Technical Report

ISO/TR 12353-4

Road vehicles — Traffic accident analysis —

Part 4: Compilation of methodologies for assessment of vehicle safety system effectiveness

Véhicules routiers — Analyse des accidents de la circulation —

Partie 4: Compilation des méthodologies pour l'évaluation de l'efficacité des systèmes de sécurité des véhicules

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 36, *Safety and impact testing*.

A list of all parts in the ISO 12353 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Many methodologies are used to analyse the effectiveness of various vehicle safety systems. Most methods are retrospective, have different applicability, advantages and limitations, and are often chosen depending on the structure and content of the data available. More recently, prospective methods have been presented and used.

The aim of this document is to compile commonly used methods for assessing the effectiveness of vehicle safety systems. The document covers assessment methods for active, passive and integrated safety systems including crash avoidance systems. The effectiveness in this context refers to the capability of a safety system or feature to avoid or mitigate injuries, fatalities or crashes.

The document provides a general overview of commonly used terms for the assessment methodologies, including exposure, risk, odds, effectiveness, benefit and safety performance.

Six methodologies, both prospective and retrospective, are described in the document. Each method is summarized in terms of its applicability, advantages and limitations. The methodology is described together with necessary input data and the resulting output data. Conclusions are given in terms of accuracy, sensitivity and validation for each method.

An overview of the applicability of prospective and retrospective assessment methods is also included (see Annex A).

The methods included in this document were considered to be in use and valid for this compilation by the time of development. If needed and requested, this document can be expanded with additional methods in a later revision.

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Road vehicles — Traffic accident analysis —

Part 4: Compilation of methodologies for assessment of vehicle safety system effectiveness

1 Scope

This document compiles common methods for assessing the effectiveness of vehicle safety systems. This covers active, passive and integrated safety systems including crash avoidance systems.

Effectiveness in this context refers to the capability of a safety system or feature to avoid or mitigate injuries, fatalities or crashes.

The document covers both prospective and retrospective methodologies. Applicability, advantages, limitations, accuracy and sensitivity are described for each method. Necessary input and output data and format are also presented.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 12353-1, *Road vehicles — Traffic accident analysis — Part 1: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in in ISO 12353-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
mitigate
reduce the consequences of a hazardous event

Note 1 to entry: In the context of this document, the consequences are injuries, fatalities or crash severity.

3.2
injury risk
IR
probability of occurrence of a personal injury at a specific level

Note 1 to entry: Injury level is often expressed with the abbreviated injury scale (AIS).

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