



CMF / CRF Details

CMF ID: 6676

Widen shoulder

Description:

Prior Condition: Original shoulder width 4-12 ft

Category: Shoulder treatments

Study: [*Exploration and comparison of crash modification factors for multiple treatments on rural multilane roadways, Park et al., 2014*](#)

Star Quality Rating:



[\[View score details\]](#)

Crash Modification Factor (CMF)

Value:

$$CMF = 0.249 * e^{0.106X}$$

Where X = original shoulder width in the before period (ft)

Adjusted Standard Error:

Unadjusted Standard Error:

Crash Reduction Factor (CRF)

Value:

$$CRF = 100 * (1 - 0.249 * e^{0.106X})$$

Where X = original shoulder width in the before period (ft)

Adjusted Standard Error:

Unadjusted Standard Error:

Applicability

Crash Type:

All

Crash Severity:

K (fatal),A (serious injury),B (minor injury),C (possible injury)

Roadway Types:

Not specified

Number of Lanes:

multi

Road Division Type:

Speed Limit:

Area Type:

Rural

Traffic Volume:

2000 to 50000 *Annual Average Daily Traffic (AADT)*

Time of Day:

If countermeasure is intersection-based

Intersection Type:

Intersection Geometry:

Traffic Control:

Major Road Traffic Volume:

Minor Road Traffic Volume:

Development Details

Date Range of Data Used:	2003 to 2012
Municipality:	
State:	FL
Country:	
Type of Methodology Used:	4
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Jun-22-2015
Comments:	Before condition shoulder width between 4-12 ft. Study method was either EB or CG, the authors chose the method that had the lowest SE. The number of crashes in the after period were not reported in this study, however, they have been recorded as 300 to give 10 points as a benefit of doubt for one or more of the following: (1) number of miles/sites in the reference/treatment group, (2) number of crashes in the references/treatment group, (3) reporting AADTs for the aggregate dataset but not for the disaggregate dataset used for CMF development.

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