

# CADaS Structure

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# Presentation Outline

## CADaS Structure

[https://road-safety.transport.ec.europa.eu/system/files/2021-07/cadas\\_glossary\\_v\\_3\\_8.pdf](https://road-safety.transport.ec.europa.eu/system/files/2021-07/cadas_glossary_v_3_8.pdf)

- Part A
  1. Introduction
  2. Accident-related variables
- Part B
  1. Road-related variables
  2. Traffic Unit-related variables
  3. Person-related variables

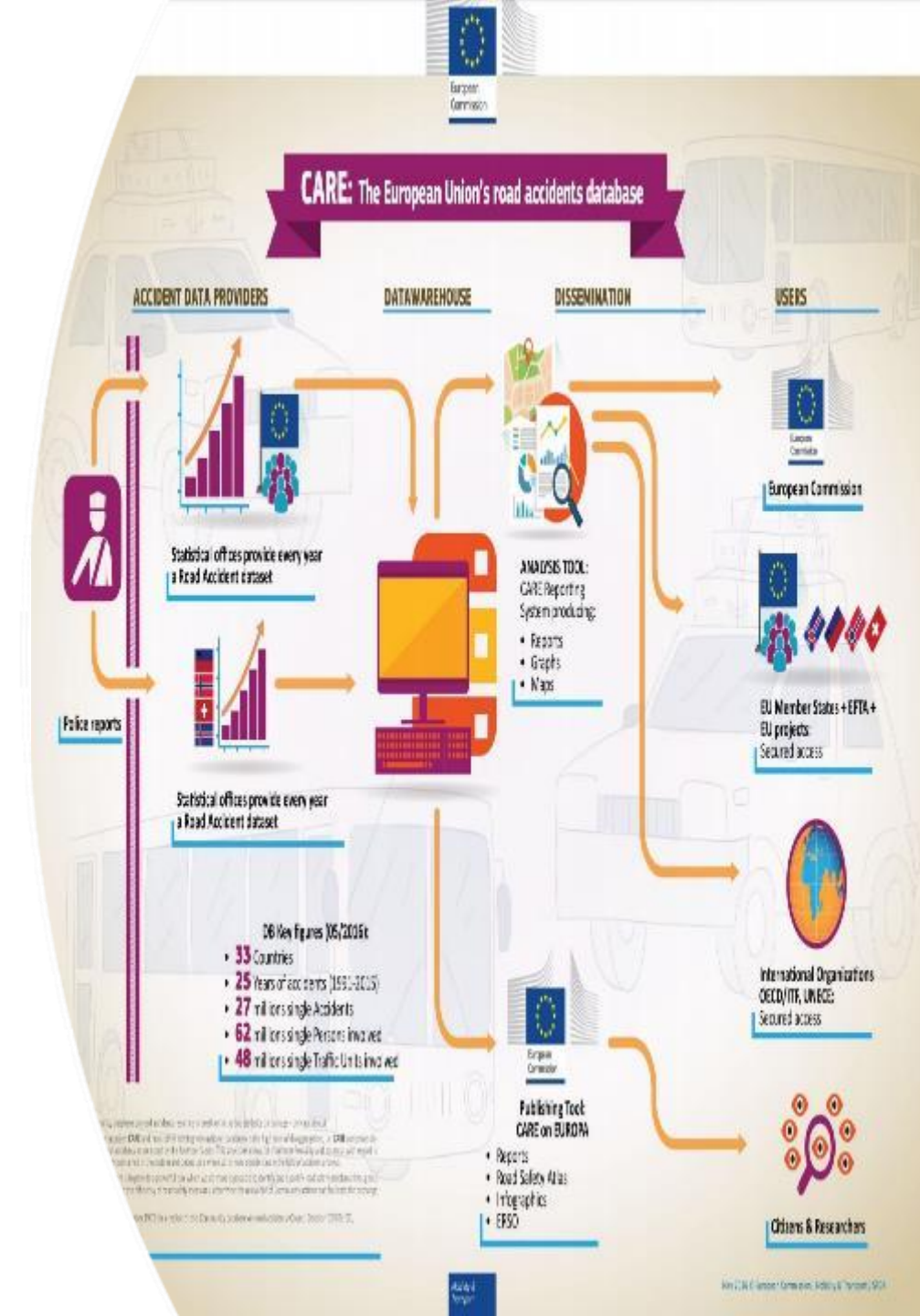


# Introduction



# EU CARE Database

- CARE – the **Community database on road accidents** (commonly referred as “crashes” resulting in death or injury)
- **Disaggregate** road crash data since 1991
- Parts of the national data sets are integrated into the CARE database in their **original national structure and definitions**
- For the remaining data, the EC provides and applies a **framework of transformation rules** to the national data sets, allowing CARE to have compatible data
- **Common Accident Data Set (CADaS)** has been developed consisting of a minimum set of standardised data elements



# Data availability in CARE database

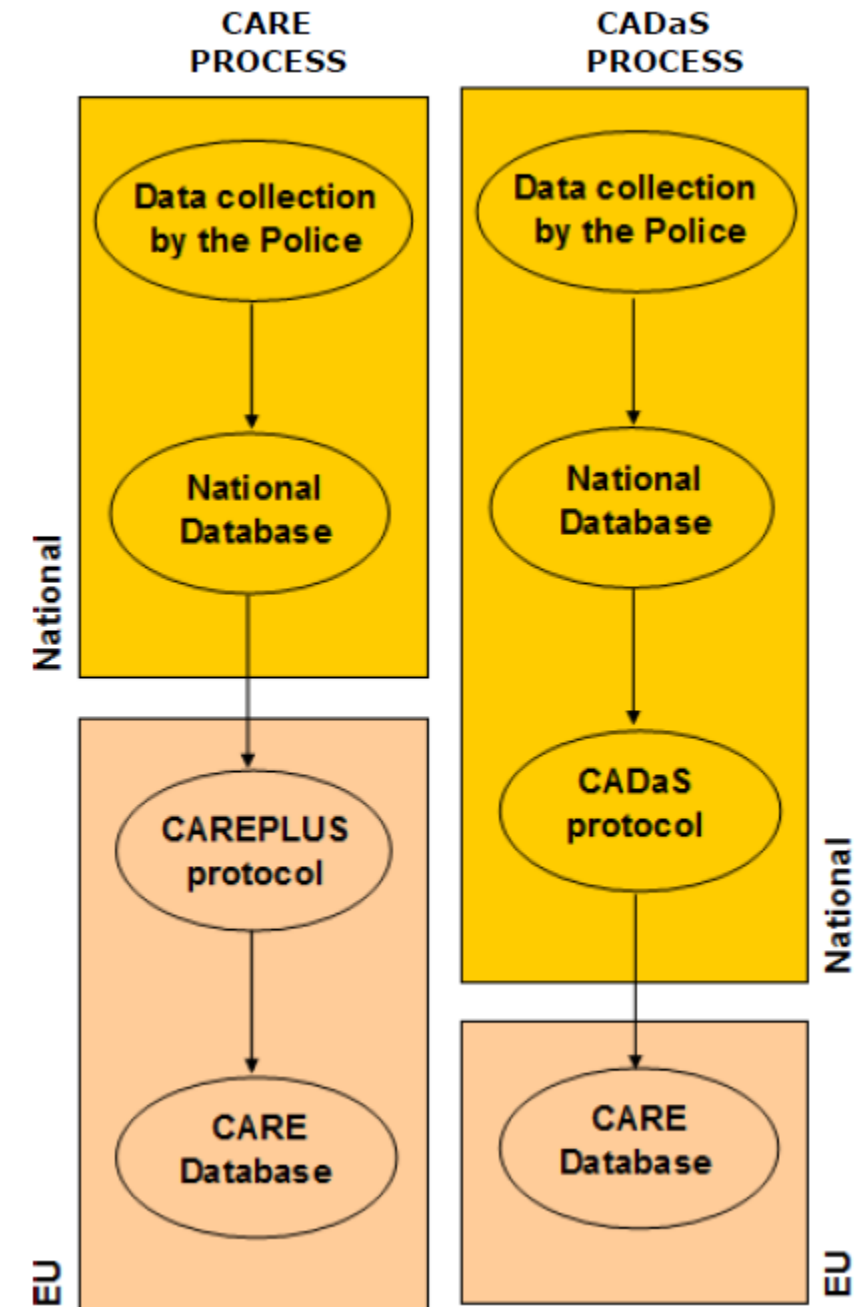
Data availability on country level

	Not yet processed/Not available						Loaded (Care format)						Loaded (CADaS format)						Only main figures available													
	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	CH	IS	NO	LI
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# Accident Data Transformation Process

- CARE and CADaS process the national road crash files
- The **compatibility** of the crash data among EU countries is ensured
- The main difference of the two approaches is related to the **degree of involvement of the country** in the process
- CADaS process allows for **more common variables and values** but also for higher quality



# Optional Adjustments of the National Systems (1/2)

- CADaS refers to the **set of data to be voluntarily transmitted by each country to the EC**, which should be derived from the national road crash data collection system.
- This means, that the EU countries will not be legally obliged to adopt CADaS and can **continue using their national systems** by collecting data in the way they find it more suitable (manually, electronically, links with other databases, etc.).
- Adjustments are implemented in order to transform data according to the CADaS protocol and provide to EU **more compatible data**
- Certain variables might need to be collected under a different structure to **meet local/regional/national needs**



# Optional Adjustments of the National Systems (2/2)

- EU countries are encouraged to **adopt as many as possible CADaS variables** and values
- CADaS is **structured in a simple way**, without levels of hierarchy, constituting in fact the record layout of the data set to be transferred to the EU
- CADaS may also be considered as **recommendation** for national police road crash data collection reports
- CADaS can be **further enhanced** (derived variables to be added) inside the CARE database allowing for a wide range of analysis reports



# Selection Criteria for CADas Variables and Values (1/2)

- Variables and values must be **useful for road crash analysis**.
- The **level of detail of the variables and values** corresponds to all data useful for macroscopic data analysis and not for detailed reconstruction of the scene of the crash, which is of local interest.
- Each country should have the possibility to choose **alternative level of detail** of the various values.
- Variables and values must be **comprehensive** and **concise**. Each variable must include description and scope, attribute values, their definitions and data format.



# Selection Criteria for CADaS Variables and Values (2/2)

- Data **impossible or very difficult to be collected** are not retained in the CADaS, independently of their value for road crash analysis.
- The **future perspective** of using certain variables and values was taken into account, even though those data are not currently collected by most of the countries due to current technical difficulties (i.e. latitude and longitude etc.).
- CADaS variables and values refer to **casualty road crashes**; material damage-only crashes are not considered. Not injured participants can optionally be recorded.

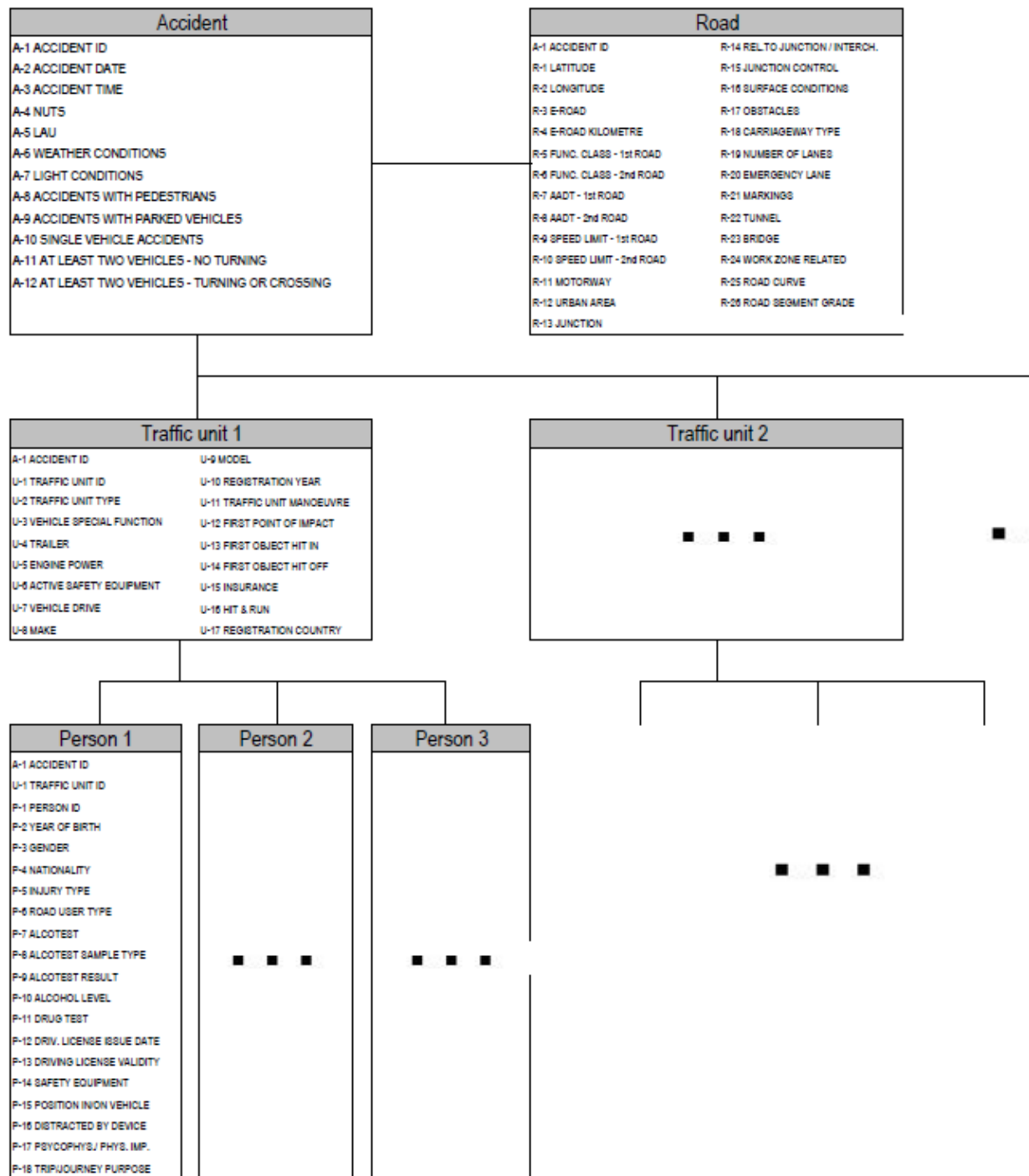


# Variable Categories

- The CADaS variables are divided into **4 basic categories**, identified by the unique letter (code) which refers to the beginning of the respective variable's name:
  - **A**, for **Accident** related variables
  - **R**, for **Road** related variables
  - **U**, for **Traffic Unit** (vehicle and pedestrian) related variables,
  - **P**, for **Person** related variables



# CADaS Structure



# Variable Components

- **Variable label**
  - Category identifier (A, R, U, P)
  - Numbering and Name
  - Variable importance for road safety analysis (H: high, L: low)
- **Variable definition and scope**
  - Variable definition
  - Brief description
  - Importance and usefulness (rational lying behind its selection)
- **List of values**



# Value Components

## Value labels

- Each value is further identified by the code of the variable, followed by a number which corresponds to each value and its name

## Value definitions

- Definition of each value is given, indicating also any particularities and any relevant assumptions regarding its collection process

## Data format

- The possibility to attribute one or more values to a variable
- The format of the value (code, number, text)



# Value Categories

- For several variables, two main distinct types of values are defined (according to the detail in which these data can be obtained):
  - **Detailed**: information at the highest level of detail.
  - **Alternative**: information of a more aggregate level of detail, when more detailed values are not available.
- Alternative values do not differ from detailed values apart from their level of detail. These values are **complementary** and can be used when more detailed data are not available



# Example of Alternative Values

Variable: **NATIONALITY**

Values:

**Detailed:**

P-5.XXX Nationality code (one code per country)

**Alternative:**

P-5.951 National

P-5.952 Foreigner, within the EU

P-5.953 Foreigner, outside the EU

P-5.954 Foreigner, not specified

P-5.999 Unknown

- The detailed value indicates the person nationality at a disaggregate level (country code).
- If the person nationality is not available at this level of detail, one of the alternative (aggregate) values can be selected.



# Classification of Variables

- At a first stage, each country can adopt only a **subset of variables** of the CADaS.
- This selection can be based on the **importance** of the recommended variables.
- For that reason, all variables were separated into two broad categories, according to their importance for road crash analysis:
  - Variables of **high** importance (H)
  - Variables of **lower** importance (L)



# Summary of CADas Variables and Values

Category	Code	Number of Variables			Number of Values		
		High Importance	Lower Importance	Total	Detailed Values	Alternative Values	Total
Accident	A	7	6	13	91	13	104
Road	R	12	13	25	92	13	105
Traffic Unit	U	8	10	18	181	15	196
Person	P	13	8	21	92	10	102
Total		40	37	<b>77</b>	456	51	<b>507</b>



# Accident-related variables



# Part 1: Accident Information

a/a	Variable	Importance
A-1	Accident ID	(H)
A-2	Accident Date	(H)
A-3	Accident Time	(H)
A-4	NUTS	(H)
A-5	LAU	(L)
A-6	Weather Conditions	(H)
A-7	Light Conditions	(H)
A-8	Accidents with pedestrians	(L)
A-9	Accidents with parked vehicles	(L)
A-10	Single Vehicle Accidents	(L)
A-11	At least two vehicles - no turning	(L)
A-12	At least two vehicles - turning or crossing	(L)
A-13	Hit & Run accident	(H - Optional variable)



# A-1 Accident ID (H)

## Variable definition and scope

- The accident ID number allows the accident record to be cross-referenced to road, traffic unit and person records.
- It consists of three distinct fields.

## Values

- A-1a Country code
- A-1b Year
- A-1c Accident number

## Data format

Three codes are filled-in:

- the first two digit code indicates the country code,
- the next four digit code indicates the year and
- the last six digit code indicates the number of the accident

**Example:** ES 2007 012976

A1_ID	A2_DATE	A3_TIME	A4_NUTS	A5_LAU	A6_WEATHER	A7_LIGHT	A8_PEDESTRIAN	A9_PARKED	A10_SINGLE	A11_VEH_NO TURNING	A12_VEH_TURNING
XX2005000001	01022005	0423	LV006	0191	01	06	01	00	00	00	00
XX2005000002	01022005	0855	LV006	0195	01	01	00	00	05	00	00
XX2005000003	01022005	1530	LV006	0196	01	01	00	99	00	00	00
XX2005000004	01022005	1630	LV008	4280	01	05	00	00	00	06	00



# A-2 Accident Date (H)

## Variable definition and scope

- The date (day, month and year) when the crash occurred
- It allows for the identification of the timing of the crash
- It enables seasonal comparisons and time series analyses

## Values

- A-2 Accident date (day, month, year)
- A-2.91XXXXXX Monday (month known or unknown)
- A-2.92XXXXXX Tuesday (month known or unknown)
- A-2.93XXXXXX Wednesday (month known or unknown)
- A-2.94XXXXXX Thursday (month known or unknown)
- A-2.95XXXXXX Friday (month known or unknown)
- A-2.96XXXXXX Saturday (month known or unknown)
- A-2.97XXXXXX Sunday (month known or unknown)
- A-2.99XXXXXX Unknown day, month and year known
- A-2.XX99XXXX Unknown month (day known/ unknown, year known)

## Data format

- An eight-digit number is filled-in, starting with the day and followed by the month and the year: ddmmyyyy.
- If a part of the accident date is unknown, the respective digits are filled in with:
  - 99 (for day and month) and
  - 9999 (for year).
- Any part of the date can be provided irrespectively whether the other parts are known or not.



# A-3 Accident Time (H)

## Variable definition and scope

- The time of the day, when the crash occurred.
- Time recorded is the local time of the crash location and is expressed in period of 60 minutes, using the 24-hour clock format (00.00-23:59).
- Midnight is defined as 00:00 and represents the beginning of a new day, not the end of the preceding day.
- It allows for analyses of different time periods within the same day.

## Values

A-3 Accident time

A-3.9999 Unknown

## Data format

- A four digit number is filled-in according to the following format: hhmm.
- The hour of the crash can be provided even if the minute is unknown.  
  
e.g. Accident time = 1099: indicates that the crash occurred between 10.00-11.00 and the exact minute is unknown.



# A-4 NUTS (Nomenclature of Territorial Units for Statistics) (H)

## Variable definition and scope

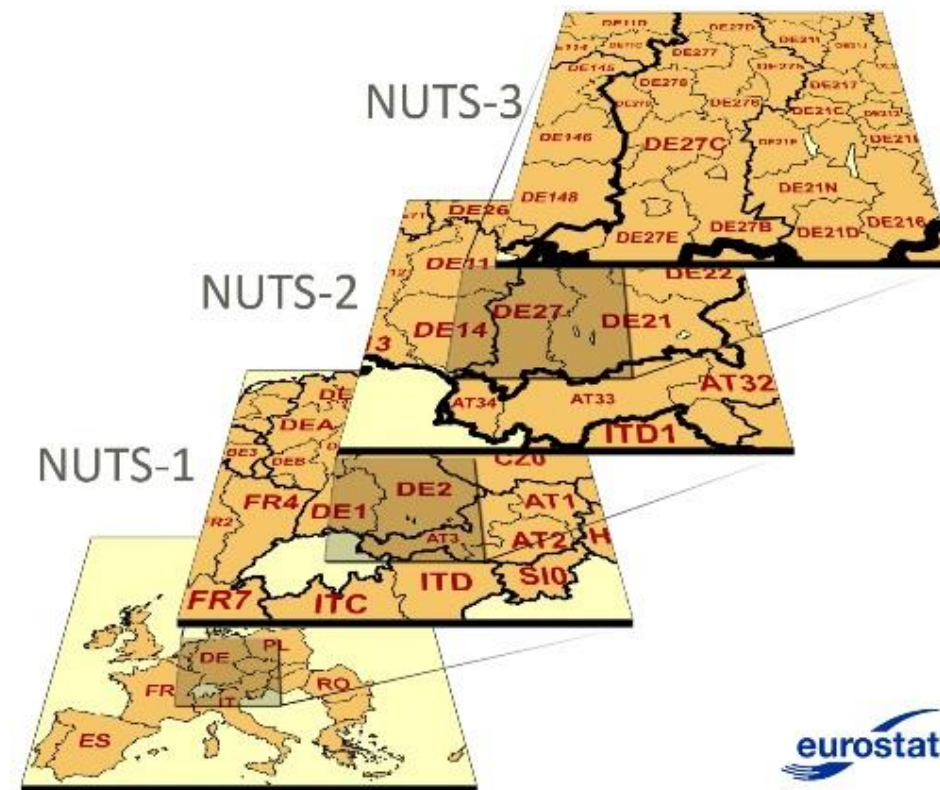
- The individual region according to the Eurostat NUTS 3 classifications.
- This allows for uniform and compatible statistics among the EU countries.
- If the country collects NUTS 2 and/or NUTS 1, this can also be provided through the alternative values.

## Values

- A-4            NUTS 3 code
- AA-4a        NUTS 2 code
- AA-4b        NUTS 1 code
- A-4.99999   Unknown

## Data format

- A five digit code is filled in for the most detailed NUTS level available, from the relevant Eurostat list.
- The code includes country code (e.g. GR for Greece) followed by one, two or three digits, for NUTS levels 1, 2 or 3 respectively.
- If the regions corresponding to a NUTS level are more than nine, the digit is replaced by a letter (after 9 follows A, B, C etc).



# A-6 Weather Conditions (H)

## Variable definition and scope

- This variable defines the atmospheric conditions at the crash location at the time of the crash
- It allows for the identification of the impact of weather conditions to road safety

## Values

- A-6.01 Dry / Clear
- A-6.02 Rain
- A-6.03 Snow
- A-6.04 Fog, Mist, Smoke
- A-6.05 Sleet, Hail
- A-6.06 Severe winds
- A-6.07 Other
- A-6.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in to indicate the weather conditions.



# A-7 Light Conditions (H)

## Variable definition and scope

- Defines the level of light at the crash location, at the time of the crash.
- Values related to natural lighting are included, indicating the level of light in each period of the day.
- Additionally values concerning artificial lighting, indicate the existence of light by street lights.
- Important element in analysis of spot location or in network analysis and for determining the effects of road illumination on night-time accidents to guide relevant future measures.

## Values

- A-7.01 Daylight
- A-7.02 Twilight
- A-7.03 Darkness street lights lit
- A-7.04 Darkness street lights unlit
- A-7.05 Darkness no street lights
- A-7.06 Darkness street lights unknown
- A-7.07 Darkness no street lights or street lights unlit
- A-7.99 Unknown

## Data format

A two digit number corresponding to one of the values is filled-in to indicate the light conditions.



# Accident Type (A-8 – A-13 variables)

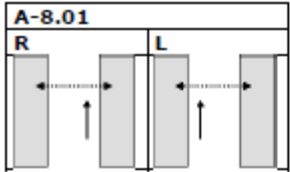
- These variables describe the **type of the accident** in terms of:
  - parties involved
  - type of collision
  - vehicle / pedestrian manoeuvre just before the accident
  - Hit & run accident
- Each variable describes a specific accident type
- **More than one type** can be applicable in the same accident (e.g. collision between two vehicles, one of which finally hits a pedestrian).
- For each of these accident types, only the **first event** should be recorded

## Data format

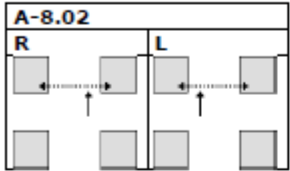
- A two digit number corresponding to one of the values is filled-in, indicating the type of the accident.
- The value 99 refers to the fact that details of the specific accident type are unknown but the type of the accident is known.
- The value 00 is used when no information at all is available on the accident type.



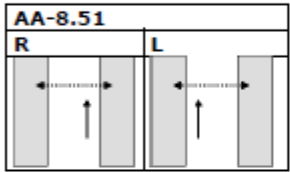
# A-8 Accidents with Pedestrians (L)



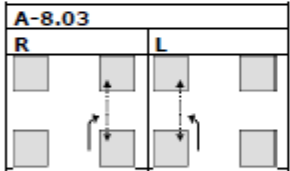
Pedestrian crossing street - no turning of vehicle - outside a junction



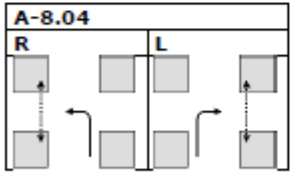
Pedestrian crossing street - no turning of vehicle - at a junction



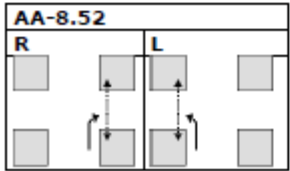
Pedestrian crossing street - no turning of vehicle - not specified



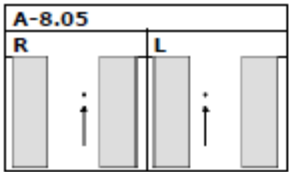
Pedestrians crossing - turning of vehicle turning right (left)



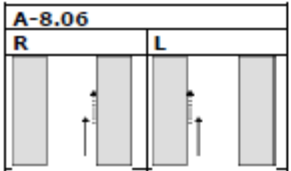
Pedestrians crossing - turning of vehicle turning left (right)



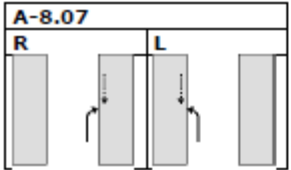
Pedestrians crossing - turning of vehicle - not specified



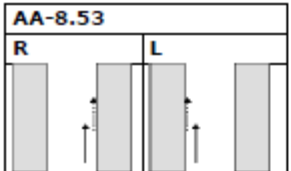
Pedestrian stationery in the road



Pedestrian walking along the road



Pedestrians on pavement or bicycle lane

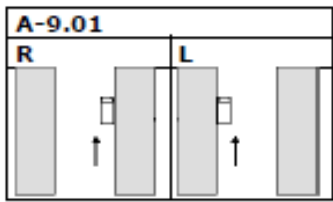


Pedestrian walking along the road or stationary in the road

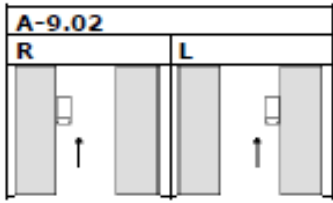


Pedestrian others

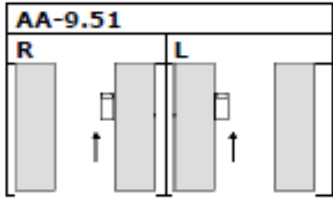
# A-9 Accidents with Parked Vehicles (L)



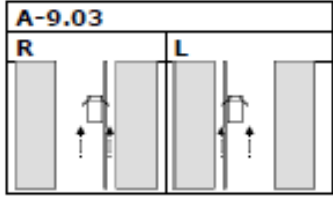
Hitting parked vehicles right (left) side of the road



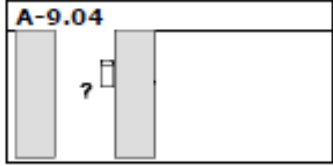
Hitting parked vehicles left (right) side of the road



Hitting parked vehicles either side of the road



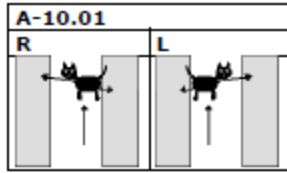
Accidents with parked vehicles - opening doors



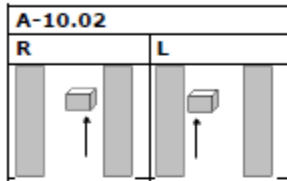
Other accidents with parked vehicles



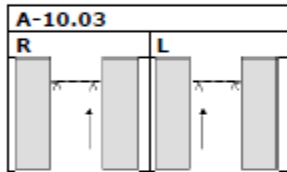
# A-10 Single Vehicle Accidents (L)



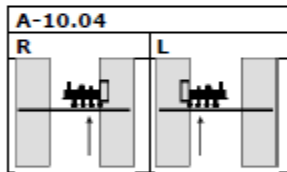
Single vehicle accidents with animals



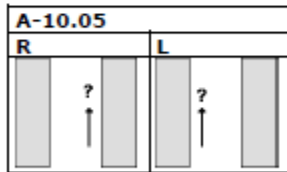
Single vehicle accidents with obstacles on or above the road



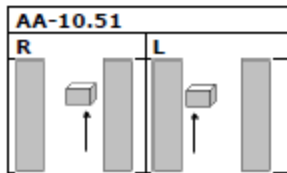
Single vehicle accidents with roadwork materials



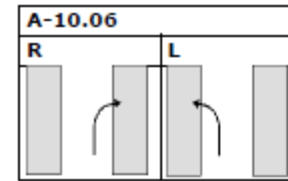
Accidents between train and vehicle



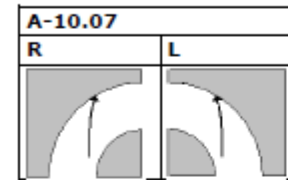
Single vehicle accidents with obstacles - others



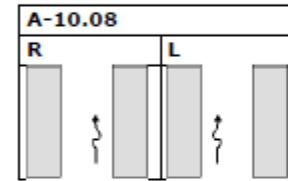
Single vehicle accidents with obstacles on the road - not specified



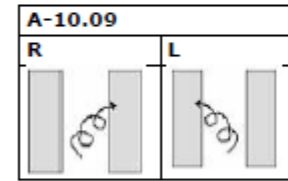
Single vehicle accident - Leaving straight road - either side of the road



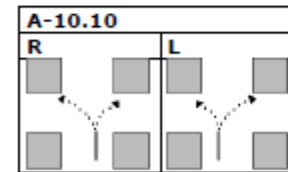
Single vehicle accidents in a bend - going either side of the road



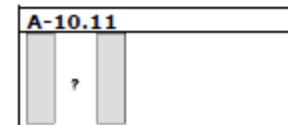
Single vehicle accidents on the road



Single vehicle accidents including rollover

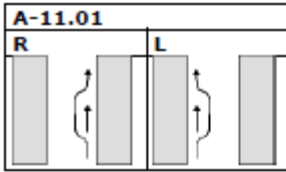


Single vehicle accidents in junctions or entrances

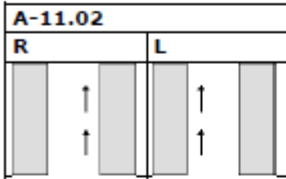


Single vehicle accidents without obstacles - others

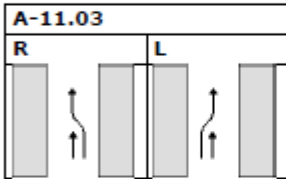
# A-11 At Least Two Vehicles - No Turning (L)



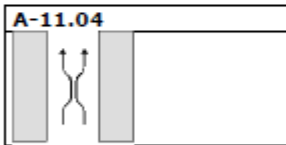
At least two vehicles - same direction - overtaking



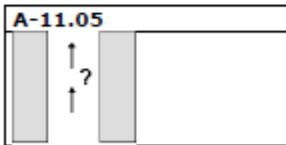
At least two vehicles - same direction - rear end collisions



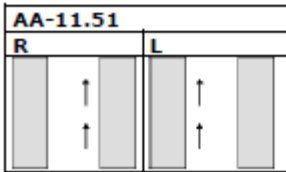
At least two vehicles - same direction - entering traffic



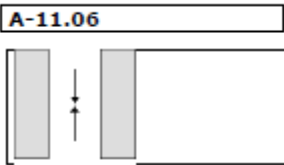
At least two vehicles - same direction - side collision



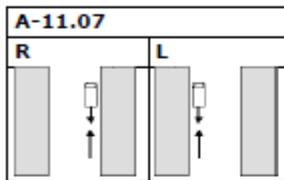
At least two vehicles - same direction - others



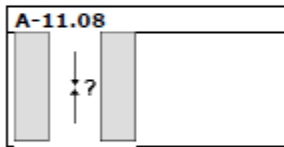
At least two vehicles - same direction no turning - not specified



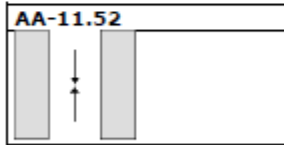
At least two vehicles - head on collision in general



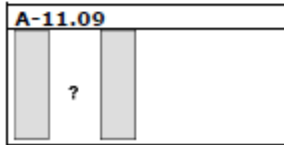
At least two vehicles - opposite direction no turning - reversing



At least two vehicles - opposite direction no turning - others

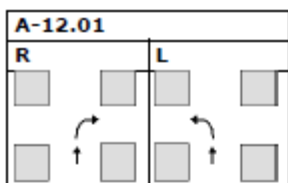


At least two vehicles - opposite direction no turning - not specified

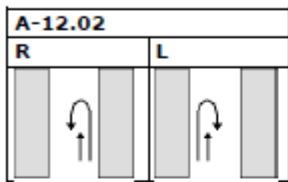


At least two vehicles - Others no turning

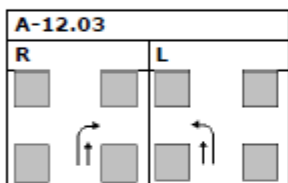
# A-12 At Least Two Vehicles – Turning or Crossing (L)



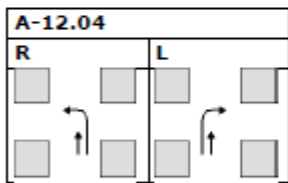
At least two vehicles - turning - same road - same direction - rear end collision



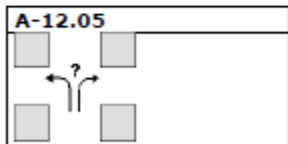
At least two vehicles - turning - same road - same direction - U-turn in front of other vehicle



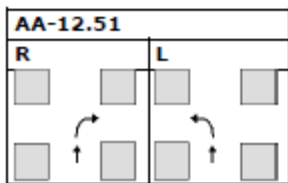
At least two vehicles - turning - same road - same direction - turning right (left)



At least two vehicles - turning - same road - same direction - turning left (right)



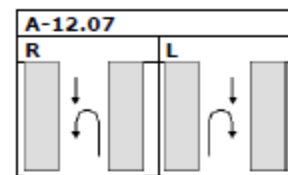
At least two vehicles - turning - same road - same direction - others



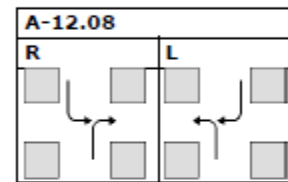
At least two vehicles - turning - same road - same direction - not specified



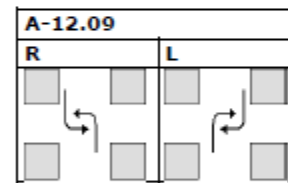
At least two vehicles - same road - opposite direction - turning left (right) in front of other vehicle



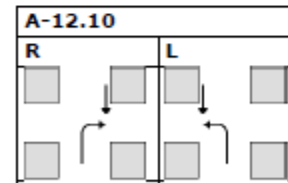
At least two vehicles - same road - opposite direction - U-turn in front of other vehicle



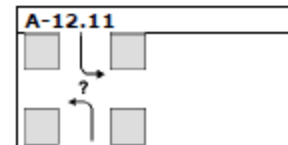
At least two vehicles - same road - opposite direction - turning into same road



At least two vehicles - same road - opposite direction - turning into opposite roads



At least two vehicles - same road - opposite direction - turning right (left) in front of other vehicle



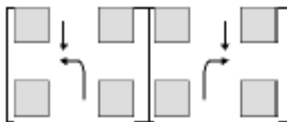
At least two vehicles - same road - opposite direction - turning others



# A-12 At Least Two Vehicles – Turning or Crossing (L)

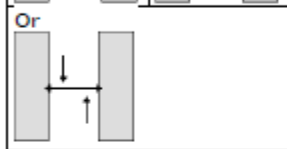
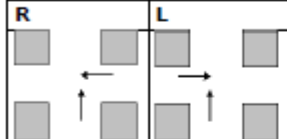
AA-12.52	
R	L

At least two vehicles - turning or crossing - same road  
- opposite direction - not specified



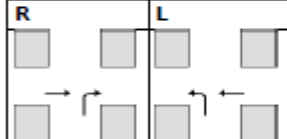
A-12.12	
R	L

At least two vehicles - crossing (no turning) - different roads



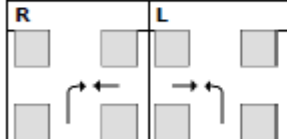
A-12.13	
R	L

At least two vehicles - different roads - turning right (left) in front of vehicle from the left (right)



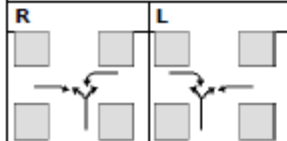
A-12.14	
R	L

At least two vehicles - different roads - turning right (left) - head on collision



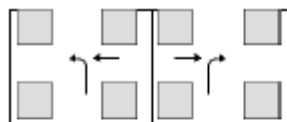
A-12.15	
R	L

At least two vehicles - different roads - both vehicles turning



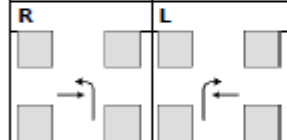
A-12.16	
R	L

At least two vehicles - different roads - turning left (right) into traffic from the right (left) side



A-12.17	
R	L

At least two vehicles - different roads - turning left (right) into traffic from the left (right) side



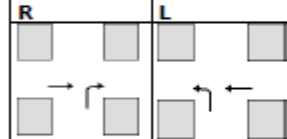
A-12.18	
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At least two vehicles - different roads - turning into traffic - others



AA-12.53	
R	L

At least two vehicles - turning - different roads - not specified



A-12.19	
---------	--

At least two vehicles - crossing or turning - others



# A-13 Hit & Run Accident (H - Optional variable)

## Variable definition and scope

- Indicates whether at least one vehicle left the crash scene right after the crash without being recorded by the police at the crash location.
- The variable is not applying to pedestrians leaving the crash scene.

## Values

- A-13.00 Not applicable
- A-13.01 Not Hit & Run  
*(all involved vehicles stopped at the scene)*
- A-13.02 Hit & Run  
*(at least one involved vehicle did not stop at the scene and was not recorded by the police)*
- A-13.99 Unknown

## Data format

- A two digit number corresponding to one of the values (1 or 2) is filled for each crash.



# Road-related variables



# Part 2: Road Information

a/a	Variable	Importance	a/a	Variable	Importance
R1	Accident location - Latitude	(H)	R15	Junction control	(L)
R2	Accident location - Longitude	(H)	R16	Surface conditions	(H)
R3	E-road	(L)	R17	Obstacles	(L)
R4	E-road kilometre	(L)	R18	Carriageway type	(H)
R5	Road functional class - First road	(H)	R19	Number of lanes	(H)
R6	Road functional class - Second road	(H)	R20	Emergency lane	(L)
R9	Speed limit - First road	(H)	R21	Markings	(L)
R10	Speed limit - Second road	(H)	R22	Tunnel	(L)
R11	Motorway	(H)	R23	Bridge	(L)
R12	Urban area	(H)	R24	Work zone related	(H)
R13	Junction	(H)	R25	Road curve	(L)
R14	Relation to junction / interchange	(L)	R26	Road segment grade	(L)



# Accident Location

## R-1 Accident Location - Latitude (H)

### Variable definition and scope

- It indicates the latitude of the exact geographical location of the road crash.
- The geographical coordinates (latitude and longitude) will allow for more accurate identification of the crash location.
- WGS84 is the system of reference to use. However, another system may be also used.

### Values

- R-1 Latitude
- R-1.99999999 Unknown

### Data format

- If system is WGS84, a seven digit number is filled in (+ or – sign followed by three digits and four decimals).
- For other systems, size of each coordinate can be maximum 20 digits.

## R-2 Accident Location - Longitude (H)

### Variable definition and scope

- This variable indicates the longitude of the exact geographical location of the road crash.

### Values

- R-2 Longitude
- R-2.99999999 Unknown

A1_ID	R1_LATITUDE	R2_LONGITUDE	R3_E-ROAD	R3_E-ROAD KILOMETER	R5 ROAD FUNCTIONAL CLASS FIRST ROAD	R6 ROAD FUNCTIONAL CLASS SECOND ROAD	R9_SPEED LIMIT-FIRST ROAD	R10_SPEED LIMIT-SECOND ROAD	R11_MOTORWAY	R12_URBAN_AREA	R13_ACCIDENT_AT JUNCTION	R14_REL_TO_JUNCTION_INTERCHANGE	R15_JUNCTION_CONTROL	R16_SURFACE_CONDITION	R17_OBSTACLE	R18_CARRIAGEWAY_TYPE	R19_NUMBER OF LINE	R20_EMERGENCY_LANE	R21_ROAD_MARKINGS	R22_TUNNEL	R23_BRIDGE	R24_WORK_ZONE_RELATED	R25_ROAD_CURVE	R26_ROAD_SEGMENT_GRADE
XX2005000001	9999999	9999999	0000	0000	00	00	000	000	00	01	00	00	00	04	99	99	99	99	99	02	99	99	99	99
XX2005000002	9999999	9999999	0000	0000	00	00	000	000	00	01	00	00	00	04	01	99	99	99	99	02	99	99	99	99
XX2005000003	9999999	9999999	0000	0000	00	00	000	000	00	01	00	00	00	04	02	99	99	99	99	02	99	99	99	99



# R-5 Road Functional Class - First Road (H)

## Variable definition and scope

- This variable describes the functional class of the road where the crash occurred.
- For crashes occurring at junctions the road with priority is indicated as first road (priority defined by traffic signs, traffic lights, policemen or any other type of junction control).

## Values

- R-5.01 Principal arterial
- R-5.02 Secondary arterial
- R-5.03 Collector
- R-5.04 Local
- R-5.05 Other
- R-5.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in to indicate the road functional class.



# R-5 Road Functional Class - Second Road (H)

## Variable definition and scope

- This variable describes the functional class of the second road at the location where the crash occurred.
- Applicable only for crashes occurring at junctions.
- The road without priority is indicated as second.

## Values

- R-6.00 Not applicable (*no secondary road*)
- R-6.01 Principal arterial
- R-6.02 Secondary arterial
- R-6.03 Collector
- R-6.04 Local
- R-6.05 Other
- R-6.99 Unknown

## Data format:

- A two digit number corresponding to one of the values is filled-in to indicate the road functional class.



# Road Functional Class

## Principal arterial

- Roads serving long distance and mainly interurban movements.
- Includes motorways and expressways.
- Principal arterials may cross through urban areas, serving suburban movements.
- The traffic is characterized by high speeds and full or partial access control (interchanges or junctions controlled by traffic lights).

## Secondary arterial

- Arterial roads connected to principal arterials through interchanges or traffic light controlled junctions
- Supporting and completing the urban arterial network
- Serving middle distance movements but not crossing through neighborhoods
- Full or partial access control is not mandatory

## Collector

- Collectors cross urban areas (neighborhoods)
- They collect or distribute the traffic from/to local roads
- Collectors also distribute traffic leading to secondary or principal arterials

## Local

- Roads used for direct access to the various land uses (private property, commercial areas etc.)
- Low service speeds not designed to serve interstate or suburban movements



# R-9 Speed Limit – First Road (H)

## Variable definition and scope

- The exact legal speed limit at the first road at the location of the crash is recorded for the respective road.
- Alternative values are also provided for countries collecting speed limit in groups.
- The measurement unit of the variable is kilometer per hour; hence, countries using non-metric systems should transform their data accordingly.

## Values

- R-9 Speed limit
- R-9.001 No speed limit
- R-9.999 Unknown
- RA-9.501 <30 km/h
- RA-9.502 30-50 km/h
- RA-9.503 51-80 km/h
- RA-9.504 81-100 km/h
- RA-9.505 101-120 km/h
- RA-9.506 >120 km/h

## Data format

- The speed limit, in kilometres per hour is filled-in, in a three digit number format.
- An alternative value indicating the speed limit group is selected, or the "Unknown" value is selected (999).



# R-10 Speed Limit - Second Road (H)

## Variable definition and scope

- The exact legal speed limit at the second road at the location of the crash is recorded for the respective road.

## Values

- R-10.000 Not applicable
- R-10 Speed limit
- R-10.001 No speed limit
- R-10.999 Unknown
- RA-10.501 <30 km/h
- RA-10.502 30-50 km/h
- RA-10.503 51-80 km/h
- RA-10.504 81-100 km/h
- RA-10.505 101-120 km/h
- RA-10.506 >120 km/h



# R-11 Motorway (H)

## Variable definition and scope

- The variable provides information on whether the crash occurred on a motorway.
- Important to assess the impact of motorway special road design characteristics on road safety and conduct comparative analyses between motorway and non-motorway road segments.

## Values

- R-11.01 Yes
- R-11.02 No
- R-11.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in (1 or 2 indicating "yes" or "no" respectively).



# R-12 Urban Area (H)

## Variable definition and scope

- It is indicated whether the crash occurred inside or outside an urban area.
- The difference in the frequency, severity and the specific characteristics of road crashes occurring inside and outside urban areas can be analyzed.

## Values

- R-12.01 Yes (Inside)
- R-12.02 No (Outside)
- R-12.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in (01, 02 or 99) indicating "inside", "outside" or unknown respectively).



# R-13 Junction (H)

## Variable definition and scope

- If the crash occurred at a junction, this variable indicates whether the crash occurred at an at-grade junction or at an interchange and the type of junction / interchange.

## Values

- R-13.00 Not at junction
- R-13.01 At-grade - crossroad
- R-13.02 At-grade - roundabout
- R-13.03 At-grade - T or staggered junction
- R-13.04 At-grade - multiple junction
- R-13.05 Not at grade (interchange)
- R-13.06 Other
- R-13.07 At level crossing
- R-13.99 Unknown
- R-13.51 At a junction-Not specified



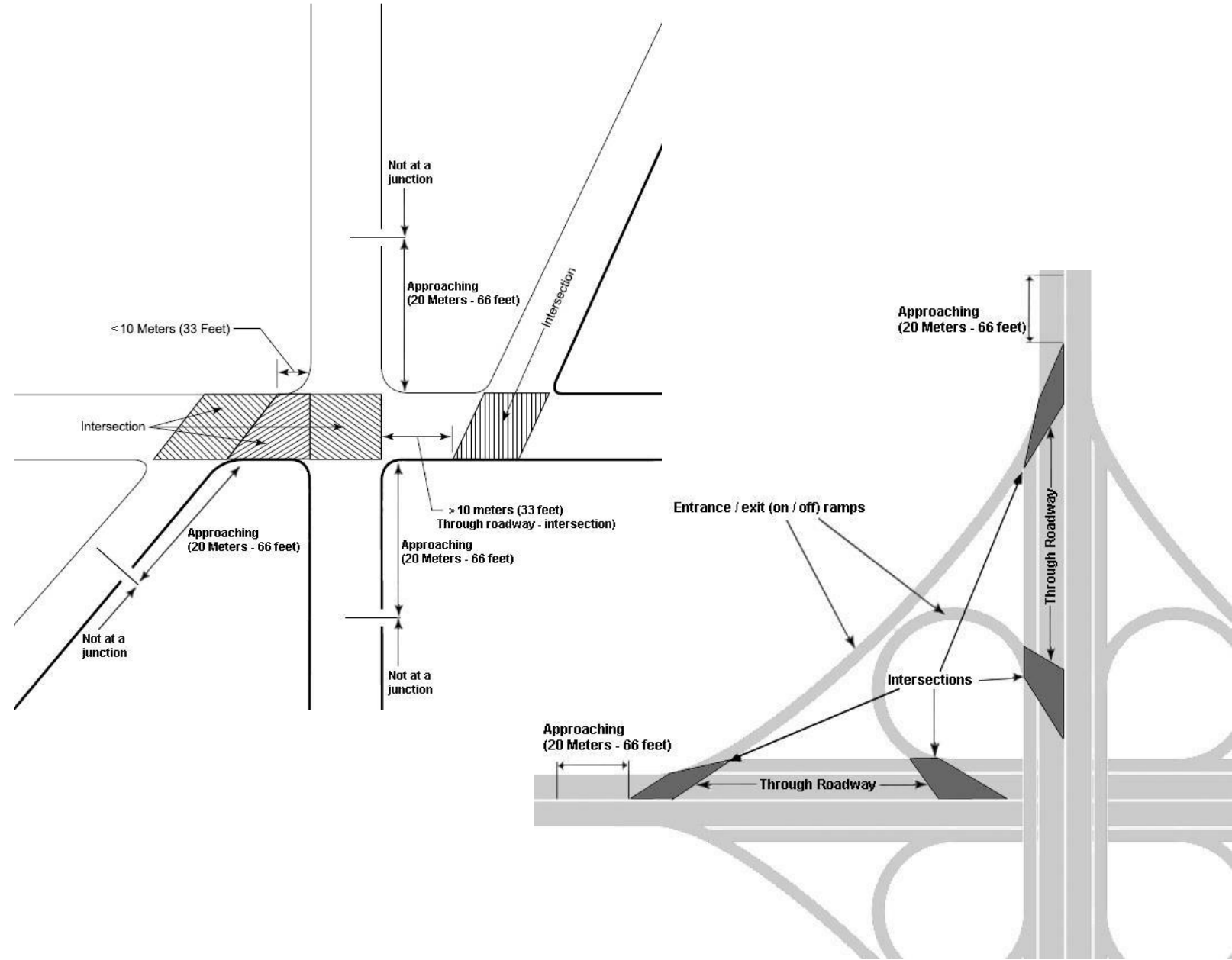
# R-14 Relation to Junction / Interchange (L)

## Variable definition and scope

- Indicates the exact site of the junction / interchange where the crash occurred.
- Important for site-specific safety studies to identify actual or potential safety problem locations.

## Values

- R-14.00 Not applicable
- R-14.01 Approaching (20m)
- R-14.02 Acceleration / deceleration lanes
- R-14.03 Through Roadway
- R-14.04 Entrance / exit ramps
- R-14.05 Crossover related
- R-14.06 Intersection
- R-14.99 Unknown



# R-16 Surface Conditions (H)

## Variable definition and scope

- The effect of the prevailing atmospheric conditions on the road surface at the crash scene is indicated
- Important to identify and correct high wet-surface crash locations and provide information for setting coefficient of pavement friction standards

## Values

- R-16.01 Dry  
*(Dry and clean road surface)*
- R-16.02 Snow, frost, ice, slush  
*(Snow, frost, ice or slush on the road)*
- R-16.03 Slippery  
*(Slippery road surface due to existence of sand, gravel, mud, leaves, oil on the road. Does not include snow, frost, ice or wet road surface.)*
- R-16.04 Wet, damp  
*(Wet road surface. Does not include flood)*
- R-16.05 Flood  
*(Still or moving water on the road)*
- R-16.06 Other  
*(Other road surface conditions not included in the list of the previous values)*
- R-16.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in (e.g. 05)



# R-18 Carriageway Type (H)

## Variable definition and scope

- Indicates whether the accident occurred at one-way or two-way street, whether the road has two directions of travel and whether the carriageway is divided by a central reservation (single or dual carriageway).
- For crashes at junctions the variable is filled-in for the first road.

## Values

- R-18.01 Single carriageway - one way street  
*(road traffic is carried out in one direction only, on a single, undivided carriageway)*
- R-18.02 Single carriageway - two way street  
*(road traffic is carried out in two directions, on a single, undivided carriageway)*
- R-18.03 Dual carriageway  
*(road traffic is carried out on a carriageway divided by a central reservation, separating the two directions of travel)*
- R-18.04 Single carriageway - not specified  
*(road traffic is carried out on a single carriageway, with no of directions not specified)*
- R-18.99 Unknown

## Data format

A two digit number corresponding to one of the values is filled-in



# R-19 Number of Lanes (H)

## Variable definition and scope

- The number of traffic lanes of the carriageway is recorded.
- For single carriageway, the total number of lanes in both directions of travel is recorded.
- In dual carriageway where the two directions of travel are separated, the number of lanes in the direction of travel in which the crash occurred is recorded.
- If the country does not distinguish between single and dual carriageways, the total number of lanes is provided by the alternative value.
- For crashes at junctions the variable is filled-in for the first road.

## Values

- R-19.[01 to nn] Number of lanes (in one or two directions)
- R-19.99 Unknown
- RA-19 Total number of lanes

## Data format

- The number of lanes is filled-in in a two digit format.



# Traffic Unit-related variables



# Part 3: Traffic Unit Information

a/a	Variable	Importance	a/a	Variable	Importance
U-1	Traffic unit ID	(H)	U-10	Registration year	(H)
U-2	Traffic unit type	(H)	U-11	Traffic unit manoeuvre	(H)
U-3	Vehicle special function	(L)	U-12	First point of impact	(L)
U-4	Trailer	(H)	U-13	First object hit in carriageway	(L)
U-5	Engine power	(L)	U-14	First object hit off carriageway	(L)
U-6	Active safety equipment	(L)	U-15	Vehicle insurance for driver/rider	(L)
U-7	Vehicle drive	(L)	U-16	Hit & Run	(H)
U-8	Make	(L)	U-17	Registration country	(H)
U-9	Model	(L)			



# U-1 Traffic Unit ID (H)

## Variable definition and scope

- The traffic unit identification number allows the traffic unit record to be cross-referenced to accident and person records.
- Together with the Accident ID and Person ID, a unique linkage is established.
- Vehicles and pedestrians are regarded as traffic units.
- The units are numbered according to the national registration. If a country links pedestrians to vehicles the pedestrian is just given the next number in the row when entered into the traffic unit information.

## Data format

A two digit number (01-99) is filled-in.

A1_ID	U1_TRAFFIC_UNIT_ID	U2_TRAFFIC_UNIT_TYPE	U3_VEHICLE_SPECIAL_FUNCTION	U4_TRAILER	U5_ENGINE_POWER	U6_ACTIVE_SAFETY_EQUIPMENT	U7_VEHICLE_DRIVE	U8_MAKE	U9_MODEL	U10_REGISTRATION_YEAR	U11_TRAFFIC_UNIT_MANOEUVER	U12_FIRST_POINT_OF_IMPACT	U13_FIRST_OBJECT_HIT_I	U14_FIRST_OBJECT_HIT_OFF	U15_INSURANCE	U16_HIT_AND_RUN	U17_REGISTRATION_COUNTRY
XX2005000001	1	18	00	00	000	00	00	000	00	0000	00	00	00	00	00	00	428
XX2005000001	2	99	99	99	999	99	02	999	99	9999	99	99	99	99	99	99	999
XX2005000002	1	05	01	01	999	99	02	002	99	1988	99	99	99	99	99	99	428
XX2005000003	1	05	01	01	999	10207	02	009	99	1991	99	99	99	99	99	99	428
XX2005000004	1	11	01	02	999	99	99	080	99	1994	99	99	99	99	99	99	428
XX2005000004	2	05	01	01	999	99	99	036	99	1987	99	99	99	99	99	99	428



# U-2 Traffic Unit Type (H)

## Variable definition and scope

- Indicates the type of traffic unit involved in the crash. Important to assess the variations in road crash risk for the various traffic unit types.

## Values

- U-2.01 Pedal cycle
- U-2.02 Moped
- U-2.03 Motorcycle up to 125cc
- U-2.04 Motorcycle over 125cc
- U-2.05 Passenger car
- U-2.06 Minibus
- U-2.07 Bus
- U-2.08 Coach
- U-2.09 Trolley
- U-2.10 Goods vehicle under 3.5t mgw
- U-2.11 Goods vehicle over 3.5t mgw
- U-2.12 Road tractor
- U-2.13 Agricultural tractor

## Values

- U-2.14 Tram/light rail
- U-2.15 Ridden animal
- U-2.16 Other motor vehicle
- U-2.17 Other non-motor vehicle
- U-2.18 Pedestrian
- U-2.19 quad up to 50cc
- U-2.20 quad over 50cc
- U-2.21 E-pedelec
- U-2.22 Motorised micro-mobility device
- U-2.99 Unknown
- UA-2.51 Two wheel motor vehicle
- UA-2.52 Bus or minibus or coach or trolley
- UA-2.53 Goods vehicle
- (UA-2.54 Motorcycle not specified) => used for migration purposes

## Data Format

- A two digit number corresponding to one of the values is filled-in.



# U-4 Trailer (H)

## Variable definition and scope

- Indicates whether the vehicle was towing a trailer or semi-trailer when involved in the crash. The variable is not applicable if the traffic unit is a pedestrian.

## Values

- U-4.00 Not applicable  
*(the traffic unit is a pedestrian)*
- U-4.01 Without trailer  
*(vehicle with no trailer or semi-trailer)*
- U-4.02 With trailer  
*(vehicle with trailer or semi-trailer)*
- U-4.99 Unknown  
*(It was unknown or not recorded whether the vehicle was towing a trailer or a semi-trailer)*

## Data format

- A two digit number corresponding to one of the values is filled-in, indicating whether a trailer was connected to the vehicle.



# U-10 Registration Year (H)

## Variable definition and scope

- The year when the motor vehicle was first registered.
- Crash analyses relating to motor vehicle age can be made.
- The variable is not applicable if the traffic unit is a pedestrian or a pedal cycle.

## Values

U-10.0000	Not applicable
U-10	Registration year
U-10.9999	Unknown

## Data format

A four digit number is filled-in, indicating the year of the vehicle registration.



# U-11 Traffic Unit Manoeuvre (H)

## Variable definition and scope

- To be filled for each traffic unit, indicating the respective manoeuvre prior to the crash.
- If the vehicle was still, the variable is not applicable.

## Data format

- A two digit number corresponding to one of the values is filled-in, indicating the respective vehicle manoeuvre.

### Values

#### Vehicle manoeuvres

- U-11.00 Not applicable
- U-11.01 Reversing
- U-11.02 Parked
- U-11.03 Entering a parking position
- U-11.04 Leaving a parking position
- U-11.05 Waiting to go ahead but held up
- U-11.06 Slowing or stopping
- U-11.07 Moving off
- U-11.08 U turn
- U-11.09 Waiting to turn left
- U-11.10 Turning left
- U-11.11 Waiting to turn right
- U-11.12 Turning right
- U-11.13 Changing lane to left

### Values

#### Vehicle manoeuvres

- U-11.14 Changing lane to right
- U-11.15 Avoidance manoeuvre
- U-11.16 Overtaking vehicle on its left
- U-11.17 Overtaking vehicle on its right
- U-11.18 Going round left hand bend
- U-11.19 Going round right hand bend
- U-11.20 Straight forward/normal driving
- UA-11.51 Entering or leaving a parking position
- UA-11.52 Waiting to turn
- UA-11.53 Turning
- UA-11.54 Changing lane
- UA-11.55 Overtaking

### Values

#### Pedestrian manoeuvres

- U-11.21 Crossing (on pedestrian crossing)
- U-11.22 Crossing (on other point)
- U-11.23 Walking on the carriageway, facing traffic
- U-11.24 Walking on the carriageway, back to traffic
- U-11.25 Standing or playing on the carriageway
- U-11.26 Not on the carriageway (on sidewalk, pedestrian road, etc.)
- U-11.27 Lying on the carriageway
- U-11.28 Entering or getting out of a vehicle
- UA-11.56 Crossing
- UA-11.57 Walking or standing on the carriageway
  
- U-11.98 Other
- U-11.99 Unknown



# U-16 Hit & Run (H)

## Variable definition and scope

- Indicates whether the vehicle was recorded by the police at the crash location or left the crash scene right after the crash.
- The variable is not applicable if the traffic unit is a pedestrian.

## Values

- U-16.00 Not applicable
- U-16.01 Not Hit & Run
- U-16.02 Hit & Run
- U-16.99 Unknown

## Data format

- A two digit number corresponding to one of the values (1 or 2) is filled for each vehicle.
- If variable A-13 Hit&Run Accident (H) is not provided, values of variable U-16 HIT & RUN (H) will be used by the loading process to fill it. A-13 should be used if you have information on hit & run accident but no information on the hit & run vehicle itself.



# U-17 Registration Country (H)

## Variable definition and scope

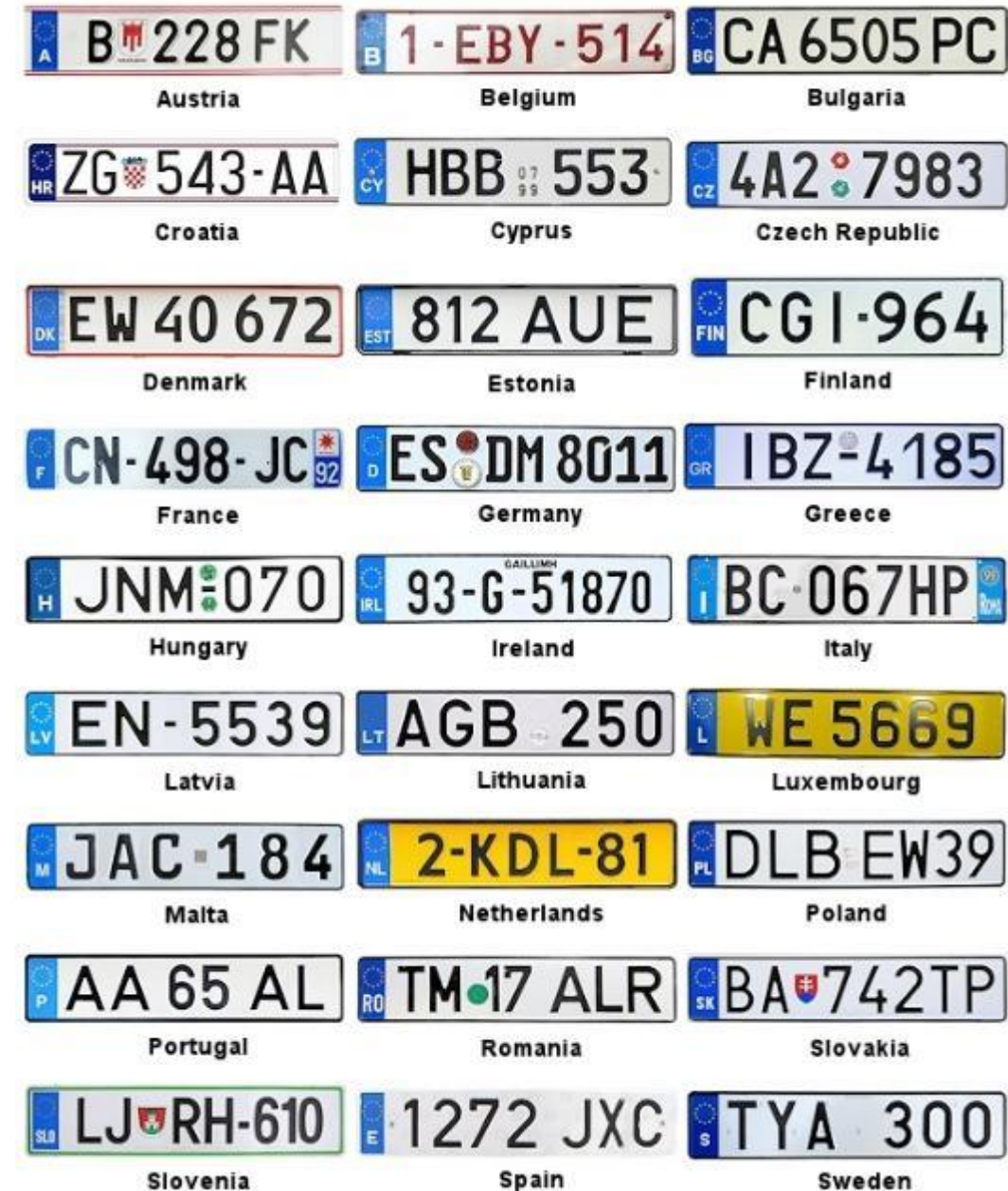
- The country in which the vehicle involved in the crash has been registered.
- The variable is not applicable if the traffic unit is a pedestrian or a pedal cycle.

## Values

- U-17.000 Not applicable
- U-17 Country code (*in accordance to ISO 3166-1*)
- UA-17.501 National
- UA-17.502 Foreign

## Data format

- A three digit number corresponding to the country code is filled-in to indicate vehicle registration country.
- If the country of registration is not collected in disaggregate form the alternative values can be used.
- If the country does not collect this information at all, 999 is filled in.



# Person-related variables



# Part 4: Person Information

a/a	Variable	Importance	a/a	Variable	Importance
P-1	Person ID	(H)	P-11	Drug Test	(L)
P-2	Date of Birth	(H)	P-12	Driving License Issue Date	(H)
P-3	Gender	(H)	P-13	Driving License Validity	(L)
P-4	Nationality	(H)	P-14	Safety Equipment	(H)
P-5	Injury Severity as Reported	(H)	P-15	Seating Position in/on Vehicle	(H)
P-6	Road User Type	(H)	P-16	Distracted by Device	(L)
P-7	Alcotest	(L)	P-17	Psychophysical / Physical Impairment or Condition	(L)
P-8	Alcotest Sample Type	(L)	P-18	Trip / Journey Purpose	(L)
P-9	Alcotest Result	(H)	P-19	Injury MAIS Scale	(L – Optional variable)
P-10	Alcohol Level	(H)			



# P-1 Person ID (H)

## Variable definition and scope

- The person ID number allows the person record to be cross-referenced to accident, road and traffic unit records and distinguish persons within each traffic unit.
- Together with the Accident ID and the Traffic Unit ID, a unique ID is established.
- The person numbering follows the same rule as in the traffic unit numbering: For each unit, the driver will be recorded first, followed by the passengers.

## Values

- P-1 Person ID

## Data format

- A two-digit number indicating the number of the person involved in the specific road accident, in the specific vehicle.

A1_ID	U1_VEHICLE IDENTIFICATION (NUMBER OF VEHICLE IN ACCIDENT)	P1_PERSON_ID(PERSON NUMBER IN ACCIDENT)	P2_DATE_OF_BIRTH	P3_GENDER	P4_NATIONALITY	P5_INJURY_TYPE	P6_ROAD_USER_TYPE	P7_ALCOHOL_TEST	P8_ALCOTEST_SMPL_TYPE	P9_ALCOTEST_RESULT	P10_ALCOHOL_LEVEL	P11_DRUG_TEST	P12_DRIVING_LICENSE_ISSUE_DATE	P13_DRIVING_LICENCE_VALIDITY	P14_SAFETY EQUIPMENT	P15_POSITION_IN_ON_VEHICLE	P16_DISTRACTD_BY_DEVICE	P17_PSYHO_PHYS_IMPERMENT	P18_TRIP_JOURNEY_PURPOSE
XX2005000001	2	2	99999999	99	999	04	01	99	00	00	00	99	99	99	99	01	99	99	99
XX2005000001	1	1	02081942	02	951	03	03	99	00	00	00	00	00	00	99	00	99	99	99
XX2005000002	1	1	02061965	01	951	01	01	99	01	99	99	99	99	99	99	01	99	99	99
XX2005000003	1	1	24061983	01	951	03	01	01	99	02	99	99	99	99	99	01	99	99	99
XX2005000004	2	2	18101984	01	951	03	01	01	99	01	99	99	99	99	99	01	99	99	99
XX2005000004	1	1	18051984	01	951	04	01	99	00	00	00	99	99	99	99	01	99	99	99
XX2005000004	2	3	15121981	01	951	03	02	99	00	00	00	00	00	00	00	05	99	99	99



# P-2 Date of Birth (H)

## Variable definition and scope

- Indicates the date of birth of each person involved in the road crash.
- Important to study the impact of the persons' age in road crash risk.

## Values

- P-2.XXXXXXXXXX Date of Birth (*Determined on the basis of identity documents/ personal ID number or determined by the police*)
- P-2.9999XXXX Year of birth
- P-2.99XXXXXX Year and month of birth (day unknown)
- P-2.99999999 Unknown
- PA- 2.0000XXXX Age of person

## Data format

- An eight digit number indicates the person's date of birth.
- Alternatively the age of a person can be provided: the first 4 digits are zeros, the next 2 digits indicate the years of the person (e.g. 07) and the last 2 digits indicate the months of person (e.g. 09)



# P-3 Gender (H)

## Variable definition and scope

- Indicates the gender of each person who was involved in the crash.
- Important to evaluate the effect of the gender of the persons involved on occupant protection systems and motor vehicle design characteristics.

## Values

- P-3.01 Male
- P-3.02 Female
- P-3.99 Unknown

## Data format

A two digit number corresponding to one of the values is filled in (01, 02 or 99 for unknown) to indicate the person's gender.



# P-4 Nationality (H)

## Variable definition and scope

- Indicates the nationality of each person who was involved in the crash in a disaggregate form.
- The country of origin of each person can be obtained. The nationality can alternatively be provided in an aggregate form by filling-in the alternative value.

## Values

- P-4      Nationality (*ISO 3166-1-Numeric*)
- PA-4.951 National
- PA-4.952 Foreigner, within the EU
- PA-4.953 Foreigner, outside the EU
- PA-4.954 Foreigner, not specified
- PA-4.999 Unknown

## Data format

- A three digit number is filled-in to indicate the country of origin (e.g. 300 for Greece) in disaggregate form.
- Alternatively the nationality can be provided in groups.



# P-5 Injury Severity as Reported (H)

## Variable definition and scope

- Indicates to what extent a person (driver, passenger or pedestrian) was injured or not during a road crash.
- On that purpose various injury classification systems such as ISS, AIS etc. can be used.
- A simpler definition based on the hours of hospitalization is proposed.

## Values

- P-5.01 Fatally injured (*Death within 30 days of the road accident*)
- P-5.02 Seriously injured (*Injured and hospitalized at least 24 hours*)
- P-5.03 Slightly injured (*Injured and hospitalized less than 24 hours or not hospitalized*)
- P-5.04 Not injured (*Person participating in the crash although not injured*)
- P-5.99 Unknown (*injury severity not recorded/unknown*)
- PA-5.51 Injured (*seriously or slightly injured*)

## Data format

- A two digit number corresponding to one of the values is filled-in to indicate the severity for each person.



# P-6 Road User Type (H)

## Variable definition and scope

- Indicates the class of the person involved in a road crash.
- For crashes with pedestrians, the vehicle which collided with the pedestrian can be identified as the traffic unit with the previous Traffic Unit ID from the pedestrian.

## Values

- P-6.01 Driver
- P-6.02 Passenger (*Includes person in the act of boarding or alighting from a vehicle*)
- P-6.03 Pedestrian
- P-6.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled in.



# P-7 Alcotest (L)

## Variable definition and scope

- Indicates whether or not a driver or a pedestrian who was involved in a road crash was tested on alcohol.
- If the road user was a passenger this variable is not applicable.

## Values

- P-7.00 Not applicable
- P-7.01 Tested
- P-7.02 Not tested
- P-7.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in (e.g. 01) to indicate whether an alcohol test was conducted.



# P-8 Alcotest Sample Type (L)

## Variable definition and scope

- This variable is filled only if 'Tested' was selected in "Alcotest" variable, otherwise "not applicable" is chosen.

## Values

- P-8.00 Not applicable
- P-8.01 Blood sample
- P-8.02 Breath sample
- P-8.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in to indicate the sample type, if applicable.



# P-9 Alcotest Result (H)

## Variable definition and scope

- This variable is filled only if "Tested" was selected in "P-7 Alcotest" variable otherwise "not applicable" is chosen.

## Values

- P-9.00 Not applicable  
*(The person was not tested for alcohol, or the person was a passenger.)*
- P-9.01 Positive  
*(The person consumed alcohol above the respective national legal limit.)*
- P-9.02 Negative  
*(The person consumed alcohol below the respective national legal limit or did not consume alcohol at all.)*
- P-9.99 Unknown  
*(The result of the alcohol test was unknown or not recorded.)*

## Data format

- A two digit number corresponding to one of the values is filled-in (e.g. 1) to indicate the alcotest result, if applicable.



# P-10 Alcohol Level (H)

## Variable definition and scope

- This variable is applicable only if "Tested" was selected in "Alcotest" variable, otherwise "not applicable" is chosen.
- The variable should be interpreted in conjunction with "Alcotest sample type" variable.

## Values

- P-10.000 Not applicable
- P-10 Level
  - For blood samples, the alcohol concentration is measured in grammars of alcohol per liter of blood.
  - For breath samples the alcohol concentration is measured in milliliters of alcohol per liter of air.
- P-10.999 Unknown

## Data format

- A three digit number is filled-in, one integer followed by two decimals (both for blood and breath samples).



# P-12 Driving License Issue Date (H)

## Variable definition and scope

- Indicates the month and year of issue of the first driving licence (provisional or full) of drivers / riders who are involved in a road crash, for the vehicle they are driving.
- The driving experience in months and years can be provided through the alternative value.
- This variable is applicable only for drivers otherwise "Not applicable" should be selected.

## Values

- P-12.000000 Not applicable
- P-12.99XXXX Only the Year (e.g. if 2008 => 992008)
- P-12.XXXXXX Year/Month (e.g. if 2008 February => 200802)
- P-12.999999 Unknown
- PA-12.00XXXX Number of years and months of driving experience (e.g. 10 years, 2 months => 001002)

## Data format

- A six digit number is filled-in where the first four digits indicate the year of issue and the last two digits indicate the month of issue.
- If the variable is not applicable, 000000 is filled.



# P-14 Safety Equipment (H)

## Variable definition and scope

- Indicates the use of safety equipment of drivers/riders and passengers during the crash.

## Values

- P-14.00 Not applicable (*No safety equipment could be used on the specific vehicle, e.g. agricultural tractors*)
- P-14.01 Seat belt worn no airbag in vehicle (*Seat belt was worn and there was no airbag*)
- P-14.02 Seat belt worn and airbag released (*Seat belt was worn and airbag released*)
- P-14.03 Seat belt worn and airbag not released (*Seat belt was worn and airbag did not release*)
- P-14.04 Seat belt not worn and airbag released (*Seat belt was not worn and airbag released*)
- P-14.05 Crash helmet worn (*Crash helmet was worn*)
- P-14.06 Child safety seat facing forwards used (*Childs safety seat facing forwards was used*)
- P-14.07 Child safety seat facing backwards used (*Childs safety seat facing backwards was used*)
- P-14.08 No use of safety equipment (seat belt - helmet) (*No seat belt or helmet was used*)
- P-14.09 Other (appropriate equipment for bikers and cyclists e.g. protective pads, reflective clothing, lighting) (*Other safety equipment, not included in the list of the previous values*)
- P-14.99 Unknown (it was not recorded) (*The use of any safety equipment by the road user was unknown*)
- PA-14.51 Seat belt worn - not specified (*Seat belt was worn, it was not specified whether an airbag was present and whether it was released.*)
- PA-14.52 Child safety seat used - not specified (*Childs safety seat was used, it was not specified whether it was facing forwards or backwards.*)



# P-15 Seating Position in/on Vehicle (H)

## Variable definition and scope

- Describes the seating position of the driver/ passenger at the time of the crash.
- For pedestrians and two wheel vehicle occupants this variable is not applicable.

## Values

- P-15.00 Not applicable
- P-15.01 Driver
- P-15.02 Front seat
- P-15.03 Rear - seated
- P-15.04 Rear - standing
- PA-15.51 Rear - not specified
- P-15.05 Elsewhere
- P-15.99 Unknown

## Data format

- A two digit number corresponding to one of the values is filled-in (e.g. 05) indicating the seating position of the driver / passenger in the vehicle (if applicable).



# CADaS Structure

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