Illinois Pedestrian Corridor Analysis

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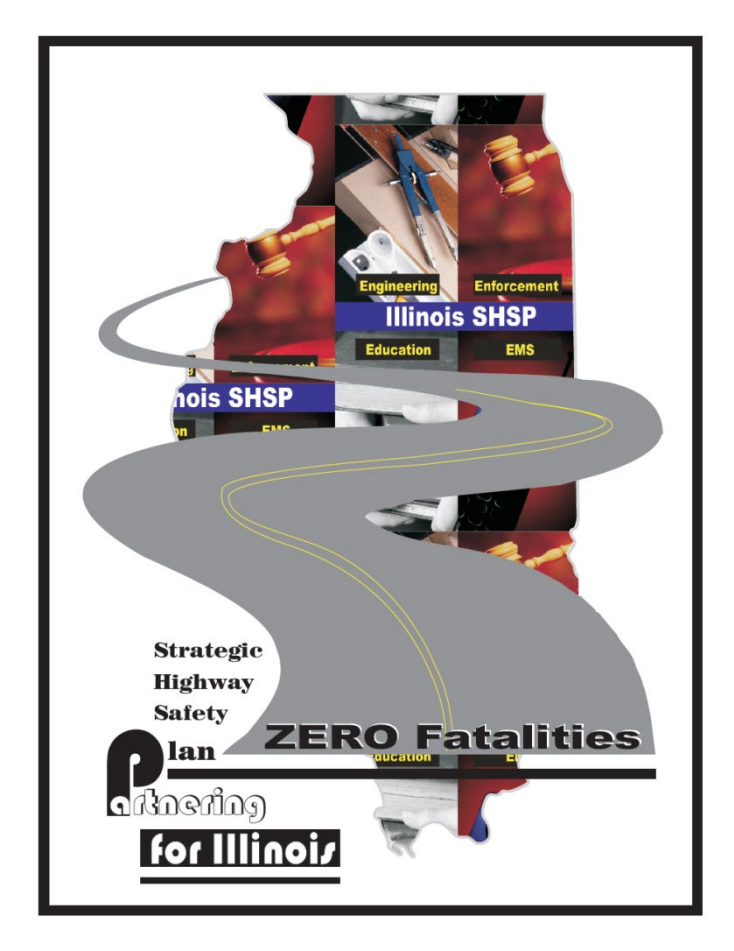
Illinois SHSP

- Zero Fatality Goal
- All public roads
- Severe Crashes
- Substantive Safety
- 4E Partnership
- Continual Evaluation



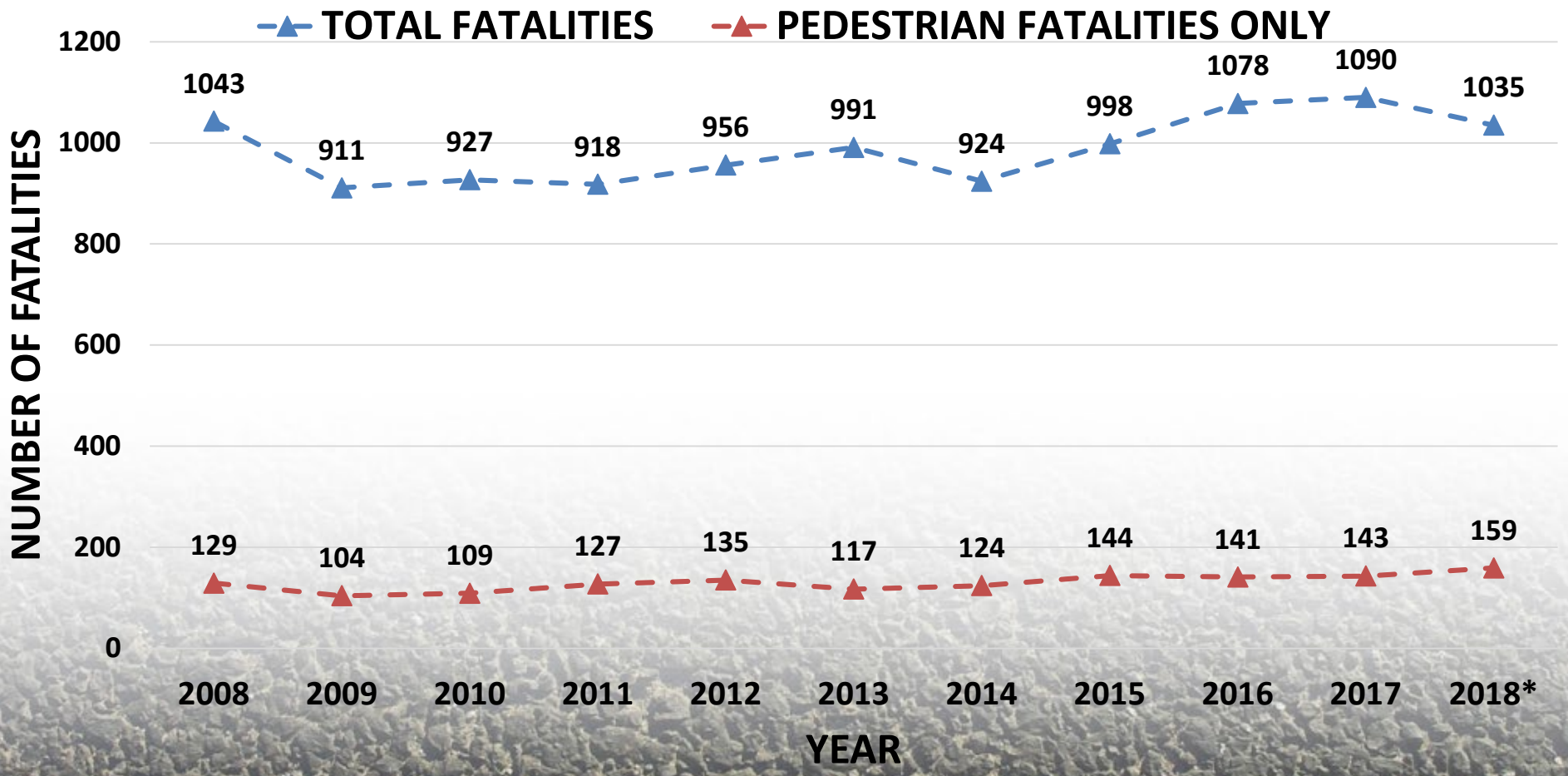
Driving Zero Fatalities to a Reality

Partnering for Illinois

IL SHSP Emphasis Areas

Priority Level	Emphasis Areas
PRIORITY LEVEL 1	Roadway Departure
	Impaired Driver
	Unrestrained Occupants
	Intersection Related
PRIORITY LEVEL 2	Speeding/Aggressive Driver
	Older Driver
	Young Driver
	Motorcycle
	Heavy Vehicle
	Pedestrian
PRIORITY LEVEL 3	Pedalcyclist
	Work Zone
	Distracted/Fatigued/Drowsy Driver
	Highway-Railroad Grade Crossings

Illinois Fatalities: 2008 – 2018*



IDOT Data Tools for Districts

- Data trees
- Emphasis area tables
- Heat maps
- Top 50 Curves
- High Risk Rural Roads
- **Pedestrian Corridor Analysis**

IDOT Data Tools for Districts

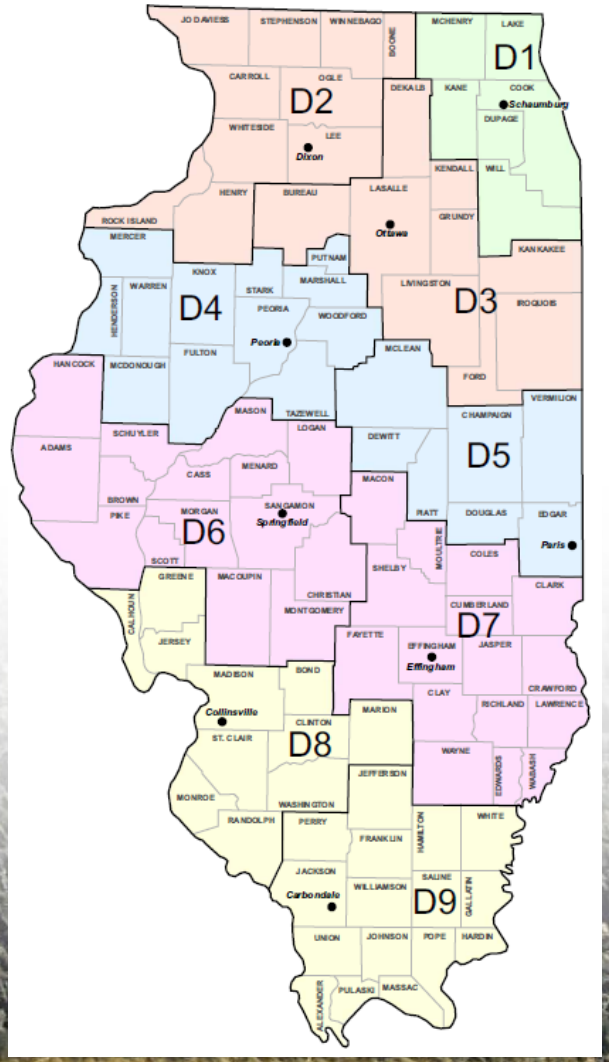
One Hundred Percent Report with Safety Tiers and Safer Roads Index

- Originally for state segments and intersections only
  - Added local segments and intersections in 2014
- Locations are ranked based on their Potential for Safety Improvement (PSI) value calculated based on weighted severe crashes within respective peer groups
  - Peer groups are so rural 2-lane road isn't being compared to urban expressway
- Top 5% of locations with highest PSI values classified as 5% Locations originally
- Since 2015 for state and 2017 for local, now have Safety Tiers
  - 5% is now Critical, followed by High, Medium, Low, and Minimal

Pedestrian Corridor Analysis

The purpose was to identify corridors throughout Illinois with the highest number of pedestrian fatal and A-Injury crashes

- Initial Analysis was done in 2013 using 2007 – 2011 pedestrian fatal and A-Injury crash data
- Updated Analysis completed in 2017 using 2007 – 2015 pedestrian fatal and A-Injury crash data
- <u>All</u> pedestrian fatal and A-Injury crashes were analyzed, regardless of being on a state or a local route



2013 Pedestrian Corridor Analysis

Used 2007 – 2011 pedestrian fatal and A-Injury crash data

- (2012 was provisional at the time)

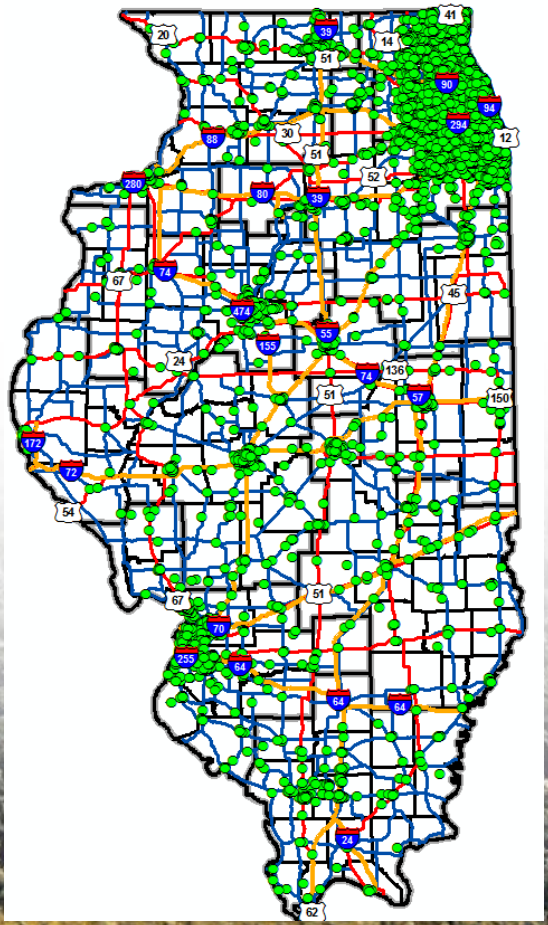
District 1 criteria:

- At least 3 fatal pedestrian crashes close together
  - A-Injury crashes then added to identified corridors
  - Narrowed down to top 15 corridors

Districts 2- 9 criteria:

- At least 2 fatal crashes close together OR
- At least 2 A-Injury crashes close together OR
  At least 1 fatal and 1 A-Injury crash close together
- All corridors were included, no limit on amount

All fatal and A-Injury crashes in Illinois for 2007-2011



2017 Pedestrian Corridor Analysis

Used 2007 – 2015 pedestrian fatal and A-Injury crash data

- (2016 was provisional at the time)
- All districts were limited to top 25 corridors, some districts had fewer

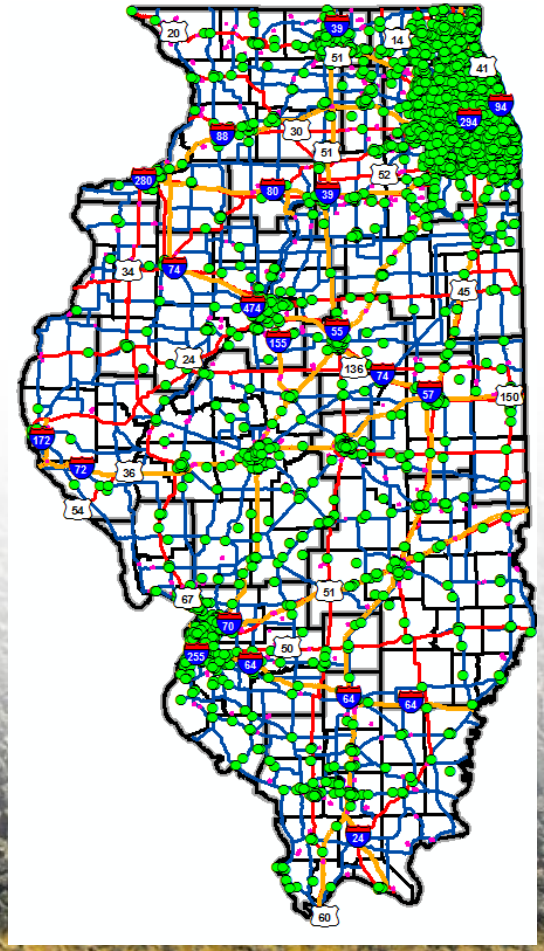
District 1 criteria:

- At least 3 fatal pedestrian crashes close together
  - A-Injury crashes then added to identified corridors
  - Separated into two parts– within and not within City of Chicago

Districts 2- 9 criteria:

- At least 3 fatal crashes close together OR
- At least 3 A-Injury crashes close together OR
  Any combination of fatal and A-Injury crashes close together which total 3 crashes

All fatal and A-Injury crashes in Illinois for 2007-2015

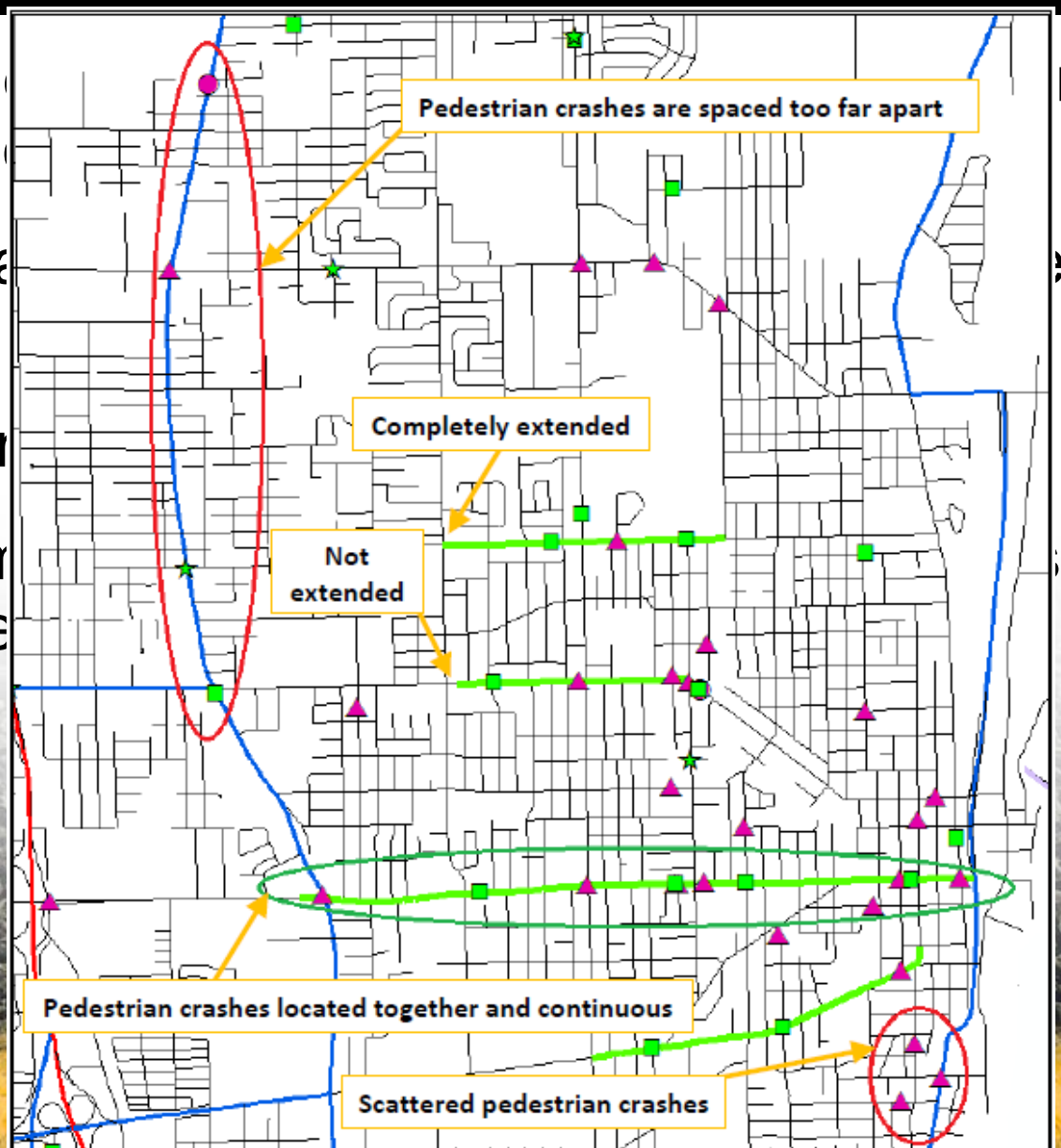


Results

- Spreadsheets with corridor information
- PDF Maps
- GIS shapefiles
- 2017 included KMZ files for GoogleEarth
- Technical Memos

Step 1: Identifying Corridors

- All crash ng on state or l
- Pedestria elected
- Grid-like by county fi criteria
- No minin used, instead e



Step 2: Labeling Corridors

- Once the corridors were identified in each district, a spreadsheet was then created for each district to summarize the pedestrian corridor information
- Each pedestrian corridor was then ranked
  - 2013 analysis ranked corridors by total crash count
  - 2017 analysis ranked corridors by weighted crash total/mile value
- Corridors were then labeled based on district and ranking
  - Example: D1-C5 is the corridor with the fifth highest value in District 1

Step 3: Gathering Information

From ArcGIS:

- County
- Length
- AADT Range
- Number of Lanes
- State or local roadway
- Functional class
- Road name
- For 2017 analysis, 2013 Corridor ID if applicable

- For 2013 analysis: Presence of 5%/Critical intersections/segments locations along corridor for **state routes only**

- For 2017 analysis: Peer Grouping from the One Hundred Percent Report and Highest Safety Tier of intersections and Highest Safety Tier of segments **for both state and local routes**
  - 5%/Critical, High, Medium, Low, Minimal

Step 3: Gathering Information

From crash reports:

- Where pedestrian was struck
  - (intersection, mid-block crossing, roadway segment)
- If intersection, type of control
  - (signalized vs. unsignalized)
- Lighting conditions
  - (Daylight, darkness, darkness, lighted road, dusk, dawn)

Step 3: Gathering Information

From GoogleEarth/Streetview
Presence along corridor:

- Pedestrian Refuge Island
- ADA ramps
- Pedestrian signals
- Presence of pedestrian signage
- Type of on-street parking
- Sidewalks present
- Pedestrian bump-outs/curb extension
- Turn lanes at intersections
- Crosswalks– location and type
- Bus routes/shelters
- Curb and gutter
- Approx. count of access points and types (residential, commercial, industrial, farming, education, etc.)
- Column for notes and additional comments

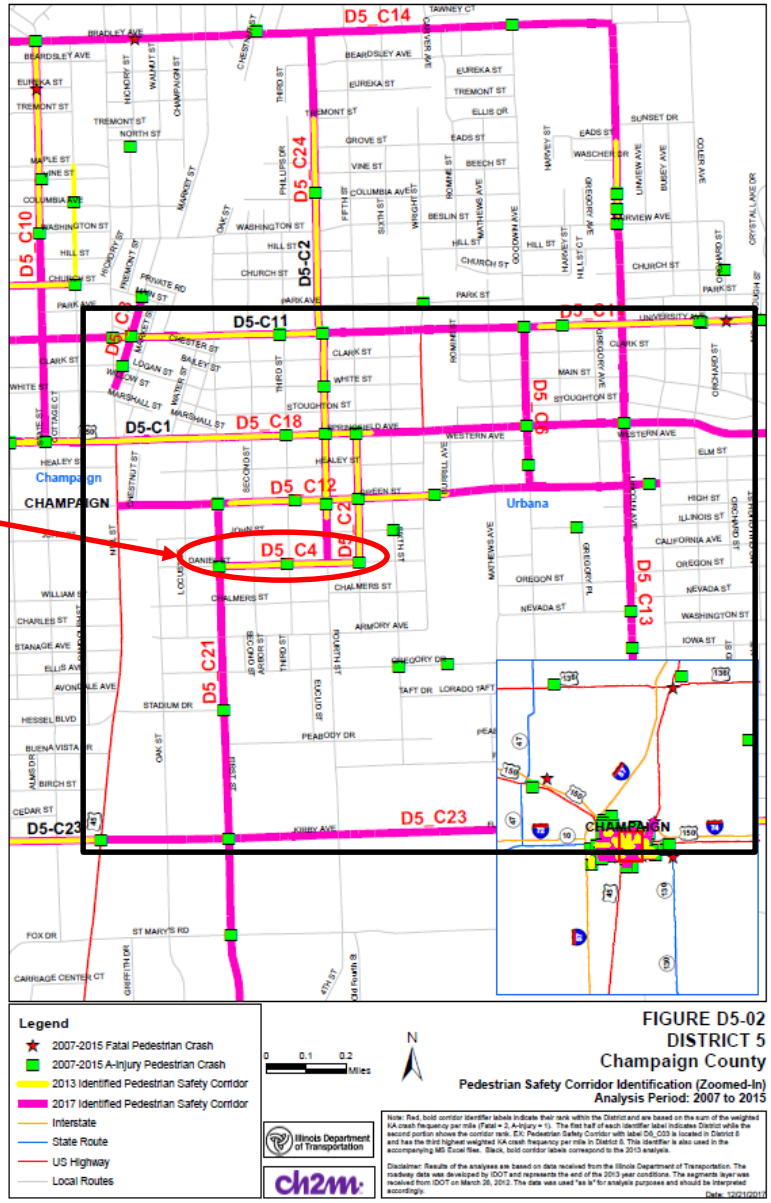
Streetview: Typical intersection

Results: Spreadsheet (2017 Analysis)

Corridor Characteristics								
On Street Parking (Type & % & close to	Sidewalks Present?	Pedestrian Bumpouts/Curb Extension Present?	Presence of Turn Lanes at Intersections	Crosswalks Present? (Where? What kind?)	Bus Routes/ Shelter Present? (count)	Curb and Gutter Present?	Approximate Count of Access Points (residential, commercial, industrial,	Notes/Comments
None	100%	None	Few	(3) Continental @ Signalized Intersection, (2) Ladder and Continental @ Signalized Intersection, (7)	(2) Routes; 20, 53 (1) Shelter	100%	36	(1) School, (1) Church, (1) Metra Station (Green Line)
Parallel 90%	100%	(9) @ Unsignalized Intersection, (2) @ Signalized Intersection	Few	(4) Continental @ Signalized Intersection, (9) Continental @ Unsignalized Intersection,	(3) Routes; 155, 49B, 93 (2) Shelters	100%	3	(1) School,
None	100%	None	All	(1) Continental @ Signalized Intersection, (1) Continental And Standard @ Signalized Intersection, (2) Standard @	(2) Routes; 49, 126 (1) Shelter	100%	7	(1) Park
Parallel 95% Min 40' From	100%	None	Few	(6) Continental @ Signalized Intersection, (1) Ladder @ Signalized Intersection, (4) Continental And Ladder @	(4) Routes; 147, 151, 155, 96 (8)	100%	4	(1) Metra Station, (2) School, (3) Park
None	100%	None	Many	(8) Continental @ Signalized Intersection, (13) Continental @ Unsignalized Intersection, (2) Standard @ Unsignalized	(3) Routes; 54, 66, 20 (1) Shelter	100%	53	(4) Church,
None	100%	None	Few	(2) Standard @ Signalized Intersection, (1) Continental @ Signalized Intersection, (3) Standard @	(3) Routes; 7, 82, 20 (5) Shelters	100%	25	(1) Park, (1) Church,
None	100%	None	All	(9) Continental @ Signalized Intersection, (3) Standard @ Signalized Intersection, (2) Continental and Ladder @	(13) Routes, 3, 6, 20, 26, 66, 143, 146, 147,	100%	6	(2) Park, (3) Library, (1) College,
None	100%	None	Many	(15) Continental @ Signalized Intersection, (2) Continental and Ladder @ Signalized Intersection,	(17) Routes; 2, 6, 15, 28, 170, 59, 63, 5, 67,	100%	81	(3) Park, (4) School, (3) Church, (1) Library, (1) Railroad
Parallel 81% 10' Min Distance to	100%	(3) @ Unsignalized Intersection, (2) @ Signalized Intersection	Many	(3) Standard @ Signalized Intersection, (7) Standard And Continental @ Unsignalized Intersection, (7) Ladder @	(9) Routes; 72, 57, 65, 53, 82, 52, 50, 56, 9	100%	97	(10) Church, (2) School, (2) Library, (1) Park,
None	100%	None	Many	(11) Continental @ Signalized Intersection, (2) Standard @ Signalized Intersection, (8) Standard @	(15) Routes; 24, 79, 29, 75, 3, 4, 28, 30,	100%	151	(1) Metra - Red Line & ME, (10) Church, (3) School, (1) Library,
None	100%	None	Many	(8) Continental @ Signalized Intersection, (3) Standard @ Signalized Intersection, (1) Continental and Ladder @	(5) Routes; 9, 87, 24, 29, 3 (12)	100%	90	(5) Church, (3) School
Parallel 30% 20" Minimum	100%	None	All	(5) Continental @ Signalized Intersection, (3) Ladder @ Signalized Intersection, (1) Continental And Ladder	(5) Routes; 9, 126, 12, 157, 18 (7)	100%	25	(2) Hospital, (7) Church, (5) School, (2) Park
Parallel 38% Adjacent Minimum	100%	(3) @ Unsignalized Intersection, (1) @ Signalized Intersection	Many	(8) Ladder @ Signalized Intersection, (13) Continental @ Signalized Intersection, (9) Continental and Ladder @	(32) Routes; Available Upon Request.	100%	294	(6) Park, (6) School, (12) Church, (3) Library, (2) Railroad, (1) Airport Midway, (4)
None	100%	(1) @ Signalized Intersection, (2) @ Unsignalized Intersection,	Few	(5) Ladder @ Signalized Intersection, (7) Continental @ Signalized Intersection, (9) Standard @ Signalized	(7) Routes; 66, 54, 53, 52, 94, 65, 9	100%	134	(2) Church, (2) Library, (3) School, (3) Park,
None	100%	None	Many	(16) Continental @ Signalized Intersection, (1) Standard And Ladder @ Signalized Intersection, (1) Standard and	(33) Shelters	100%	237	(18) Church, (4) School, (1) Metra Green Line, (1) Railroad Crossing
None	100%	None	few	(4) Continental @ Signalized Intersection, (1) Continental And Ladder @ Signalized Intersection, (2) Continental @	(3) Routes; 111, 95, 155 (3)	100%	41	(6) School, (4) Church, (1) Park,
None	100%	None	Many	(1) Standard @ Signalized Intersection, (1) Continental And Standard @ Signalized Intersection, (2) Continental @	(4) Routes; 47, 62, 52, 94 (7) Shelters	100%	29	(1) Library
Parallel 40% 15' Minimum	100%	(1) @ Signalized Intersection, (1) @ Unsignalized Intersection,	Many	(16) Continental @ Signalized Intersection, (4) Standard @ Signalized Intersection, (3) Continental And Ladder @	18	100%	23	(4) Church, (2) School, (4) Park, (1) Hospital, (1) College,
Parallel 25% 30' Minimum	100%	(1) @ Unsignalized Intersection,	Many	(10) Continental @ Signalized Intersection, (1) Standard @ Signalized Intersection, ...(27) Continental @	(6) Routes; 85, 91, 81W, 78, 80, 76 (6)	100%	92	(4) Church, (1) Park
None	100%	None	Many	(4) Continental @ Signalized Intersection, (2) Ladder and Continental @ Signalized Intersection, (11)	(6) Routes; 2, 4, 55, 15, 43, 47 (11)	100%	42	(3) Church, (2) Park, (2) School,
None	100%	None	Few	(10) Continental @ Signalized Intersection, (1) Ladder @ Signalized Intersection, (3) Standard @ Signalized	(10) Routes; 56, 77, 82, 76, 74, 52, 73, 49,	100%	42	(1) Library, (1) Church, (1) School, (1) Park
Parallel 73% 40' Min Distance to	100%	None	Many	(14) Continental @ Signalized Intersection, (10) Continental @ Unsignalized Intersection, (3) @	(5) Routes; 20, 54, 53, 82, 52 (16) Shelters	100%	72	(5) Church, (1) School, (1) Park
Parallel North - 20% South - 33%	100%	None	Many	(15) Continental @ Signalized Intersection, (1) Standard @ Signalized Intersection, (1) Ladder @ Signalized	(6) Routes; 70, 156, 37, 8, 132, 56, (6)	100%	35	(1) Library, (2) Park, (2) School, (1) Church, (1) Metra Station (Blue Line), (1) Railroad
None	100%	(1) @ Unsignalized Intersection,	Few	(3) Continental @ Signalized Intersection, (3) Standard @ Signalized Intersection, (1) Continental And Standard @	(7) Routes 47, 62, 52, 94, 48, 49, 9	100%	98	(2) School
	West - 5% East -			(1) Continental @ Signalized Intersection, (3) Ladder @	(6) Routes; 39, 49, 47			

Results: Maps

2017 Pedestrian Safety Corridor	County	Length (mile	AADT Range	Number of Lane	Peer Group Name	S
					General Pe	
D5_C1	MCLEAN	0.06	11,200	4	L - Urban AADT >2500/multilane	L
D5_C2	CHAMPAIGN	0.33	2200 to 4950	2	L - Urban AADT >2500/two lanes	L
D5_C3	CHAMPAIGN	0.25	8400 to 9000	2	L - Urban AADT >2500/two lanes	L
D5_C4	CHAMPAIGN	[illegible]	2300 to 3200	2	L - Urban AADT 1001-2500/two	L
D5_C5	MCLEAN	0.35	4700 to 6200	2	L - Urban AADT >2500/two lanes	L
D5_C6	CHAMPAIGN	0.4	3100 to 5000	2	L - Urban AADT >2500/two lanes	L
D5_C7	MCLEAN	1.22	5400 to 12400	2 to 4	L - Urban AADT >2500/multilane	L
D5_C8	VERMILION	0.42	3350 to 4200	2	L - Urban AADT >2500/two lanes	L
D5_C9	CHAMPA	0.69	3600 to	4	L - Urban AADT	L



Results: Technical Reports

In addition to sending districts and local agencies/counties the spreadsheets, maps, GoogleEarth files, GIS files, technical memos detailing the analysis process were sent

Illinois Pedestrian Safety Corridor Identification Procedure

PREPARED FOR: IDOT Bureau of Safety and Programs Engineering

PREPARED BY: CH2M

DATE: January 18, 2018

Background

The Illinois Department of Transportation (IDOT) has conducted a second analysis cycle for statewide identification of Pedestrian Safety Corridors (PSCs) for all nine Districts in Illinois. For each of the nine Districts in Illinois, it was desired to select 25 corridors per district for further analysis. The objective of the analysis was to identify locations that appear to have a pattern of fatal and serious injury pedestrian crashes; only fatal (K) and A-Injury (A) crashes were considered.

This technical memorandum provides an overview of the methodology for obtaining these locations using the crash analysis period of 2007 to 2015.

Procedure to Identify a Candidate PSC

The methodology for identifying these PSC locations included scanning through both state and local routes in each of the 102 counties in Illinois in a grid-like pattern in geographic information systems (GIS). The criteria for identifying candidate PSCs were defined by IDOT in the 2013 PSC analysis and, in general, the same methodology was followed in the 2017 analysis. The 2013 PSC analysis was the first time this study was performed, and the criteria for identifying pedestrian severe crash corridors were defined.

The major data analysis change between the 2013 and 2017 is that the 2013 analysis used a weighted KA sum as the ranking factor, while in the 2017 analysis the ranking was based on a weighted KA sum per mile. The decision was made to make the change in 2017 to help normalize the comparison of PSCs. Some corridors are shorter with many crashes and others are longer with many crashes. With this change being implemented, corridors with a higher weighted KA density of crashes would appear higher on the final list for each District.

For the GIS maps, the major difference is that corridors are now displayed by a line rather than a text box with a caption. This was done to help visualize the corridors with both of their termini and to easily show where crashes are occurring along the corridor.

For District 1, a PSC must have at least three fatal pedestrian crashes in close proximity. Once the fatal crashes were identified to define a PSC, the A-Injury crashes were added to those candidate PSCs. For Districts 2 through 9, a PSC must have a combination of at least three fatal and/or A-Injury crashes in close proximity. This means a PSC could have zero fatal crashes and three A-Injury crashes, three fatal crashes and zero A-Injury crashes, or any other combination if there are at least three total fatal and/or A-Injury crashes. The difference in criteria used in District 1 and the remaining Districts was done since District 1 is expected to have the majority of the pedestrian fatalities and severe injuries.
Other than the two major changes described above, in general, the same methodology was used in the 2017 PSC analysis.

Analysis Summary

2013 Analysis

A total of 161 corridors were analyzed for Districts 1-9

- The 161 corridors had a total of 543 severe (K & A-Injury) pedestrian crashes for 2007-2011

2017 Analysis

A total of 202 corridors were analyzed for Districts 1-9

- The 202 corridors had a total of 1,634 severe (K & A-Injury) pedestrian crashes for 2007-2015

2017 Analysis Findings

Location	Fatal Crashes	A-Injury Crashes	Intersection-Related	Mid-block/ Segment	Signalized	Un-Signalized	Daylight	Darkness	Darkness, Lighted Road	Dusk	Dawn
All Crashes	20%	80%	51%	49%	61%	39%	49%	16%	21%	2%	1%
Chicago	17%	83%	60%	40%	65%	35%	57%	7%	22%	2%	1%
District 1	38%	63%	36%	64%	51%	49%	38%	27%	21%	1%	2%
District 2	15%	85%	48%	52%	52%	48%	49%	21%	18%	3%	0%
District 3	20%	80%	40%	60%	55%	45%	42%	22%	22%	2%	2%
District 4	14%	86%	41%	59%	60%	40%	49%	22%	23%	2%	0%
District 5	15%	85%	63%	38%	58%	42%	53%	16%	20%	2%	0%
District 6	13%	87%	60%	40%	78%	22%	51%	15%	18%	6%	2%
District 7	21%	79%	49%	51%	42%	58%	33%	10%	33%	0%	0%
District 8	27%	73%	30%	70%	45%	55%	38%	28%	19%	4%	1%
District 9	21%	79%	34%	66%	33%	67%	24%	31%	29%	3%	0%

From reading crash reports:

- Trends among nighttime crashes, pedestrians wearing dark clothing among little to no street lighting and either walking in roadway or crossing mid-block

Analysis Use

- Identify potential Highway Safety Improvement Program (HSIP) locations
- Identify locations for other project funding (Safe Routes to School, Multi-Year Program)
- Identify need for and assist in Roadside Safety Assessments (RSAs)/Roadside Safety Reviews (RSRs) analysis

Limitations

- The corridors are a tool, districts and local agencies use analysis at own discretion
- Haven’t done in-depth analysis for each district analyzing crash trends

Questions??

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