Evaluation of Pedestrian Safety Countermeasures—Summary of Results, Conclusions and Lessons Learned

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SAIC Team’s Role

- Conduct an independent national evaluation
- Compile and summarize teams’ results
- Conduct a cross-cutting analysis
- Identify lessons learned
Independent National Evaluation

- Evaluate zone / area-wide combined impacts of countermeasures (as opposed to site-specific, individual impacts)
  - Identified intersections within deployments zones/areas
  - Collected before and after data (safety, mobility, customer satisfaction)
Collins Avenue Zone, Miami

17th Street
- Yield to pedestrian signs

16th Street
- Yield to pedestrian signs
- LPIs
- Pedestrian zone warning signs

14th Street
- Yield to pedestrian signs

11th Street
- Yield to pedestrian signs
- Pedestrian zone warning signs

7th Street
- Advance yield markings
- Pedestrian zone warning signs

Data Collection Site
Independent National Evaluation--Findings

- Mixed (non significant, counterintuitive results, inconsistent)
- No conclusive carry-over impacts / trends found, especially looking across the locations
Summary of Results and Cross-cutting Analysis

- Compile and summarize results from three locations
- Compare results across locations
<table>
<thead>
<tr>
<th>TYPE OF CM</th>
<th>COUNTERMEASURE</th>
<th>MIAMI</th>
<th>LV</th>
<th>SF</th>
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<tbody>
<tr>
<td>Static Signs</td>
<td>TURNING TRAFFIC YIELD TO PEDESTRIANS signs</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td></td>
<td>In-street pedestrian signs</td>
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<td>✓</td>
<td>✓</td>
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<td>Active Signs</td>
<td>Pedestrian zone signs</td>
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<tr>
<td></td>
<td>NO TURN ON RED (NTOR) signs</td>
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<td>✓</td>
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<tr>
<td></td>
<td>Portable radar speed trailers</td>
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<td>Pavement Markings</td>
<td>High visibility crosswalk treatment</td>
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<td></td>
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<td></td>
<td>Advance stop lines</td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td></td>
<td>LOOK pavement stencils</td>
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<td>✓</td>
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<td>Signals and Signal Timing</td>
<td>Pedestrian countdown signals</td>
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<td>Call buttons that confirm the press</td>
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<td>✓</td>
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<td>Automated pedestrian detection</td>
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<td>Activated flashing beacons</td>
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<td>Rapid flash beacon</td>
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<td>Leading pedestrian phase (Pedestrian head start)</td>
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<td>Elimination of permissive left turns</td>
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<td>Physical Separation</td>
<td>Median refuge island</td>
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<td>✓</td>
<td>✓</td>
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<td>Danish offset (in combo with high visibility crosswalk, advance yield markings and YIELD HERE TO PEDESTRIANS sign)</td>
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<tr>
<td>Lighting</td>
<td>Dynamic lighting</td>
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</table>
Challenges

- Similar, but not identical countermeasures
- Same countermeasure applied somewhat differently
- MOEs measured somewhat differently
Findings/ Conclusions

- Summarize findings for non cross-cutting countermeasures
- Assess effectiveness of cross-cutting countermeasures
- Group countermeasures in terms of effectiveness
  - High
  - Medium
  - Low
High Effectiveness

- Leading pedestrian phase
- Pedestrian countdown signals
- Rectangular rapid flashing beacons
- In-street signs
- Call buttons that confirm the press
- Danish offset (combined w/ high-visibility Xwalk, advance yield markings, YIELD HERE TO PEDESTRIANS sign)
Medium/ Mixed Effectiveness

- Activated flashing beacons
- Electronic no turn on red (NTOR) sign
- Elimination of permissive left turns
- Portable speed trailers
Low Effectiveness

- High visibility crosswalks
- Advance stop lines
- “LOOK” pavement stencils
- “Turning traffic yield to pedestrians” signs
- Pedestrian zone signs
Effectiveness Dependent on Application

- Median refuge island
- Dynamic lighting
- Automated pedestrian detection (to activate or extend pedestrian crossing phase)
Identify Lessons Learned

Major steps in the project included:

- Establishing and maintaining a multi-agency team to oversee and guide the project
- Identifying safety and mobility problems, including potential contributing factors to crashes
- Selecting countermeasures corresponding to the problems identified
- Obtaining funding and support for improvements
- Procuring, deploying, and maintaining the countermeasures
- Evaluating the effectiveness of the countermeasures
General Lessons Learned

- Assemble a diverse set of project partners to address the range of issues that might arise during the study.
- Implement regular communication and participation mechanisms for project partners from project kick-off.
- Use a variety of methods/sources to understand problems and to determine causes of crashes at prominent pedestrian crash locations.
- Begin the program by implementing low-cost countermeasures for the greatest potential of widespread use.
General Lessons Learned (cont’d)

- Pursue a variety of funding sources for the pedestrian safety program
- Do not underestimate the complexity of procurement
- Budget ample time for deployment and coordinate with the appropriate jurisdictions
- Consider how the timing of countermeasure deployment may impact the experimental design and evaluation
- Consider the unique aspects of collecting and reducing pedestrian safety data
Countermeasure-specific Lessons Learned

- Strategically place in-street pedestrian signs to reduce the chance of them being hit by vehicles and to maximize their effectiveness.

- Consider the technical issues surrounding the use of automated pedestrian detection.

- Translate public service messages into multiple languages to successfully reach non-English speaking populations.

- Be prepared to demonstrate to concerned traffic engineers that the electronic NTOR sign will not significantly disrupt traffic progression along a corridor. Work with the local electrical department and vendors to make sure everything is in place for success.
Thank you.