

CMF Clearinghouse Data Dictionary

v. September 2022

This data dictionary is intended to accompany the data extracts of the CMF Clearinghouse that are provided to the public. Each field is listed and described. Where applicable, the coding of the data in the field is discussed.

| Field Name | Description | Coding Notes |
|-------------|--|---|
| crfid | Unique ID assigned to each CMF | |
| cmid | Unique ID assigned to each countermeasure | |
| cmName | Countermeasure name | |
| cmDesc | Countermeasure description | |
| cmCostRange | Countermeasure cost | |
| catname | Countermeasure category | |
| subcatname | Countermeasure subcategory | |
| cmImageFile | File name of countermeasure illustration, if available | |
| qualRating | Star quality rating | <p>0,1,2,3,4,5 = star ratings as assigned through the technical review process</p> <p>-2 = Cannot be rated. This CMF is derived from a survey of one or more state transportation agencies to determine what CMF values were being used by states for particular countermeasures at that time. The resulting responses were averaged or summarized to arrive at a "most commonly used" value. The star rating review process cannot be applied to this CMF since the estimate was not the result of evaluation-based research</p> <p>-3 = Cannot be rated (HSM). This CMF cannot be rated in the Clearinghouse because it appears in the 1st Edition of the Highway Safety Manual without an adjusted standard error. The Clearinghouse uses the adjusted standard error to provide a surrogate star quality rating for all</p> |

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| | | <p>CMFs that were imported from the HSM, so without this value, a star rating is not possible. In the HSM, there is a notation for these CMFs that "the standard error of the CMF is unknown". This is generally because the CMF was developed either through an expert panel or was obtained from an older study for which the standard error was unknown</p> <p>-4 = Cannot be rated (insufficient information). This CMF cannot be rated due to insufficient information provided in the source document. The most common reason for this is that the source document was an extended abstract that was submitted to the Transportation Research Board Annual Meeting. This shortened format typically does not typically provide enough detail about the study and the CMF development to allow the Clearinghouse team to confidently provide a star quality rating</p> |
| priorCondition | Prior condition of the site | |
| crfactor | Crash reduction factor (CRF) | This value is the percent change. The unit is whole percent values, so 20 indicates a 20% reduction in crashes |
| crfunction | File name for crash reduction function | If the CRF is conveyed as a function (equation), the function image name is provided |
| accModFactor | Crash modification factor (CMF) | This value is the multiplicative change. So, 0.80 indicates a 20% reduction in crashes |
| accModFunction | File name for crash modification function | If the CMF is conveyed as a function (equation), the function image name is provided |
| adjStanErrorCrf | Standard error of the CRF, adjusted by the authors of the Highway Safety Manual 1st Edition | Standard errors in the Highway Safety Manual 1st Edition were adjusted (increased) to reflect quality concerns with the |

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| | | development of the CMF. More information on the development of the Highway Safety Manual is available at www.highwaysafetymanual.org |
| unAdjStanErrorCrf | Standard error of the CRF, unadjusted | |
| adjStanErrorAmf | Standard error of the CMF, adjusted by the authors of the Highway Safety Manual 1st Edition | Standard errors in the Highway Safety Manual 1st Edition were adjusted (increased) to reflect quality concerns with the development of the CMF. More information on the development of the Highway Safety Manual is available at www.highwaysafetymanual.org |
| unAdjStanErrorAmf | Standard error of the CMF, unadjusted | |
| inFirstHSM | Indicator whether CMF was included in the Highway Safety Manual 1st Edition | |
| typeMethod | Type of methodology used to produce the CMF | |
| state | State for data origin | |
| municipality | Municipality for data origin | |
| bai_1 | Number of miles/sites of reference/comparison group for SPF estimation and trend analysis (for analysis based on "segments", number of miles should be used; for analysis based on intersections or similar units, sites should be used) | Rating input for Before/After studies |
| bai_1a | Exact number of miles/sites of reference/comparison group if known | Rating input for Before/After studies |
| bai_1b | unknown (bai_1a) | Rating input for Before/After studies |
| bai_2 | Number of crashes in reference/comparison sites for SPF estimation and trend analysis | Rating input for Before/After studies |
| bai_3 | Reference/comparison group is appropriate to account for any spillover/crash migration | Rating input for Before/After studies |
| bai_4 | Number of miles/sites for treatment group (for analysis based on "segments", number of miles | Rating input for Before/After studies |

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| | should be used; for analysis based on intersections or similar units, sites should be used) | |
| bai_5 | Reference Group Crashes/Year | Rating input for Before/After studies |
| bai_6 | Number of miles/sites for treatment group (for analysis based on "segments", number of miles should be used; for analysis based on intersections or similar units, sites should be used) | Rating input for Before/After studies |
| bai_6a | Exact number of miles/sites of treatment group if known | Rating input for Before/After studies |
| bai_6b | unknown (bai_6a) | Rating input for Before/After studies |
| bai_7 | Number of crashes in the before period, for treatment group | Rating input for Before/After studies |
| bai_7a | unknown (bai_7a) | Rating input for Before/After studies |
| bai_8 | Number of crashes in the after period, for treatment group | Rating input for Before/After studies |
| bai_8a | unknown (bai_8) | Rating input for Before/After studies |
| bai_9 | Number of crashes expected in the after period, for treatment group | Rating input for Before/After studies |
| bai_9a | unknown (bai_9) | Rating input for Before/After studies |
| bai_10 | Number of crashes expected in the after period, for treatment group - calculated | Rating input for Before/After studies |
| bai_11 | Number of before plus expected after crashes | Rating input for Before/After studies |
| bai_12 | At least one traffic volume count in the before period? | Rating input for Before/After studies |
| bai_13 | At least one traffic volume count in the after period? | Rating input for Before/After studies |
| bai_14 | Possible bias due to RTM is addressed or the treatment was a systemwide implementation? | Rating input for Before/After studies |
| bai_15 | Accounts for changes in traffic volume during the study period? | Rating input for Before/After studies |
| bai_16 | Accounts for time trends and other changes during the study period? | Rating input for Before/After studies |
| bai_17 | Reference/comparison group is similar to treatment group in terms of AADT, i.e., the AADT range for the reference group overlaps the | Rating input for Before/After studies |

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| | AADT range for the treatment group, and the mean AADT for the reference and treatment groups are similar to each other? | |
| bai_18 | The reference/comparison group and treatment groups belong to the same roadway type (e.g., rural two-lane roads) and site type (e.g., horizontal curve). In addition, the reference/comparison groups are similar to treatment group in terms of other important site characteristics | Rating input for Before/After studies |
| bai_19 | CMF is statistically significant at 0.05, 0.10, or 0.15 levels | Rating input for Before/After studies |
| bai_20 | The SPFs were estimated using appropriate statistical procedures and functional form is reasonable? | Rating input for Before/After studies |
| bao_1 | Rating for number of miles/sites of ref/comp group | Rating output for Before/After studies |
| bao_2 | Rating for number of crashes in reference/comparison group | Rating output for Before/After studies |
| bao_3 | Rating for accounting for spillover/crash migration | Rating output for Before/After studies |
| bao_4 | Rating for number of miles/sites of treatment group | Rating output for Before/After studies |
| bao_5 | Rating for providing at least one traffic volume count in before and after periods | Rating output for Before/After studies |
| bao_6 | Rating for reference/comparison and treatment groups having similar AADT | Rating output for Before/After studies |
| bao_7 | Rating for reference/comparison and treatment groups having same roadway characteristics | Rating output for Before/After studies |
| bao_9 | Rating for addressing RTM | Rating output for Before/After studies |
| bao_10 | Rating for accounting for changes in traffic volume | Rating output for Before/After studies |
| bao_11 | Rating for accounting for time trends/other changes | Rating output for Before/After studies |
| bao_12 | Rating for appropriate SPF | Rating output for Before/After studies |
| bao_13 | Rating for CMF significance level | Rating output for Before/After studies |
| csi_1 | Number of miles/sites. Depending on the treatment being evaluated, | Rating input for Cross-Sectional studies |

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| | this may include sites with and without the treatment. In other cases, the range of each independent variable of interest should be adequate (for analysis based on "segments", number of mi | |
| csi_1a | Exact number of miles/sites if known | Rating input for Cross-Sectional studies |
| csi_1b | unknown (csi_1a) | Rating input for Cross-Sectional studies |
| csi_2 | Number of crashes for all sites combined | Rating input for Cross-Sectional studies |
| csi_2a | Actual number of crashes for all sites combined if known. | Rating input for Cross-Sectional studies |
| csi_2b | unknown (csi_2a) | Rating input for Cross-Sectional studies |
| csi_3 | At least two years with actual/estimated traffic volume counts in the study period | Rating input for Cross-Sectional studies |
| csi_4 | Selection bias (similarity of site with and without the treatment) | Rating input for Cross-Sectional studies |
| csi_5 | Appropriate model form (including error terms) | Rating input for Cross-Sectional studies |
| csi_6 | Appropriate functional form (including possibility of non-traditional non-GLM forms) | Rating input for Cross-Sectional studies |
| csi_7 | Appropriate consideration of omitted variable bias (i.e., variables known to influence safety were considered as terms in the model or controlled through study design) | Rating input for Cross-Sectional studies |
| csi_8 | Appropriate consideration of correlation between independent variables (with significant correlation, the coefficient of variables may have the wrong sign) | Rating input for Cross-Sectional studies |
| csi_9 | Appropriate consideration of spatial and temporal correlation | Rating input for Cross-Sectional studies |
| csi_10 | CMF is statistically significant at 0.05, 0.10, or 0.15 levels | Rating input for Cross-Sectional studies |
| cso_1 | Rating for number of miles/sites | Rating output for Cross-Sectional studies |
| cso_2 | Rating for number of crashes for all sites combined | Rating output for Cross-Sectional studies |
| cso_3 | Rating for traffic volume counts in study period | Rating output for Cross-Sectional studies |

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| cso_4 | Rating for selection bias | Rating output for Cross-Sectional studies |
| cso_5 | Rating for appropriate model form | Rating output for Cross-Sectional studies |
| cso_6 | Rating for appropriate functional form | Rating output for Cross-Sectional studies |
| cso_7 | Rating for appropriate consideration of omitted variable bias | Rating output for Cross-Sectional studies |
| cso_8 | Rating for appropriate consideration of correlation between independent variables | Rating output for Cross-Sectional studies |
| cso_9 | Rating for appropriate consideration of spatial and temporal correlation | Rating output for Cross-Sectional studies |
| cso_10 | Rating for CMF significance level | Rating output for Cross-Sectional studies |
| mai_1 | Included studies applied the same methodology and accounted for the same confounding factors, including RTM, traffic volume changes, time trends, and crash migration/spillover effects, if applicable | Rating input for Meta-Analysis studies |
| mai_2 | Crash type and severity definitions consistent between outcome measures of studies | Rating input for Meta-Analysis studies |
| mai_3 | Individual estimates exhibit consistency in the direction of effect | Rating input for Meta-Analysis studies |
| mai_4 | Publication bias was tested for and addressed if present | Rating input for Meta-Analysis studies |
| mai_5 | A majority of studies used are deemed acceptable by the NCHRP 17-72 rating scheme | Rating input for Meta-Analysis studies |
| mai_6 | The standard error of at least one of the CMFs is less than or equal to 0.10 | Rating input for Meta-Analysis studies |
| mai_7 | A test of homogeneity indicates that the CMF estimates can be combined | Rating input for Meta-Analysis studies |
| mai_8 | Appropriate method used to estimate the combined CMF | Rating input for Meta-Analysis studies |
| mai_9 | Overall CMF is statistically significant at 0.05, 0.10, or 0.15 levels | Rating input for Meta-Analysis studies |

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| mao_1 | Rating for consistency in study methodologies | Rating output for Meta-Analysis studies |
| mao_2 | Rating for consistency in crash type and severity definitions | Rating output for Meta-Analysis studies |
| mao_3 | Rating for estimate consistency | Rating output for Meta-Analysis studies |
| mao_4 | Rating for publication bias | Rating output for Meta-Analysis studies |
| mao_5 | Rating for majority of studies being acceptable under NCHRP 17-72 rating scheme | Rating output for Meta-Analysis studies |
| mao_6 | Rating for standard error value | Rating output for Meta-Analysis studies |
| mao_7 | Rating for test of homogeneity | Rating output for Meta-Analysis studies |
| mao_8 | Rating for using appropriate method for combining CMFs | Rating output for Meta-Analysis studies |
| mao_9 | Rating for CMF significance level | Rating output for Meta-Analysis studies |
| mri_1 | Included studies applied the same methodology and accounted for the same confounding factors, including RTM, traffic volume changes, time trends, and crash migration/spillover effects, if applicable | Rating input for Meta-Regression studies |
| mri_2 | Crash type and severity definitions consistent between outcome measures of studies | Rating input for Meta-Regression studies |
| mri_3 | Treatment was applied similarly between locations or accounted for in the model | Rating input for Meta-Regression studies |
| mri_4 | Publication bias was tested for and addressed if present | Rating input for Meta-Regression studies |
| mri_5 | A majority of studies used are deemed acceptable by the NCHRP 17-72 rating scheme | Rating input for Meta-Regression studies |
| mri_6 | The standard error of at least one of the CMFs is less than or equal to 0.10 | Rating input for Meta-Regression studies |
| mri_7 | A test of homogeneity indicates that the CMF estimates can be combined | Rating input for Meta-Regression studies |
| mri_8 | Appropriate model form including error terms applied | Rating input for Meta-Regression studies |
| mri_9 | Appropriate functional form applied | Rating input for Meta-Regression studies |

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| mri_10 | Consideration of omitted variable bias, considered through design or included in model | Rating input for Meta-Regression studies |
| mri_11 | Consideration of correlation between independent variables | Rating input for Meta-Regression studies |
| mri_12 | Considered the possible impacts of country of study origin and year | Rating input for Meta-Regression studies |
| mro_1 | Rating for consistency in study methodologies | Rating output for Meta-Regression studies |
| mro_2 | Rating for consistency in crash type and severity definitions | Rating output for Meta-Regression studies |
| mro_3 | Rating for estimate consistency | Rating output for Meta-Regression studies |
| mro_4 | Rating for publication bias tested | Rating output for Meta-Regression studies |
| mro_5 | Rating for majority of studies being acceptable under NCHRP 17-72 rating scheme | Rating output for Meta-Regression studies |
| mro_6 | Rating for standard error of CMFs | Rating output for Meta-Regression studies |
| mro_7 | Rating for test of homogeneity | Rating output for Meta-Regression studies |
| mro_8 | Rating for appropriate model form | Rating output for Meta-Regression studies |
| mro_9 | Rating for appropriate functional form. | Rating output for Meta-Regression studies |
| mro_10 | Rating for consideration of omitted variable bias | Rating output for Meta-Regression studies |
| mro_11 | Rating for consideration of correlation | Rating output for Meta-Regression studies |
| mro_12 | Rating for possible impacts of country of study | Rating output for Meta-Regression studies |
| totalrating | Rating total | Sum of the rating outputs |
| yearsOfDataFrom | Start year of study period | |
| yearsOfDataTo | End year of study period | |
| intersectionRelated | Indicator of whether the CMF is related to intersections | |
| trafVolUnit | Unit of traffic volume | |
| minTrafficVol | Minimum traffic volume across the sites used to develop the CMF | |
| maxTrafficVol | Maximum traffic volume across the sites used to develop the CMF | |
| minMajorRoadVol | Minimum major road traffic volume across the sites used to develop the CMF (if intersection related) | |

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| maxMajorRoadVol | Maximum major road traffic volume across the sites used to develop the CMF (if intersection related) | |
| minMinorRoadVol | Minimum minor road traffic volume across the sites used to develop the CMF (if intersection related) | |
| maxMinorRoadVol | Maximum minor road traffic volume across the sites used to develop the CMF (if intersection related) | |
| avgTrafVol | Average traffic volume across the sites used to develop the CMF | |
| majorAvgTrafVol | Average major road traffic volume across the sites used to develop the CMF (if intersection related) | |
| minorAvgTrafVol | Average minor road traffic volume across the sites used to develop the CMF (if intersection related) | |
| roadwayType | Roadway type | |
| minNumLanes | Minimum number of lanes | |
| maxNumLanes | Maximum number of lanes | |
| NumLanesComments | Notes on the number of lanes | |
| NumLanesDirection | Number of lanes direction | Records whether the number of lanes recorded are for one direction or for both directions |
| StreetType | Street type | Records whether the streets used were one-way or two-way |
| intersecType | Intersection type | |
| intersecGeometry | Intersection geometry | |
| trafficControl | Type of traffic control | |
| minSpeedLimit | Minimum speed limit | |
| maxSpeedLimit | Maximum speed limit | |
| SpeedLimitComments | Notes on speed limit | |
| SpeedUnit | Speed limit unit (mph or km/h) | Records speed limit units in mph or km/h |
| areaType | Area type | |
| crashType | Crash type addressed by the CMF | |
| crashSeverityKABCO | Crash severity addressed by the CMF (provided in KABCO severity scale) | |
| crashTOD | Crash time of day | |
| crashWeather | Crash weather condition | |
| roadDivType | Road division type | |

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| country | Country of data origin | |
| comments | Public comments to communicate any relevant information about the CMF not otherwise captured in another field | |
| chTeamDerived | Indicator of whether the CMF was derived by the contractor team | |
| chTeamDerivedStanErr | Indicator of whether the standard error was derived by the contractor team | |
| studyid | Unique ID assigned to each study | |
| title | Study title | |
| pubMonth | Month of study publication | |
| pubYear | Year of study publication | |
| potentialBias | Any potential biases noted by the reviewer | |
| abstract | Study abstract as provided by the authors | |
| citation | Full study citation | |
| relatedCitations | Citations for other publications which stem from the same study/dataset | |
| authors | Short notation of authors | |
| studyLink | Link to full study text (if available) | |
| publicComment | Notes on how the study was reviewed for the Clearinghouse | |
| reviewPeriod | Review period of the study | I.e., "2019 Q1" indicates that the study was identified during the first quarter of 2019 |
| webReleaseDate | Date when the study was released live to the public site | YYYY-MM-DD |
| approved | Indicator whether the study is approved for release to public site | |