The DRAFT 2015 Indiana Strategic Highway Safety Plan



STRATEGIC HIGHWAY SAFETY PLAN

2015 Revision

As required by 23 U.S.C. 148 (c)(c), the Indiana Strategic Highway Safety Plan identifies and highly a safety problems and opportunities for saving lives, reducing a uffering and economic losses resulting from traffic crashes. It guides the types of roadway infrastructure countermeasures that are preferred for use of federal Highway Sufety Improvement Program funding to reduce the risks associated with the physical environment. It is coordinated with the traffic safety activities of state agencies, municipal entities, and other highway safety interests.

Schedule

Now to June 1

- Consult with stakeholders
- July
 - Modify as needed
- August
 - Executive approval (Governor or his designee)
- September
 - Submit to FHWA Indiana Division







What is TZD?

- > Roots in Sweden Vision Zero 1997
 - No loss of life is acceptable
 - People make mistakes, so systems must be designed to protect users
- Spread to other European countries
- > Toward Zero Deaths in the US
 - > How many traffic fatalities are acceptable?
 - > Only zero is justifiable.



Strategic Highway Safety Plan

The first 2 Indiana SHSP's had a goal stressing that fatalities were unacceptable

The new SHSP adopts language reflecting "Toward Zero Deaths" as a goal



'Traditional Safety'

Placed responsibility for safety on road users, travel is inherently 'risky'

 TZD shifts more responsibility to engineering, education, enforcement, and EMS systems



Culture Shift

Mobility and access needs in roadway planning and design must be balanced by safety considerations

 Safety cannot always be achieved by meeting minimum standards or a positive benefit/cost

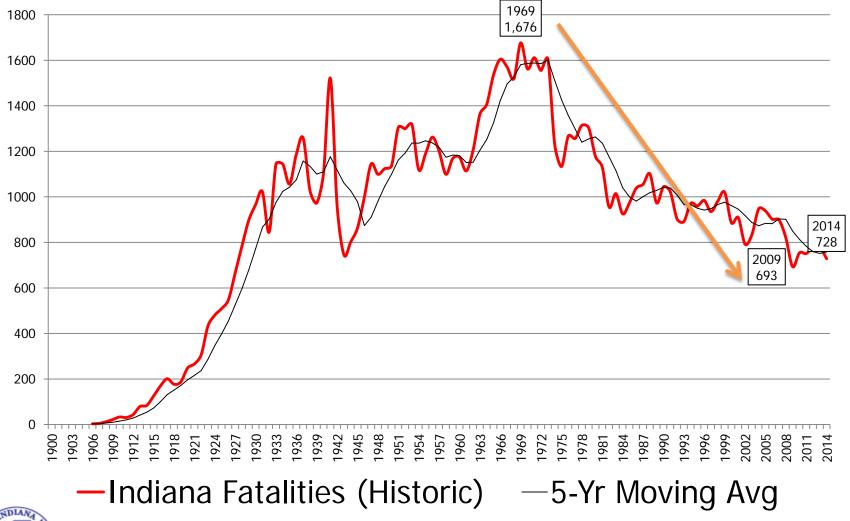


It Takes A Long Time

- Annual deaths on Indiana roads rose during the 20th century up until 1969 peaking at 1,676
- It took four decades to cut that number in half
- At the current pace, it <u>could take until 2078</u> to get to one quarter of that 1978 toll

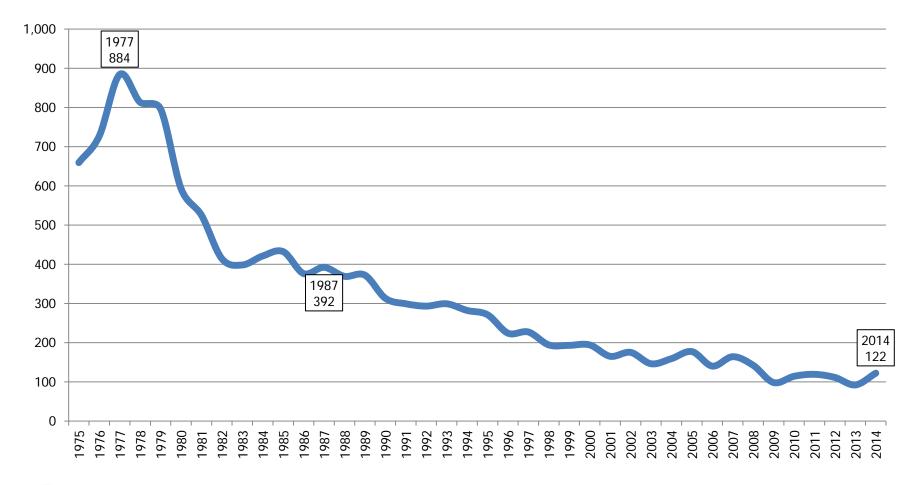


Indiana Fatalities





Indiana Grade Crossing Crashes





Highway-Rail Grade Crossings

- A program of safety improvements began in 1975
- Crashes at Indiana grade crossings peaked in 1977 at 884 crashes with 79 deaths
- > Only ten years later, crashes were cut more than half and deaths reduced to 43



Highway-Rail Grade Crossings

- In 2013 there were only 92 crashes, almost 1/10th of the 1977 count, with 15 deaths
- But, while reaching zero deaths is now within sight, it remains frustratingly just out of reach.
- The early FRA counts for 2014 are in, and crashes increased. 122 crashes, 11 deaths





TOWARD ZERO DEATHS

Impact on roadway engineering . . .

Roadway Engineering

- Planning and design that expects road users to make mistakes and builds-in aids to avoid crashes as well as reducing severity of crashes that occur
- Construction techniques that speeds completion while reducing the risks to road users and workers



Roadway Engineering

- > Operations practices that remove hazards as quickly and as safely as possible
- Maintenance that ensures visibility and viability of warning/advisory devices, as well as countermeasures designed to reduce the effects of crashes with off-road features
- Systemic safety improvements

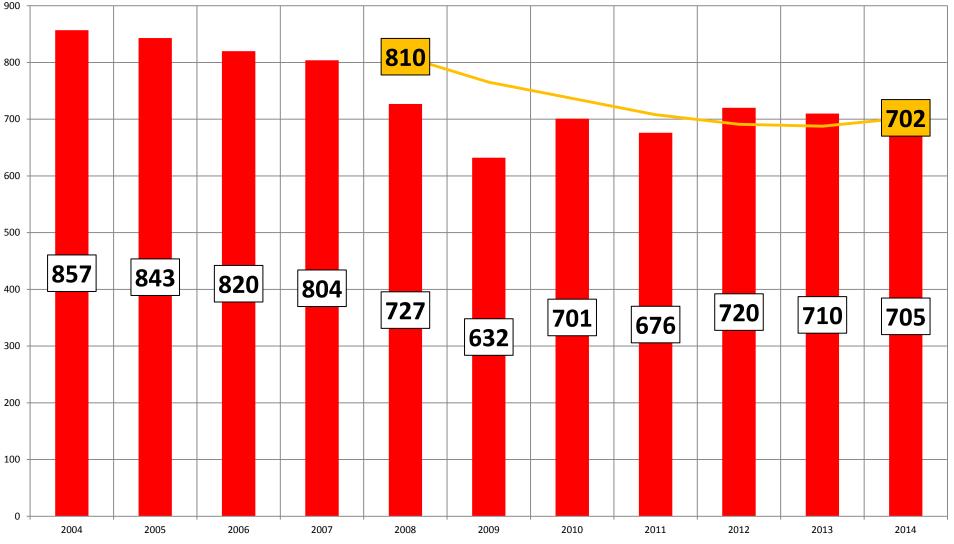


What the numbers tell us . . .

TOWARD ZERO DEATHS



Indiana Fatal Crashes



Fatal Crashes (FARS) —5-Year Moving Average

Indiana State Police FARS* Report Total Traffic Fatalities to Date and Time

	γ	EAR TO DA	TE DEATH	DIFFERENCE TO 2015			
YEAR	2012	2013	2014	2015	2012	2013	2014
RURAL	70	89	60	83	+13	-6	+23
URBAN	41	36	29	39	-2	+3	+10
STATEWIDE	111	125	89	122	+11	-3	+33

	Y	EAR TO DA	TE CRASH	DIFFERENCE TO 2015			
YEAR	2012	2013	2014	2015	2012	2013	2014
RURAL	65	79	55	76	+11	-3	+21
URBAN	40	32	29	36	-4	+4	+7
STATEWIDE	105	111	84	112	+7	+1	+28

	YEAR	TOTAL DE	ATHS	YEAR TOTAL CRASHES				
YEAR	2012	2013	2014	2012	2013	2014		
RURAL	523	530	471	475	478	440		
URBAN	258	254	275	245	232	265		
STATEWIDE	781	784	746	720	710	705		

The Crash Report Database

January 1, 2004 and December 31, 2013 1,870,748 crash reports

Injury Status	Collisions	% of Total
Fatal	7,555	0.4%
Incapacitating	30,161	1.7%
Non-incapacitating	299,510	16.0%
Not Reported	11,097	0.6%
Possible	51,803	2.8%
Refused	54,714	2.9%
PDO	1,660,842	88.8%
Total	1,870,748	



The Crash Report Database

January 1, 2004 and December 31, 2013
 38,683 SEVERE crash reports

Injury Status	Collisions	% of Severe
Fatal	7,555	19.4%
Incapacitating	31,308	80.6%
Total	37,716	



	2009	2010	2011	2012	2013	2014
# of Crashes	180,250	183,681	177,043	181,696	190,863	203,691
# of Property Damage Crashes	144,944	148,465	143,981	147,096	157,245	169,180
# of Injury Crashes	35,306	35,216	33,062	34,600	33,618	34,511
# of Incapacitating Crashes	2,736	2,919	2,815	3,189	2,908	4,378
# of Fatal Crashes	633	700	680	736	746	701
# of Severe Crashes	3 369	3,619	3,495	3,925	3,654	5,079

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Why the jump in

incapacitating crashes?



358

AUTOMOBILE FATALITIES.

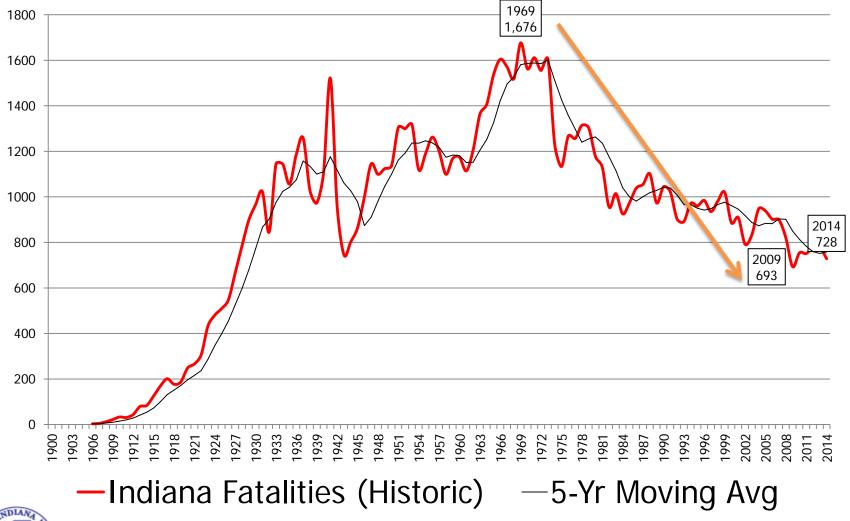
No. 221.—AUTOMOBILE FATALITIES: NUMBER OF DEATHS AND DEATH RATE PER 100,000 OF POPULATION IN THE REGISTRATION AREA (EXCLUSIVE OF HAWAII), CALENDAR YEARS 1915 TO 1920, BY STATES.¹

514-4- 5		Nı	Number of deaths.			1	Rate per 100,000 population.				n.	
State. ²	1915	1916	1917	1918	1919	1920	1915	1916	1917	1918	1919	1920
California Colorado Connecticut Delaware Florida	411 53 106 (⁸) (⁸) (⁸)	478 71 171 (⁸) (⁸) (⁸)	554 93 192 (⁸) (⁸)	533 119 183 (⁸) (⁸)	647 118 207 23 58	734 117 218 22 104	14.0 6.1 8.4 ⁽³⁾ (³⁾	15.7 8.0 13.3 (³) (³)	$ \begin{array}{c} 17.6 \\ 10.3 \\ 14.6 \\ \binom{3}{3} \\ \binom{3}{3} \end{array} $	16. 3 13. 0 13. 7 ⁽³⁾ ⁽³⁾	$ 19.2 \\ 12.7 \\ 15.1 \\ 10.4 \\ 6.1 $	$21.1 \\ 12.4 \\ 15.6 \\ 9.8 \\ 10.6$
Illinois. Indiàna. Kansas. Kentucky. Louisiana.	(⁸) 125 45 39 (⁸)	(⁸) 169 92 41 (⁸)	(⁸) 201 106 63 (⁸)	464 177 129 92 76	522 187 98 71 57	728 248 155 85 90	(8) 4.4 2.6 1.7 (8)	(⁸) 5.9 5.3 1.7 (⁸)	$\binom{8}{7.0}$ 6.1 2.6 $\binom{8}{3}$	7.36.17.33.8 4.3	8.1 6.4 5.6 2.9 3.2	11.2 8.4 8.7 8.5 5.0

[Source: Bureau of the Census, Department of Commerce.]



Indiana Fatalities





Fatal Injury (FARS Coding & Validation Manual)

A fatal injury is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred.



Suspected Serious Injury (FARS Coding & Validation Manual)

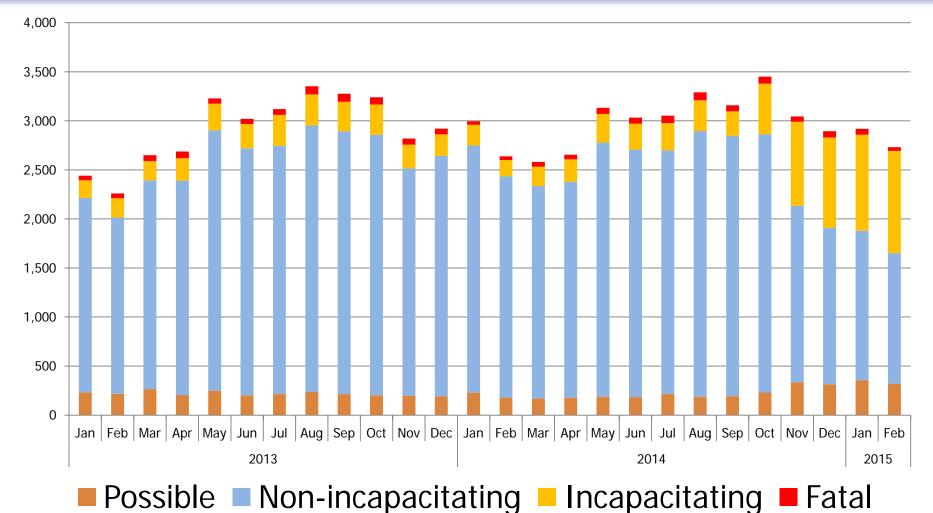
- A non-fatal injury, which results in one or more of the following:
- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)
- > Unconsciousness when taken from the crash scene
- > Paralysis



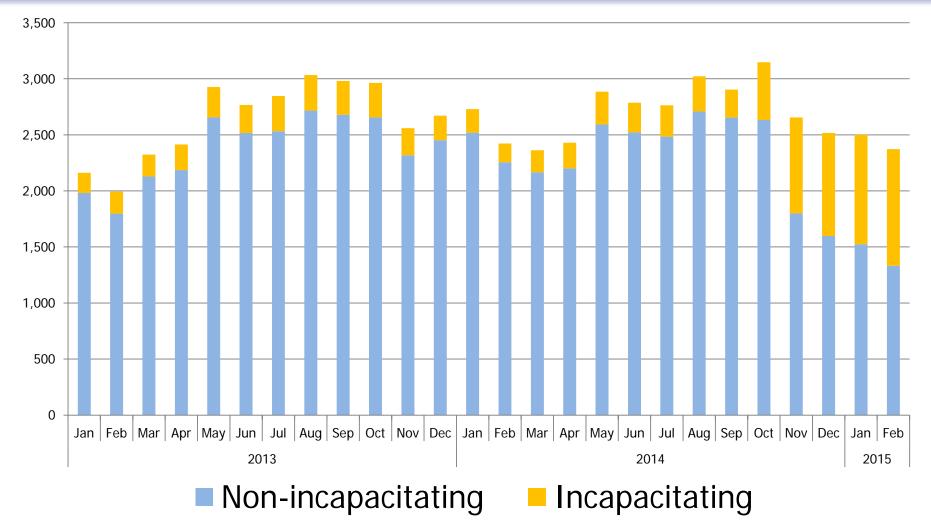
ARIES 5.1 Reporting Client Software

- Was the individual taken from the scene for immediate medical treatment?
 - YES = Incapacitating
 - NO = Non-Incapacitating





THE PROPERTY OF TRANSPORT





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Injury Status	Collisions	% of Severe
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Crash Elements

- > Vehicle type
- Collision with
- Person type
- Manner of collision
- Road type
- Junction type
- > Injury Status



All Crashes	Another Motor Vehicle	Deer	Other	Utility Pole	Off Roadway	Tree
Total	446,060	344,241	239,631	198,550	166,958	158,381

All Crashes	Another Motor Vehicle	Deer	Other	Utility Pole	Off Roadway	Tree
Total	446,060	344,241	239,631	198,550	166,958	158,381
Rear End	441,194	201	2,833	171	214	116
Right Angle	272,113	55,126	1,772	783	386	568
Ran off Road	7,980	1,126	8,887	23,720	31,649	24,021
Head On	44,417	77,421	8,787	9,520	2,694	9,190
Same Direction Sideswipe	146,969	1,201	2,339	1,377	460	547
Backing	143,907	110	3,019	1,521	326	500
Left Turn	89,983	91	1,174	586	165	132
Other (Explain in Narrative)	29,490	13,932	11,687	1,606	1,135	1,684
Opposite Direction Sideswipe	44,098	805	843	233	143	117
Right Turn	21,827	245	744	548	89	80
Non-Collision	866	2,692	5,312	294	1,802	380
Left/Right Turn	16,575	62	447	307	85	44
Unknown	8,920	226	282	210	64	160

Severe Crashes	Another Motor Vehicle	Unknown	Tree	Off Roadway	Utility Pole	Ran Off Roadway
Total	19,015	3,146	2,352	1,739	1,306	1,219
Ran off Road	202	139	1,580	1,467	908	943
Right Angle	7,142	550	31	22	40	19
Head On	3,166	902	624	105	285	187
Rear End	4,480	196	2	5	1	4
Other (Explain in Narrative)	590	612	65	59	37	16
Left Turn	1,599	149	0	4	8	3
Non-Collision	22	123	18	59	4	30
Same Direction Sideswipe	659	165	14	6	11	10
Opposite Direction Sideswipe	658	42	3	4	4	3
Backing	89	181	4	2	1	1
Left/Right Turn	165	24	1	3	1	1
Unknown	114	23	9	3	3	1

Severe Crashes	Road Type	All Manners	Ran off Road	Right Angle	Head On	Rear End
	Total	37,716	9,755	8,330	6,560	4,797
Passenger Car	2 Lanes (2 Way)	10,211	3,355	2,322	2,182	1,002
Passenger Car	Multi-Lane Divided 3 or more (2 Way)	3,403	521	942	410	825
Pickup	2 Lanes (2 Way)	3,096	1,263	511	697	246
Motorcycle	2 Lanes (2 Way)	2,858	892	496	381	206
Passenger Car	Multi-Lane Undivided (2 Way)	2,605	373	795	436	489
SUV		2,207	908	414	388	192
Pedestrian	Unknown	2,183	72	249	740	78
Van	2 Lanes (2 Way)	1,247	335	343	274	142
SUV	Multi-Lane Divided 3 or more (2 Way)	775	194	168	78	156
Bicycle		731	7	271	110	97
Motorcycle	Multi-Lane Divided 3 or more (2 Way)	704	106	157	51	127
Unknown	2 Lanes (2 Way)	704	163	156	78	67
Motorcycle	Multi-Lane Undivided (2 Wav)	694	105	175	62	81

Vulnerable Users

	# of Crashes	# of Severe Crashes	% of this modes crashes that are severe
Total	1,870,748	37,716	2.02%
Deer	153,274	275	0.18%
Animal Drawn Vehicle	5,262	42	0.80%
Bicycle	9,791	172	1.76%
Pedestrian	16,671	613	3.68%
Railway Vehicle/Train/Engine	943	146	15.48%



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4					# of Collisions	# of Severe Collisions	% Type Severe	% all Severe
5	Total				1,870,748	37,716		
6	Road Type	WX	Light					
	Multi-Lanes (One Way)	Fog/Smoke/Smog	Dawn/Dusk		19	1	5.26%	0.00%
		Fog/Smoke/Smog	Dawn/Dusk		20	1	5.00%	0.00%
	Multi-Lane Divided 3 or more (Two Way)	Fog/Smoke/Smog	Dark (Not Lighted)		361	16	4.43%	0.04%
		Fog/Smoke/Smog	Dark (Not Lighted)		107	4	3.74%	0.01%
164	Multi-Lane Divided 3 or more (Two Way)	Fog/Smoke/Smog	Dawn/Dusk		220	8	3.64%	0.02%
	Two Lanes (One Way)	Fog/Smoke/Smog	Dawn/Dusk		55	2	3.64%	0.01%
166	Two Lanes (Two Way)	Fog/Smoke/Smog	Dark (Not Lighted)		3,548	121	3.41%	0.32%
167	Two Lanes (Two Way)	Fog/Smoke/Smog	Daylight		1,754	57	3.25%	0.15%
	Private Drive	Fog/Smoke/Smog	Dark (Not Lighted)		62		3.23%	0.01%
169	Multi-Lane Divided 3 or more (Two Way)	Fog/Smoke/Smog	Dark (Lighted)		229	7	3.06%	0.02%
		Fog/Smoke/Smog	Daylight		72	2	2.78%	0.01%
171	Multi-Lane Divided 3 or more (Two Way)	Fog/Smoke/Smog	Daylight		559	15	2.68%	0.04%
	Two Lanes (Two Way)	Fog/Smoke/Smog	Dark (Lighted)		522	14	2.68%	0.04%
	Two Lanes (One Way)	Fog/Smoke/Smog	Dark (Lighted)		39	1	2.56%	0.00%
	Two Lanes (Two Way)	Fog/Smoke/Smog	Dawn/Dusk		1,192	29	2.43%	0.08%
	Two Lanes (One Way)	Fog/Smoke/Smog	Daylight		127	3	2.36%	0.01%
	, , , , , , , , , , , , , , , , , 	Fog/Smoke/Smog	Dark (Not Lighted)		43	1	2.33%	0.00%
	Multi-Lane Undivided (Two Way)	Fog/Smoke/Smog	Daylight		355	8	2.25%	0.02%
	Multi-Lane Undivided (Two Way)	Fog/Smoke/Smog	Dark (Lighted)		182	4	2.20%	0.01%
	Multi-Lane Undivided (Two Way)	Fog/Smoke/Smog	Dark (Not Lighted)		332	5	1.51%	0.01%
		Fog/Smoke/Smog	Daylight		75		1.33%	0.00%
181	Multi-Lane Undivided (Two Way)	Fog/Smoke/Smog	Dawn/Dusk		152	2	1.32%	0.01%
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Data and Information Systems for Traffic Safety Decision Making



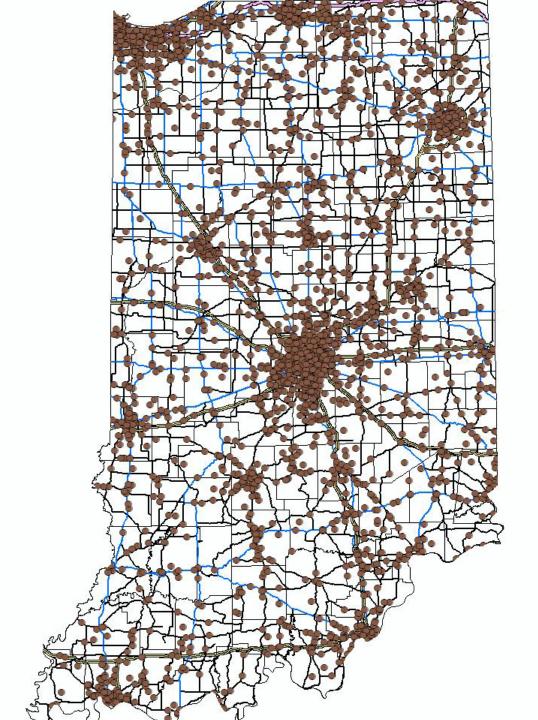
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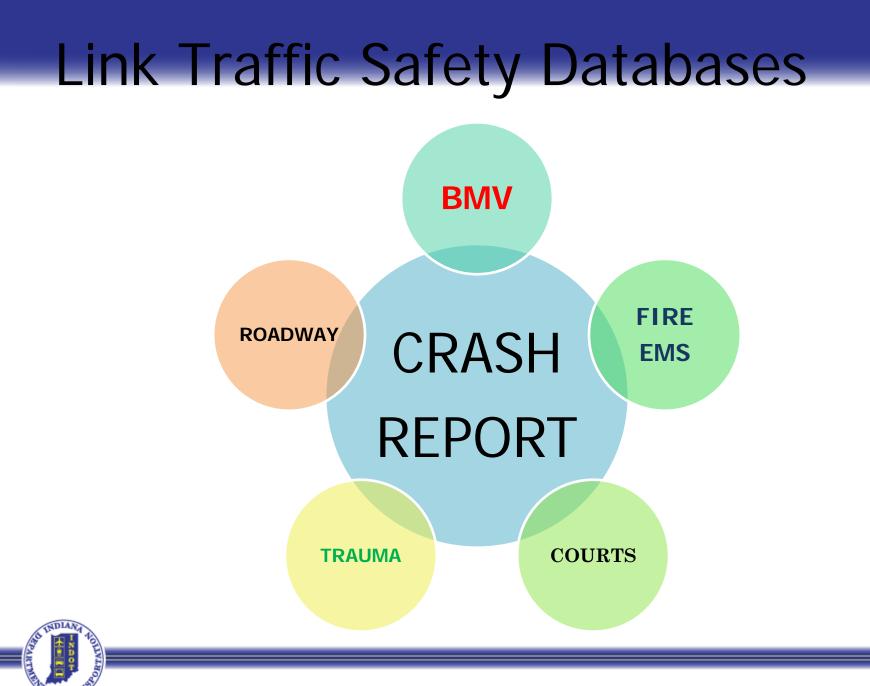
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Severe Crashes as a Metric

The total number of severe crashes for any given contributor is divided by the total number of severe crashes for the period examined. That produces a percentage that factor contributes overall severe crashes.



Emphasis Areas

Severe Crash Types Run Off Road/Lane Departure Crashes Intersection Crashes

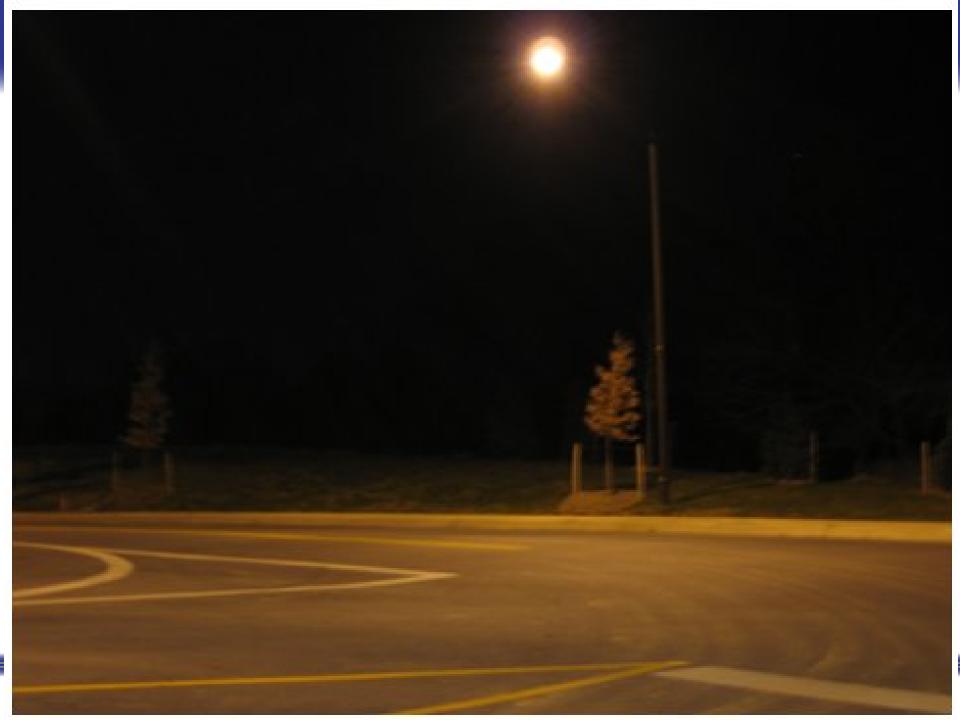
% of All Severe Crashes	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lane Departure no Junction Involved	38.5%	41.1%	39.2%	41.1%	41.7%	37.9%	38.7%	37.9%	40.6%	37.7%
Intersection Crashes	40.4%	36.6%	35.4%	30.3%	31.1%	33.1%	31.3%	32.0%	32.4%	31.9%



















Emphasis Areas

Vehicle/Mode Conflicts Motorcycles, Bicycles, and Pedestrians Highway-Rail Grade Crossing Crashes Large Truck Crashes

% of All Severe Crashes	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Motorcycle/Mopeds	12.3%	12.3%	13.7%	16.7%	16.1%	16.4%	16.5%	17.7%	18.4%	17.9%
Bicycle	2.4%	2.0%	2.6%	2.5%	2.3%	2.1%	2.5%	2.6%	2.8%	2.8%
Pedestrian	6.3%	7.0%	7.0%	7.0%	7.7%	7.7%	8.3%	8.3%	7.0%	7.3%



















Emphasis Areas

Vehicle/Mode Conflicts Highway Rail Grade Crossing Crashes

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Highway-Rail Grade Crossing Crashes	194	165	175	146	159	177	140	164	142	98
% Crashes at Crossings w/Active Warning	53.7%	59.5%	60.5%	60.0%	68.2%	69.3%	67.9%	75.0%	71.8%	67.8%



OPERATION LIFESAVER.®

Saving Lives at America's Highway-Rail Crossings. RO POAD

TRACKS







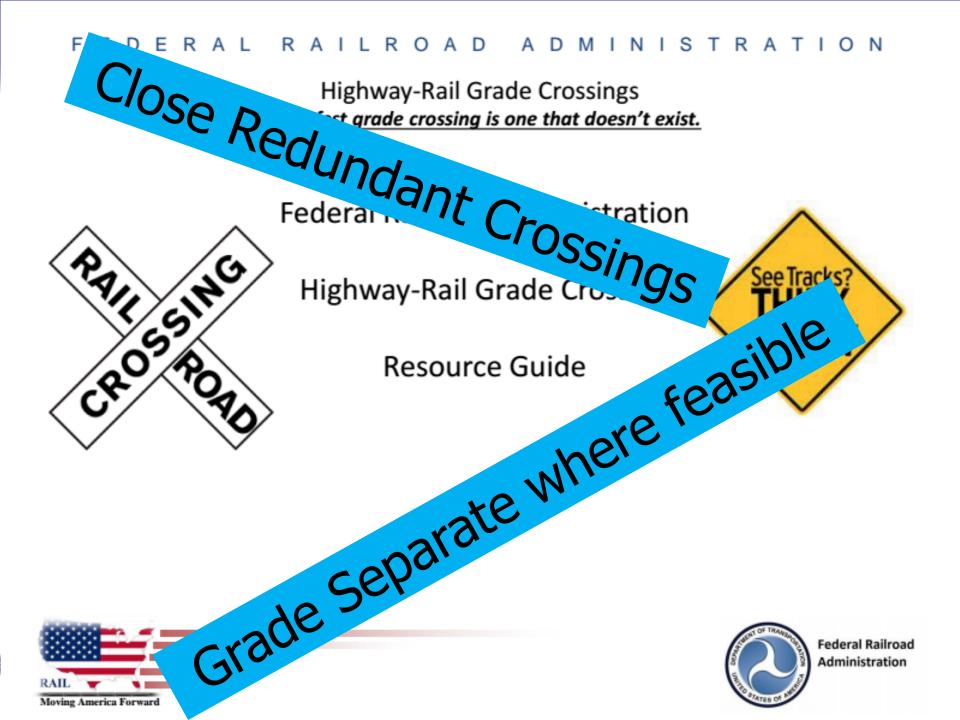












Emphasis Areas

Vehicle/Mode Conflicts Large Truck Crashes

MCMIS Crash Events	CY 2012	CY 2013	CY 2014* (09/30/2014)	
Vehicles Involved	4,090	4,075	4,104	
Crashes	3,790	3,751	3,712	
Fatalities	118	110	91	
Injuries	1,937	1,857	1,656	
FARS Fatal Crash Events	CY 2011	CY 2012	CY 2013	
Vehicles Involved	130	115	115	
Fatalities	136	112	116	







Emphasis Areas

High-Speed Multi-Lane Roadway Rear-End Collisions

% of All Severe Crashes	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
HS Multi-Lane Rear-End	1.8%	2.0%	1.8%	2.4%	1.9%	2.3%	2.6%	2.3%	2.5%	2.8%
Work Zones	1.9%	1.4%	1.4%	1.3%	1.8%	1.3%	2.2%	1.6%	1.6%	1.8%









INdiana Traffic Incident Management Effort









Emphasis Areas

Human Behavior Factors



Primary Contributors to Crashes







http://www.in.gov/cji/2367.htm

INDIANA CRASH FACTS

19.1

013

Other "E" Partners

Enforcement

Indiana State Police, Sheriff's, & Local PD's Education

Indiana Criminal Justice Institute Indiana Operation Lifesaver Emergency Medical Services

Indiana State Department of Health

Indiana Department of Homeland Security



Consult on the DRAFT SHSP

Visit our table in **Stewart 307**



Consult on the DRAFT SHSP

Request a pdf of the DRAFT and Data tables for 2004-2013 by email:

rmanning@indot.in.gov

Subject: DRAFT 2015 SHSP



Consult on the DRAFT SHSP Request a pdf of the DRAFT and CSV tables of the 2004-2013 data by mail:

Roger Manning

Strategic Highway Safety Plan Mgr. 100 N. Senate Ave., N955 Indianapolis, IN 46024 ATTN: DRAFT 2015 SHSP



Consult on the DRAFT SHSP

Comments, Concerns, and Corrections or Insights, Ideas, and Improvements

Submit them by email or mail

