



Saving lives  
through research  
and education



# United States Road Assessment Program (usRAP)

2012 Virginia  
Governor's  
Conference

December 6,  
2012



## Current Context

- Strategic safety planning, accountability, transparency, and performance metrics becoming more important
- We have under-invested in rural road safety
- State & local resources will remain tight
- Need to engage public to enhance the safety culture





# usRAP

**UNITED STATES ROAD ASSESSMENT PROGRAM**

“Safer drivers in safer vehicles on  
safer roads”



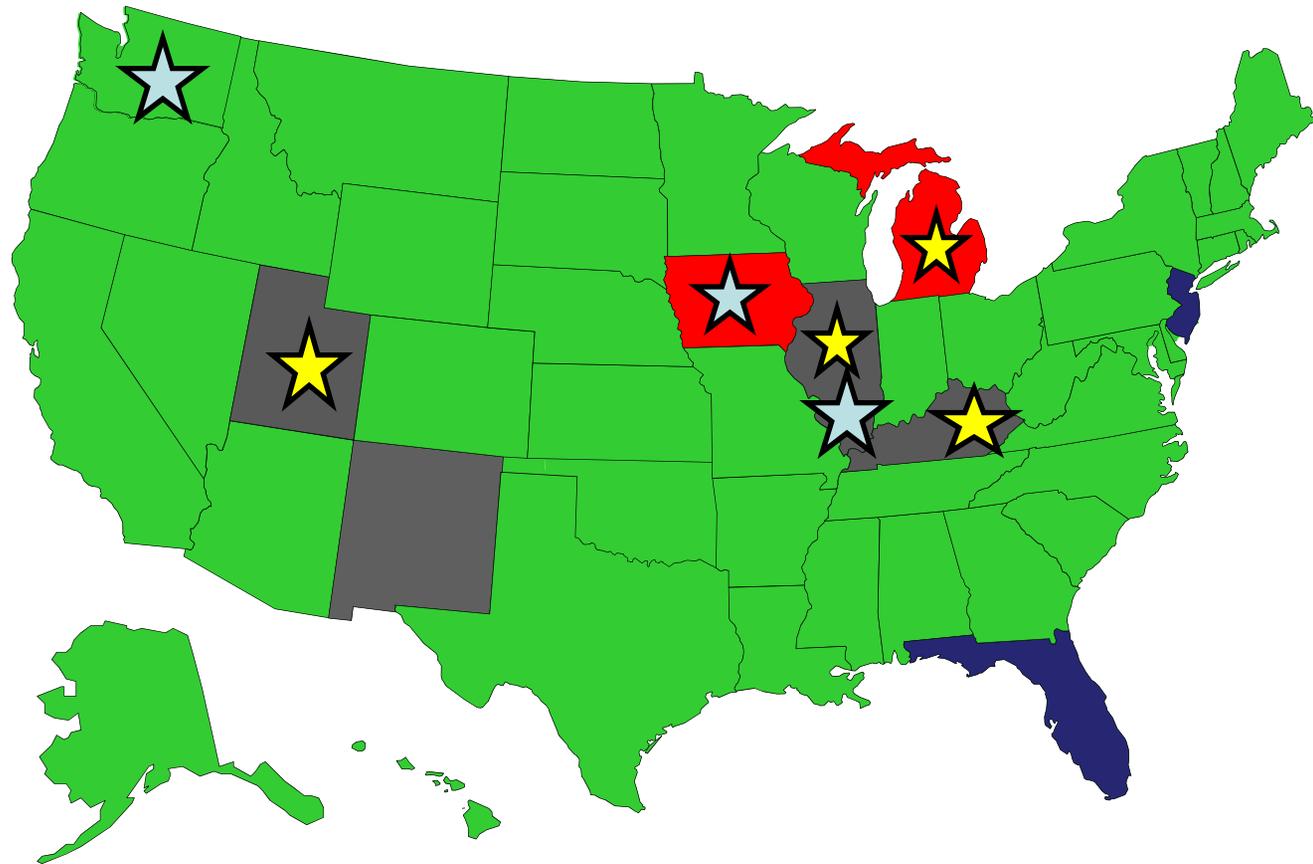
## Road Assessment Programs

- 2000 - EuroRAP
- 2003 - AusRAP
- 2004 - usRAP
- 2005 - iRAP



Active in over 70 Countries





- Phase I
- Phase II
- Phase III

☆ RPS Validation – Washington, Iowa, Illinois  
★ Active projects – Utah, Illinois, Michigan, Kentucky



## usRAP Objectives

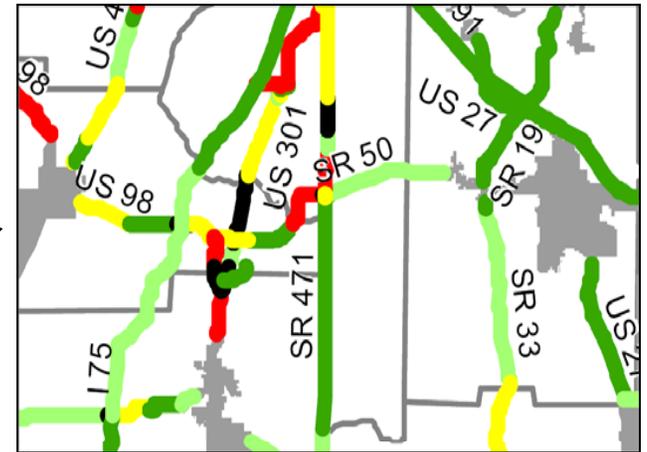
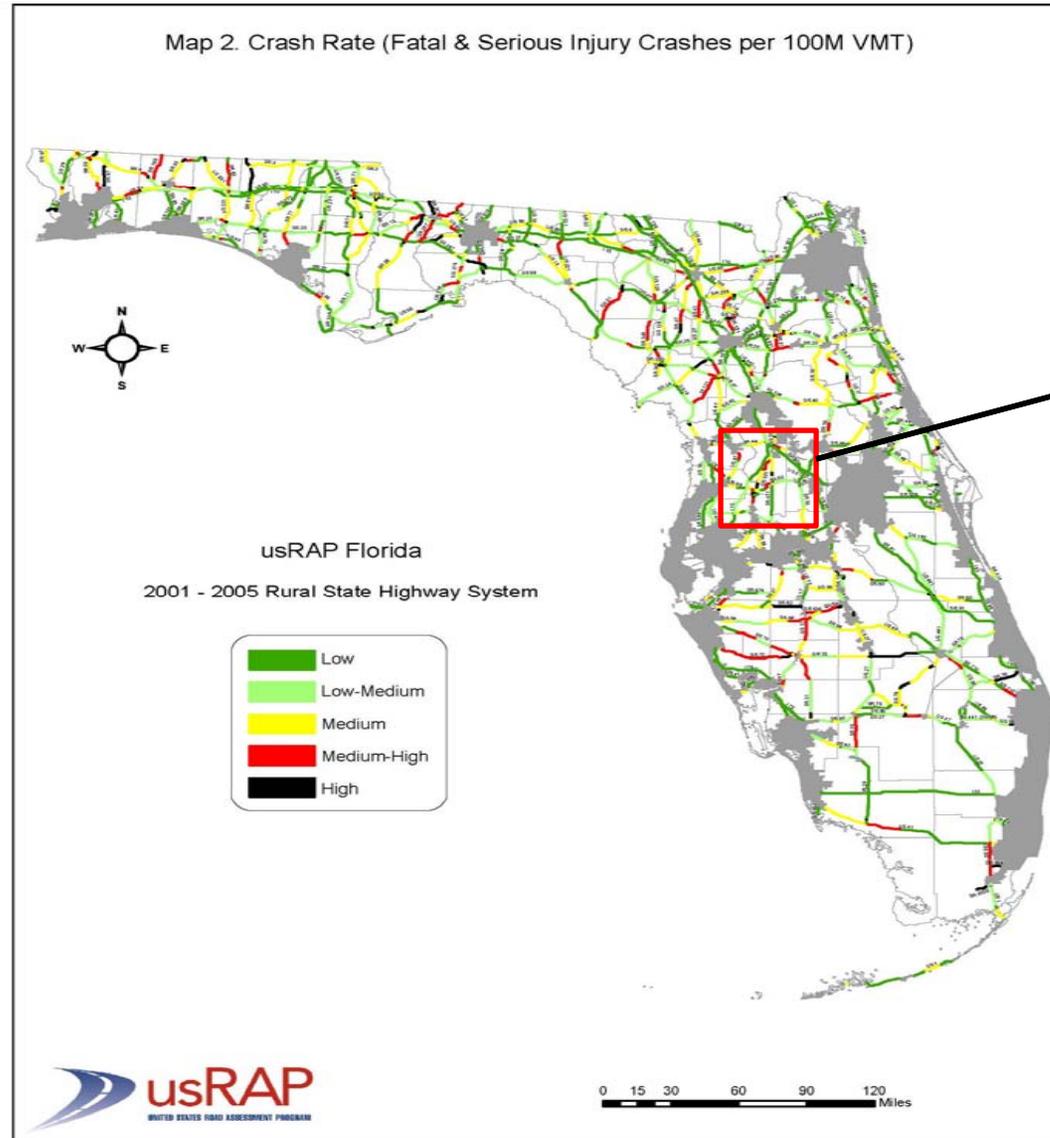
- Benchmark safety of road segments
- Allocate resources based on risks
  - ✓ Infrastructure
  - ✓ Enforcement
- Inform and provide guidance to motorists
- Foster collaboration
- Save lives and reduce serious injuries

## usRAP Protocols

- Risk Mapping – Deaths and Serious Injuries
- Road Protection Score (RPS) – Star Ratings
- Safety Investment Plan
- Performance Tracking



Map 2. Crash Rate (Fatal & Serious Injury Crashes per 100M VMT)



## Risk Map-West of Orlando

## Star Ratings based on Road Protection Score

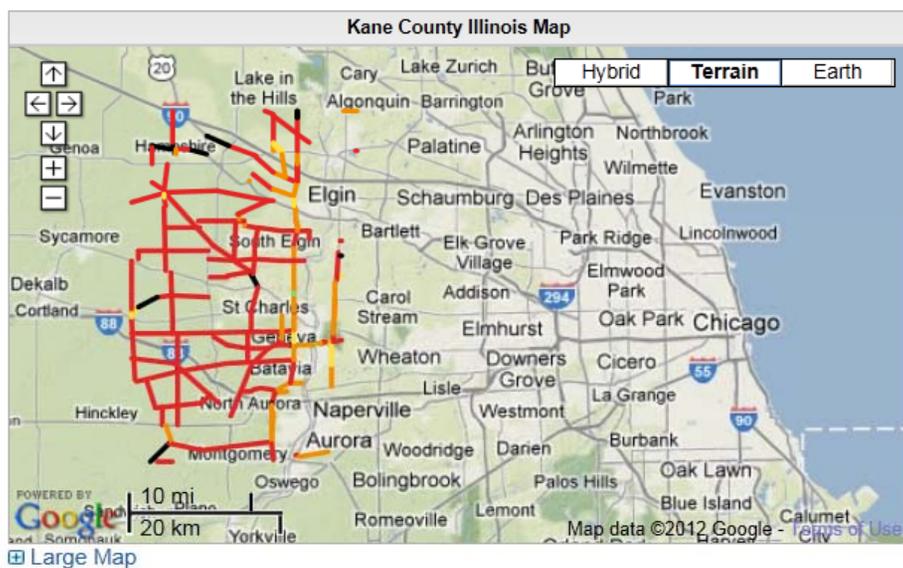
- Provide star ratings based on safety features of specific sites
  - ✓ Crash Likelihood
  - ✓ Crash Protection
- Can supplement and explain risk maps
- Useful when crash data are limited
- Produce Safety Investment Plans
  - ✓ Identifies cost-effective engineering solutions

## usRAP Kane County Illinois Road Safety Report

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Kane County Illinois Fast Facts	
Population	525,000
GDP per Capita	\$ 45,550
Road Network	443km
Fatalities (2011)	25
Serious Injuries (2011)	85
Est. Crash Cost	\$ 147,445,000
Traffic Mix	TDB



### STAR RATINGS

Star Rating	Car Occupants		Motorcyclists		Bicyclists		Pedestrians	
	Length (km's)	%						
★★★★★	2km	0%	0km	0%	0km	0%	0km	0%
★★★★	13km	3%	8km	2%	0km	0%	2km	0%
★★★	82km	19%	50km	11%	10km	2%	375km	85%
★★	322km	73%	334km	75%	404km	91%	64km	14%
★	24km	5%	52km	12%	20km	5%	2km	0%
	0km	0%	0km	0%	9km	2%	0km	0%
<b>TOTAL</b>	<b>443km</b>	<b>100%</b>	<b>443km</b>	<b>100%</b>	<b>443km</b>	<b>100%</b>	<b>443km</b>	<b>100%</b>

## usRAP Kane County Illinois Safer Roads Investment Plan

View:

### ALL ROADS

#### usRAP Kane County Illinois Countermeasure Program based on a minimum benefit-cost ratio of 10

Countermeasure Type	Length	KSI's Saved (20 years)	PV of Safety Benefit (20 years)	Estimated Cost (20 years)	Cost per KSI saved	Program BCR
Central median barrier (no duplication)	5.1km	114.97	\$ 79,261,525	\$ 1,749,384	\$ 15,215	45.31
Shoulder paving (>1m)	45.8km	110.58	\$ 76,229,818	\$ 3,783,450	\$ 34,216	20.15
Roadside barriers - Right	16.8km	96.36	\$ 66,429,032	\$ 3,825,375	\$ 39,699	17.37
Signalize intersection (3-leg)	15 sites	70.33	\$ 48,485,644	\$ 1,860,000	\$ 26,446	26.07
Signalize intersection (4-leg)	6 sites	65.18	\$ 44,933,933	\$ 810,000	\$ 12,427	55.47
Left turn lane (unsignalized 3 leg)	27 sites	55.99	\$ 38,601,484	\$ 2,402,400	\$ 42,905	16.07
Roadside barriers - Left	7.0km	51.13	\$ 35,250,371	\$ 1,682,325	\$ 32,901	20.95
Roundabout	2 sites	40.25	\$ 27,746,597	\$ 2,000,000	\$ 49,691	13.87
Duplication with median barrier	0.7km	38.66	\$ 26,649,424	\$ 1,254,960	\$ 32,464	21.24
Left turn provision at existing signalized site (4-leg)	5 sites	30.53	\$ 21,047,382	\$ 541,800	\$ 17,746	38.85
Left turn lane (unsignalized 4 leg)	10 sites	26.55	\$ 18,305,492	\$ 856,800	\$ 32,267	21.36
Left turn provision at existing signalized site (3-leg)	6 sites	26.36	\$ 18,173,903	\$ 730,800	\$ 27,721	24.87
Rail crossing upgrade	1 sites	15.85	\$ 10,923,321	\$ 78,000	\$ 4,923	140.04
Lane widening (up to 0.5m)	6.3km	15.25	\$ 10,514,582	\$ 168,056	\$ 11,018	62.57
Shoulder paving (<1m)	9.7km	10.56	\$ 7,281,465	\$ 387,525	\$ 36,687	18.79
Road resurface	0.9km	9.96	\$ 6,869,568	\$ 421,848	\$ 42,334	16.28
Delineation and signing (Intersection)	5 sites	4.71	\$ 3,246,032	\$ 106,828	\$ 22,688	30.39
Sideslope improvement - Right	1.0km	4.65	\$ 3,207,812	\$ 93,000	\$ 19,987	34.49
Sideslope improvement - Left	0.7km	2.15	\$ 1,481,328	\$ 51,300	\$ 23,875	28.88
Improve delineation	2.5km	1.87	\$ 1,290,949	\$ 91,329	\$ 48,776	14.14
Road surface improvement	0.5km	1.02	\$ 705,725	\$ 30,040	\$ 29,347	23.49
Improve curve delineation	0.1km	0.27	\$ 188,985	\$ 1,784	\$ 6,508	105.93
<b>TOTAL</b>		<b>793</b>	<b>\$ 546,824,372</b>	<b>\$ 22,927,004</b>	<b>\$ 28,904</b>	<b>23.85</b>

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## Applications of usRAP

- Highway safety improvement plans
- Performance “metrics”
- 5% reports
- High risk rural road grants
- Guide resource allocation
  - ✓ Infrastructure
  - ✓ Enforcement
- Support asset management

## Current usRAP Plans

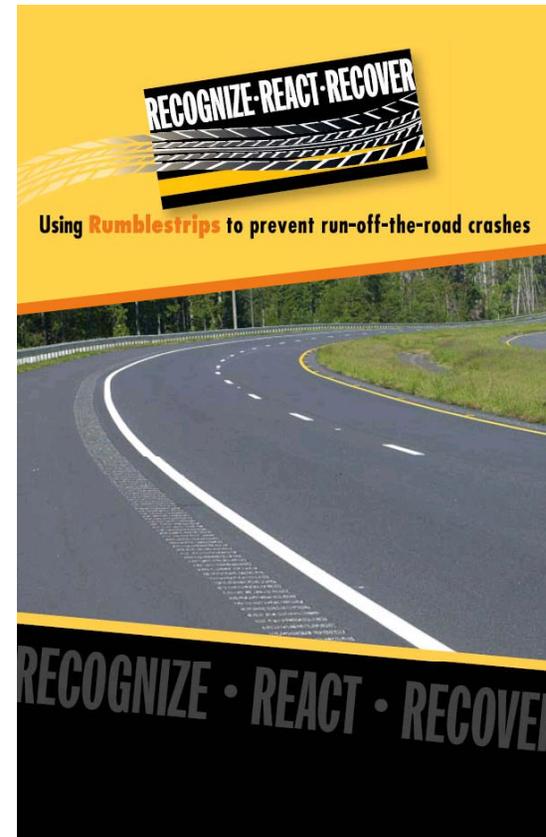
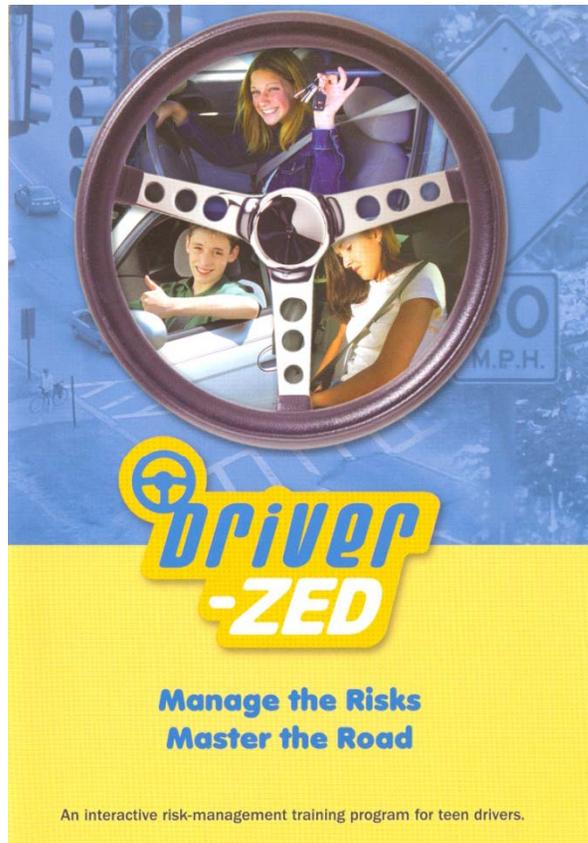
- Train additional state/county engineers
- Expand the usRAP technical team
- Further demonstrate the utility and benefits of the program
- Reduce expenses through strategic partnerships
- Expand into national program

## In Summary

- Validated safety management tool that can complement other resources
- No profit motive
- Unique application where adequate crash data isn't available
- Performance benchmarks and safety investment plans
- There's something about a map!



# Rural Road Safety Resources



**For more information:**

**[www.usRAP.us](http://www.usRAP.us)**

**[www.aaafoundation.org](http://www.aaafoundation.org)**

