Pedestrian Collision Warning Demonstration Project

TriMet Board of Directors
May 27, 2015
Demonstration Project Overview

Study was funded through a FTA Cooperative Agreement
Study Objectives

1. Demonstrate ability of available warning systems
2. Determine effectiveness of these systems at intersections and bus stops
3. Determine cost-benefit
4. Define when systems should be provided
5. Assess effectiveness at one intersection
Technologies Assessed

- **System 1**: Spoken warning activated by steering wheel, with strobe lights
- **System 2**: Spoken warning activated by steering wheel
- **System 3**: Beeping warning activated by turn signal, with directional LED headlights
- **System 4**: Fixed location BUS Blank-Out Sign
- **Other**: Spoken warning activated by turn signal (assessed but not tested)
System 1

Spoken warning activated by steering wheel, strobe lights
System 2

Spoken warning activated by steering wheel
System 3

Beeping warning activated by turn signal, directional LED headlights
System 4

Fixed location
BUS Blank-Out
Sign
Process

• Approach
  • 45 buses
  • 5 routes
  • 7 months
  • One fixed location warning sign at SW 5th/Burnside

• Evaluation
  • Operator surveys & focus groups
  • Pedestrian surveys & focus groups
  • Staff interviews and cost benefit analysis
System Findings

• Warning volume

• Sensitivity of warning activation

• Warning type

• Application of warnings
Technology Effectiveness

• Bus operators less favorably impressed with effectiveness of warning systems than general public

• Majority of pedestrians felt the systems were effective in alerting pedestrians and improving safety
Acceptance of Technologies

Operators
• Nearly half agree safety benefits outweigh drawbacks, but most seemed skeptical

Pedestrians
• Did not find warnings intrusive and that more systems should be installed but some cautioned that dollars could be better spent elsewhere
Options for Improving Technologies

• “Tweak the system”
• Integrate systems with GPS/ AVL system
• Operator control
Cost Benefit Analysis

• Number of variables influence Rate of Return
• Rates of Return for audible warning systems were found to range from 51.4% - 16.5%, with the baseline of 34.5%
Considerations

• Audible warning systems were found to be effective
• Systems are cost-effective technology
• Pedestrian warning technology continues to evolve
• Two emerging technologies that show promise
  • Eagle Eye – analytic video-based technology
  • Protran – Radar-based technology
Next Steps

Defer decision until:

• New emerging technologies are evaluated
• Create an internal team to recommend best technology fall 2016