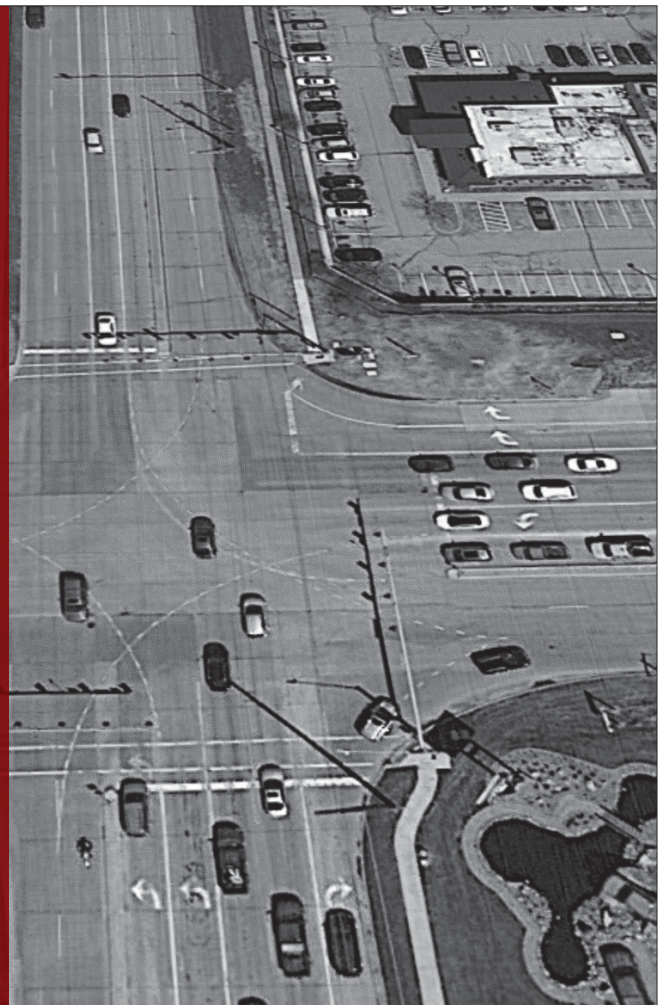




Iowa Intersection Potential for Crash Reduction

Overview

- Historic Intersection Assessment
- Safety Performance Functions (SPFs)
- PCR Rankings
- Future Efforts



Historic Intersection Assessment

Intersection Safety Improvement Candidate List (SICL)

Historic Intersection Assessment

Statewide Average – Crash Rates

ACCIDENT AND RELATED DATA FOR RURAL AND MUNICIPAL INTERSECTIONS IN IOWA

Based on 1983 thru 1987 Data ← → 30 yrs old

BY INTERSECTION CLASS

Field Description	RURAL				MUNICIPAL			
	Primary with Primary	Primary with Secondary	Secondary with Secondary	Total Rural	Primary with Primary	Primary with City Street	City Street with City Street	Total Municipal
Number of Intersections	93	345	134	572	162	1,129	1,553	2,844
Average Number of Accidents / Year	1.6	1.1	0.8	1.1	4.8	4.1	3.0	3.6
Average Dollar Loss / Year *	\$52,200	\$44,200	\$37,300	\$43,900	\$53,800	\$43,100	\$26,800	\$34,800
Average Daily Entering Vehicles	4,500	4,000	2,200	3,600	12,800	12,800	10,500	11,500
Average Accident Rate / MEV	1.0	0.8	1.0	0.9	1.0	0.9	0.8	0.8
Lower Limits of Statistical Rates								
90 % Confidence Level (K=1.282)	1.9	1.8	2.8	2.1	1.7	1.6	1.6	1.6
95 % Confidence Level (K=1.645)	2.1	2.0	3.2	2.4	1.9	1.8	1.8	1.8
99.5 % Confidence Level (K=2.576)	2.8	2.7	4.1	3.2	2.4	2.3	2.4	2.4

← Limited Categories
← Limited Sample

Changing Lanes



Safety Performance Functions (SPFs)

Predict average number of crashes per year at a location.

Use of Empirical Bayes statistical method to increase the accuracy and reliability of crash estimates.



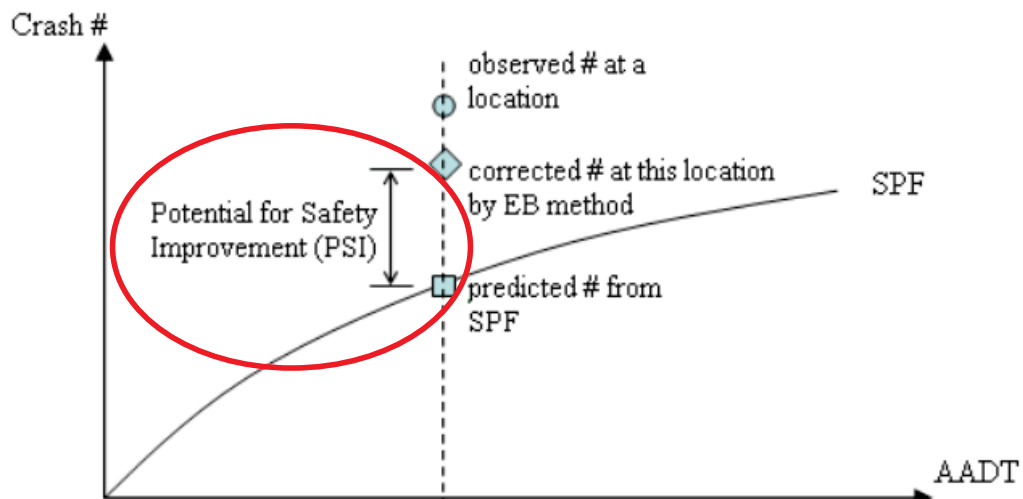
Current Efforts

Summary Statistics of Intersection SPFs Data (2014-2018 Crashes; 2016 GIMS)

Category ID	Category Description	# of Intersections
1	High Speed Traffic Signal Control	262
2	Divided High Speed Partial Stop Control	1,102
3	Divided Low Speed Traffic Signal Control	625
4	Divided Low Speed Partial Stop Control	1,299
5	Undivided High Speed Partial Stop Control (1 - 1,500 AADT)	28,049
6	Undivided Low Speed Traffic Signal Control	1,568
7	Undivided Low Speed Partial Stop Control (1 - 1,500 AADT)	49,305
8	Roundabouts & Other Circular Intersections	89
9	All Way Stop Control	5,618
10	Uncontrolled	22,047
11	Yield Control	5,538
		115,502

Current Efforts - Results

SPFs Developed:



Current Efforts - Results

Potential Crash Reduction for all intersections:

Category ID	Category ID Descriptions	Road 1	Road 2	County	City	All (KABCO) Crashes		
						PCR/Year	Overall Ranking	Category Ranking
3	Divided Low Speed Traffic Signal Control	J5 69	W 15T ST & E 15T ST	Polk	Ankeny	14.916	1	1
8	Roundabouts & Other Circular Intersections	J5 30	IA 1/1st Ave	Linn	Mount Vernon	12.182	2	1
3	Divided Low Speed Traffic Signal Control	J5 6/Euclid Ave	J5 69/14th St	Polk	Des Moines	9.687	3	2
6	Univided Low Speed Traffic Signal Control	KEO 19TH ST NE EXIT RAMP	19TH ST	Polk	Des Moines	8.701	4	1
6	Univided Low Speed Traffic Signal Control	8TH AVE, N	DAY ST, W	Polk	Des Moines	8.303	5	2
3	Divided Low Speed Traffic Signal Control	J5 69	E PARK AVE	Polk	Des Moines	8.192	6	3
4	Divided Low Speed Partial Stop Control	J5 6	E Douglas Ave	Polk	Des Moines	8.181	7	1
6	Univided Low Speed Traffic Signal Control	GRAND AVE, E	9TH ST, N	Polk	Des Moines	8.069	8	3
1	High Speed Traffic Signal Control	IA 27	Viking Rd	Black Hawk	Cedar Falls	7.977	9	1
6	Univided Low Speed Traffic Signal Control	7TH ST	SCHOOL ST/7TH ST SW EXIT RAMP	Polk	Des Moines	7.613	10	4
1	High Speed Traffic Signal Control	IA 415	IA 160	Polk	Ankeny	7.474	11	2
6	Univided Low Speed Traffic Signal Control	J5 69	SW 3RD ST & SE 3RD ST	Polk	Ankeny	7.111	12	5
3	Divided Low Speed Traffic Signal Control	JA 163	Hubbell Ave	Polk	Des Moines	6.519	13	4
7	Univided Low Speed Partial Stop Control	J5 69	DES MOINES ST	Polk	Des Moines	6.495	14	1
3	Divided Low Speed Traffic Signal Control	J5 69	LINCOLN WAY/GRAND AVE	Story	Ames	6.489	15	5
6	Univided Low Speed Traffic Signal Control	BRD ST	PIERCE ST	Woodbury	Sioux City	6.460	16	6
6	Univided Low Speed Traffic Signal Control	E 14TH ST	E 14TH NW ENTRANCE RAMP	Polk	Des Moines	6.394	17	7
3	Divided Low Speed Traffic Signal Control	J5 6	SYCAMORE ST	Johnson	Iowa City	6.366	18	6
6	Univided Low Speed Traffic Signal Control	E 53RD ST	ELMORE CIR	Scott	Davenport	6.346	19	1
1	High Speed Traffic Signal Control	J. 29 SPECIAL CASE NE	J5 HWY 77	Woodbury	Sioux City	6.161	20	3
3	Divided Low Speed Traffic Signal Control	SERGEANT RD	S LAKEPORT ST	Woodbury	Sioux City	6.072	21	7
3	Divided Low Speed Traffic Signal Control	JA 163	JA 69	Polk	Des Moines	6.029	22	8
6	Univided Low Speed Traffic Signal Control	J5 6	E38th St	Polk	Des Moines	5.872	23	8

What about Crash Severity?



Current Efforts - Results

Potential Crash Reduction for all intersections:

Category ID	Category ID Descriptions	Road 1	Road 2	County	City	KAB Crashes		
						PCR/Year	Overall Ranking	Category Ranking
3	Divided Low Speed Traffic Signal Control	JS 69	W 1ST ST & E 1ST ST	Polk	Ankeny	1,444	1	1
8	Roundabouts & Other Circular Intersections	JS 30	IA 17/1st Ave	Linn	Mount Vernon	1,391	2	1
3	Divided Low Speed Traffic Signal Control	JS 6/Euclid Ave	JS 69/14th St	Polk	Des Moines	0,796	15	5
6	Unidivided Low Speed Traffic Signal Control	KEO 19TH ST NE EXIT RAMP	19TH ST	Polk	Des Moines	1,297	3	1
6	Unidivided Low Speed Traffic Signal Control	8TH AVE, N	DAY ST, W	Polk	Des Moines	1,041	6	2
3	Divided Low Speed Traffic Signal Control	JS 69	E PARK AVE	Polk	Des Moines	0,421	62	21
4	Divided Low Speed Partial Stop Control	JS 6	E Douglas Ave	Polk	Des Moines	1,150	5	1
6	Unidivided Low Speed Traffic Signal Control	GRAND AVE, E	9TH ST, N	Polk	Des Moines	0,810	13	3
1	High Speed Traffic Signal Control	IA 27	Viking Rd	Black Hawk	Cedar Falls	1,267	4	1
6	Unidivided Low Speed Traffic Signal Control	7TH ST	SCHOOL ST/7TH ST SW EXIT RAMP	Polk	Des Moines	0,208	263	68
1	High Speed Traffic Signal Control	IA 415	IA 160	Polk	Ankeny	0,603	31	3
6	Unidivided Low Speed Traffic Signal Control	JS 69	SW 3RD ST & SE 3RD ST	Polk	Ankeny	0,786	20	5
3	Divided Low Speed Traffic Signal Control	IA 163	Hubbell Ave	Polk	Des Moines	0,249	201	46
7	Unidivided Low Speed Partial Stop Control	JS 69	DES MOINES ST	Polk	Des Moines	0,321	118	14
3	Divided Low Speed Traffic Signal Control	JS 69	LINCOLN WAY/GRAND AVE	Story	Ames	0,086	921	124
6	Unidivided Low Speed Traffic Signal Control	BRD ST	PIERCE ST	Woodbury	Sioux City	0,558	36	9
6	Unidivided Low Speed Traffic Signal Control	E 14TH ST	E 14TH NW ENTRANCE RAMP	Polk	Des Moines	0,257	193	51
3	Divided Low Speed Traffic Signal Control	JS 6	SYCAMORE ST	Johnson	Iowa City	0,677	26	11
6	Unidivided Low Speed Traffic Signal Control	E 53RD ST	ELMORE CIR	Scott	Davenport	0,080	972	206
1	High Speed Traffic Signal Control	J-29 SPECIAL CASE NE	JS HWY 77	Woodbury	Sioux City	0,459	51	4
3	Divided Low Speed Traffic Signal Control	BERGEANT RD	S LAKEPORT ST	Woodbury	Sioux City	-0,036	113,590	356
3	Divided Low Speed Traffic Signal Control	IA 163	IA 69	Polk	Des Moines	0,852	11	4
6	Unidivided Low Speed Traffic Signal Control	JS 6	E38th St	Polk	Des Moines	0,706	144	18

The Big Question

Rank by all crashes or injurious crashes?



Future Efforts

- 1 Develop interactive website
- 2 Possible expansion of intersection types
- 3 Segments!



Sneak Peak

2014-2018 Potential for Crash Reduction

SPF Methodology

To view this page in a larger window, follow this [link](#).

Most VMT is concentrated within metropolitan areas or along major interstate and U.S. highway routes. As Figure 1-1 illustrates, the counties and roadways with the most total VMT are those that are near a metropolitan area or interstate highway. The efforts within the SHSP consider all public roadways, including primary highways, secondary roads, and municipal streets. These include high-risk rural roads, which are defined as paved rural major and minor collectors and paved local roads. High-risk rural roads are further classified as routes with a posted speed limit greater than 45 miles per hour (mph) and with a paved surface width of less than 26 feet.

Iowa's population has increased 9.5% over the past 30 years, and it is projected that the population will continue to increase at nearly the same rate over the next three decades. Iowa's population growth between census years shows that it is growing at a slower rate than the national average according to

Intersection: US 69 and GOLF COURSE RD

Intersection Category: Undivided Low Speed Partial Stop Control

City: Jewell
County: Hamilton

All Crashes

Statewide ranking: 70,676 out of 110,769
Category ranking: 2569 out of 47,777

Fatal and Injury Crashes

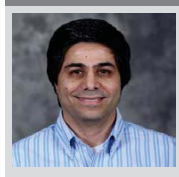
Statewide ranking: 67,166 out of 110,769
Category ranking: 26,088 out of 47,777

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[Zoom to](#)

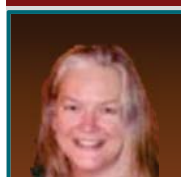
Technical Advisory Committee



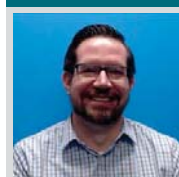
Zach Hans
InTrans



Hossein Naraghi
InTrans



Jan Laaser-Webb
Iowa DOT



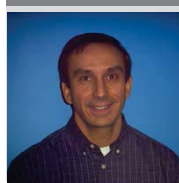
Chris Poole
Iowa DOT



Angie Poole
Iowa DOT



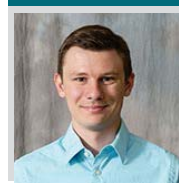
Willy Sorenson
Iowa DOT



Kevin Patel
Iowa DOT



Nick Humpal
Iowa DOT



Sam Sturtz
Iowa DOT



THANK YOU FOR YOUR TIME AND ATTENTION



Angie Poole, Iowa DOT, Traffic and Safety Bureau