

CMF / CRF Details

CMF ID: 10189

Change unpaved shoulder width from X to Y (in meters)

Description: Change unpaved shoulder width from X meters to Y meters

Prior Condition: Unpaved shoulder width of X meters, where X is greater than or equal to 0.9 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:

★★★★☆ [\[View score details\]](#)

Crash Modification Factor (CMF)

Value:

$$CMF = e^{[-0.087*(Y-X)]}$$

Y = proposed average unpaved shoulder width, in meters

X = existing average unpaved shoulder width, in meters

Adjusted
Standard
Error:

Unadjusted
Standard
Error:

Crash Reduction Factor (CRF)

Value:	$CRF = 100 * (1 - e^{[-0.087*(Y-X)])}$ <p>Y = proposed average unpaved shoulder width, in meters</p> <p>X = existing average unpaved shoulder width, in meters</p>
Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability	
Crash Type:	Single vehicle
Crash Severity:	K (fatal),A (serious injury),B (minor injury),C (possible injury)
Roadway Types:	Not specified
Number of Lanes:	2
Road Division Type:	Undivided
Speed Limit:	
Area Type:	Rural
Traffic Volume:	
Time of Day:	All
<i>If countermeasure is intersection-based</i>	
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 applies when both the existing (X) and proposed (Y) unpaved shoulder width are greater than or equal to 0.9 meters.

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