



CMF / CRF Details

CMF ID: 4110

Improve signal visibility, including signal lens size upgrade, installation of new back-plates, addition of reflective tapes to existing back-plates, and installation of additional signal heads

Description: 4-leg intersections with 3 or 4 lanes on each approach and 50 km/h posted speed

Prior Condition: Smaller signal lens size, old back-plates, no reflective tapes on existing back-plates, and less number of signal heads

Category: Intersection traffic control

Study: [Investigating Effect of Collision Aggregation on Safety Evaluations Using Multivariate Linear Intervention Models: Case Study of Signal Head Upgrade Program, El-Basyouny et al., 2012](#)

Star Quality Rating:



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

Crash Modification Factor (CMF)

Value: 1.004

Adjusted Standard Error:

Unadjusted Standard Error: 0.039

Crash Reduction Factor (CRF)

Value:	-0.4 (<i>This value indicates an increase in crashes</i>)
Adjusted Standard Error:	
Unadjusted Standard Error:	3.9

Applicability

Crash Type:	Day time
Crash Severity:	K (fatal),A (serious injury),B (minor injury),C (possible injury)
Roadway Types:	Not Specified
Number of Lanes:	3 to 4
Road Division Type:	
Speed Limit:	50 km/h
Area Type:	Urban
Traffic Volume:	
Time of Day:	Day

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	4-leg
Traffic Control:	Signalized
Major Road Traffic Volume:	4637 to 51743 Average Daily Traffic (ADT)
Minor Road Traffic Volume:	134 to 48906 Average Daily Traffic (ADT)

Development Details

Date Range of Data Used:	1999 to 2004
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Municipality:	British Columbia
State:	
Country:	Canada
Type of Methodology Used:	2
Sample Size Used:	Crashes
Before Sample Size Used:	3288 Crashes
After Sample Size Used:	1653 Crashes

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	Nov-01-2012
Comments:	3 CMF sets are presented: crash severity only, time of day only, severity and time of day. Only disaggregate set (severity and time of day) is reported

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