
**Naturalistic driving studies —
Vocabulary —**

**Part 1:
Safety critical events**

*Études naturalistiques de conduite — Vocabulaire —
Partie 1: Événements critiques de sécurité*

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Published in Switzerland

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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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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 39, *Ergonomics*.

A list of all parts in the ISO 21974 series can be found on the ISO website.

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Introduction

A better understanding of driver behaviour is critical to future improvements in transportation safety. Naturalistic Driving Studies (NDSs), which observe driver behaviour in a “natural” or uncontrolled driving environment, offer unique insight into drivers’ typical behaviour under both “normal” driving conditions and during the critical seconds before a crash or other safety-critical event (SCE). Much of the value and power of NDSs lies in the video that is recorded of the driver and the environment surrounding the vehicle. Although rich in information, video should be manually reviewed and coded by trained data coders before it is scientifically analyzed. Given the potential for human error and interpretation, coding protocols that are well-designed, thoroughly tested, and standardized across studies are essential.

Naturalistic driving data sets, such as the Second Strategic Highway Research Program (SHRP 2), are becoming more available to a diverse group of researchers. As a result, it is important to have a common terminology for monitoring, coding, and analyzing data to allow research protocols to be replicated and results to be compared across studies. In fact, the research community has called for the development of fully tested, common coding protocols for use in NDSs. This document addresses that need by providing a standard vocabulary for coding SCE characteristics in NDSs. The foundation for this document came from the SHRP 2 naturalistic driving study annotation effort and subsequent revisions to the SHRP 2 dictionary to accommodate heavy vehicles (trucks and buses)^[1]. Substantial improvements have been made to this document in both content and structure. However, large parts of this document are largely verbatim with the original foundational documents.

It is recommended that vehicles in these studies be instrumented with at least a forward-looking view and an in-vehicle view capturing the driver’s face and upper body. Rear- and side-facing views are often helpful when interpreting conflicts that occur behind or next to the instrumented vehicle. A view capturing the steering wheel, driver’s hands and/or dashboard can be helpful for additional analyses (which are outside the scope of this document). However, equipment and labor costs may make these additional views unfeasible. In addition, basic measurements of the kinematics of the instrumented vehicle should be available, including at least longitudinal acceleration, lateral acceleration, and vehicle speed. Other kinematic measurements that help assess conflict situations (if feasible) include brake and throttle pedal application and/or pressure, proximity to and speed of surrounding non-instrumented vehicles (e.g., via radar), latitude and longitude, and activation of key vehicle safety systems (e.g., anti-lock brakes).

The main objective of this document is to define different types of SCEs based on a taxonomy of general conflict classes and a set of basic variables for characterizing the events. The definitions supplied here apply to data collected from light and heavy vehicles [i.e., category M and N according to *Classification and definition of power-driven vehicles and trailers: Council Directive 70/156/EEC* (as amended by 92/53/EEC), Annex 2]. However, this does not preclude the definitions specified in this document from, with caution, being adapted for use with data collected from other vehicle types such as powered two-wheelers or an infrastructure-based (rather than vehicle-based) data collection system.

This document does not address methods for identifying candidate SCEs (also referred to as triggers), a complete set of annotations for these SCEs (e.g., driver distraction), or the recommended approach to analyzing this data. This document also does not address the definition, extraction, or annotation of controls. These controls, often called baselines in transportation literature, are selected for comparison to events of interest in epidemiological as well as other analyses. Since the definition, extraction, and annotation of these controls are highly dependent on the research question of interest, they have been excluded from the scope of this document. The scope of the present document is graphically illustrated in [Figure 1](#).

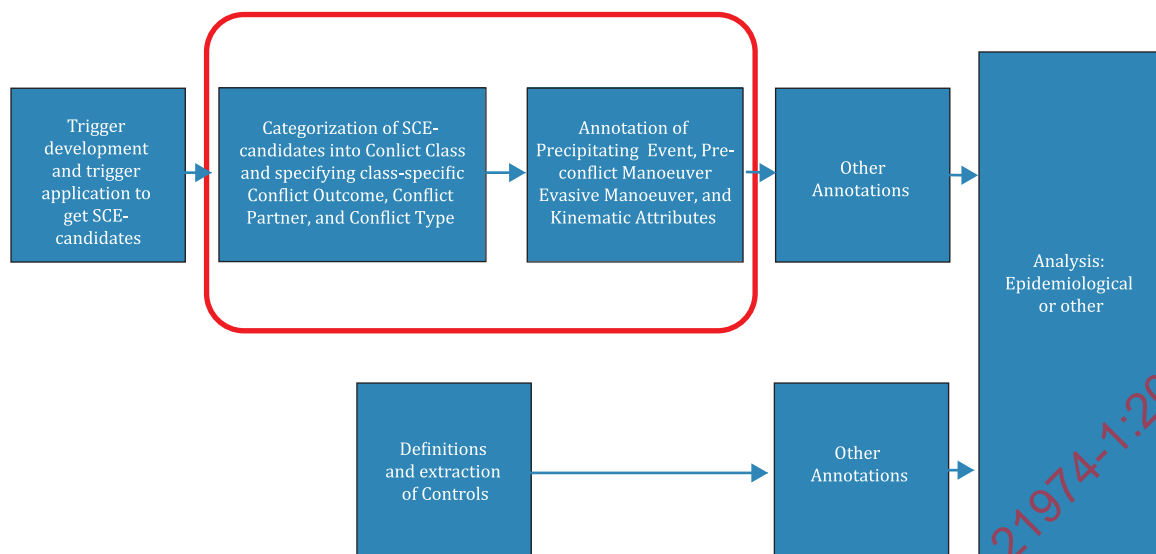


Figure 1 — Document scope

Naturalistic driving studies — Vocabulary —

Part 1: Safety critical events

1 Scope

This document defines terms and definitions commonly used for the annotation of video from NDSs collected during real-world driving in an uncontrolled setting.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

combined avoidance capacity

total response capacity of all responding *conflict partners* (3.3)

Note 1 to entry: The capacity of a responding conflict partner takes into account both the abilities and limitations of the vehicle or road user as well as any environmental or infrastructural constraints, if present.

Note 2 to entry: Conflict partners that do not exhibit an observable response are not included in this construct.

3.2

conflict

situation where the trajectory(ies) of one or more road users or objects (*conflict partner*; 3.3) led to one of three results: 1) a *crash* (3.4) or *road departure* (3.12), 2) a situation where an *evasive manoeuvre(s)* (3.5) was required to avoid a crash or road departure, or 3) an unsafe proximity between the conflict partners

Note 1 to entry: The key concept underlying the present framework is that of conflict.

Note 2 to entry: Three general classes of traffic conflict are of interest in naturalistic driving analyses: *trajectory conflict* (3.2.1), *single-vehicle conflict* (3.2.2), and *proximity conflict* (3.2.3).

3.2.1

trajectory conflict

crash course between at least two *conflict partners* (3.3)

3.2.2

single-vehicle conflict

conflict (3.2) involving loss of vehicle control (e.g., horizontal and/or lateral skidding or rotation) or proximity to the road edges (e.g., *road departure*; 3.12) rather than proximity to another entity

3.2.3

proximity conflict

conflict (3.2) involving two or more entities that are not on a crash course but nevertheless come in close temporal and/or spatial proximity to a *crash* (3.4)

3.3

conflict partner

any entity that is part of a *conflict* (3.2)

Note 1 to entry: This may include other *vehicles* (3.18), *pedestrians* (3.10), *pedal cyclists* (3.9), other *non-motorists* (3.8), other road users, animals, and objects (including roadside barriers that exceed the ground clearance of the affected vehicle).

Note 2 to entry: If a *conflict partner* (3.3) is present, then the conflict is either a *trajectory conflict* (3.2.1) or a *proximity conflict* (3.2.3).

Note 3 to entry: Low roadside barriers (e.g., curbs) within the ground clearance of the vehicle are not considered conflict partners.

3.4

crash

situation in which the subject vehicle (i.e., *instrumented vehicle*; 3.14) has any contact with at least one other *conflict partner* (3.3) either on or off the *trafficway* (3.15), either moving or stationary (fixed or non-fixed), that is observable or in which kinetic energy is measurably transferred or dissipated

Note 1 to entry: This excludes *roadway* (3.11) features meant to be driven over such as speed bumps and low roadside barriers (curbs, medians, etc.) within the ground clearance limitations of the vehicle.

Note 2 to entry: A crash may also be a *single-vehicle conflict* (3.2.2) that includes at least one of the following conditions: vehicle rollover, airbag deployment, injury, more than 90° degrees of horizontal vehicle rotation, or all four tires leaving the trafficway.

3.5

evasive manoeuvre

any action performed by any *conflict partner* (3.3) to change its trajectory or speed in an attempt to avoid or reduce the severity of a *potential crash* (3.4), avoid or reduce the severity of a *road departure* (3.12), or regain vehicular control after a loss of control

Note 1 to entry: Examples include steering, braking, accelerating, running, stopping, or a combination of these.

Note 2 to entry: At least one of the manoeuvres exceeds normal vehicle control inputs.

3.6

metadata

information that provides a description about the structural content of its referenced dataset or the methods with which the data were collected

Note 1 to entry: Examples of metadata include location (e.g., country, region) of data collection, sampling methods, units of measure, etc.

3.7

naturalistic driving study

NDS

any driving study where research subjects are recruited to drive on public roads (not in a simulator or on a test track), where there is no in-vehicle experimenter or confederate vehicles, and where driving conditions are not experimentally controlled or manipulated

Note 1 to entry: Subjects are not instructed to drive differently than they normally would, and the data collection instrumentation is unobtrusive.

Note 2 to entry: Typically, these studies last a minimum of several weeks for each subject and can go much longer.

3.8**non-motorist****non-motorized conveyance**

person is being transported by a non-motorized conveyance, other than a *pedaled cycle* (3.9)/a human-powered device by which a non-motorist may move or may move another non-motorist

EXAMPLE Baby carriages, coasters, wagons, ice skates, roller skates, push carts, push scooters, skateboards, skis, sleds, non-motorized wheel chairs, rickshaws, etc.

3.9**pedal cyclist**

person on any type of manually propelled pedaled cycle, as either the driver or the passenger, including bicycles, tricycles, and unicycles

Note 1 to entry: This category includes pedal cyclists holding on to a motorized vehicle.

Note 2 to entry: This category also includes power-assisted pedaled cycles that have limitations on speed (i.e., pedelecs). Pedaled cycles that are capable of propelling themselves and do not require pedaling for propulsion are not included in this category (see "Motorcycle or moped").

3.10**pedestrian**

any person who is on or near a *roadway* (3.11) or a sidewalk, path, or other space that is contiguous with a roadway, or on areas beside the roadway into which a vehicle can travel, and who is not in or on either a motorized or a non-motorized conveyance

Note 1 to entry: This includes persons who are in contact with the ground, roadway, etc., but who are holding on to a vehicle.

3.11**roadway**

portion of a *trafficway* (3.15) that is designed and ordinarily used for vehicular travel, including all designated or implied travel lanes (through lanes, turn lanes, acceleration and deceleration lanes), but not shoulders, painted (whether usable or not), medians of any type, roadsides, gore areas, etc., that are of a similar road surface to the parking lanes, parking areas, or driveways

3.12**road departure**

conflict (3.2) in which the *subject vehicle* (3.14) is on a path toward and crosses, or is at risk of crossing, the road edge

Note 1 to entry: The road edge is the outside edge of the shoulder (if present) or a physical raised curb or median on the left or right side of the trafficway, including low barriers such as curbs and curb-style medians that are within the ground clearance of the vehicle.

3.13**safety-critical event****SCE**

conflict (3.2) or series of related conflicts that involves the *subject vehicle* (3.14) either alone or in combination with another *vehicle* (3.18), *pedal cyclist* (3.9), *pedestrian* (3.10), object, or road edge

Note 1 to entry: This document describes the range of conflict types that may comprise an SCE, and an SCE may be composed of a single conflict type or multiple simultaneous or sequential conflict types. Conflicts should be non-intentional and non-premeditated (unplanned) by at least one *conflict partner* (3.3).

3.14**subject vehicle**

vehicle (3.18) that has been instrumented and collects data

Note 1 to entry: Available videos will capture images from the subject vehicle's perspective.

Note 2 to entry: Kinematic data are typically available only from the subject vehicle or (in the case of radar data) the subject vehicle's perspective.

3.15

trafficway

any right-of-way designated for moving persons or property from one place to another, including the surface on which vehicles normally travel (i.e., the *roadway*; [3.11](#)), plus the shoulders, painted medians, and painted gore areas at grade with the roadway

Note 1 to entry: The trafficway also includes parking lanes and parking areas (e.g., parking lots, driveways).

Note 2 to entry: The trafficway is bound by the outer edges of the shoulder or by raised roadside barriers (e.g., curb, guardrail, pylon) and thus does not include raised medians, grassy medians, sidewalks, etc.

3.16

trigger

data analysis method that includes the application of algorithms (e.g., acceleration thresholds) for searching time series driving data for key situational characteristics or thresholds in order to identify potential events of interest (e.g., kinematic threshold for potential *SCEs*; [3.13](#))

3.17

urgent response

urgency of response

situation in which the required *evasive manoeuvre* ([3.5](#)) approaches the *combined avoidance capacity* ([3.1](#)) of the responding *conflict partners* ([3.3](#)) required to prevent a crash

Note 1 to entry: Both the time available for response and the required response magnitude (e.g., level of deceleration) should be considered.

Note 2 to entry: While it may be possible to quantify the required urgency of the evasive manoeuvre (see [Annex A](#) for more discussion), the methods for doing so are not within the scope of this document. Quantification of the urgency is not required in order to use the concept as described in this document.

Note 3 to entry: The urgency of the response is independent of any evasive manoeuvres that are actually performed.

3.18

vehicle

any motorized means of transportation, excluding *pedelecs*, which are included in the *pedal cyclist* definition ([3.9](#))

Annex A (informative)

Conceptual Framework for Categorizing Safety-critical events (SCEs) in Naturalistic Driving Data

A.1 Introduction

Safety-critical events (SCEs) of interest in naturalistic driving studies (NDSs) traditionally include crashes and near-crashes, but also less-severe but still safety-relevant non-crash events, such as crash-relevant conflicts and proximity conflicts. The main objective of this document is to define and rank different types of SCEs based on a taxonomy of general conflict classes and a set of basic variables for characterizing the events. The objective of this Annex is to outline the conceptual basis for these definitions.

The key concept underlying the present framework is that of traffic *conflict*. There are at least three general classes of traffic conflict that are of interest in naturalistic driving analyses. First, a *trajectory conflict*, which is the main conflict class traditionally studied (e.g., Reference [1]), is defined in terms of a crash course between at least two conflict partners. Second, a *single-vehicle conflict* is defined in terms of loss of control or proximity to the road edges rather than by proximity to another conflict partner. Third, a *proximity conflict* involves two or more conflict partners that are not on a crash course but nevertheless come in close temporal and/or spatial proximity to a crash. Importantly, these general conflict types are not mutually exclusive and may coexist in a single SCE. Thus, an SCE may include several conflicts occurring in a series.

Furthermore, these conflict classes are characterized by two types of criteria. First, the *outcome criteria* state that conflicts result in some level of criticality or severity, and that conflicts within each class may be graded based on these severity levels. However, the definitions of these severity levels differ between the conflict classes, as further described below. Second, the *intentionality criterion* states that conflicts are always non-intended by at least one of the conflict partners. The following section further describes these two criteria, and the remainder of the Annex describes how they apply to each of the three conflict classes.

A.2 General conflict criteria

A.2.1 Outcome criteria

The basic criterion for an event to count as a crash is that it involves contact with another entity that extends above the ground clearance of the subject vehicle that is observable and in which kinetic energy is measurably transferred or dissipated. In the case of a single vehicle crash, the vehicle departs the road with all four tires, rolls over, results in an air bag deployment, or involves occupant injury. The crash can then be further characterized in terms of outcome criteria such as delta-V (the change in velocity during impact) and/or other observable outcomes such as injuries or property damage. In the context of naturalistic driving analysis, the choice of crash-severity criteria to be applied to a given conflict depends mainly on practical rather than conceptual considerations, in particular the types of outcomes that can be reliably observed in naturalistic data.

For non-crashes, the specific outcome criteria differ between the main conflict classes, but the common characteristic is that there is some degree of *kinematic proximity* to crash impact, or, in the case of single-vehicle conflicts, some degree of loss of control or proximity to the road edges. The specific criteria for each conflict class are further discussed below.

A.2.2 Intentionality criterion

The intentionality criterion requires that the conflict (i.e., crash impact or kinematic proximity) was *not intended* by at least one of the conflict partners. This criterion is important to exclude situations where a driver (or, in the case of trajectory and proximity conflicts, all conflict partners) intentionally produces a situation that satisfies the outcome criteria. For example, this may involve a driver leaving the road on purpose to take a shortcut. Importantly, it should be noted that the action leading up to a true conflict (e.g., initiating a pass on a blind corner) may have been intentional, but as long as the outcome [e.g., a small time-to-collision (TTC) to an oncoming vehicle] was not intended by at least one of the conflict partners, the event should be considered a conflict.

A.3 Trajectory conflict

In traditional conflict theory, a conflict is defined as “a situation where two or more conflict partners approach each other in time and space to such extent that a crash is imminent if their movements remain unchanged [2]”. Thus, the defining features of traditional conflicts are (1) that two or more *conflict partners* (which may be vehicles, other road users, or stationary objects) enter into a *collision course* with each other where (2) *collision is imminent*. This general situation is referred to as a *trajectory conflict*, which includes the main types of SCEs traditionally analyzed in NDSs, such as crashes, near-crashes, and crash-relevant conflicts.

Given this conceptualization of a trajectory conflict, a key further issue is to characterize the degree of imminence of a crash. Here, imminence is conceptualized in terms of the *urgency of the conflict situation*. Urgency is here defined as given the point of time of the avoidance manoeuvre, what is the *required magnitude of the avoidance response* relative to the possible (or available) avoidance response magnitude of the involved responding conflict partners. More specifically, a response is urgent when the magnitude of the evasive manoeuvre required to avoid a crash approaches the *combined avoidance capacity* of all *responding conflict partners* in the given situation.

There are two key concepts here: the required evasive manoeuvre magnitude, and the combined avoidance capacity of all responding conflict partners. The required evasive manoeuvre magnitude is discussed in greater detail in the paragraphs that follow, but in short it represents the “minimum” that should be done to avoid a crash. It is dependent on the relative speed of the conflict partners and the angle of their approach. It is independent of the actual response(s) performed and may be of greater (in the case of crashes) or lesser (in the case of non-crash conflicts) magnitude than the actual response(s).

Avoidance capacity is here defined as the ability of a conflict partner to execute an *evasive manoeuvre*, where an evasive manoeuvre is any action performed to avoid a potential crash by changing the trajectory or speed, such as steering, braking, accelerating, running (pedestrian and animals), or stopping. The *combined avoidance capacity* refers to the combined ability of all responding conflict partners to change their trajectories to avoid a crash. It is also independent of the actual response(s) performed, but dependent on the characteristics both of the responding conflict partners themselves (e.g., brake condition, tire tread, vehicle specifications, braking and steering capabilities, pedestrian mobility, etc.), and the environment in which the conflict takes place (e.g., road surface condition, presence of other road users or obstacles). For example, the combined avoidance capacity of a vehicle that brakes and/or swerves as it heads toward a pole is less than the combined avoidance capacity in a situation where the same vehicle approaches a pedestrian and both conflict partners respond to the situation, everything else being equal (since the pedestrian but not the pole can move). Finally, a responding conflict partner is defined as a conflict partner exhibiting a visible response to the conflict. If a conflict partner does not exhibit such a response, it is excluded from the conceptualization of “combined avoidance capacity” for the given conflict. Thus, if the pedestrian in the example above does not move, then the combined avoidance capacity is the same as in the situation with the pole.

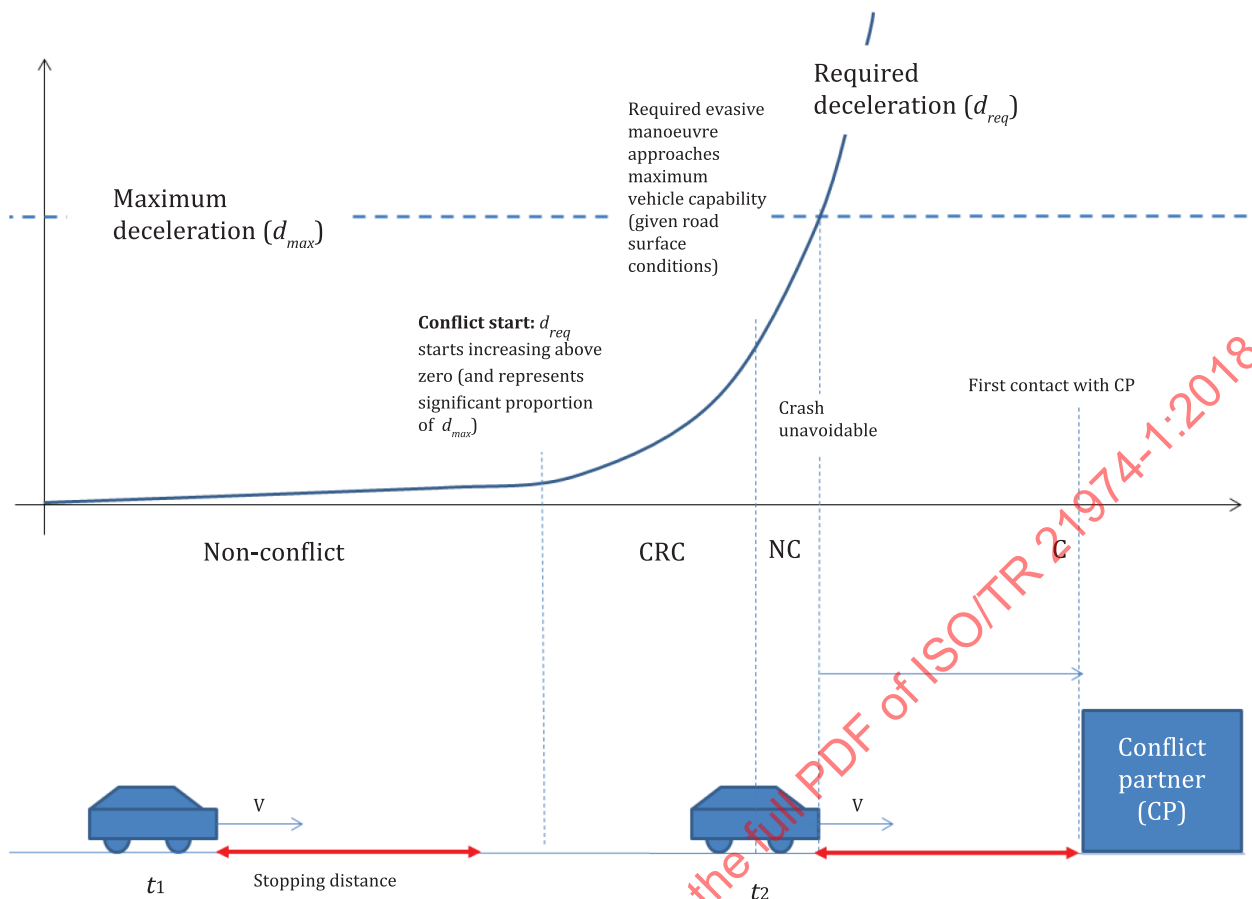
A useful way to think about the urgency of a situation is in terms of the proximity to the *point-of-no-return* (PONR). The PONR refers to the point in time during the conflict envelope when the crash becomes unavoidable given the maximum avoidance capacities of the responding conflict partners. Thus, for example, for a given set of kinematics (locations, speeds, and accelerations) of the involved conflict partners, the urgency of the situation increases with reduced road friction (thus reducing

the avoidance capacities of the conflict partners). Consequently, the PONR will be reached earlier, and the situation will be more urgent, when the road is wet or icy compared to when it is dry. This conceptualization of urgency may be used as the basis for characterizing different types of non-crash conflicts. For example, *near-crashes* (NCs) may be defined as situations with high urgency. That is, the magnitude of the required evasive manoeuvre approaches the maximum combined avoidance capability of the responding conflict partners (see B.2.1.4 and B.2.1.5). In other words, a near crash corresponds to a situation with a small margin to the PONR. By contrast, a crash-relevant conflict may be characterized as a less urgent conflict situation, where there is a need for a larger-than-normal avoidance response to avoid a crash but there is still a relatively large margin to the PONR.

When coding naturalistic data, the determination of urgency normally has to rely on judgment rather than precise quantification (where the margin to the PONR may be a useful guiding principle). However, even if coding cannot normally rely on objective quantification, it is still useful to operationalize these concepts in mathematical terms. For instance, the required magnitude of the avoidance response may be operationalized in terms of the minimum lateral and/or longitudinal *acceleration* (which is negative when braking) required to avoid a crash. Conversely, avoidance capacity may be operationalized as *the maximum possible lateral and/or longitudinal acceleration the range of vehicle and environment factors discussed above*[3]. Thus, urgency at any point in time may be defined as the required acceleration (at that point in time) divided by the maximum possible acceleration (which is relatively constant over time, depending on vehicle and environment factors). This is further illustrated in Figure A.1 for the basic longitudinal case of a vehicle approaching a stationary conflict partner (a moving conflict partner such as a braking lead vehicle would greatly complicate the mathematical description of the situation but the key concepts still hold).

Figure A.1 pictures a scenario where the vehicle (shown at times t_1 and t_2) approaches the stationary conflict partner (CP; box at far right) from a distance. As shown, the deceleration (i.e., negative acceleration) required by the approaching vehicle, d_{req} , grows with the spatiotemporal proximity to the crash. Trajectory conflicts may be theoretically separated from non-conflicts at the point where d_{req} starts to grow significantly above zero and represents a certain proportion of the maximum possible avoidance capacity, d_{max} . Thus, prior to this point, although the conflict partners may be on a crash course, the timing of an evasive manoeuvre is not critical (i.e., the urgency is close to zero). However, after this point any delay in the corrective action will significantly increase the urgency of the situation. Hence, the *urgency* of a trajectory conflict (i.e., the need for an avoidance manoeuvre) may thus be defined as d_{req} divided by d_{max} . At the other end of the conflict envelope, there is a point where d_{req} exceeds the maximum deceleration (d_{max}) and the crash thus becomes unavoidable. This corresponds to the PONR discussed above.

The question remains what level of urgency (i.e., as d_{req}/d_{max}) should be used as a kinematic criterion separating conflicts from non-conflicts. As outlined above and in the main document, it is here suggested to define conflicts as situations where the urgency is judged to be outside the normal range. While this is not an exact criterion, it takes into account the fact that the precise level of urgency is hard to judge from video recording alone. If, in the future, all relevant kinematic values can be estimated with sufficient precision, it may be possible to define a more precise value of urgency defining a conflict.



NOTE This example is developed for the longitudinal case (braking avoidance), but the same principles apply for the lateral case (steering avoidance) or a combination of the two.

Figure A.1 — Conceptualization of a trajectory conflict in terms of the minimum deceleration required to avoid a crash (d_{req}) relative to the maximum possible deceleration (d_{max})

A.4 Single-vehicle conflict

Single-vehicle conflicts are conflicts involving only a single vehicle (of a type included in the scope of this document [Clause 1](#)) and no other conflict partner. Thus, in contrast to trajectory conflicts, there is no crash course between objects. Rather a single-vehicle conflict is defined in terms of the proximity to the road edges and/or in terms of a loss of control on or off the road.

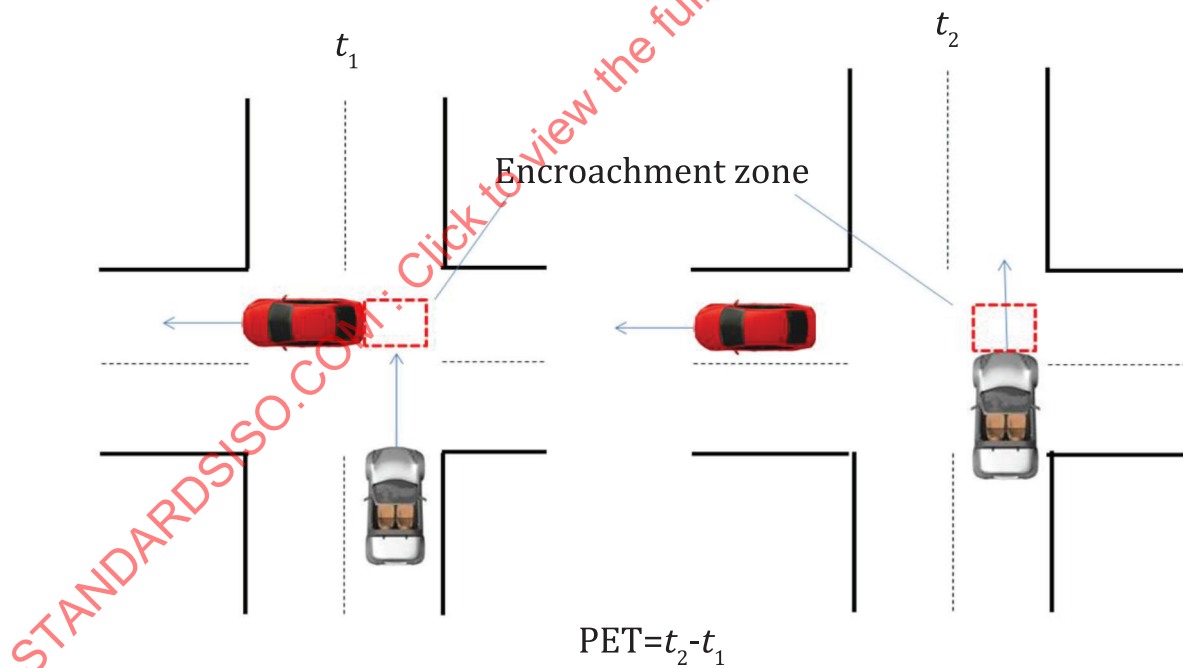
Thus, a single-vehicle conflict never results in a crash with another entity above the ground clearance of the vehicle but could, for example, result on a roll-over crash, a curb strike, a road departure, or a critical loss of control. If the single-vehicle conflict (such as a road departure) is followed by a crash with an object (such as, a tree), the latter should be regarded as a trajectory conflict and coded separately (i.e., Conflict 1 = single-vehicle conflict, Conflict 2 = trajectory conflict).

The severity of single-vehicle conflicts may be conceptualized in terms of the extent of the road departure (or the proximity to the road edge for non-road departures) and the degree of loss of control, as outlined in the main body of this document.

A.5 Proximity conflict

The term proximity conflict refers to a case involving at least two conflict partners who are not on a crash course in such a way that a crash is imminent (as defined above) but that nevertheless involves a small (spatial or temporal) kinematic proximity to a crash. Like the other conflict types, proximity conflicts also should satisfy the intentionality criterion: the resulting close kinematic proximity is unintended by at least one of the conflict partners. An example of a proximity conflict would be a distracted car driver approaching an intersection and failing to detect an approaching pedal cyclist, but where the pedal cyclist just makes it across the road before the vehicle passes, and neither conflict partner was required to change their trajectory in any way to avoid impact. This could be distinguished (based on the intentionality criterion) from the non-conflict case where the car driver is aware of the cyclist (and vice versa) and intentionally passes closely behind the cyclist on the assumption by the car driver that the cyclist will not slow or stop and by the cyclist that the car will not accelerate.

Since the conflict partners in a proximity conflict are not on a crash course, the concepts derived above for kinematic proximity of trajectory conflicts (based on urgency) do not apply. Rather, the kinematic proximity in situations such as the example above are instead conceptualized in terms of the *post-encroachment time* (PET), illustrated in [Figure A.2](#). Situations where a vehicle is unintentionally passing a pole, or even a pedal cyclist or pedestrian, with a very small lateral margin (clearance), are considered proximity conflicts. For such events, distance is a more suitable metric than PET (which would be undefined in such an event). The severity of proximity conflicts can thus be defined in terms of different threshold values of PET, or distance/clearance. However, in contrast to trajectory conflicts, there is no non-arbitrary point in time defining the start of the conflict. Rather, a PET/distance value should be defined that establishes a lower boundary for criticality. Further research is needed to establish such boundaries and to operationalize them in a way that they can be estimated based on video coding.



NOTE PET is defined as the difference between the time t_1 when the first conflict partner leaves the conflict zone and the time t_2 when the second conflict partner enters it.

Figure A.2 — Illustration of the concept of PET

A.6 Summary

[Table A.1](#) summarizes the three main conflict classes outlined above, in terms of the number of involved objects, the presence of a crash course, and the criteria used to code conflict severity.

Table A.1 — Summary of the three main conflict classes

Conflict class	Number of involved entities	Crash course	Severity criteria
Trajectory conflict	>1	Yes	Crashes: Impact severity criteria (multiple) Non-crashes: Urgency (required magnitude of avoidance response relative to avoidance capacity)
Single-vehicle conflict	1 (a vehicle)	No	Extent of road departure, degree of loss of control
Proximity conflict	>1	No	Spatiotemporal proximity (e.g., PET, minimum passing distance)

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Annex B (informative)

Principles of Conflict Classification

B.1 Conflict Classification

Conflict Classification is the entry point into the description of SCEs, and is the point at which all potential events of interest are classified as valid conflicts or not (non-conflicts). The definitions included here describe the range of valid conflict types; any events of interest that do not meet the definitions included here are non-conflicts and do not receive additional analysis under the variables included here.

For valid conflicts, the Conflict Classification variable defines the nature of the conflict in terms of whether there are one or more conflict partners and whether those partners are on a crash course at any point during the conflict. Conflict classes include trajectory, single vehicle, and proximity. At all levels of classification, conflicts should be non-intentional and non-premeditated (unplanned) by at least one conflict partner. Conflict partners (if any are involved) are defined to include vehicles, other road users, animals, or objects (including roadside barriers that exceed the ground clearance of the affected vehicle). The conceptual framework underlying the conflict definitions and conflict class taxonomy described here is discussed further in [Annex A](#).

SCEs may comprise more than one conflict class, conflict outcome, conflict severity, and/or conflict type. This is especially true when more than two conflict partners are involved or when one conflict leads directly to another. In cases such as these, where multiple conflicts should be coded, conflicts should be coded in the order in which they occur, and each variable coded should have an index number appended that indicates the conflict to which it applies (i.e. Time 1 = Conflict Class 1, Conflict Severity 1; Time 2 = Conflict Class 2, Conflict Severity 2; and so on). In addition, all conflicts associated with one SCE should reference the same unique event identifier. The order of coding is based on the progression of time, not on the severity of the referenced conflict.

Once the conflict class is assigned, then conflict severity, conflict partner, and conflict type are assigned according to categories that are specific to each conflict class, as discussed under each conflict class listed in this Annex. Finally, [Annex C](#) includes additional variables that are to be coded for all SCEs, including pre-incident manoeuvre, configuration values and evasive manoeuvres for the subject vehicle and all conflict partners (based on [Figure 3](#)), the relative location of the conflict partner(s) to the subject vehicle (conflict partner location), and key kinematic attributes.

B.2 Trajectory conflict

A trajectory conflict involves at least two conflict partners that are on a course, on or off the trafficway, such that a crash is kinematically imminent and an evasive manoeuvre is required by at least one conflict partner. If no other conflict partner is involved, see [B.3](#).

B.2.1 Trajectory conflict severity

Trajectory conflicts can result in one of five severity levels.

- 1) Level 1 Trajectory Crash
- 2) Level 2 Trajectory Crash
- 3) Level 3 Trajectory Crash

- 4) Near-crash
- 5) Crash-relevant conflict

A trajectory crash is any contact that the subject vehicle has with at least one other conflict partner either on or off the trafficway, either moving or stationary (fixed or non-fixed), that is observable or in which kinetic energy is measurably transferred or dissipated. This excludes roadway features meant to be driven over such as speed bumps and low roadside barriers (curbs, medians, etc.) within the ground clearance limitations of the vehicle.

Trajectory crashes should meet the following two criteria:

- 1) Impact. The vehicle makes contact with another conflict partner.
- 2) Not premeditated (i.e., not planned). The manoeuvre(s) performed by at least one conflict partner is not premeditated (planned). This criterion does not rule out crashes caused by unexpected events experienced during a premeditated manoeuvre (e.g., a premeditated aggressive lane change resulting in a crash with an unseen or faster-than-expected vehicle in the adjacent lane, or with a conflict partner that did not yield as expected).

There are three levels of crash severity, ranging from Level 1 (most severe) to Level 3 (least severe). Any trajectory conflict not resulting in contact between conflict partners is defined as either a Near-crash or a Crash-relevant Conflict. These severity levels are defined below.

B.2.1.1 Level 1 Trajectory Crash, Most Severe

A Level 1 Trajectory Crash is the most severe trajectory conflict and includes any crash that results in at least one of the following outcomes for at least one conflict partner:

- 1) airbag deployment (any airbag, any vehicle);
- 2) vehicle rollover (at least one quarter-turn, any vehicle);
- 3) towing of either vehicle involved in the conflict;
- 4) likely or observed injury of any driver, passenger, or other road user. The injury is serious enough to require a doctor's visit, and includes both self-reported injuries and those apparent from video;
- 5) a large change in the velocity of any conflict partner (e.g., a high delta-V). A high delta-V is defined as either a change in speed of any conflict partner in any direction at the time of impact that reaches or exceeds 32 km/h (20 mi/h) or acceleration on any axis at the time of impact that reaches or exceeds ± 2 g (excluding curb strikes). The delta-V excludes curb strikes and any pre- or post-impact braking or steering.

B.2.1.2 Level 2 Trajectory Crash, Moderate Severity

A Level 2 Trajectory Crash is any crash that does not meet the requirements for a Level 1 Crash but that includes at least one of the following outcomes:

- 1) A moderate level of property damage to any conflict partner, but all vehicles and other road users are able to leave the scene while operating normally under their own power (if applicable).
- 2) A modest change in the velocity of any conflict partner that reaches or exceeds an acceleration on any axis greater than $\pm 1,3$ g (excluding curb strikes and any pre- or post-impact braking or steering).

Many crashes involving other road users that do not meet the Level 1 criteria are included here. Also included here are most crashes involving large animals, traffic signs, or fixed roadside barriers unless they occur at very low speed (Level 3) or unless the more severe criteria for Level 1 are met.

B.2.1.3 Level 3 Trajectory Crash, Minor Severity

A Level 3 Trajectory Crash is any crash that does not meet the requirements of Level 1 or Level 2 but that includes physical contact with another conflict partner and no or minimal resulting property damage.

Any crashes involving other vehicles or other road users that do not meet the Level 1 or Level 2 criteria (generally at very low speed) are classified here. In addition, most crashes involving small animals, light objects (e.g., empty box in road), or light/non-fixed roadside barriers (e.g., construction cones) will be classified as Level 3 Trajectory Crashes unless they meet the criteria outlined for Level 1 or 2.

B.2.1.4 Near-crash

A near-crash is any trajectory conflict where a crash was avoided because the required urgent evasive manoeuvre(s) were performed successfully by at least one conflict partner.

Near-crashes should meet the following four criteria:

- 1) No impact. The subject vehicle does not make contact with any other conflict partner.
- 2) Not premeditated (i.e., not planned). The conflict resulting from the trajectory of the conflict partners is not premeditated (planned) by at least one conflict partner. This criterion does not rule out near-crashes caused by unexpected events experienced during a premeditated manoeuvre. (For example, a premeditated aggressive lane change resulting in a conflict with an unseen vehicle in the adjacent lane that requires an urgent evasive manoeuvre by one of the vehicles is considered a near-crash).
- 3) Evasive manoeuvre is required. An evasive manoeuvre was required by at least one conflict partner.
- 4) Urgent response required. An urgent response (i.e., evasive manoeuvre) is required by at least one conflict partner.

B.2.1.5 Crash-relevant conflict

A crash-relevant conflict is any circumstance that requires an evasive manoeuvre on the part of the subject vehicle or any other conflict partner that is not urgent (as defined above in Near-crash) but is still greater in magnitude than a "normal manoeuvre" to avoid a crash.

Crash-relevant conflicts should meet the following four criteria:

- 1) No impact. The subject vehicle does not make contact with any other conflict partner.
- 2) Not premeditated (i.e., not planned). The conflict resulting from the trajectory of the conflict partners is not premeditated (planned) by at least one conflict partner. This criterion does not rule out crash-relevant conflicts caused by unexpected events experienced during a premeditated manoeuvre. (For example, a premeditated aggressive lane change resulting in a conflict with an unseen vehicle in the adjacent lane that requires a non-urgent evasive manoeuvre by one of the vehicles.).
- 3) Evasive manoeuvre is required. An evasive manoeuvre is required by at least one conflict partner.
- 4) Urgent response not required. The response (i.e., evasive manoeuvre) required by any of the conflict partners was not urgent, but the required response was still of a greater magnitude than a "normal" driving manoeuvre.

B.2.2 Conflict nature (applies to both Trajectory and Proximity Conflicts)

Conflict Nature identifies the relationship between the subject vehicle and the conflict partner(s) (e.g., lead vehicle, following vehicle) as they enter into the conflict situation (at the time of the Precipitating Event; see [C.8](#)). It applies to both trajectory and proximity conflicts (See [B.2.1](#) and [B.4](#)).

Unless the subject vehicle is specified in the definition, “vehicle” may refer to any vehicle involved in the conflict.

The Conflict Nature categories generally correlate to the Conflict Configuration variable ([C.1](#)), with the Conflict Nature determining the subset of Conflict Configurations that might apply.

B.2.2.1 Conflict with a lead vehicle or pedal cyclist

Conflict with a vehicle or pedal cyclist in front of the subject vehicle that is, was, or intends to be traveling in the same direction as and in the travel path of the subject vehicle. The lead vehicle may be either moving or stopped (for instance, at a traffic signal). For this category, pedal cyclists should be in the subject vehicle’s lane (e.g., inside of the lane marking).

B.2.2.2 Conflict with a following vehicle or pedal cyclist

Conflict with a vehicle or pedal cyclist traveling behind the subject vehicle that is, was, or intends to be traveling in the same direction and path of travel as the subject. The following vehicle may be either moving or stopped. For this category, pedal cyclists should be in the subject vehicle’s lane (e.g., inside of the lane marking).

B.2.2.3 Conflict with oncoming vehicle or pedal cyclist

Conflict with a vehicle or pedal cyclist traveling toward the subject vehicle, in the opposite direction and on a parallel path of travel to the subject vehicle. See also “Conflict with vehicle turning across another vehicle path (opposite direction)” for a special case of “oncoming vehicle.”

B.2.2.4 Conflict with adjacent vehicle, pedal cyclist, or pedestrian

Conflict with a vehicle, pedal cyclist, or pedestrian, traveling in the same direction as the subject vehicle and in a lane next to the subject vehicle’s travel path. This includes (but may not be limited to) any of the following:

- conflict involving a vehicle that is merging, weaving, changing lanes, or unintentionally drifting into another vehicle’s lane from or to another lane, entrance ramp, or exit ramp;
- conflict with a motorcycle that is lane splitting next to subject vehicle;
- conflict with vehicles or other road users that are traveling in the same direction on the shoulder of the trafficway;
- conflict with pedestrian or pedal cyclist walking/riding in the same direction on the shoulder of the trafficway, but not in the lane (typically on the road shoulder/edge).

See also “Conflict with vehicle turning across another vehicle path (same direction)” for a special case of “adjacent vehicle.”

B.2.2.5 Conflict with vehicle or pedal cyclist turning across another vehicle, pedal cyclist, or pedestrian path (same direction)

Conflict involving a vehicle or pedal cyclist crossing in front of the path of another vehicle, pedal cyclist, or pedestrian, in order to turn left or right, when both conflict partners were originally traveling in the same direction on parallel paths of travel. This is a special case of “Conflict with adjacent vehicle, pedal cyclist, or pedestrian.”

B.2.2.6 Conflict with vehicle or pedal cyclist turning across another vehicle, pedal cyclist, or pedestrian path (opposite direction)

Conflict with a vehicle or pedal cyclist crossing in front of the path of another vehicle, pedal cyclist, or pedestrian, when the conflict partners were originally traveling in opposite directions on parallel paths of travel. This is a special case of "Conflict with oncoming vehicle or pedal cyclist."

B.2.2.7 Conflict with vehicle or pedal cyclist turning into another vehicle, pedal cyclist, or pedestrian path (same direction)

Conflict with a vehicle or pedal cyclist turning into the path of another vehicle, pedal cyclist, or pedestrian when the vehicles were originally traveling in perpendicular directions but intend to travel in the same direction on the same trafficway.

B.2.2.8 Conflict with vehicle or pedal cyclist turning into another vehicle, pedal cyclist, or pedestrian path (opposite direction)

Conflict with a vehicle or pedal cyclist turning into the path of another vehicle, pedal cyclist, or pedestrian when the conflict partners were originally traveling in perpendicular directions but intend to travel in opposite directions on the same trafficway.

B.2.2.9 Conflict with vehicle or pedal cyclist moving across another vehicle, pedal cyclist, or pedestrian path (through intersection)

Conflict with a vehicle or pedal cyclist crossing through the path of another vehicle, pedal cyclist, or pedestrian when the conflict partners were originally traveling in perpendicular directions and intend to continue traveling in perpendicular directions.

B.2.2.10 Conflict with vehicle or pedal cyclist making a U-turn into or across another vehicle, pedal cyclist, or pedestrian path

Conflict with a vehicle or pedal cyclist, making a U-turn into or across the path of travel of another vehicle, pedal cyclist, or pedestrian.

B.2.2.11 Conflict with out-of-control vehicle, pedal cyclist, or pedestrian in trafficway

Conflict with another vehicle, pedal cyclist, or pedestrian that is in motion but has lost control and is not intentionally or predictably following a path. This would include, for example, a scenario in which a motorcycle or pedal cyclist in front of the subject vehicle experiences a slide-out. For pedestrians this would include pedestrians falling into the roadway (e.g., due to slipping on ice).

B.2.2.12 Conflict with parked vehicle or pedal cyclist at standstill

Conflict with a vehicle or pedal cyclist that is neither in the trafficway nor in motion, or is entering or exiting a parked position (and does not fit into any other category). A vehicle parked off the roadway or trafficway with its door open over a roadway or trafficway is included in this category if there is no pedestrian entering or exiting (or about to enter/exit) the vehicle. If a pedestrian is entering/exiting the vehicle, code as "Conflict with pedestrian/occupant entering/exiting vehicle." If the scenario fits into another category, code that category. (For example, if a lead vehicle or pedal cyclist slows to enter a parking place, code as "Conflict with lead vehicle or pedal cyclist.")

B.2.2.13 Conflict as parked vehicle

Conflict with a vehicle or pedal cyclist that conflicts with the parked subject vehicle. This includes, for example, a pedal cyclist or motorcycle conflicting with the opening of the subject vehicle's door.

B.2.2.14 Conflict with pedestrian/occupant entering/exiting vehicle

Conflict with a pedestrian/vehicle combination where a pedestrian/occupant is entering or exiting (or about to enter/exit) a parked vehicle in or adjacent to the trafficway. This also includes pedestrians that are in the process of loading or unloading a vehicle's cargo and pedestrians that are interacting with a parked vehicle in some other way (including interactions with other vehicle occupants) provided that the referenced pedestrian is within an arm's reach of the parked vehicle.

B.2.2.15 Conflict with pedestrian not on trafficway

Conflicts with pedestrians that are not in the trafficway (typically in a separate area such as on a raised sidewalk). An example of this category is conflict with a pedestrian after the subject vehicle has experienced a road departure.

B.2.2.16 Conflict with pedal cyclist on separate cycle lane or cycle tracks

Conflicts with a pedal cyclist that are not on the trafficway (typically separate area delineated by some physical barrier). This category should not be coded for crossing path conflicts. An example of this category is conflict with a pedal cyclist after the subject vehicle has departed the roadway.

B.2.2.17 Conflict with animal (large or small)

Conflict with any type or size of living animal (other than insects). This category does not include animals that are being used as transportation or to pull some type of transportation device; these would be considered non-motorized conveyances and should be coded as "Conflict with other non-motorist or non-motorized conveyance."

B.2.2.18 Conflict with obstacle/object in trafficway

Conflict with any type of inanimate obstacle or object other than another vehicle. This includes dead animals in the trafficway. The object is in the trafficway in the vehicle's travel path. This includes roadside barriers that exceed the ground clearance of the vehicle, but does not include low roadside barriers within the ground clearance of the vehicle (see [3.2.2](#)).

B.2.2.19 Conflict with obstacle/object not in the trafficway

Conflict with any type of inanimate obstacle or object other than another vehicle, pedal cyclist, or pedestrian that is not in the trafficway.

B.2.2.20 Other conflicts with pedestrian

Conflict with a pedestrian where the conflict is not covered by other categories.

B.2.2.21 Other conflict with pedal cyclist

Conflict with a pedal cyclist where the conflict is not covered by other categories. Also includes pedal cyclists who hold on to a motor vehicle in motion.

B.2.2.22 Other conflict with vehicle

Conflict with any vehicle not included in other categories.

B.2.2.23 Conflict with other non-motorist or non-motorized conveyance

Conflict with any type of non-motorist or non-motorized conveyance that is not described in previous categories.

B.2.2.24 Conflict not involving subject vehicle

A conflict that does not directly involve the subject vehicle, but that leads to a conflict with the subject vehicle or results from a conflict with a subject vehicle. For example, this would include a conflict between two lead vehicles (Conflict 1) that results in a conflict with the subject vehicle (Conflict 2), or a conflict between a lead vehicle and a pedestrian (Conflict 1) that results in a conflict between the subject vehicle and the lead vehicle (Conflict 2). In both of these examples, Conflict Nature 1 should be coded as “conflict not involving subject vehicle” and Conflict Nature 2 should be coded as “Conflict with lead vehicle.”

A wide variety of other scenarios with multiple (>2) conflict partners would be handled similarly. This category would only be used when it is part of a multi-conflict SCE. Any conflict that does not lead to or result from a conflict with the subject is out of the scope of this document.

B.2.3 Conflict partner (applies to Trajectory and Proximity Conflicts)

The Conflict partner variable describes the type and size of the other vehicles, other road users, etc., that are involved in the SCE. Information about the subject vehicle should be a part of the metadata in the naturalistic driving study's database and should not be coded here because the information is generally not available from video.

Some of vehicle types defined below are based on gross vehicle weight rating (GVWR) and reflect the classifications used in the United States. Researchers should be aware that classifications vary by country. Therefore, the appropriate vehicle classifications based on the regulations of the country where data collection occurred are applicable.

B.2.3.1 Automobile

Light vehicle designed primarily to transport passengers in an enclosed (or convertible) space, including direct automobile derivatives. Examples include, but may not be limited to, convertible, two-door sedan, hardtop, coupe, two- to five-door hatchback, three-door coupe, four-door sedan, station wagon (excluding van- and truck-based), cargo station wagon, auto-based pickups, auto-based ambulance/hearse, large limousine, and three-wheeled enclosed automobiles (see “Motorcycle or moped” if not enclosed).

B.2.3.2 Sport-utility vehicle (SUV)

Utility vehicle designed to have some level of off-road capabilities, generally taller and heavier than comparable automobiles but still having a GVWR less than or equal to 4 536 kg (10 000 lb). Examples include, but may not be limited to, multi-purpose vehicle, compact utility vehicle, large utility vehicle, and utility station wagon.

B.2.3.3 Van (minivan or standard van)

Vehicle designed to maximize cargo/passenger area versus overall length, having an enclosed cargo/passenger area and relatively short (or non-existent) hood and a GVWR less than or equal to 4 536 kg (10 000 lb). Examples include, but may not be limited to, minivan, large van, step van or walk-in van, conversion van, van-based motorhome, van-based school bus, and other van derivatives.

B.2.3.4 Pickup truck

Light conventional truck with a pickup style cab (includes extended cabs), a large hood covering the conventional engine placement, a separate open box area for cargo (with or without an aftermarket cap or cover), and a GVWR less than or equal to 4 536 kg (10 000 lb).

B.2.3.5 Light vehicle pulling trailer

Automobile, sport utility vehicle, van, or pickup truck that is pulling or towing some type of additional cargo behind it. Towed items may include, but are not limited to, another vehicle, camper, trailer, farm or landscaping equipment, etc.

B.2.3.6 School bus

Medium/heavy vehicle (not including van-based) that is designed to carry groups of passengers (generally with seating capacities that exceed 15 passengers) to and from educational facilities and/or related functions. These are generally, but not always characteristically painted yellow and clearly identified as school buses. GVWR exceeds 4 536 kg (10 000 lb). This category includes private company school buses and school buses converted for other uses (e.g., church bus).

B.2.3.7 Bus (transit, motor coach)

Medium/heavy vehicle (not including van-based) that is designed to transport large groups of passengers (generally with seating capacities that exceed 15 passengers). GVWR exceeds 4 536 kg (10 000 lb). This category includes transit buses, intercity buses, bus-based motorhomes, and charter buses.

B.2.3.8 Single-unit straight truck

A non-articulated truck designed to carry cargo with a GVWR that exceeds 4 536 kg (10 000 lb). This category includes most box trucks, delivery trucks, dump trucks, garbage trucks, concrete mixers, flatbed trucks, non-towing tow trucks, and large work pickup trucks, etc., as long as the truck is a single unit that does not articulate when turning.

B.2.3.9 Single-unit straight truck + trailer

A non-articulated truck designed to carry cargo (as defined under "Single-unit straight truck" above) with a trailing unit. Examples include a tow truck towing a vehicle or a work truck pulling a flatbed trailer.

B.2.3.10 Tractor only

A fifth-wheel-equipped tractor-trailer power unit with a GVWR that exceeds 4 536 kg (10 000 lb) that is not pulling a trailer.

B.2.3.11 Tractor-trailer

A fifth-wheel-equipped tractor-trailer power unit with a GVWR that exceeds 4 536 kg (10 000 lb) that is pulling a trailer. This category includes, but is not limited to, tractors pulling enclosed box trailers, open top/grain trailers, flatbed trailers, tank trailers, car carriers, livestock carriers, lowboy trailers, dump trailers, and multiple trailers.

B.2.3.12 Other construction equipment

Construction equipment (other than trucks as defined in previous categories) parked or operating under its own power (e.g., not on a trailer or being towed). This includes, but is not limited to, bulldozers, steamrollers, and road graders.

B.2.3.13 Motorcycle or moped

A motorcycle is a two- or three-wheeled open vehicle (no enclosed body) that is wholly self-propelled (rather than all human-powered). A moped is a motorized bicycle capable of moving either by assistive pedaling or by an independent motor or engine. This category includes other motored cycles (such as mini-bikes and motor scooters) as well as motorcycles and mopeds equipped with sidecars. This

category does not include all-terrain vehicles (e.g., three- or four-wheelers), which should be coded as “Other vehicle type”) or three-wheeled enclosed automobiles (which should be coded as “Automobile”).

B.2.3.14 Emergency vehicle

Any in-service vehicle readily identified through lights or markings that is used solely to provide emergency services. Vehicle should be identifiable as currently in service by lights, markings, sirens, or observable actions. Vehicles not in service should be coded as the appropriate vehicle type. This category includes, but is not limited to, in-service ambulances, fire trucks/cars, police cars, and other rescue vehicles.

B.2.3.15 Other vehicle type

Any vehicle not included in the categories listed above. This includes, but may not be limited to, all-terrain vehicles (three- and four-wheelers), snowmobiles, riding lawnmowers, farm equipment (other than trucks), and any form of mechanical handling equipment (e.g., forklift). Vehicle should be parked or operating under its own power (not being trailered or towed).

B.2.3.16 Pedestrian

See definition of *pedestrian* ([3.10](#)).

B.2.3.17 Pedal cyclist

See definition of *pedal cyclist* ([3.9](#)).

B.2.3.18 Animal conveyance

An animal (e.g., horse) that is being ridden by a human, whether for general transportation or recreation. This also includes animal-pulled conveyances and pack animals.

B.2.3.19 Other non-motorist or non-motorized conveyance

See definition of *non-motorist/non-motorized conveyance* ([3.8](#)).

B.2.3.20 Deer, elk, moose, bear (or similar)

Any type of live, large animal, such as deer, elk, moose, bear, kangaroo, mountain lion, etc.

B.2.3.21 Other animal

Any type of small animal, such as dog, cat, squirrel, rabbit, bird, opossum, raccoon, etc.

B.2.3.22 Fixed object, building

Object is a building. (See also [B.2.3.22](#))

B.2.3.23 Fixed object, impact attenuator/crash cushion

Object is a device intended to attenuate an impact.

B.2.3.24 Fixed object, bridge structure

Object is a bridge (not overhead), or part of a bridge support system (e.g., abutment).

B.2.3.25 Fixed object, guardrail

Object is a guardrail.

B.2.3.26 Fixed object, concrete traffic barrier, or other longitudinal barrier

Object is a concrete or other longitudinal barrier or median (e.g., "Jersey Barrier").

B.2.3.27 Fixed object, post, pole, or support

Object is a post or pole designed to support a sign, light, etc.

B.2.3.28 Fixed object, culvert or ditch

Object is a culvert or ditch.

B.2.3.29 Fixed object, curb

Object is a curb.

B.2.3.30 Fixed object, embankment

Object is an embankment.

B.2.3.31 Fixed object, fence

Object is a fence.

B.2.3.32 Fixed object, wall

Object is a wall that is not part of a building.

B.2.3.33 Fixed object, fire hydrant

Object is a fire hydrant.

B.2.3.34 Fixed object, shrubbery or bush

Object is a shrubbery or bush.

B.2.3.35 Fixed object, tree (not overhead)

Object is a tree (not overhanging tree branch).

B.2.3.36 Fixed object, boulder

Object is a boulder.

B.2.3.37 Fixed object, loading dock

Object is a loading dock, and may be part of a building.

B.2.3.38 Fixed object, loading equipment

Object is stationary loading equipment (e.g., forklift).

B.2.3.39 Fixed object, cargo

Object is cargo that is waiting to be loaded.

B.2.3.40 Fixed object, other

Object is a fixed object not described in previous categories.

B.2.3.41 Overhanging object, tree branch

Object is an overhanging tree branch.

B.2.3.42 Overhanging object, overhanging part of sign or post

Object is an overhanging part of sign or a post.

B.2.3.43 Overhanging object, bridge/overpass

Object is an overhead bridge/overpass.

B.2.3.44 Overhanging object, building

Object is an overhanging component of a building.

B.2.3.45 Overhanging object, wires

Object is overhead telephone, electrical, or similar wires.

B.2.3.46 Overhanging object – other

Object is overhead, but of a type not described in previous categories.

B.2.3.47 Non-fixed object, vehicle parts, including tire parts

Object is vehicle parts, including tire parts.

B.2.3.48 Non-fixed object, spilled cargo

Object is spilled cargo.

B.2.3.49 Non-fixed object, dead animal

Object is a dead animal.

B.2.3.50 Non-fixed object, broken tree limbs or other tree/shrub parts

Object is broken tree limbs or other tree/shrub parts (not overhead or hanging).

B.2.3.51 Non-fixed object, trash/debris

Object is trash or debris.

B.2.3.52 Non-fixed object, construction barrel

Object is a construction barrel.

B.2.3.53 Non-fixed object, construction cone

Object is a construction cone.

B.2.3.54 Non-fixed object, other

Object is non-fixed but of a type not listed in previous categories.

B.2.3.55 Unknown

Cannot determine the conflict partner type due to limitations in video views, lighting, visual obstructions, or limited perspective.

B.2.4 Conflict type (applies to Trajectory and Proximity Conflicts)

Conflict Type identifies the type(s) of conflict(s) that develop between the conflict partners after the Precipitating Event. Unlike Conflict Nature, which describes the relationship between the conflict partners at the time of the Precipitating Event, Conflict Type refers to the resulting orientation of the conflict partners at time of impact for crashes or at the time of their closest proximity to each other for non-crash events. While the two variables overlap considerably, they are both important in order to fully characterize the conflict as it progresses. Unless the subject vehicle is specified, "vehicle" may refer to any vehicle involved in the event. Right and left designations are made using the subject vehicle driver's point of view.

B.2.4.1 Rear-end, subject behind

Front plane or either front corner of subject vehicle makes contact or is at risk of making contact with any portion of the rear plane or either rear corner of a lead vehicle or pedal cyclist.

B.2.4.2 Rear-end, subject in front

Rear plane or either rear corner of subject vehicle makes contact or is at risk of making contact with any portion of the front plane or either front corner of a following vehicle or pedal cyclist.

B.2.4.3 Side-to-side, same direction (right)

Right side plane of subject vehicle makes contact or is at risk of making contact with the left side plane of another vehicle or pedal cyclist.

B.2.4.4 Side-to-side, same direction (left)

Left side plane of subject vehicle makes contact or is at risk of making contact with the right side plane of another vehicle or pedal cyclist.

B.2.4.5 Side-to-side, opposite direction (right)

Right side plane of subject vehicle makes contact or is at risk of making contact with the right side plane of another vehicle or pedal cyclist.

B.2.4.6 Side-to-side, opposite direction (left)

Left side plane of subject vehicle makes contact or is at risk of making contact with the left side plane of another vehicle or pedal cyclist.

B.2.4.7 Head-on

Front plane or either front corner of subject vehicle makes contact or is at risk of making contact with the front plane or either front corner of another vehicle or pedal cyclist.

B.2.4.8 Side-to-front (right)

Right side plane of subject vehicle makes contact or is at risk of making contact with the front plane or either front corner of another vehicle or pedal cyclist.

B.2.4.9 Side-to-front (left)

Left side plane of subject vehicle makes contact or is at risk of making contact with the front plane or either front corner of another vehicle or pedal cyclist.

B.2.4.10 Front-to-side

Front plane or either front corner of subject vehicle makes contact or is at risk of making contact with either side plane of another vehicle or pedal cyclist.

B.2.4.11 Side-to-rear (right)

Right side plane of subject vehicle makes contact or is at risk of making contact with the rear plane or either rear corner of another vehicle or pedal cyclist.

B.2.4.12 Side-to-rear (left)

Left side plane of subject vehicle makes contact or is at risk of making contact with the rear plane or either rear corner of another vehicle or pedal cyclist.

B.2.4.13 Rear-to-side

Rear plane or either rear corner of subject vehicle makes contact or is at risk of making contact with either side plane of another vehicle or pedal cyclist.

B.2.4.14 Rear-to-rear

Rear plane or either rear corner of subject vehicle makes contact or is at risk of making contact with the rear plane or either rear corner of another vehicle or pedal cyclist.

B.2.4.15 Road departure (left)

Subject vehicle makes contact with or is at risk of making contact with a roadside barrier, curb or other objects intended to define the road edge on the left side of the road and that exceeds the ground clearance of the vehicle. (See also the modified definition of this category under the single-vehicle conflict classification.)

B.2.4.16 Road departure (right)

Subject vehicle makes contact with or is at risk of making contact with a roadside barrier, curb or other objects intended to define the road edge on the right side of the road and that exceeds the ground clearance of the vehicle. (See also the modified definition of this category under the single-vehicle conflict classification.)

B.2.4.17 Road departure (end)

Subject vehicle makes contact with or is at risk of making contact with a roadside barrier, curb, or other object intended to define the end of a roadway and that exceeds the ground clearance of the vehicle. This includes, but is not limited to, the end of the road at T-intersections, dead-ends, or the end of a parking space. (See also a modified definition of this category under the single-vehicle conflict classification.)

B.2.4.18 Backing into object

Subject vehicle backs into or nearly backs into an object.

B.2.4.19 Backing into traffic

A vehicle backs into or within the trafficway into the travel path of another vehicle or road user.

B.2.4.20 Other vehicle-related

Subject vehicle makes contact with or is at risk of making contact with a motorized vehicle in a manner that is not covered by any previous category.

B.2.4.21 Other pedestrian-related

Subject vehicle makes contact with or is at risk of making contact with a pedestrian in a manner that is not covered by any previous category.

B.2.4.22 Other pedal cyclist-related

Subject vehicle makes contact with or is at risk of making contact with a pedal cyclist in a manner that is not covered by any previous category.

B.2.4.23 Non-motorist-related

Subject vehicle makes contact with or nearly makes contact with a non-motorist or non-motorized conveyance.

B.2.4.24 Animal-related

Subject vehicle makes contact with or nearly makes contact with any type of live animal.

B.2.4.25 Other

Interaction with any conflict partner not described in the other categories.

B.2.4.26 Unknown

Cannot determine the full conflict type due to limitations in video views, lighting, visual obstructions, or limited perspective.

B.3 Single-vehicle conflict

A single-vehicle conflict involves only the subject vehicle and involves a loss of control of the subject vehicle and/or the subject vehicle on a path toward the road edge such that a road departure is imminent or resulting and an evasive manoeuvre is required by that vehicle to regain control and/or to avoid a road departure. The road edge is defined as the edge of the shoulder (if present) or a physical raised curb or median on the left or right side of the trafficway, including low barriers such as curbs and curb-style medians that are within the ground clearance of the vehicle. Loss of control includes at least one of the following: a single-vehicle rollover crash (on or off the trafficway), an observable uncontrolled horizontal vehicle rotation (on or off the trafficway), or an observable loss of longitudinal traction.

If another conflict partner is involved (another vehicle, pedestrian, pedal cyclist, animal, object, or roadside barrier that exceeds the ground clearance of the vehicle), see [B.2](#).

B.3.1 Single-vehicle conflict severity

Single-vehicle conflicts can result in one of seven severity levels.

- 1) Level 1 Single-Vehicle Crash
- 2) Level 2 Single-Vehicle Crash
- 3) Level 3 Single-Vehicle Conflict
- 4) Level 4 Single-Vehicle Conflict
- 5) Level 5 Single-Vehicle Conflict
- 6) Level 6 Single-Vehicle Conflict
- 7) Single-Vehicle Unintentional Lane Deviation

B.3.1.1 Level 1 single-vehicle crash, most severe

A Level 1 single-vehicle crash results in at least one of the following outcomes on or off the road:

- 1) airbag deployment (any airbag);
- 2) vehicle rollover (at least one quarter-roll);
- 3) likely or observed injury of the driver or any passenger. The injury is serious enough to require a doctor's visit, and includes self-reported injuries and those apparent from video.

B.3.1.2 Level 2 single-vehicle crash, moderate severity

A Level 2 single-vehicle crash does not meet the requirements for a Level 1 crash but that includes at least one of the following outcomes:

- 1) An uncontrolled horizontal vehicle rotation from the path of travel (on or off the road) of 90° or more.
- 2) All four tires leave the trafficway or strike a low barrier within the ground clearance of the vehicle (curb, median, or similar).

B.3.1.3 Level 3 single-vehicle conflict, minor severity

A Level 3 single-vehicle conflict does not meet the requirements of Level 1 or Level 2 conflict but that includes at least one of the following outcomes:

- 1) The vehicle departs the road or strikes a low barrier within the ground clearance of the vehicle (curb, median, or similar) while underway (speed ≥ 32 km/h (20 mi/h), and not turning or parking), and at least one tire departs the road or is struck.
- 2) The vehicle departs the road or strikes a low barrier within the ground clearance of the vehicle (curb, median, or similar) as a result of an evasive manoeuvre performed in response to a previous conflict (e.g., steering off the road to avoid a stopped lead vehicle), and at least one tire leaves the road or is struck as a result.

B.3.1.4 Level 4 single-vehicle conflict, low severity

A Level 4 single-vehicle conflict does not meet the requirements of Level 1, 2, or 3, but does include at least one of the following outcomes:

- 1) At least one tire departs the trafficway or struck a curb, median, or similar low barrier within the ground clearance of the vehicle during a reduced-speed manoeuvre (e.g., turning, parking).

- 2) At least one tire departs the trafficway or struck a curb, median, or similar low barrier within the ground clearance of the vehicle at a speed of <32 km/h (20 mi/h).

B.3.1.5 Level 5 single-vehicle conflict, near-crash

A single-vehicle near-crash is any circumstance that requires an urgent evasive manoeuvre to avoid a road departure or recover from a loss of control.

A single-vehicle near-crash should meet the following four criteria:

- 1) No road departure, and loss of control, if any, is moderate. This includes near-road departures, but the subject vehicle does not depart the trafficway (no tires leave the trafficway or are struck). This also includes on-road loss-of-control scenarios resulting in at least 45° but less than 90° of uncontrolled horizontal rotation from the path of travel.
- 2) Not premeditated (i.e., not planned). The near-crash is not premeditated (planned). This criterion does not rule out near-crashes caused by unexpected events experienced during a premeditated manoeuvre (e.g., a premeditated departure off the trafficway onto a slippery grass area that results in the subject vehicle nearly sliding into a ditch).
- 3) Evasive manoeuvre required. An evasive manoeuvre to avoid a road departure or to regain vehicular control was required by the subject vehicle.
- 4) Urgent response required. An urgent response (i.e., evasive manoeuvre) is required to avoid a road departure or to regain vehicular control. In a single-vehicle near-crash, a response is urgent when the magnitude of the evasive manoeuvre required approaches the avoidance capacity of the responding subject vehicle.

B.3.1.6 Level 6 single-vehicle conflict, crash-relevant

A single-vehicle crash-relevant conflict is any circumstance that requires an evasive manoeuvre that is less urgent than a rapid evasive manoeuvre (as defined above for single-vehicle near-crash) but greater in urgency than a “normal manoeuvre” to avoid a road departure or regain vehicular control.

A single-vehicle crash-relevant conflict should meet the following four criteria:

- 1) No road departure with minimal, if any, loss of control. This includes potential road departure scenarios that are less severe than near-road departures. This also includes minor on-road loss-of-control scenarios resulting in observable uncontrolled horizontal rotation less than 45° from the path of travel and/or observable uncontrolled loss of longitudinal traction.
- 2) Not premeditated (i.e., not planned). The single-vehicle conflict is not premeditated (planned). This criterion does not rule out crash-relevant conflicts caused by unexpected events experienced during a premeditated manoeuvre (e.g., a premeditated departure off the trafficway onto a slippery grass area that results in the subject nearly sliding into a ditch).
- 3) Evasive manoeuvre required. An evasive manoeuvre to avoid a road departure or recover from a loss of control was required by the subject vehicle.
- 4) Urgent response NOT required. The response (i.e., evasive manoeuvre) required by the subject vehicle is not urgent, but the required response is still of a greater magnitude than a “normal” driving manoeuvre.

B.3.1.7 Single-vehicle unintentional lane deviation

A single-vehicle unintentional lane deviation is any circumstance requiring corrective action (usually steering) where the subject vehicle unintentionally drifts or crosses over a lane line (e.g., into the shoulder or adjacent or oncoming lane) but where no hazard is present or the hazard is never closer to the subject vehicle than one standard lane width.

Hazards include, but are not limited to, trafficway edges, guardrails, and other road users. Hazards do not include rumble strips. If a hazard is present and is closer to the subject vehicle than one lane width or the vehicle leaves the road, the event should be classified as a crash-relevant conflict, near-crash, or crash and may be either a trajectory conflict or a single-vehicle conflict depending on the nature of the hazard and the conflict outcome(s) (impact or urgency).

As with all other conflicts discussed in this document, the lane deviation should be unintended, which excludes any deviations performed with intent, such as to assist with curve negotiation, to maintain a safe distance from adjacent traffic, or to better utilize available space in low traffic situations.

B.3.2 Single-vehicle conflict type

B.3.2.1 Lane departure left

The subject vehicle is involved in a single-vehicle lane deviation whereby the vehicle crosses over the left lane line into an adjacent shoulder, adjacent same-direction lane, or adjacent opposite-direction lane. This does not include any loss of control or road departure.

B.3.2.2 Lane departure right

The subject vehicle is involved in a single-vehicle lane deviation whereby the vehicle crosses over the right lane line into an adjacent shoulder, adjacent same-direction lane, or adjacent opposite-direction lane. This does not include any loss of control or road departure.

B.3.2.3 Road departure left

The subject vehicle departs or is at risk of departing the trafficway (beyond the shoulder, raised curb, or median) to the left or strikes a low raised roadside barrier within the ground clearance of the vehicle on the left side of the road.

B.3.2.4 Road departure right

The subject vehicle departs or is at risk of departing the trafficway (beyond the shoulder, raised curb, or median) to the right or strikes a low raised roadside barrier within the ground clearance of the vehicle on the right side of the road.

B.3.2.5 Road departure end

The subject vehicle departs or is at risk of departing the trafficway (beyond the shoulder, raised curb, or median) at the end of a trafficway or strikes a low raised roadside barrier within the ground clearance of the vehicle at the end of a trafficway.

B.3.2.6 Other single vehicle conflict

The subject vehicle has some other type of single-vehicle conflict that is not included in previous categories. This includes an observable loss of control that does not result in a road departure.

B.4 Proximity conflict

Proximity conflicts involve at least two conflict partners that are not on a crash course and require no evasive manoeuvre to avoid a crash (assuming kinematics remain unchanged), but nevertheless result in a small spatial and temporal kinematic proximity to one another that is inappropriate for the driving circumstance (including considerations such as conflict partners' speed, sight distance, weather, etc.). See [Annex A](#) for further discussion of proximity conflicts. The Proximity Conflict classification uses the same coding as trajectory conflicts with regard to Conflict Nature, Conflict Partner, and Conflict Type.

Annex C (informative)

Additional Conflict Attributes

A number of other variables are needed to describe a conflict and can be applied to all conflict classes that are described in this clause.

C.1 Conflict configuration

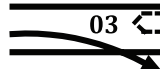
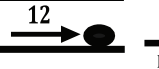
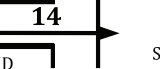
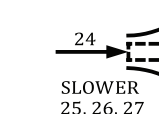
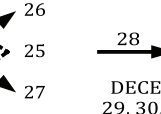
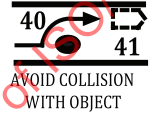
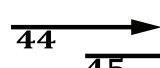
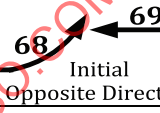
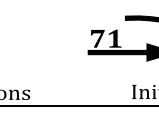
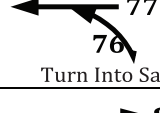
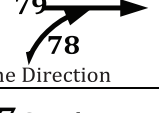
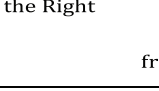
To further describe each conflict, a numerical designation is assigned to each conflict partner at the time of their first involvement in the sequence of events. Configurations are depicted in [Figure C.1](#) below [adapted from the Accident Types chart in GES (2014)]. The first configuration assigned is always the subject vehicle (Vehicle 1), with additional configurations assigned in the order of their involvement in the conflict (Vehicle 2, 3, and so on).

EXAMPLE 1 If the subject vehicle is involved in a conflict with a lead vehicle that is decelerating in the traffic lane due to traffic ahead, then Vehicle 1 Conflict Configuration would be 28, and Vehicle 2 Conflict Configuration would be 29. If, in addition, a second conflict occurs with the subject vehicle's following vehicle due to traffic deceleration, then Vehicle 3 Conflict Configuration would be 28, similar to the subject vehicle.

EXAMPLE 2 If the subject vehicle attempts to change lanes to the left, but comes into conflict with another vehicle that is already present in that target lane, then Vehicle 1 Conflict Configuration would be 47 and Vehicle 2 Conflict Configuration would be 45. If the subject vehicle brakes and aborts its lane change, and this causes an additional conflict with a following vehicle in the subject vehicle's lane, then Vehicle 3 Conflict Configuration would be 28.

The conflict configuration chart in [Figure C.1](#) assumes a right-hand traffic rule, but can be adapted for left-hand traffic rules by mirroring the diagrams (keeping the configuration values the same) for rows G through K. The type of traffic rule (left- or right-hand) should be part of the study's metadata and is not coded here.

Conflict Configuration values range from 00 to 99, and generally correspond to the assigned Conflict Nature. The Conflict Nature assigned in [Annex B](#) will direct the analyst to a corresponding row or rows in [Figure C.1](#) from which configuration values can be assigned to each vehicle. If an event includes multiple conflict types, only one configuration value is assigned to each vehicle that describes its relationship to its conflict partner at the time it entered into the conflict. Configuration values are assigned to vehicles, including motorcycles, mopeds, and pedal cyclists. Pedestrians, other non-motorists, animals, and objects do not get assigned configuration values.

Category	Configuration	CRASH TYPES (includes intent)				
I Single Driver	A Right Roadside Departure	 01 DRIVE OFF ROAD	 02 CONTROL/ TRACTION LOSS	 03 AVOID COLLISION WITH VEH., PED., ANIM.	04 SPECIFICS OTHER	05 SPECIFICS UNKNOWN
	B Left Roadside Departure	 06 DRIVE OFF ROAD	 07 CONTROL/ TRACTION LOSS	 08 AVOID COLLISION WITH VEH., PED., ANIM.	09 SPECIFICS OTHER	10 SPECIFICS UNKNOWN
	C Forward Impact	 11 PARKED VEH.	 12 STA.OBJECT	 13 PEDESTRIAN/ ANIMAL	 14 END DEPARTURE	15 SPECIFICS OTHER 16 SPECIFICS UNKNOWN
II Same Trafficway Same Direction	D Rear End	 20 STOPPED 21, 22, 23	 24 SLOWER 25, 26, 27	 28 DECEL. 29, 30, 31	(EACH - 32) SPECIFICS OTHER	(EACH - 33) SPECIFICS UNKNOWN
	E Forward Impact	 34 CONTROL/ TRACTION LOSS	 36 CONTROL/ TRACTION LOSS	 38 AVOID COLLISION WITH VEH.	 40 AVOID COLLISION WITH OBJECT	(EACH - 42) SPECIFICS OTHER (EACH - 43) SPECIFICS UNKNOWN
	F Angle, Sideswipe	 44 45	 46 47	(EACH - 48) SPECIFICS OTHER	(EACH - 49) SPECIFICS UNKNOWN	
III Same Trafficway Opposite Direction	G Head-On	 50 51	(EACH - 52) SPECIFICS OTHER	(EACH - 53) SPECIFICS UNKNOWN		
	H Forward Impact	 54 CONTROL/ TRACTION LOSS	 56 CONTROL/ TRACTION LOSS	 58 AVOID COLLISION WITH VEH.	 60 AVOID COLLISION WITH OBJECT	(EACH - 62) SPECIFICS OTHER
	I Angle, Sideswipe	 64 65 Lateral Moves	(EACH - 66) SPECIFICS OTHER	(EACH - 67) SPECIFICS UNKNOWN		
IV Change Trafficway Vehicle Turning	J Turn Across Path	 68 69 Initial Opposite Directions	 70 71 72 73 Initial Same Directions	(EACH - 74) SPECIFICS OTHER	(EACH - 75) SPECIFICS UNKNOWN	
	K Turn Into Path	 76 77 78 79 Turn Into Same Direction	 80 81 82 83 Turn Into Opposite Direction	(EACH - 84) SPECIFICS OTHER	(EACH - 85) SPECIFICS UNKNOWN	
V Intersect Paths	L Straight Paths	 86 87 Struck on the Right	 88 89 Struck on the left	(EACH - 90) SPECIFICS OTHER	(EACH - 91) SPECIFICS UNKNOWN	
VI Misc.	M Backing, Etc.	 92 93 Backing Vehicle or Object	98 Other Accident Type 99 Unknown Accident Type 00 No Impact			

NOTE From GES Variable PC23, from 2014 FARS/NASS GES Coding and Validation Manual 668.

Figure C.1 — Conflict configuration

C.2 Conflict partner location at time of precipitating event

For trajectory conflicts and proximity conflicts, the location of each conflict partner is assigned an alphabetic value between A and K (see Figure C.2 below) to represent the position of the conflict partner in relation to the subject vehicle at the time of the precipitating event.

For conflicts involving roadside barriers with no discrete location (including some trajectory conflicts, some proximity conflicts, and some single-vehicle conflicts), the location should be coded as “Curb, guardrail, or similar longitudinal barrier.” If no conflict partner is present, code Conflict Partner Location as “Not Applicable.”

NOTE The term “referenced time” in the below categories is interpreted as the time of the precipitating event for this variable (C.2), but at the impact time or time of closest proximity for variable C.3.

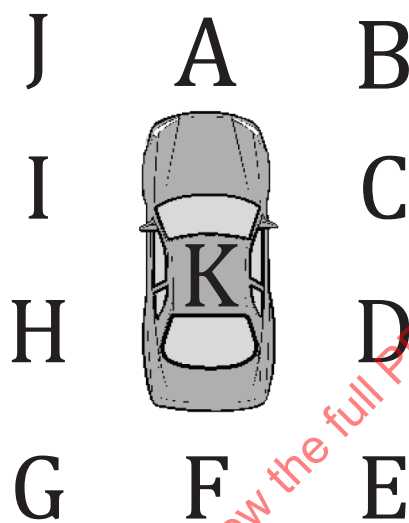


Figure 3 — Conflict partner location

C.2.1 A = In front of the subject vehicle

Conflict partner is directly in front of the subject vehicle, in the path of travel, at the referenced time.

C.2.2 B = In front and to the immediate right of the subject vehicle

Conflict partner is in front of the subject vehicle, but to the right (passenger side) of the subject vehicle's path of travel, at the referenced time.

C.2.3 C = On the right side of the subject vehicle, closer to the front seat of the vehicle

Conflict partner is on the right (passenger) side of the subject vehicle, closer to the front than the back of the subject vehicle at the referenced time.

C.2.4 D = On the right side of the subject vehicle, closer to the rear seat of the vehicle

Conflict partner is on the right (passenger) side of the subject vehicle, closer to the back than the front of the subject vehicle at the referenced time.

C.2.5 E = Behind and to the immediate right of the subject vehicle

Conflict partner is behind the subject vehicle, but to the right (passenger side) of the path of travel at the referenced time.

C.2.6 F = Behind the subject vehicle

Conflict partner is directly behind the subject vehicle at the referenced time.

C.2.7 G = Behind and to the immediate left of the subject vehicle

Conflict partner is behind the subject vehicle, but to the left (driver side) of the path of travel at the referenced time.

C.2.8 H = On the left side of the subject vehicle, closer to the rear seat of the vehicle

Conflict partner is on the left (driver) side of the subject vehicle, closer to the back than the front of the subject vehicle at the referenced time.

C.2.9 I = On the left side of the subject vehicle, closer to the front seat of the vehicle

Conflict partner is on the left (driver) side of the subject vehicle, closer to the front than the back of the subject vehicle at the referenced time.

C.2.10 J = In front and to the immediate left of the subject vehicle

Conflict partner is in the front of the subject vehicle, but to the left (driver side) of the subject vehicle's path of travel at the referenced time.

C.2.11 K = On top of vehicle

Conflict partner is located above the subject vehicle at the referenced time (e.g., overhanging tree branches, low bridge).

C.2.12 Curb, guardrail, or similar longitudinal barrier

Conflict partner or roadside barrier is a curb, guardrail, or similar longitudinal barrier that does not have a discrete location.

C.2.13 Unknown

Cannot determine the conflict partner position due to limitations in video views, lighting, visual obstructions, or limited perspective.

C.2.14 Not applicable

There is no conflict partner or low roadside barrier involved, thus no location to categorize. This includes single-vehicle road departures with no curb present.

C.3 Conflict partner location at time of impact

For trajectory conflicts and proximity conflicts, the location of each conflict partner is assigned an alphabetic value between A and K to represent the position of the conflict partner in relation to the subject vehicle at the time of impact (for crashes) or nearest proximity (for non-crash events). This variable uses the same coding scheme and categories as is used for the Conflict Location at the Time of Precipitating Event variable above.

C.4 Vehicle rollover

C.4.1 General

The vehicle rollover variables indicate which, if any, vehicles or pedaled cycles rolled over (at least one quarter-turn for four-wheeled vehicles) or capsized (for two-wheeled vehicles and pedaled cycles) as a result of the SCE.

C.4.2 No rollover occurred

The subject vehicle and all other vehicles and pedaled cycles remained upright throughout the SCE.

C.4.3 Subject vehicle rolled only

The subject vehicle rolled at least one quarter-roll as a result of the SCE, but all other vehicles and pedaled cycles remained upright.

C.4.4 Subject vehicle rolled, other unknown

The subject vehicle rolled at least one quarter-roll as a result of the SCE, but it cannot be determined whether any other vehicle or pedaled cycle rolled or capsized.

C.4.5 Other vehicle rolled only

The subject vehicle remained upright, but at least one other vehicle rolled at least one quarter-roll or capsized as a result of the SCE.

C.4.6 Both subject vehicle and other vehicle rolled

Both the subject vehicle and at least one other vehicle rolled at least one quarter-roll or capsized as a result of the SCE.

C.5 Subject vehicle loss of control

The subject vehicle loss of control variable indicates whether the subject vehicle lost vehicular control as a contributing factor to the SCE. It also indicates the type of control that was lost. This variable is coded only for the subject vehicle because information about other conflict partners' level of control is often unknown.

C.5.1 Control maintained

The subject vehicle did not experience any loss of control in any direction.

C.5.2 Loss of longitudinal control

The subject vehicle experienced a loss of longitudinal traction, resulting in uncontrolled skidding or sliding in the direction of travel, but no rotation.

C.5.3 Loss of lateral control

The subject vehicle experienced a loss of lateral traction, resulting in uncontrolled sideways skidding or sliding to the left or right of the direction of travel, but no rotation.

C.5.4 Loss of both longitudinal and lateral control

The subject vehicle experienced a loss of both lateral and longitudinal traction, resulting in uncontrolled skidding or sliding to the left or right of the direction of travel as well as in the direction of travel, but no rotation.

C.5.5 Loss of rotational control

The subject vehicle experienced a loss of rotational control, resulting in uncontrolled horizontal rotation or spinning.

C.5.6 Loss of control unknown

It cannot be determined whether the subject vehicle lost control due to limitations in available data.

C.6 Subject vehicle airbag deployment

The subject vehicle airbag deployment variable indicates whether any airbag was deployed in the subject vehicle as a result of the SCE. This variable is coded only for the subject vehicle because information about other conflict partners' airbag deployment status is often unknown.

C.6.1 No airbag deployment

No airbags were deployed in the subject vehicle as a result of the SCE.

C.6.2 Airbag deployed

At least one airbag in the subject vehicle deployed anywhere in the vehicle as a result of the SCE.

C.6.3 Airbag deployment unknown

It cannot be determined whether any airbags were deployed in the subject vehicle due to limitations in available data.

C.7 Precipitating Event

The Precipitating Event is the action or condition that began the event sequence in question. It specifies the environmental state or action by a conflict partner that was critical to the subject vehicle becoming involved in the conflict. It does not consider factors such as driver distraction or impairment, but instead indicates the vehicle action (whether of the subject vehicle or another conflict partner) or external condition that initiated the conflict sequence.

Precipitating Event is defined independently of any perception of conflict fault. For example, Vehicle 1 is exceeding the speed limit when Vehicle 2 crosses Vehicle 1's path, causing a crash. The Precipitating Event in this case would be Vehicle 2 crossing Vehicle 1's path (rather than Vehicle 1 speeding). If two possible Precipitating Events occur simultaneously, the condition that imparted the greatest effect on the conflict is coded. If more than one sequential action or condition contributed to the initiation of the conflict, then determination of which is the Precipitating Event depends upon whether the driver had enough time or vehicular control to avoid the latter event. If the driver evades one scenario and immediately encounters another potentially harmful event (with no time or ability to avoid the latter), then the Precipitating Event is the first action or condition that was successfully avoided. If the driver had ample time or vehicular control to recover from the initial scenario prior to being presented with or getting involved in the latter event, then that latter event would be coded as the Precipitating Event.

The Precipitating Event represents the beginning of the event time window. This time window encompasses all aspects of the event from its beginning through its resolution, ending when all conflicts have been resolved, all evasive manoeuvres (if any) have been completed, and the criticality of the driving scenario has returned to pre-conflict levels.

The time of the Precipitating Event is the reference point for a number of other variables as described in this clause. As stated earlier in this document, the event may include multiple conflicts of different types and severity and involving different partners. However, the Precipitating Event variable, which defines the beginning of this event time window and the sequence of conflicts that it contains, is only coded once per SCE.

C.7.1 Subject vehicle lost control, blow-out or flat tire

Driver of subject vehicle loses some amount of vehicular control related to tire “air out.”

C.7.2 Subject vehicle lost control, stalled engine

Driver of subject vehicle loses some amount of vehicular control related to loss of engine power. The stalled engine precipitates the event, rather than have been ongoing for some time before the event.

C.7.3 Subject vehicle lost control, disabling vehicle failure

Driver of subject vehicle loses some amount of vehicular control related to a mechanical malfunction of a component (other than stalled engine), which prevents the vehicle from being drivable. This includes, but is not limited to, loss of a wheel, steering system failure, or suspension system failure.

C.7.4 Subject vehicle lost control, minor vehicle failure

Driver of subject vehicle loses some amount of vehicular control related to a mechanical abnormality (other than stalled engine), but vehicle is still drivable. This includes, but is not limited to, the vehicle's hood flying up and the vehicle overheating.

C.7.5 Subject vehicle lost control, poor road conditions

Driver of subject vehicle loses some amount of vehicular control related to localised poor environmental or structural conditions of the trafficway surface. The poor road conditions have caused a loss of control, and do not qualify as a Precipitating Event on their own. Condition should precipitate the event and not simply be present as an ongoing condition. This includes, but may not be limited to, large/deep puddle or pothole, isolated patch of ice, oil residue, and road contraction. This does not include a trafficway that is largely ice-covered or wet, which may be categorized instead as “Subject vehicle lost control, excessive speed.”

C.7.6 Subject vehicle lost control, excessive speed

Driver of subject vehicle loses some amount of vehicular control related to traveling too fast for the driving conditions. Driving conditions should take into account all of the following: traffic, trafficway design, surface condition, weather, and ambient lighting. The excessive speed has caused a loss of control, and does not qualify as a Precipitating Event on its own. Excessive speed is considered to be either more than 16 km/h (10 mi/h) above the posted speed limit or too fast for driving conditions if they warrant a lower speed.

C.7.7 Subject vehicle lost control, jack-knife

Driver of subject vehicle loses some amount of vehicular control related to a trailer or other articulated vehicle body part jack-knifing in relation to the driver cabin.

C.7.8 Subject vehicle lost control, cargo shift

Driver of subject vehicle loses some amount of vehicular control related to a shifting of cargo somewhere on or in the vehicle or trailer.

C.7.9 Subject vehicle lost control, other cause

Driver of subject vehicle loses some amount of vehicular control, and the loss of control was related to some recognized reason not described in previous categories. For example, the subject driver takes his or her foot off the brake pedal at a red light, does not realize it, and is therefore not in control of the vehicle.

C.7.10 Subject vehicle lost control, unknown cause

Driver of subject vehicle loses some amount of vehicular control, but the cause cannot be determined due to limitations in video views, lighting, visual obstructions, or limited perspective.

C.7.11 Subject vehicle over left edge of road

Subject vehicle departs the trafficway to the left, beyond the left side shoulder area or onto a median. The conflict occurs after the vehicle has left the shoulder area or entered a median to the left. This category applies only if the road departure is a direct factor in the event. For example, if the subject vehicle departs the road to the left in order to avoid hitting an animal, the precipitating event would be "Animal in trafficway."

C.7.12 Subject vehicle over right edge of road

Subject vehicle departs the trafficway to the right, beyond the right side shoulder area or onto a median. The conflict occurs after the vehicle has left the shoulder area or entered a median to the right. This category applies only if the road departure is a direct factor in the event. For example, if the subject vehicle departs the road to the right in order to avoid hitting an animal, the factor would be "Animal in trafficway."

C.7.13 Subject vehicle, end departure

Subject vehicle departs the end of a trafficway; for example, the subject vehicle runs off the road at a "T" intersection or at the end of a designated driving or parking area.

C.7.14 Subject vehicle over left lane line

Subject vehicle unintentionally departs its lane to the left and is entering or has entered an adjoining lane or shoulder. The conflict occurs before the vehicle leaves the trafficway (not past the shoulder area or onto the median); else, code as "Subject over left edge of road." This category applies only if the lane departure is a direct factor in the event. For example, if the subject vehicle drifts across a lane line, then an animal runs into its path, the correct category would be "Animal in trafficway." This category should be coded only if other related categories do not apply, including Subject lane change, left behind vehicle/left in front of vehicle/left, sideswipe threat/left, other.

C.7.15 Subject vehicle over right lane line

Subject vehicle unintentionally departs its lane to the right and is entering or has entered an adjoining lane or shoulder. The conflict occurs before the vehicle leaves the trafficway (not past the shoulder area or onto median); else code as "Subject vehicle over right edge of road." This category applies only if the lane departure is a direct factor in the event. For example, if the subject vehicle drifts across the lane line, then an animal runs into its path, the factor would be "Animal in trafficway." This category should be coded only if other related categories do not apply, including Subject lane change, right behind vehicle/right in front of vehicle/right, sideswipe threat/right, other.

C.7.16 Subject vehicle lane change, left behind vehicle

Subject vehicle initiates a lane change to the left and is entering or has entered an adjacent lane behind another vehicle traveling in the same direction in the destination lane, putting the subject vehicle into conflict with the rear portion of that lead vehicle.

C.7.17 Subject vehicle lane change, right behind vehicle

Subject vehicle initiates a lane change to the right and is entering or has entered an adjacent lane behind another vehicle traveling in the same direction in the destination lane, putting the subject vehicle into conflict with the rear portion of that lead vehicle.

C.7.18 Subject vehicle lane change, left in front of vehicle

Subject vehicle initiates a lane change to the left and is entering or has entered an adjacent lane in front of another vehicle traveling in the same direction in that destination lane, putting the subject vehicle into conflict with the front portion of that following vehicle.

C.7.19 Subject vehicle lane change, right in front of vehicle

Subject vehicle initiates a lane change to the right and is entering or has entered an adjacent lane in front of another vehicle traveling in the same direction in that destination lane, putting the subject vehicle into conflict with the front portion of that following vehicle.

C.7.20 Subject vehicle lane change, left sideswipe threat

Subject vehicle is traveling beside and in the same direction as another vehicle that is in an adjacent lane to the left. Subject vehicle initiates a lane change to the left, putting the left (driver) side of the subject vehicle into conflict with the right (passenger) side of the other vehicle.

C.7.21 Subject vehicle lane change, right sideswipe threat

Subject vehicle is traveling beside and in the same direction as another vehicle that is in an adjacent lane to the right. Subject vehicle initiates a lane change to the right, putting the right (passenger) side of the subject vehicle into conflict with the left (driver) side of the other vehicle.

C.7.22 Subject vehicle lane change, left, other

Subject vehicle is traveling in the same direction as another vehicle that is in an adjacent lane to the left. The subject vehicle initiates a lane change to the left, putting the subject vehicle into conflict with the adjacent vehicle in a manner not described in other categories.

C.7.23 Subject vehicle lane change, right, other

Subject vehicle is traveling in the same direction as another vehicle that is in an adjacent lane to the right. The subject vehicle initiates a lane change to the right, putting the subject vehicle into conflict with the adjacent vehicle in a manner not described in other categories.

C.7.24 Subject vehicle ahead, but decelerating

Subject vehicle is the lead vehicle and is decelerating while traveling in the same lane as, ahead of, and in same direction as another vehicle. The deceleration of the subject vehicle precipitates the event.

C.7.25 Subject vehicle ahead, but at a slower constant speed

Subject vehicle is the lead vehicle and is traveling at a lower constant speed than, in the same direction as, in front of, and in the same lane as another vehicle. The lower constant speed precipitates the event.

C.7.26 Subject vehicle ahead, stopped on roadway more than 2 seconds

Subject vehicle is the lead vehicle and is stopped in the same lane as, in front of, and in the same direction as another vehicle. This state of being stopped precipitates the event. The subject vehicle has been stopped on the roadway for more than 2 s at the time when the other vehicle begins to react to the event. The subject vehicle may be stopped in a traffic lane, parked, or disabled.

C.7.27 Subject vehicle ahead, slowed and stopped 2 seconds or less

Subject vehicle is the lead vehicle and is decelerating to a stop or has just stopped in the same lane as, in front of, and in the same direction as another vehicle. This state of stopping or being stopped precipitates the event. The subject vehicle has been stopped for 2 s or less at the time when the other

vehicle begins to react to the event. The subject vehicle is nearly or completely stopped, rather than in a longer process of decelerating (which should be coded as “Subject ahead, but decelerating”).

C.7.28 Subject vehicle in intersection, turning left

Subject vehicle attempts a left turn from its current path, and the act of performing this turn precipitates the event.

C.7.29 Subject vehicle in intersection, turning right

Subject vehicle attempts a right turn from its current path, and the act of performing this turn precipitates the event.

C.7.30 Subject vehicle in intersection, passing through

Subject vehicle is proceeding straight through an intersection without planning to turn, and the act of crossing through the intersection precipitates the event.

C.7.31 Subject vehicle in intersection, intended path unknown

Subject vehicle enters an intersection, but the subject vehicle's intended path through the intersection is unknown, and the act of being in the intersection precipitates the event.

C.7.32 Subject vehicle from driveway/parking lot, straight across path

Subject vehicle is entering another vehicle's path from a driveway or parking lot (a trafficway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal but may be controlled by a stop sign) and intends to continue in a straight path across to another driveway or trafficway. Subject crosses the other vehicle's intended travel path, thus precipitating the event.

C.7.33 Subject vehicle from driveway/parking lot, turning into opposite direction

Subject vehicle is entering another vehicle's path from a driveway or parking lot (a trafficway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal, but may be controlled by a stop sign) and intends to turn into the opposite travel direction of the other vehicle. Subject vehicle crosses the other vehicle's intended travel path, thus precipitating the event.

C.7.34 Subject vehicle from driveway/parking lot, turning into same direction

Subject vehicle is entering another vehicle's path from a driveway or parking lot (a trafficway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal but may be controlled by a stop sign) and intends to turn into the other vehicle's path in order to travel in the same direction. The subject vehicle enters the other vehicle's intended travel path, thus precipitating the event.

C.7.35 Subject vehicle from driveway/parking lot, intended path unknown

Subject vehicle is entering another vehicle's roadway from a driveway or parking lot (a roadway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal but may be controlled by a stop sign) and enters or crosses another vehicle's intended travel path, but details about the subject vehicle's intended path are unknown.

C.7.36 Subject vehicle making U-turn

Subject vehicle makes a U-turn, intending to proceed in the opposing lane of travel. Performing this U-turn precipitates the event.

C.7.37 Subject vehicle from parked position

Subject vehicle enters or crosses another vehicle's intended travel path while departing some type of parking space. The subject vehicle may be moving forward or in reverse. The parking space may be parallel, diagonal, or perpendicular to the other vehicle's travel path, and the parking space may be legal or illegal.

C.7.38 Subject vehicle backing, other than parking

Subject vehicle is in the process of backing up within or into another vehicle's travel lane or intended path of travel for purposes other than entering or exiting a parking space.

C.7.39 Subject vehicle traveling in opposite direction

Subject vehicle is in the other vehicle's travel lane and traveling head-on in the opposite direction of the other vehicle. The subject vehicle may have just crossed or be in the process of crossing the center line or otherwise manoeuvred into the oncoming path of the other vehicle.

C.7.40 Subject vehicle, other

The event was precipitated by some state or action on the part of the subject vehicle in a manner not described in other categories.

C.7.41 Other vehicle, pedal cyclist, or pedestrian lost control

Another vehicle, pedal cyclist, or pedestrian lost control and is traveling in an out-of-control or unpredictable manner that affects the subject vehicle's intended travel path. For example, a motorcycle or pedal cyclist in front of the subject vehicle experiences a slide-out, creating a conflict with the subject vehicle.

C.7.42 Other vehicle or pedal cyclist over left lane line

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle in a lane to the left of the subject vehicle. The other vehicle or pedal cyclist unintentionally departs its lane to the right, crossing over the subject vehicle's left lane line. This excludes intentional lane change manoeuvres, whether completed or aborted, which should be coded as the appropriate "Other vehicle lane change..." category. Lane lines are from the subject vehicle's point of view (left or right).

C.7.43 Other vehicle or pedal cyclist over right lane line

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle in a lane to the right of the subject vehicle. The other vehicle or pedal cyclist unintentionally departs its lane to the left, crossing over the subject vehicle's right lane line. This excludes intentional lane change manoeuvres, whether completed or aborted, which should be coded as the appropriate "Other vehicle lane change..." category. Lane lines are from the subject vehicle's point of view (left or right).

C.7.44 Other vehicle or pedal cyclist lane change, left in front of subject

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, ahead and in a lane to the left of the subject vehicle. The other vehicle or pedal cyclist initiates a lane change to its right, crossing the subject vehicle's left lane line, resulting in a conflict between the front of the subject vehicle and the rear of the other vehicle or pedal cyclist. Lane lines are from the subject vehicle's point of view (left or right).

C.7.45 Other vehicle or pedal cyclist lane change, right in front of subject

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, ahead and in a lane to the right of the subject vehicle. The other vehicle or pedal cyclist initiates a lane change to its left, crossing the subject vehicle's right lane line, resulting in a conflict between the front of the subject

vehicle and the rear of the other vehicle or pedal cyclist. Lane lines are from the subject vehicle's point of view (left or right).

C.7.46 Other vehicle or pedal cyclist lane change, left behind subject

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, behind and in a lane to the left of the subject vehicle. The other vehicle or pedal cyclist initiates a lane change to its right, crossing the subject vehicle's left lane line, resulting in a conflict between the rear of the subject vehicle and the front of the other vehicle or pedal cyclist. Lane lines are from the subject vehicle's point of view (left or right).

C.7.47 Other vehicle or pedal cyclist lane change, right behind subject

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, behind and in a lane to the right of the subject vehicle. The other vehicle or pedal cyclist initiates a lane change to its left, crossing the subject vehicle's right lane line, resulting in a conflict between the rear of the subject vehicle and the front of the other vehicle or pedal cyclist. Lane lines are from the subject vehicle's point of view (left or right).

C.7.48 Other vehicle or pedal cyclist lane change, left sideswipe threat

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, next to and in a lane to the left of the subject vehicle. The other vehicle or pedal cyclist initiates a lane change to its right, crossing over the subject vehicle's left lane line, resulting in a conflict between the left side of the subject vehicle and the right side of the other vehicle or pedal cyclist. Lane lines are from the subject vehicle's point of view (left or right).

C.7.49 Other vehicle or pedal cyclist lane change, right sideswipe threat

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, next to and in a lane to the right of the subject vehicle. The other vehicle or pedal cyclist initiates a lane change to its left, crossing over the subject vehicle's right lane line, resulting in a conflict between the right side of the subject vehicle and left side of the other vehicle or pedal cyclist. Lane lines are from the subject vehicle's point of view (left or right).

C.7.50 Other vehicle or pedal cyclist lane change, left, other

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, in a lane to the left of the subject vehicle, and initiates a lane change to its right, crossing over the subject vehicle's left lane line in a manner not described in other categories. Lane lines are from the subject vehicle's point of view (left or right).

C.7.51 Other vehicle or pedal cyclist lane change, right, other

Other vehicle or pedal cyclist is traveling in the same direction as the subject vehicle, in a lane to the right of the subject vehicle, and initiates a lane change to its left, crossing over the subject vehicle's right lane line in a manner not described in other categories. Lane lines are from the subject vehicle's point of view (left or right).

C.7.52 Other vehicle or pedal cyclist ahead, but decelerating

Another vehicle or pedal cyclist is the lead vehicle and is decelerating while traveling in the same lane as, ahead of, and in the same direction as the subject vehicle. The deceleration of the other vehicle or pedal cyclist precipitates the event. If both the lead vehicle or pedal cyclist and subject vehicle are initially decelerating at the same rate, the Precipitating Event would begin when the lead vehicle or pedal cyclist begins decelerating at a higher rate (thus decreasing the headway between the two vehicles).

C.7.53 Other vehicle or pedal cyclist ahead, but at a slower constant speed

Another vehicle or pedal cyclist is the lead vehicle/pedal cyclist and is traveling at a lower constant speed in the same direction as, in front of, and in the same lane as the subject vehicle. The lower constant speed precipitates the event.

C.7.54 Other vehicle or pedal cyclist ahead, stopped on trafficway more than 2 seconds

Another vehicle or pedal cyclist is ahead of the subject vehicle and is stopped in the same lane and traveling in the same direction. This state of being stopped precipitates the event. The other vehicle or pedal cyclist has been stopped for more than 2 s at the time when the subject driver begins to react. The other vehicle or pedal cyclist may be stopped in a traffic lane, parked, or disabled.

C.7.55 Other vehicle or pedal cyclist ahead, slowed and stopped 2 seconds or less

Another vehicle or pedal cyclist is ahead of the subject vehicle and is decelerating to a stop or has just stopped in the same lane and traveling in the same direction. This state of stopping or being stopped precipitates the event. The subject has been stopped for 2 s or less at the time when the subject driver begins to react to the event. The other vehicle or pedal cyclist is nearly or completely stopped, rather than in a longer process of decelerating (which should be coded as "Other vehicle or pedal cyclist ahead, but decelerating").

C.7.56 Other vehicle or pedal cyclist entering intersection, turning same direction

Other vehicle or pedal cyclist is turning left or right from its current path perpendicular to the subject vehicle's path with the intention of traveling in the same direction as the subject vehicle, crossing or entering the subject vehicle's path.

C.7.57 Other vehicle or pedal cyclist entering intersection, straight across path

Other vehicle or pedal cyclist is traveling straight through an intersection moving in a perpendicular direction to the subject vehicle's path, crossing over the subject vehicle's intended travel path.

C.7.58 Other vehicle or pedal cyclist entering intersection, turning onto opposite direction

Other vehicle or pedal cyclist is turning from its current path perpendicular to the subject vehicle's path with the intention of traveling in the opposite direction as the subject vehicle, crossing the subject vehicle's travel lane.

C.7.59 Other vehicle or pedal cyclist entering intersection, left turn across path

Other vehicle or pedal cyclist is on the same trafficway as the subject vehicle, traveling either in the same direction (in a right adjacent lane) or the opposite direction (in an oncoming lane). The other vehicle or pedal cyclist is turning left, crossing the path of the subject vehicle.

C.7.60 Other vehicle or pedal cyclist entering intersection, right turn across path

Other vehicle or pedal cyclist is on the same trafficway as the subject vehicle, traveling in the same direction in a left adjacent lane. The other vehicle or pedal cyclist is turning right, crossing the path of the subject vehicle.

C.7.61 Other vehicle or pedal cyclist entering intersection, intended path unknown

Other vehicle or pedal cyclist enters an intersection, crossing the subject vehicle's travel path, but the other vehicle's or pedal cyclist's travel direction or intended path cannot be determined.

C.7.62 Other vehicle or pedal cyclist from driveway/parking lot, straight across path

Other vehicle or pedal cyclist is entering the subject vehicle's path from a driveway or parking lot (a trafficway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal) and intends to continue straight across to another driveway, parking lot, or roadway. The other vehicle or pedal cyclist crosses the subject vehicle's travel path.

C.7.63 Other vehicle or pedal cyclist from driveway/parking lot, turning into opposite direction

Other vehicle or pedal cyclist is entering the subject vehicle's path from a driveway or parking lot (a trafficway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal) and intends to turn into the opposite travel direction of the subject vehicle. The other vehicle or pedal cyclist crosses the subject vehicle's travel path.

C.7.64 Other vehicle or pedal cyclist from driveway/parking lot, turning into same direction

Other vehicle or pedal cyclist is entering the subject vehicle's path from a driveway or parking lot (a trafficway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal), and intends to turn into the same travel direction as the subject vehicle. The other vehicle or pedal cyclist enters the subject vehicle's travel path.

C.7.65 Other vehicle or pedal cyclist from driveway/parking lot, intended path unknown

Other vehicle or pedal cyclist is entering the subject vehicle's roadway from a driveway or parking lot (a roadway providing access from some property adjacent to the trafficway that is not controlled by a traffic signal), entering or crossing the subject vehicle's travel path, but the other vehicle's travel direction or intended path cannot be determined.

C.7.66 Other vehicle or pedal cyclist making U-turn

Other vehicle or pedal cyclist makes a U-turn, intending to proceed in a direction opposite its original direction. The other vehicle or pedal cyclist may initially be a lead vehicle/pedal cyclist in front of the subject vehicle or may initially be traveling in the opposite or perpendicular direction of the subject vehicle when the U-Turn causes the other vehicle or pedal cyclist to be in the path of the subject vehicle.

C.7.67 Other vehicle from parked position

Other vehicle enters or crosses the subject vehicle's intended travel path while departing some type of parking space. The other vehicle may be moving forward or in reverse. The parking space may be parallel, diagonal, or perpendicular to the subject vehicle's travel path, and the parking space may be legal or illegal.

C.7.68 Other vehicle backing, other than parking

Other vehicle backs up within in or into the subject vehicle's travel lane or intended path of travel for purposes other than entering or exiting a parking space.

C.7.69 Other vehicle or pedal cyclist traveling in opposite direction

Other vehicle or pedal cyclist is in the subject vehicle's travel lane and traveling head-on in the opposite direction of the subject vehicle. The other vehicle or pedal cyclist may have just crossed or be in the process of crossing the center line or otherwise manoeuvred into the oncoming path of the subject vehicle.

C.7.70 Emergency vehicle approaching, giving way required

An in-service emergency service vehicle is approaching the path of either the subject vehicle or another motorist or non-motorist. Either this approach in itself or the act of giving the right-of-way precipitates the event.

C.7.71 Pedestrian near or approaching trafficway

A pedestrian is near or adjacent to the trafficway (e.g., on a sidewalk/path contiguous with a trafficway or on the shoulder), which precipitates the event. Pedestrian may be moving toward the trafficway, preparing to enter the trafficway, moving parallel to the trafficway, or standing still, but should not be in the trafficway. See also "Pedestrian entering/exiting vehicle" for a special case of a pedestrian near a trafficway.

C.7.72 Pedestrian entering/exiting vehicle

A pedestrian is entering or exiting a parked vehicle in or adjacent to the trafficway, and either the pedestrian or the vehicle (e.g., open door) is encroaching into the travel path of another vehicle.

C.7.73 Pedestrian entering roadway in location that is not a marked pedestrian crossing, left

A pedestrian is entering the roadway, in front of the subject vehicle from the left side of the road, where there are no pedestrian crossing markings or signs (i.e., no zebra crossings).

C.7.74 Pedestrian entering roadway in location that is not a marked pedestrian crossing, right

A pedestrian is entering the roadway, in front of the subject vehicle from the right side of the road, where there are no pedestrian crossing markings or signs (i.e., no zebra crossings).

C.7.75 Pedestrian entering roadway in location marked as pedestrian crossing, left

A pedestrian is entering the roadway, in front of the subject vehicle from the left side of the road where there is a pedestrian crossing (markings or signs; for example, a zebra crossing).

C.7.76 Pedestrian entering roadway in location marked as pedestrian crossing, right

A pedestrian is entering the roadway, in front of the subject vehicle from the right side of the road, where there is a pedestrian crossing (markings or signs; for example, a zebra crossing).

C.7.77 Pedestrian, other

The presence of a pedestrian precipitates the event in a manner not described in previous categories. See also "Pedestrian entering/exiting vehicle" for a special case of a pedestrian in a trafficway not covered by any previous category.

C.7.78 Pedestrian, unknown location

The presence or action of a pedestrian is a critical precipitating factor in the conflict, but the location and/or action of the pedestrian is unknown.

C.7.79 Pedal cyclist entering roadway in location that is marked as bicycle path, from the right

A pedal cyclist is entering the roadway, in front of the subject vehicle from the right side of the road, where there are cyclist crossing markings or signs (i.e., bicycle path).