APPENDIX C. SUMMARY OF CMF PROTOCOLS

DOCUMENTATION REQUIREMENTS

In summary form, here are the documentation requirements detailed in the CMF Protocols:

**General Documentation (knowing where the CMF can be appropriately applied)**

- CMF and Countermeasure
  - Countermeasure Name and Description
  - Crash Modification Factor or Function
  - Measures of Precision for the CMF
  - Prior Conditions
- Site Characteristics
  - Roadway Class
  - Road Division Type
  - State
  - Municipality
  - Area Type
  - Number of Through Lanes
  - Speed Limit
  - Traffic Volume Range
  - Traffic Control (if applicable)
  - Intersection Type
  - Intersection Geometry
  - Other Relevant Details

- Crash Characteristics
  - Crash Type
  - Crash Severity
  - Time of Day

- Study Details
  - Years of Data
  - Type of Methodology
  - Site Selection Criteria
  - Sample Size Used (Crashes)
  - Sample Size Used (Sites)
Biases Documentation (knowing how potential biases were addressed)

- Potential Biases for Cross-sectional Studies
  - Control of confounders
  - Unobserved heterogeneity and omitted variable bias
  - Accounting for state-to-state differences if using multiple states
  - Selection of appropriate functional form
  - Correlation or collinearity among the independent variables
  - Overfitting of prediction models
  - Low sample mean and small sample size
  - Bias due to aggregation, averaging, or incompleteness in data
  - Temporal and spatial correlation
  - Endogenous independent variables
  - Misspecification of structure of systematic variation and residual terms
  - Correlation between crash types and injury severities

- Potential Biases for Before-After Studies
  - Regression-to-the-mean
  - Changes in traffic volumes
  - History trends
  - Other safety treatments
  - Changes in crash reporting
  - Accounting for state-to-state differences if using multiple states
  - Suitability of comparison or reference groups
  - Other biases for before-after studies from cross-sectional list