Pedestrian and Bicyclist Safety

Source: FHWA.

Source: FHWA.

Source: FHWA.

Overall Approach

U.S. Department of Transportation (USDOT) National Pedestrian Safety Action Plan (<2 years)

Federal Highway Administration (FHWA) Pedestrian and Bicyclist Safety Strategic Plan (2–5 years)

Research Needs (5–10 years)

USDOT Summit on Pedestrian Safety

Objective: Inform. Listen. Engage.

1.	2.	3.	4.
Introduction: Virtual Series on Pedestrian Safety.	Safe System Approach and Innovative Technologies.	Nighttime and Urban Arterials.	High-Risk Populations.

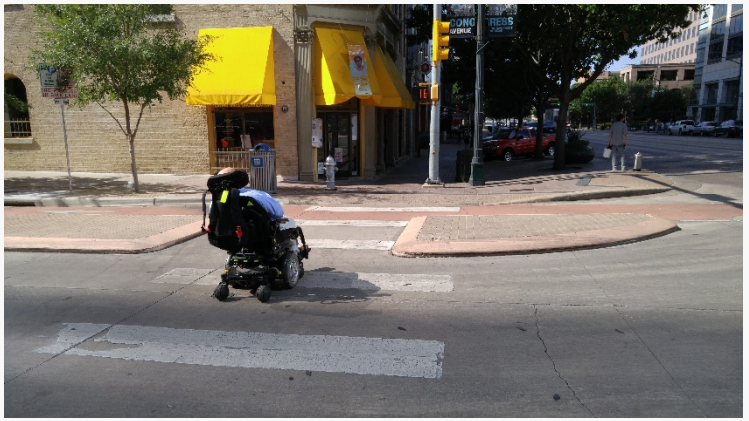
National Pedestrian Safety Action Plan

Objective: Develop a series of recommended actions to improve pedestrian safety across all USDOT modes.

- The plan covers actions to take place in the next 2 years.
- Tables show when each project will be completed and under what action area of the "safe system" approach the activities fall.

Tentative Outline

- Introduction.
- Understanding the Challenge.
- National Actions to Reduce Pedestrian Crashes.

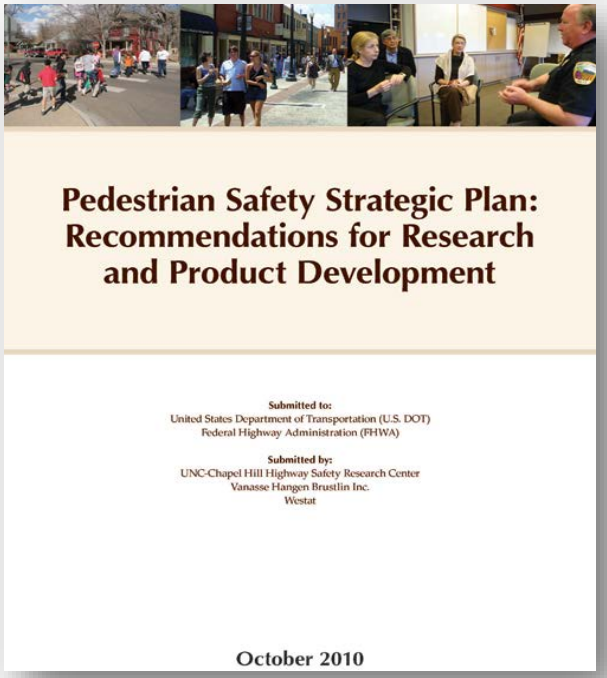


Source: FHWA.

Pedestrian and Bicyclist Safety Strategic Plan

Objective: Create a comprehensive strategic plan for the FHWA's pedestrian and bicyclist safety program area projecting 5 years ahead.

- Update will be made to existing 10 year Pedestrian and Bicyclist Safety Strategic Plan (October 2010).
- Stakeholder group will provide input throughout (in person meeting October 2020).
- Plan will be completed December 2020.

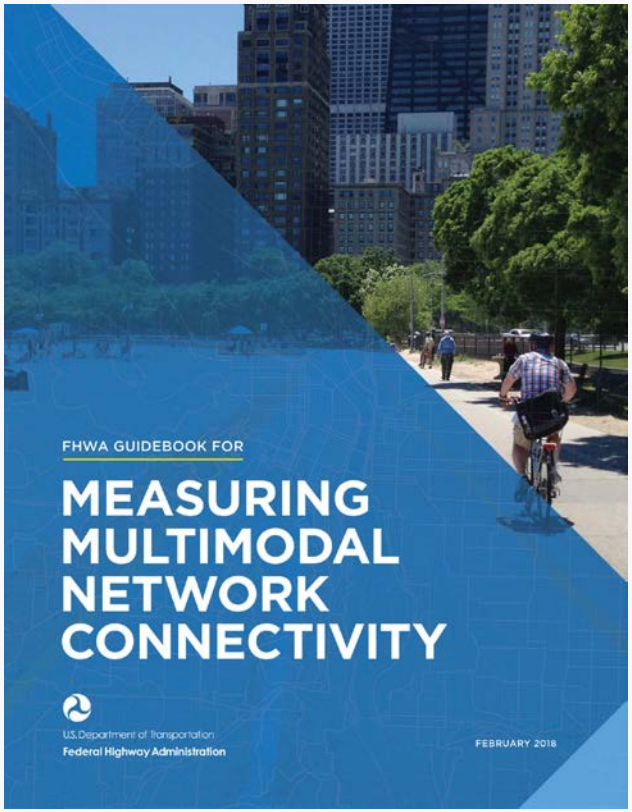


Source: FHWA.

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

Data and Exposure

- Travel Monitoring Analysis System (TMAS) for accepting walking/biking volume data.
- Scalable Risk Assessment Methods (ScRAM) for pedestrians and bicyclists.
- Guide for measuring multimodal network connectivity.



Source: FHWA.

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_connectivity/

Design Research and Resources

- National Highway Institute (NHI) Bicycle Facility Design web-based training course.

- American Association of State Highway and Transportation Officials (AASHTO) Pedestrian and Bicycle Guide drafts.

Source: FHWA.
https://www.nhi.fhwa.dot.gov/course-search?tab=0&key=bicycle&sf=0&course_no=142080

Safety Research and Development (R&D): Current Research Studies

Develop Crash Modification Factors (CMFs) for:

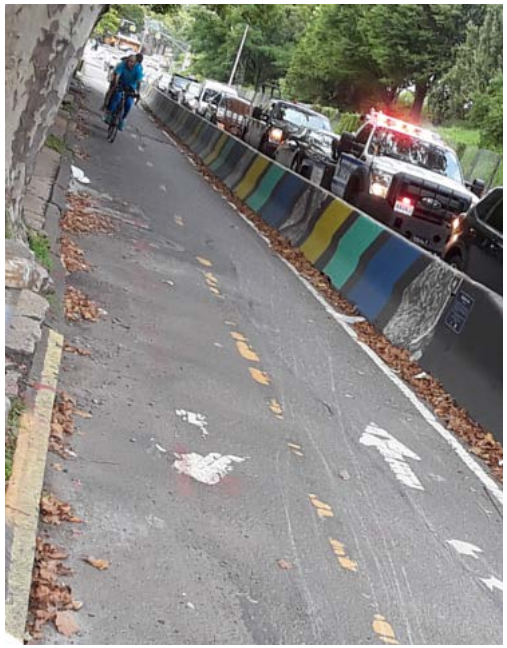
1. Different types of separated bike lanes (SBLs).
2. Right-turn radius for pedestrians at intersections.
3. Pedestrian crossing warning sign with light-emitting diodes (LEDs).

Research and Evaluations:

1. Evaluate aesthetically treated crosswalks.
2. Investigate key automated vehicle (AV) human-factors safety issues related to infrastructure.

Safety R&D: Current Research Studies

SBL



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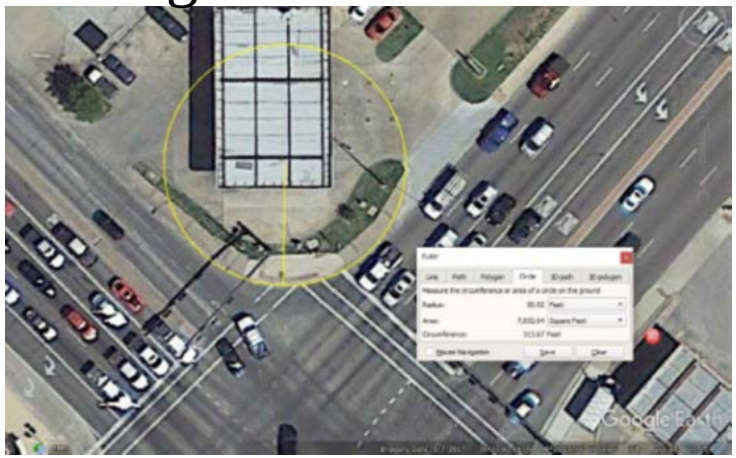
Right-Turn Radius



Original Photo: 2019 © Google®. Map modifications: Source: FHWA.

Warning Sign with LED

Source: FHWA.

Evaluation of Aesthetically Treated Crosswalks

- Determine the impact aesthetically-treated crosswalks have on road user's recognition and behavior at crosswalks.

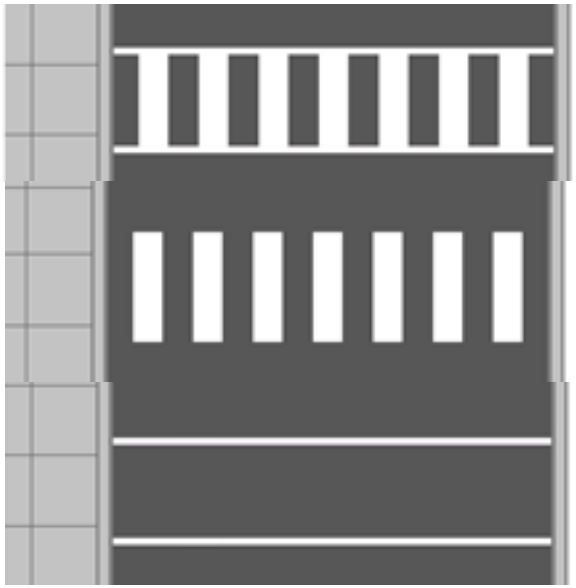
- Determine what conditions and/or aspects of the aesthetically-treated crosswalks impact road user recognition and behavior.

Road users include drivers, pedestrians, low-vision pedestrians.

Evaluation of Aesthetically-Treated Crosswalks

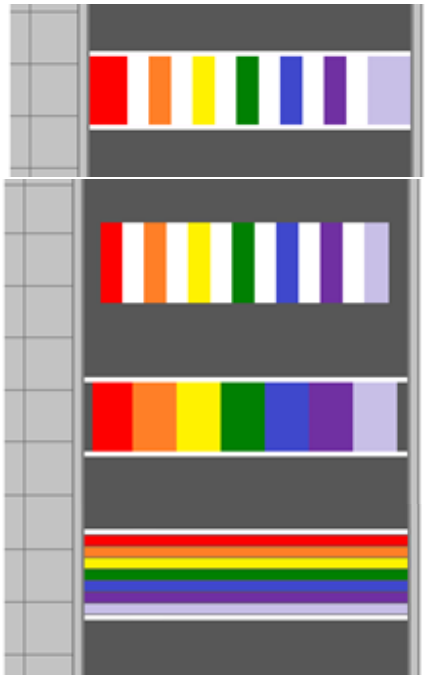
Rainbow Crosswalk Potential Research Scenarios

Standard



Source: FHWA.

Experimental



7. Ladder with Color-Filled Gaps
4. Longitudinal Bars with Abutting Longitudinal Color Bars
3. Transverse Lines with Abutting Longitudinal Color Bars
1. Tranvserse Lines with Wide Transverse Color Lines

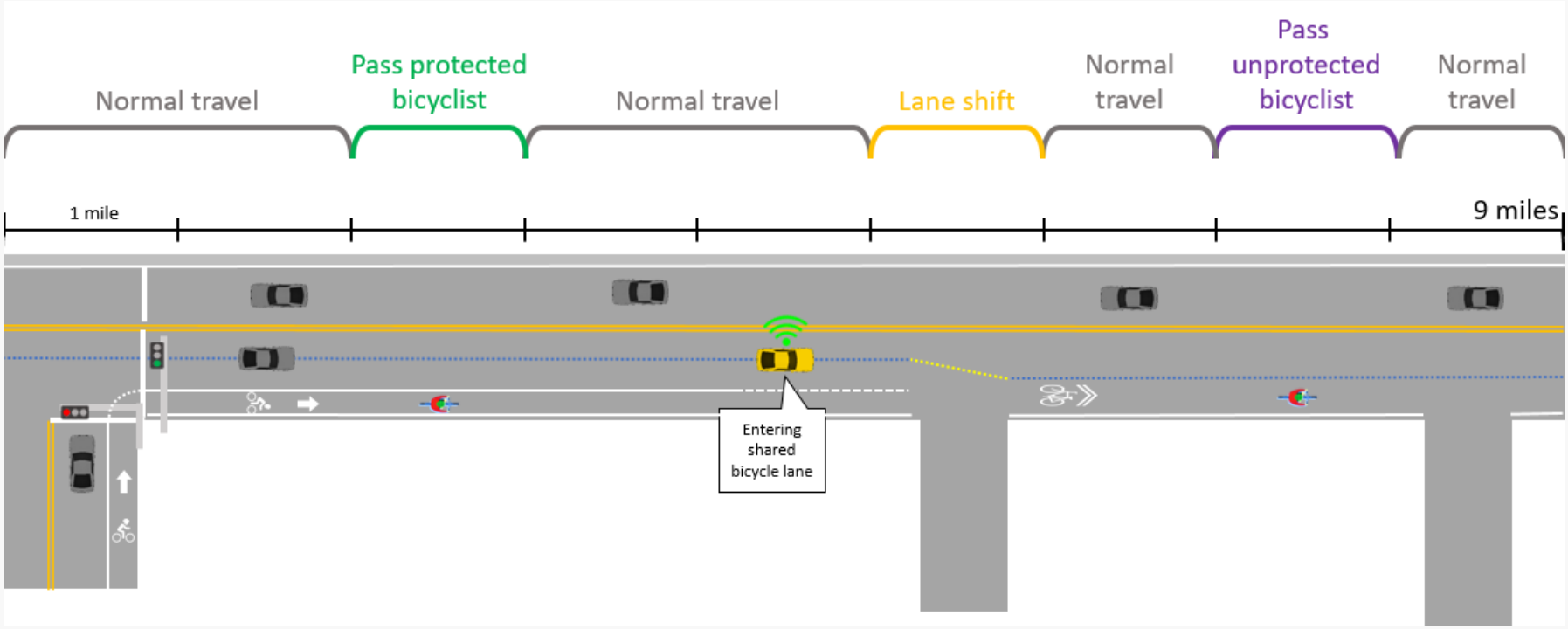
Source: FHWA.

Investigate Key AV Human Factors Safety Issues Related to Infrastructure

Project Background

- Identify SAE Level 2 and Level 3 AVs operating in diverse environments during early deployment.
- Identify and investigate human factors safety challenges associated with Level 2 and Level 3 AVs interacting with roadway infrastructure.

Highway Driving Simulator Experiment One



Source: FHWA.

Safety R&D: Future Research Studies

Objective: Ensure safe interactions between pedestrians and connected and autonomous vehicles (CAVs) in complex urban settings.

Goal: Understand how CAVs will deal with pedestrians and other vulnerable road users (VRU) in the crowded, chaotic urban roadways of the future.

Safety R&D Future Research Studies

Objective: Communicate AV intentions to pedestrians.

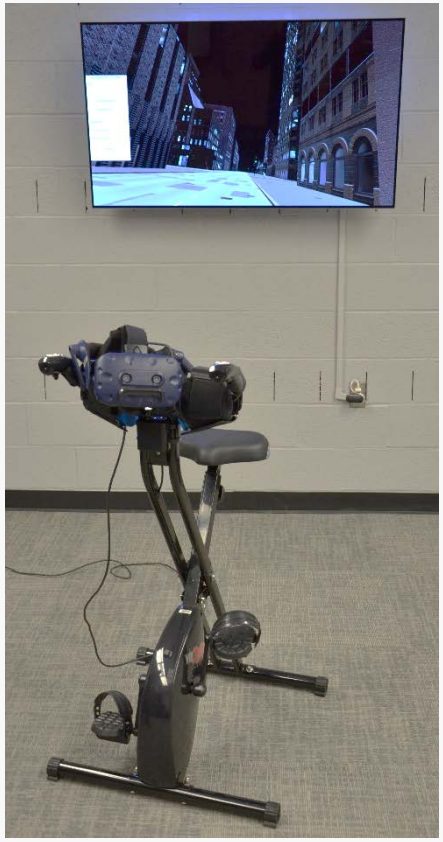
Goal: Identify, evaluate, and recommend optimal methods for AVs to clearly communicate their actions to pedestrians and other VRUs to promptly correct behaviors and prevent collisions.

New Research Technologies

FHWA is interested in using new (to us) technologies for bicycle and pedestrian research.

- Infrared pedestrian detection cameras.
- Virtual reality.
- Connected simulation.

Source: FHWA.



Source: FHWA.

Discussion on Research Need

1. Research and Technology Coordinating Committee (RTCC) engagement with FHWA's Pedestrian and Bicyclist Safety Strategic Plan?
   - Participate in stakeholder engagement group.
   - Review draft and discuss at future RTCC meeting.
2. Research needs for the next 5–10 years?
   Safety, nonsafety
3. Research needs for the long term?
   Safety, nonsafety
4. Incorporation of new technology?

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