

# DEVELOPMENT OF A STATEWIDE CRASH MAP: ENABLING NETWORK BASED SAFETY ANALYSIS THROUGH LRS CRASH MAPPING



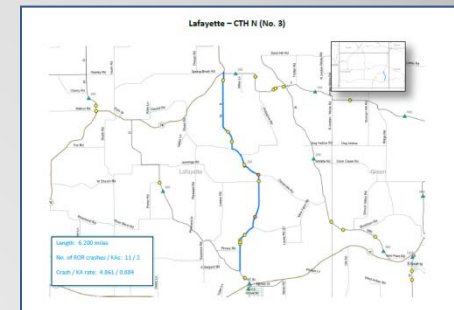
**2013 GIS-T Symposium**  
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- *WISCONSIN HRRR PROGRAM*
  - *HISTORY AND OBJECTIVES*
- *HRRR STATEWIDE LIST IMPLEMENTATION*
  - *METHODOLOGY AND RESULTS*
- *FUTURE: MAP 21 CONSIDERATIONS*



**Outline**

- High Risk Rural Roads (HRRR)
- Established in SAFETEA-LU as a mandatory set-aside in the Highway Safety Improvement Program (HSIP)
- Funding limited to locations with:
  - Functional classifications of rural major collector, rural minor collector, or rural local road
  - Fatal or severe injury crash rate above statewide average for functional classification
- WisDOT focused on the local system

## Wisconsin HRRR Program

- Applications followed traditional HSIP process
  - Application submitted by local
  - Project-specific safety evaluation
  - 10% local funding match
- Two questions emerged:
  - The “Reactive” vs. “Proactive” question
  - The “Hotspot” vs. “Corridor” question

## Wisconsin HRRR Program

- Three Pilot projects:
  - County-level corridor analysis by:
    - Functional classification
    - Run-off-the-road type crashes
  - Focused on low-cost safety countermeasures
    - e.g. –clear zone tree removal, chevron installation, rumble strips, beamguard end treatment upgrades
- County ranking based on crash rate
  - Urban vs. Rural
- Statewide corridor analysis

## Wisconsin HRRR Program

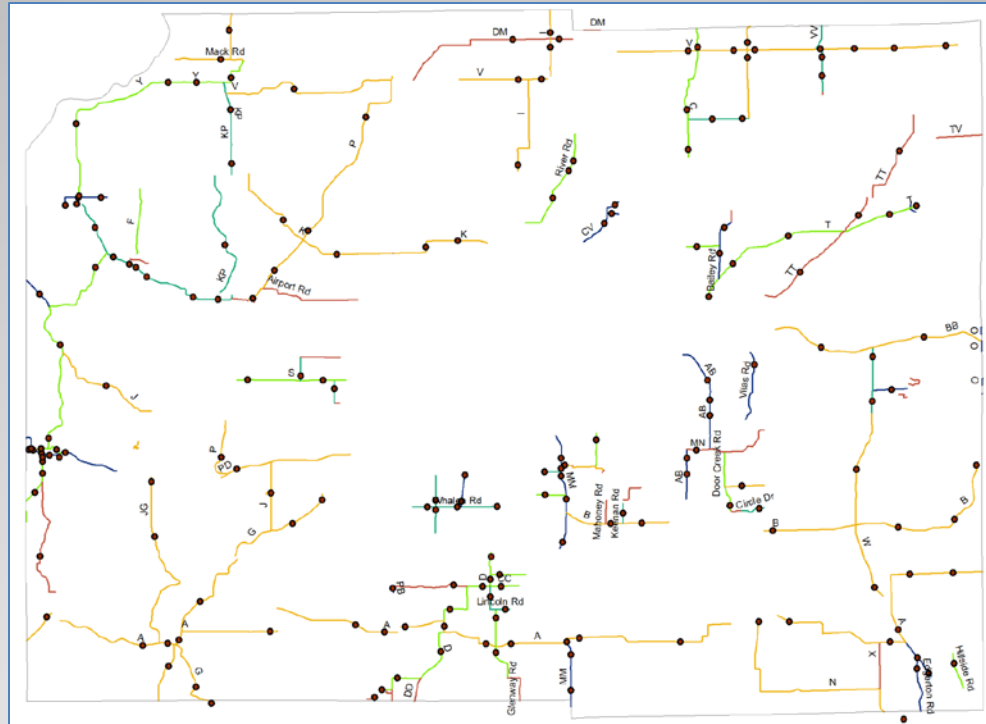
- SCOPE AND OBJECTIVES
  - STATEWIDE LIST OF TOP 10 HRRR CORRIDORS
  - FOCUS ON:
    - RURAL MAJOR AND MINOR COLLECTORS
    - RUN-OFF-THE-ROAD CRASHES
    - FIVE YEARS OF CRASH DATA
  - RANKING BASED ON CRASH RATES
  - LEVERAGE NEW LRS CRASH MAP

## HRRR Statewide List

- SOURCE DATA
  - WISCONSIN LOCAL ROADS INFORMATION SYSTEM (WISLR) LRS
    - ROADWAY NETWORK
    - FUNCTIONAL CLASSIFICATIONS
  - WISDOT MV4000 CRASH DATA
  - WISDOT AADT TRAFFIC COUNT DATA

## **HRRR Statewide List**

**Data Integration Investigation (Dane County):**  
Rural major/minor collector network, ROR crashes (*points*),  
and AADT count sites per mile (*color coded segments*).



**HRRR Statewide List**



- “FILTERED KA CRASH RATE” RANKING
  - BASIC FILTERS
    - SEGMENT LENGTH, CRASH COUNTS
  - ABOVE AVERAGE CRASH DENSITY
  - ABOVE AVERAGE CRASH RATES
  - MINIMUM K+A CRASH COUNTS
  - SORT BY K+A CRASH RATES

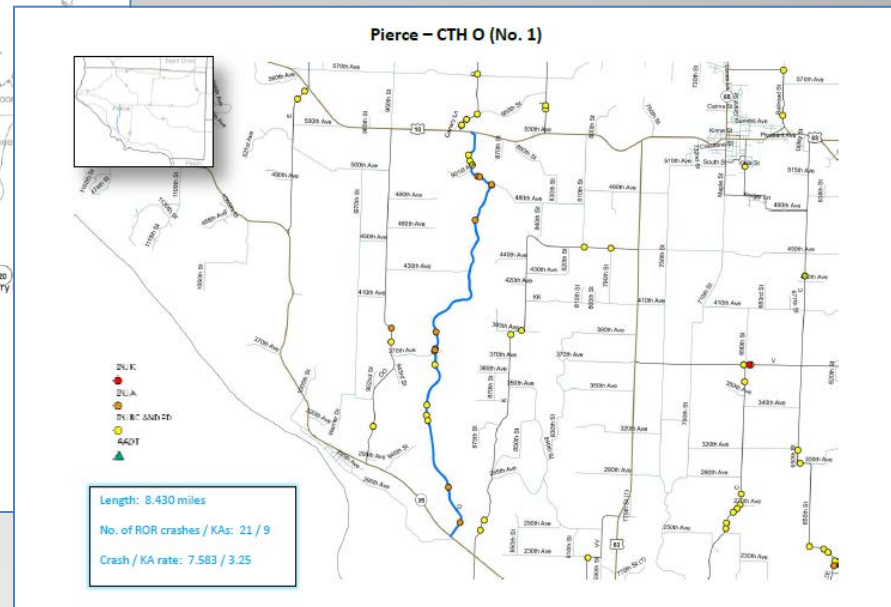
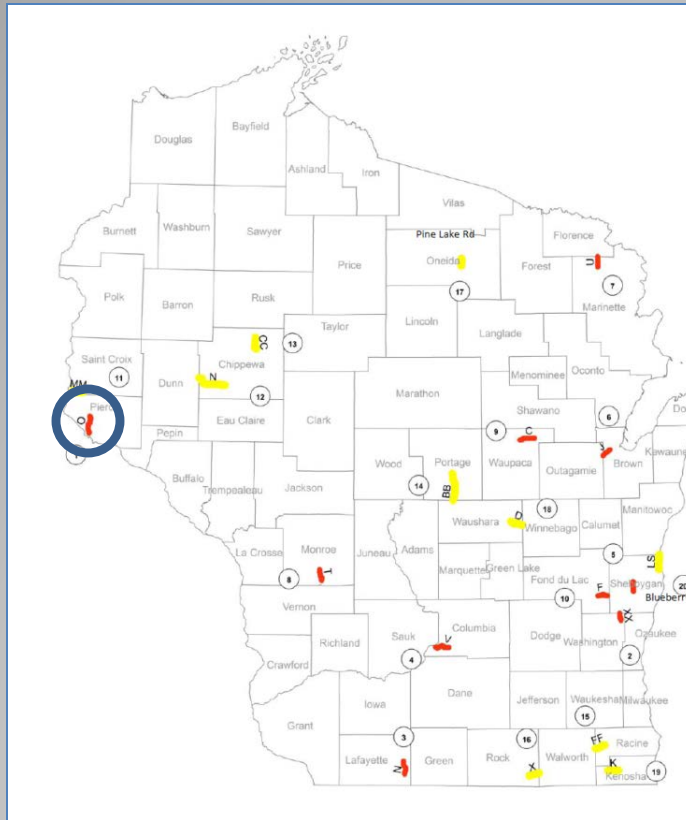
**HRRR Statewide List**

HRRR 2013 Statewide Corridor List 2013-04-17 - Microsoft Excel

	A	B	C	K	L	M	N	O	P	Q	R	S	T
1				AVG.	1.454	0.939		0.124	0.083				
2				STD.	0.940	0.791		0.164	0.170				
3													
4	REGION	COUNTY	NAME	TOTAL CRASHES	CRASH DENSITY	CRASH RATE	KA CRASHES	KA DENSITY	KA CRASH RATE	CRASH DENS. RANK	CRASH RATE RANK	KA DENSITY RANK	KA RATE RANK
5	NW	PIERCE	O	21	2.491	7.583	9	1.068	3.25	127	2	3	1
7	SE	WASHINGTON	XX	7	2.065	4.919	2	0.590	1.405	186	6	23	3
11	SW	LAFAYETTE	N	11	1.774	4.861	2	0.323	0.884	262	8	101	7
13	SW	COLUMBIA	V	20	2.869	2.742	5	0.717	0.686	82	26	13	9
20	NE	SHEBOYGAN	Blueberry Ln	7	1.75	1.918	2	0.500	0.548	267	78	36	16
21	NE	BROWN	J	12	2.985	1.09	6	1.493	0.545	73	290	1	17
23	NE	MARINETTE	U	18	4.009	2.288	4	0.891	0.508	26	46	9	19
27	SW	MONROE	T	14	2.627	2.057	3	0.563	0.441	110	61	28	23
28	NC	WAUPACA	C	12	1.802	1.299	4	0.601	0.433	252	210	20	24
29	NE	FOND DU LAC	F	15	3.191	2.107	3	0.638	0.421	60	55	18	25
30	NW	ST. CROIX	MM	10	2.404	2.091	2	0.481	0.418	131	58	41	26
34	NW	CHIPPEWA	N	22	1.686	1.192	7	0.536	0.379	297	244	29	30
39	NW	CHIPPEWA	CC	14	2.642	1.673	3	0.566	0.359	106	111	27	35
51	NC	PORTAGE	BB	23	1.983	1.426	5	0.431	0.31	202	159	49	47
56	SE	RACINE	FF	19	4.27	1.418	4	0.899	0.299	21	163	8	52

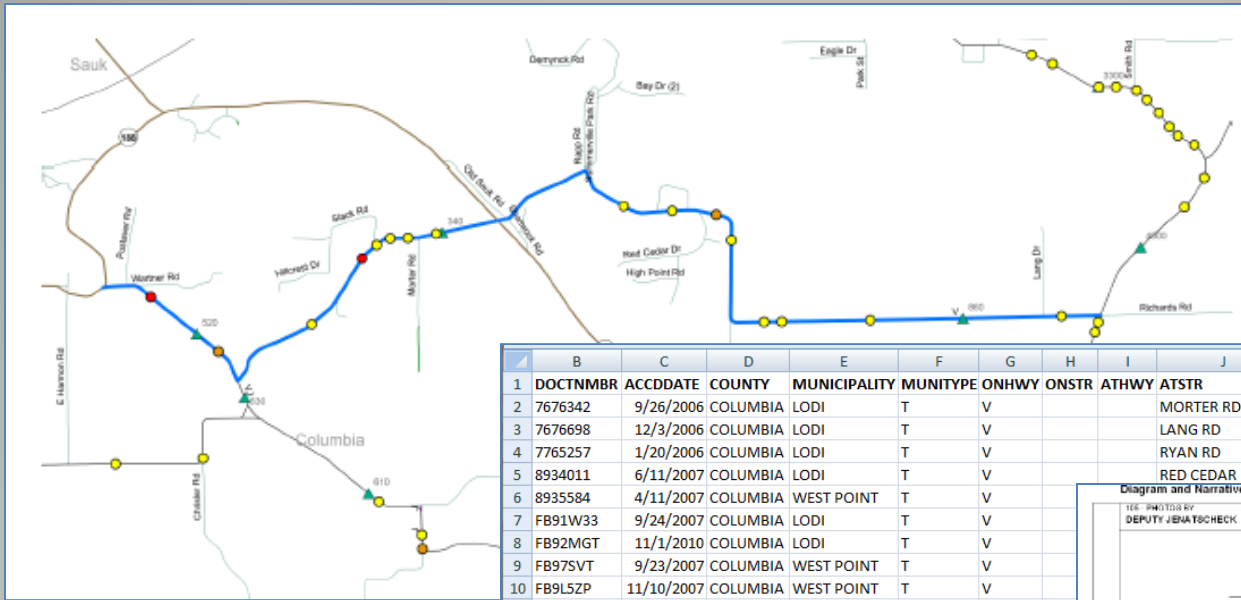
# HRRR Statewide List

# Statewide HRRR Map (left) and Pierce County Highway O (below)



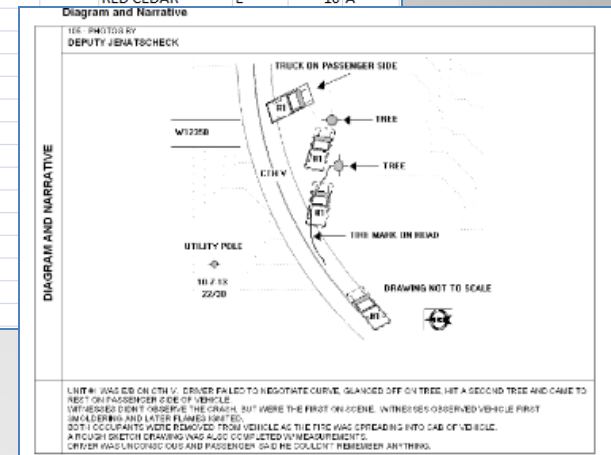
# HRRR Statewide List

# Data Validation



	B	C	D	E	F	G	H	I	J	K	L	M
1	DOCTNMBR	ACCDDATE	COUNTY	MUNICIPALITY	MUNTYPE	ONHWY	ONSTR	ATHWY	ATSTR	INTDIR	INTDIS	INJSVR
2	7676342	9/26/2006	COLUMBIA	LODI	T	V			MORTER RD	E	10	C
3	7676698	12/3/2006	COLUMBIA	LODI	T	V			LANG RD	E	10	
4	7765257	1/20/2006	COLUMBIA	LODI	T	V			RYAN RD	E	80	
5	8934011	6/11/2007	COLUMBIA	LODI	T	V			RED CEDAR	E	10	A
6	8935584	4/11/2007	COLUMBIA	WEST POINT	T	V						
7	FB91W33	9/24/2007	COLUMBIA	LODI	T	V						
8	FB92MGT	11/1/2010	COLUMBIA	LODI	T	V						
9	FB97SVT	9/23/2007	COLUMBIA	WEST POINT	T	V						
10	FB91L5ZP	11/10/2007	COLUMBIA	WEST POINT	T	V						
11	FB91608	7/20/2008	COLUMBIA	LODI	T	V						
12	FB91625	12/30/2009	COLUMBIA	WEST POINT	T	V						
13	FB953RH	4/15/2008	COLUMBIA	WEST POINT	T	V						
14	FB953VB	5/19/2010	COLUMBIA	LODI	T	V						
15	FB91LDV	4/12/2010	COLUMBIA	LODI	T	V						
16	FB9XK3T	4/13/2008	COLUMBIA	WEST POINT	T	V						
17	FBB575M	10/29/2010	COLUMBIA	WEST POINT	T	V						
18	FBB575T	12/12/2010	COLUMBIA	LODI	T	V						
19	FBB8X9F	7/6/2010	COLUMBIA	WEST POINT	T	V						

Columbia County  
Highway V



# HRRR Statewide List

- SUMMARY AND CHALLENGES
  - HOW TO SEGMENT
    - CHANGES IN FUNCTIONAL CLASS
    - CHANGES IN TRAFFIC VOLUME
  - NO CRASH REPORT FIELD FOR ROR
  - DATA QUALITY / AVAILABILITY FOR CRASH RATES
  - STABILITY OF RANKING METHODOLOGY
  - AUTOMATION

**HRRR Statewide List**

- MAP-21 eliminated the mandatory set-aside for HRRR.
- But, requires additional funding (200% of FY09 set-aside) should crash rates increase over the most recent two-year period
- Why WisDOT will continue to manage a HRRR program
  - Supports our local transportation system
  - No studies under SAFETEA-LU HRRR

## **Future: Map 21 Considerations**

# Questions?

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**Wisconsin HRRR Program**