Local Road Safety Planning

Washington State

Scott Davis PE, Assistant State Traffic Design Engineer

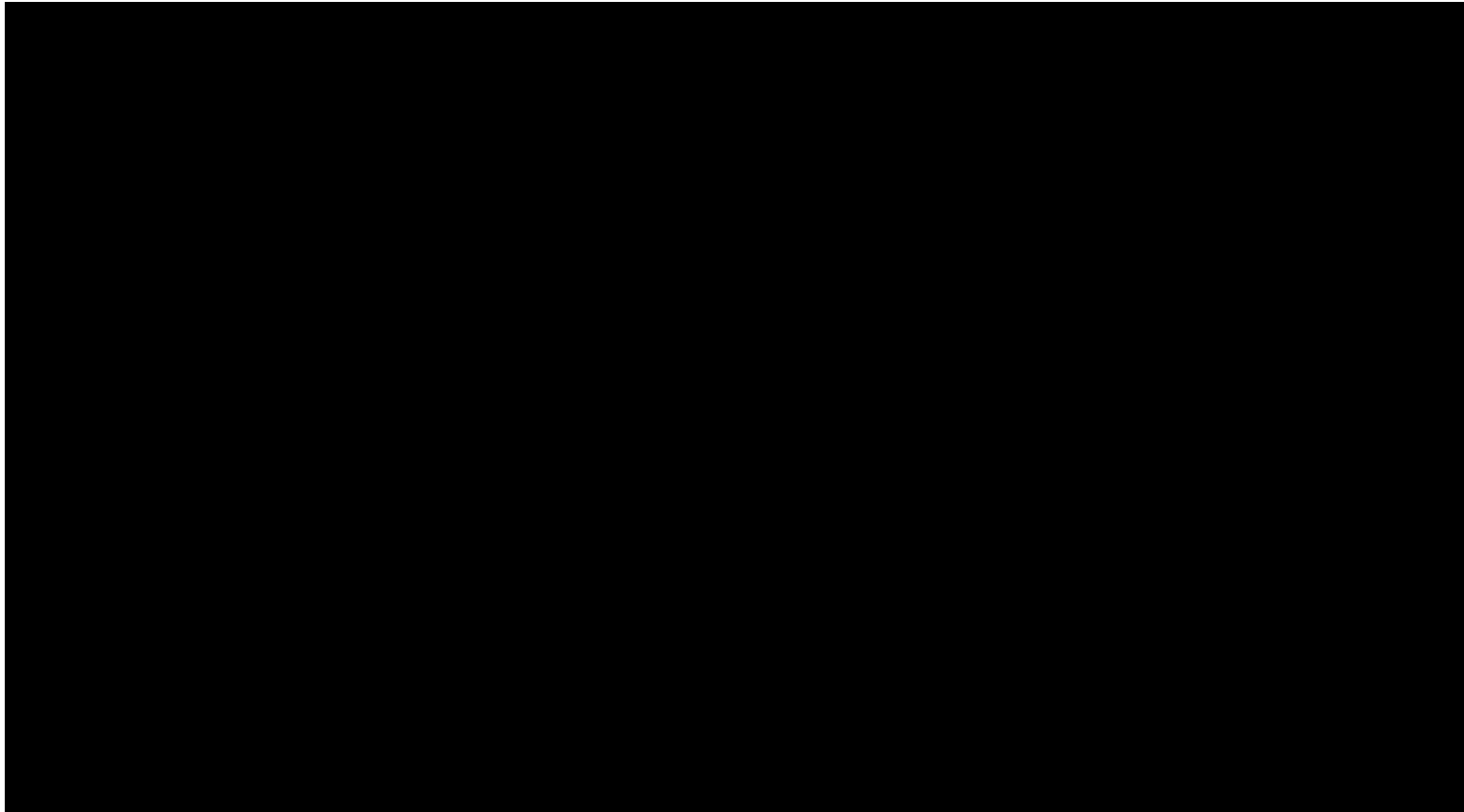October, 2019

Agenda

- Current Performance
- Planning History
- DIY Local Road Safety Plans
- Results

Safety Video

Source: Jimmy Kimmel Live, URL https://www.youtube.com/watch?v=CQLBaTa4hAU
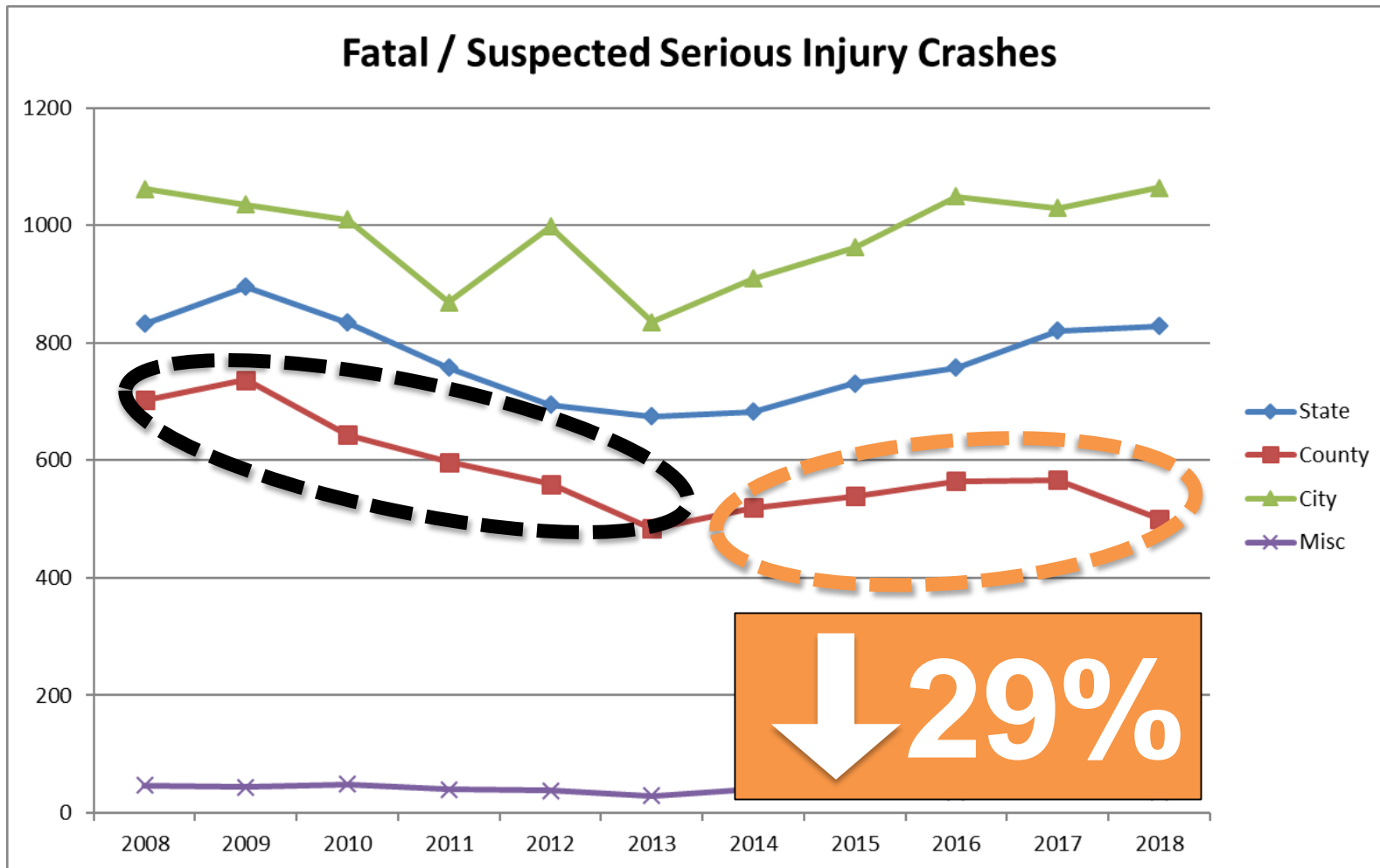
Safety Program Results

Fatal / Suspected Serious Injury Crashes
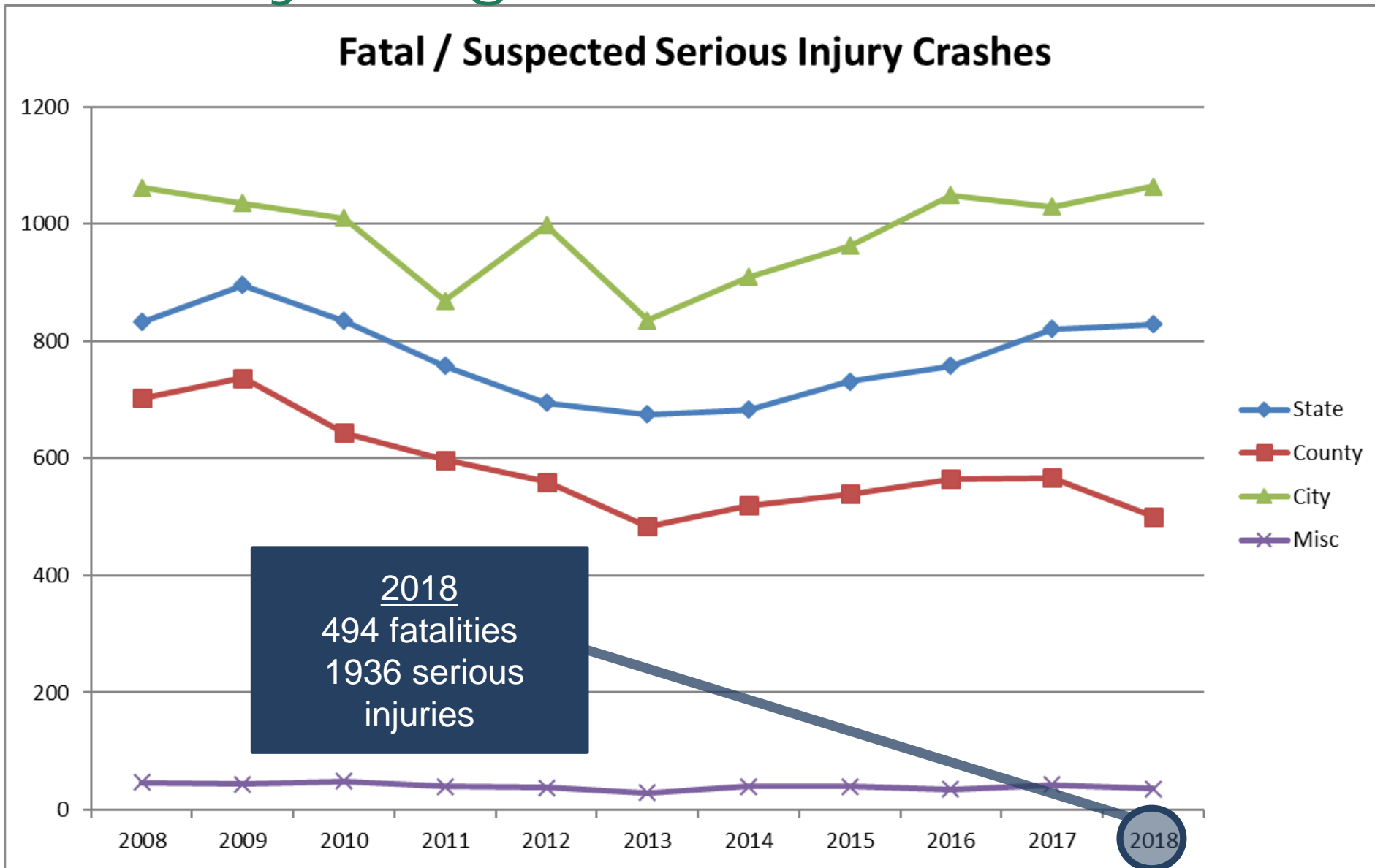
2018
494 fatalities
1936 serious injuries

Legend: State, County, City, Misc

County Roads Results

Fatal / Suspected Serious Injury Crashes

County Roads Results

Lane Departure ⬇ 35%

Impairment ⬇ 35%

⬇ 20%

⬇ 20%

Motorcycles ⬇ 20%
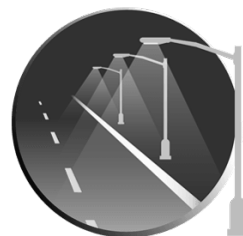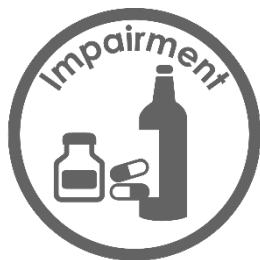
Pedestrian ⬇ 7%

Washington State Safety Planning History

2000

2007
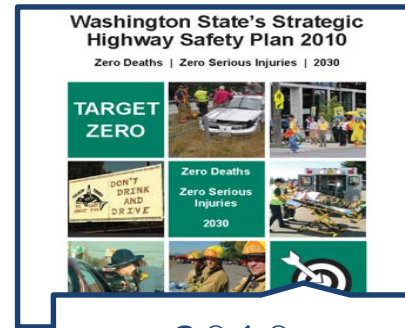
2010
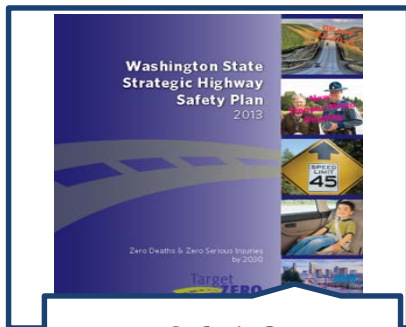
2013
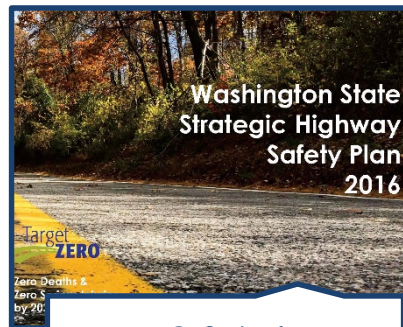
2016

2019

www.targetzero.com

Local Road HSIP Program

Data Driven Process

70% of HSIP Funds to Local Agencies

Over **$270** million awarded to local agencies since 2006

Percent Fatal & Serious Crashes by Agency

City 40%
State 30%
County 30%

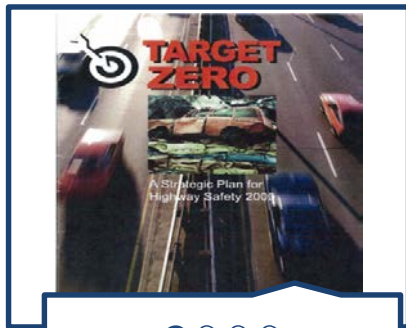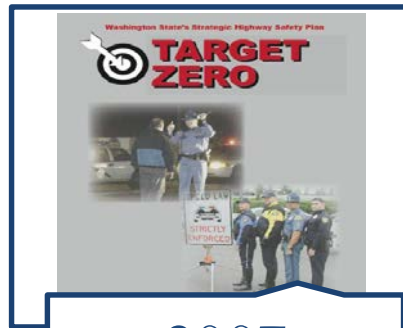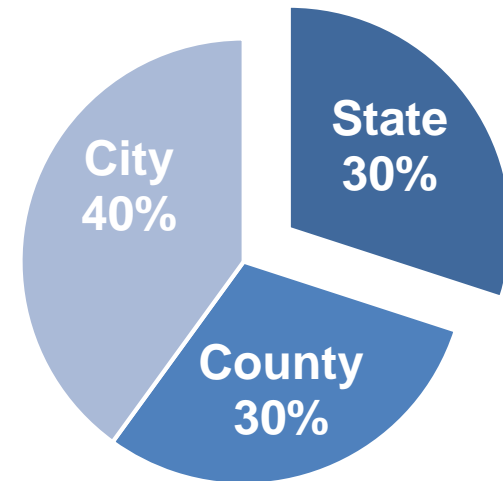*"Our recent progress has been impressive. Washington traffic fatalities have fallen every year since 2005- down to 437 in 2012 - still, too many people dying on our roadways. To continue this decline, we will need to implement new strategies and more breakthrough programs in the next five years."*
-Governor Jay Inslee, 2013

Local Road HSIP Funding

2012

City Safety Program
50 Million

2013

Quick Response
Program
28 Million

2014

City Safety Program
23.1 Million

County Safety
Program
26.5 Million

2016

Innovative Safety
Program
24.8 Million

2017

County Safety
Program
28.1 Million

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Since 2006 Washington State has invested almost $300 million for local road safety.

$274

million

WSDOT
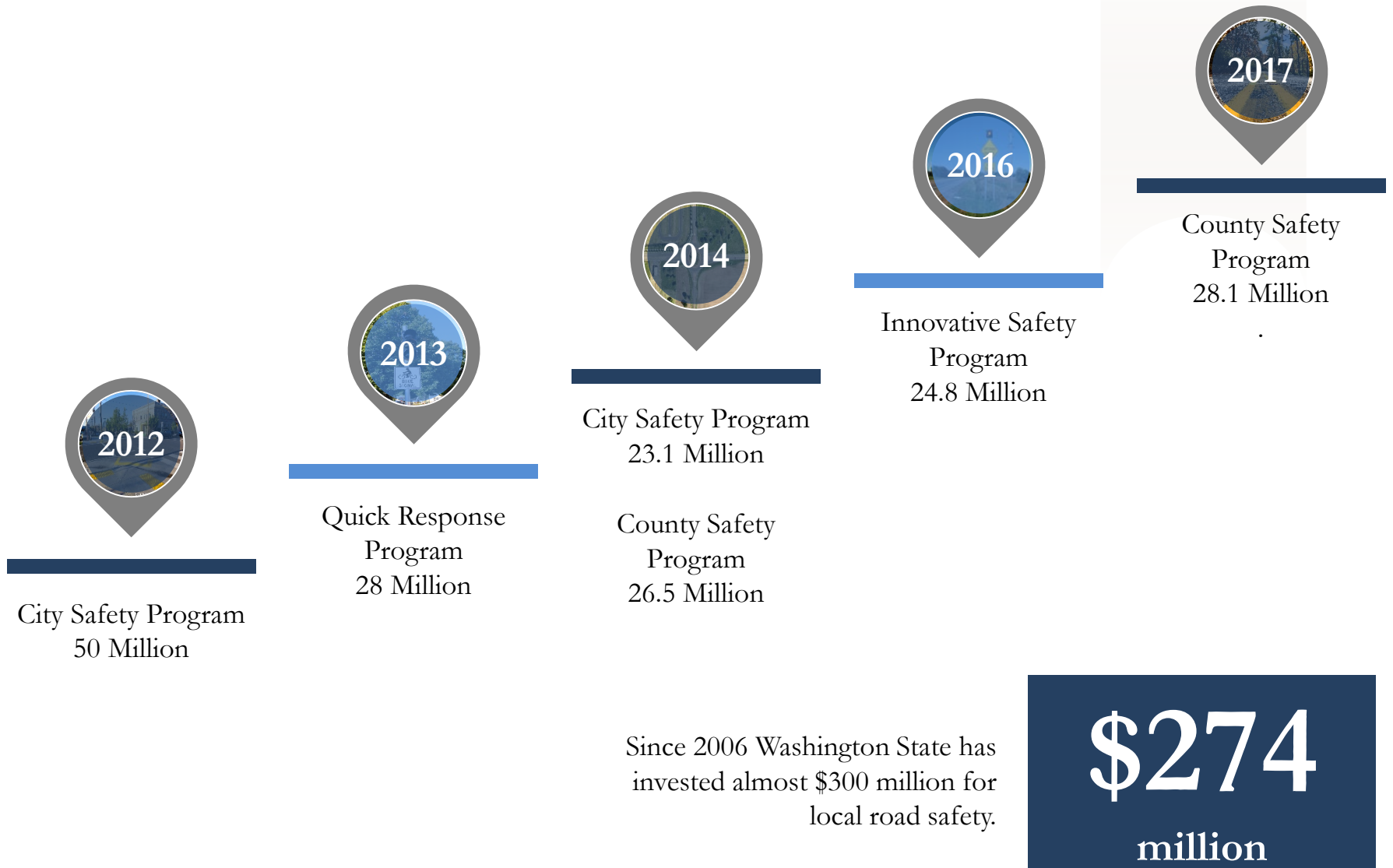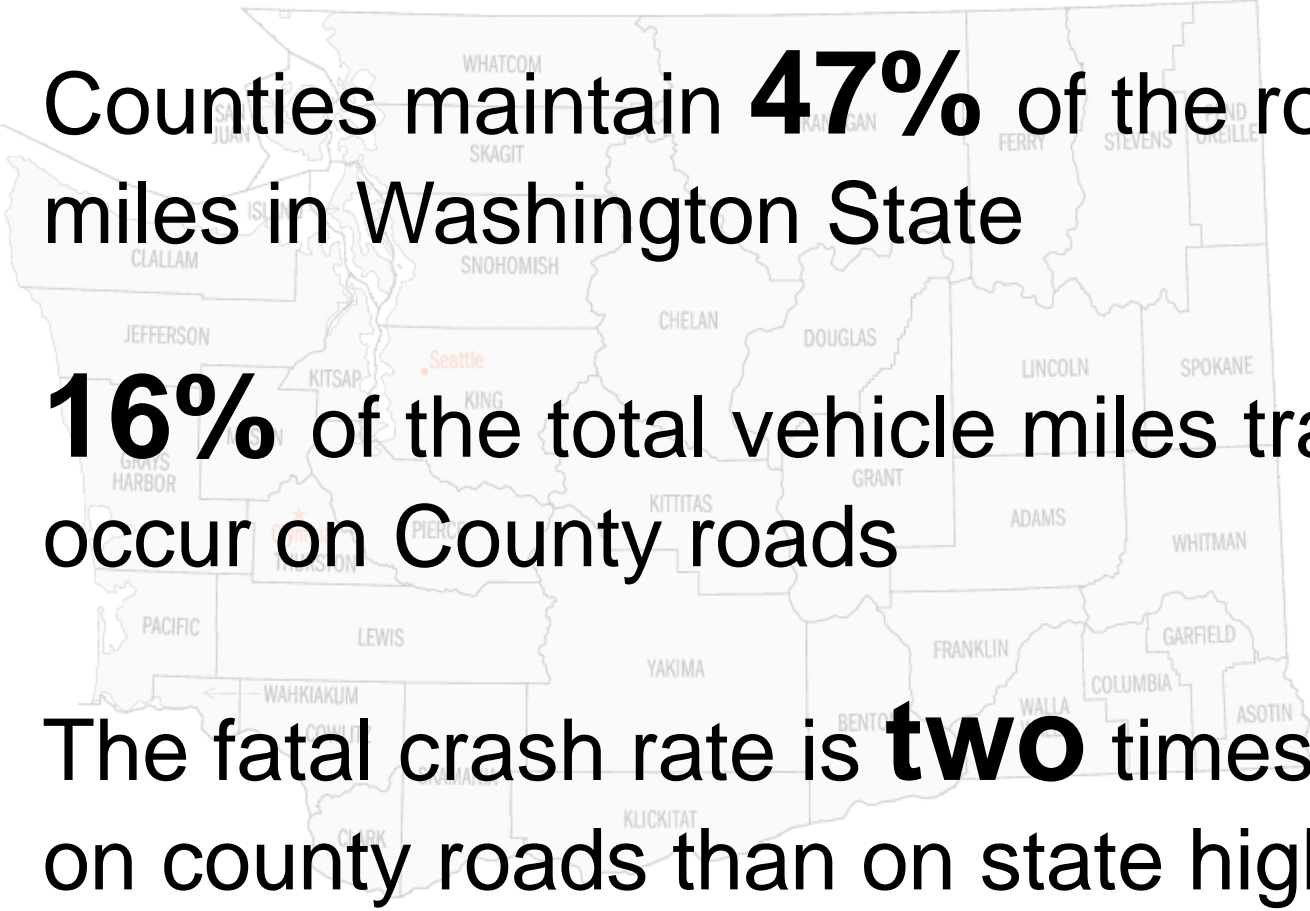
DIY County Road Safety Plans
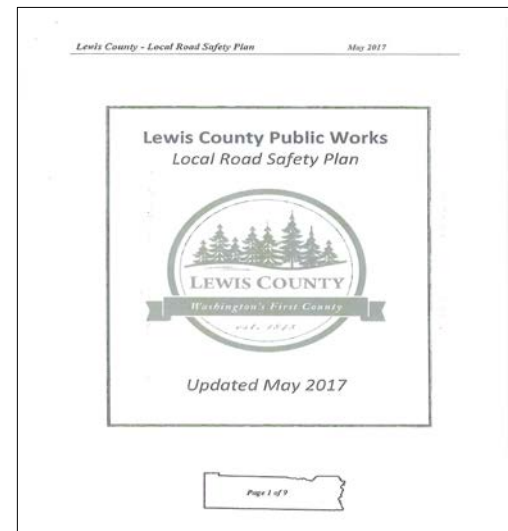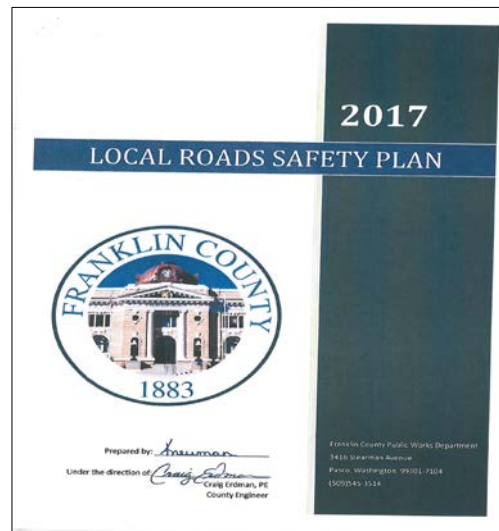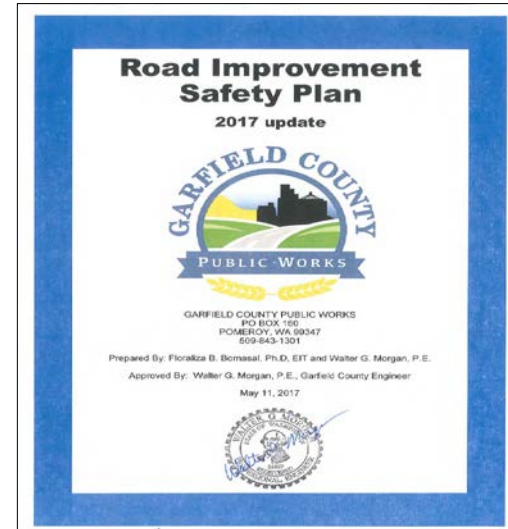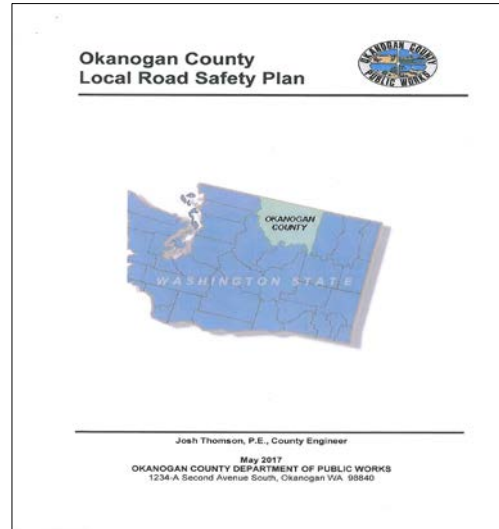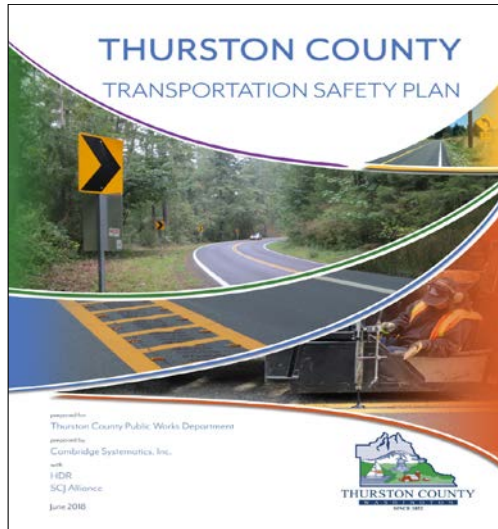
County Safety Facts

Counties maintain **47%** of the road miles in Washington State

16% of the total vehicle miles traveled occur on County roads

The fatal crash rate is **two** times higher on county roads than on state highways.

Data Challenges
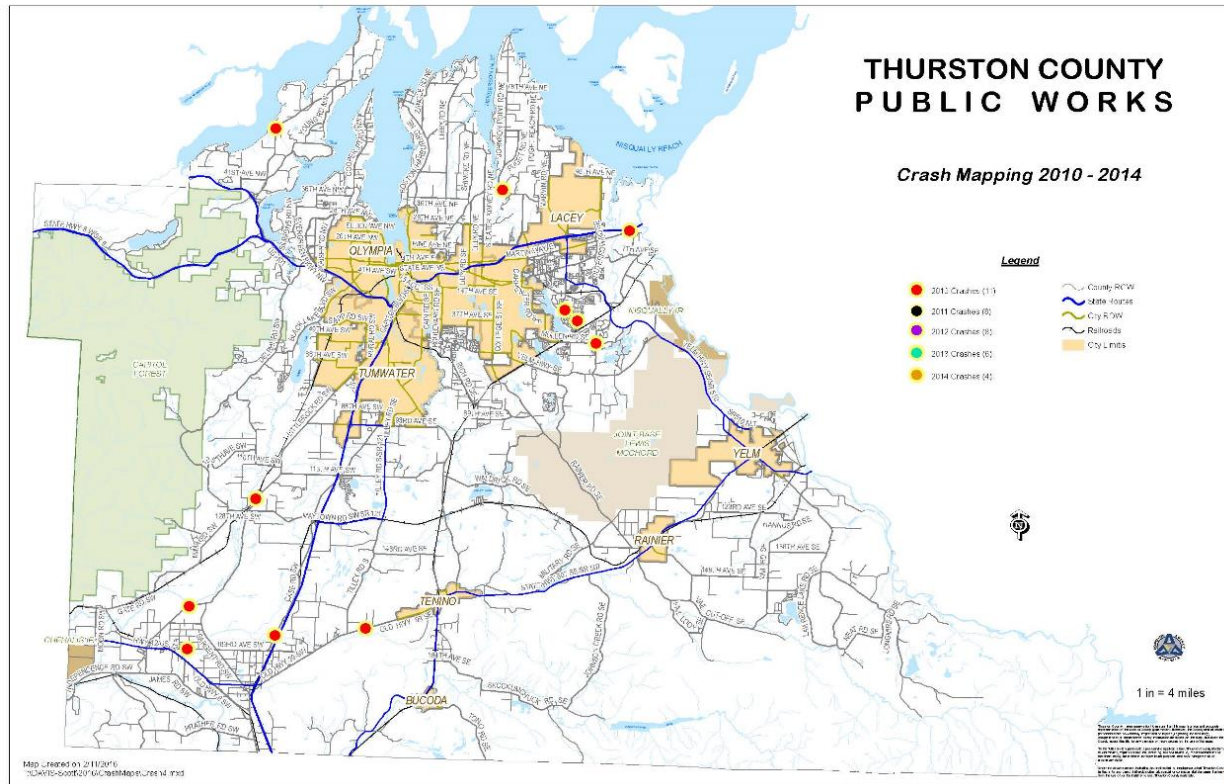
Source: Thurston County, WA

"…low-density crash situation is often viewed as a rural issue, but similar situations can exist in urban areas, such as crashes involving motorized vehicles and vulnerable road users (e.g., pedestrians, bicyclists, and motorcyclists)."
-Systemic Safety Project Selection Tool, FHWA

2014 & 2017 County Road HSIP Program

Required Data Driven Safety Plan

Focus on fatal & severe crashes

Emphasized use of Systemic Safety

$54 Million Available

"The community specific data will help local and regional agencies prioritize safety projects and programs, as well as assist them in developing localized Target Zero plans. Using data-driven approaches to problem identification and prioritization provides local-level justification for allocating funds and resources." - Washington Strategic Highway Safety Plan

LRSP Expectations

1 Analyze Safety Data

2 Description of Risk Factors

3 Prioritized list of roadway locations

4 Countermeasure selection

5 Prioritized list of projects

Data Analysis

WSDOT

Safety Information

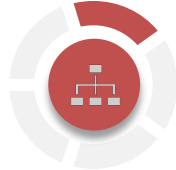| 2013-2017 County X Data	Fatal/Serious Injury Crashes Only																	
	All Roads		All Co		West Co		County X											
	2013-2017	%	2013-2017	%	2013-2017	%	2013-2017	%	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Overall Numbers																		
Total # of Collisions	11,313		2,674		1,921		50		10	9	9	11	11	12	15	7	12	16
# of Fatal Collisions	2,402	21.2%	654	24.5%	419	21.8%	12	24.0%	3	4	3	0	2	2	3	2	1	2
# of Serious Injury Collisions	8,911	78.8%	2,020	75.5%	1,502	78.2%	38	76.0%	7	5	6	11	9	10	12	5	11	14
# of Alcohol-Related Collisions	2,482	21.9%	706	26.4%	476	24.8%	17	34.0%	5	3	3	2	4	5	2	4	2	7
Total # of Fatalities	2,587		702		441		13		3	5	3	0	2	2	5	2	1	2
Total # of Injuries	15,651		3,552		2,583		71		11	13	13	22	12	16	20	9	17	18
By Collision Type																		
Hit Fixed Object	3,192	28.2%	1,164	43.5%	825	42.9%	23	46.0%	5	5	3	6	4	9	9	4	5	13
Angle (T)	1,311	11.6%	282	10.5%	197	10.3%	8	16.0%	1	2	1	1	3	0	0	0	1	0
Overturn	849	7.5%	273	10.2%	144	7.5%	4	8.0%	1	0	1	1	1	0	0	1	0	1
Head On	590	5.2%	160	6.0%	123	6.4%	4	8.0%	2	1	0	0	1	2	1	0	0	0
Hit Cyclist	628	5.6%	87	3.3%	73	3.8%	4	8.0%	0	1	2	1	0	0	0	0	0	0
Angle (Left Turn)	686	6.1%	124	4.6%	102	5.3%	2	4.0%	0	0	0	0	2	0	2	0	1	1
Wildlife	102	0.9%	47	1.8%	26	1.4%	1	2.0%	0	0	0	1	0	0	0	0	2	1

"Assisting, working with, and sometimes being led by local partners is most effective when guided by state and local data."

- *Washington Highway Strategic Safety Plan*

Our crash data is fairly limited, so we use information from our maintenance division to augment our crash data
-anonymous, County Engineer or designee

Finding Emphasis Areas

2006-2010 Collision Data	Fatal/Serious Injury Crashes Only		
	All Roads	All Counties	Thurston County
Angle (left-Turn)	16% (2175)	13% (468)	9% (16)
Intersection-Related	33% (4557)	22% (812)	19% (34)
Horizontal Curve	26% (3674)	39% (1419)	45% (80)

Source: Thurston County, WA

Network Screening (Risk Analysis)

Common Risk Factors Used

"Don't reinvent the wheel; use the assets that are available and customize them to meet your needs."
-anonymous, County Engineer or designee

Keep it simple, find your target area and make your case.
-anonymous, County Engineer or designee

Traffic Volume   Functional Classification   Horizontal Curves   Speed Limits   Crash Severity

Risk Factors by the Numbers

Risk Factor	Value
Illumination Present	5
Embankment/Slope Height	5
Surface Type	5
Shoulder Width	9
Road/Lane Width	11
Clear Zone & Fixed Objects	12
Posted Speed	12
Functional Classification	14
Horizontal Curves	16
Traffic Volume	19
Crash Rate/Severity	23
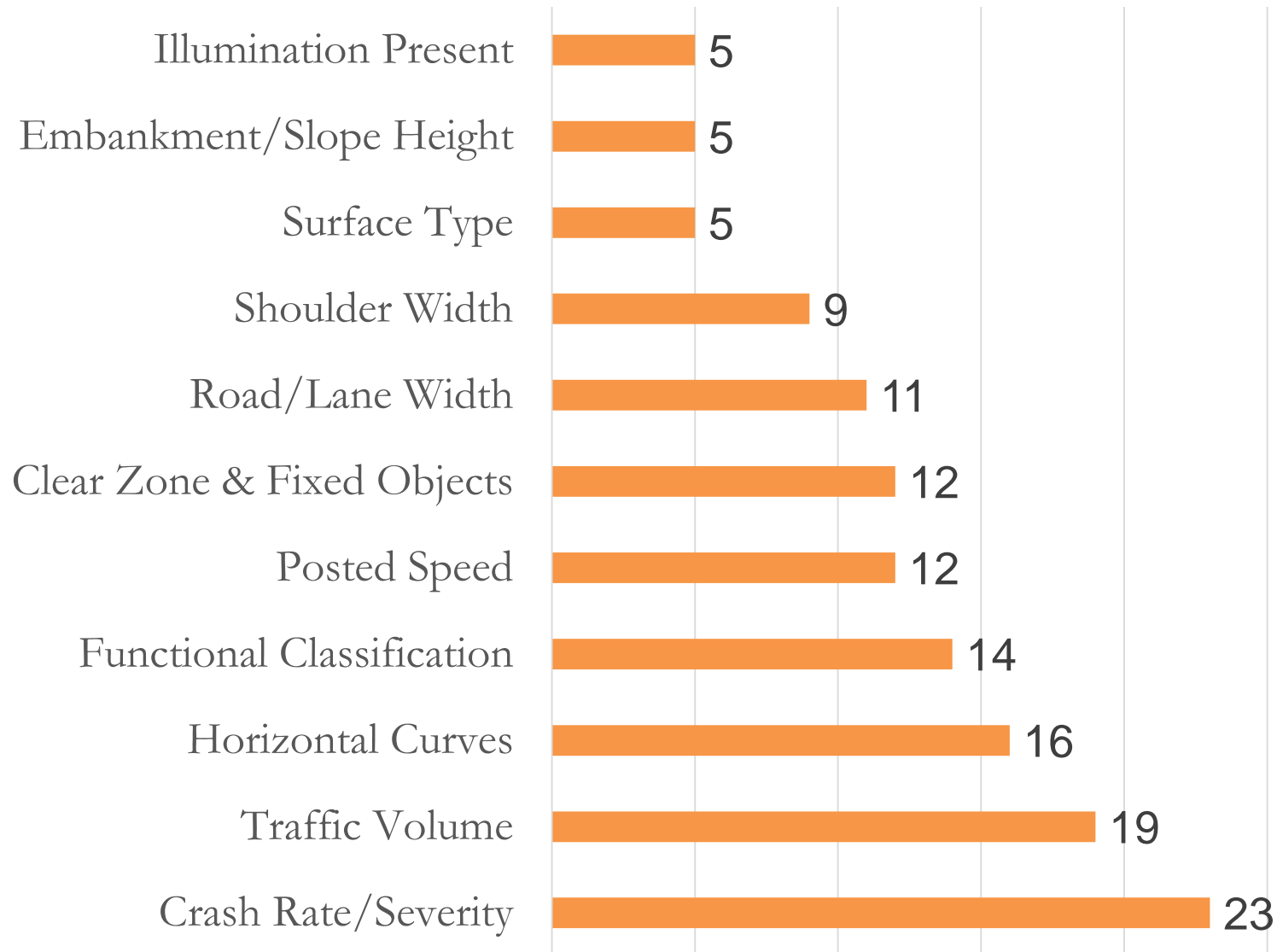
Risk Factor Selection Example
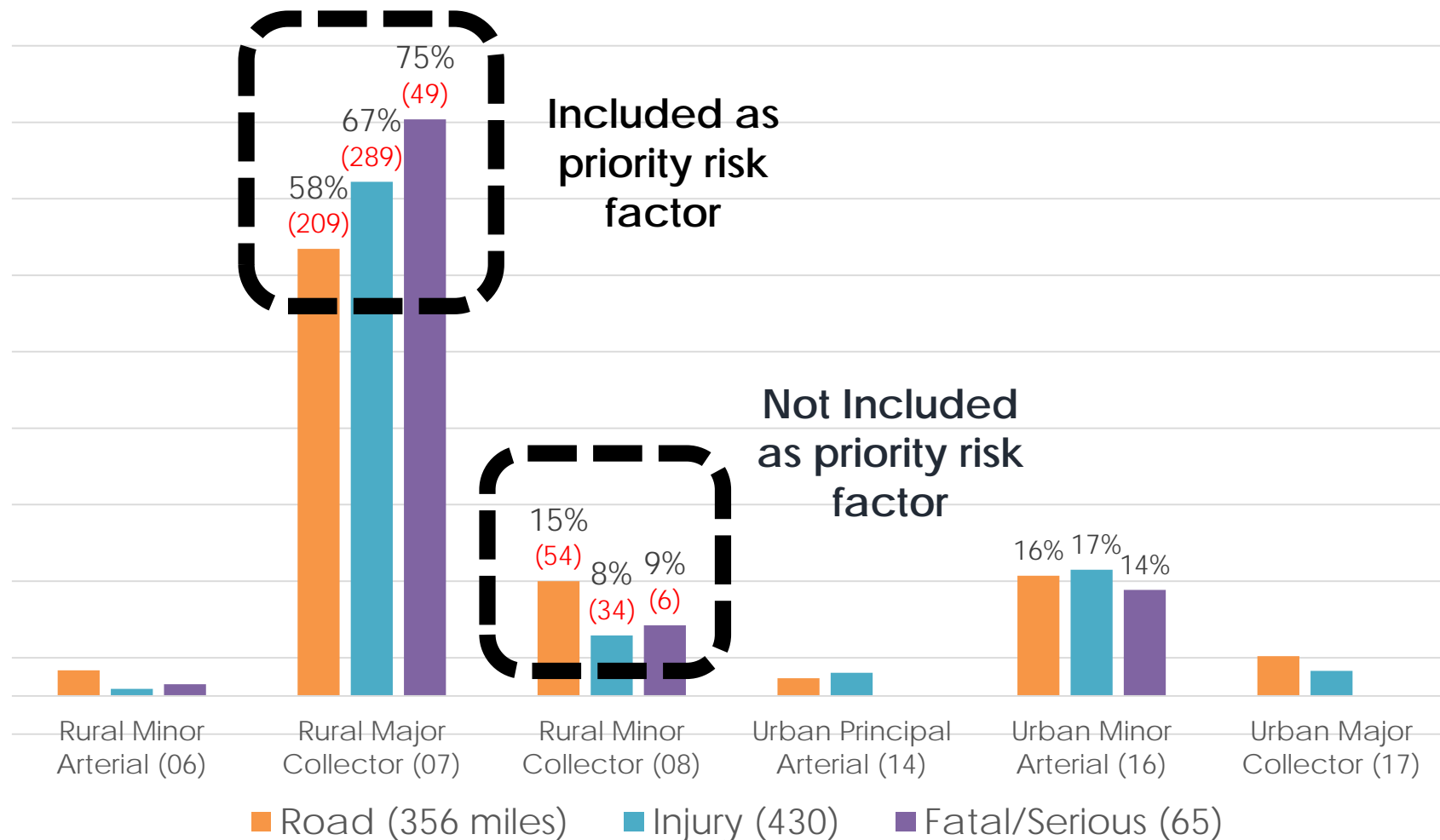
Source: Thurston County, WA

Use of Qualitative Data

Use the data that you have

Use qualitative ratings when needed for

Density, frequency, or conditions

It is important to include the risk factors that are key to your roadway network

Edge Clearance 1

Edge Clearance 2

Edge Clearance 3

Scoring or Ranking System

Simple Scoring System

Higher Confidence in results resulted in highest score

Lower Confidence in results resulted in lowest score

Systemic analysis approaches might weigh risk factors equally, which simply means the more risk factors present, the higher the location's priority. However, risk factors also can be given relative weights... The values for relative weights may be high/medium/low or based on integers that infer a higher level of confidence in the weights.

Systemic Safety Project Selection Tool, FHWA

Risk Scoring Example

| Curve_ID	Corridor	Start	End	Length	Systemic Score
12945.01.03	LITTLEROCK RD SW	4.35	4.44	0.09	5.5
12945.01.02	LITTLEROCK RD SW	4.48	4.54	0.06	5.5
14820.01.04	STEDMAN RD SE	1.55	1.66	0.11	5.5
14820.01.03	STEDMAN RD SE	1.8	1.94	0.14	5.5
10241.01.07	BALD HILL RD SE	5	5.06	0.06	4.5
10241.01.09	BALD HILL RD SE	7.77	7.87	0.1	4.5

Source: Thurston County, WA

Risk Scoring Example

| Rank	Corridor	ADT Range	Road Departure Density	Access Density	Curve Critical Radius Density	Edge Risk	Totals
1	144.01	★	★	★	★	★	★★★★★
2	40.04	★	★	★	★	★	★★★★★
3	131.01		★	★	★	★	★★★★
4	9.02	★	★	★	★		★★★★
5	5.06	★	★	★	★		★★★★
6	31.02	★	★	★	★		★★★★
7	8.01	★	★			★	★★★
8	4.01		★	★		★	★★★
9	2.05			★	★	★	★★★
74	1.03						
75	116.02						
76	2.04						
77	28.02						

This table represents 19 of the 77 segments.

Source: VHB

Risk Mapping Example
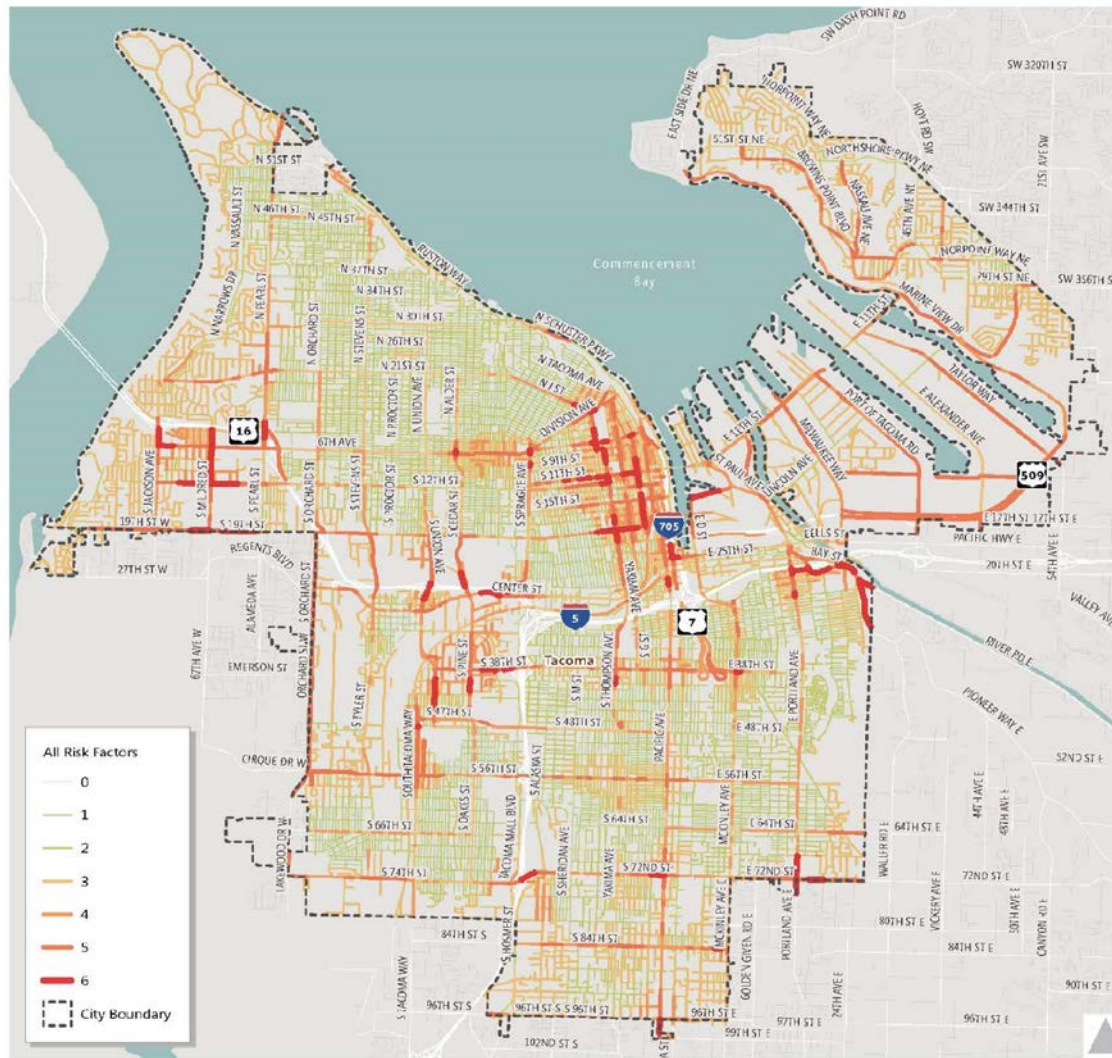
Map courtesy of City of Tacoma, WA

Focus Facility Scoring Distribution

Source: Thurston County, WA

WSDOT
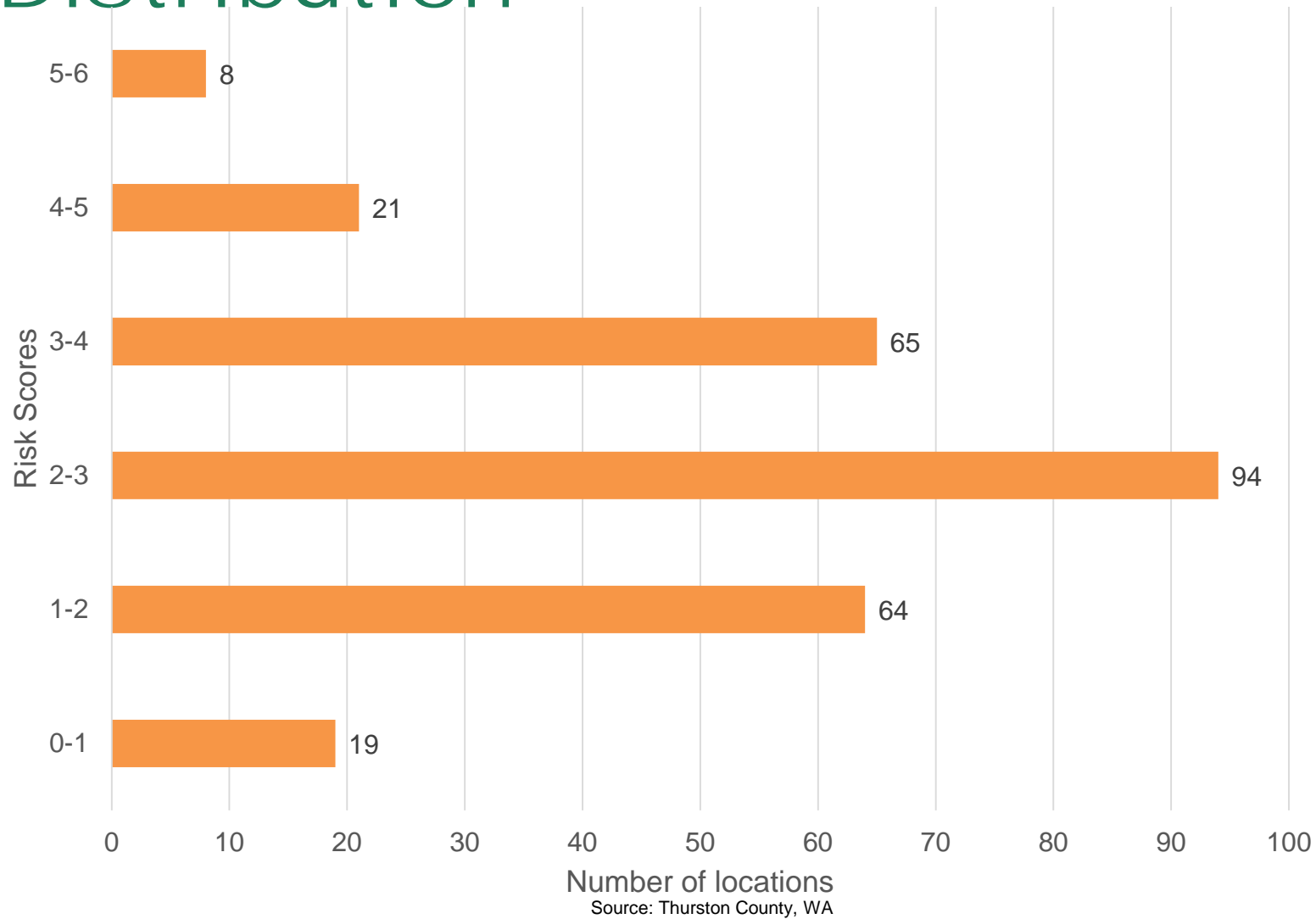
Countermeasures

Most Common Countermeasures Used

Rumble Strips

Enhanced crosswalks

High Friction Surfacing

Roundabouts

Guardrail

Traffic Signs

HSIP Program Results

HSIP Program Results

Almost **90%** of Washington State Counties have LRSP's now

25 Cities in Washington State have LRSP's now

29% reduction in severe crashes on County roads

HSIP Program Future

Call for projects every 2 years

Counties must submit a LRSP (since 2014)

Cities will be required to submit LRSP (2020)

Photos Curtesy of Thurston County, WA

Local Road Safety Planning
Washington State

Scott Davis, PE
Assistant State Traffic Design Engineer
Washington State Department
Transportation Operations Division
(360) 705-7342
daviss@wsdot.wa.gov

Matthew Enders, P.E.
Technical Services Manager (and LTAP Director)
Washington State Department of Transportation
Local Programs Division
(360) 705-6907
Matthew.Enders@wsdot.wa.gov