# ROAD SAFETY ASSESSMENTS

## FOR LOCALS

Kansas Active Transportation

*Presented by*

**Kansas Local Technical Assistance Program (KS LTAP)**

*Sponsored by*

**Kansas Department of Transportation (KDOT)**

# Training Objective

The objective of this training is to learn how to conduct a local road safety assessment focused on pedestrian and cyclist concerns, exploring safety, accessibility, comfort, and convenience.

# Today's Topics & Agenda

9-9:45AM: Welcome & Introductions

9:45-10:45AM: Background

10:45-11:30AM: RSA Process

11:30AM-12:30PM: Lunch

12:30-1:30PM:  RSA Field Experience

1:30-2PM: Small Group Discussions

2-2:45PM: Large Group Discussions

2:45-3:15PM: Next Steps

3:15-3:30PM: Wrap-up and Evaluation

# Today's Trainers


Lindsay Francis
KS LTAP Director
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Nelda Buckley
KS LTAP Local Field Liaison
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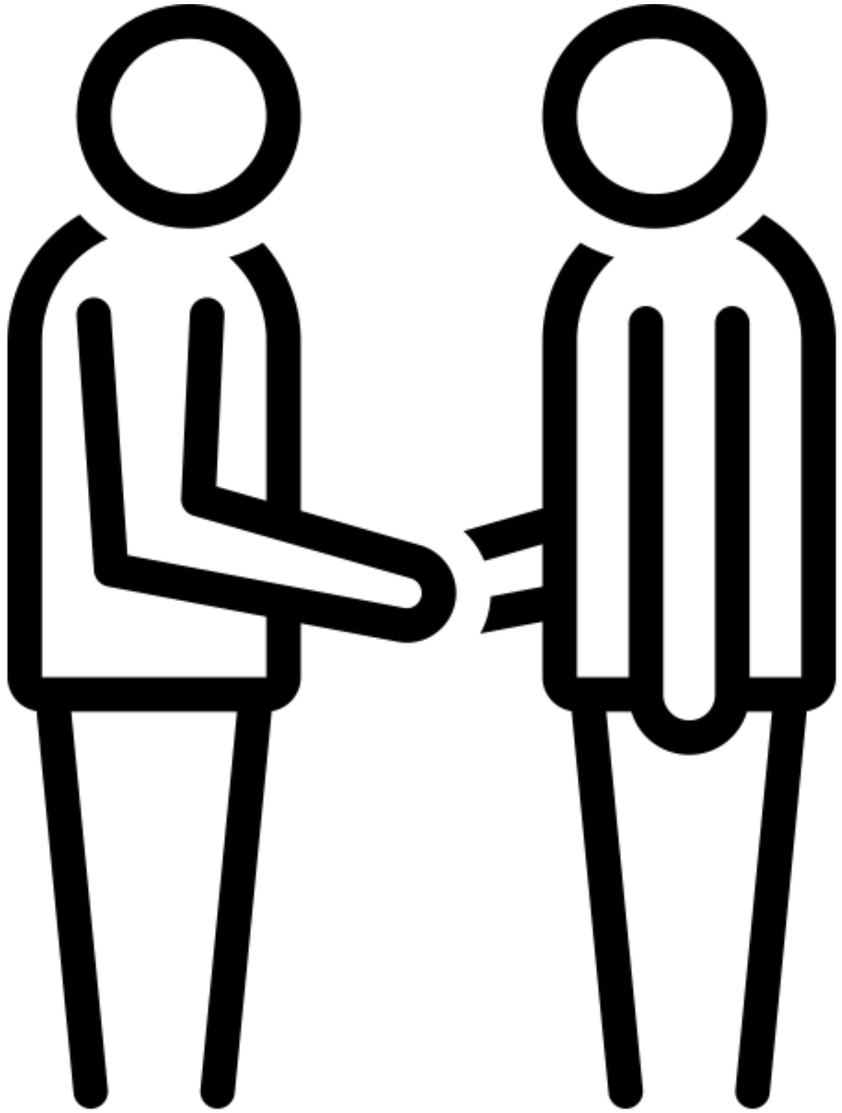
# Rules of Conduct

- For this training and when planning and designing roadways:
  - Avoid stereotyping based on modes of transportation, e.g. witnessing a pedestrian behaving in a way you thought was wrong or dangerous, doesn't mean all pedestrians behave that way and there may be good reasons for the behavior you can't understand, e.g., a woman crosses mid-block to avoid a man she finds threatening
  - Keep in mind, drivers behave poorly and make mistakes all of the time but have the potential to kill someone walking or biking
  - Recognize and respect different perspectives and life choices, including how we transport ourselves either by necessity or choice
  - Acknowledge we are all human and therefore all make mistakes, get distracted, etc.
  - If you see someone making a "bad decision", e.g. crossing mid-block without a crossi consider why they are doing that, e.g. is the next crossing a quarter mile away, is it cold a rainy, is their destination directly across the street, etc.?

# Introductions

- What is your name?
- What do you do?
- What does safety mean to you?
- Have you participated in a RSA before?
- What is your level of walking, biking, rolling?
- What attracted you to this training?



https://youtu.be/k2tOye9DKdQ?si=ak1tkHK_K7TR7iNT

# Zero. The only acceptable number.

# Background

# What is Road Safety Assessment (RSA)?

- What is Road Safety Assessment (RSA)?
  - Assessing the safety of roadways (including sidewalks, cycle lanes, etc.) for both motorists and vulnerable road users, both by reviewing available data and the physical environment

# Purpose of Road Safety Assessment (RSA)?

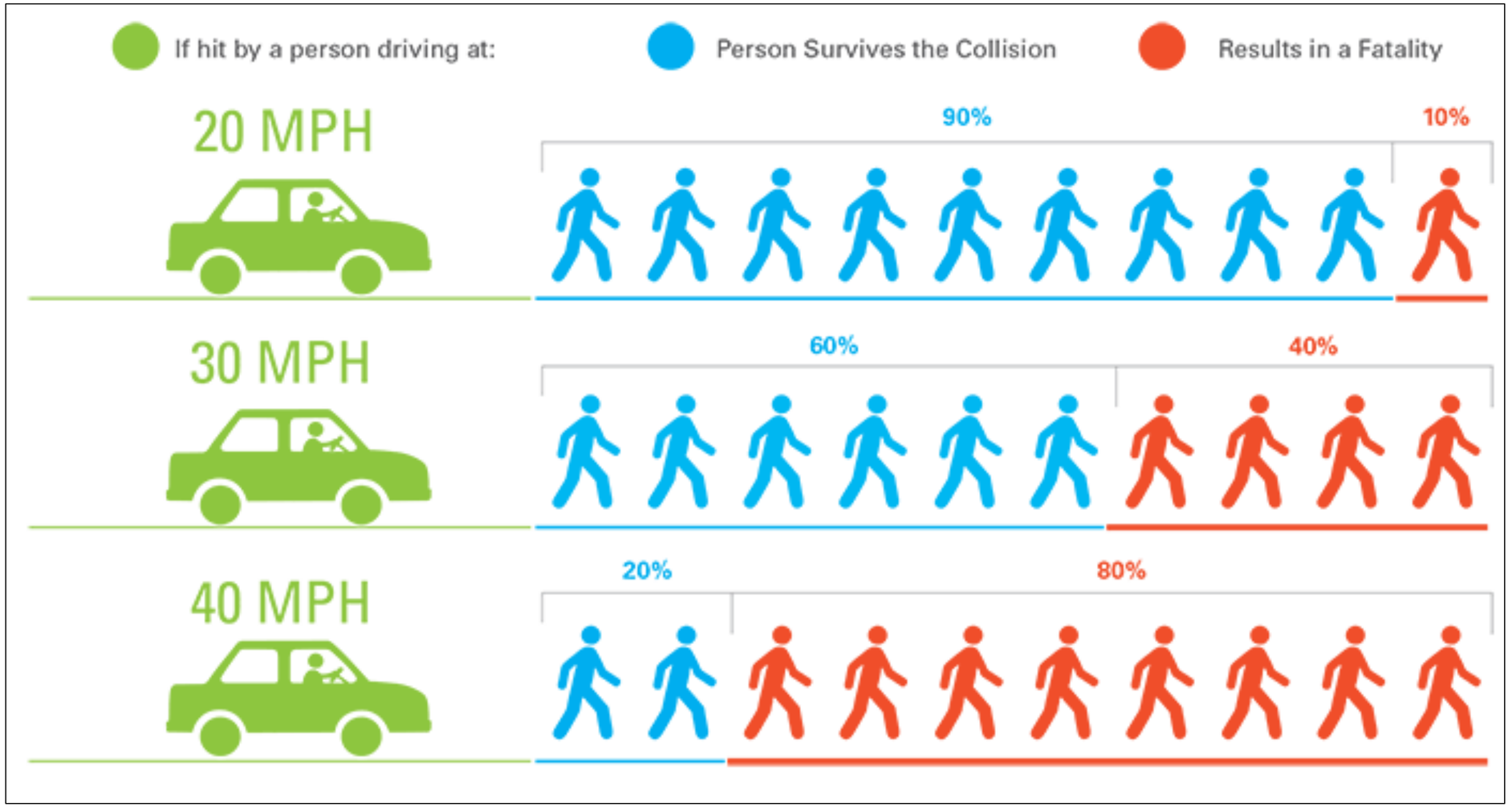
*In Kansas*
*from 2014 to 2021,*
*crashes involving VRUs resulted in*
***269 fatalities** and **790 serious injuries.***

*The associated crash cost equaled*
***$4,250,000,000***

# Purpose of Road Safety Assessment (RSA)/Walk Audit?

- Experience the corridor, intersection, etc., from a variety of perspectives
- Get an idea of how an area “feels” from outside the perspective of an automobile, e.g. does it feel safe, pleasant, inviting?
- Educate participants on proven safety countermeasures in a real-life setting
- Respond to concerns from users or in response to a crash or near-crash
- Experience area from the user perspective prior to applying for funding
- Better demonstrate an understanding of an area, space and physical obstacles (e.g. fences, ditches, retaining walls), risks and potential countermeasures before recommending changes
- For KDOT: determine opportunities prior to survey and design of scheduled road projects, e.g. CCLIP, mill and overlay, heavy preservation, etc.

# Principles of Pedestrian and Bicyclist Safety

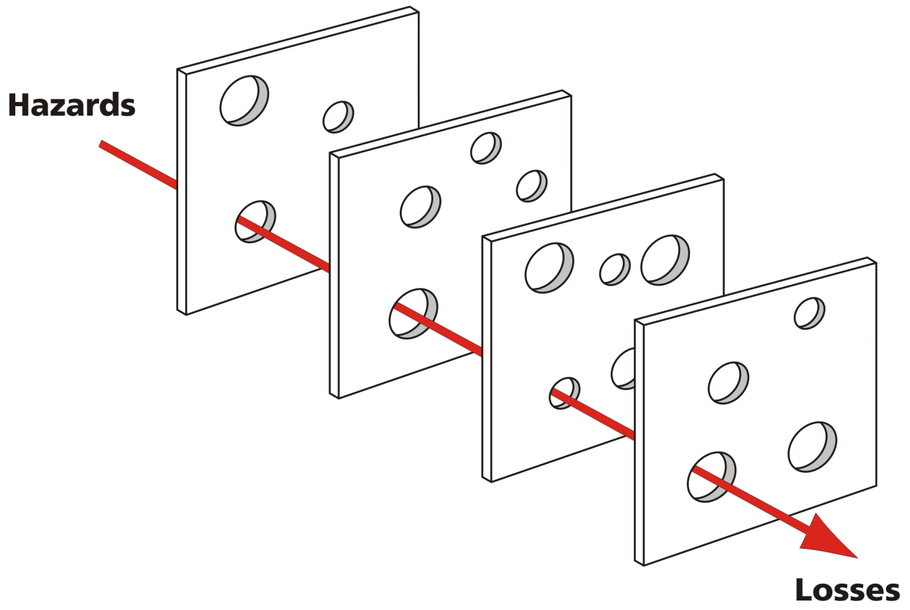


# Safe System Approach

https://www.youtube.com/watch?v=mLRmv5dbIb0

# Safe System Approach

- Six principles of SSA:
  - Deaths and serious injuries are unacceptable
  - Humans make mistakes
  - Humans are vulnerable
  - Responsibility is shared
  - Safety is proactive
  - Redundancy is critical



# Safe System Approach

## THE FIVE ELEMENTS OF THE SAFE SYSTEM APPROACH

### Safe Road Users

The Safe System approach addresses the safety of all road users, including those who walk, bike, drive, ride transit, and travel by other modes.

### Safe Vehicles

Vehicles are designed and regulated to minimize the occurrence and severity of collisions using safety measures that incorporate the latest technology.

### Safe Speeds

Humans are unlikely to survive high-speed crashes. Reducing speeds can accommodate human injury tolerances in three ways: reducing impact forces, providing additional time for drivers to stop, and improving visibility.

### Safe Roads

Designing to accommodate human mistakes and injury tolerances can greatly reduce the severity of crashes that do occur. Examples include physically separating people traveling at different speeds, providing dedicated times for different users to move through a space, and alerting users to hazards and

### Post-Crash Care

When a person is injured in a collision, they rely on emergency first responders to quickly locate them, stabilize their injury, and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.

# Safe System Approach

## *What does this mean for pedestrians and bicyclists?*

The Safe System approach considers the safety of all road users, but particularly those who are most at risk of fatal or serious injury in the event of a crash, such as bicyclists and pedestrians.

Vehicle technology has made crashes more survivable for passengers inside the vehicle. Those same advances have not yet benefited pedestrians and bicyclists to the same degree.

Pedestrians and bicyclists are particularly vulnerable to death or severe injury as vehicular speed increases.

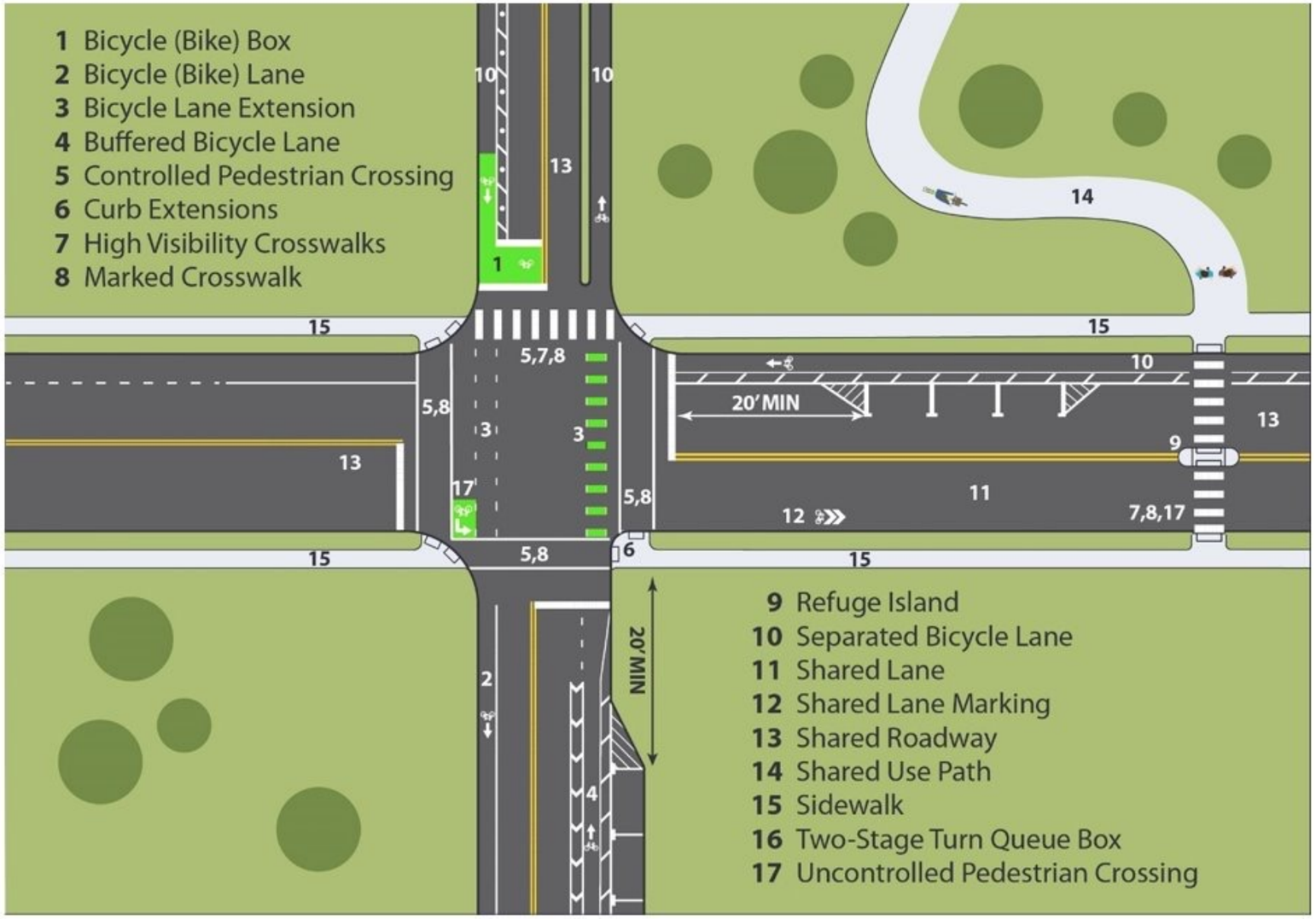
Given their vulnerability to fatal and serious injuries, it is important to separate bicyclists and pedestrians in time and space from vehicles as they have a heavier mass and can travel at greater speeds.

Pedestrians and bicyclists are more likely to be killed or injured in a crash, so post-crash care is even more important to their survival.

# Definitions

- Nominal vs Substantive Safety
  - Nominal Safety is based on design standards
  - Substantive Safety  is based on safety performance

# Definitions /Countermeasures




Source: 2020 FHWA.

# Proven Safety Countermeasures

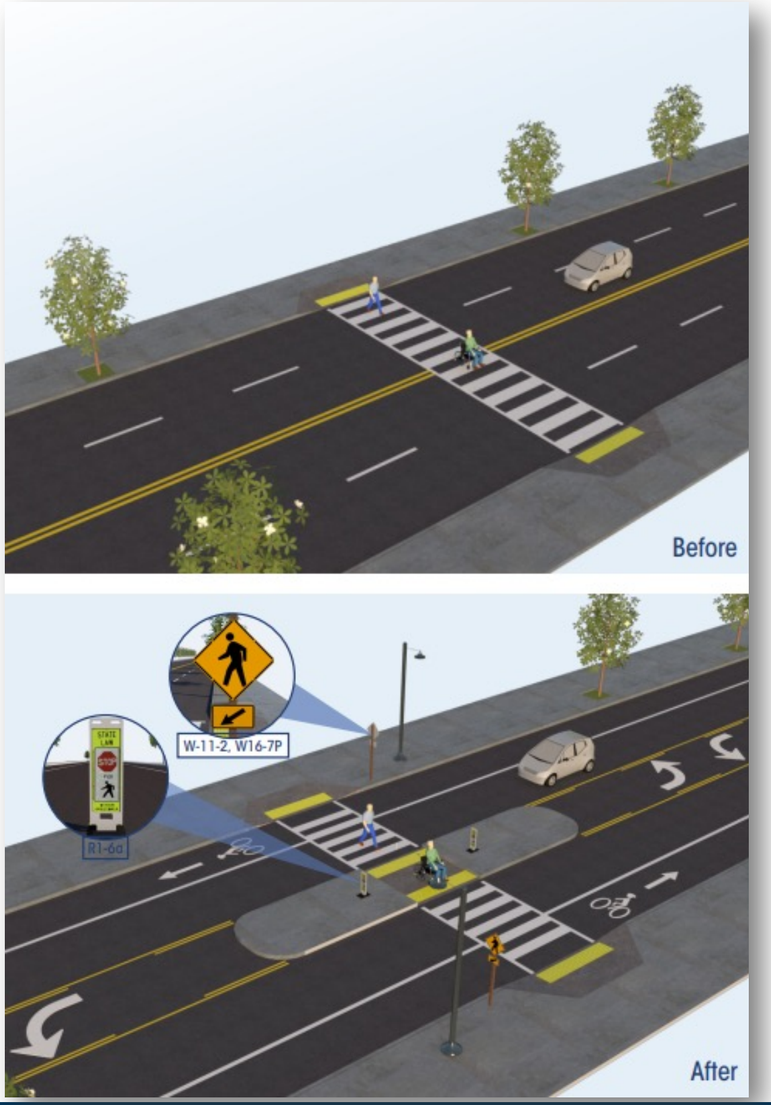
- Categories
  - Speed Management
  - Pedestrian/Bicyclist
  - Roadway Departure
  - Intersections
  - Crosscutting
- See all at: https://highways.dot.gov/safety/proven-safety-countermeasures

# FHWA Safe Transportation for Every Pedestrian (STEP)

- Examples of Countermeasures covered:
  - Crosswalk Visibility Enhancements (Tech Sheet)
    - Can reduce crashes by 23-48%
  - Pedestrian Hybrid Beacon (Tech Sheet)
    - Can reduce pedestrian crashes by 55%
  - Raised Crosswalk (Tech Sheet)
    - Can reduce pedestrian crashes by 45%
  - Road Diet (Tech Sheet)
    - Can reduce total crashes by 19-47%*

    *19% in urban areas. 47% in suburban areas.
  - Rectangular Rapid-Flashing Beacon (Tech Sheet)
    - Can reduce pedestrian crashes by 47%

- STEP Studio: user-friendly step-by-step guide to selecting appropriate countermeasures



# FHWA Safe Transportation for Every Pedestrian (STEP)

| Roadway Configuration | Posted Speed Limit and AADT | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vehicle AADT <9,000 | | | | | | Vehicle AADT 9,000–15,000 | | | | | | Vehicle AADT >15,000 | | | | | |
| | ≤30 mph | | | 35 mph | | | ≥40 mph | | | ≤30 mph | | | 35 mph | | | ≥40 mph | | | ≤30 mph | | | 35 mph | | | ≥40 mph | | |
| **2 lanes** (1 lane in each direction) | ❶ | 2 | | ❶ | | | ① | | | ❶ | | | ❶ | | | ① | | | ❶ | | | ① | | | ① | | |
| | 4 | 5 | 6 | | 5 | 6 | | 5 | 6 | 4 | 5 | 6 | | 5 | 6 | | 5 | 6 | 4 | 5 | 6 | | 5 | 6 | | 5 | 6 |
| | | | | 7 | | 9 | ❼ | | ❾ | | | | 7 | | 9 | ❼ | | ❾ | 7 | | 9 | 7 | | 9 | | | ❾ |
| **3 lanes with raised median** (1 lane in each direction) | ❶ | 2 | 3 | ❶ | | ❸ | ① | | ❸ | ① | | 3 | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ |
| | 4 | 5 | | | 5 | | | 5 | | 4 | 5 | | | 5 | | | 5 | | 4 | 5 | | | 5 | | | 5 | |
| | | | | 7 | | 9 | ❼ | | ❾ | 7 | | 9 | ❼ | | ❾ | ❼ | | ❾ | 7 | | 9 | ❼ | | ❾ | | | ❾ |
| **3 lanes w/o raised median** (1 lane in each direction with a two-way left-turn lane) | ❶ | 2 | 3 | ❶ | | ❸ | ① | | ❸ | ① | | 3 | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ |
| | 4 | 5 | 6 | | 5 | 6 | | 5 | 6 | 4 | 5 | 6 | | 5 | 6 | | 5 | 6 | 4 | 5 | 6 | | 5 | 6 | 5 | 6 | |
| | 7 | | 9 | 7 | | 9 | | | ❾ | 7 | | 9 | ❼ | | ❾ | | | ❾ | 7 | | 9 | | | ❾ | | | ❾ |
| **4+ lanes with raised median** (2 or more lanes in each direction) | ❶ | | ❸ | ❶ | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ |
| | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | |
| | 7 | 8 | 9 | 7 | 8 | 9 | | 8 | ❾ | 7 | 8 | 9 | ❼ | 8 | ❾ | | 8 | ❾ | ❼ | 8 | ❾ | | 8 | ❾ | | 8 | ❾ |
| **4+ lanes w/o raised median** (2 or more lanes in each direction) | ❶ | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ | ① | | ❸ |
| | | 5 | 6 | | 5 | ❻ | | 5 | ❻ | | 5 | ❻ | | 5 | ❻ | | 5 | ❻ | | 5 | ❻ | | 5 | ❻ | | 5 | ❻ |
| | 7 | 8 | 9 | 7 | 8 | 9 | | 8 | ❾ | 7 | 8 | 9 | ❼ | 8 | ❾ | | 8 | ❾ | ❼ | 8 | ❾ | | 8 | ❾ | | 8 | ❾ |

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- ● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- ○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

1. High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
2. Raised crosswalk
3. Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
4. In-Street Pedestrian Crossing sign
5. Curb extension
6. Pedestrian refuge island
7. Rectangular Rapid-Flashing Beacon (RRFB)*
8. Road Diet
9. Pedestrian Hybrid Beacon (PHB)*

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# AASHTO Guide for the Development of Bicycle Facilities

- New edition expected “soon”
- Guide especially helpful when designing shared-use paths (chapter 5), a popular choice in many communities

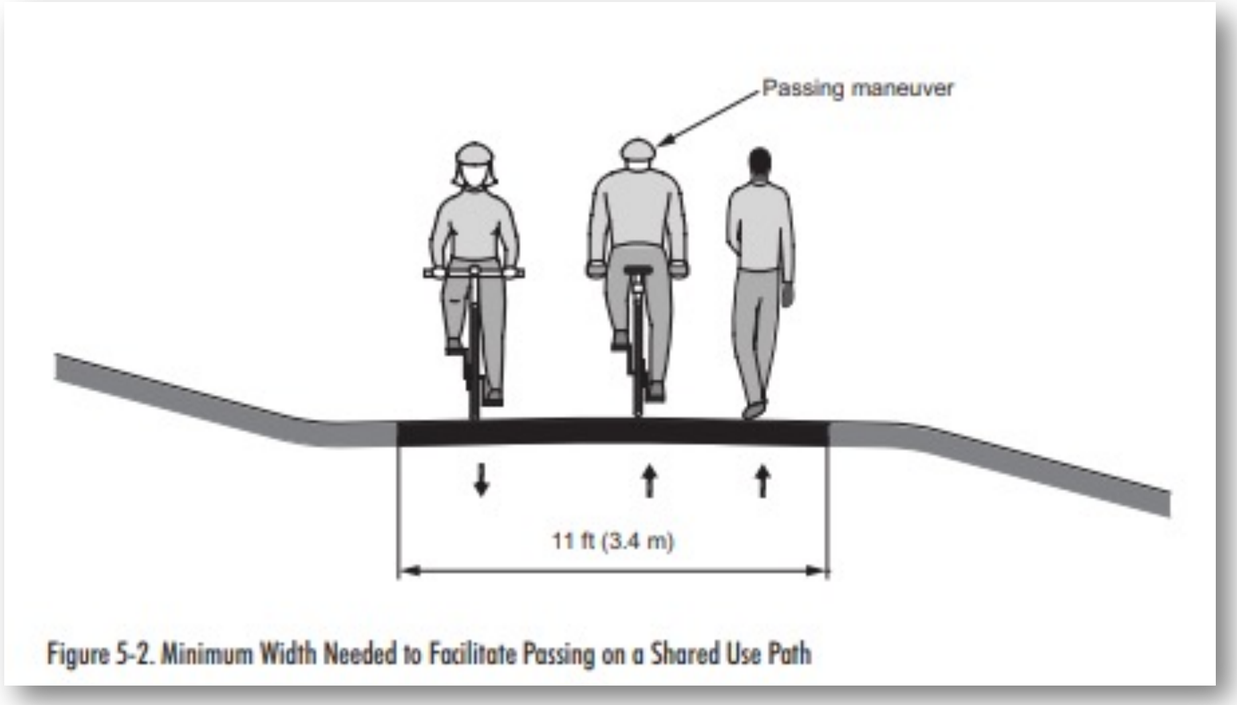
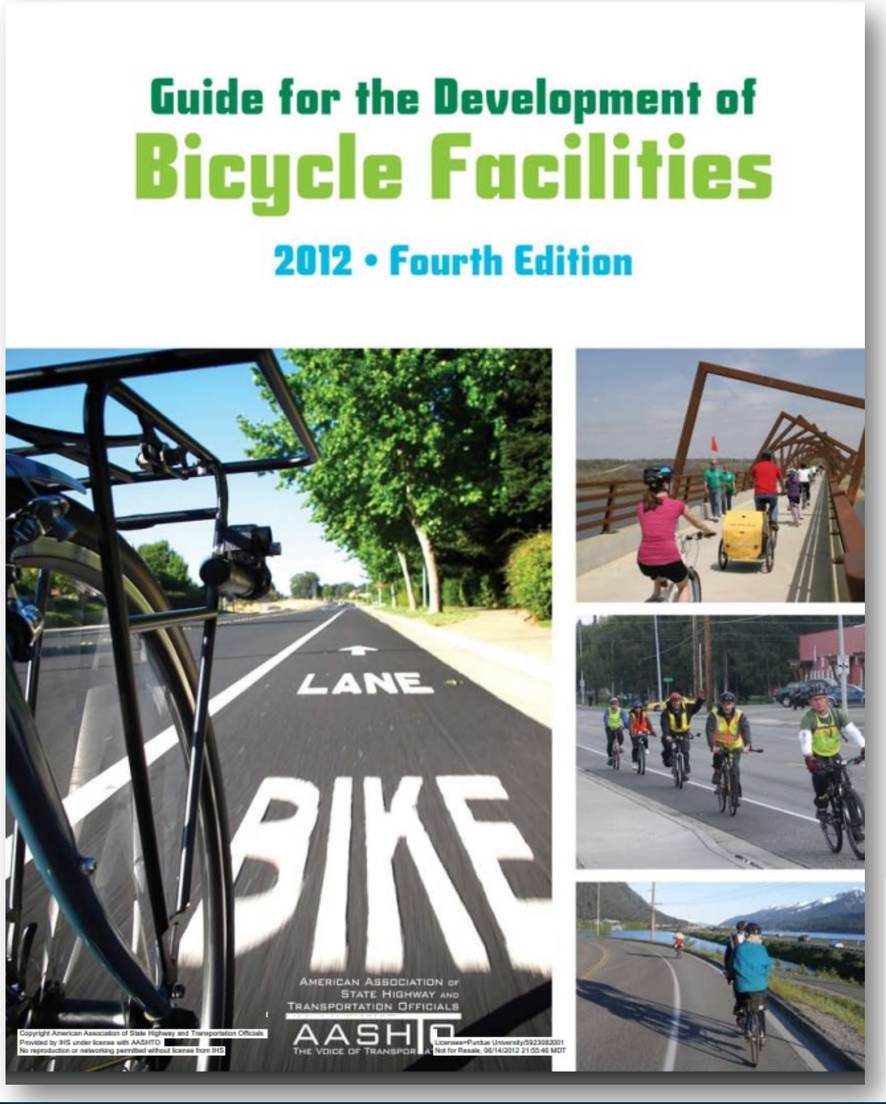
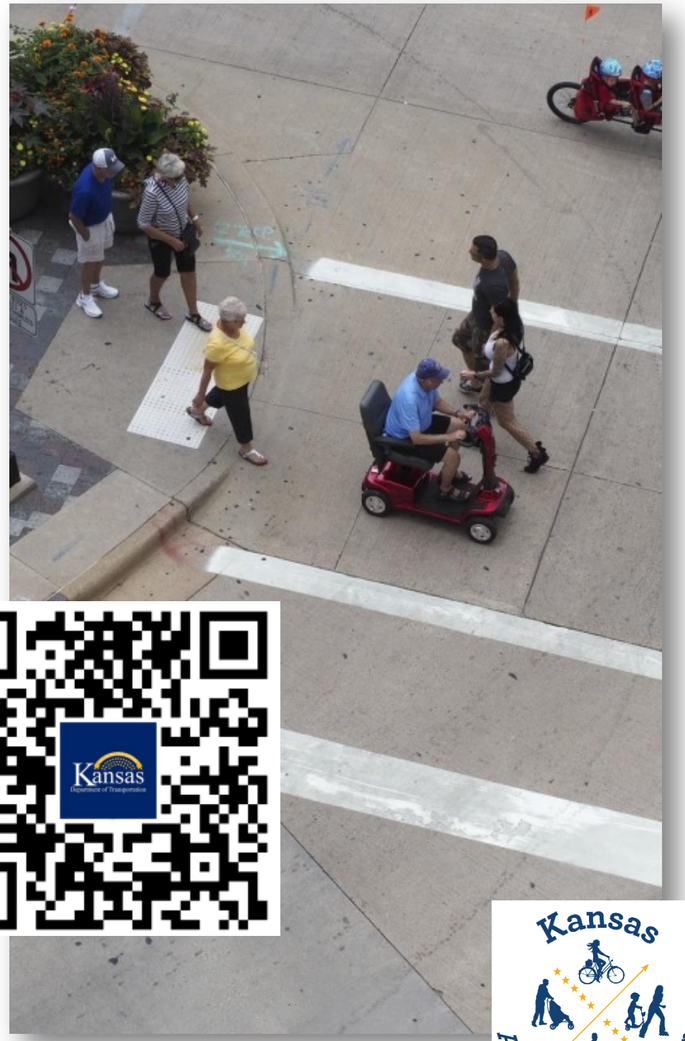


Figure 5-2. Minimum Width Needed to Facilitate Passing on a Shared Use Path



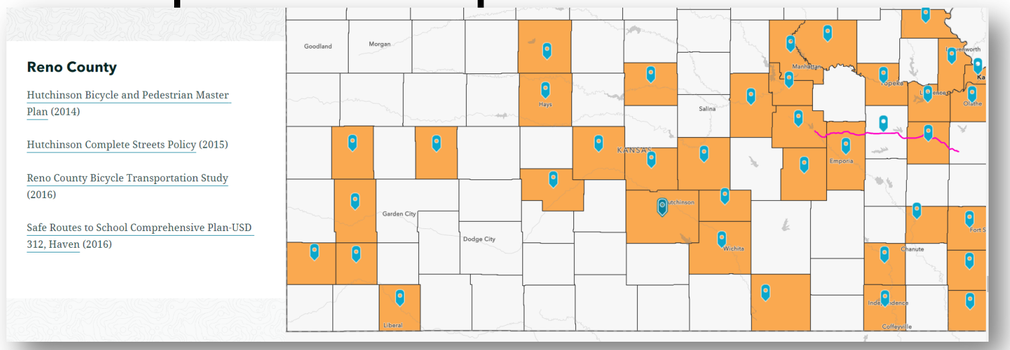
# Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)

- Goal is to ensure pedestrian facilities in the public right-of-way are accessible by individuals with disabilities
- Now required on the construction or alteration of pedestrian facilities, not just federally funded projects
- Addresses sidewalks, streets, crosswalks, curb ramps, ped signals, on-street parking, and other components of the public right-of-way
- View the Walk Bike Roll Kansas webinar, “Mobility and Access for All” presented on Dec. 13, 2023 to learn more: Slides, Q&A, and Recording
- More information can be found here: https://www.access-board.gov/prowag/



# Kansas Active Transportation Resources

- Additional Design Guidance, Mapping and Network Planning, Engagement and Equity, Project Delivery, Data Tools and Performance Measures, Funding, Active Tourism, Bicycle and Pedestrian Safety and Education, and more, can be found on the KDOT webpage
- Visit the Kansas Active Transportation Plan webpage to view the recently published plan, toolkits, recordings of virtual series, KDOT Crosswalk guide, and more
- See the Kansas Active Transportation Plan and Policy Registry Map to view published active transportation plans across the state



# Road Safety Assessment Process

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# RSA Process

- Process to conduct Road Safety Assessment (RSA)

✓Identify Location

✓Collect Data

✓Select Team

✓Meet

✓Field Review

✓Analyze and Report Findings

✓Discuss Recommendations

✓Write Report

# Identify Location

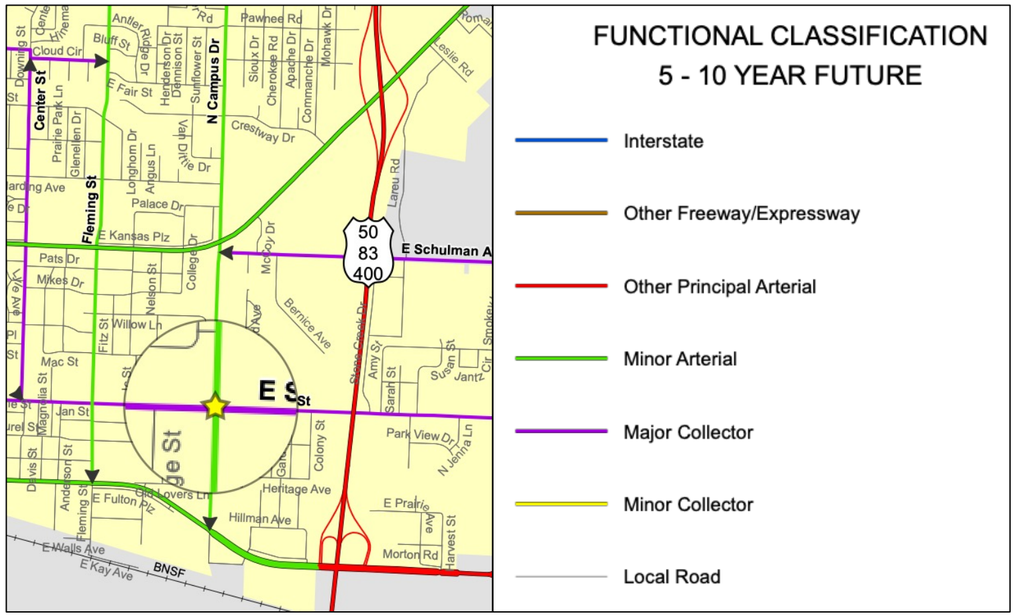
- High Injury Network
- High Risk (Systemic)
- School Route
- Future route
- Entire Route or Site-Specific Issues

# Identify Location

- Distance: less than two miles
- Determined in advance, pre-scouted, relevant data collected
  - Crash history, citizen-voiced concerns, high injury or risk network, school route, a route identified in a local transportation plan, a future route, etc.
- RSA can be for the entire route or for site-specific issues
- Determine areas where the team can safely stop to discuss the area or sections of the route

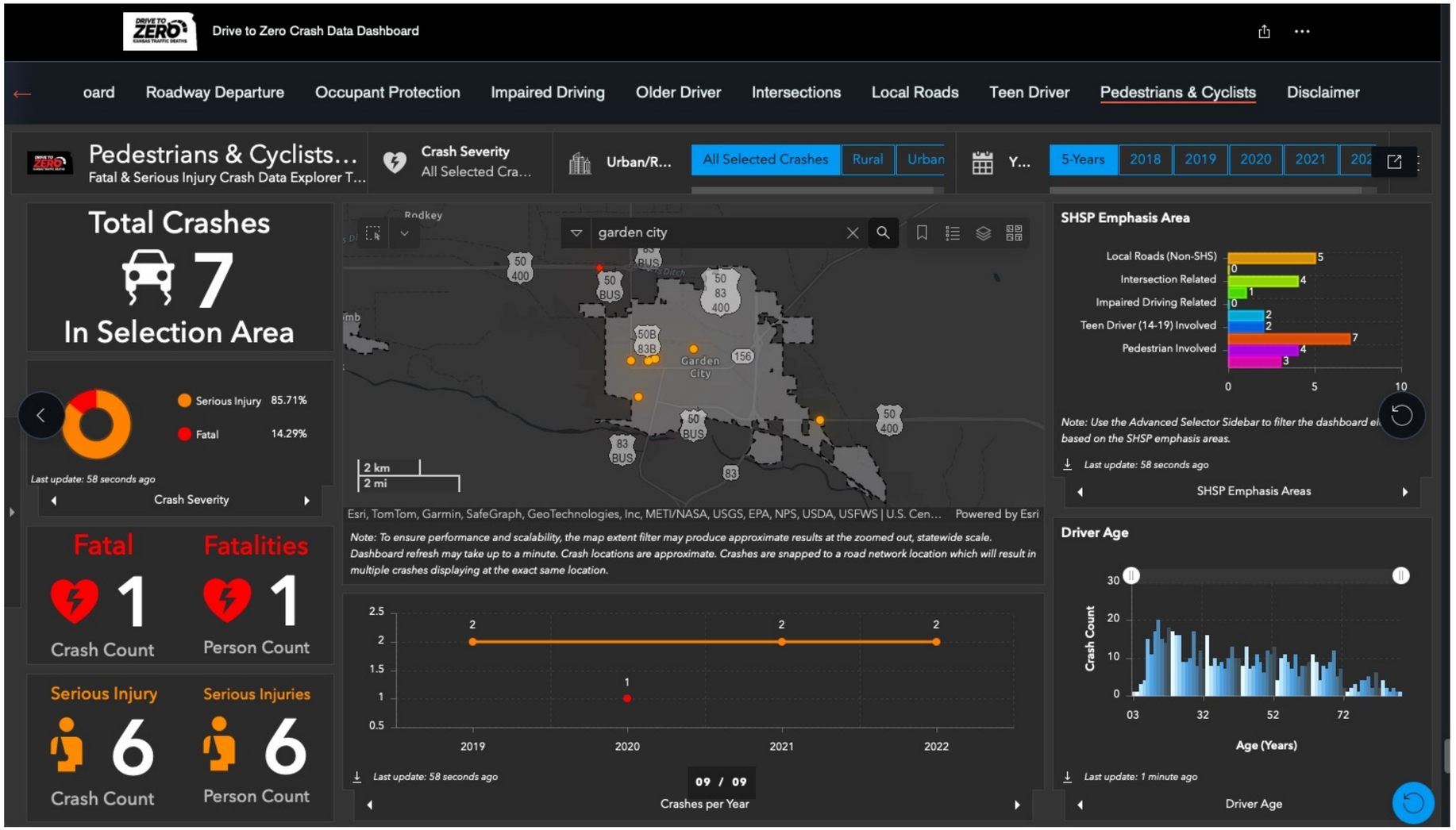
# Collect Data

- Crash Data Sources
  - KDOT Drive to Zero Crash Data Dashboard
- Traffic Counts
  - Vehicular
  - Pedestrian and Cyclist
- Other Data
  - Measurements
  - Comprehensive Plans
  - Functional Classification Maps
  - Land Use or Zoning Maps




GARDEN CITY, KS
CAMPUS DR & E SPRUCE ST

# Collect Data



# Select RSA Team

- Optimal Team Size
- Potential Team Members
  - Ensure persons with disabilities and people who regularly walk, bike, and roll
- Roles and Responsibilities

***"Put together the smallest team that can bring all the necessary knowledge and experience to the process"***

# Meet RSA Team

- Introductions
- Clarify Scope
- Constraints
  - Design Requirements
  - Laws
  - Ordinances
- Data Insights

# Road Safety Assessment Tools and Considerations

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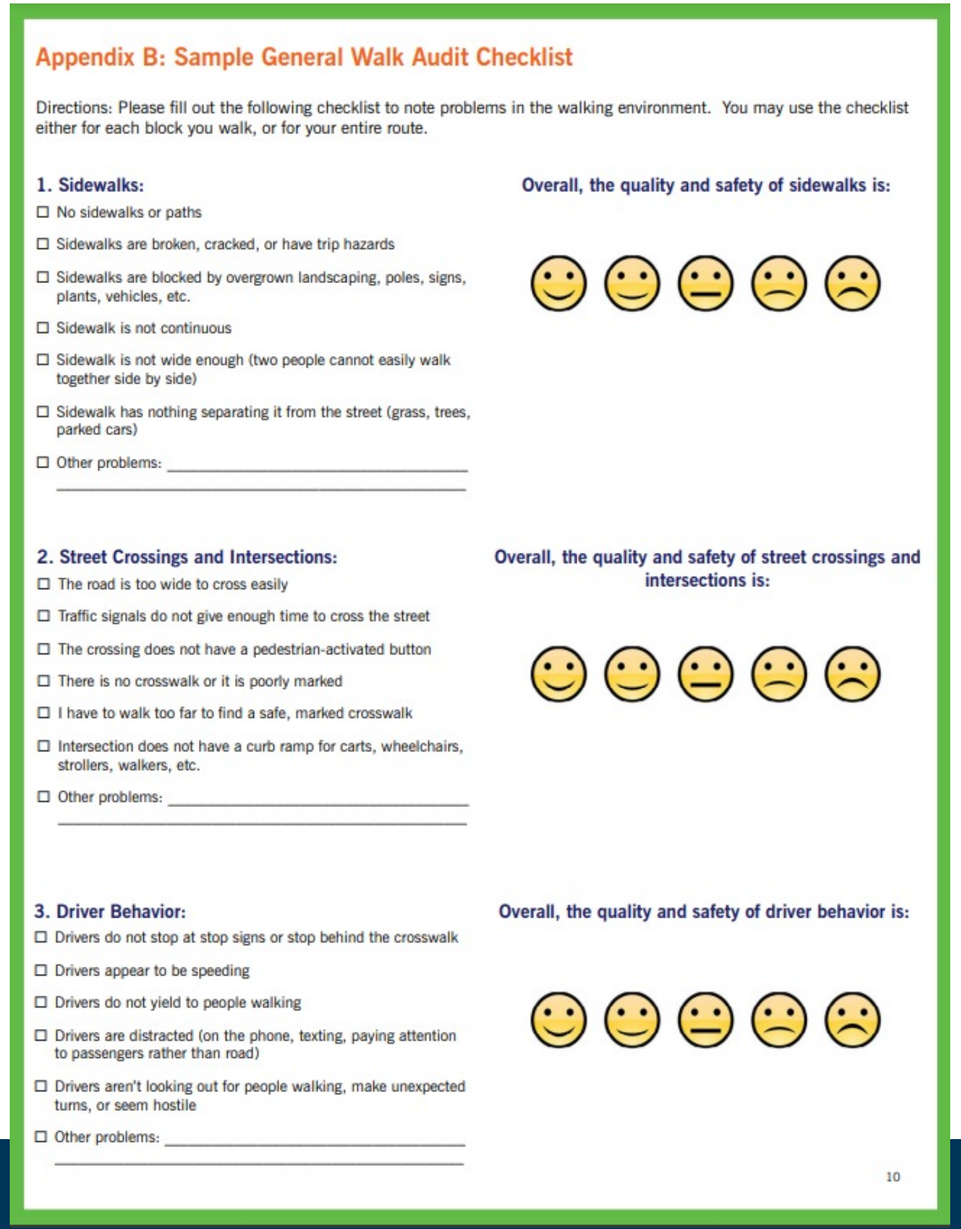
# Guiding the Walk: Tools, Prompts, and Checklists

- AARP: Walk Audit Tool and Bike Audit Tool
- National Aging and Disability Transportation Center *Toolkit for the Assessment of Bus Stop Accessibility and Safety*
- Safe Routes Partnership *Let's Go for a Walk: A Toolkit for Planning and Conducting a Walk Audit*



## Appendix B: Sample General Walk Audit Checklist

Directions: Please fill out the following checklist to note problems in the walking environment. You may use the checklist either for each block you walk, or for your entire route.

**1. Sidewalks:**

**Overall, the quality and safety of sidewalks is:**

- ☐ No sidewalks or paths
- ☐ Sidewalks are broken, cracked, or have trip hazards
- ☐ Sidewalks are blocked by overgrown landscaping, poles, signs, plants, vehicles, etc.
- ☐ Sidewalk is not continuous
- ☐ Sidewalk is not wide enough (two people cannot easily walk together side by side)
- ☐ Sidewalk has nothing separating it from the street (grass, trees, parked cars)
- ☐ Other problems: _____

**2. Street Crossings and Intersections:**

**Overall, the quality and safety of street crossings and intersections is:**

- ☐ The road is too wide to cross easily
- ☐ Traffic signals do not give enough time to cross the street
- ☐ The crossing does not have a pedestrian-activated button
- ☐ There is no crosswalk or it is poorly marked
- ☐ I have to walk too far to find a safe, marked crosswalk
- ☐ Intersection does not have a curb ramp for carts, wheelchairs, strollers, walkers, etc.
- ☐ Other problems: _____

**3. Driver Behavior:**

**Overall, the quality and safety of driver behavior is:**

- ☐ Drivers do not stop at stop signs or stop behind the crosswalk
- ☐ Drivers appear to be speeding
- ☐ Drivers do not yield to people walking
- ☐ Drivers are distracted (on the phone, texting, paying attention to passengers rather than road)
- ☐ Drivers aren't looking out for people walking, make unexpected turns, or seem hostile
- ☐ Other problems: _____

10

# Field Experience Considerations

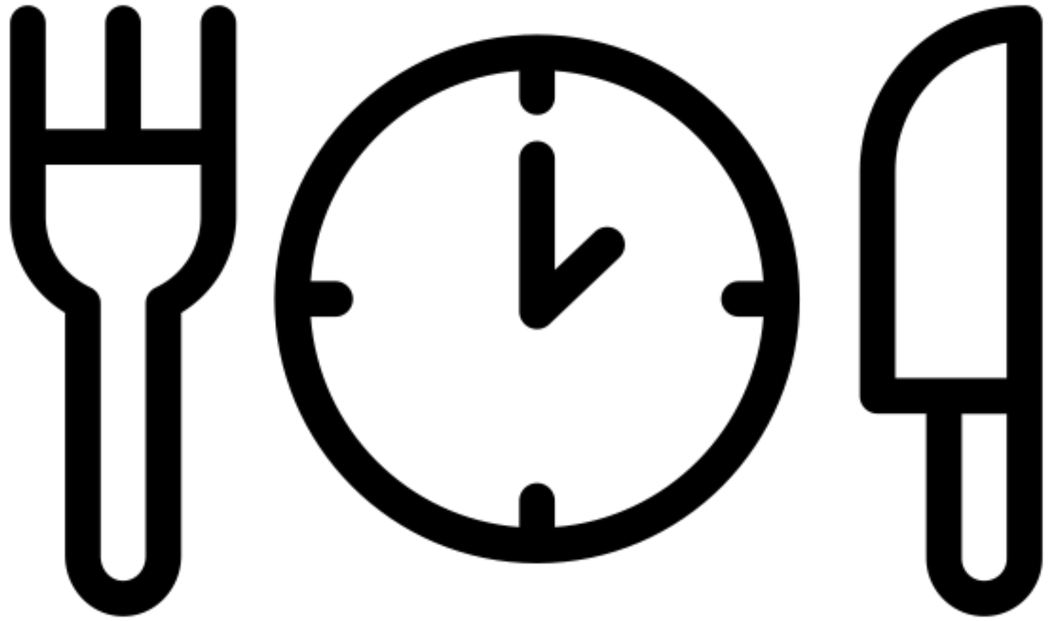
- Context Sensitive – is route on a business district, near grocery store, schools, neighborhoods, transit stops, etc.? Are speeds and crossing appropriate for the context?
- Inviting – how does the street feel, do you want to walk on it?
- Connected – where does the path lead, if anywhere?
- Accessible – can someone who is blind, using a walking support device, or pushing a stroller navigate the area?
- Functional inclusions, e.g. benches, landscaping, shade, etc. – what seasonal challenges might be present, e.g. no shade in the heat of summer or excessive amounts of concrete?

# Field Experience: Other Considerations

- Maintenance
- Consistency
- Visibility
- Lighting
- Traffic Control Devices
- Clearances
- Comfort
- Drainage
- Width
- Pictures/Video

# RSA Logistics

- Things to remember
  - Data Packets
  - Transportation
  - Meals
  - Personal Protection Equipment
  - Tools
- Prompts and Checklist
- Other Needs
  - Personal Protective Equipment (PPE)
  - Measuring wheel
  - Clipboards, ink pens
  - Sunscreen, insect repellant
  - Etc ...



# Lunch Break

*1 hour*

*Next up … Field Visit*

# RSA
# Field Experience

# 2024 Field Visit Locations -

| Date | Location | Assessment Location |
|---|---|---|
| 3.13.2024 | Topeka | SW Van Buren St & SW 21st St |
| 3.19.2024 | Kansas City | State Ave & N 47th St |
| 3.28.2024 | Hutchinson | W 5th Ave & N Monroe St |
| 4.2.2024 | Garden City | Campus Dr & E Spruce St |
| 4.10.2024 | Wichita | Central Ave & N Waco Ave |
| 4.25.2024 | Salina | N 9th St & W Pacific Ave/N Broadway Blvd |
| 5.1.2024 | Pittsburg | N Broadway St & E 4th St |
| 5.7.2024 | Hays | Vine St & E 22nd St |

# Field Visit – go time!

- Assignments
  - Lead: Nelda & Lindsay
  - Note Takers: You
  - Report Writers: You
- Expectations
  - Stay Safe
  - Stay Visible
  - Stay Focused
  - Stay Prepared
  - Stay Lawful
- Items to Consider:
  - Maintenance
  - Connectivity
  - Consistency
  - Visibility
  - Lighting
  - Traffic Control Devices
  - Clearances
  - Comfort
  - Accessibility
  - Drainage
  - Width
  - Pictures/Videos

# Debrief of Field Assessment

# Debrief of Field Assessment – Small Group Roundtables

- Mark-up map of area assessed
- Share your experience
- Things that stood out or that you learned today
- Potential recommendations on countermeasures and other improvements
- Assign someone to report out

# Large Group Report Out

- Overall Impressions
- Specifics
- User Needs
- Positives and Negatives
- Potential Countermeasures
- Potential for Demonstration Projects
- Behavioral solutions (enforcement, education)

# Next Steps

# Write Report

- Engaging
- Constructive
- Cooperative
- Diplomatic
- Summarize scope, opportunities, and constraints
- Other items to include:
  - Team members
  - Documents reviewed
  - Dates of meetings and field reviews
  - Safety concerns and recommendations

# Write Report

Example RSA Outline

1. Introduction
    a. Background on study area
    b. Objective of RSA
    c. Relationship to other efforts (Pedestrian and Bicycle Safety Action Plans, etc.)
2. RSA site locations
3. Geometric conditions and multimodal volume summary
    a. Vehicle traffic
    b. Pedestrian and bicyclist traffic
    c. Transit
4. Crash history
    a. Pedestrian and bicyclist crash history
    b. Vehicle crash summary
5. RSA Team members and roles/areas of expertise
6. Assessment findings
    a. Positive existing features
    b. Identified safety issues and suggestions for improvements (include pictures)
7. Improvements suggested for consideration and implementation timeframe (near- to long-term)
    a. Signalized intersection A
    b. Intersection B
    c. Mid-block C
    d. Potential crosswalk D
    e. Signalized intersection E
    f. Mid-block F
8. Conclusions

# Advocacy and Funding

Possible sources of funding:

- Transportation Alternatives
- Safe Routes to Schools
- Highway Safety Improvement Program
- Safe Streets and Roads for All
- Cost Share
- Congestion Mitigation & Air Quality Improvement Program
- Connecting City Link Improvement Program
- Innovative Technology

# Advocacy and Funding

*Provides resources to help Kansas entities make the most of federal funding available under BIL*

kshub.org

# Wrap-Up

# Any Questions ?

# Training Evaluation

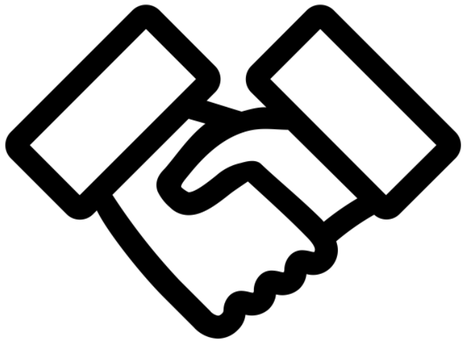
Please follow the link to complete the evaluation survey for this course.

A PDH Certificate will be available for download in the KS LTAP Learning Management System.

If you need assistance, please email us at kutc_training@ku.edu

Thank you for attending Kansas RSA trainings!

We appreciate your time!!



**For any questions or queries, email**

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- KDOT – Matt Messina matthew.messina@ks.gov