U.S. Department of Transportation
Federal Highway Administration

Pedestrian and Bicycle Information Center

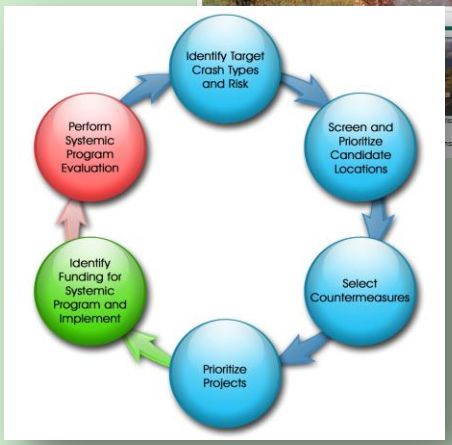
Systemic Safety Project Selection Tool

Presented by:

Karen Scurry
Federal Highway Administration Office of Safety

Howard Preston
CH2M HILL

May 28, 2013



Today's presentation

- Introduction and housekeeping
- Audio issues? Dial into the phone line instead of using "mic & speakers"
- PBIC Trainings

  http://www.walkinginfo.org/training
- Registration and archives

  http://www.walkinginfo.org/webinars
- Questions at the end
- Follow-up email with certificate of attendance for 1.5 hours of instruction and link to download slides

Participant Exercise

- **Help identify the top three risk factors for three types of pedestrian crashes:**
  - **Walking Along Roadway** – Pedestrian struck by motor vehicle while walking along the roadway
  - **Crossing** – Pedestrian struck by motor vehicle while crossing the roadway
  - **Pedestrian Dart/Dash** – Pedestrian ran into the roadway or walked into the roadway when view of pedestrian was obstructed
- **If your top choice isn't available, submit it to us via the chat/question pod**

Systemic Approach to Safety: Using Risk to Drive Action

Pedestrian Safety Focus States/Cities Webinar

May 28, 2013

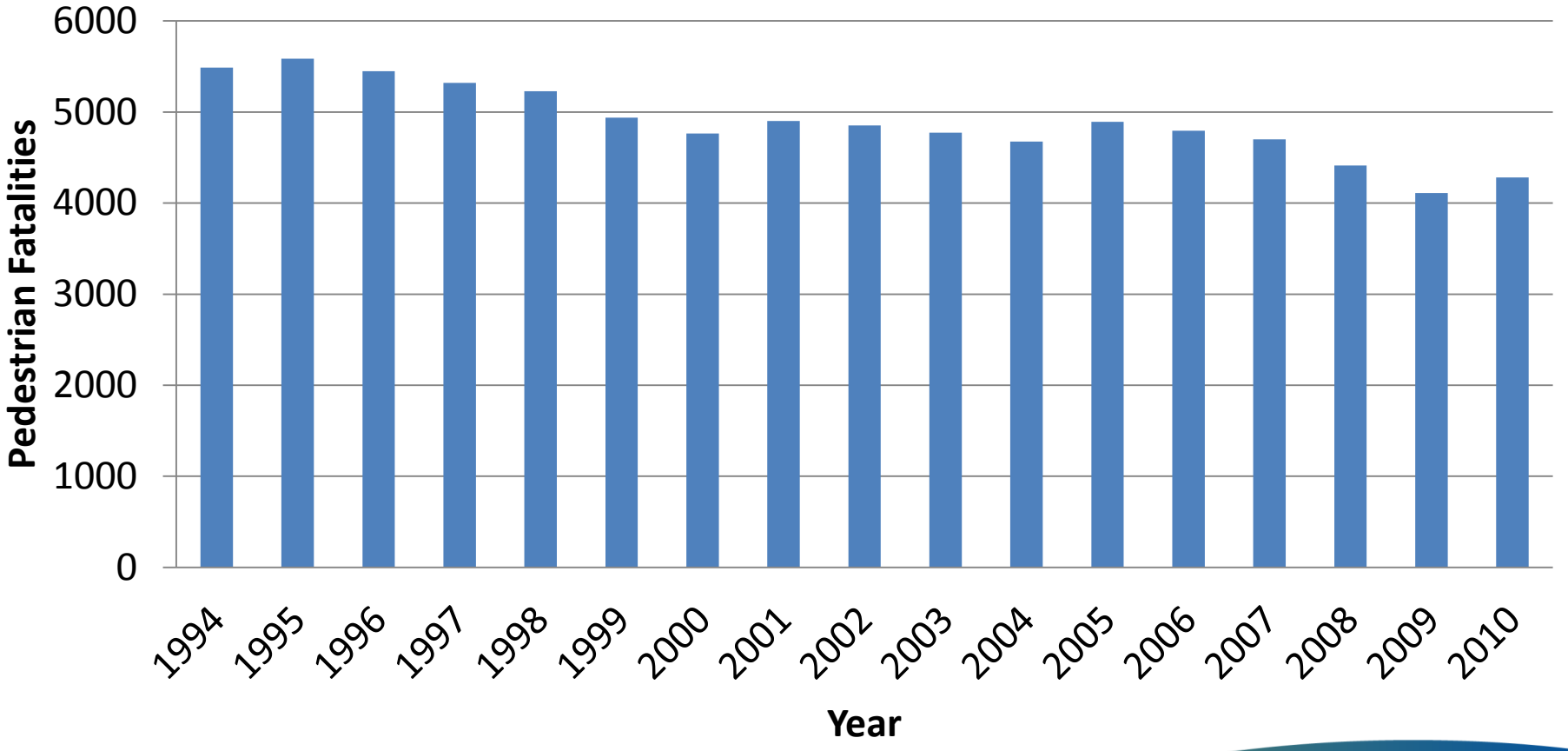
U.S. Department of Transportation
Federal Highway Administration

Safe Roads for a Safer Future
Investment in roadway safety saves lives
http://safety.fhwa.dot.gov

Webinar Outline

- Background
- Introduction to the Systemic Safety Project Selection Tool
- Minnesota Case Study
  - Presented by Howard Preston, CH2MHill
- Participant Exercise

Pedestrian Fatalities by Year in US (1994-2010)



Other Pedestrian Safety Facts

- 73 percent pedestrian fatalities in urban areas.
- 79 percent at non-intersection locations.
- 88 percent in “normal” weather conditions.
- 68 percent at night.

Source: NHTSA Traffic Safety Facts – Pedestrians (2010 Data)

Approaches

Planning & Design

- Street Design
- Street Connectivity
- Site Design
- Land Use
- Access Management

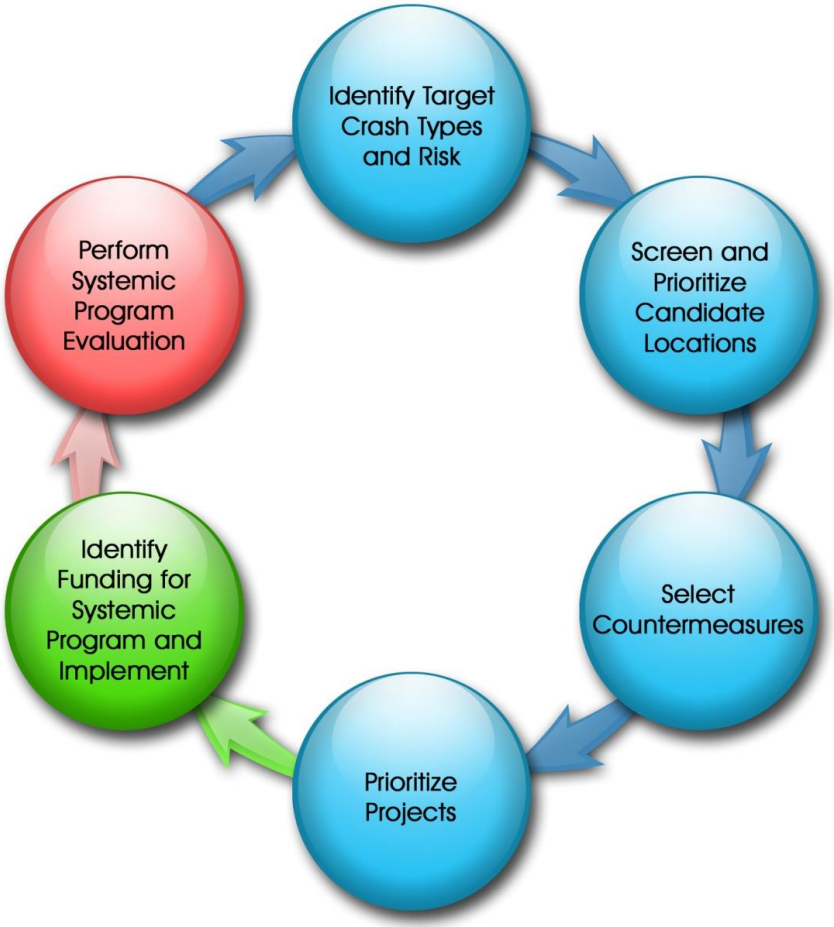
Safety management

- Spot Locations
- Corridors
- Targeted areas
- Entire jurisdiction
- Systemic approach

What do we mean by “systemic safety improvement”?

An improvement that is widely implemented based on high-risk roadway features that are correlated with particular severe crash types.

Systemic Safety Project Selection Tool

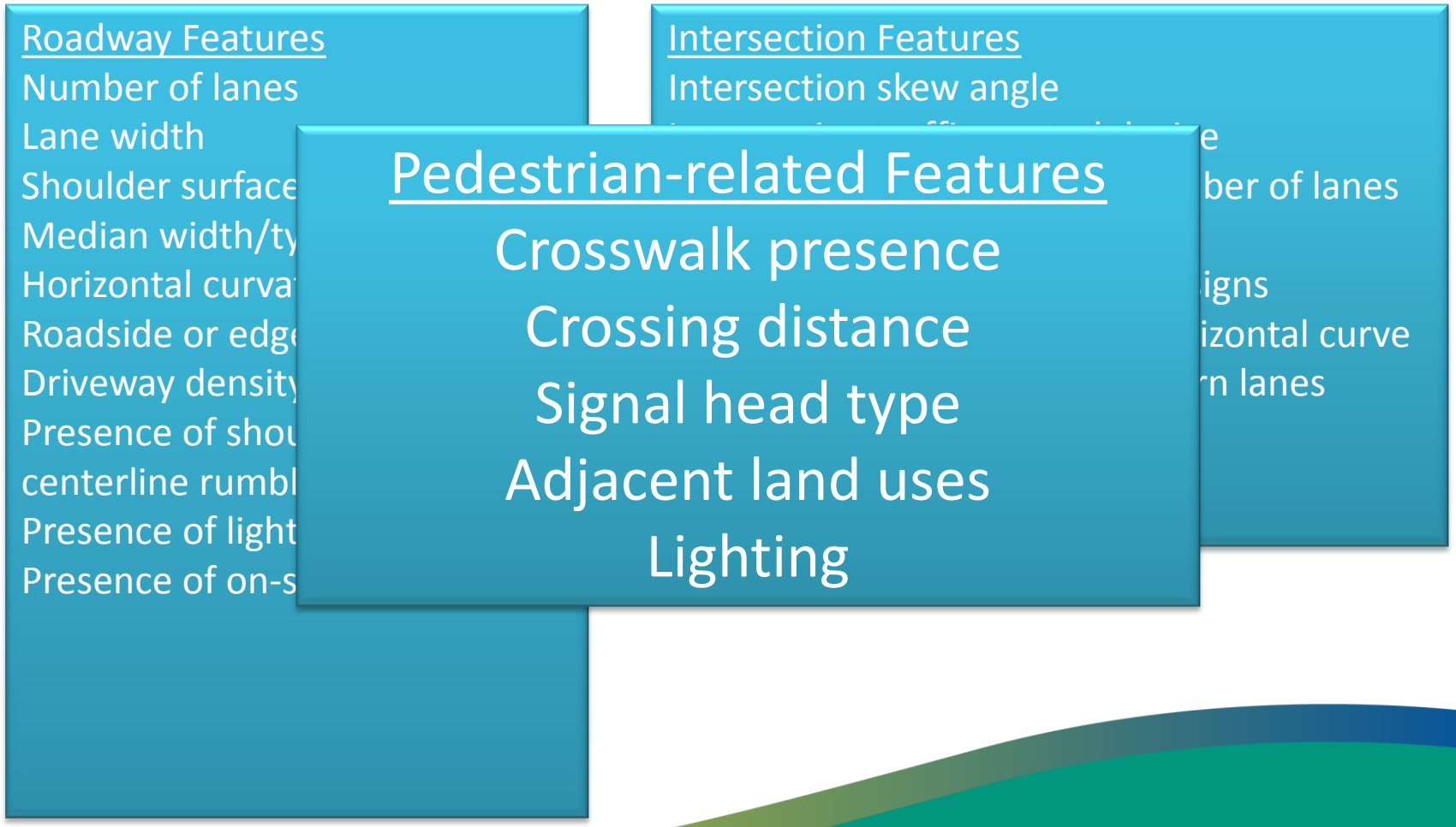


Systemic Safety Planning Process

Identify Target Crash Types and Risk Factors

- System-wide crash analysis
- Crash characteristics at the system level

Potential Risk Factors



Screen and Prioritize Candidate Locations

- Risk Assessment
  - Identify similar facilities
  - Document crash history and patterns
  - Document physical and traffic characteristics
  - Conduct evaluation of system
  - Prioritize elements of system

Select Countermeasures

- Initial list of strategies
  - Low cost
  - Significant crash reduction
- Evaluation
  - Effectiveness
  - Implementation costs
  - Policies/practices/ experiences

- Selection tool
- Interactive matrices
- Countermeasures
- Case studies

Crash Group / Countermeasures	Pedestrian Facility Design	Roadway Design	Intersection Design	Traffic Calming	Traffic Management	Signals and Signs	Other Measures
1. Dart/Dash	●	●		●	●	●	●
2. Multiple Threat/Trapped	●	●	●	●		●	●
3. Unique Midblock	●	●		●		●	●
4. Through Vehicle at Unsignalized Location	●	●	●	●	●	●	●
5. Bus-Related	●	●		●		●	●
6. Turning Vehicle	●	●	●	●	●	●	●
7. Through Vehicle at Signalized Location	●	●	●	●	●	●	●
8. Walking Along Roadway	●	●				●	●
9. Working or Playing in Roadway	●	●		●	●	●	●
10. Non-Roadway	●	●		●		●	●
11. Backing Vehicle	●	●		●			●
12. Crossing an Expressway	●					●	●

Prioritize Projects

Task 1 – Create a Decision Process for Project Selection

Purpose

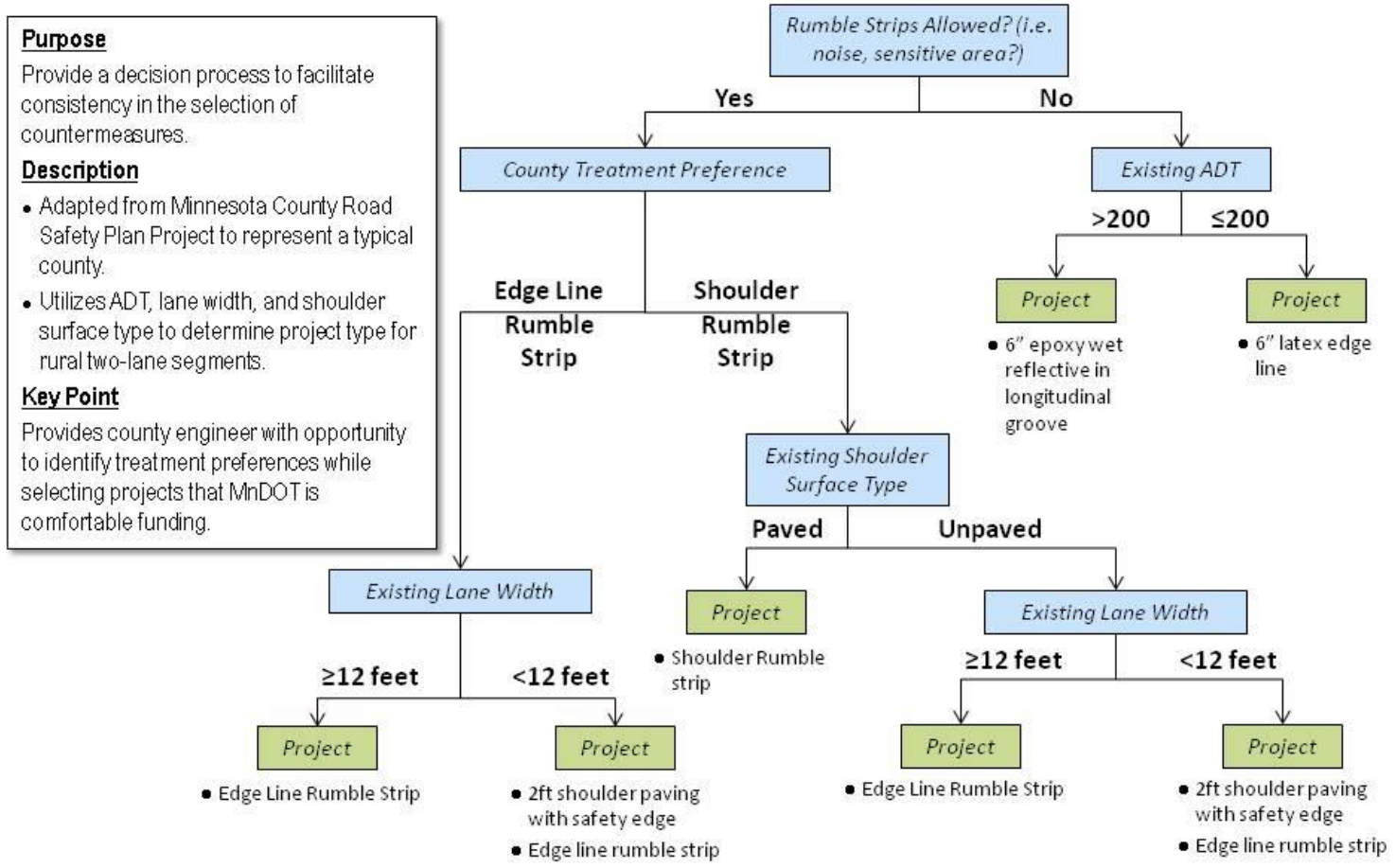
Provide a decision process to facilitate consistency in the selection of countermeasures.

Description

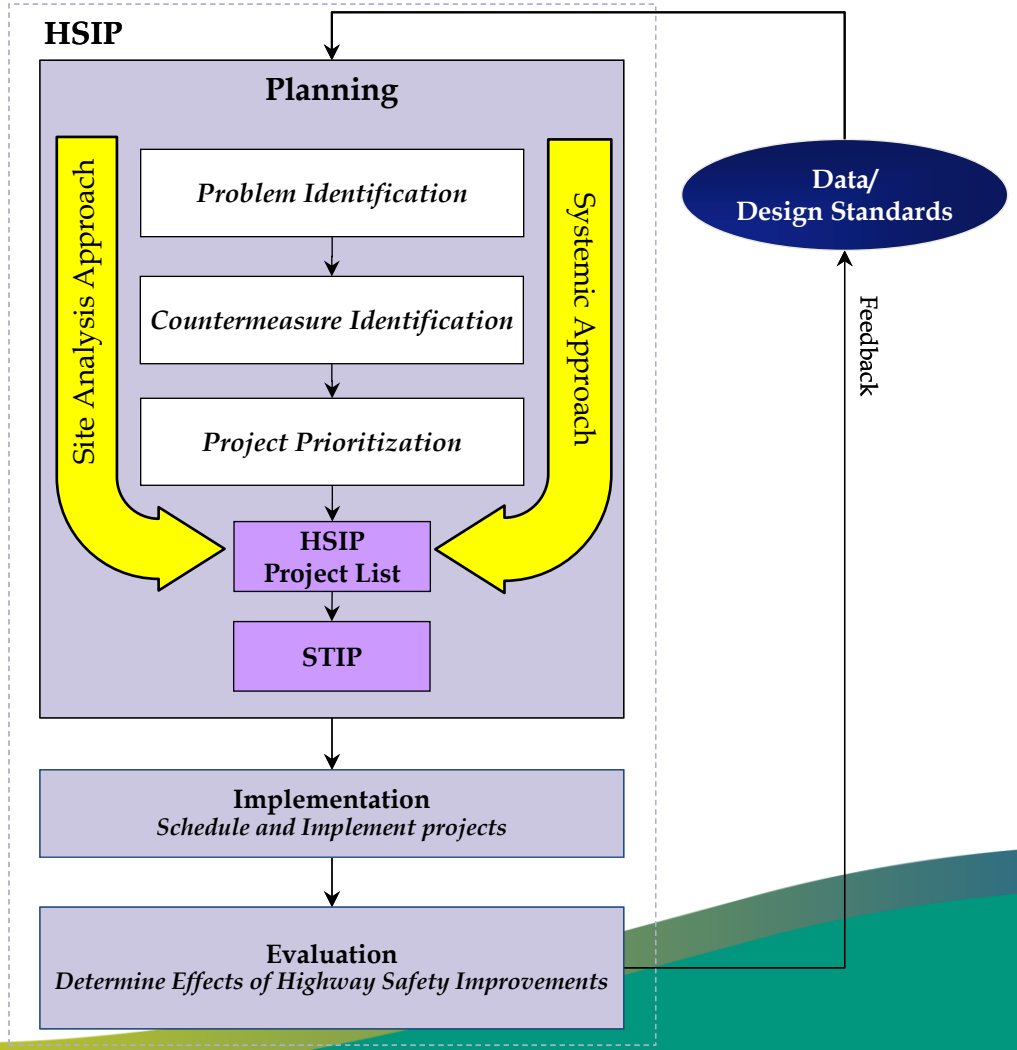
- Adapted from Minnesota County Road Safety Plan Project to represent a typical county.
- Utilizes ADT, lane width, and shoulder surface type to determine project type for rural two-lane segments.

Key Point

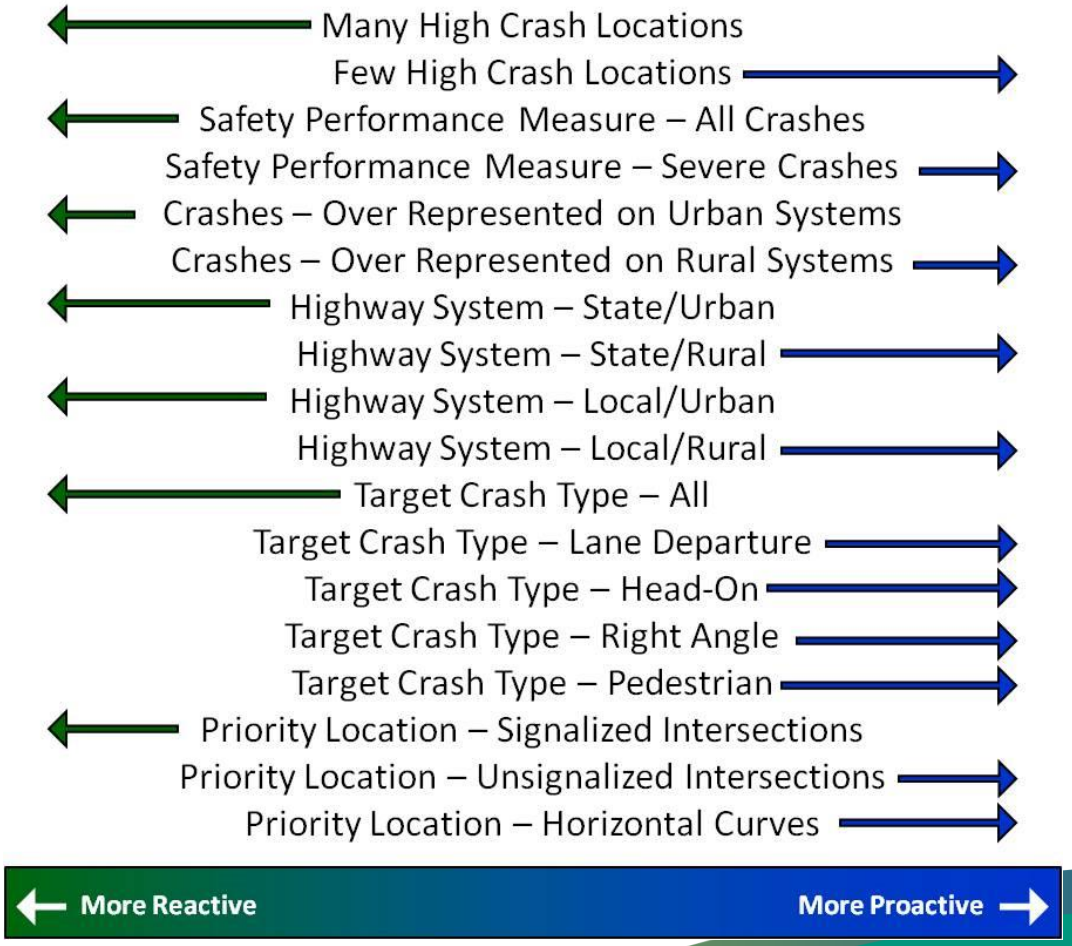
Provides county engineer with opportunity to identify treatment preferences while selecting projects that MnDOT is comfortable funding.



State Highway Safety Improvement Program



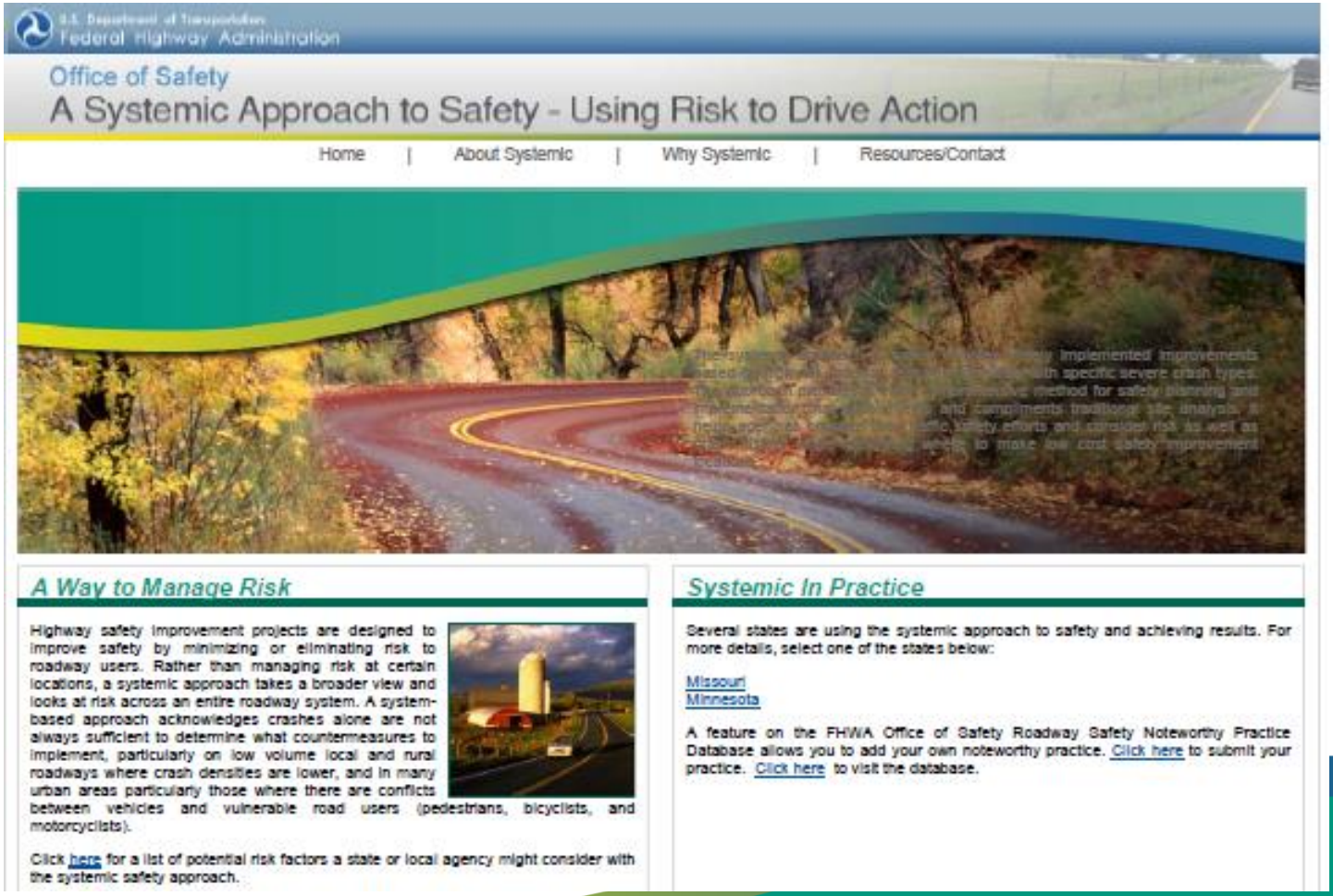
Distribution of Safety Investments



Systemic Program Evaluation

- Output
  - Funding level decisions
- Outcome
  - Program level trends
  - Treated facilities only
  - Cost effectiveness
  - Countermeasure performance

Systemic Website



http://safety.fhwa.dot.gov/systemic

What can you do?

- Get started
  - Review the Systemic Tool
  - Identify Data Needs and Potential Risk Factors
  - Apply the systemic approach to safety
- Share with your peers
  - Case Studies
  - Lessons Learned

Questions???

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HSIP

Highway Safety Improvement Program

Data Driven Decisions

FHWA Webinar

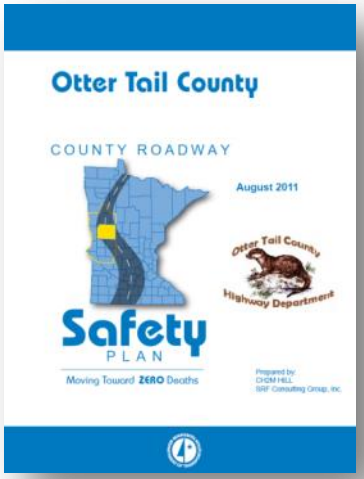
Systemic Safety Project Selection Tool – Application to Address Pedestrian Safety: The Minnesota Experience

May 28, 2013

Agenda

- Background
- Process
- Target Crash Types & Risk Factors
- Screen Candidate Locations
- Countermeasures
- Project Development
- Wrap Up

Background



Minnesota County Road Safety Plans

- MnDOT effort to prepare a safety plan for all 87 counties in Minnesota.
- Follow through on commitment in 2008 Strategic Highway Safety Plan to better address the 50% of severe crashes that occur on local systems.
- County Road Safety Plans were the first statewide application of the systemic risk assessment process.

Systemic Safety Project Selection Tool

- FHWA effort to document a systemic process intended to compliment the traditional site analysis (Black Spot) approach to developing safety projects.

Process

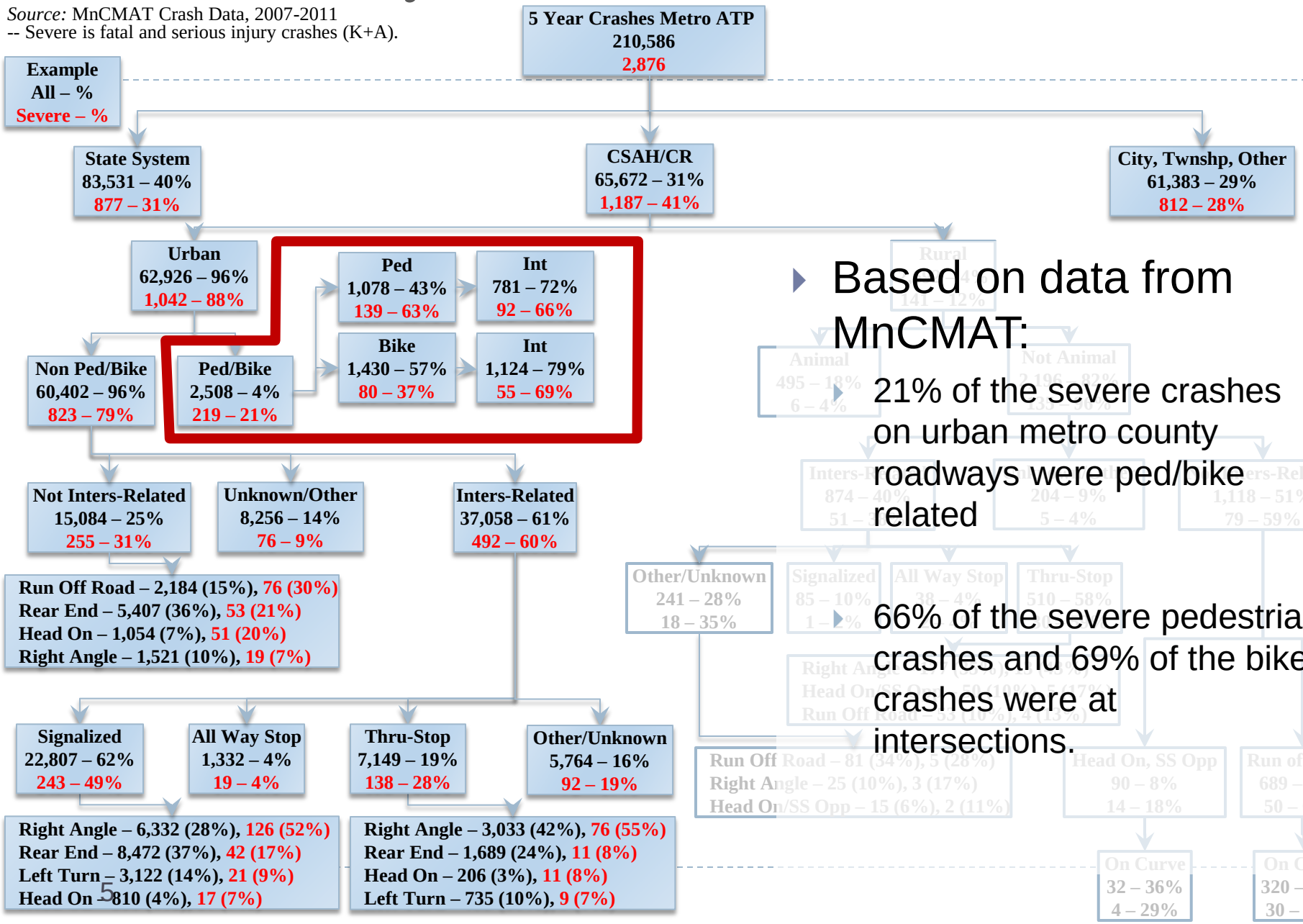
Source: FHWA

- Identify Target Crash Types and Risk Factors
  - What types of crashes represent the greatest opportunity for reduction?
  - What roadway and traffic characteristics appear to be overrepresented at the locations where the target crash types occur?
- Screen and Prioritize Candidate Locations
  - In most cases, the target crashes will NOT be focuses at Black Spots and they will NOT be evenly distributed across a system. It will likely be possible to evaluate and prioritize candidate locations based on the observed presence of certain roadway and traffic characteristics – risk factors.
- Select Countermeasures
  - Develop and prioritize a short list of high priority safety strategies for the target crash types based on effectiveness and cost.
- Develop/Prioritize Projects
  - Specific strategies to be deployed at specific locations (corridors, intersections, curves)

Target Crash Types

Metro ATP County Crash Data Overview

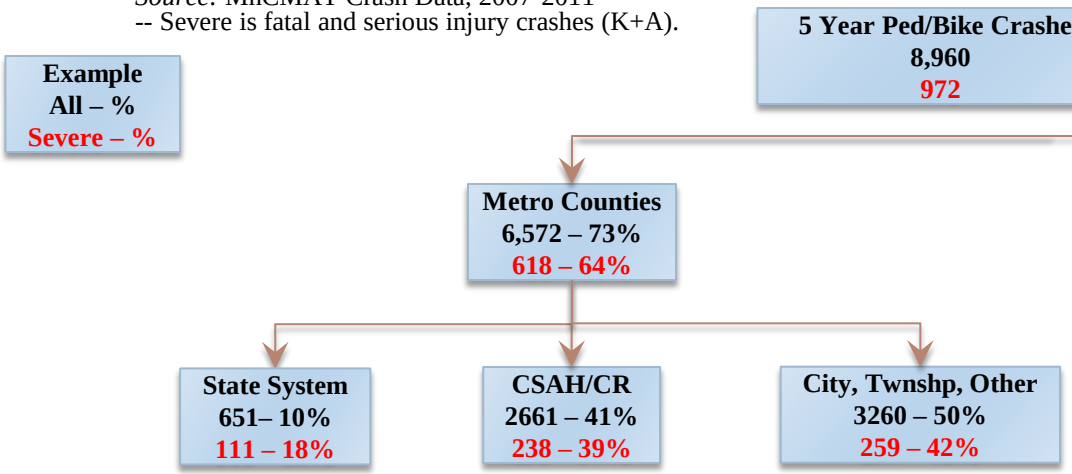
Source: MnCMAT Crash Data, 2007-2011
-- Severe is fatal and serious injury crashes (K+A).



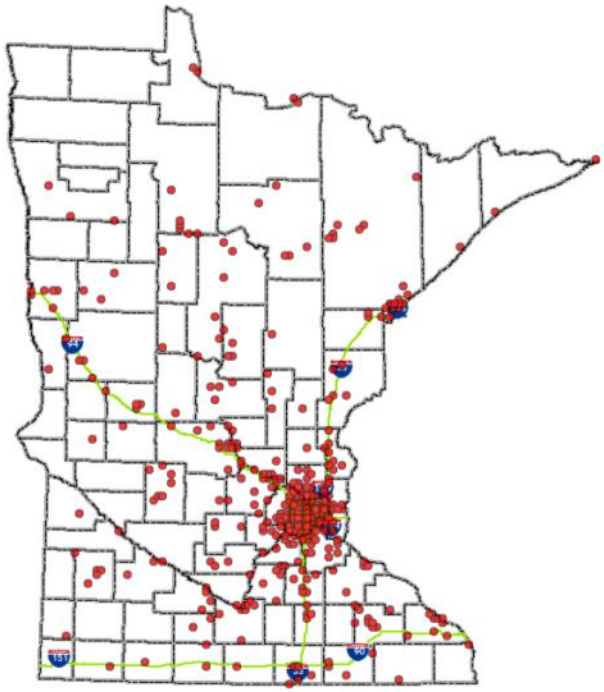
- Based on data from MnCMAT:
  - 21% of the severe crashes on urban metro county roadways were ped/bike related
  - 66% of the severe pedestrian crashes and 69% of the bike crashes were at intersections.

Statewide Ped/Bike Crashes

Source: MnCMAT Crash Data, 2007-2011
-- Severe is fatal and serious injury crashes (K+A).



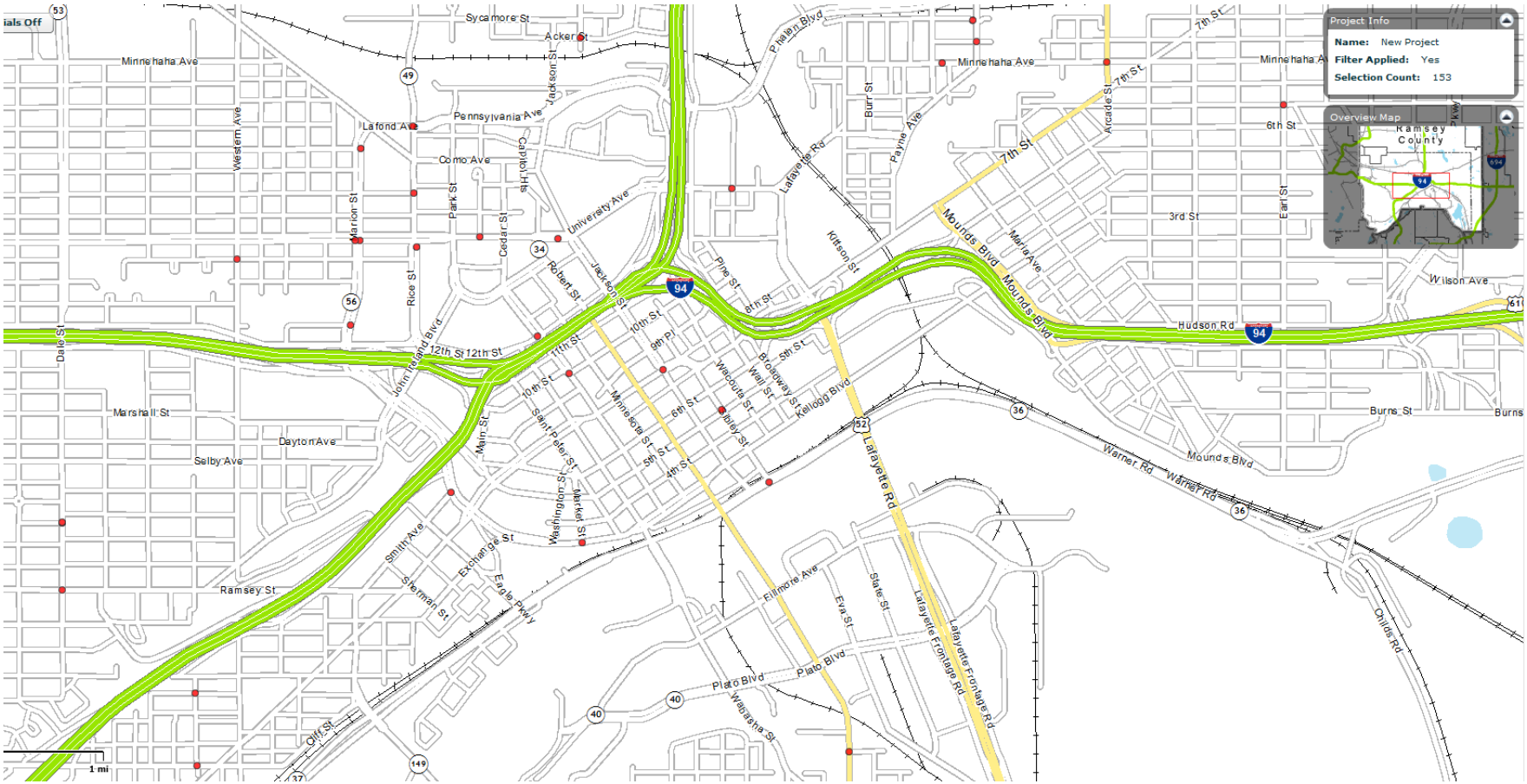
- 64% of all severe Minnesota ped/bike crashes occur in the metro counties
- 81% of all severe metro county ped/bike crashes occur on the local/county system
- The County Road Safety Plans focused on the 41% of all ped/bike (39% of severe ped bike crashes) on the CSAH and County Road system



Need for Proactive Approach

- Approximately 70% of severe pedestrian/bicycle crashes occur at intersections
- 1,587 signalized intersections were included in the analysis
- 122 intersections had a severe pedestrian or bicycle crash in the last five years
- Only 14 intersections had multiple severe ped/bike crashes – none had more than 1 severe ped/bike crash per year

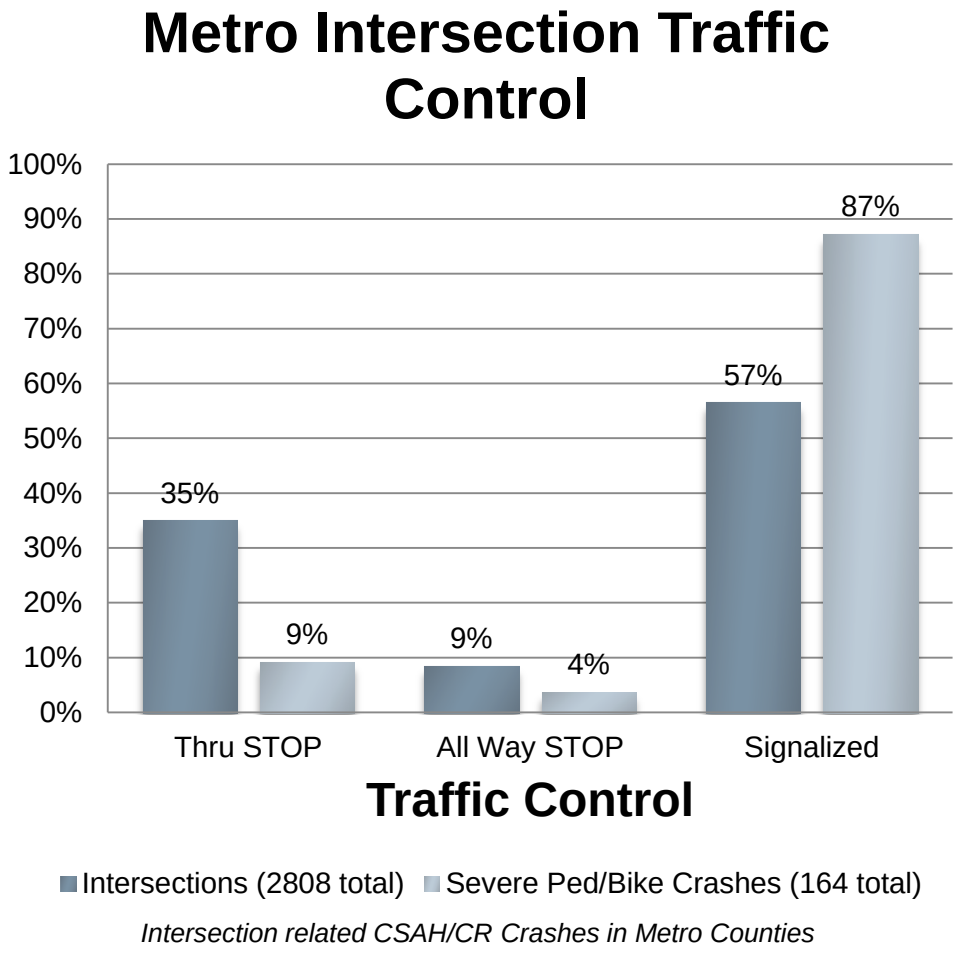
Need for Proactive Approach



- Severe pedestrian/bicycle crashes are scattered across the roadway system

Risk Factors

Traffic Control at Intersections with Ped/Bike Crashes

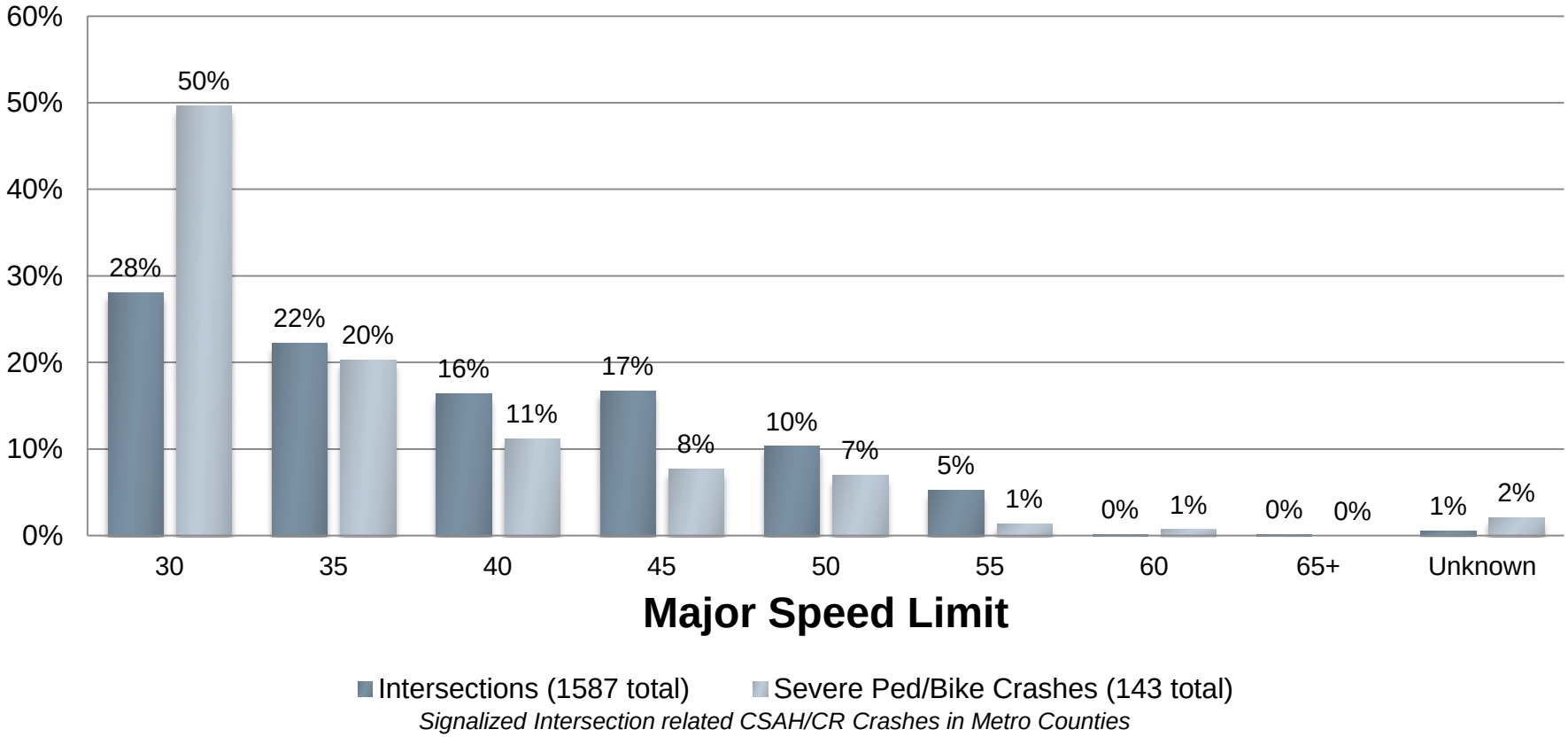


Intersection related CSAH/CR Crashes in Metro Counties

- Based on detailed crash analysis of the Urban Metro County Roadway System:
  - 87% of the intersection related severe ped/bike crashes were at signalized intersections

Risk Factors

Speed Limits at Signalized Intersections with Ped/Bike Crashes

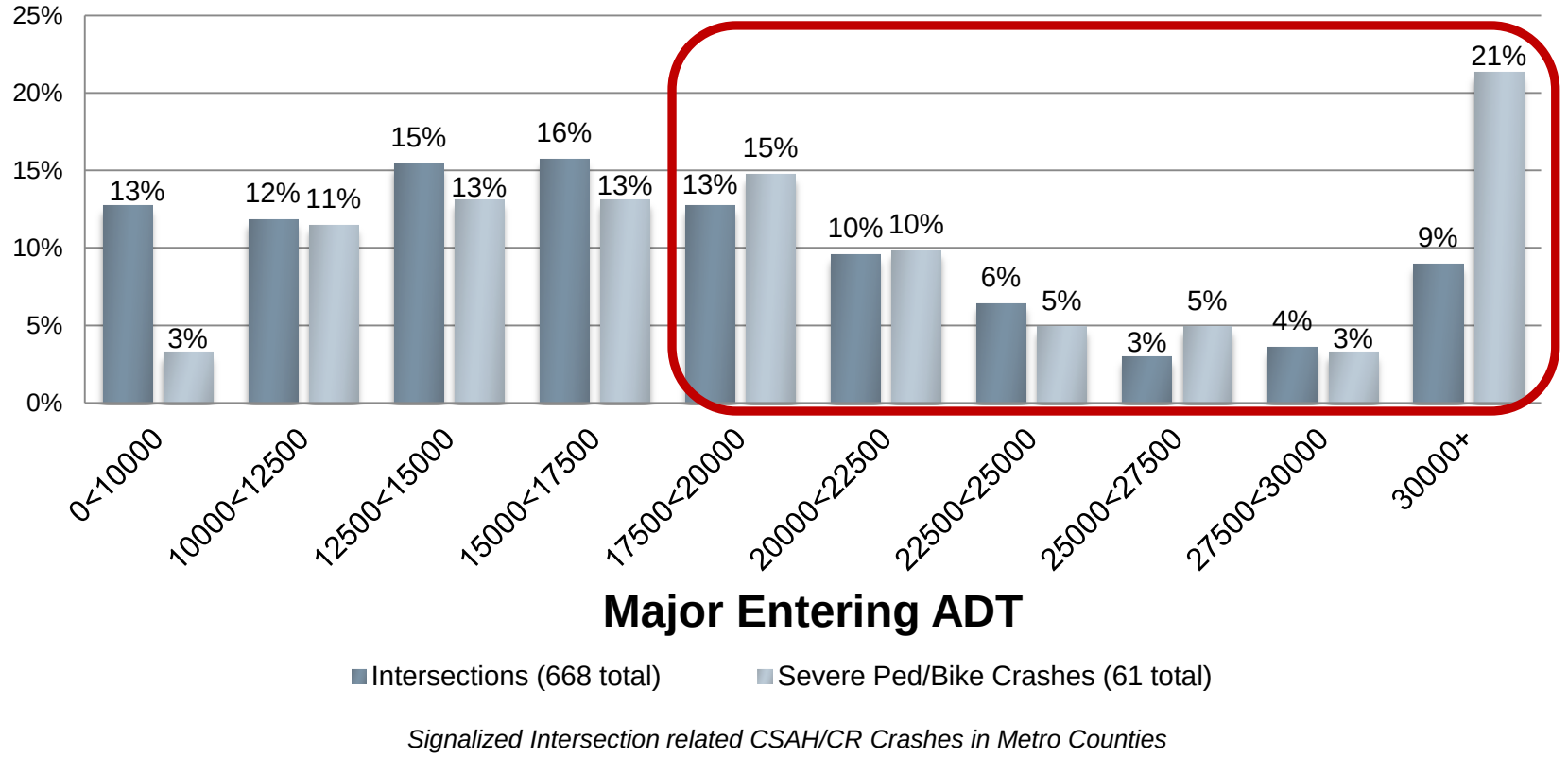


Signalized Intersection related CSAH/CR Crashes in Metro Counties

- Half of the severe ped/bike crashes at signalized intersections were on corridors with 30 mph speed limits
- 80% were equal or less than 40 mph

Risk Factors

Intersection Traffic Volumes



Signalized Intersection related CSAH/CR Crashes in Metro Counties

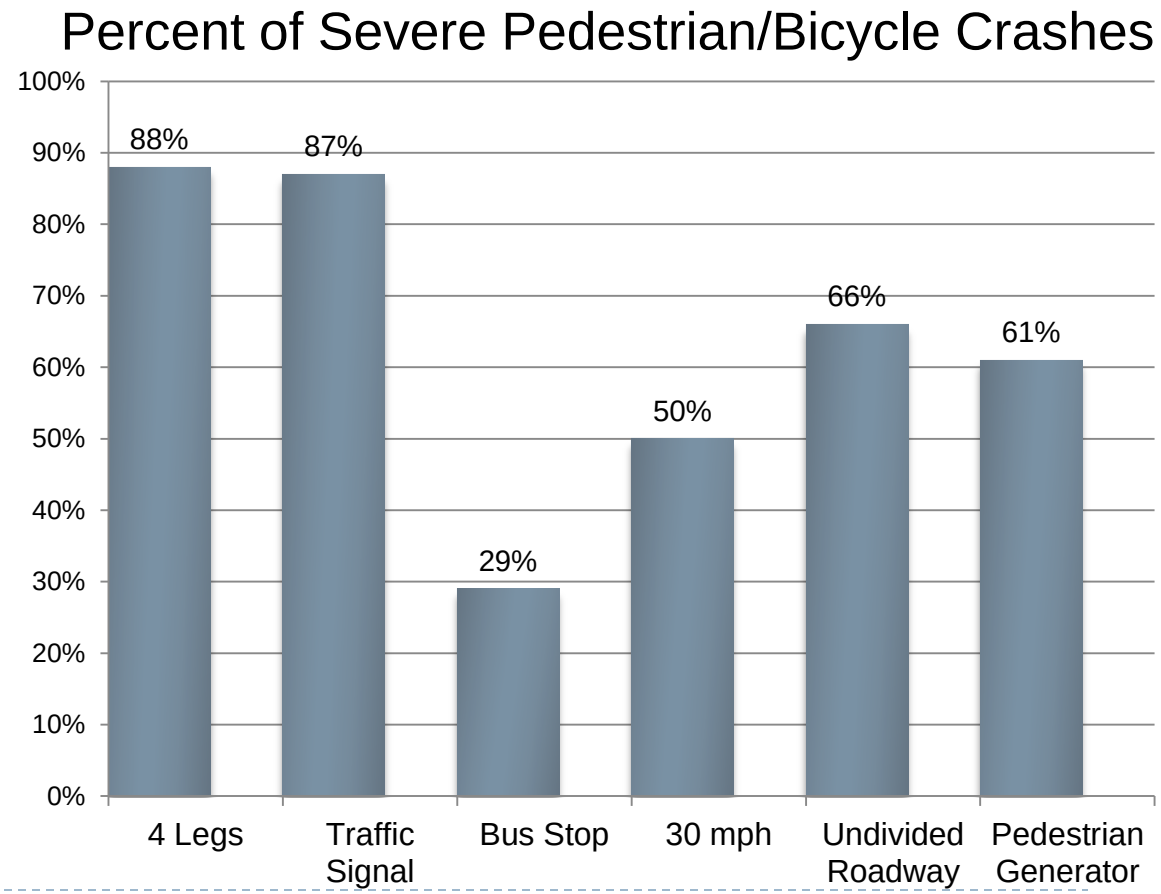
- 59% severe pedestrian/bicycle crashes at equal or greater than 17,500 vehicles per day

Risk Factors

Urban Signalized Intersection Pedestrian Crash Risk Rating Criteria

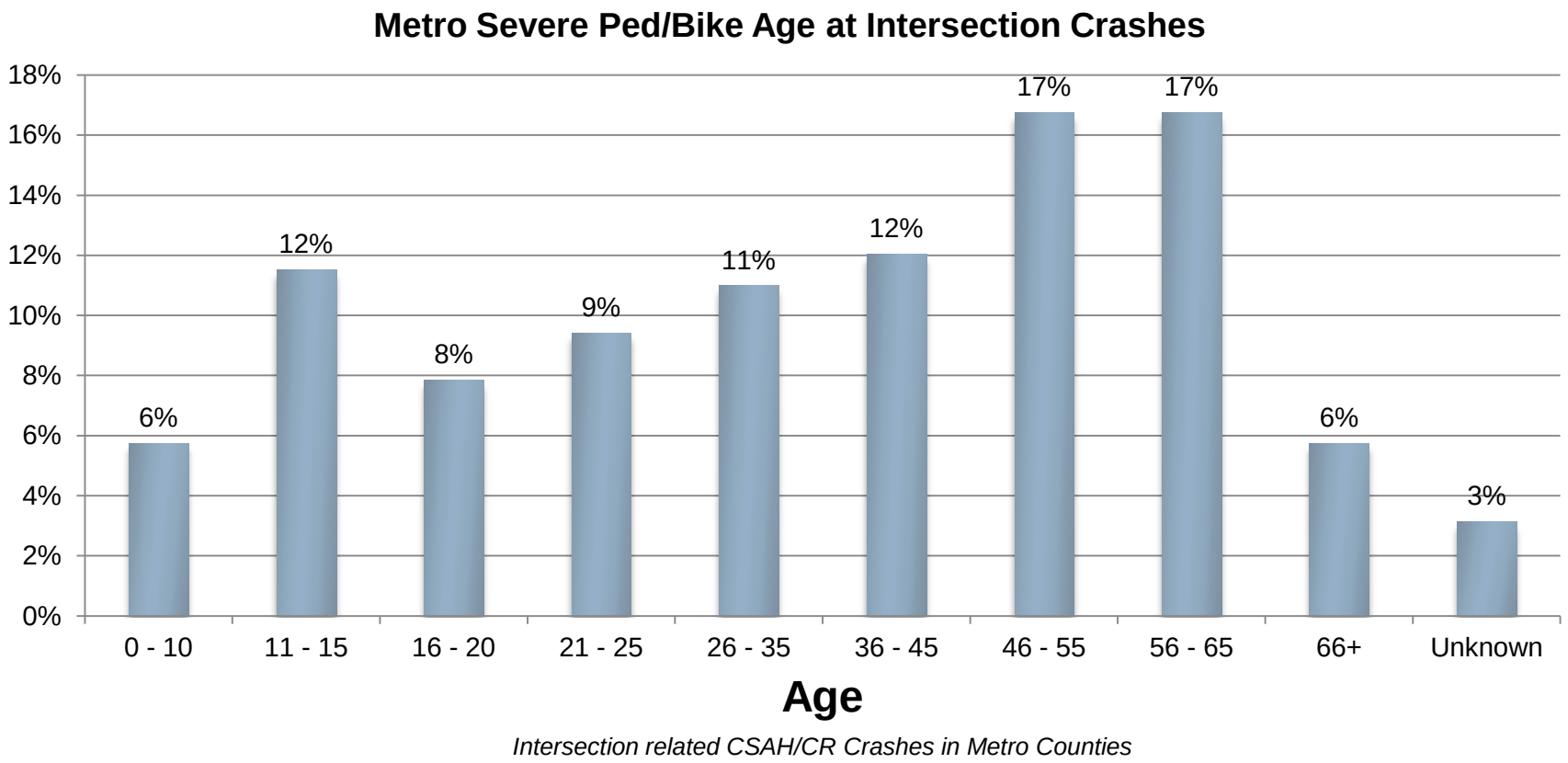
Characteristics (*NOT* causation!)

- Traffic Signal
- Speed Limit
- Four Legged
- Undivided Roadway
- Bus Stop
- Pedestrian Generator



Risk Factors

Pedestrian/Bicyclists Age at Signalized Intersections



Intersection related CSAH/CR Crashes in Metro Counties

Screen & Prioritize Candidate Locations

Urban Signalized Intersection Pedestrian/Bicycle Crash Risk Analysis

Rank	Int #	Sys	#	Street Name	Intersection Description	Major ADT	Major Approach Lanes	Major Speed Limit	Bus Stop	Ped Gen	Parking Present	Severe Ped/Bike Crash	Priority	Crash Cost	Total Severe Ped/Bike Crashes
1	34.09	CSAH	34	University Ave W	CSAH 34 AND MNTH-51 (SNELLING AVE)	★	★	★	★	★		★	★★★★★★	$5,840,000	3
2	65.12	CSAH	65	White Bear Ave N	CSAH 65 AND GERVAIS AVE (MSAS-111)	★	★	★	★	★		★	★★★★★★	$5,455,000	1
3	34.16	CSAH	34	University Ave W	CSAH 34 AND MARION ST (CSAH-56)	★	★	★	★	★		★	★★★★★★	$3,673,000	2
4	34.07	CSAH	34	University Ave W	CSAH 34 AND FAIRVIEW AVE N (MSAS-132)	★	★	★	★	★		★	★★★★★★	$2,301,000	1
5	19.03	CSAH	19	County Rd D W	CSAH 19 AND OLD HWY 8 SW (CSAH-77)	★	★	★	★	★		★	★★★★★★	$1,669,000	1
6	34.03	CSAH	34	University Ave W	CSAH 34 AND RAYMOND AVE (CSAH-46)	★	★	★	★	★		★	★★★★★★	$1,260,000	1
7	31.08	CSAH	31	Maryland Ave E	CSAH 31 AND ARKWRIGHT ST (MSAS-224)	★	★	★	★	★			★★★★★	$5,261,000	0

Intersection Count	Segment	Intersection ID	Street Name	Description	Traffic Control	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median
109	49.01	49.03	N Rice St	CSAH 49 AND FRONT AVE (MSAS-138)	Signalized	★★★★	1	1	-	-
110	49.01	31.05	Maryland Ave W	CSAH 31 AND RICE ST (CSAH-49)	Signalized	★★★★	-	-	-	-
111	49.01	49.04	N Rice St	CSAH 49 AND ARLINGTON AVE (MSAS-109)	Signalized	★★★★	1	1	-	-
112	49.01	30.14	Larpenteur Ave W	CSAH 30 AND RICE ST (CSAH-49)	Signalized	★★★★	-	-	-	-
113	49.01	49.05	N Rice St	CSAH 49 AND S MCCARRON BLVD (MSAS-250)	Thru STOP	★★★	-	-	-	-
114	49.01	49.06	N Rice St	CSAH 49 AND ROSELAWN AVE (MSAS-138)	Signalized	★★★	1	1	-	-
115	49.01	49.07	N Rice St	CSAH 49 AND N MCCARRON BLVD (MSAS-249)	Thru STOP	★★★★	-	-	-	-
116	49.01	25.11	County Rd B W	CSAH 25 AND CSAH-49	Signalized	★★★★	-	-	-	-
117	49.01	-	N Rice St	CSAH 49 and MNTH 36 South Ramps	Signalized	☒	1	1	-	-
118	49.01	-	N Rice St	CSAH 49 and MNTH 36 North Ramps	Signalized	☒	1	1	-	-
119	49.01	49.08	N Rice St	CSAH 49 AND MINNESOTA AVE (MSAS-223)	Signalized	★★★★★	1	1	-	-
120	49.01	49.09	N Rice St	CSAH 49 AND W CR-B2 (CR-111)	Signalized	★★★★	1	1	-	-
121	49.01	49.1	N Rice St	CSAH 49 AND DEMONT AVE (MSAS-109)	Thru STOP	★★★	-	-	4	-
122	49.01	23.13	City Centre Dr	CSAH 23 AND RICE ST (CSAH-49)	Signalized	★★★★				
123	49.01	49.11	N Rice St	CSAH 49 AND LITTLE CANADA RD (MSAS-120)	Signalized	★★★	1	1	-	-
124	49.01	49.12	N Rice St	CSAH 49 AND W CR-C2 (MSAS-216)	Thru STOP	★★★	-	-	3	-
125	49.01	49.13	N Rice St	CSAH 49 AND S OWASSO BLVD (CSAH-20)	Signalized	★★★★	1	1	-	-
126	51.01	51.01	Lexington Pkwy S	CSAH 51 AND 7TH ST W (MNTH-5)	Signalized	★★★★	1	1	-	-
127	51.01	38.05	Randolph Ave	CSAH 38 AND LEXINGTON PKWY (CSAH-51)	Signalized	★★★★★	1	1	-	-
128	51.01	51.02	Lexington Pkwy S	CSAH 51 AND JEFFERSON AVE (MSAS-156)	Signalized	★★	1	1	-	-
129	51.01	51.03	Lexington Pkwy S	CSAH 51 AND ST CLAIR AVE (MSAS-188)	Signalized	★★★	1	1	-	-
130	51.01	51.04	Lexington Pkwy S	CSAH 51 AND GRAND AVE (MSAS-141)	Signalized	★★★★	1	1	-	-

- Risk assessment conducted at individual intersections – projects were developed for corridors with multiple priority intersections.

Screen & Prioritize Candidate Locations

Urban Signalized Intersection Pedestrian/Bicycle Crash Risk Analysis

Rank	Int #	Sys	#	Street Name	Parking Present	Severe Ped/Bike Crash	Priority	Crash Cost	Total Severe Ped/Bike Crashes
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3	34.16	CSAH	34	University Ave W		★	★★★★★★	$3,673,000	2
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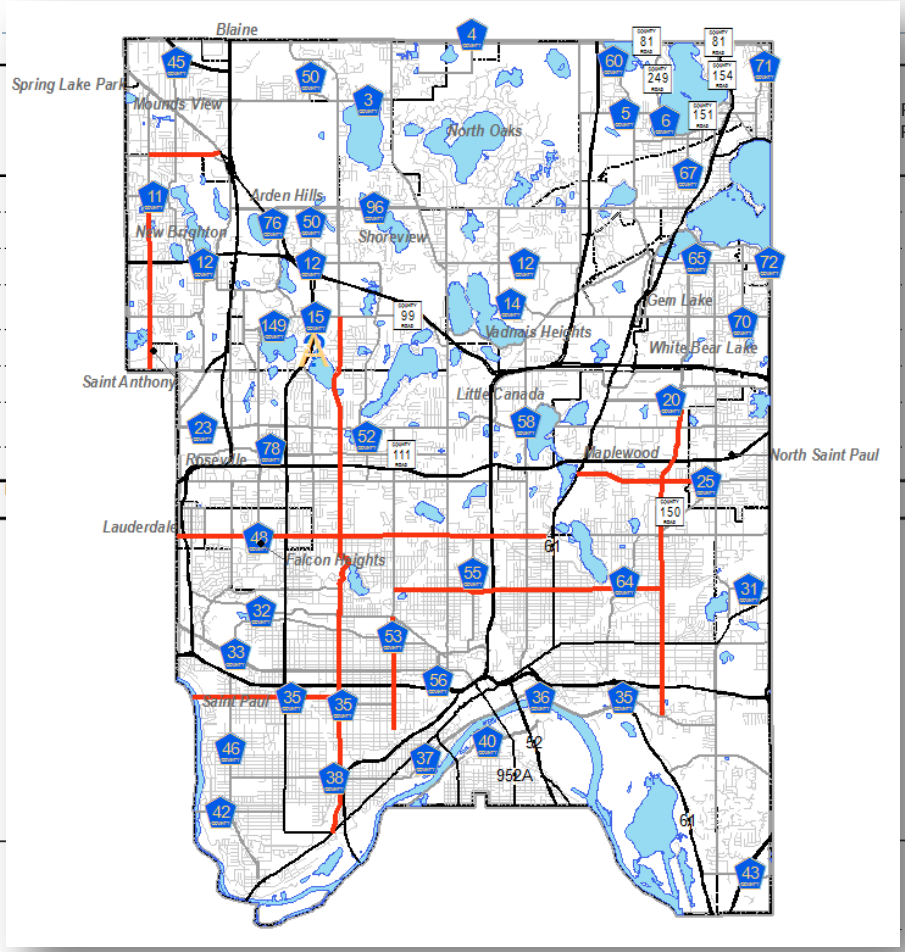
6	34.03	CSAH	34	University Ave W		★	★★★★★★	$1,260,000	1
7	31.08	CSAH	31	Maryland Ave E			★★★★★	$5,261,000	0



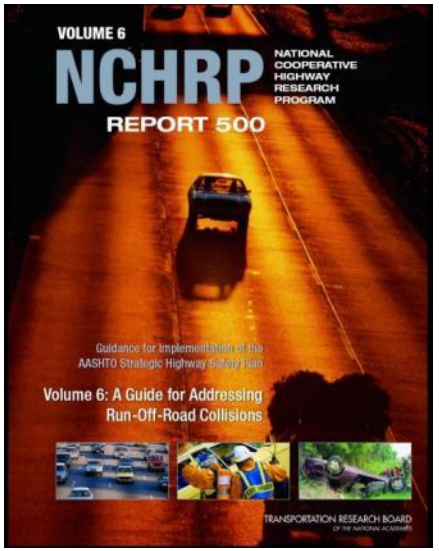
Intersection Count	Segment
109	49.01
110	49.01
111	49.01
112	49.01
113	49.01
114	49.01
115	49.01
116	49.01
117	49.01
118	49.01
119	49.01
120	49.01
121	49.01
122	49.01
123	49.01
124	49.01
125	49.01
126	51.01
127	51.01
128	51.01
129	51.01
130	51.01

Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median
★★★★	1	1	-	-
★★★★	-	-	-	-
★★★★	1	1	-	-
★★★★	-	-	-	-
★★★	-	-	-	-
★★★	1	1	-	-
★★★★	-	-	-	-
★★★★	-	-	-	-
☒	1	1	-	-
☒	1	1	-	-
★★★★★	1	1	-	-
★★★★	1	1	-	-
★★★	-	-	4	-
★★★★				
★★★	1	1	-	-
★★★	-	-	3	-
★★★★	1	1	-	-
★★★★	1	1	-	-
★★★★★	1	1	-	-
★★	1	1	-	-
★★★	1	1	-	-
★★★★	-	-	-	-

- Risk assessment conducted at individual intersections – projects were developed for corridors with multiple priority intersections.

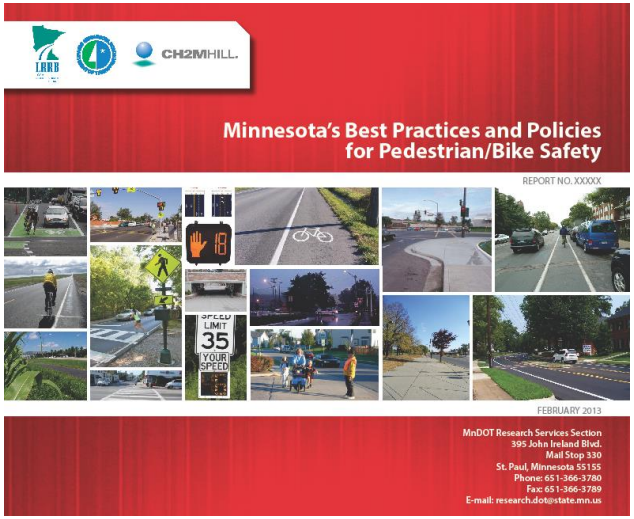
What Countermeasures have been PROVEN Effective?

- **NCHRP Report 500**
  - A series of guides to assist state and local agencies in reducing injuries and fatalities in targeted emphasis areas
  - The guides correspond to the emphasis areas outlined in the AASHTO Strategic Highway Safety Plan.
  - Each guide includes a brief introduction, a general description of the problem, the strategies/ countermeasures to address the problem, and a model implementation process.



Stay Tuned

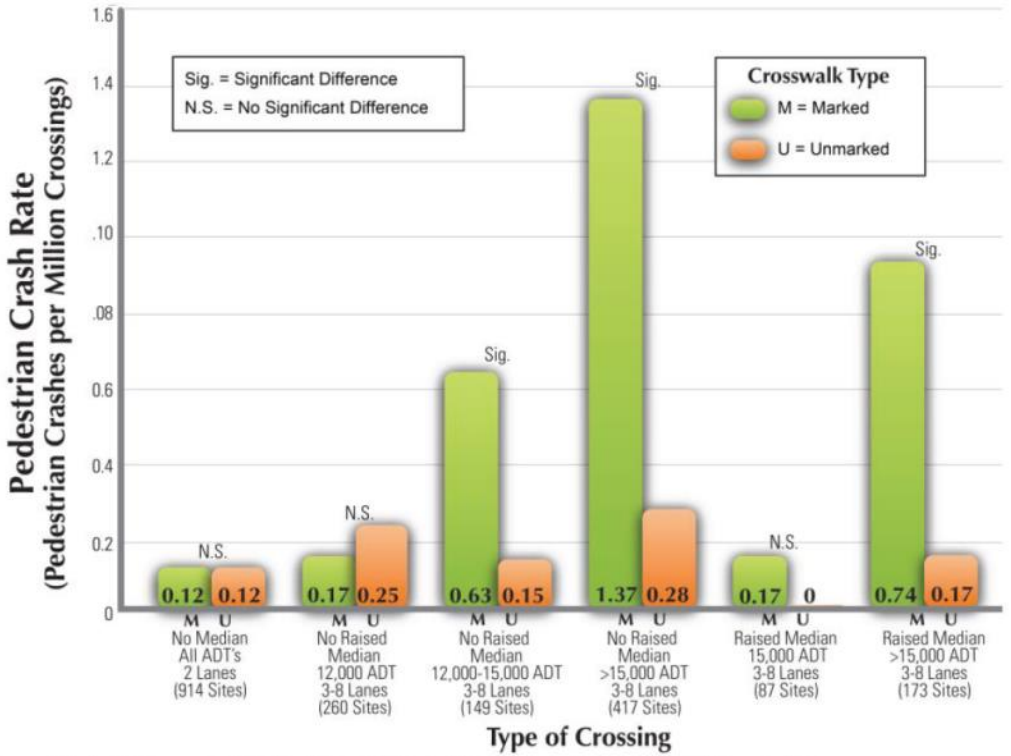
- New Best Practices manual coming out this summer.



	Strategies	Crash Reduction/ Crash Features	Proven/Tried/ Experimental	Operational Effects (Mobility)	Candidate Locations	Design Features	Construction Costs
Pedestrian Safety Strategies	Sidewalks	50 to 90% reduction in "walking in roadway" pedestrian crashes	Proven	N/A	Urban arterials & collectors (not residential streets)	Curb ramps, cross slope, buffer zones	$4 to $5 per square foot
	Crosswalks and Crosswalk Enhancements	39 to 46%	Proven/Tried	N/A	Signalized intersections	Should be part of package including crosswalk enhancements	$200 per crosswalk
	Medians and Crossing Islands	39 to 46%	Proven	May provide operational benefits	Wide 2-lane roads and multi-lane roadways	4 to 8 feet wide	$15,000 to $30,000 per 100 feet
	Curb Extensions	39 to 46%	Proven	Potential reduction in speeds	Urban arterials and collectors with curb parking	Roadway with parking	$3,000 to $10,000 per extension
	Pedestrian Hybrid Beacon System	15 to 69%	Tried	Additional delay for vehicles stopping for pedestrians	Mid-Block Crosswalk locations — Not at intersections	Pedestrian activated	$80,000
	Crosswalk Lighting	33 to 44%	Proven	N/A	Isolated crosswalks not along a continuously lit roadway	Require a power source	$10k to $25K per intersection
	Traffic Signals	Leading Pedestrian Interval — 60%	Tried	Increases delay and reduces mobility of major roadway	Intersections that meet signal warrants	Short cycle lengths, countdown timers, easy accessibility	Signal — $250,000 per intersection
Ped and Bike Safety Strategies	Grade Separation	80 to 90% in fatal and injury crashes	Proven	May provide operational benefits for locations with high pedestrian traffic	Limited access/high-volume roadways	Install barriers or landscaping to discourage at-grade crossing	$500,000 to $4 million
	Crossing Guards	NA	Tried	Higher compliance with guard	School crossings	Training required	NA
	Shared Space	NA	Tried	Equal travel speeds for all users	Low speed/high pedestrian and bike volumes	Limited or no traffic control devices	NA
Bike Safety Strategies	Road Diet	30% all crashes (benefits to pedestrians)	Proven/Tried	Potential speed reduction	4-lane undivided roadways with ADT <20,000	Variations of distribution of cross section available	$16,000 per mile for restriping $500,000 for overlay $5 million for reconstruction
	On-Road Bike Lane	-30 to +13%	Tried	NA	Urban	4 to 8 feet wide	$16,000 per mile for restriping
	Shared (Paved) Shoulder Bike Lane	NA	Tried	NA	Rural roadways	4 to 10 feet wide	$40,000 per mile for 2-foot shoulders $100,000 per mile for 8-foot shoulders
	Bicycle Boulevards	60%	Tried	Reduces conflict with vehicles on parallel arterial	Local streets	Traffic-calming features often used	Minimal — Signs and Markings
	Bike Boxes	NA	Experimental	NA	Signalized intersections	14-foot-wide rectangle	$1,000 per box
Pedestrian and Bicycle Considerations	Roundabouts	Lower speeds and medians for pedestrian refuge	Proven — Vehicles Tried — Pedestrians	Slows traffic entering roundabout	Arterials and major collectors	Splitter islands help pedestrians by separating entering and exiting traffic	more than $1,000,000
	Bicycle-friendly Edge Line Rumbles	30 – 35% of Road Departure Crashes	Proven	N/A	Lower volume rural roadways	48-foot strip with 12-foot gap	$3,000 per mile
	Speed Reduction Measures	Low-speed roads have higher crash rates and higher fraction of pedestrian crashes	Tried	Limited reduction of speed without changing driver's perceptions of roadway	School zones, speed transitions	Road diets, curb extensions and streetscaping help change driver's perceptions	Varies by strategy $250 to more than $1,000,000

Stay Tuned – Other Ped/Bike Information

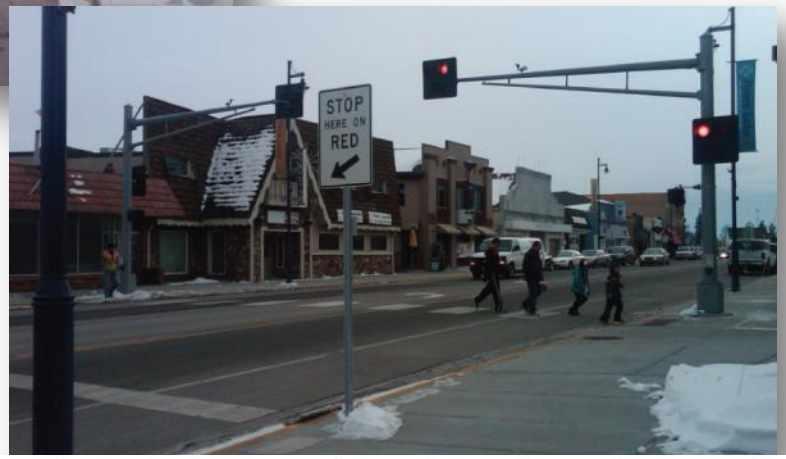
- **Crosswalks –** the addition of marked crosswalks alone (without other treatments such as medians, curb extensions, etc) has not been found to reduce pedestrian crash rates.
- **Medians** – proven strategy with one study finding 39 to 46 reduction of ped-vehicle crashes at unsignalized



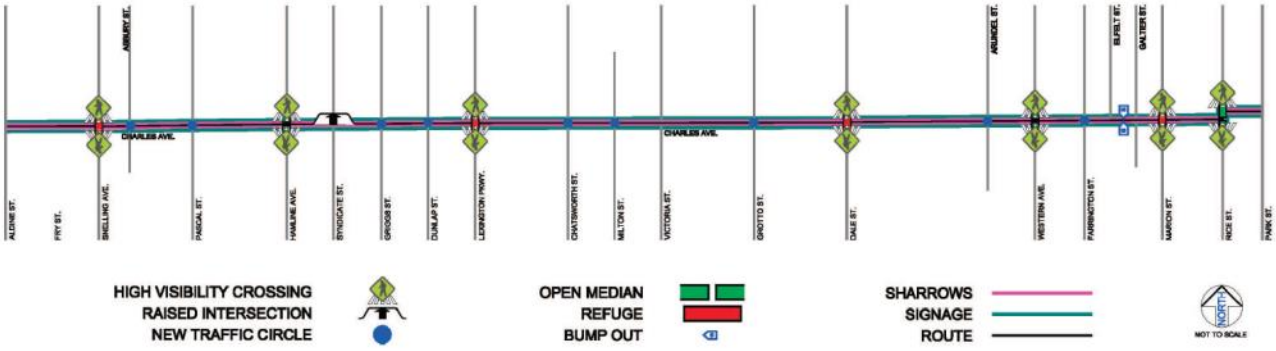
Source: Charles V. Zegeer, et al., Safety Effects Of Marked Vs. Unmarked Crosswalks At Uncontrolled Locations: Executive Summary And Recommended Guidelines, 1996-2001, http://www.walkinginfo.org/pdf/r&d/crosswalk_021302.pdf

Stay Tuned – Other Ped/Bike Information

- **Curb Extensions**– proven strategy that shortens the crossing distance for pedestrians, however, crash reduction effects have not been quantified.



- **HAWK Signals –** Should only be used in conjunction with a marked crosswalk and typically not at an intersection



- **Bike Boulevards** – still considered experimental, however, one study looking at seven bike boulevards in Berkeley, found a 60 percent reduction in bicycle-involved crashes.

Countermeasures
Signal Ped/Crash Strategies

- **Countdown Timers** - Countdown timers are flashing timers, usually installed with pedestrian indication lights, which provide the number of seconds remaining during the pedestrian phase.
- **Leading Pedestrian Interval** - A leading pedestrian interval provides the pedestrian walk 2 or 3 seconds ahead of the vehicle green, allowing pedestrians a head start and the ability to enter the crosswalk before right-turning vehicles can turn into the crosswalk.
- **Curb Extensions**
- **Medians**
- **Sidewalks**

Countermeasures

Effectiveness of Signal Ped/Crash Strategies

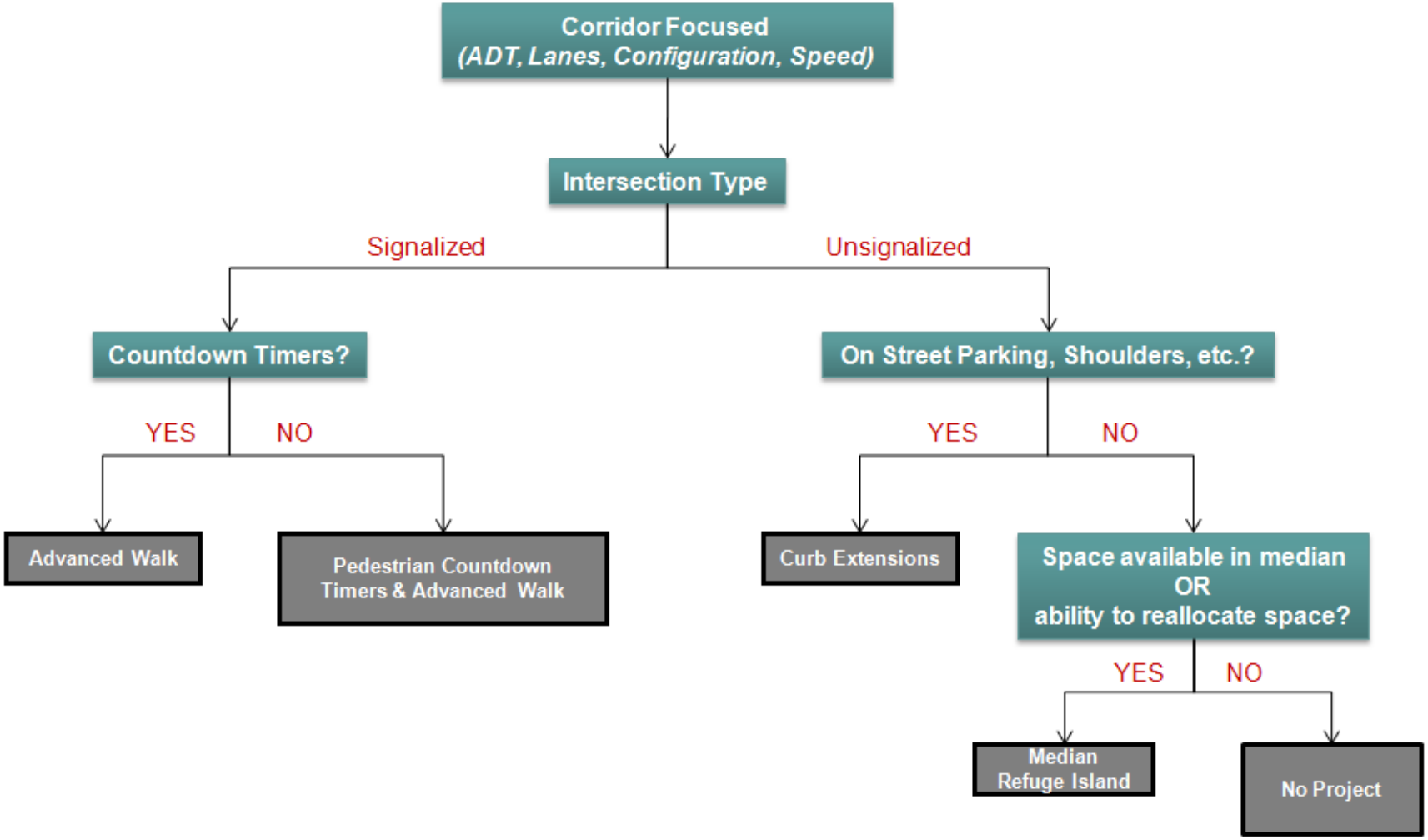
- Leading pedestrian intervals and pedestrian countdown timers are **TRIED** safety strategies because of their newness and limited research, but results are promising so far.

- A 2010 study in the *Journal of the Transportation Research Board* found an up-to-60 percent reduction in vehicle-pedestrian crashes at intersections that use the leading pedestrian interval strategy (Transportation Research Board 2010).

- A 2012 study by Chen, et. al., in New York City found that a 43 percent reduction in pedestrian crashes was associated with converting to leading pedestrian intervals. The same study found that providing separated left turn phasing reduced pedestrian crashes by 43 percent.

- A study in San Francisco (Markowitz et al) found that converting from standard pedestrian signals to countdown signals was associated with up to 25 percent fewer pedestrian crashes after the conversion.

Project Development
Decision Tree

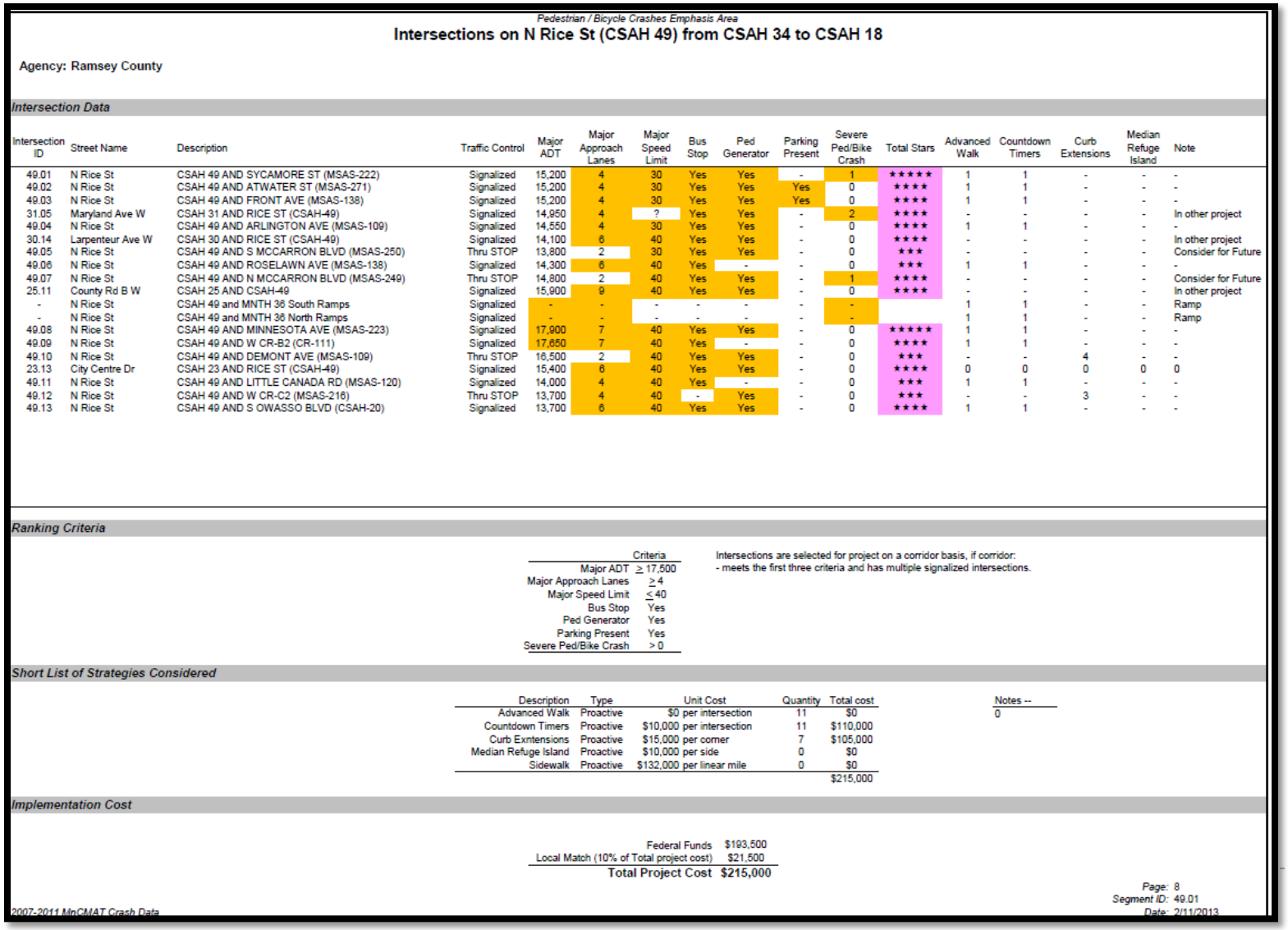


Project Development

Urban Signalized Intersection Pedestrian/Bicycle Project Implementation

Corridor	Street Name	First Intersection	Last Intersection	Signals (Countdown Timers and/or Advanced Walk)	Curb Extension	Median	Side-walk	Total Cost
9.01	Cty Rd H	Silver Lk Rd	CSAH 10	0	0	0	Yes	$171,600
19.01	Cty Rd D	Chandler	Johanna Blvd	6	0	1	-	$30,000
25.01	Cty Rd B	Cleveland	Edgerton St	8	8	0	-	$190,000
30.01	Larpenteur	TH 280	Payne Ave	17	0	2	-	$150,000
31.02	Maryland Ave	Dale St	White Bear	15	0	0	-	$100,000
35.01	Marshall Ave	MSAS-166	Lexington	7	1	2	-	$65,000
44.01	Silver Lake	37th Ave	16th St	9	0	0	-	$90,000
49.01	Rice St	Sycamore	Owasso Blvd	11	7	0	-	$215,000
51.01	Lexington	7th St W	Concordia Ave	8	0	0	-	$80,000
51.02	Lexington	St Anthony	Larpenteur	4	0	0	-	$40,000
51.03	Lexington	Garden	Cty Rd E	8	0	0	-	$80,000
51.04	Lexington	Grey Fox	CSAH 1/Ash	10	0	0	-	$100,000
53.01	Dale St	Grand Ave	Thomas Ave	7	0	0	-	$70,000
65.01	White Bear	Up.Afton	Cty Rd C	17	4	0	-	$220,000
65.02	White Bear	Beam Ave	Orchard Ln	8	0	0	-	$80,000
68.01	McKnight Rd	Londin Ln	Burns Ave	2	2	0	-	$50,000
			TOTALS	**143**	**12**	**5**	**1**	**$1,731,600**

Project Development
Minnesota HSIP Solicitation Form



Pedestrian / Bicycle Crashes Emphasis Area

Intersections on N Rice St (CSAH 49) from CSAH 34 to CSAH 18

Agency: Ramsey County

Intersection Data

Intersection ID	Street Name	Description	Traffic Control	Major ADT	Major Approach Lanes	Major Speed Limit	Bus Stop	Ped Generator	Parking Present	Severe Ped/Bike Crash	Total Stars	Advanced Walk	Countdown Timers	Curb Extensions	Median Refuge Island	Note
49.01	N Rice St	CSAH 49 AND SYCAMORE ST (MSAS-222)	Signalized	15,200	4	30	Yes	Yes	-	1	★★★★★	1	1	-	-	-
49.02	N Rice St	CSAH 49 AND ATWATER ST (MSAS-271)	Signalized	15,200	4	30	Yes	Yes	Yes	0	★★★★	1	1	-	-	-
49.03	N Rice St	CSAH 49 AND FRONT AVE (MSAS-138)	Signalized	15,200	4	30	Yes	Yes	Yes	0	★★★★	1	1	-	-	-
31.05	Maryland Ave W	CSAH 31 AND RICE ST (CSAH-49)	Signalized	14,950	4	?	Yes	Yes	-	2	★★★★	-	-	-	-	In other project
49.04	N Rice St	CSAH 49 AND ARLINGTON AVE (MSAS-109)	Signalized	14,550	4	30	Yes	Yes	-	0	★★★★	1	1	-	-	-
30.14	Larpenteur Ave W	CSAH 30 AND RICE ST (CSAH-49)	Signalized	14,100	6	40	Yes	Yes	-	0	★★★★	-	-	-	-	In other project
49.05	N Rice St	CSAH 49 AND S MCCARRON BLVD (MSAS-250)	Thru STOP	13,800	2	30	Yes	Yes	-	0	★★★	-	-	-	-	Consider for Future
49.06	N Rice St	CSAH 49 AND ROSELAWN AVE (MSAS-138)	Signalized	14,300	6	40	Yes	-	-	0	★★★	1	1	-	-	-
49.07	N Rice St	CSAH 49 AND N MCCARRON BLVD (MSAS-249)	Thru STOP	14,800	2	40	Yes	Yes	-	1	★★★★	-	-	-	-	Consider for Future
25.11	County Rd B W	CSAH 25 AND CSAH-49	Signalized	15,900	9	40	Yes	Yes	-	0	★★★★	-	-	-	-	In other project
-	N Rice St	CSAH 49 and MNTH 36 South Ramps	Signalized	-	-	-	-	-	-	-		1	1	-	-	Ramp
-	N Rice St	CSAH 49 and MNTH 36 North Ramps	Signalized	-	-	-	-	-	-	-		1	1	-	-	Ramp
49.08	N Rice St	CSAH 49 AND MINNESOTA AVE (MSAS-223)	Signalized	17,900	7	40	Yes	Yes	-	0	★★★★★	1	1	-	-	-
49.09	N Rice St	CSAH 49 AND W CR-B2 (CR-111)	Signalized	17,650	7	40	Yes	-	-	0	★★★★	1	1	-	-	-
49.10	N Rice St	CSAH 49 AND DEMONT AVE (MSAS-109)	Thru STOP	16,500	2	40	Yes	Yes	-	0	★★★	-	-	4	-	-
23.13	City Centre Dr	CSAH 23 AND RICE ST (CSAH-49)	Signalized	15,400	6	40	Yes	Yes	-	0	★★★★	0	0	0	0	0
49.11	N Rice St	CSAH 49 AND LITTLE CANADA RD (MSAS-120)	Signalized	14,000	4	40	Yes	-	-	0	★★★	1	1	-	-	-
49.12	N Rice St	CSAH 49 AND W CR-C2 (MSAS-216)	Thru STOP	13,700	4	40	-	Yes	-	0	★★★	-	-	3	-	-
49.13	N Rice St	CSAH 49 AND S OWASSO BLVD (CSAH-20)	Signalized	13,700	6	40	Yes	Yes	-	0	★★★★	1	1	-	-	-

Ranking Criteria

	Criteria
Major ADT	≥ 17,500
Major Approach Lanes	≥ 4
Major Speed Limit	≤ 40
Bus Stop	Yes
Ped Generator	Yes
Parking Present	Yes
Severe Ped/Bike Crash	> 0

Intersections are selected for project on a corridor basis, if corridor:
- meets the first three criteria and has multiple signalized intersections.

Short List of Strategies Considered

Description	Type	Unit Cost	Quantity	Total cost
Advanced Walk	Proactive	$0 per intersection	11	$0
Countdown Timers	Proactive	$10,000 per intersection	11	$110,000
Curb Exntensions	Proactive	$15,000 per corner	7	$105,000
Median Refuge Island	Proactive	$10,000 per side	0	$0
Sidewalk	Proactive	$132,000 per linear mile	0	$0
				$215,000

Notes --
0

Implementation Cost

Federal Funds	$193,500
Local Match (10% of Total project cost)	$21,500
Total Project Cost	**$215,000**

2007-2011 MnCMAT Crash Data

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Segment ID: 49.01
Date: 2/11/2013

Wrap Up

- The data from Minnesota indicates that pedestrian/bicycle crashes are a candidate for the systemic/risk assessment analytical approach – severe pedestrian/bicycle crashes are widely scattered around the system and none occurred at a location that would be considered a Black Spot.
- Not all intersections and road segments are equally at-risk – the presence of certain roadway and traffic characteristics infers a priority.
- The risk assessment was applied to over 600 intersection along roughly 275 miles of urban county roads.
- The systemic process resulted in the identification of approximately $1.7M of pedestrian/bicycle improvements. (The process also identified another $9M of roadway (conversion to two-way left turn lanes) and traffic signal system improvements (addition of red light confirmation lights).

- Questions?

Thank you!

- **Archive at**
  - walkinginfo.org/training/pbic/pedfocus_webinars.cfm
  - **Downloadable and streaming recording and presentation slides**

- **Questions?**
  - **Karen Scurry: Karen.Scurry@dot.gov**
  - **Howard Preston: Howard.Preston@CH2M.com**
  - **Other: webinars@hsrc.unc.edu**