



CMF / CRF Details

CMF ID: 10177

Change shoulder width from X to Y (meters)

Description: Change shoulder width from X to Y (meters)

Prior Condition: Total shoulder width of X meters, where X is less than 2.25 meters

Category: Shoulder treatments

Study: [The influence of shoulder characteristics on the safety level of two-lane roads: A case-study, Gitelman et al., 2019](#)

Star Quality Rating: **3 Stars** [\[View score details\]](#)

Crash Modification Factor (CMF)

Value:

$$CMF = e^{[0.339*(Y-X)]}$$

Y = proposed average total shoulder width, in meters

X = existing average total shoulder width, in meters

Adjusted
Standard
Error:

Unadjusted
Standard
Error:

Crash Reduction Factor (CRF)

Value:

$$CRF = 100 * (1 - e^{[0.339*(Y-X)])}$$

Y = proposed average total shoulder width, in meters

X = existing average total shoulder width, in meters

Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability

Crash Type:	All
Crash Severity:	K (fatal),A (serious injury)
Roadway Types:	Not specified
Number of Lanes:	2
Road Division Type:	Undivided
Speed Limit:	
Area Type:	Rural
Traffic Volume:	
Time of Day:	All

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:	2008 to 2010
Municipality:	
State:	
Country:	Israel
Type of Methodology Used:	5
Sample Size Used:	

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Dec-07-2019
Comments:	This CMFunction applies when both existing (X) and proposed (Y) total shoulder width are less than 2.25 meters.

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