

# Research Need Statement 569

## I. Need Statement Champions and Information

### I.A. Need Statement Champion Information

- I.A.1. First and Last Name of Research Champion: **Hannah Pritchard**
- I.A.2. Research Champion's Office: **Transit and Active Transportation**
- I.A.3. Research Champion's Phone Number: **651-366-4168**
- I.A.4. Research Champion's Email: [hannah.pritchard@state.mn.us](mailto:hannah.pritchard@state.mn.us)

### I.B. Research Co-Champion

- I.A.1. First and Last Name of Research Co-Champion: **Amber Dallman**
- I.A.2. Research Co-Champion's Office: **Transit and Active Transportation**
- I.A.3. Research Co-Champion's Phone Number: **651-366-4189**
- I.A.4. Research Co-Champion's Email: [amber.dallman@state.mn.us](mailto:amber.dallman@state.mn.us)

### I.C. Research Needs Title (115 Characters):

**Impact of Vehicle Speeds and Roadway Context on Pedestrian Safety**

### I.D. Project Sponsor: **Joint MnDOT and Local Road Research Board**

## II. Research Need Background and Description

### II.A. Research Need Background

II.A.1. Describe the problem or opportunity.

**Approaches to encouraging drivers yielding to pedestrians are typically guided by the posted and operating speeds of a roadway. Stopping sight distance and a driver's ability to perceive a pedestrian are negatively impacted by the speed of the vehicle.**

II.A.2. If applicable, describe how this project will build on previous research.

II.A.3. If applicable, include the title/s or previous research.

**See literature search for more information. Titles for the most relevant findings are listed below:**

***Critical Gap Estimation for Pedestrians at Uncontrolled Mid-Block Crossings on High-Speed Arterials.***

*Effects of safety measures on driver's speed behavior at pedestrian crossings.*

*Event-Based Modeling of Driver Yielding Behavior at Unsignalized Crosswalks.*

*Double-Red Signal Reduces Crashes at Crosswalks.*

*Pedestrian Safety at Signalized Intersections T&DI Congress 2014: Planes, Trains, and Automobiles (458 - 466)*

*Analysis of Factors Influencing Pedestrian Injury Severity in Pedestrian-Vehicle Crashes T&DI Congress 2014: Planes, Trains, and Automobiles (448 - 457)*

*Evaluation of Sustained Enforcement, Education, and Engineering Measures on Pedestrian Crossings*

II.A.4. What is the objective of the proposed research?

**An analysis of the relationship between vehicle speed, roadway context, and drivers yielding to pedestrians should be conducted. The study would examine driver compliance with Minnesota crosswalk laws when traveling at various speeds on roadways with varying road designs and/or types of treatments. Road design components could include number of lanes, turn lanes, channelized turn lanes, medians, or curb extensions. Treatments could include marked crosswalks, signs, advanced stop lines, RRFBs, or PHBs.**

**Driver/pedestrian encounters could be evaluated using several methods, as applicable. On lower speed roads with observed operating speeds of 30 mph or less, drivers would experience real world encounters with pedestrians crossing roadways with a variety of widths and land use contexts.**

**Complimentary simulated encounters or video analysis would also allow the researchers to evaluate the impact of roadway widths and land use contexts on driver yielding behavior at higher speeds. The study would help to inform policy and engineering changes to roadways that may encourage better pedestrian safety through safe travel speeds of drivers.**

### III. Strategic Priorities, Benefits, and Expected Outcomes

Section III. is for MnDOT sponsored and co-sponsored projects only; all LRRB projects proceed to section IV.

#### III.A. MnDOT Strategic Priorities

*Instructions:* Briefly describe how the project aligns with the following MnDOT Research Strategic Priorities. Complete all that apply.

##### III.A.1. Innovation & Future Needs:

##### III.A.2. Advancing Equity:

**Advancing a safe and accessible transportation system for all.**

##### III.A.3. Asset Management:

##### III.A.4. Safety:

**This research would aim to inform policy and design changes that improve crosswalk safety for pedestrians.**

##### III.A.5 Climate Change & Environment:

#### III.B. Expected Outcomes

*Instructions:* Check all expected direct outcomes of this research.

- New or improved technical standard, plan, or specification
- New or improved manual, handbook, guidelines, or training
- New or improved policy, rules, or regulations
- New or improved business practices, procedure, or process
- New or improved tool or equipment
- New or improved decision support tool, simulation, or model/algorithm (software)
- Evaluation of a new commercial product
- New or improved technical standard, plan, or specification
- Other. Please specify below:

III.C. Expected Benefits

*Instructions:* Select all expected benefits that may be realized if the findings and recommendations from this research is adopted or implemented

III.C.1. Construction Savings Choose an item.

III.C.2. Decrease Engineering/Administrative Costs Choose an item.

III.C.3. Environmental Aspects Choose an item.

III.C.4. MnDOT Policy **Changed or inform a policy**

III.C.5. Lifecycle Choose an item.

III.C.6. Operations and Maintenance Savings Choose an item.

III.C.7. Reduce Risk Choose an item.

III.C.8. Reduce Road User Cost Choose an item.

III.C.9. Safety **Reduction of crash frequency**

III.C.10. Technology Choose an item.

III.C.11. Other, please describe below:

#### IV. Technical Advisory Panel

*Instructions:* Please list the name and affiliation of individuals to consider for the Technical Advisory Panel.

Your assigned Project Advisor is available to answer questions and provide guidance (assigned by the Office of Research & Innovation).

Your Project Advisor is: Marcus Bekele, (651)366-3903, [marcus.bekele@state.mn.us](mailto:marcus.bekele@state.mn.us)