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Evaluating Driver and Pedestrian Behaviors at Enhanced Multilane Midblock Pedestrian Crossings

Nick Foster

Portland State University

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Evaluating Driver and Pedestrian Behaviors at Enhanced Multi-lane Midblock Pedestrian Crossings

A Case Study in Portland, OR

Nick Foster, AICP

Introduction

- Problem
 - Over 4,000 pedestrian deaths in 2010
- Potential solution
 - Enhanced crossings
 - Effectiveness?
 - Use?

Project Overview

- Two marked midblock crossings
 - Rectangular rapid flash beacons (RRFB)
 - Raised median refuge islands
 - *Z-crossing (Danish offset)*
 - *One site only*

Background

- RRFB research focused on drivers
 - Driver yielding rates: 54%-88%
- Crossing decisions based on distance to crosswalk
 - Limited research on attraction
- No literature on Z crossing use

Site 1 – Barbur Boulevard

- 30,700 ADT

- 35 MPH

Site 2 – B-H Highway

- 26,400 ADT

- 40 MPH

Methodology

- 62 hours of video
 - Weekdays in February 2013
- Driver and pedestrian behavior MOEs

RESULTS

Driver Yielding Rates

■ RRFB Not Activated Crossings ■ RRFB Activated Crossings

Comparison to Other Studies

Pedestrian Actuation Rates

Crossing Locations

Diverted Crossings

- 52% of crossings at crosswalk are out-of-direction

Diverted Crossings – SB Only

Z-Crossing Use

- Path use = 52%
 - High yielding rates

Other Findings

- Avoidance maneuvers
 - Hard braking (2)
- Stranded pedestrians
 - RRFB activated (1 – 0.3%)
 - RRFB not-activated (6 – 15%)
- Minimal pedestrian delay
 - 20 sec max (RRFB not activated)
 - All but one <15 sec (RRFB activated)

Conclusions

- 91-92% overall driver yielding rate
- Marked midblock crossing with RRFB may encourage diversion
- Z-crossing effectiveness limited
 - Adequate sight distance
 - No physical barrier

Future Research

- Pedestrian diversion
 - More sites
 - Before/after
 - Wider field of view
 - Automated analysis
 - Survey
- Z-crossing
 - More sites
- Driver understanding

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