

Pennsylvania CMF Guide

The Pros and Cons



► Pennsylvania CMF Guide

- Who developed the CMF Guide
- What is it
- Why it was developed
- Data and how to use it
- Advantages (Pros)
- Disincentives (Cons)



History

- *CMF Guide* developed by  **PennState** University
- Completed August 2014
- *CMF Practitioners Guide* developed by consultant firm
- Completed April 2016



PENNSYLVANIA CMF GUIDE

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- The *Pennsylvania CMF Guide* provides list of high-quality Crash Modification Factors appropriate for use in Pennsylvania
- CMF data obtained mainly from FHWA CMF Clearinghouse website, www.cmfclearinghouse.com
- The *Practitioner's Guide* establishes a consistent approach to the application of Crash Modification Factors (CMFs) within the context of the Highway Safety Manual (HSM) and the PennDOT HSM analysis tools.



➤ Data and Use

Assessing CMF Quality

- Use rating system proposed by CMF Clearinghouse
- Each CMF assigned score from 1 (worst) to 5 (best) stars based on:
 - Study design
 - Sample size
 - Standard error
 - Potential bias
 - Data source
- Only 3+ star CMF included in guide and suitable for use in PA



➤ Data and Use

CMFs Categorized Into 19 Tables

- Access Management
- Advanced Technology and ITS
- Alignment
- Bicyclists
- Delineation
- Highway Lighting
- Interchange Design
- Intersection Geometry
- Intersection Traffic Control
- On-Street Parking
- Pedestrians
- Railroad Grade Crossings
- Roadside Features
- Roadway Features
- Shoulder Treatments
- Signs
- Speed Management
- Transit
- Work Zones



> CMF Tables

- Each table provides information on the conditions for which the CMF applies, which include:
 - Roadway/area type
 - Crash type
 - Crash severity
 - Level of traffic (AADT)
 - Other implementation notes
- CMFs should only be directly applied to the **same conditions**
- CMFs might serve as a guide for other conditions

Using the CMF Tables

Countermeasures	Area Type	Crash Severity	Crash Type	AADT	Note	CMF		Star Quality Rating	State
						Value	Std. Err		
Install centerline rumble strips on tangent sections	Rural	All	All	1336 - 13240		0.9	0.055	4	MN
				574 - 17591		0.9	0.084	4	PA
				3167 - 20784		1.02	0.093	4	WA
				574 - 20784		0.92	0.043	4	MN,PA,WA
			Head-on,Sideswipe	1336 - 13240		0.51	0.079	4	MN
				574 - 17591		0.57	0.184	3	PA
				3167 - 20784		0.33	0.19	3	WA
				574 - 20784		0.51	0.069	5	MN,PA,WA
		Fatal and injury	All	1336 - 13240		0.82	0.078	4	MN
				574 - 17591		0.78	0.1	4	PA
				3167 - 20784		1.1	0.173	4	WA
				574 - 20784		0.85	0.059	5	MN,PA,WA

- **Highlighted:** recommended values
- **Bolded:** values estimated using PA data

➤ Advantages (Pros)

- Uniform Statewide list of part D CMFs
- Can be printed and used as a book
- Used to develop consistent results in PennDOT's HSM analysis tool
- Shows higher quality CMFs (3 stars or higher)
- Shows CMFs that used Pennsylvania data
 - No CMFs were created by Penn State for this Guide



➤ Disincentives (Cons)

- Outdated once it was published
 - Clearinghouse is always being updated
- Not web based and as easy to access
- Not as easy to use as CMF Clearinghouse
- Does not include the CMF ID numbers
 - Harder to reference more information about the CMF(s) selected
- Expensive to develop
- Includes some CMFs that aren't used in PA
 - HAWKS, pelican to puffin crossings
- No CMFs were created by Penn State for the CMF Guide



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