution.

How to Ride Classes and Bike Clinics/Rodeos

Classes teaching children and adults how to ride a bicycle safely on road and on trails is necessary to encourage safe bicycling. Teaching families with toddlers and young children how to together also fosters a culture of bicycling. These classes could include basic “how to ride” information, as well as more detailed in-traffic, on-bike instruction and experiences sharing the road with motor vehicles. This course could be shared with City of Lawrence employees to promote commuting by bike.

Non-Competitive Bicycle-Themed Events

Develop a variety of fun, family friendly, social and non-competitive bicycle-themed events year-round, such as a bike-in movie festival, 4th of July bike parade, Halloween bike decoration competition, or a bike to the arts event. To be successful these events should be coordinated with schools, bicycle clubs, bike shops, and local bicycle advocacy groups. Appropriate safety measures such as road closures or police escorts need to be provided.

Level of Support: 68%
of survey respondents
said they would
support this program

Traffic Gardens

Traffic gardens allow people to practice their bicycling skills in a controlled environment, which mimics real-life street conditions. Various traffic elements like stop signs, roundabouts, crosswalks, multi-lane roads, and more are utilized. A Traffic Garden can be developed using an empty parking lot, unused tennis courts, or other underused space. Once created, the Traffic Garden would be an important asset to the BLAST curriculum to put their teachings into practice.

Trips for Kids Local Chapter

The Trips for Kids program is an international nonprofit which aims to provide the opportunity for kids of all walks of life to have the opportunity to know the joy of riding a bike and the freedom to explore the natural world on two wheels. Kids are typically given the chance to trail ride for the first time and learn basic bicycle maintenance.

Youth Bike Clubs and Teams

Biking clubs can come in many forms. They can be part of an afterschool program or a separate clubs kids join. The Tulsa Bike Club meets weekly afterschool from late September to early May. Students who complete the program earn a bicycle and helmet. Each club is made up of roughly 20 students and five volunteers—this number includes faculty member(s). Equipment needed to run club activities, such as bicycles, helmets, safety vests, curriculum, drill supplies, maps, etc., along with adult-size bicycles, are provided to each participating school.

In the fall, students and adult volunteers meet weekly after school to ride bikes and work on cycling skills, life skills (confidence, respect, following rules, etc.) and other activities (for instance, STEM learning). And the spring semester is focused more on off-campus rides and experiences—for example, students may ride to a fire station, museum, park, restaurant or other nearby place of interest³.

Youth bike teams can be road/cross racing, mountain bike racing, or velodrome teams. Both clubs and teams are to create a foundation of safe bicycling while instilling a love of bicycling in kids.



LAWRENCE -DOUGLAS COUNTY
BLAST PROGRAM

³ Bike Club. (n.d.). Retrieved November 13, 2018, from www.bikeclubtulsa.com

Education and Encouragement

Education is giving people of all ages and abilities the skills and confidence to ride and educating bicycle riders and drivers about the rules of the road. Encouragement is creating a strong bike culture that welcomes and celebrates bicycling. The two elements are strongly intertwined.

Adopt-A-Park/Trail/Street

Local clubs and organizations provide great volunteer services for maintaining and patrolling trails. This idea could be extended to follow tour routes or specified streets/sidewalks. A sign to recognize the club or organization could be posted as an incentive to sustain high quality volunteer service.

Association of Pedestrian and Bicycle Professionals Webinars (APBP)

The APBP publishes a range of webinars related to bicycle and pedestrian planning. The webinars are hosted by the Lawrence-Douglas County Metropolitan Planning Organization and can only be viewed on-site.

Beginner Bicycle Rides

The Beginners Ride is offered during the summer months (first Monday after Memorial Day through last Monday in August) for individuals new to cycling. This is approximately a 10-mile, 10-12 mph ride intended to promote safe riding in Lawrence area streets. The purpose of this ride is to help participants develop confident road cycling habits through brief (15-20 min.) instruction and a supportive weekly group ride. This Lawrence Bicycle Club ride is supported by local League of American Bicyclists Certified Instructors. Cyclists need to bring a bike, helmet and a water bottle. For more details, see the Beginners Ride Facebook page - <https://www.facebook.com/groups/BeginnersRide>.⁴

Bicycle Ambassador/Mentorship Program

A bicycle ambassadors/mentorship program is an important bicycle outreach and education component of a bicycle plan, as it promotes bicycle safety and awareness. City staff and other groups may volunteer to be ambassadors as well as recruiting community members to be ambassadors. Ambassadors host and attend programs, demonstrations, and activities at events, summer camps, and schools. Ambassadors also teach individuals about the best route for their needs. The most successful ambassador programs typically include adult and junior ambassador programs to reach the largest amount of users. Local bicycle shops are often involved.

Level of Support: 55% of survey respondents said they would support this program

Bicycle Friendly Business Program

The League of American Bicyclists provides criteria for local businesses to participate in the Bicycle Friendly Business program. Businesses are recognized for their efforts to encourage a more bicycle friendly efforts.



Level of Support: 61% of survey respondents said they would support this program

Bicycle Friendly Driver Program

The Bicycle Friendly Driver program, presented by the Lawrence Bicycle Club, is a quick class designed to expand awareness on the ways in which motor vehicles are supposed to interact with bicycles. Topics include sharing the road/taking the lane, infrastructure, bicycle laws, common points of conflict/crashes. A short wrap-up exam is used to ensure that the messages are being relayed.

Level of Support: 81% of survey respondents said they would support this program

The City of Lawrence is creating a series of Bicycle Friendly Driver Videos. It would be beneficial to present this information to City of Lawrence staff, Lawrence Transit drivers, taxi drivers, school bus drivers, delivery drivers, and other groups. This information should also be incorporated into new driver education programs and for older drivers. AARP offers AARP

⁴ Lawrence Bike Club (n.d.). Weekly Rides. Retrieved November 13, 2018, from <https://lawrencebicycleclub.org/index.php/weekly-rides>

Smart Driver Course, which is designed especially for drivers age 50 and older to refresh people on the rules of the road.⁵

Bicycle Registration

The Lawrence Police Department operates a bicycle registration program which seeks to alleviate any concerns regarding theft or vandalism by creating a system which identify and links stolen bikes to the proper owner. Residents who know their bikes serial number can register them with the Lawrence Police Department at the Law Enforcement Center on 11th Street and New Hampshire.

Bicycle Rideability Map

A bicycle rideability map is a tool to help residents determine the best route for your skill level. The map varies from the future and existing bicycle facilities map, which is a comprehensive map used as a system planning tool. A new rideability map will be created as part of the ongoing bikeway plan update process. The maps are developed by the MPO Bicycle Advisory Committee (BAC).

Bicycling Lunch and Learn

Lunch and learn educational sessions can be offered quarterly or more or less often depending on needs. Lunch and learn topics can be focused on bicycle maintenance, bicycle skills, bicycle laws, or any other bicycle related topic. It may be a good venue to show the Bicycle Friendly Driver videos.

Bike-to-Work Day (Third Friday in May)

Bike-to-Work Day is an annual event held on the third Friday of May across the United States that promotes the bicycle as an option for commuting to work. Leading up to Bike-to-Work Day, national, regional, and local bicycle advocacy groups encourage people to try bicycle commuting as a healthy and safe alternative to driving by providing route information and tips for new bicycle commuters. On Bike-to-Work Day, these groups often organize bicycle-related events, and in some areas, pit stops along bicycle routes with snacks.

Level of Support: 65%
of survey respondents
said they would
support this program

Car Free Day

Car free days are when communities close a road or portion of road to vehicular traffic for a specified day and utilize the space for bicycle and pedestrian activities. In addition to walking and bicycling, various events and workshops can be integrated into the day's activities. Such a program should be designed to encourage residents to think differently about their city streets, to improve physical activity, or to highlight the cultural and physical amenities of the city. In communities that don't have enough support to run a communitywide car free day, slight variations have been employed to generate similar outcomes. Instead of closing a roadway, car free days can consist of pledges for residents to find creative transportation solutions on one specific day of the week, repeated each week throughout the year. Rather than having a single day of communitywide events, communities can encourage people to leave the car at home on the specified day of week.



9TH ST. AND
VERMONT ST.,
LAWRENCE, KS

Community Challenge

Community challenges acknowledge that many residents simply cannot commute without a car, so the emphasis is shifted towards more broad, positive goals beyond simply “not to drive” and instead encourages residents to reach beyond their comfort zones and try active transportation options whenever possible. A community challenge should ask residents to track bike, walk, bus, and carpool miles throughout a specified timeframe. Participants can compete with one another throughout the duration of the challenge, and prizes can be made available for the most successful residents.

⁵ AARP Smart Driver Course: Lawrence Library. (n.d.). Retrieved November 12, 2018, from <https://local.aarp.org/driver-safety/lawrence-library-lawrence-ks-b49642.html>

Confident, Capable, Commuters Bike Class

This class is taught by instructors certified by the League of American Bicyclists, and is designed to be beneficial to all levels of riders. Participants will learn how to ride safely in traffic and on the sidewalk, basic bike maintenance, and group riding skills. This course consists of two class room sessions in the evenings and a Saturday morning outdoor on-bike session.

Create a Commuter Program

A Create a Commuter program provides low income individuals with a sturdy bicycle made for commuting, which includes fenders and a cargo rack. Bicycles are provided at no charge to recipients. In addition to the bicycle, program participants receive safety equipment, including a helmet, lock, air pump, and patch kit. Training is provided to teach the basics of safe riding, how to fix a flat, how to plan a safe route, safety checks, and basic diagnostics. The Portland, Oregon Create a Commuter program requires participants to be at least 18 years old, not own a car, demonstrate financial need, and show a need for transportation. Participants are recruited, screened, and referred to the program from human service agencies.⁶

Earth Day

Earth Day is a national awareness day on April 22nd each year and offers a discussion opportunity to focus on helping the environment. Efforts can be made to encourage people to help the environment by bicycling to destinations and staying out of their automobiles.

Education Campaign

Create an education campaign for drivers and bicycle riders about sharing the road, interacting safely, and the 3-foot passing law. Utilize the Lawrence in Gear videos prepared by the City of Lawrence.

Level of Support: 80%
of survey respondents
said they would
support this program

End of Trip Amenities

Develop long-term bicycle parking standards and promote end-of-trip amenities, like locker rooms and showers to boost bike commuting in all weather. Providing end-of-trip facilities improves employee health as physical activity is incorporated into their routines, reduces parking costs, and creates a positive image for the business/organization.

Level of Support: 62%
of survey respondents
said they would
support this program

League of American Bicyclists, League Certified Instructors

The League of American Bicyclists (LAB) has a national bicycle education program (Bike ED) that includes training to become certified League Cycling Instructors (LCI's). The training seminar focuses on teaching and demonstration techniques to use when instructing a Smart Cycling class, which LCI's are ideally equipped to host after becoming certified. The seminar emphasizes how to teach bicycle safety and skills to provide increased comfort and confidence for new and returning bicycle riders and youth. League instructors should be used to teach bicycle classes and support bicycle education throughout the community.

Mileage clubs

Online or community-based mileage club programs encourage bicycling and provide incentives for reaching mileage goals either individually or in groups. The National Bicycle Challenge is one example of a mileage club that has been successful, but there are many options available which can be custom tailored to suit anyone. Residents can either compete as part of a teams or independently.

Partner with KU and HINU on Bicycle Related Programming

Two universities are located in Lawrence - University of Kansas (KU) and Haskell Indian Nations University (HINU). Lack of parking and congestion issues on the KU campus could shift students, faculty, and staff to bicycling to and across campus. Bicycle related programming should be created in partnership with various community organizations, KU, HINU,

⁶ Create A Commuter. (n.d.). Retrieved November 12, 2018, from http://web1.ctaa.org/webmodules/webarticles/articlefiles/Portland_TriMet.pdf

and the City to promote bicycling as a form of transportation.

Pre Drivers Education Camp

This camp introduces the rules of the road and teaches participants the skills needed to safely and effectively use their bike as a form of transportation. Each day kids learn and practice new skills before going on a group ride to a popular destination. Participants ride on sidewalks as well as roads and must provide their own bike and helmet.

Reward Safe Bicycling

Start a program to reward safe bicycling (by giving out gift certificates to bicycle riders that are “caught” following the law). Typically these programs are targeted towards kids wearing helmets. If a child is not wearing a helmet they are provided one, but if they are wearing a helmet they receive a reward.

Level of Support: 46%
of survey respondents
said they would
support this program

Share the Road: Rules of the Road (Website)

On its website, the City of Lawrence provides detailed information for drivers, bicycle riders, and pedestrians about how to safely interact along the shared roadway. The resources provided can be used as a guide for residents to more confidently understand the rules of the road and reach the intended destination more safely. The webpage includes links to instructional videos, basic bike repair and maintenance tips, and information on how to use a bicycles as safely as possible.

Travel with Care Campaign

In the summer of 2016, the Lawrence-Douglas County Health Department adopted a new and creative ad campaign to encourage physical activity and safety. The campaign, Travel with Care, is a national initiative through People for Bikes and coincides with the Health Department's Be Active Safe Routes initiative. The campaign not only encourages pedestrian-bicycle safety, but it also highlights everyday people who are bicycle riders, making it relatable and encouraging more local residents to bicycle.



L-DC HEALTH DEPARTMENT

Wayfinding System

Create wayfinding standards to direct bicycle riders to routes and/or depicting time and distance information. A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes. There are three general types of wayfinding signs:

- Confirmation – Indicates on a designated bikeway informing bicycle riders and drivers.
- Turn Signs – Indicates where a bikeway turns from one street onto another.
- Decision Signs – Marks the junction of two or more bikeways informing of key destinations along the routes.⁷

Level of Support: 68%
of survey respondents
said they would
support this program

Enforcement

Enforcement is about ensuring roads are safe for all users - drivers, bicycle riders, & pedestrians. The primary way to achieve this is by slowing traffic down on streets and altering driver behavior to adhere to traffic ordinances.

Speed

There are many ways to reduce motor vehicle speeds. Including lowering residential speed limits, pace-car campaigns,

⁷ Urban Bikeway Design Guide. (2014). National Association of City Transportation Officials. Bike Route Wayfinding Signage and Markings System. Retrieved November 12, 2018, from <https://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/bike-route-wayfinding-signage-and-markings-system>

and speed monitoring programs.

Lower Residential Speed Limit

Lower residential street speed limit from 30 mph to 20 mph. Lowering the speed limit of residential streets will greatly improve the safety of neighborhoods. The faster you drive the smaller field of vision you have and therefore see less. When you drive slower you have more time to see bicycle riders, pedestrians, and side road activity. Furthermore, when vehicles strike pedestrians and bicycle riders at higher speeds, they are more likely to be killed.⁸

Level of Support: 35% of survey respondents said they would support this program

Pace-Car Campaigns

Resident pace-car drivers agree to drive courteously, at or below the speed limit, and follow other traffic laws. Programs usually require interested residents to register as a pace car driver, sign a pledge to abide by the rules, and display a sticker on their vehicle.

Level of Support: 30% of survey respondents said they would support this program

Speed Monitoring Program

A radar speed unit is placed in neighborhoods to alert drivers to their speed and allow City staff to collect speed data. Speed monitoring programs often have a limited long-term effectiveness in changing driver behavior but it can be useful for short-term behavior change.

Level of Support: 46% of survey respondents said they would support this program

Behavior

Altering driving behavior is sometimes accomplished by altering the built environment or enforcing laws to reinforce the importance to change behaviors.

3 Foot Passing Enforcement Device (BSMART)

Three-foot passing laws require drivers to give people on bikes at least that much clearance when passing them on the road, however such laws are extremely difficult to enforce. A new device (BSMART) helps give the law some teeth by allowing police officers to easily measure the distance that a driver provides when passing. With the device, a police officer rides along the roadway, constantly checking the passing distance of each vehicle. Another officer is located down the road, ready to pull over the driver and issue either a warning or a citation to the driver who does not obey the three foot passing law. This scenario allows for a high contact rate between residents and local law enforcement, which helps establish a more respected police presence.

Level of Support: 33% of survey respondents said they would support this program

Neighborhood Traffic Management Program (NTMP)

The City of Lawrence Neighborhood Traffic Management Program (NTMP) is a comprehensive program which aims to maintain or improve existing neighborhood environments through application of the 5E's (Education, Evaluation, Enforcement, Evaluation and Engineering). The program was established in November 2018 to address concerns throughout an entire neighborhood (or even all neighborhoods) instead of addressing one section of one street at a time. The program is designed to allow flexibility in the application of 5E's so solutions can be tailored to the specific issues we are aiming to address and to allow adjustments as the evaluation shows what the most effective solutions are.⁹

A primary goal of the program in 2019 and 2020 will be to reduce speeds on neighborhood streets throughout the community.¹⁰

Police Enforcement (Bicycle)

The Lawrence Police Department is primarily responsible for the enforcement of local bicycle ordinances, which are described in Chapter 17 Article 7 of the Code of the City of Lawrence. Proper interpretation of specific circumstances

⁸ Dwyer, E. (2015, September 08). Does Speed Matter? Retrieved November 12, 2018, from <http://sdblog.seattle.gov/2015/09/08/does-speed-matter>

⁹ <https://assets.lawrenceks.org/assets/boards/transportation-commission/2018/agendas/2018nov5/agenda.pdf#page=17>

¹⁰ <https://cdn.lawrenceks.org/wp-content/uploads/2016/10/agenda-2019-05-06.pdf#page=9>

and events is critical for proper enforcement and respect between drivers and bicycle riders. The Lawrence Police Department has a bicycle patrol unit which aims to make police officers more approachable throughout the community, while allowing for maximum mobility when engaging residents.

There is public support to provide more police enforcement to ensure bicycle riders and drivers are following the rules of the road and interacting properly.

Level of Support: 55%
of survey respondents
said they would
support this program

Traffic Ticket Diversion Program

Create a traffic ticket diversion program. Road users given citations are offered an opportunity to waive violation fees by attending a bicycling education course.

Level of Support: 54%
of survey respondents
said they would
support this program

Traffic Concern Reporting Website

A web-site for citizen traffic concerns helps paint a picture of problematic segments of the road network. It allows police to coordinate their responses and concentrate on those areas where there are numerous complaints. Residents need to provide information on the time of day and day of week when the violations are most prevalent to allow the police to better focus their resources.

Equity

There are two main concerns that relate to the essential elements of an equitable bicycle friendly community. The first challenge is spatial equity, which seeks to ensure resources, programming, infrastructure, and network amenities are equally distributed throughout the community in a way which ensures no exclusionary gaps exist. The second concern regarding equity pertains to a resident's ability to own and maintain a bicycle despite a wide range of setbacks, whether it be due to a financial constraint or physical barrier. A successful bicycle network must be appropriate and accessible for all ages and abilities. Many of the existing bicycle facilities are only suitable for extremely confident riders, which tend to be adult men, and exclude people who might otherwise ride. Poor or inadequate infrastructure – which has disproportionately impacted low-income communities and communities of color – forces people to choose between feeling safe and following the rules of the road, and induces wrong-way and sidewalk riding.

Bicycle Library

Bicycle libraries operate similarly to bike share programs, however they often provide bikes to residents free of charge. Bikes can be checked out for a specified amount of time, usually just a few hours, however long-term rental programs have been successful throughout the country in recent years. Bicycle libraries can be beneficial because they allow residents to test various bicycle types (cruiser, cycle, cargo) before making a purchase of their own, while ensuring a diverse range of applications for all users of the roadway.

Bike Share

A bike share program aims to get as many people on bikes as possible. Bike share programs are a great option for low income residents who are burdened by the high cost of transportation and for people who want to avoid the high upfront costs associated with bicycle ownership. On the other hand, there are barriers such as smart phone ownership, options for unbanked residents, lessons on how to ride, which need to be considered.

Complete Streets Policy

The Complete Streets Policy establishes guiding principles and priorities to create an equitable, balanced, and



BIKE SHARE NEAR KU CAMPUS

effective transportation system that encourages bicycling (and walking and transit use) to improve health and reduce environmental impacts, while simultaneously promoting safety for all users of the streets. A revised policy was adopted on December 4, 2018 and it enhances transparency and documentation on the application of the policy to projects. A checklist was created to be used in the planning and design phase, identifying complete streets elements that are to be implemented on a project. The policy includes a list of exceptions and does not apply to maintenance projects, but when feasible, improvements should still be considered. Defined performance measures have been added to the policy that will be tracked annually.

Environmental Justice Consideration in Project Selection

A majority of the existing bike lanes, bike routes with paved shoulders, and shared lane markings are within the environmental justice (EJ) zone. The EJ zone was established by identifying the low-income and minority populations. Currently Transportation 2040 identifies unprogrammed non-motorized funding will be spent on projects that continue to improve access, mobility, and safety for people who walk and bicycle. The non-motorized prioritization process also recognizes that consideration should be given to EJ areas in project selection.

Non-Profit, Volunteer-Run Community Bike Shop and Earn-a-Bike Program

Lawrence Unchained is a local non-profit, volunteer-run community bike shop in Lawrence that works towards the goal of promoting self-reliance, sustainability, and healthful living throughout the community. The group recycles, repurposes, and distributes used bicycles and advocates for improved bicycle facilities along the transportation network. Additionally, Lawrence Unchained offers an Earn-A-Bike program, which offers volunteers access to a free bicycle after completion of 10 hours of community service towards a bicycle related project.¹¹

Evaluation

There are two aspects to evaluation. The first is data collection and analysis of implementation outcomes over time. The second includes the national evaluation programs to compare Lawrence to other communities.

Collect Bicycle Rider and Pedestrian Counts

The MPO manually collects bicycle rider and pedestrian counts annually utilizing the National Bicycle & Pedestrian Documentation Project (NBPDP) methodology.¹² The project aims to establish a consistent methodology for counting and surveying bicyclists and pedestrians and develop a national database of bicycle and pedestrian activity. The Institute of Transportation Engineers (ITE) and transportation professionals nationwide have helped to develop the methodology, which requires the following features:

- Consistent days and times
- Consistent methods and materials, including training of volunteers
- Centralized data collection and analysis practices

Lawrence Bicycle and Pedestrian count locations were developed consistent with the methodology developed for the NBPDP by Alta Planning and based on the following criteria:

- Representative locations throughout the city
- Bicycle and pedestrian activity areas or corridors (downtowns, near schools, parks, etc.)
- Locations near proposed major bicycle or pedestrian improvements
- Key corridors that can be used to gauge the impacts of future improvements
- Places where counts have been conducted historically
- Locations where collisions between motor vehicles and bicycles and/or pedestrians are more prevalent

A screen line was established for all locations; when a bicycle rider or pedestrian passed the screen line, they were counted. Counts are conducted during three two-hour time slots. Dates for conducting counts are chosen based on the National

¹¹ Earn A Bike. (n.d.). Retrieved November 12, 2018, from <http://www.lawrenceunchained.com/earn-a-bike>

¹² National Bicycle and Pedestrian Documentation Project. (2016). Retrieved November 13, 2018, from <http://bikepeddocumentation.org>

Bicycle and Pedestrian Documentation Project's recommended September count weeks.
This data collection effort should be expanded to incorporate automated counters.

Collect Parked Biking Counts

Evaluating the number of parked bicycles located at schools and transit stops is valuable to determine if enough bike parking exists.

Data Driven Safety Improvements

The MPO developed a Crash Analysis and Countermeasure Identification Study, which identified 12 locations where crash history shows the site has a potential for safety improvements and merits further investigation. The report provided countermeasures for each location based on a field assessment. A specific analysis and plan which has strategies to reduce bicycle crashes and fatalities may be beneficial. Example information available at <https://safety.fhwa.dot.gov/tsp/>

Downtown Bike Parking Counts

As part of the Downtown Bike Corral Pilot Project, the MPO committed to conducting pre and post bike corral installation counts to determine if the bike corrals have addressed deficient parking. Once the pilot project has concluded, MPO staff will need to determine if downtown bike counts are still informative.

League of American Bicyclists - Bicycle Friendly CommunitySM

<https://bikeleague.org/community>

The League of American Bicyclists awards communities that have made significant efforts towards becoming more bicycle friendly. Lawrence has been a Bronze Bicycle Friendly Community since 2004. The current recognition expires in 2020. Bronze is the lowest recognition out of five levels of bicycle friendliness; it indicates preliminary efforts to create the safest network possible. The designation takes into consideration engineering, education, encouragement, enforcement, evaluation and planning, with key goal outcomes including maximizing commuter ridership, and minimizing the number of crashes and fatalities. To improve the score and become a Silver Community the following feedback was provided:

- Continue to complete the Lawrence Loop and ensure that people can safely access the loop and community destinations from the loop.
- Increase staff time on improving conditions for people who bike and walk.
- Continue to create a connected network that helps people safely access transit and schools.

Places for Bikes City Rating

<https://peopleforbikes.org/placesforbikes/city-rating-system>

Places for Bikes offers a data-driven approach to focus on quickly building better bike infrastructure. In order to qualify for a Places for Bikes rating, communities must address and improve the following: ridership, safety, network, reach, and acceleration. Lawrence has a score of 3.3/5. To improve the score, Lawrence was provided the following feedback:

- Hold a monthly social ride for new bikers
- Launch or expand public bike share.
- Create a "Vision Zero" policy with measureable goals and a clear timeline
- Partner with police, electeds and community groups to routinely collect, review and analyze crash data for all modes.
- Plan a bike network linking multiple districts. Use neighborhood bikeways on quiet streets, protected bike lanes on busy ones.
- Improve bike/walk links to parks, trails & mountain bike areas.
- Partner with community groups on door-to-door surveys, focus groups, or other personal outreach to assess transportation and recreation needs.
- Analyze who isn't biking in underserved areas, the barriers residents indicate, and potential solutions.
- Look to capital budgets or voters for dedicated funding for low-stress bikeways

- and programs.
- Return to quick-build projects to make them permanent.

STAR Communities/LEED for Cities & Communities program

<http://www.starcommunities.org/about/our-communities>

In 2016, Lawrence was designated as a 4-STAR Community. The STAR Community Rating System works to evaluate, improve, and certify sustainable communities by providing a clear, data-driven approach to assessing communities' sustainability efforts. The STAR framework integrates economic, environmental, and social aspects of sustainability in order to provide a sustainability rating. To reach a 5-STAR level, the following bicycle related strategies were provided:

- Increase mileage of buffered bicycle lanes, cycle-tracks, and other dedicated facilities
- Establish or support a community-wide public bike share program
- Retrofit transportation infrastructure to meet ADA standards
- Implement specific programs or create facility upgrades that transition the community towards the use of alternative modes of transportation and low-emission vehicles
- Require or incentivize bicycle and pedestrian amenities in new major development projects in high-density, mixed-use areas or near transit stations.

APPENDIX E: PLAN AND POLICY REVIEW



Since the last Bikeway Plan was completed in 2014 several planning efforts have been completed relating to bicycling.

Metropolitan Transportation Plan

<http://assets.lawrenceks.org/assets/mpo/T2040/T2040.pdf>



Transportation 2040 identifies future transportation needs, investments, and improvement strategies for all forms of transportation (automobile, public transit, bicycle, pedestrian, etc.) necessary to meet the needs of the region through 2040. Transportation 2040 was approved in March 2018.

Lawrence – Douglas Countywide Bikeway System Plan

<https://assets.lawrenceks.org/assets/mpo/study/reports/bike.pdf>



The Countywide Bikeway System Plan was approved in March 2014. The Plan details the existing and planned countywide bikeway network. The plan lacks design options, established metrics, project prioritization, and needs stronger E's. The new plan will address all of these.

KU Bike Plan

<https://sustain.ku.edu/sites/sustain.ku.edu/files/docs/KU%20Bike%20Plan.pdf>



The KU Bike plan was completed in the fall of 2016. The plan includes a toolbox of policy, program, and infrastructure ideas, and feasible strategies the university could take to improve the bicycling environment at KU. The plan is designed to address the following goals:

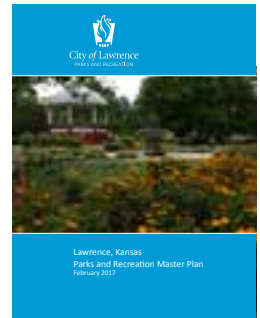
- Enhance the bikeway network linking residential, academic, and recreational destinations on campus and in the community.
- Promote a safe, healthy campus environment
- Increase the percentage of bicycle and pedestrian users on campus through the implementation of new policies, programs, and infrastructure
- Improve coordination with the City of Lawrence and create seamless transitions between university and city bike infrastructure and routes
- Create movement uphill by identifying policy, program, and infrastructure solutions that encourage people to overcome the real and perceived barrier of steep routes to campus

Parks and Recreation Master Plan

<https://assets.lawrenceks.org/assets/lprd/lprdmasterplan17-draftupdate-01-18-17.pdf>

The Parks and Recreation Master Plan was completed in the winter of 2017 and includes a goal to provide new or improved facilities and amenities. This includes the Lawrence Loop Trail improving connectivity and additional trail network amenities.

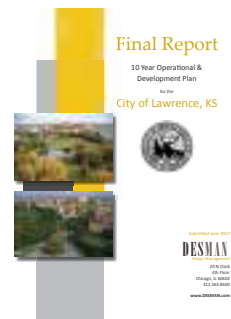
A survey process identified walking and bicycling as highly valued recreational activities because they require little equipment or financial investment to get started, and are open to participation by nearly all segments of the population. The design of a community's infrastructure is directly linked to physical activity - where environments are built with bicycle riders and pedestrians in mind, more people bike and walk.



Downtown Parking Study

https://assets.lawrenceks.org/assets/agendas/cc/2017/07-18-17/cm_strategic_parking_plan_report.pdf

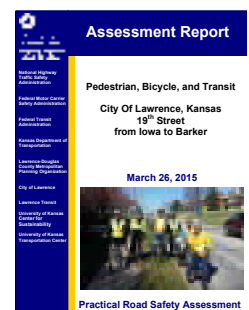
The Downtown Parking Study was completed in June 2017 and recommended implementation of demand management strategies such as bicycle parking, infrastructure, amenities, a bike share program, and encouraging “walk there or bike there” campaigns.



19th Street Safety Assessment

<https://assets.lawrenceks.org/assets/mpo/corridor/19thStRSA.pdf>

The 19th Street Safety Assessment was completed in March 2015 and found the 19th Street corridor between Iowa Street and Barker Avenue is an ideal location for road improvements that improve the important east-west connection near the University of Kansas campus for all vehicle types.



Complete Streets Policy

Complete Streets Policy

https://lawrenceks-my.sharepoint.com/:b:/g/personal/webmaster_lawrenceks_org/EazM-VLBI4tAjPPmapKTZJ4Bb_xHRbdo6frGKx54vmljg

Lawrence first adopted a Complete Streets Policy in March 2012. The policy establishes guiding principles and practices to create an equitable, balanced, and effective transportation system that encourages walking, bicycling, and transit use, to improve health and reduce environmental impacts, while simultaneously promoting safety for all users of the streets. A revised policy was adopted on [December 4, 2018](#) and it enhances transparency and documentation on the application of the policy to projects. A checklist was created to be used in the planning and design phase, identifying complete streets elements that are to be implemented on a project. The policy includes a list of exceptions and does not apply to maintenance projects, but when feasible, improvements should still be considered. Defined performance measures have been added to the policy that will be tracked annually.

Pedestrian-Bicycle Issues Task Force

https://assets.lawrenceks.org/assets/boards/pedestrian-bicycle/PBITF_Final_Report_2.29.16.pdf

The Lawrence City Commission created the Pedestrian-Bicycle Issues Task Force to develop built environment and programming recommendations to improve the City's pedestrian and bicycle networks by 2030. The report completed in February 2016 recommends completing the Lawrence Loop, improving safety on roads with the highest bicycle crash rates, and developing a highly visible network of bicycle boulevards. (link updated 8/25/21)

Lawrence Pedestrian Bicycle Issues
Task Force Report
2/26/16





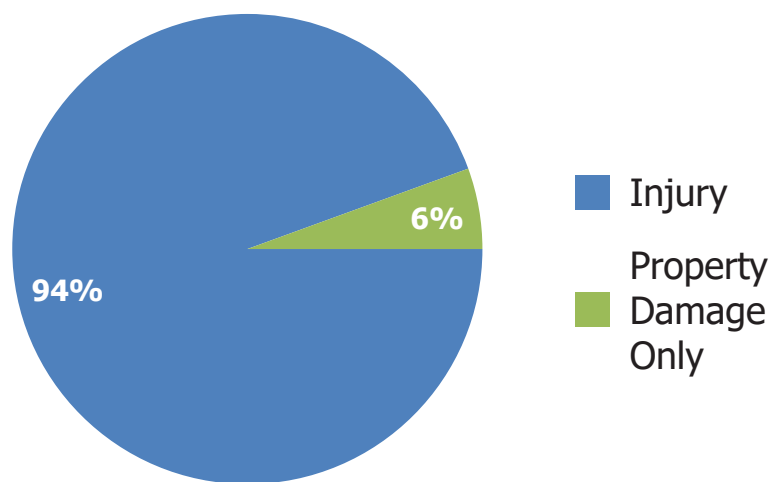
APPENDIX F: CRASH ANALYSIS

BICYCLE CRASHES

Safety, or a perceived lack of safety is the number one concern of current and potential bicycle riders in Lawrence. 71% of survey respondents indicated they would bicycle more if they felt they could do it safely. Crashes are a visible indication of safety. The Kansas Department of Transportation (KDOT) collects traffic crashes that occur on public roadways involving property damage of at least \$1,000 or an injury or fatality on the Kansas Motor Vehicle Accident Report Form. This includes crashes between motor vehicles and bicycle riders. A fatality or serious bicycle rider injury resulted from 132 (or 4%) of all traffic crashes in Lawrence between 2013 and 2017. The City of Lawrence, Douglas County, University of Kansas, and Kansas Highway Patrol reports crashes to KDOT. Bicycle related crashes are underreported. See the sidebar for types of crashes historically not reported.

Figure 1 displays a majority of the crashes resulted in injuries. Bicycle riders are more vulnerable roads users and have a higher chance of being injured if there is a collision.

Figure 1: Severity of Bicycle Crashes (2013-2017)



Source: Kansas Department of Transportation (2019)

The word “crash” may be new to some people as a way to describe the event in which a bicycle rider collides with a motor vehicle, in a way that can result in bodily harm and/or property damage. Historically, these events were called accidents. The term accident implies heavy doses of chance, unknown causes, and the connotation that nothing can be done to prevent them. Crashes are preventable. Bicycle rider crashes are not random events. They fall into a pattern of recurring crash types and occur because the parties involved make mistakes.

Several types of crashes according to BikeLaw.com are generally not reported.

“No contact” crashes – Crashes where a car runs a bicycle rider off the road, turns in front of or next to a bicycle rider and the bicycle rider takes an evasive action and crashes

“Minor” bodily injury crashes – Crashes where a bicycle rider is not transported to the hospital from the scene; crashes where the cyclist or officer does not immediately identify a significant head injury; crashes where bicycle rider goes into “superman” or “superwoman” mode and reports being okay, when s/he is not and needs to be checked out

“Stationary” motor vehicle crashes – “Dooring” crashes and crashes where bicycle rider hits parked—or allegedly parked—motor vehicle

Animal-related crashes – Unleashed dog runs in front of bicycle rider or attacks bicycle rider; deer, squirrel and other wild animal crashes

Work zone crashes – Crashes caused by unmarked hazards in a work zone and/or failure to warn of upcoming work zone hazards

Surface condition crashes – Crashes caused by potholes, sand, gravel, etc.

“Criminal” or “intentional” crashes – Bicycle rider harassment that results in a crash

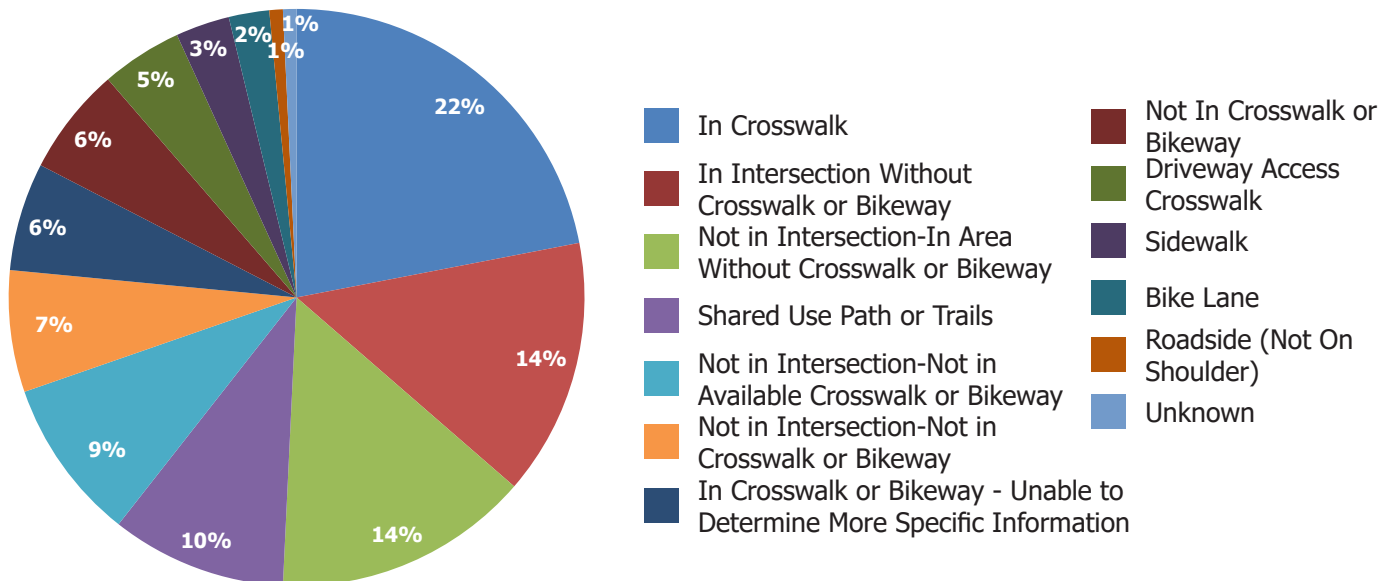
“Hit” and run crashes – Both contact and no contact “hit” and runs, meaning sometimes the motor vehicle actually hits the bicycle rider and leaves and sometimes the mv causes the bicycle rider to be run off the roadway without actually colliding with the bicycle rider and then leaves

“Mechanical” and/or user error crashes – Brakes don’t work; bicycle rider loses control of bike

The mistakes can be identified and counteracted through a combination of education, skill development, engineering, and enforcement measures that can substantially reduce crash occurrences. There is a continuing need to establish the mindset that bicycle riders are worthy and viable users of our transportation system.

KDOT reported bicycle-motor vehicle crashes were evaluated to determine if the crashes were on bikeways or not (Figure 2). 26% of the crashes were found to be on designated facilities like bikeways, crosswalks, sidewalks, or shared use paths. 22% of the crashes occurred “in a crosswalk”.

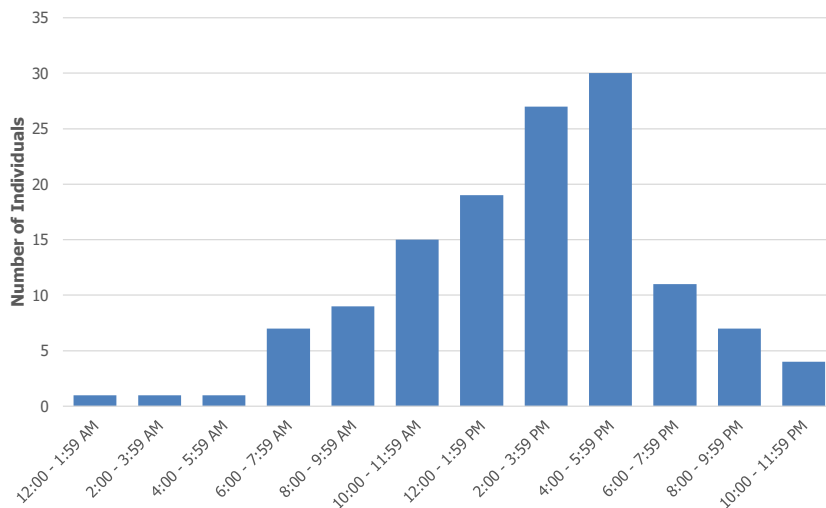
Figure 2: Location of Bicycle Rider Crashes (2013-2017)



Source: Kansas Department of Transportation (2019)

The time of day and year plays a part in visibility of bicycle riders and was evaluated to determine if there were any common elements. Figure 3 shows peak travel times between 2:00-5:59 PM accounted for the largest proportion of bicycle rider crashes and should be the focus of enforcement and other activities. This trend demonstrates an increase in crashes during hours that coincide with the end of a typical school day and the afternoon commute. This does not suggest these are the most dangerous times to bicycle, rather these periods likely align with the highest rate of bicycle trips.

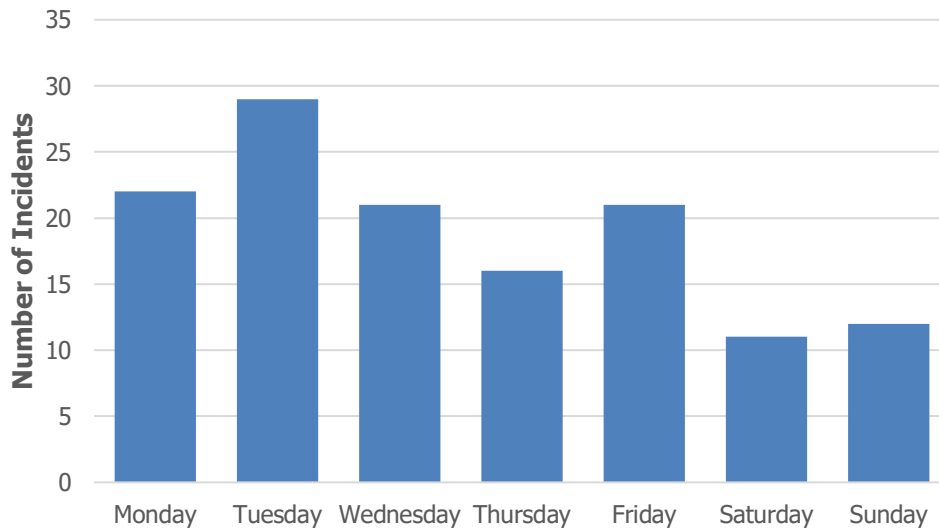
Figure 3: Individuals Involved in Bicycle Crashes by Time of Day (2013-2017)



Source: Kansas Department of Transportation (2019)

Figure 4 shows Tuesday has the highest number of bicycle rider incidents, while Saturday and Sunday have the fewest number of incidents.

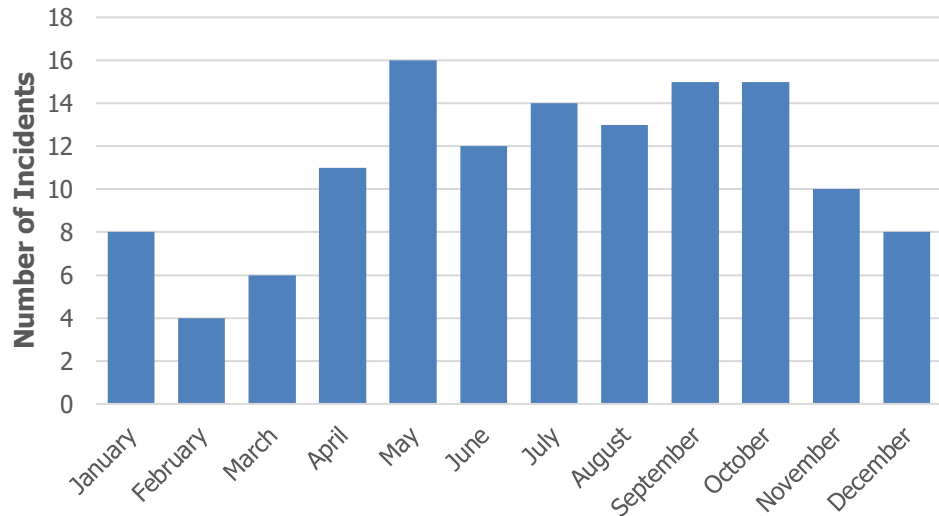
Figure 4: Bicycle Rider Incidents by Day of the Week (2013-2017)



Source: Kansas Department of Transportation (2019)

Figure 5 demonstrates the months of May, September, and October had the highest number of bicycle rider incidents. The winter months of January, February, March, and December had significantly lower numbers than the rest of the year. Summer riding is not inherently more dangerous, but the greater number of bicycle riders likely leads to a greater frequency of crashes.

Figure 5: Bicycle Incidents by Month of the Year (2013-2017)



Source: Kansas Department of Transportation (2019)



KU CAMPUS
LAWRENCE, KS



LAWRENCE AVE.
LAWRENCE, KS



DOWNTOWN
LAWRENCE, KS

The data shown in Figure 6 display age of both bicycle riders involved in crashes and drivers involved in crashes, as well the most recent Lawrence age demographics. The crash data provided by KDOT includes all passengers in motor vehicles as part of their report. This is why there are “Drivers/Passengers” included for age groups who do not drive. This data suggests targeted education at the university-level at the beginning of each semester may improve bicycle rider safety, given a large number of young drivers arrive during this time. However, the data may also suggest a higher number of crashes involve 20-somethings because they make up a large portion of our population as shown by the blue bar in Figure 6.

Figure 6: Age of Bicycle Riders and Drivers Involved in Bicycle Rider Crashes Compared to Lawrence Demographics (2013-2017)

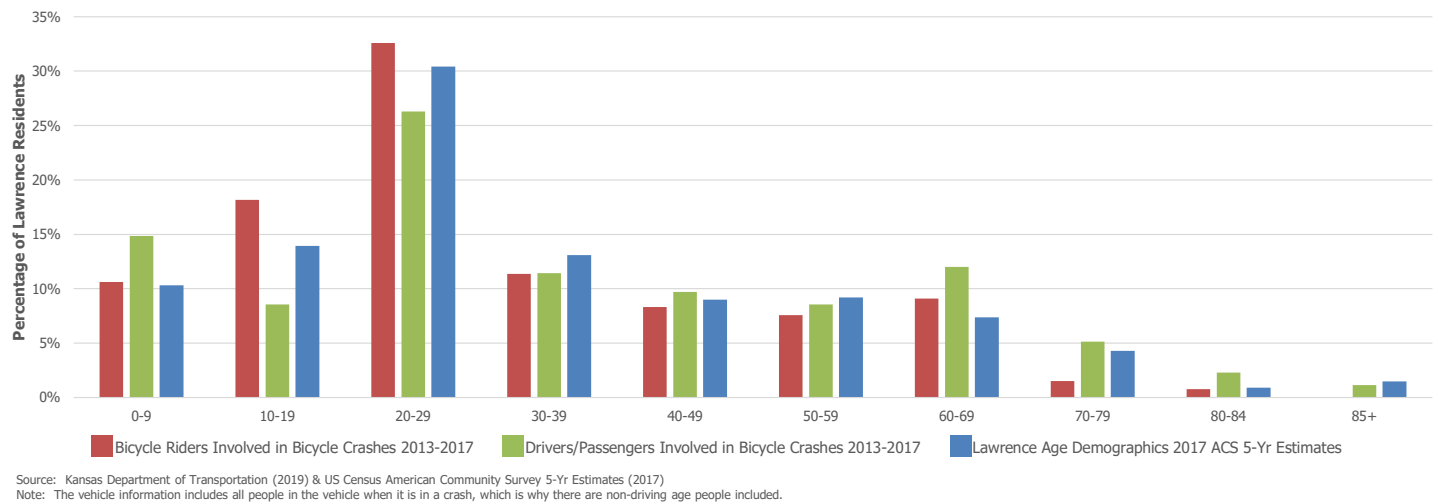
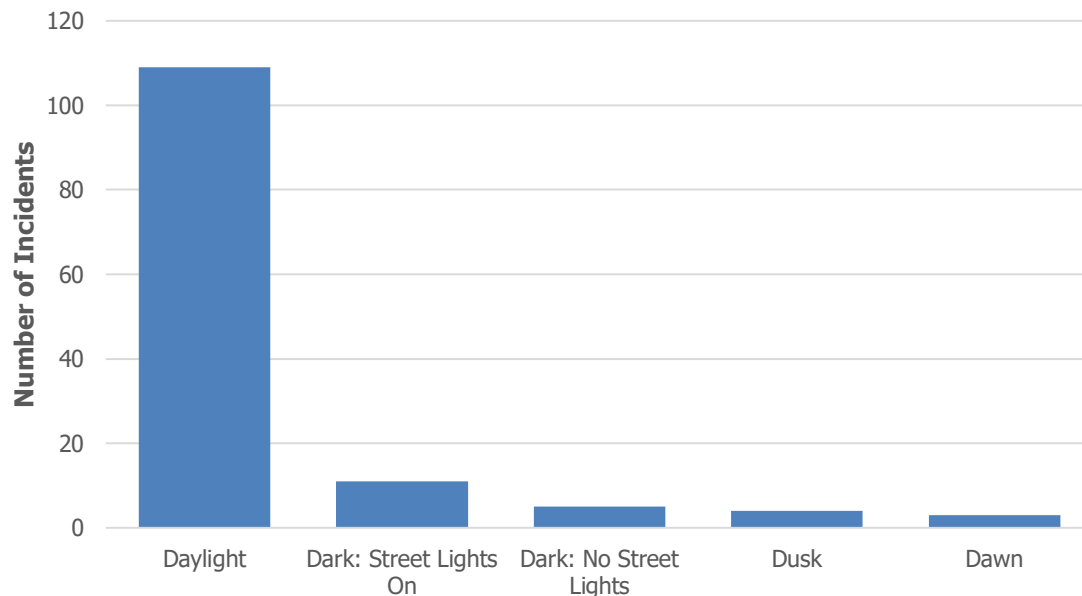


Figure 7 shows the majority of bicycle rider incidents occurred in Daylight, 62%, followed by “Dark: Lights on” at 6%. Only 3% of incidents occurred in “Dark: no lights” and the Dawn and Dusk categories each accounted for less than 2% of all incidents.

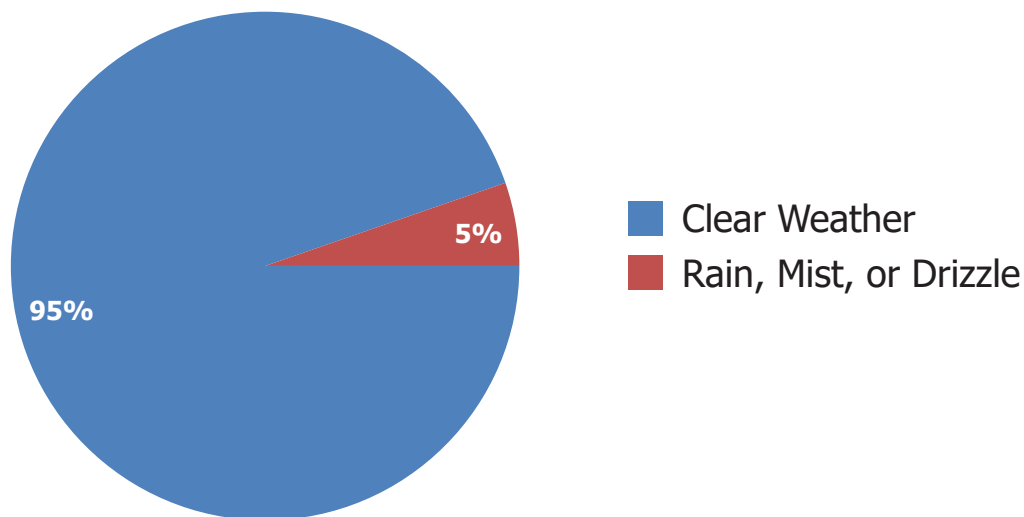
Figure 7: Number of Bicycle Rider Incidents by Light Conditions (2013-2017)



Source: Kansas Department of Transportation (2019)

Figure 8 demonstrates 95% of crashes occur in clear weather conditions. Rain, mist, and drizzle only accounted for 5% of the crashes. Since the majority of bicycle rider crash incidents occurred in clear weather conditions, this suggests inclement weather had very little effect on the likelihood of a bicycle rider crashes.

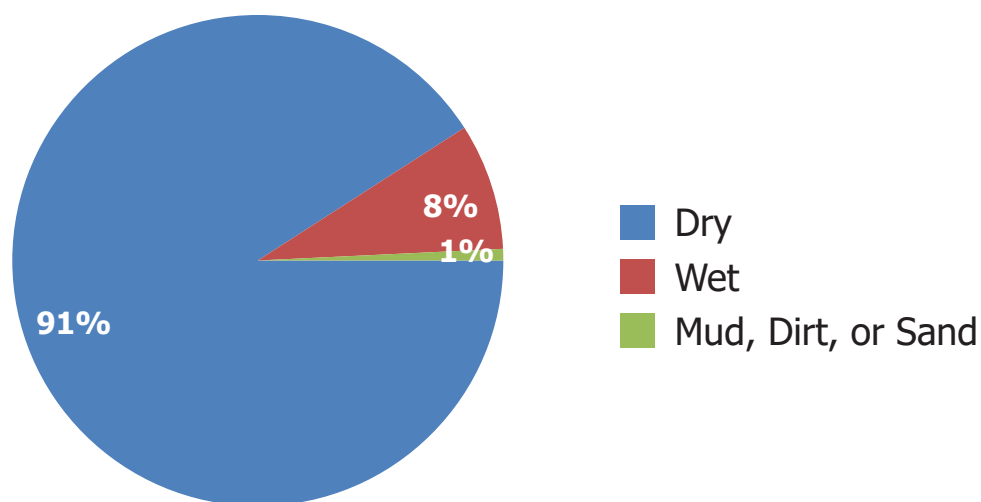
Figure 8: Number of Bicycle Rider Incidents by Weather Conditions (2013-2017)



Source: Kansas Department of Transportation (2019)

Figure 9 indicates 92% of bicycle rider crash incidents occurred under dry surface conditions, followed by wet conditions at 8%. And only 1% of crashes were on surfaces which were muddy, dirty, or sandy. Since the number of bicycle rider crash incidents are substantially higher in dry conditions, this suggests inclement weather discouraged bicycle riders from riding, or encouraged more caution from drivers and bicycle riders alike.

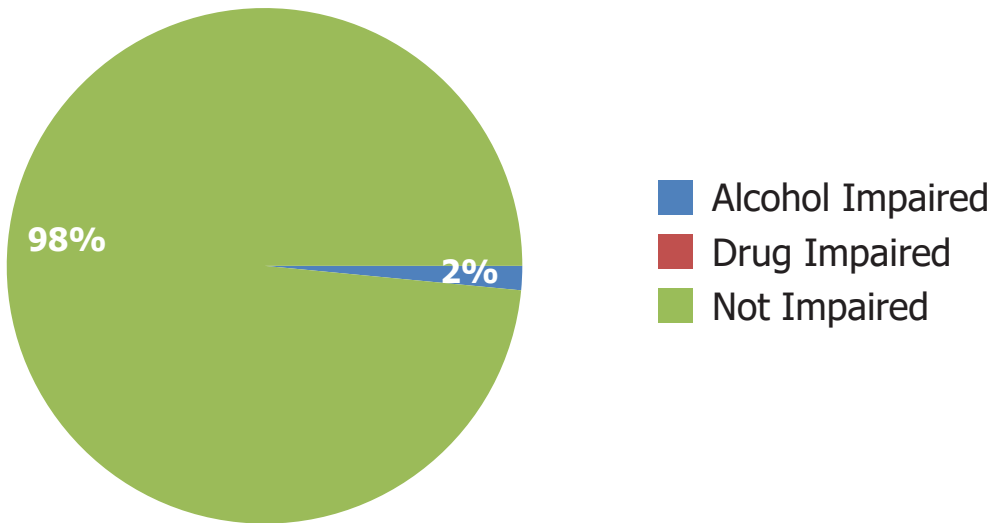
Figure 9: Bicycle Rider Incident Surface Conditions (2013-2017)



Source: Kansas Department of Transportation (2019)

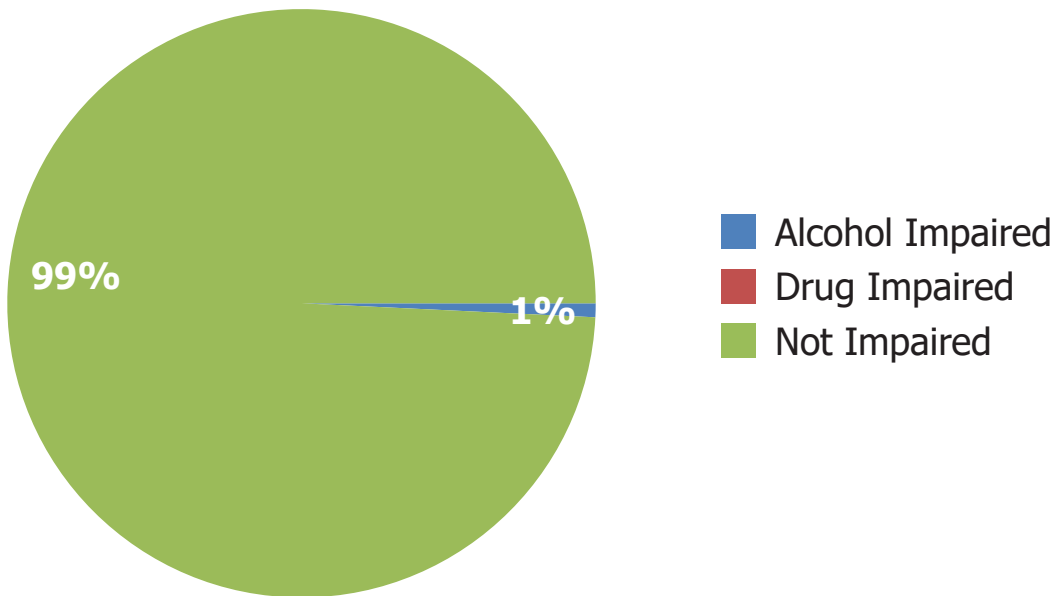
Bicycle rider or driver alcohol and drug impairments have not been a contributing factor to crashes. See Figure 10 for bicycle rider impairment and Figure 11 for driver impairment). 98% of bicycle riders were not impaired, while 99% of drivers were not.

Figure 10: Bicycle Rider Impairment (2013-2017)



Source: Kansas Department of Transportation (2019)

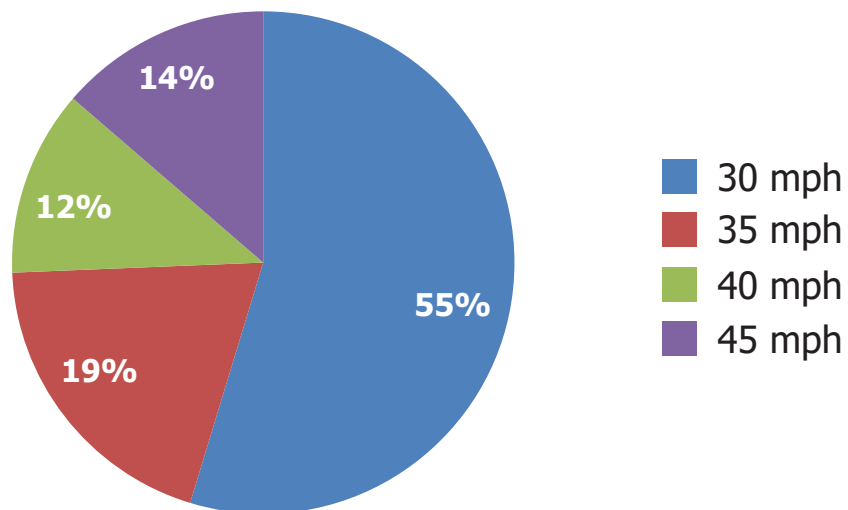
Figure 11: Driver Impairment (2013-2017)



Source: Kansas Department of Transportation (2019)

All of the crashes with data, which could be mapped, were located near roadways with a posted speed limit of 30 mph or higher (Figure 12; 15 crashes were not able to be mapped due to a lack of longitude and latitude data). An important consideration about this data is there is some level of discrepancy within the mapped data. The crash may not have been recorded in the exact location the crash occurred. Thus the crash may not have occurred on the higher speed road, rather it may have been on a slower speed road which intersects the higher speed one. However, in general crashes occurring on higher speed roads is not surprising because the speed of a roadway limits the driver's field of vision. The field of vision is the amount of space a person can view while driving down the road. The faster you drive the less you can view (Figure 13). Thus faster speeds lead to more crashes as drivers are not able to view bicycle riders (and pedestrians) soon enough to avoid a crash. According to the AAA Foundation for Traffic Safety the average risk for death of a pedestrian increases as the speed of the vehicle increases (Table 1). This report evaluated pedestrians, but it can be extrapolated that the data is also applicable to bicycle riders since bicycle riders are vulnerable users like pedestrians.¹

Figure 12: Road Speed of Bicycle Rider Crashes (2013-2017)



Source: Kansas Department of Transportation (2019) & Lawrence Road Centerline (2019)

Table 1: Average Risk of Pedestrian Severe Injury or Death Based on Vehicle Miles per Hour

| | Severe Injury | Death |
|-----|---------------|--------|
| 10% | 16 mph | 23 mph |
| 25% | 23 mph | 32 mph |
| 50% | 31 mph | 42 mph |
| 75% | 39 mph | 50 mph |
| 90% | 46 mph | 58 mph |

Source: AAA Foundation for Traffic Safety. Impact Speed and a Pedestrian's Risk of Severe Injury or Death.

*Note: Risks vary significantly by age. For example, the average risk of severe injury or death for a 70-year-old pedestrian struck by a car traveling at 25 mph is similar to the risk for a 30-year-old pedestrian struck at 35 mph.

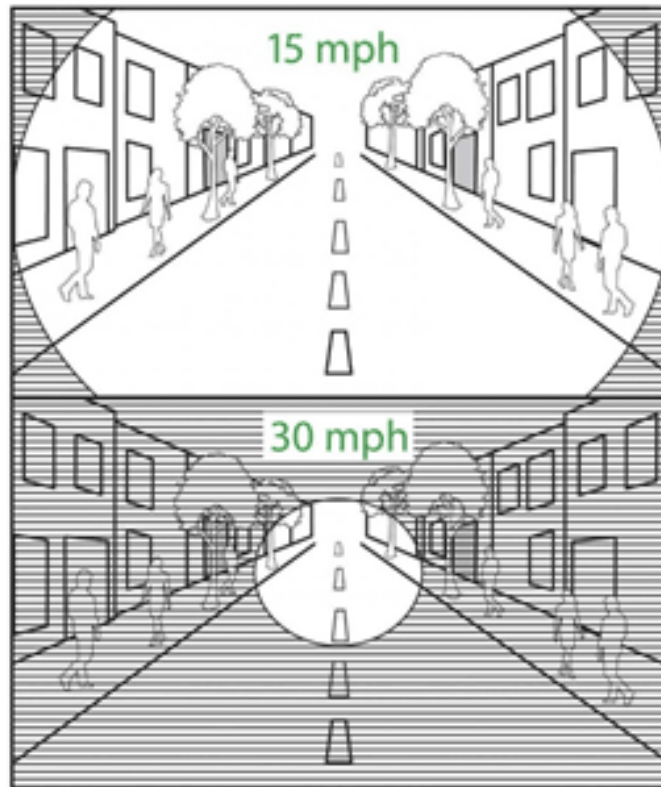


9TH ST.,
LAWRENCE, KS

¹ Tefft, B.C. (2011). Impact Speed and a Pedestrian's Risk of Severe Injury or Death. AAA Foundation for Traffic Safety. Accessed on March 26, 2019 from <https://aaafoundation.org/impact-speed-pedestrians-risk-severe-injury-death/>

Unfortunately the current data provided by KDOT does not include user behavior, so we are unable to evaluate the human contributing factor to the crashes (e.g. was there a failure to yield or stop by either the bicycle rider or driver). Reviewing the bicycle crash data indicates a majority of crashes occurred in either crosswalks/an intersection or roadway without a crosswalk/bikeway and the roadway speed is equal to or greater than 30 mph. They occur during the daylight, on clear weather days with dry surface conditions. This indicates speed concerns should be addressed and education about safe driving and bicycling behaviors is necessary. However, further analysis is needed. This review of bicycle crashes only provides a baseline of crash information. This data should be reviewed and evaluated in future years.

Figure 13: Field of Vision Based on Speed of Vehicle



Institute of Transportation Engineers. (n.d.) Speed as a Safety Problem. Accessed on March 27, 2019 from <https://www.ite.org/technical-resources/topics/speed-management-for-safety/speed-as-a-safety-problem/> Original Source: Walkable City Rules, <https://islandpress.org/book/walkable-city-rules>