The Basics of Bikeway Selection at Intersections and with Parking

Presented by FHWA Office of Safety, VHB, and UNC HSRC

April 7, 2021

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Housekeeping

- ⇨ Submit your questions
- ⇨ Webinar archive: www.pedbikeinfo.org/webinars
- ⇨ Live transcript: www.streamtext.net/player?event=HSRC
- ⇨ Certificates and professional development hours
- ⇨ Follow-up email later today

Meet the Panel

Tamara Redmon

FHWA Office of Safety

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VHB

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Toole Design

Jared Draper

Toole Design

U.S. Department of Transportation

Federal Highway Administration

Photos courtesy of Gettyimages.com

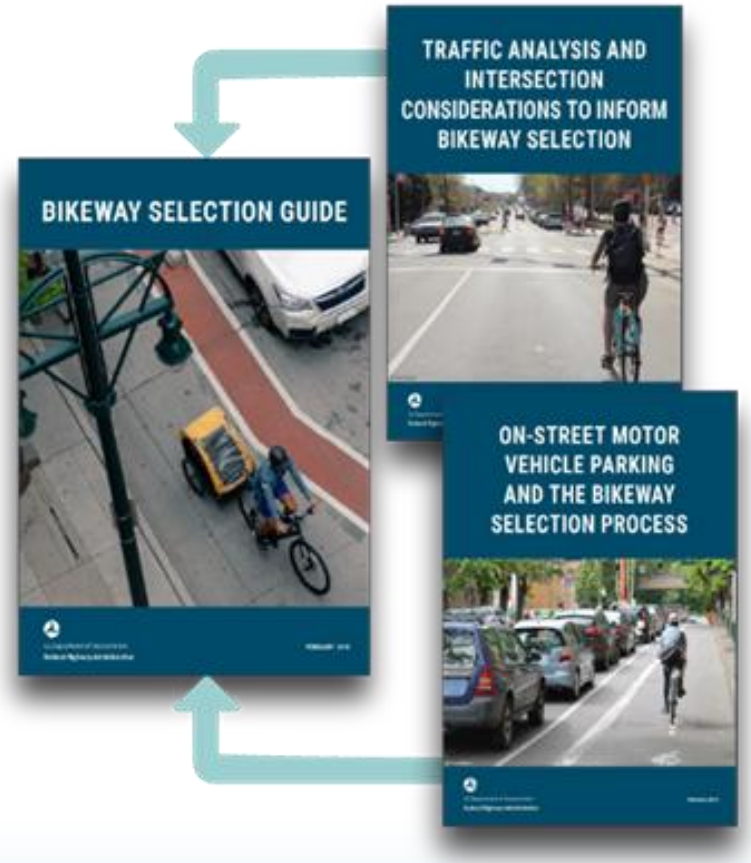
Pedestrian and Bicyclist Safety Program Overview

Tamara Redmon, Office of Safety, Federal Highway Administration

Resources Available to Help Improve Pedestrian and Bicyclist Safety

- Bikeway Selection Guide.
- Updated Pedestrian and Bicyclist Road Safety Audit Guide and Prompt List.
- Pedestrian and Bicycle Safety Focus States Efforts.
- USDOT Action Plan.
- Safe Transportation for Every Pedestrian (STEP).

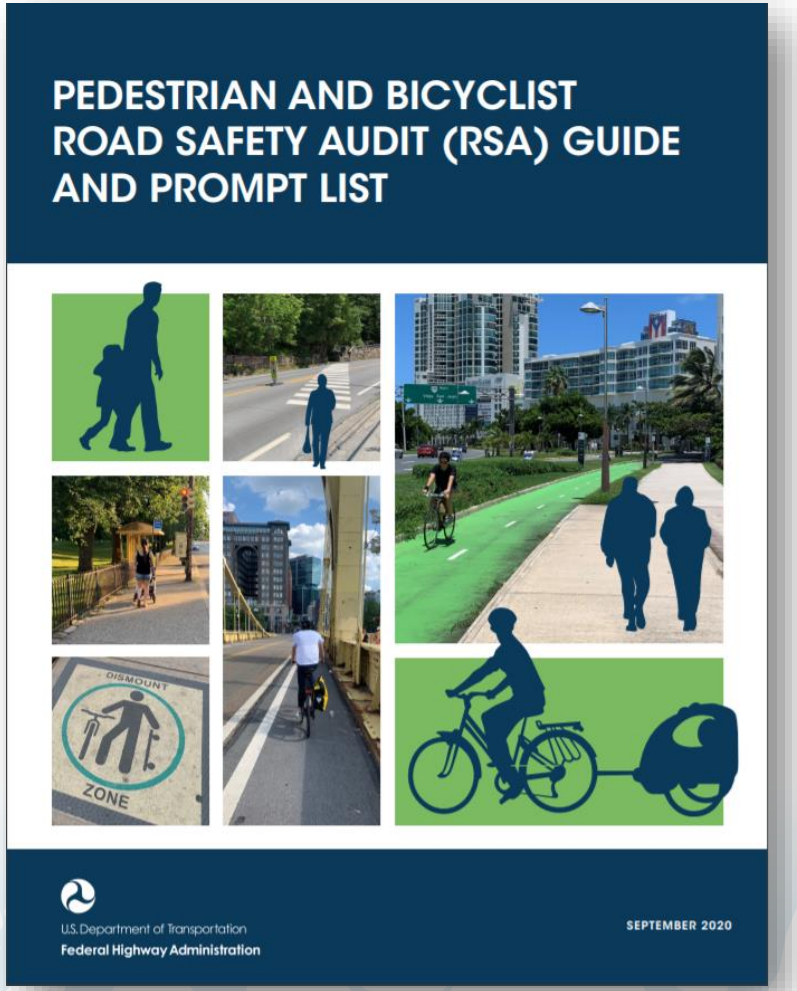
Bikeway Selection Guide and Supplemental Resources



Bikeway selection guide and two new supplementary resources. (Source: FHWA)

- Helps transportation practitioners consider and make informed decisions about trade-offs relating to the selection of bikeway types.
- Builds upon FHWA's active support for design flexibility and connected, safe, and comfortable bicycle networks.
- Based on the complementary Literature Review: Resource Guide for Separating Bicyclists from Traffic.
- NEW! Suplemental Resources on Parking and Intersection Considerations

Pedestrian and Bicyclist Road Safety Audit Guide and Prompt List



- Intended to support agencies that are interested in conducting pedestrian- and bicycle-focused RSAs.
- Includes information on safety risks for both modes, the RSA process, necessary data, and the roles and responsibilities of the RSA Team.
- Includes prompt lists for pedestrians and bicyclists to use in the field.
- This guide helps practitioners understand pedestrian and bicyclist issues in their jurisdiction and potentially achieve other goals in addition to safety.

Pedestrian and Bicycle Safety Focus States Efforts

FHWA's Safety Office has been providing extra resources to cities and states with the highest pedestrian and bicyclist fatalities and/or fatality rates.

- Working with the states/cities to assist them with developing pedestrian and bicycle safety action plans.
- Offering free technical assistance and training on how to design safe facilities and how to develop safety action plans.
- We recently re-evaluated the current list of states and cities and will be rolling out the program to new and continuing states this spring/summer.

Pedestrian-Bicycle Focus Cities and States

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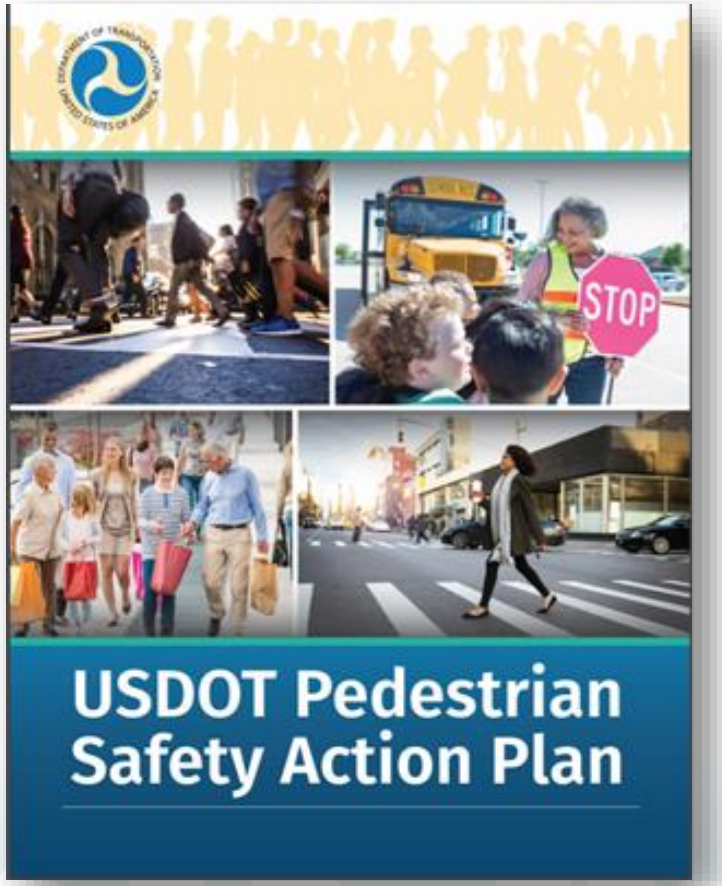
Pedestrian and Bicycle Safety Focus States and Cities

- Almost 400 training courses delivered.
- Over 6,000 people trained.
- Crash data analysis and countermeasure selection.
- Webinars and peer exchanges.
- Pedestrian and bike safety action plan development.
- Executive briefings.

USDOT Pedestrian Safety Action Plan



Complete in November 2020

The Plan identifies what the USDOT intends to accomplish with respect to pedestrian safety in the next 2 years and beyond.

Took into account the themes identified by stakeholders during the July 2020 Pedestrian Safety Summit webinars.

https://highways.dot.gov/sites/fhwa.dot.gov/files/2020-11/FHWA_PedSafety_ActionPlan_Nov2020.pdf

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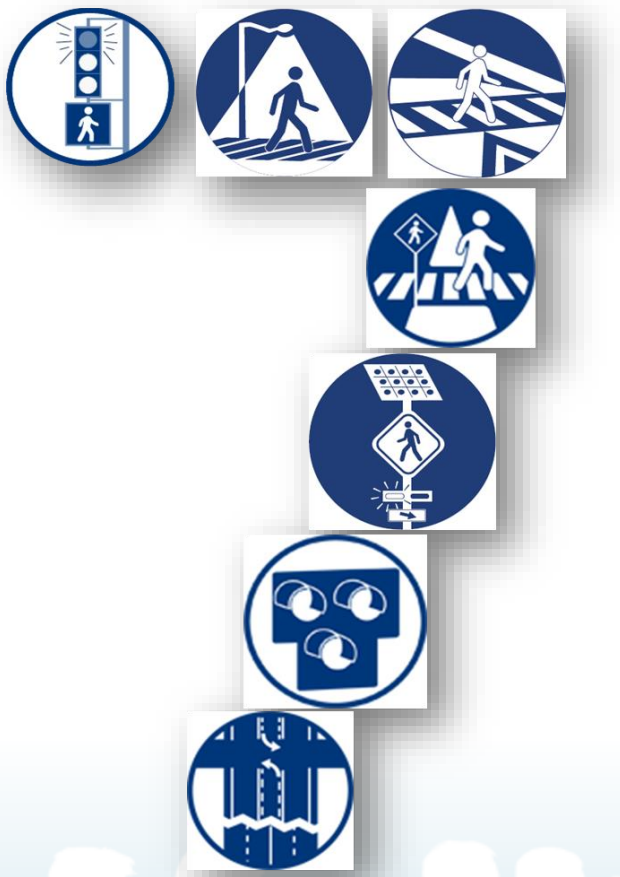
STEP

Safe Transportation for Every Pedestrian

https://safety.fhwa.dot.gov/ped_bike/step/resources/

The Spectacular Seven STEP Countermeasures



- Rectangular rapid flashing beacons (RRFBs)
- Leading pedestrian intervals (LPIs)
- Crosswalk visibility enhancements
- Raised crosswalks
- Pedestrian crossing/refuge islands
- Pedestrian hybrid beacons (PHBs)
- Road Diets

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Technical Assistance

- STEP Action Plans.
- STEP Workshops (1/2 day – Full day).
  - MPOs.
  - New partners.
  - State DOTs.
- Scan Tours.
- Road Safety Assessments (RSAs).
- STEP UP Resources

https://safety.fhwa.dot.gov/ped_bike/step/step_up_campaign/

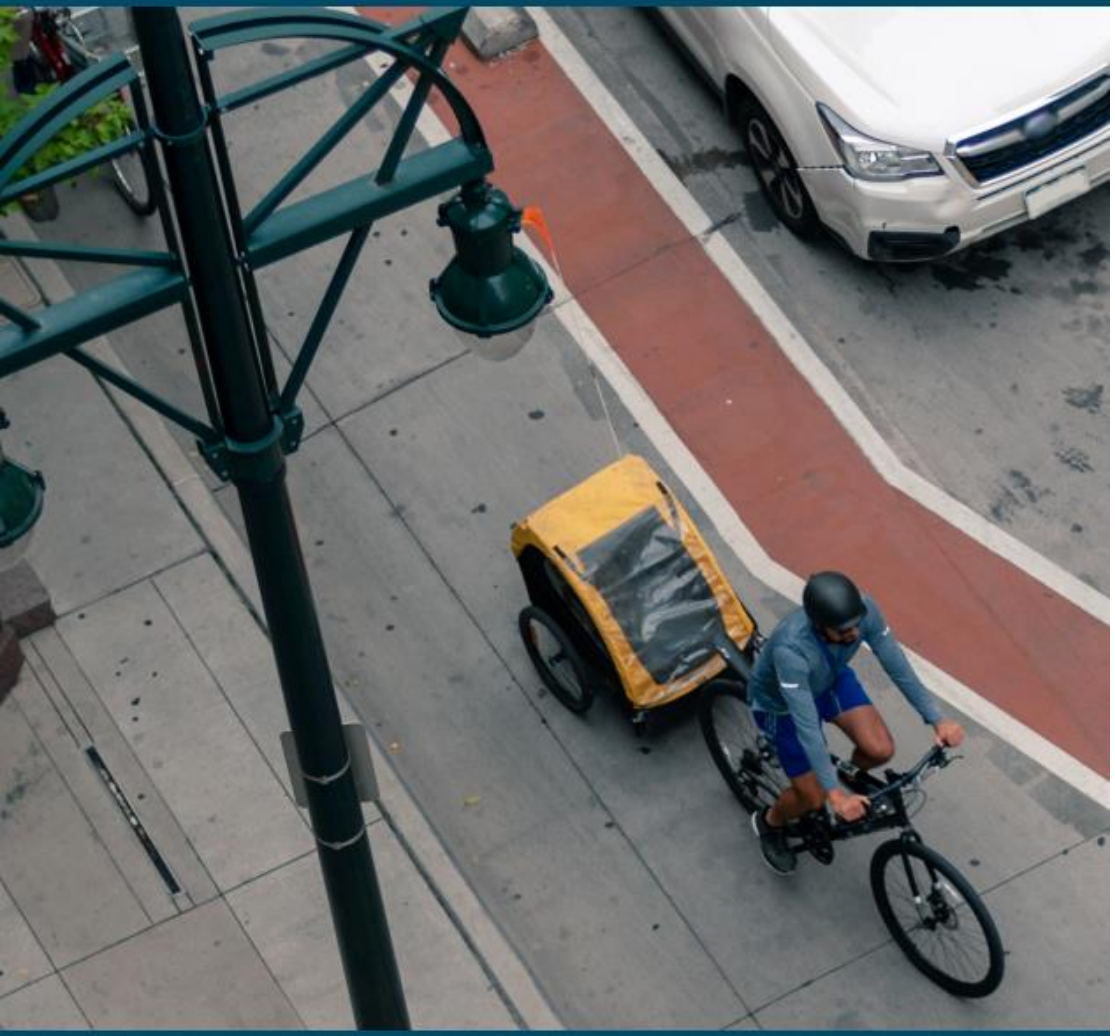
THANK YOU!

http://safety.fhwa.dot.gov/ped_bike/

E-mail: tamara.redmon@dot.gov

Order documents:
http://safety.fhwa.dot.gov/ped_bike/ped_bike_order.cfm

BIKEWAY SELECTION GUIDE



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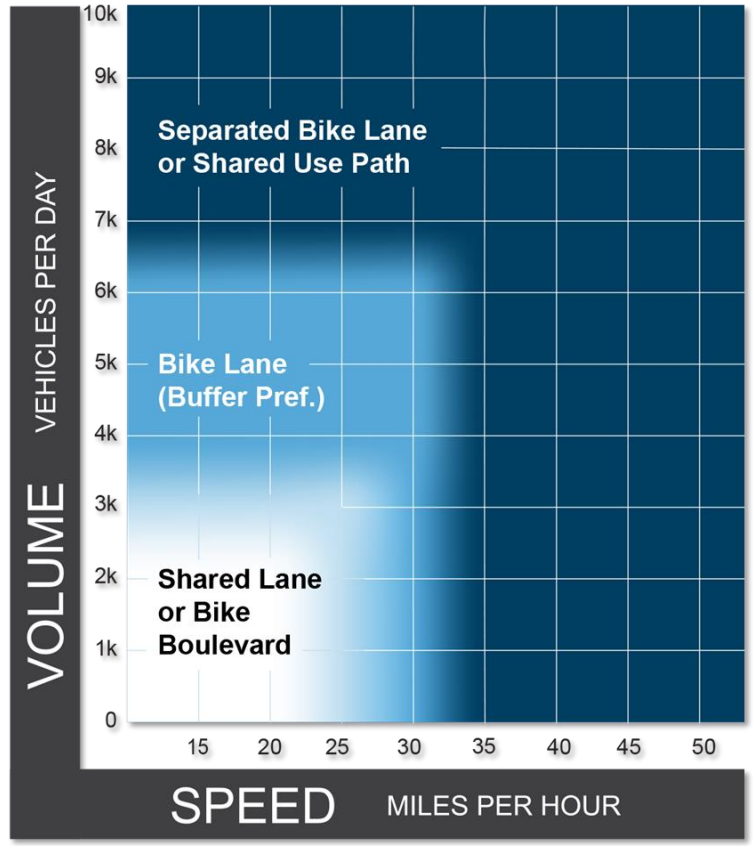
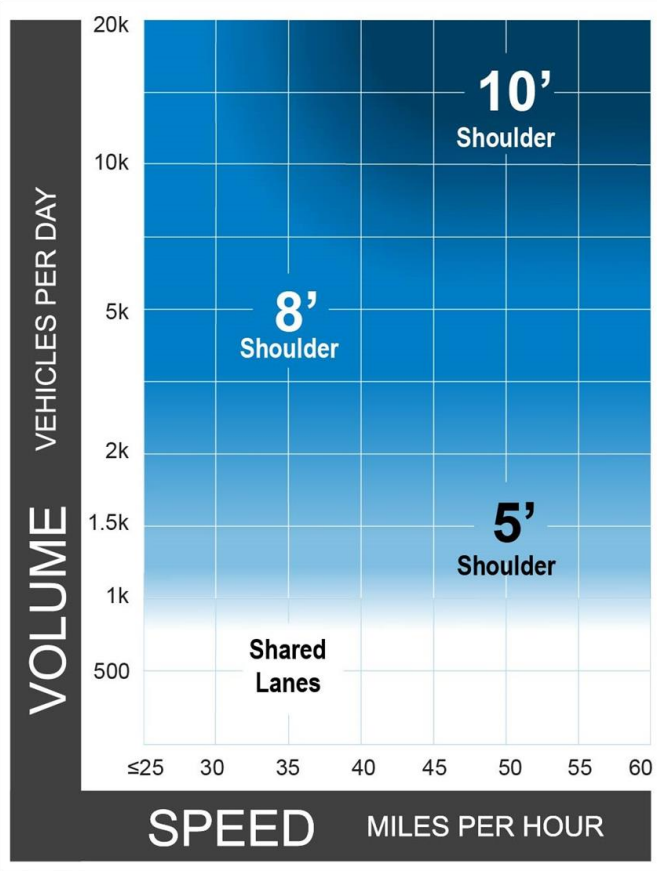
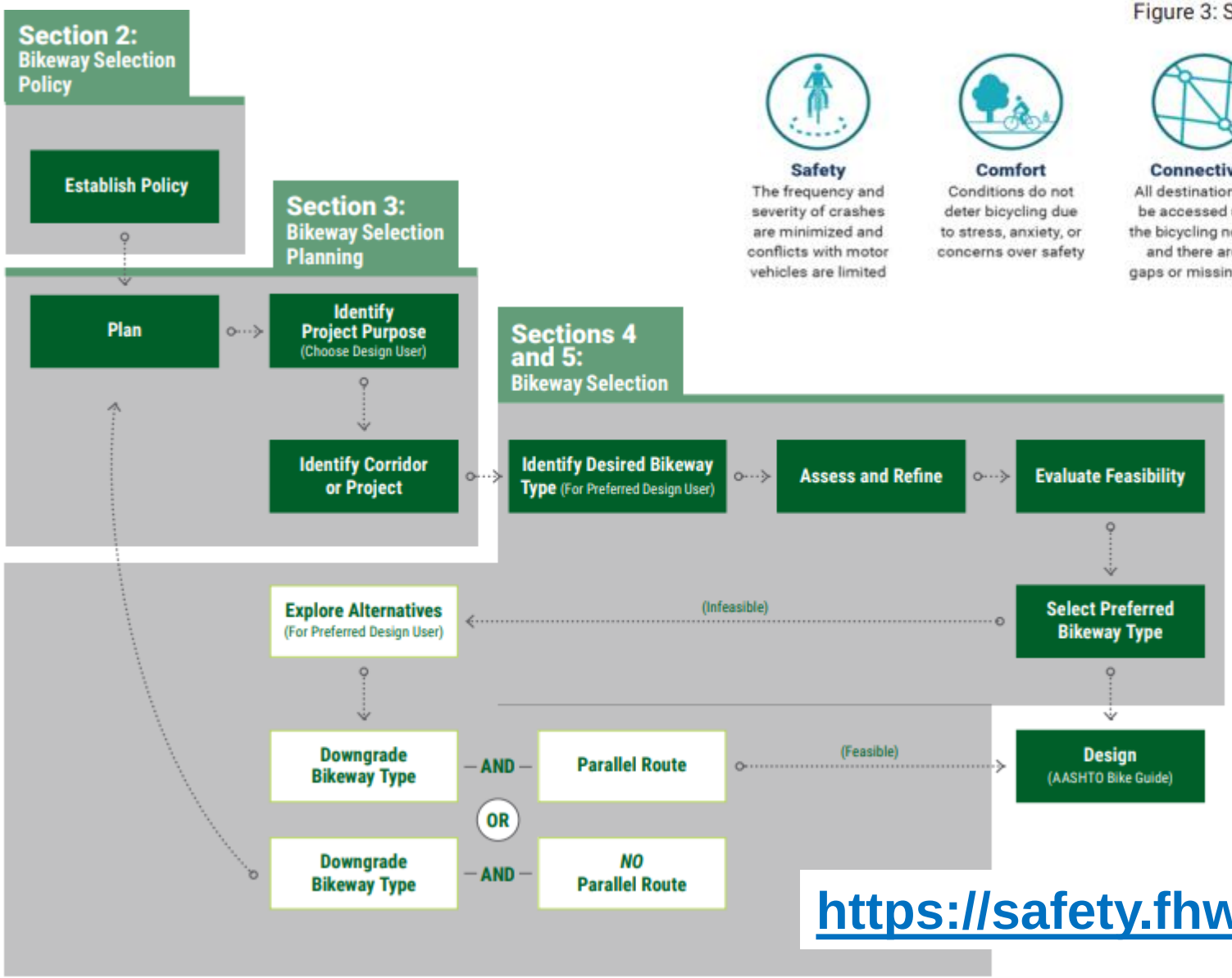
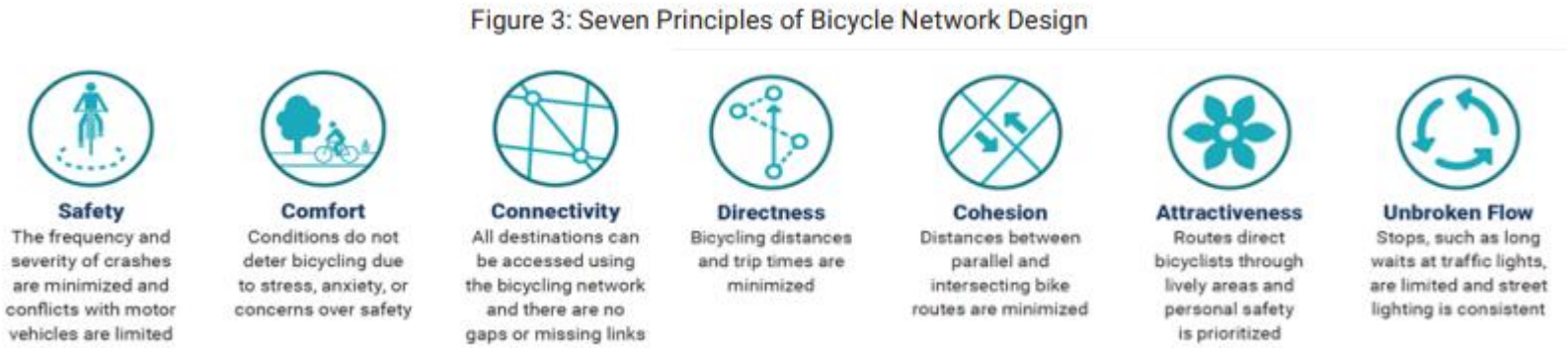
FEBRUARY 2019





FHWA Bikeway Selection Guide





Resources

Bikeway Selection Guide (2019)

Literature Review: Resource Guide for Separating Bicyclists from Traffic (2019)

https://safety.fhwa.dot.gov/ped_bike/tools_solve/

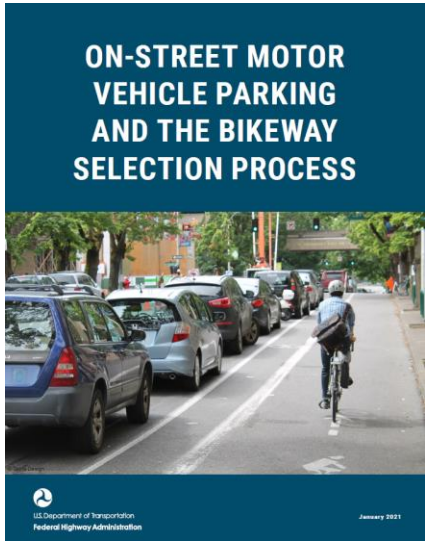
Response to Workshop Feedback

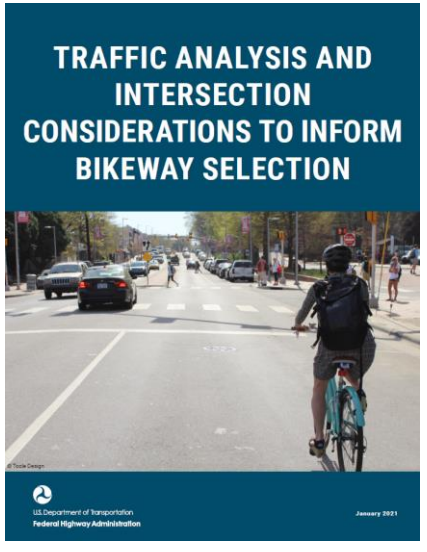
A desire for additional information based upon workshop feedback included:

- Bikeways and on-street parking tradeoffs
- Space allocation for bikeways at intersections with all other modes

Bikeway Selection Supplemental Resources

Resources:
https://safety.fhwa.dot.gov/ped_bike/tools_solve/





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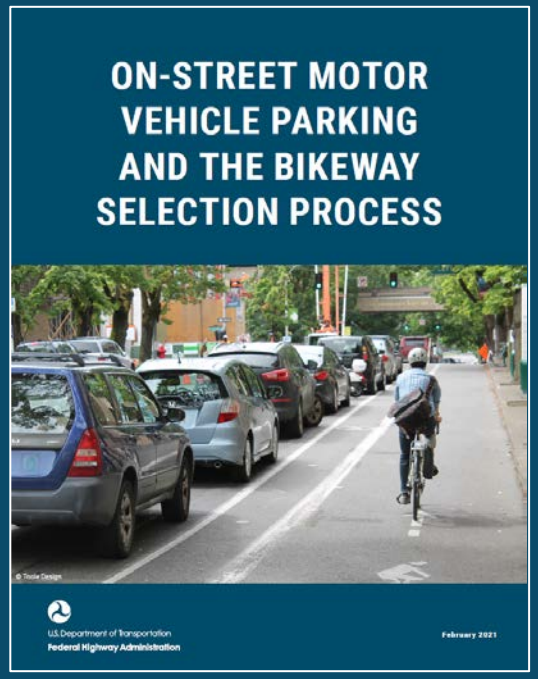
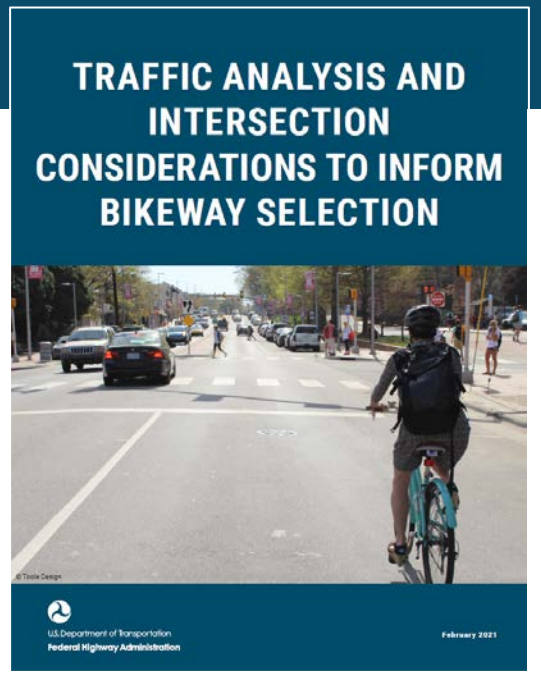
Bikeway Selection Guide Supplemental Resources





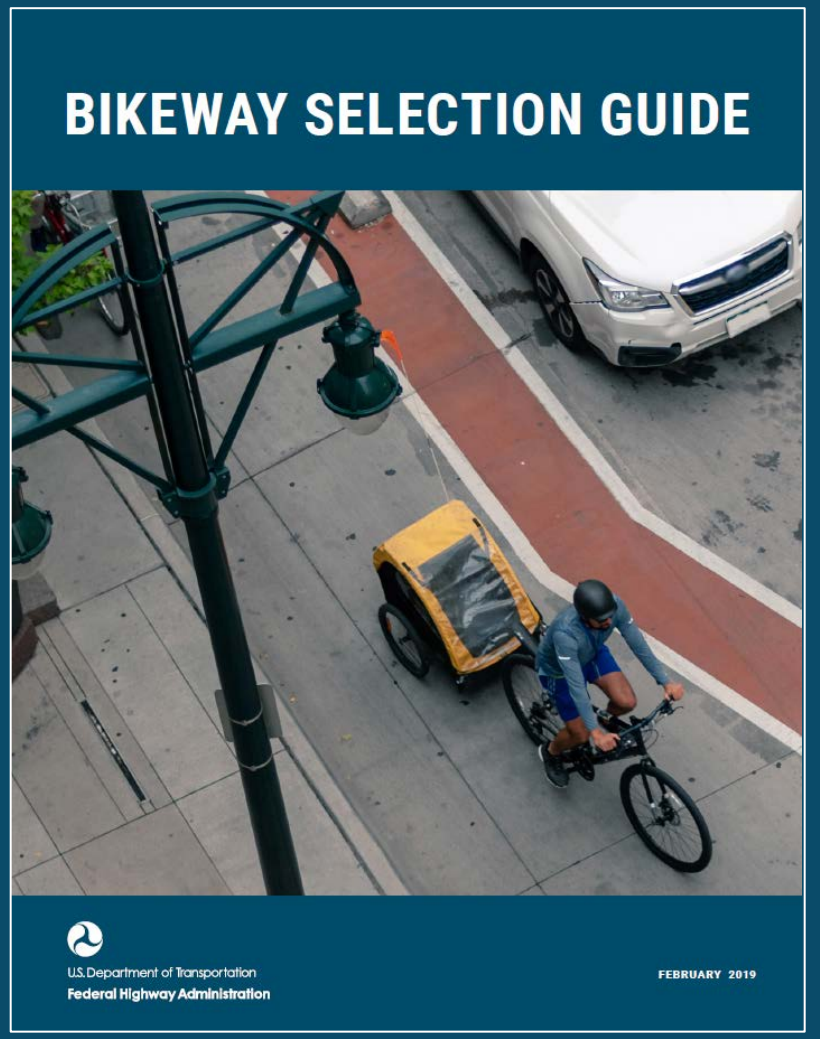
The Basics of Bikeway Selection at Intersections and with Parking

April 7, 2021

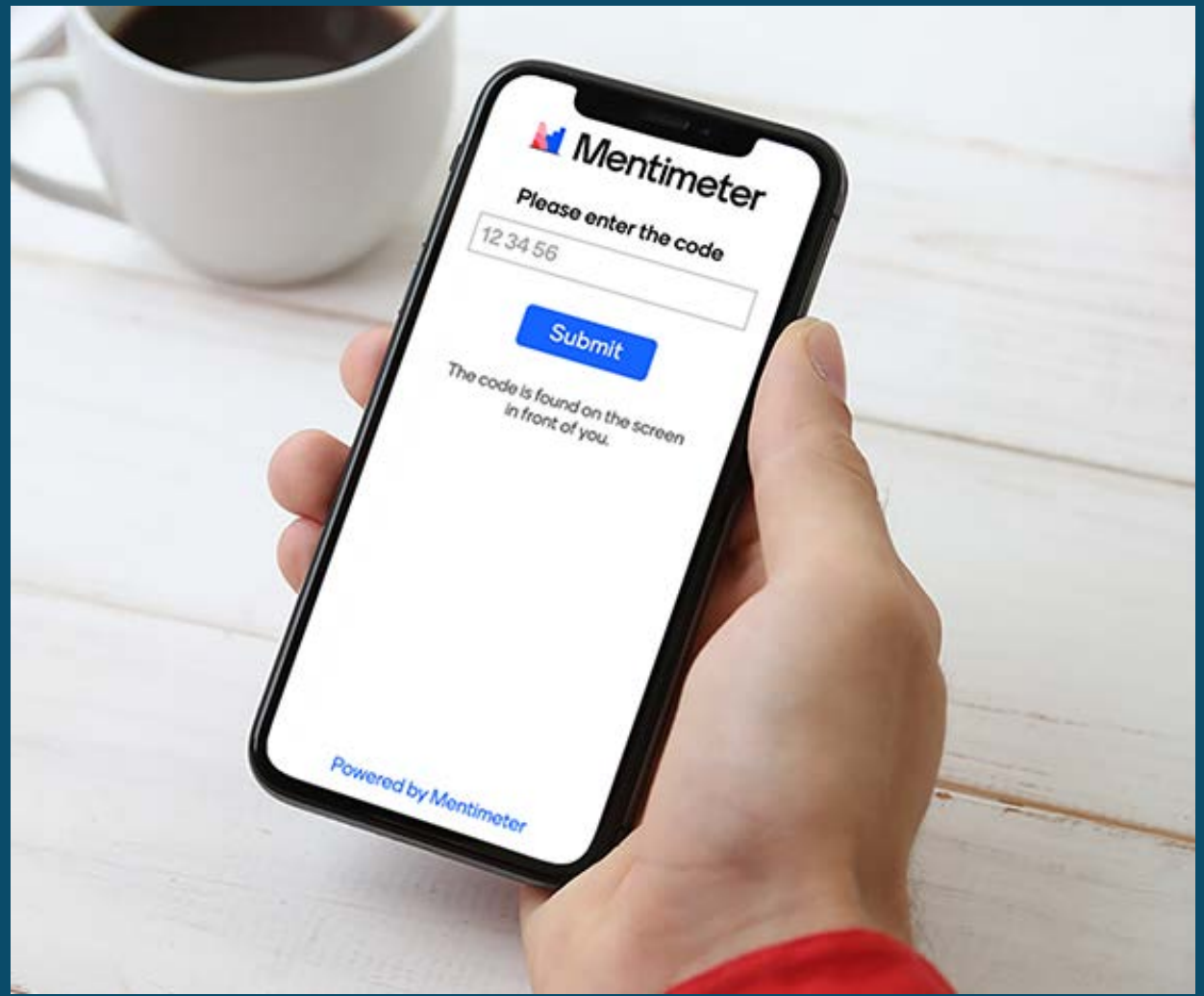
U.S. Department of Transportation
Federal Highway Administration

Introduction and Background Context

- *Bikeway Selection Guide* published in February 2019
- Bikeway selection workshops held throughout the U.S. in 2019-2020
- At workshops, we heard two clear requests for additional information:
  - Bikeway and on-street parking tradeoffs
  - Space allocation for bikeways at intersections



How to Use Mentimeter



1. Grab your phone or open a new tab on your computer browser
2. Go to www.menti.com
3. Enter the code

39 97 94 32

Go to www.menti.com and use the code 3997 9432

In your community, what are the biggest challenges when attempting to balance on-street parking needs and goals for a connected bike network?

Mentimeter

4

Parking Resource

U.S. Department of Transportation
Federal Highway Administration

ON-STREET MOTOR VEHICLE PARKING AND THE BIKEWAY SELECTION PROCESS

U.S. Department of Transportation
Federal Highway Administration

February 2021

On-Street Parking and Bikeway Types

Parking Types:

- Reverse Angle-In
- Parallel
- Head-In Angled

Bikeway Types:

- Shared Lane
- Bike Lane
- One-way Separated
- Two-way Separated

Parking Types

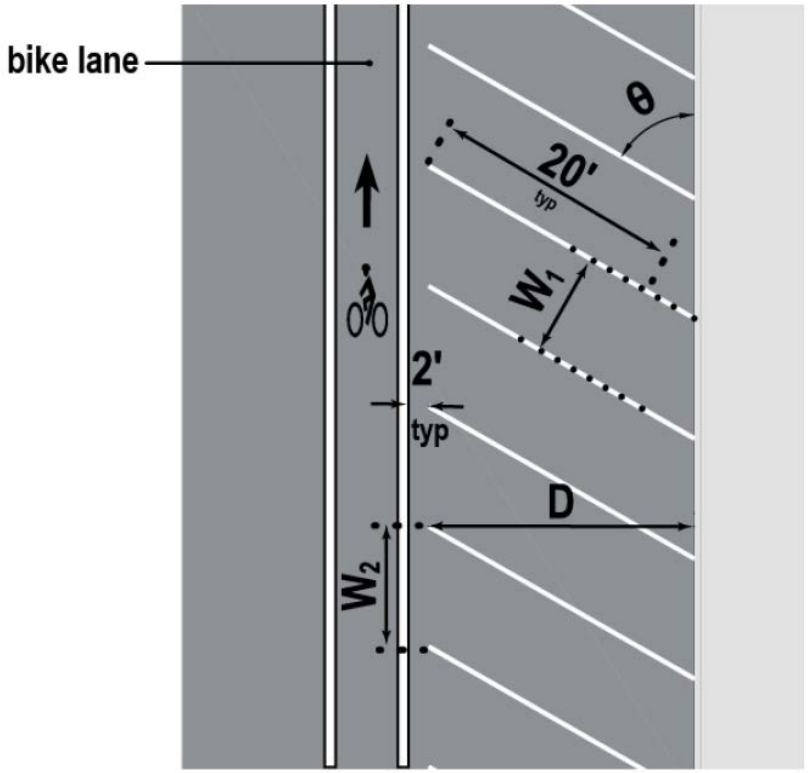
- Dimensions
- Safety Considerations
- Parking Maneuver Considerations
- Loading, Unloading, and Deliveries

Reverse Angle-In

Parallel

Head-In Angled

Design Criteria



Source: FHWA

Back in Angle Parking			
θ (Degrees)	W_1 (feet)	W_2 (feet)	D (feet)
0°	7–10	20	7–10
30°	8–9	16–18	16.9–17.8
45°	8–9	11.3–12.7	19.8–20.5
60°	8–9	9.2–10.4	21.3–21.8

W_1 = stall width

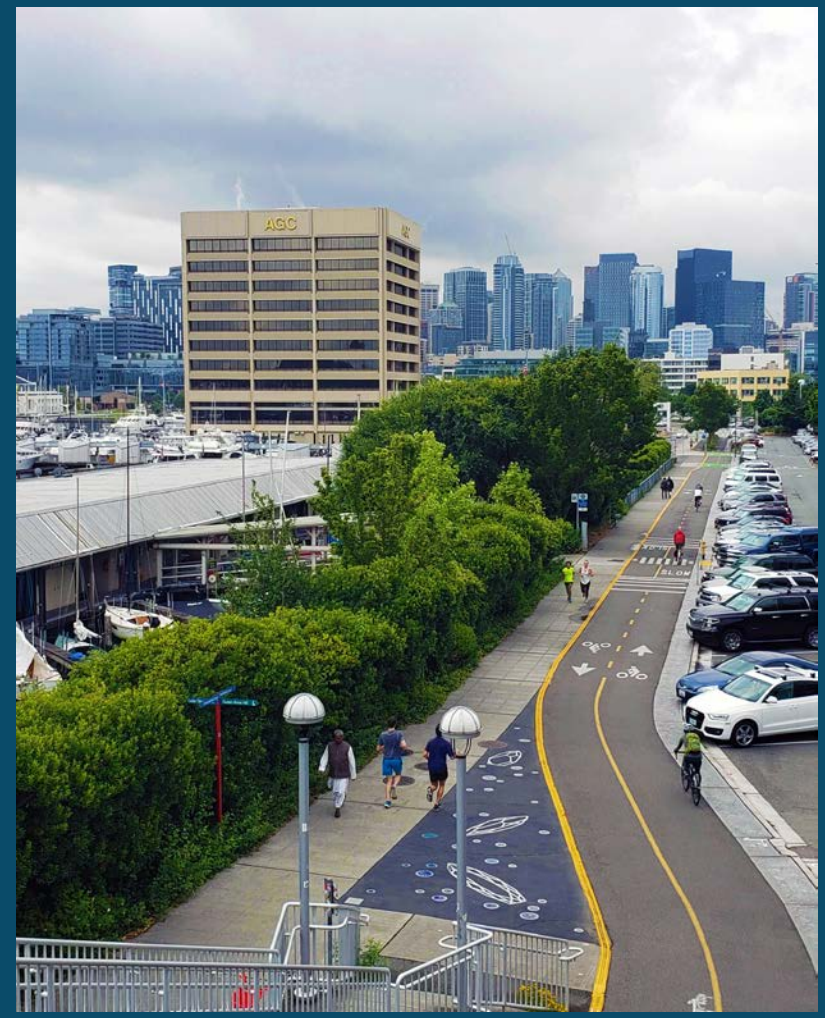
W_2 = striping width

D = depth to face of curb

θ = angle

Considerations

- Benefits and costs
- Flexible solutions
- Connecting people with disabilities to the sidewalk
- Options for reallocating space from on-street parking
- Equity and inclusion



Bikeway Types

- Shared lane
- Bike lane
- One-way separated bike lane
- Two-way separated bike lane

Shared Lane

Bike Lane

One-Way Separated Bike Lane

Two-Way Separated Bike Lane

Dimensions and Considerations

One-Way Separated Bike Lane Widths Based on Existing or Anticipated Volumes

Peak Hour Directional Bicyclist Volume	One-Way Separated Bike Lane Width (ft)		
	Between Vertical Curbs	Adjacent to One Vertical Curb	Between Sloped Curb or at Sidewalk Level
<150	6.5 - 8.5	6 - 8	5.5 - 7.5
150-750	8.5 - 10	8 - 9.5	7.5 - 9
>750	≥10	≥9.5	≥9
Constrained Condition*	4.5	4	3.5

*Peak Hour Directional Bicyclist Volume not applicable

Two-Way Separated Bike Lane Widths Based on Existing or Anticipated Volumes

Peak Hour Directional Bicyclist Volume	Preferable Two-Way Bike Lane Width (ft)		
	Between Vertical Curbs	Adjacent to One Vertical Curb	Between Sloped Curb or at Sidewalk Level
<150	10 - 12	9.5 - 11.5	9 - 11
150-350	12 - 16	11.5 - 15.5	11 - 15
>350	≥16	≥15.5	≥15
Constrained Condition*	8.5	8	7.5

*Peak Hour Directional Bicyclist Volume not applicable

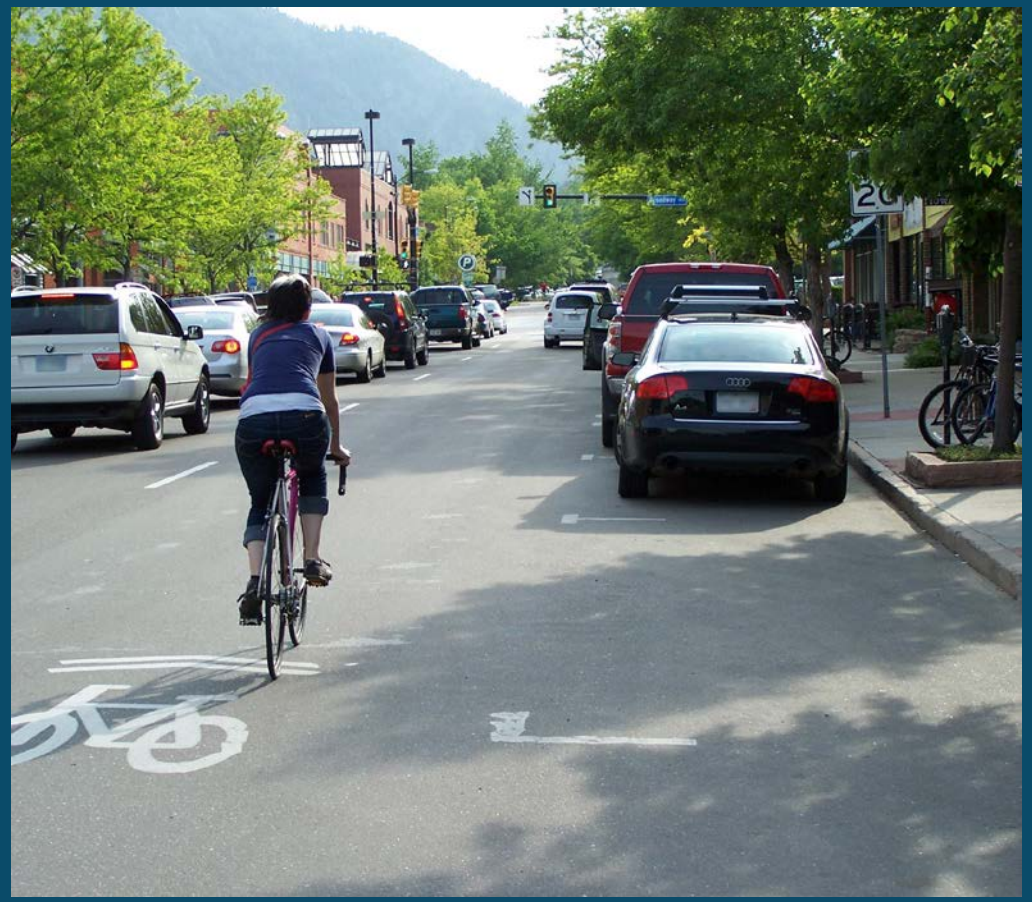
Options

- Enhancing bicyclist comfort and safety
- Reallocating space from on-street parking
  - Intermittent reductions
  - Converting type
  - Reallocating capacity
  - Parking management strategies
  - Hybrid

Bikeway	Spatial Impact	Additional Options to Enhance Experience
Shared Lanes	None	• Traffic calming to manage speed • Traffic diversion to lower volumes • Shared lane markings
Conventional Bike Lanes	10-12 feet	• Green color in bike lanes
Buffered Bike Lanes	12 – 16+ feet of space	• Green color in bike lanes
One-Way Separated Bike Lanes	12 – 16+ feet of space	• Vertical barriers • Green color in bike lanes • Protected intersections • Phase separation at signals
Two-Way Separated Bike Lane (one side of street)	10 feet (constrained) 12+ feet	• Vertical barriers • Green color in bike lanes • Protected intersections • Phase separation at signals

Bikeway Assessment Strategies

1. Assessing tradeoffs at the cross-section level
2. Adjusting on-street motor vehicle parking to better accomplish complete streets goals
3. Strategically reducing parking to improve safety



Assessing Tradeoffs at the Cross-section Level

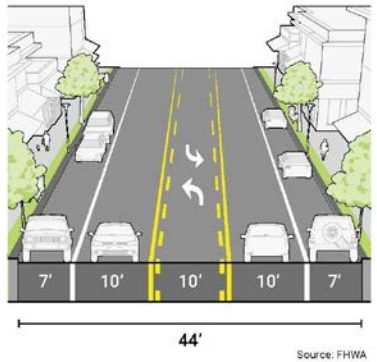
- Data driven decisions
- Questions to discuss in the planning process
- Trade-off considerations

Bikeway Assessment Strategies

The following pages describe strategies for using these factors and decision points when assessing options and trade-offs. The first strategy focuses on decision points and considerations at the cross-section level. The second strategy discusses ways that on-street parking can be used proactively to accomplish other complete streets goals. The third strategy focuses on opportunities to implement small adjustments to existing on-street parking, while still generally maintaining parking along the corridor.

Strategy 1: Assessing Tradeoffs at the Cross-section Level

This Main Street, with locally-owned storefront retail on both sides, generates significant pedestrian activity and has high loading, delivery, and parking demand. The center-turn lane services intermittent driveways. Unsafe motor vehicle passing movements occur occasionally in the continuous center-turn lane. Pedestrian crossing demand is high at intersections and mid-block locations due to the block length, mid-block bus stops, retail distribution, and on-street parking. Bicyclists are concerned about their safety and avoid this street. Despite the presence of off-street parking facilities in the vicinity, the public perceives a parking shortage and many believe that the on-street parking is critical to the success of the retail. The Main Street is controlled by the State Department of Transportation, but is operated and maintained by the local transportation agency. Note that in this existing condition and in the options presented at right, buses and freight might need 11-foot lanes.

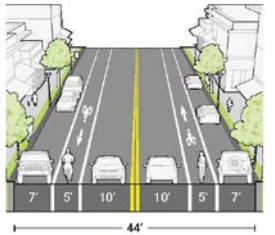


Source: FHWA

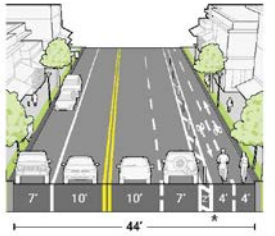
The table below outlines key data-driven decisions and questions to be discussed as part of the planning process.

Data Driven Decisions	Questions to Discuss in the Planning Process
What is the Average Annual Daily Traffic (AADT) on this street and what do the 15 minute, hourly, daily, and seasonal peaks look like?	Is there excess capacity on the street or within the network? If not, can existing capacity be managed or reduced?
What is the percent occupancy of on-street parking spaces and the frequency of parking turnover?	Who is using the parking and for how long - customers, employees, delivery vehicles? How is it managed or regulated?
Have any customer surveys been completed to assess how people are getting to the various stores?	To what extent is customer reliance on the on-street parking real or perceived? How does retailer opinion compare to customers?
How many driveways and intersections exist along the corridor?	What are the safety and operational dynamics today caused by turning vehicles? Can movements be managed or relocated?
How often are drivers and pedestrians using the center turn lane today?	Are there locations with a center turn where there is no demand? Where do pedestrians cross? How are drivers using the center turn lanes? Are they being used to pass other vehicles?
Is there relevant qualitative and observational data that should be considered?	What is generating pedestrian crossings away from intersections? Are crossing islands viable at 400 foot intervals?
What are the motor vehicle speed profiles - 50th, 85th 95th? How many drivers exceed speed limit during which time periods?	Is speeding a significant issue?
What crashes have occurred along the roadway in recent years?	How much can we discern about the circumstances of the crash based on available data?
Are accessible parking spaces available and connected to the sidewalk?	Are individuals with disabilities utilizing the existing parking?

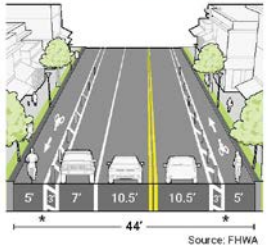
OPTION A **Implement a road diet, or space reallocation, keep on-street parking on both sides, and add bike lanes in both directions.**



OPTION B **Implement a road diet, or space reallocation, keep on-street parking on both sides, and add a two-way separated bike lane on one-side.**



OPTION C **Implement a road diet, or space reallocation, remove on-street parking on one side, and add a one-way separated bike lane on both sides.**



Source: FHWA

Trade-Off Considerations

1. Eliminating the center-turn lane is likely feasible if there are fewer than 100 vehicles per hour using it. A gap analysis can be conducted and access control/management can be considered to consolidate driveways and encourage left turns at intersections. It may be possible to replace the continuous center-turn lane with dedicated left-turn pockets at select locations.
2. The elimination of the center-turn lane could lead to some amount of additional congestion, but this may only be for a short time in the AM and PM peak and it could improve safety for everyone by slowing speeds.
3. Providing bike lanes could impact the ability to provide other beneficial roadway design features such as pedestrian crossing islands at midblock locations and curb extensions.
4. Driveways and intersections will cause drivers to turn across the path of bicyclists in the bike lanes. It may be necessary to eliminate on-street parking spaces near driveways and intersections to ensure adequate visibility.
5. The on-street parking may contribute to a dooring concern for bicyclists in the bike lanes, especially if there is high parking turnover.
6. On-street parking is maintained on both sides of the street at the expense of a higher quality bikeway.
7. A bike lane may not meet the needs of all ages and abilities so this could remain a gap in the low stress network even after this change.

Trade-Off Considerations *(Applies: 1, 2, 3, 4)*

8. Measures should be taken to ensure that drivers don't attempt to enter the separated bike lane.
9. People with disabilities must be able to safety and conveniently cross the separated bike lane to access the on-street parking and the sidewalk.
10. On-street parking is maintained on both sides and a high-quality bikeway is provided.
11. The two-way operation of the separated bike lane in this option may present increased risk as compared to the one-way separated bike lanes in Option C below.
12. Special planning and design attention will be needed to ensure adequate transitions at termini and safe intersection operations given that bicyclists will be traveling on the same side but in an opposite direction as motor vehicles. Provisions need to be made for bicyclists to turn at intersections (right way cyclists have hard time turning left, contraflow cyclists have hard time turning right).
13. If there are destinations on both sides of the street, bicyclists may not be able to conveniently access everything.
14. Roadway design will contribute to a low stress bike network by providing a bikeway that is physically separated from motor vehicle traffic by vertical elements and a horizontal buffer.

* Constrained roadway, not preferred dimension

Trade-Off Considerations *(Applies: 1, 2, 3, 4, 9, 14)*

15. Drivers may execute U-turns in order to access on-street parking on the other side of the street, which could create potential conflicts with all road users.
16. Parking occupancy, frequency of turnover, and customer surveys may indicate that on-street parking on one side can be eliminated.
17. A high-quality bikeway is provided at the expense of some amount of customer convenience.
18. Eliminating on-street parking removes a physical barrier (when there are parked cars) between bicyclists and the travel lane.
19. One-way bike operations will make driveways, intersections, and transitions more intuitive and straightforward.
20. Separated bike lanes on both sides will maximize bicyclist access to destinations along the entire corridor.

* Constrained roadway, not preferred dimension

U.S. Department of Transportation
Federal Highway Administration

Adjusting On-Street Motor Vehicle Parking to Better Accomplish Complete Streets Goals

- Swap parallel parking with bike lane to provide a Separated Bike Lane
- Creating space for bike and micromobility parking
- Organizing street elements
- Parklets and outside seating

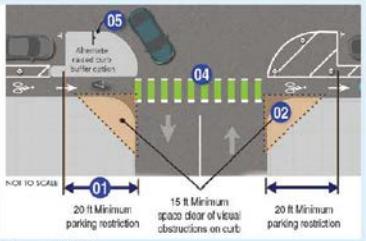



Adjusting On-Street Motor Vehicle Parking to Better Accomplish Complete Streets Goals

- Providing accessible parking and improving pick-up and drop-off conditions
- Providing better bus stop accommodations
- Commercial loading and shared mobility pick-up and drop-off

Strategically Reducing Parking to Improve Safety

- Daylighting Mid-Block Pedestrian Crossings
- Increasing Visibility of Bicyclists in Separated Bike Lanes
- Improved Intersection Design

Toolbox	Discussion	Example and/or Resource
Daylighting Mid-Block Pedestrian Crossings	**Action:** Remove selected motor vehicle parking spaces in advance of a pedestrian crossing to improve visibility at the crossings **Tradeoff:** On-street motor vehicle parking capacity along corridor is reduced **Benefit:** Improved pedestrian safety **Discussion:** Reducing on-street parking in advance of a mid-block crossing is recommended to enhance visibility of pedestrians crossing the street. The no-parking area near an intersection is typically 20 ft. from crosswalks and 30 ft. from stop signs. This parking reduction can be done in combination with curb extensions, delineator posts, signs, and other treatments. In many cases this strategy simply involves enforcing parking laws that are already in place. Enforcement may mean striping out no parking areas around crossings and this doesn't necessarily require police enforcement.	 © Toole Design
Increasing Visibility of Bicyclists in Separated Bike Lanes	**Action:** Remove selected motor vehicle parking spaces in order to improve visibility of bicyclists in Separated Bike Lanes **Tradeoff:** On-street motor vehicle parking capacity along corridor is reduced **Benefit:** Improved bicyclist safety **Discussion:** Strategic parking reductions at intersections can improve visibility of bicyclists and pedestrians for drivers turning onto and off of perpendicular streets and driveways. Parking should be prohibited 20-50 feet from an intersection depending on factors such as motor vehicle speed and sight distance.	 Source: FHWA[5]
Improved Intersection Design	**Action:** Remove selected motor vehicle parking spaces in order to improve intersection design and operations **Tradeoff:** On-street motor vehicle parking capacity along corridor is reduced **Benefit:** Improved intersection safety for all users **Discussion:** On-street parking can be used in conjunction with separated bike lanes to provide high quality multi-modal intersections. The lane offset created by on-street parking allows fully protected intersection design treatments. Additionally, as above, parking limits are pulled away from the intersection to enhance visibility of bicyclists and pedestrians.	 Source: MassDOT[6]

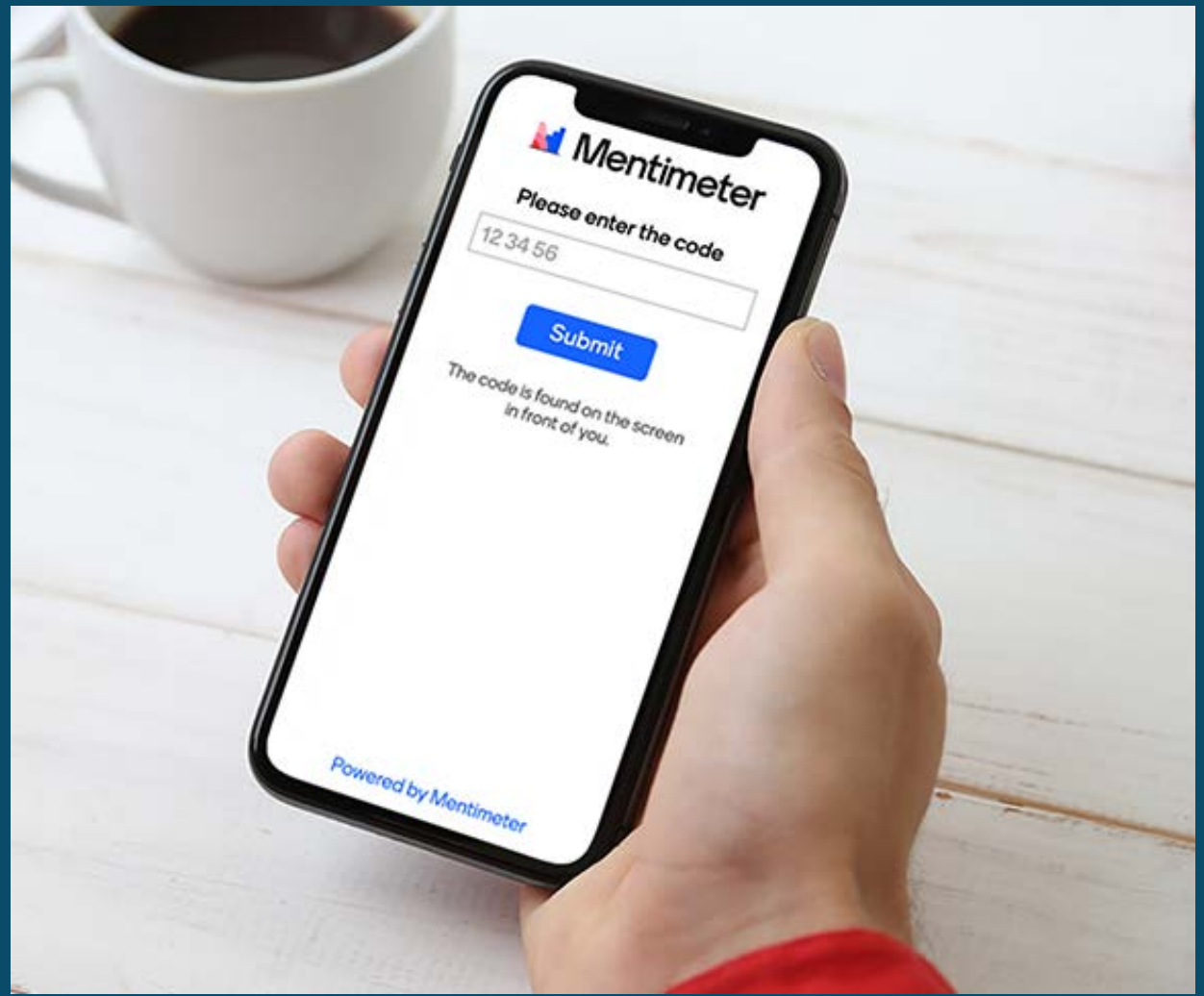
Go to www.menti.com and use the code 3997 9432

In your community, what are the biggest challenges when attempting to balance on-street parking needs and goals for a connected bike network?

Mentimeter

4

How to Use Mentimeter



1. Grab your phone or open a new tab on your computer browser
2. Go to www.menti.com
3. Enter the code

39 97 94 32

Go to www.menti.com and use the code 3997 9432

In your community, what makes intersections one of the major barriers to a fully connected bike network?

Mentimeter

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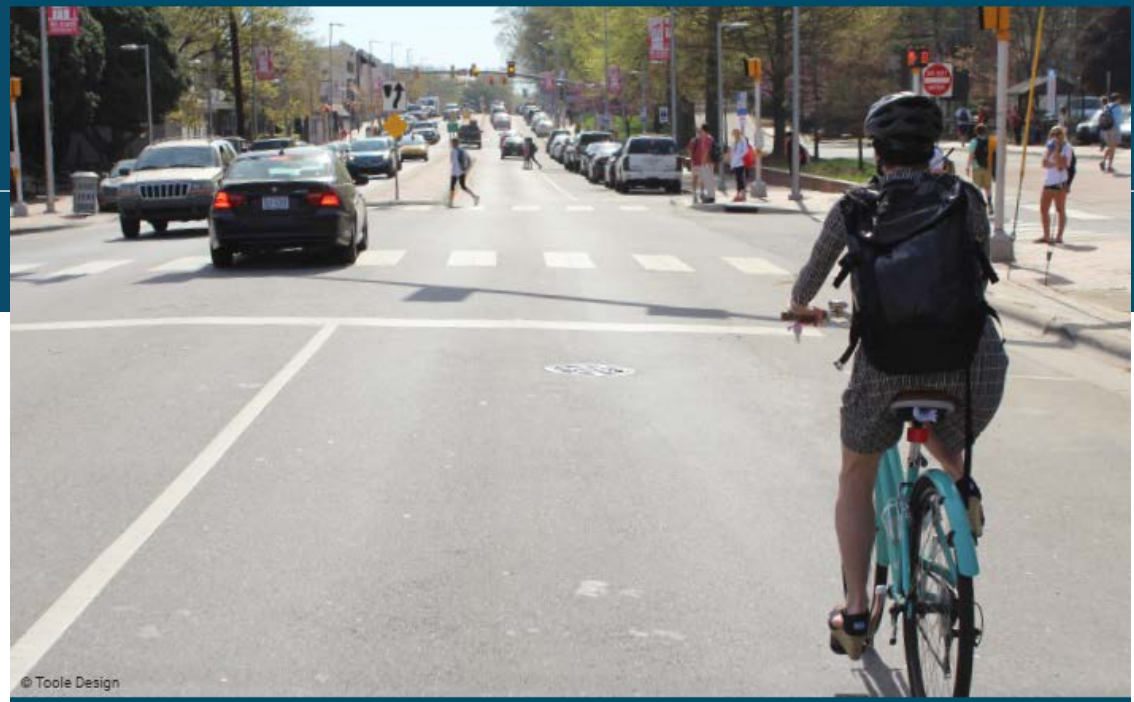
Intersection Resource

U.S. Department of Transportation
Federal Highway Administration

TRAFFIC ANALYSIS AND INTERSECTION CONSIDERATIONS TO INFORM BIKEWAY SELECTION

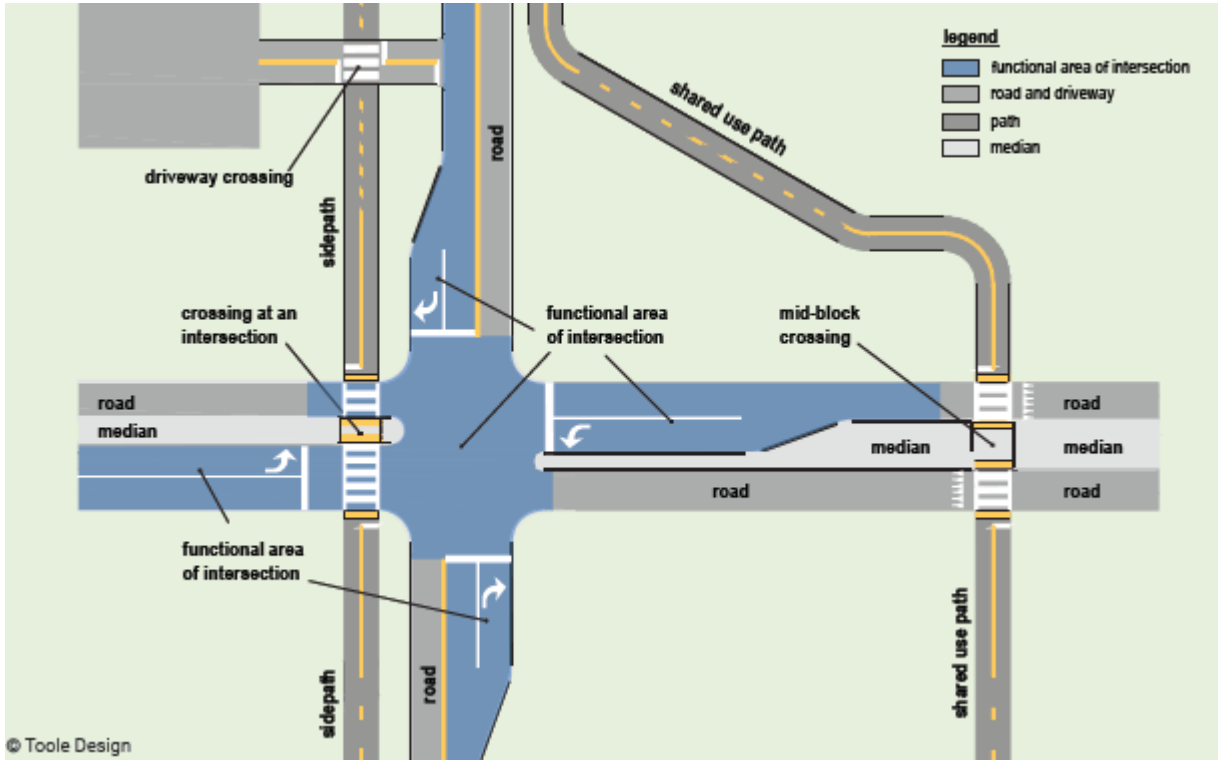


U.S. Department of Transportation
Federal Highway Administration

February 2021

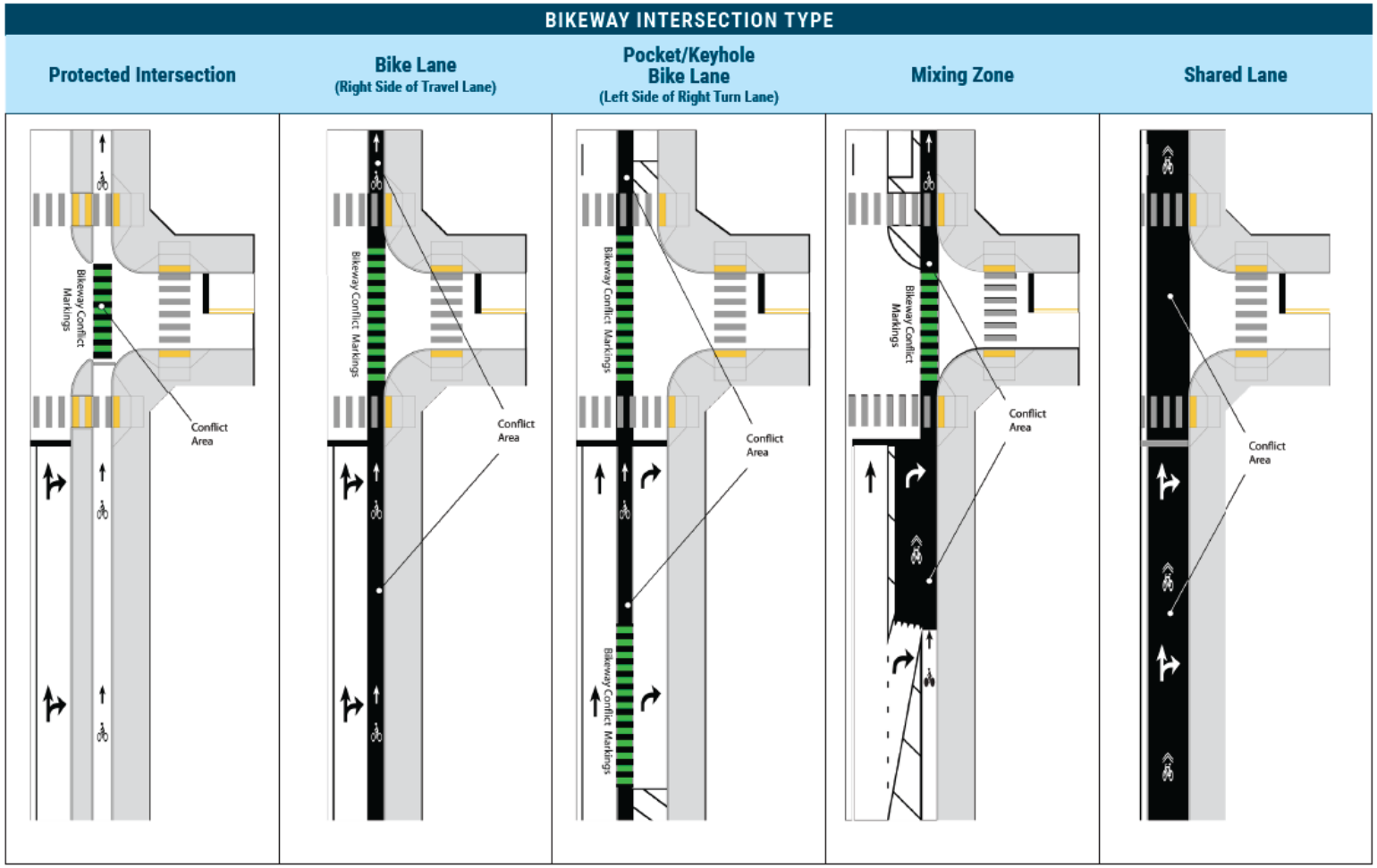
Performance Metrics

- Safety
- Accessibility for pedestrians with disabilities
- Pedestrian and bike quality of service metrics
- Traffic analysis
- Travel time



Functional Area of an Intersection

Spatial Needs by Bikeway Intersection Type



U.S. Department of Transportation
Federal Highway Administration

Source: FHWA

Safety and Equity Focused Design Principles

- Bikeway continuity
- Minimize exposure to conflicts
- Reduce speeds at conflict points
- Clearly communicate right-of-way
- Provide adequate sight distances

Sustainable Safety Considerations for Bikeway Intersection Types

	BIKEWAY INTERSECTION TYPE				
	Protected Intersection	**Bike Lane** (Right Side of Travel Lane)	**Pocket/Keyhole Bike Lane** (Left Side of Right Turn Lane)	**Mixing Zone**	**Shared Lane**
Spatial Considerations					
Bikeway Width	One-way separated bike lane: 6.5′-8.5′ Two-way separated bike lane: 10′-12′ Shared Use Path: 10′-14′	Bike Lane: 4′-7′	Bike Lane: 4′-7′	One-way separated bike lane approach: 6.5′-8.5′ Bike Lane approach: 4′-7′	No designated facility
Street Buffer Width	6′-16′	2′-4′ (applicable for buffered bike lane)	2′-4′ (applicable for buffered bike lanes)	2′-6′ (applicable for approach to the mixing zone for separated bike lanes or buffered bike lanes)	N/A
Length of Approach Exposure	None	None*	Sum of pocket/keyhole bike lane and merge area*	Constrained to merge Area	Unconstrained
Functionality (Comfort) - Roads can be categorized by their function					
Perceived comfort based on separation from traffic and constrained entry/conflict point	High	High to Moderate	Moderate to Low	Moderate to Low	Low
Homogeneity - Roads with vehicles of balanced speeds, directions, and masses are the safest					
Intersection approach exposure to potential motorist conflict	Eliminated	Moderate to High	Moderate to High	Moderate to High	High
Conflict exposure (turning and angle) result generally based upon vehicle speed/volume at intersection	Low to Moderate	Moderate to High	Moderate to High	High	High

* Exposure for users in bike lanes and buffered bike lanes—defined by the lack of vertical separation—along intersection approach is dependent upon vehicle encroachment.

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Sustainable Safety Considerations for Bikeway Intersection Types

	BIKEWAY INTERSECTION TYPE				
	Protected Intersection	**Bike Lane** (Right Side of Travel Lane)	**Pocket/Keyhole Bike Lane** (Left Side of Right Turn Lane)	**Mixing Zone**	**Shared Lane**
Predictability (Right-of-Way) - Roads should be intuitive					
Ability to limit or constrain conflicts along bikeway facility	High	Moderate	Moderate to Low	Moderate to Low	Low
Right-of-way priority between motorists and bicyclists is clarified through the intersection	High**	High to Moderate	Moderate	Low	Low
Forgiveness (Safety) - Infrastructure can be designed to accommodate human error					
Relies upon highly aware motorist and bicyclist behavior to avoid crashes	No	Yes	Yes	Yes	Yes
Bicyclists operate in separated space from vehicles	Yes	Yes, however vehicles can encroach into the facility at any location	Yes, however vehicles can encroach into the facility at any location	Yes, prior to mixing zone; however, vehicles may encroach into facility if it is not separated	No
Awareness (Visibility) - Awareness improves safety for all users					
Level of motorists/bicyclists scanning required to identify bicyclists, and/or motorists approaching from behind or operating beside them	Low to Moderate	High	High	High	High

Traffic Analysis Assumptions and Tips

- ***Volume Projections***
- Future Year
- Growth Rates
- Trip Generation
- Level of Service
- Time Period and Analysis Period
- Network Utilization/Peak Spreading
- Signal Timing Assumptions

- Consider the impacts of "conservative" approach (i.e., higher travel volumes:

Traffic Analysis Assumptions and Tips

- Volume Projections
- ***Future Year***
- Growth Rates
- Trip Generation
- Level of Service
- Time Period and Analysis Period
- Network Utilization/Peak Spreading
- Signal Timing Assumptions

- 5-30 year future condition
- Presumes existing travel behavior will remain the same:
  - Self-fulfilling prophecy
  - Increased maintenance
  - Reduce safety performance until future condition is realized

Traffic Analysis Assumptions and Tips

- Volume Projections
- Future Year
- Growth Rates
- Trip Generation
- ***Level of Service***
- Time Period and Analysis Period
- Network Utilization/Peak Spreading
- Signal Timing Assumptions

- LOS is part of the bigger picture
- Evaluate levels that are "acceptable"

ANALYSIS TIPS:

- For motor vehicle queues, evaluate the 50th-percentile queue in addition to the 95th percentile queue.
- When interpreting results, practitioners should consider whether a LOS F (or other conventional standard) may be acceptable during certain peak hours if other project goals are achieved.

Traffic Analysis Assumptions and Tips

- Volume Projections
- Future Year
- Growth Rates
- Trip Generation
- Level of Service
- ***Time Period and Analysis Period***
- Network Utilization/Peak Spreading
- Signal Timing Assumptions

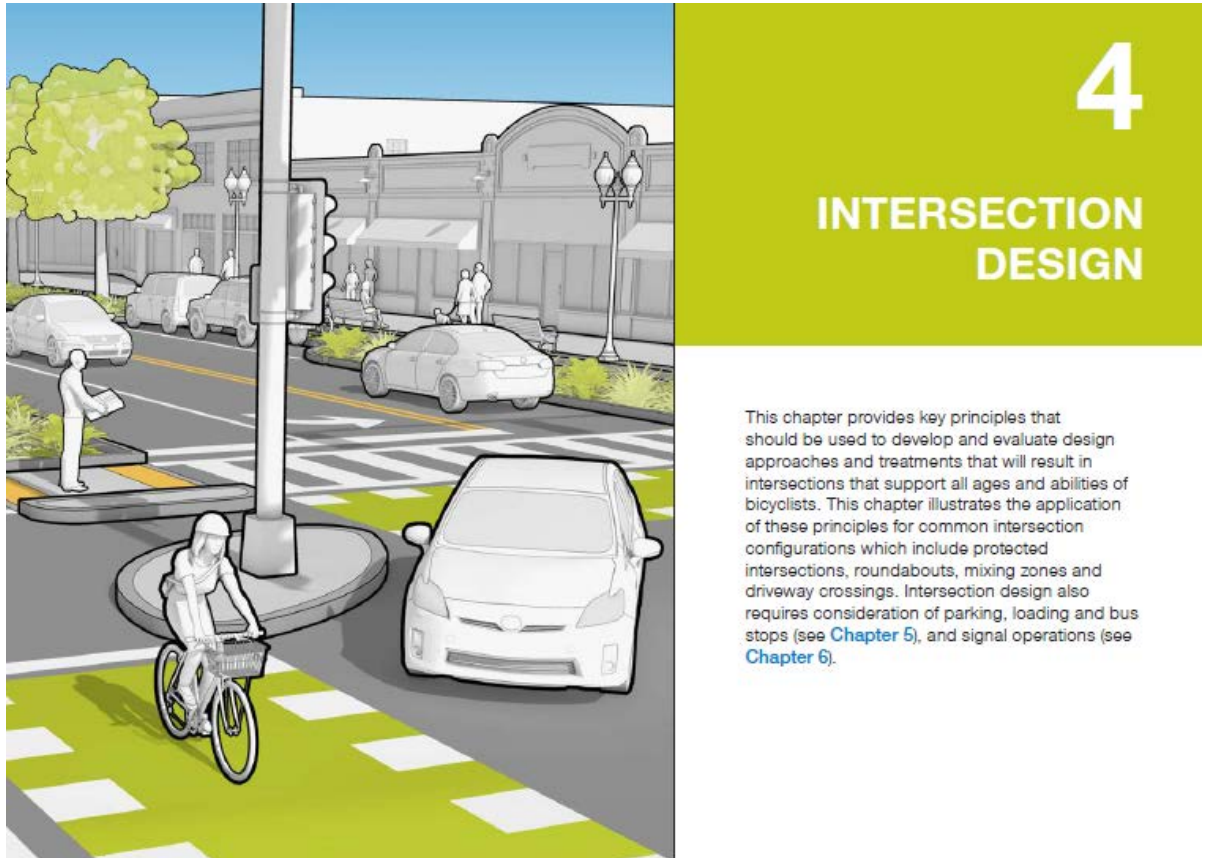
Time Period and Analysis Period

KEY TAKEAWAY People use streets at all hours of the day and night and the use of street varies throughout the entire day; streets should be designed for all day use, not just a single peak hour (or even peak 15- minutes).

ANALYSIS TIPS:

- Use a peak hour factor based on the entire intersection, not specific movements.
- Collect data for a 2-3-hour peak period at a minimum or, ideally, a 24-hour period to understand the demands of the street throughout the day. Consider averaging 2-3-hour peak to analyze an average peak hour.

Intersection Resources



MassDOT, Separated Bike Lane Planning & Design Guide: Chapter 4, Intersection Design

NACTO: Don 't Give Up at the Intersection

Go to www.menti.com and use the code 3997 9432

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Discussion of Key Topics

Can you discuss the extent to which design is addressed as part of these resources?

Discussion of Key Topics

How does the bikeway selection process (and outcomes) intersect with equity?

Discussion of Key Topics

What kind of responses should be expected when discussing bikeways, parking, and intersections?

How do you discuss tradeoffs?

Discussion of Key Topics

In what ways does COVID-19 fit into this conversation on bikeway selection?

Discussion

- ⇨ Send us your questions
- ⇨ Follow up with us:
  - ⇨ Tamara Redmon tamara.redmon@dot.gov
  - ⇨ Lauren Blackburn lblackburn@vhb.com
  - ⇨ Dan Goodman dgoodman@tooledesign.com
  - ⇨ Jared Draper jdraper@tooledesign.com
  - ⇨ General Inquiries pbic@pedbikeinfo.org
- ⇨ Archive at www.pedbikeinfo.org/webinars