

HIGHWAY SAFETY MANUAL

PART A PREFACE TO THE FIRST EDITION

A.1.	Purpose of the HSM	A-1
A.2.	The Need For The HSM	A-1
A.3.	The History of The First Edition of the HSM	A-1
A.4.	Considerations and Cautions When Using the HSM.....	A-2
A.5.	Future Editions of the HSM	A-3

This page is intentionally blank.

1 **PART A PREFACE TO THE HSM**

2 **A.1. PURPOSE OF THE HSM**

3 The Highway Safety Manual (HSM) is a resource that provides safety knowledge
4 and tools in a useful form to facilitate improved decision-making based on safety
5 performance. The focus of the HSM is to provide quantitative information for
6 decision making. The HSM assembles currently available information and
7 methodologies on measuring, estimating and evaluating roadways in terms of crash
8 frequency (number of crashes per year) and crash severity (level of injuries due to
9 crashes). The HSM presents tools and methodologies for consideration of “safety”
10 across the range of highway activities: planning, programming, project development,
11 construction, operations and maintenance. The purpose is to convey present
12 knowledge regarding highway safety information for use by a broad array of
13 transportation professionals.

14 **A.2. THE NEED FOR THE HSM**

15 Prior to this edition of the HSM, transportation professionals did not have a
16 single national resource for quantitative information about crash analysis and
17 evaluation. The HSM begins to fill this gap, providing transportation professionals
18 with current knowledge, techniques and methodologies to: estimate future crash
19 frequency and severity and identify and evaluate options to reduce crash frequency
20 and severity.

21 In addition to using descriptive methods in better ways, the HSM permits use of
22 predictive methodologies that improve and expand the use of crash estimation
23 methods to new and alternative design or conditions in past or future periods. The
24 more statistically-rigorous predictive methods in the HSM reduce the vulnerability of
25 historical crash based methods to random variations of crash data and provides a
26 means to estimate crashes based on geometry, operating characteristics, and traffic
27 volumes. These techniques provide an opportunity to: 1) improve the reliability of
28 common activities, such as screening a network for sites at which to reduce crashes
29 and 2) expand analysis to include assessments of new or alternative geometric and
30 operational characteristics.

31 **A.3. THE HISTORY OF THE FIRST EDITION OF THE HSM**

32 A special conference session was held at the annual meeting of the
33 Transportation Research Board (TRB) in January 1999 on the subject of predicting
34 highway safety impacts of highway design and operation. The session participants
35 concluded that one reason for a lack of quantitative safety emphasis in decision-
36 making is the absence of a single authoritative document to use for quantitatively
37 estimating “safety”. In December of 1999, a workshop was held under sponsorship of
38 eight TRB committees, and funded by FHWA, for the purpose of determining the
39 need for, nature of, and feasibility of producing a Highway Safety Manual. An initial
40 outline and plan for a HSM was produced. This led to the formation of a TRB Task
41 Force for the Development of a Highway Safety Manual in May of 2000. It was under
42 the direction of this Task Force of volunteers that this edition was produced. The
43 Task Force formed several sub-committees to oversee various research and
44 development aspects of the task. They also employed independent review groups to
45 assess research results before proceeding with final preparation of materials. The
46 majority of the research and development was funded by the NCHRP, with
47 significant supplementary funding and research support provided by the FHWA.

48 Finally, AASHTO formed a HSM Task Force in TBA to monitor and participate in the
49 final stages of the development of this edition.

50 **A.4. CONSIDERATIONS AND CAUTIONS WHEN USING THE HSM**

51 The HSM provides analytical tools based upon accepted knowledge, methods,
52 and processes, in a form that is usable by transportation professionals.

53 The HSM will be used by individuals with a variety of professional and technical
54 backgrounds, including engineering, planning, field operations, enforcement, and
55 education. They will come to the HSM with different levels of understanding of the
56 fundamentals of roadway safety. *Chapter 1 Introduction and Overview* provides key
57 information and the context for understanding how to apply and integrate safety
58 analysis related to the common activities within highway planning, design, and
59 operations. The HSM includes traditional “safety” analysis techniques and also
60 applies recent developments in crash estimation and evaluation methodologies. A
61 majority of the analytical techniques are new; it is important to fully understand the
62 material presented in *Chapter 2 Human Factors* and *Chapter 3 Fundamentals*, to
63 understand reasons for development and use of these techniques.

64 Because the HSM does not account for jurisdiction-specific differences, it
65 contains calibration techniques to modify tools for local use. This is necessary
66 because of differences in factors, such as driver populations, local roadway and
67 roadside conditions, traffic composition, typical geometrics, and traffic control
68 measures. There are also variations in how each state or jurisdiction reports crashes
69 and manages crash data. *Chapter 3 Fundamentals* discusses this topic and others
70 related to the reliability of crash data. Calibration does not make the crash data
71 uniform across states. Similarly, applying the HSM outside the United States and
72 Canada should be done with caution. The models and research findings presented in
73 this document may not be applicable in other countries as the roadway systems,
74 driver training and behavior, and crash frequencies and severity patterns may be
75 widely different. At a minimum, techniques presented in the HSM should be
76 properly calibrated.

77 The HSM is not a legal standard of care as to the information contained herein.
78 Instead, the HSM provides analytical tools and techniques for quantifying the
79 potential effects of decisions made in planning, design, operations, and maintenance.
80 There is no such thing as absolute “safety.” There is risk in all highway
81 transportation. A universal objective is to reduce the number and severity of crashes
82 within the limits of available resources, science, technology, and legislatively
83 mandated priorities. The information in the HSM is provided to assist agencies in
84 their effort to integrate safety into their decision-making processes. The HSM is not
85 intended to be a substitute for the exercise of sound engineering judgment. No
86 standard of conduct or any duty toward the public or any person shall be created or
87 imposed by the publication and use or nonuse of the HSM.

88 As a resource, the HSM does not supersede publications such as the Manual on
89 Uniform Traffic Control Devices (MUTCD), American Association of State Highway
90 Transportation Official’s (AASHTO) “Green Book” *A Policy on Geometric Design of*
91 *Highways and Streets*, or other AASHTO and agency guidelines, manuals, and
92 policies. If conflicts arise between these publications and the HSM, the previously
93 established publications should be given the weight they would otherwise be
94 entitled, if in accordance with sound engineering judgment. The HSM may provide
95 needed justification for an exception from previously established publications.

96

97 A.5. FUTURE EDITIONS OF THE HSM

98 This first edition of the HSM provides the most current and accepted knowledge
99 and practices relating to roadway safety management. The TRB and AASHTO HSM
100 Task Forces recognize that knowledge and methods of analysis are evolving and
101 improving with new research and lessons learned in practice.

102 The evolution in professional practice and knowledge will be influenced by this
103 first edition of the HSM because it introduces new methods, techniques, and
104 information to transportation professionals. The knowledge-base will also continue
105 to grow and to enhance transportation professionals' understanding of how decisions
106 related to planning, design, operations, and maintenance affect crash frequency and
107 severity. The transportation profession will continue to take the opportunity to learn
108 more about the relationships between crash occurrences on various types of facilities
109 and the corresponding geometry and operational characteristics of those facilities
110 that may affect crash frequency and severity. This will be facilitated as agencies
111 improve the processes used to collect and maintain data for: crashes, roadway
112 geometry, traffic volumes, land uses, and many other useful data to assess the
113 roadway environment and context in which crashes are occurring. These and/or
114 other potential enhancements in analysis techniques and knowledge will be reflected
115 in future editions of the HSM.

116

117

This page intentionally blank.

118