Reference	*CP70*
Project Title	Collision matrix for heavy goods vehicles worldwide
Coordinator	*DuWill*
Project Manager	*tania.willstrand@duwill.se*
Project Duration	2024-06-01 – 2024-09-30
Author(s)	Dukic Willstrand, T., Fredlund, T., Sjöblom, R., Theander, A., Vadeby, A.
Confidentiality	Public

Contents

Summary

By increasing the knowledge regarding fatalities per road users in collision with others, stakeholders in general and industry in particular here can address specific countermeasures. The objective is to describe the nature of the work to identify road fatalities in collisions with HGV at a global level, i.e. data to build a matrix for HGV for several countries outside EU. Large HGV markets outside UE identified for further investigation in the project were: Argentina, Brazil, Japan, South Corea, USA. Collaboration with responsible administration in the identified countries and together with IRTAD secretary made it possible to answer whether it is possible to build collision matrix in those countries. The answer was positive in Argentina, Japan, South Corea and USA. Accident data collection and analysis are enough mature to build such collision matrix. Brazil is building a sustainable system to collect accident statistics data. Recommendations for further work are delivered in the report for global stakeholders to carry on this initiative.

COLLISION MATRIX FOR HEAVY GOODS VEHICLES WORLSWIDE

1. Background

Traditional official statistics worldwide provide the number of deaths by main road users, i.e. number of deaths in vehicles, as a pedestrian, as a power-two wheelers (PTW). The motivation behind to collect these statistics has been for developing policy and governance worldwide. In a near future, EuroNCAP will play a significant role for accelerating the implementation of new safety systems on-board heavy goods vehicles (HGV). To evaluate and follow the effect of safety systems on a large scale, collisions statistics will have a role to play. Therefore, there is a need to improve both in quality of the data and in quantity the number of country reporting (WHO, 2023).
Today the private sector among others wants to step up and to accelerate the effort to reduce road fatalities. In parallel, a sustainability approach context is growing. There is also a novel methodology called 'traffic safety footprint' where organisations need to identify their impact on traffic safety, i.e. what is the organisation's impact on the number of deaths and injured in traffic.
In this context, the transport sector and more specifically the vehicle industry would need to identify their share of deaths on the road fatalities. Thus, new type of data needs to be collected to increase the knowledge in this domain. For example, a truck producer who wants to reduce number of fatalities where their products are involved will need to know among other data who is injured in collision with their products. This data is not always available today worldwide, but one exception is Europe. EU has produced since 2019 a matrix which tells the number of deaths for each road users in collisions with other main vehicle (EU, 2019).

2. Project set up

2.3 Purpose

By increasing the knowledge regarding fatalities per road users in collision with others, stakeholders in general and industry in particular here can address specific countermeasures. This knowledge is critical to address the fatalities where HGV are involved in. Similar reasoning can be done for all vehicles in traffic and for all road users, however since the pre-study is limited, it is important to focus on one type of vehicle, heavy goods vehicles.

2.4 Objectives

The objective is to describe the nature of the work to identify road fatalities in collisions with HGV at a global level, i.e. data to build a matrix for HGV for several countries outside EU.

2.5 Project period

Start date 2024-06-01
End date 2024-09-31

2.6 Partners

AB Volvo	Anna Theander anna.theander@volvo.com
DuWill	Tania Dukic Willstrand tania.willstrand@duwill.se
Transportstyrelsen	Tomas Fredlund tomas.fredlund@transportstyrelsen.se
Scania	Reimert Sjöblom reimert.sjoblom@scania.com
VTI	Anna Vadeby anna.vadeby@vti.se

3. Method and activities

The project is about the spread and share the work done by the EU reading the collision matrix and to examine whether there are prerequisites in large HGVs' markets around the world to build the same knowledge. The present successful work has been possible to achieve thanks to the engagement of following organisations and people:

AB Volvo - Sava Iancovici
Argentina – National Road Safety Agency (ANSV) - Mercedes LAVEZZOLO
Chalmers University of Technology - Jordanka Kovaceva
European Commission Directorate General Transport and Mobility –Peter Whitten
Folksam – Anders Kullgren
Head of the National Road Safety Observatory -Álvaro Gómez Méndez
International Transport Forum – International Road Traffic Safety Database – Véronique Feypell
Ministry of Transport Brazil - National Database of Traffic Accidents- Basilio Militani Neto
National Highway Traffic Safety Administration – Ann Mallory
National Police Agency Japan – Takeba Yasuto
National Technical University of Athens (NTUA) –George Yannis
Traffic Science Institute, Korea Road Traffic Authority Korea – KOROAD - Hyo Seung Han
Trivector - Francisco Malucelli
Universidade Federal do Parana (Brazil) - Jorge Tiago Bastos
World Health Organisation WHO Secretary for Road Traffic - Maria Segui Gomez

4. Results and Deliverables

European collision matrix

The collision matrices published by the EC are based on data from the CARE database, the European Commission DG Move database with disaggregate data on road crashes in the EU (disaggregate data files sent by the MS to DG Move every year). These matrices show fatalities for each transport mode considering the main opponent involved in the road crash (Figure 1). If no opponent is found, it displays the value "none" (Single vehicle crashes). Essentially, the matrix covers fatalities in single-vehicle crashes and crashes involving one or more traffic elements. For the majority of fatal crashes, only one other

vehicle is involved in the crash so the process is easy. For each road fatality, the matrix looks for the main opponent and places it accordingly in the matrix following the above logic. e.g. a pedestrian fatality in a crash involving also a car, and a heavy goods vehicle will appear in the matrix as a pedestrian fatality with the main opponent being a heavy goods vehicle.
For multi-vehicle crashes, it's clearly more complex so a weight and priority logic was adopted, i.e. the 'main vehicle' is the heaviest of the vehicles involved as this tends to be responsible for the most serious consequences. This means that each crash ends up with just one 'opposing' vehicle. As a result, the figures in each column likely underestimate a particular vehicle type's involvement in crashes. The main opponent in these matrices has been defined following a "weight" priority logic, the ordered list is: 'heavy goods vehicle', 'bus or coach', 'agricultural tractor', 'lorry, under 3.5 tonnes', 'car + taxi', 'motorcycle', 'moped', 'pedal cycle', 'pedestrian', 'other', 'unknown'.

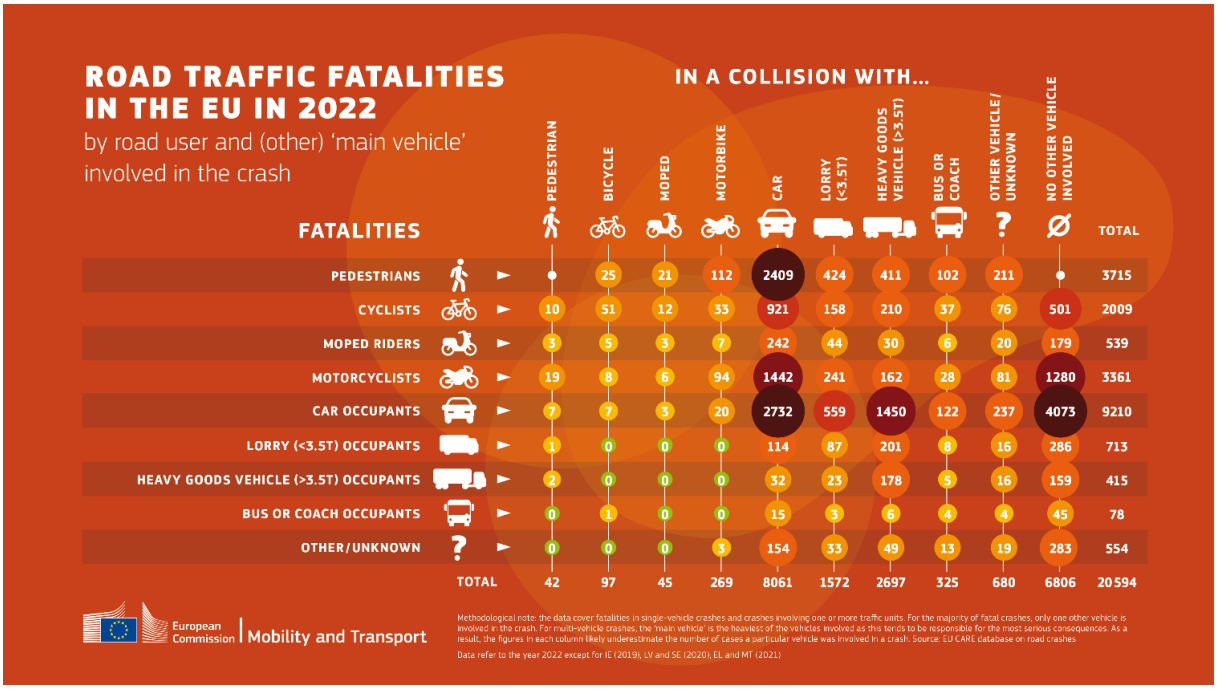

Figure 1: EU collision matrix for year 2022.

Concerning multi-vehicle crashes, they represent about 14% of all fatal crashes across EU member states (10% of all crashes). Since HGVs are the heaviest, one question raised is whether they are over-represented in the rules applied might be overrepresented in multi-vehicles crashes. HGVs are the heaviest vehicles when involved in all cases of multi-vehicles involvement which might overrepresent their involvement. It is difficult to know for sure whether HGVs are over-represented or not. For that we would need to know the km driven for each transport mode. Unfortunately, we don't have good data on this for most countries. However, looking at the number of registered vehicles (250 million cars in EU versus around 4-6 million HGVs registered or on EU roads, depending on the source), it would seem that by comparing the respective shares of vehicles (cars vs HGV) involved in crashes, they are over-represented.

Relevant HGV Markets

This study targets those markets with priority in terms of data quality (assumptions based on safety collaborations) and sales volume.The markets of interest for this study for both Volvo and Scania are following:
North America (US)
Latin America (Argentina, Brazil)
Asia (Japan and South Korea)

In addition, the selection is based on expanding knowledge from different traffic environments, as these are very specific in their infrastructure, traffic culture or other particulars. The official sales statistics of Scania can be found at the Scania corporate website regarding the annual sales report: https://www.scania.com/content/dam/group/investor-relations/financial-reports/interim-reports/2024/scania-q1-2024-delarsrapport.pdf
The official sales statistics of Volvo can be found at the Volvo corporate website regarding the annual sales report: https://www.volvogroup.com/se/investors.html#truck-orders-and-deliveries

The selection of countries to investigate was made based on several factors. The first factor was the size of the HGV market which was evaluated from the project industrial partners volume sold. The second aspect the project partners focused on was the quality of the data. There is a high discrepancy regarding quality of the road traffic crash data. A decision was made to only select countries where there was a known decent quality regarding crash data on roads.
Based on the above information, the project decided to focus on the following countries (Figure 2).

Figure 2: Global map of the countries selected in the present project: USA, Argentina, Brazil, South Korea and Japan.

Case study per market

What is a heavy goods vehicle?

The definition of a heavy goods vehicle varies in several countries that we included in the present study. In most countries, part of the definition relates to the weight of the vehicle also called gross vehicles weight (GVW). Originally, trucks are categorised in two different categories: large goods vehicles (GVW over 3,500 kg) and light goods vehicles (GVW under 3,500 kg). A heavy goods vehicle covers all commercial trucks that have a gross vehicle weight (GVW) of over 3,500 kg or 3.5 t. This definition has been adapted in the EU countries to produce a common collision matrix.

In selected countries outside EU, the HGV definition sometimes varies. USA and Japan seem to have a GVW above 4,5 t (i.e. 10.000 pound) in their statistics whereas Korea has a limit of 5 t and Brazil has 3,5 t like the EU. For each selected country, the project had a dialogue together with the relevant authority to identify data that could potentially be used to build a collision matrix. Data from the latest year available was, when available, selected and used.

Case USA

In USA, the National Highway Traffic Safety Administration (NHTSA) is the administration responsible to administered traffic fatality data in the country. USA is part of the IRTAD network (International Traffic Safety Data and Analysis Group) which is a good prerequisite to access valuable data to build a collision matrix.

NHTSA has several datasets available on their website, the Fatality Analysis Reporting System database (FARS) is the one relevant to build a collision matrix (Figure 3). The datasets and documentation can be found here: https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars.

FARS is a database containing fatal motor vehicle crashes. In Figure 3 fatalities from 2022 in single-vehicle crashes and crashes involving one or more traffic elements are shown. It shows fatalities for each transportation mode considering the main opponent involved in the road crash, “No other vehicle involved” for collisions with objects, and for harmful non-collisions like ‘Rollover’, ‘Jackknife’ or ’Fire’. Multi-vehicle crashes were treated similarly to the EU case. For each crash, only the ‘main vehicle’ and the ‘most harmful event’ were considered. The ‘main vehicle’ is the heaviest vehicle involved, and the ‘most harmful event’ is the event causing the most severe injury. More that 95% of all vehicle fatalities are related to the most harmful event for the main vehicle. The main vehicle in this matrix has been defined following a similar priority logic as for the EU case: 1. Heavy Goods Vehicle (>4.5T), 2. Bus or coach, 3. ‘Farm equipment’, 4. ‘Lorry (<4.5T)’, 5. ‘ Car + taxi', 6. ‘Motorbike, 7. 'Moped', 8. ‘Bicycle’, 9. 'Pedestrian', 10. ‘Other', 11. 'Unknown'. Only 2% of the crashes in 2022 were multi-vehicle crashes involving HGV’s.

In year 2022, a total of 41192 fatalities with 11,7% (4859) of the fatalities occurred in a crash with a large truck. In these cases, a large truck is defined as a vehicle with a Gross Vehicle Weight >4,5t (10.000 pound). Lorry occupants (<4,5 t), car occupants and pedestrians are the three most prevalent road users group killed in collision with an HGV. HGV occupants are mostly killed in collision involving no other vehicles.

	In a collision with										
FATALITIES	**Pedestrian**	**Bicycle**	**Moped**	**Motor-bike**	**Passenger Car**	**Lorry (<4.5T)**	**Heavy Goods Vehicle (>4.5T)**	**Bus or coach**	**Other vehicle / Unknown**	**No other vehicle involved**	**Total**
Pedestrians	0	0	0	39	2 363	3 366	471	43	852	0	**7 134**
Cyclists	0	0	0	10	332	531	109	5	99	0	**1 086**
Moped riders	0	0	0	1	12	14	3	0	0	11	**41**
Motorcyclists	6	2	1	63	1 110	2 071	391	23	56	2 355	**6 078**
Car occupants	1	0	0	14	1 675	3 650	1 655	47	69	5 183	**12 294**
Lorry (<4.5T) occupants	3	0	0	14	1 064	2 540	1 927	60	84	6 723	**12 415**
Heavy Goods Vehicle (>4.5T) occupants	0	0	0	1	37	66	232	3	5	721	**1 065**
Bus or coach occupants	0	0	0	0	0	4	13	0	0	9	**26**
Other / Unknown	0	0	0	6	137	254	58	2	62	534	**1 053**
Total	**10**	**2**	**1**	**148**	**6 730**	**12 496**	**4 859**	**183**	**1 227**	**15 536**	**41 192**

Figure 3: Collision matrix for USA based on data from FARS 2022.

Case Argentina

In Argentina, the National Road Safety Agency is responsible to collect accident and road fatalities. Argentina is part of the IRTAD network which is a good prerequisite to access valuable data to build a collision matrix. The project had a constructive dialogue with the relevant authority to access their data. The work has been successfully achieved by the authority in charge and the matric for 2021 data is presented in Figure 4.

In 2021, 4483 fatalities occurred in traffic in Argentina. In the majority of fatal crashes only one vehicle is involved. Motorised two-wheelers represent the largest part of the fatalities with 42% followed by car occupants with 23% and pedestrians with 9%. Concerning fatalities in collision with HGS, motorcyclists are the road users mostly at risk with 182 fatalities followed by car occupants (108 fatalities) and light trucks (54 fatalities).

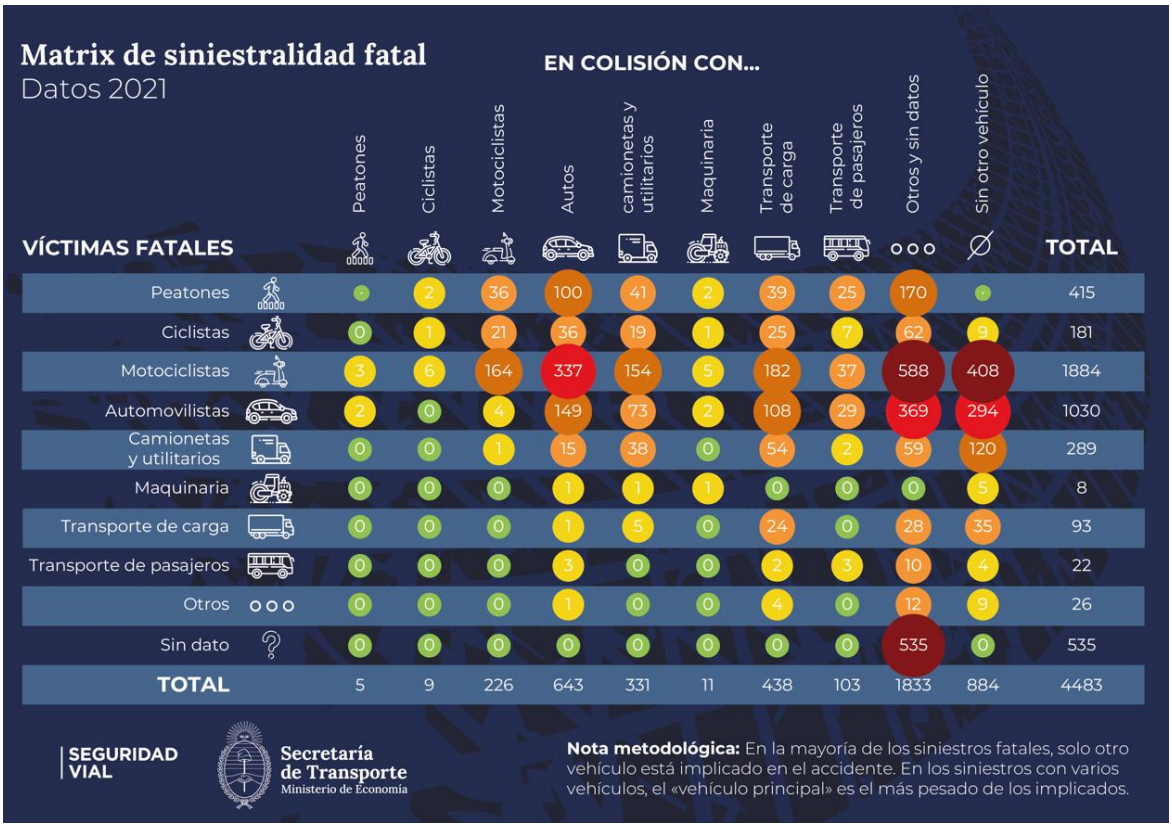

Figure 4: Collision matrix for Argentina 2021. Note: the majority of the fatalities involved only one vehicle. In multi-vehicle accidents, the main vehicle is the heaviest of those involved.

Case Brazil

In Brazil, the ministry of Transport is responsible to collect and make available data on road crashes. Brazil has started a work to build a National Database of Traffic Accidents in Brazil (Renaest). This database is still under construction, however a significant amount of data is already available: [Registro Nacional de Sinistros e Estatísticas de Trânsito — Ministério dos Transportes (www.gov.br)]

In 2022, a total of 21.165 people died in traffic. The largest share of fatalities occurred for vehicle drivers with 44%, followed by 11% of pedestrians and 8% of vehicle passengers. No further details could be extracted from the data and the project has not been successful to find support in the administration.

The national database for traffic accident is in a growing phase. A short preview of the data shows a significant amount of unknown data and/or with few details. With maturity, this amount would decrease gradually. Our conclusion so far is that Brazil does not have the prerequisite to build a collision matrix, however, the ground to build it in the future seem to exist.

Case Japan

In Japan, the National Policy Agency is the authority in charge to collect crash and fatality statistics. Japan has a membership in the IRTAD network. The project was able to have a successful dialogue with the Japanese authority to get the data to build a collision matrix (Figure 5).

In Japan, freight vehicles are divided into the following five categories based on the size and structure of the vehicle body and the size of the engine:

- 1 Large Truck (Gross vehicle weight of 11 t or more);

- 2 Medium Truck (Gross vehicle weight of 7.5 t or more but less than 11 t);
- 3 Semi-Medium Truck (Gross vehicle weight of 3.5 t or more but less than 7.5 t);
- 4 Standard Truck (Gross vehicle weight of less than 3.5 t);
- 5 Light Truck (Gross vehicle displacement of 660cc or less).

Figures collected from Japan are from year 2023 and shown in the collision matrix below (Figure 5). Out of 2,994 fatalities, pedestrians stand for 39%, bicyclists for 17%, car occupants for 15% and motorcyclists for 14%. A total of 48 HGVs occupants died which represent 1.6% of all fatalities. Pedestrians are by far the road users most killed in traffic and primarily in collision with car (n=761), lorry (n=242) and HGV (n=90, i.e. 7.6% of pedestrians fatalities). Traffic safety issues for HGVs occupants are collisions with another HGV (n = 16). Looking at fatalities in collision with HGVs, they represent 11% of the total fatalities in traffic. Pedestrians are the road user group mostly injured (n=90) followed by bicyclists (n=68), car occupants (n=65) and motorcyclists (n=45).
In total 776 unknown fatalities representing 26% of all fatalities. However, this figure includes the number of people killed in single crashes without a collision partner (e.g. falling asleep, collisions with parked vehicles, hit-and-runs, and collisions with trains).
The minimum age requirement for the HGV driving license is 19 years old and has held a regular driver's license or other driver's license for at least one year. The average age of drivers with an HGV driver's license is HGV (49.9 years).
The type of roads that HGVs primarily drive on are highways. In addition, the speed limit when traveling on highways is up to 90 km/h. When traveling on a highway, HGVs are required to pass in the travel lane (left lane), while the overtaking lane (right lane) is provided for overtaking.

		IN A COLLISION WITH_									
		PEDESTRIAN	BICYCLE	MOPED	MOTORBIKE	CAR	LORRY(<4.5T)	VEHICLE(>4.5T) HEAVY GOODS	BUS OR COACH	OTHER VEHICLE/UNKOWN	TOTAL
FATALITIES	PEDESTRIANS	0	7	7	28	761	242	90	6	38	1 179
	CYCLISTS	1	2	1	4	205	87	68	3	124	495
	MOPED RIDERS	0	0	2	2	60	26	27	1	44	162
	MOTORCYCLISTS	0	1	0	11	162	57	45	4	139	419
	CAR OCCUPANTS	0	0	1	1	100	21	65	3	267	458
	LORRY(<4.5T) OCCUPANTS	0	0	0	0	43	12	29	2	111	197
	HEAVY GOODS VEHICLE(>4.5T) OC	0	0	0	0	2	1	16	2	27	48
	BUS OR COACH OCCUPAN	0	0	0	0	0	0	1	0	0	1
	OTHER/UNKOWN	0	0	0	0	6	3	0	0	26	35
TOTAL		1	10	11	46	1 339	449	341	21	776	2 994

Figure 5: Collision matrix for Japan year 2023 delivered by the Japanese authority.

Case Korea

In Korea, the Traffic Science Institute, Korea Road Traffic Authority KOROAD supported with the data. Korea's traffic accident statistics are based on investigations by the police

authority. Korea is part of the IRTAD community which assure a satisfactory quality of the data.
According to the Korean Automobile Management Act, the definition of a freight vehicle (Lorry and HGV) is "a vehicle equipped with cargo loading space suitable for transporting goods, and the total weight of the cargo in the loading space is greater than the weight of the passengers when all passengers, excluding the driver, are seated in the passenger space". In the Korean traffic accident statistics, heavy vehicles are simply categorized under "freight vehicles," which includes everything from small 1-ton trucks to lorries and heavy goods vehicles. In short, lorry and HGVs are included in the same category.
Figures collected from Korea are from year 2023 and shown in collision matrix below (Figure 6). Out of 2,551 fatalities, pedestrians stand for 34%, car occupants for 12%, HGV/lorry occupants for 10% and motorcyclists for 7%. A total of 252 HGV/lorry occupants died which represent 10% of all fatalities. Pedestrians are by far the road users most killed in traffic and primarily in collision with car (60%), HGV/lorry (23%). Traffic safety issues for HGVs occupants are collisions with another HGV/lorry (41%) or with a car (36%). Looking at fatalities in collision with HGV, they represent 23% of all fatalities in traffic. Pedestrians are the road user group mostly injured (33%) together with lorry/HGV occupants (17%) and motorcyclists (8%).
HGVs mainly operate on highways and other major roads, primarily transporting goods to/from key ports and industrial complexes. According to the Korea Transport Institute, the average HGV drivers' age for HGV over 5 tons in 2023 is 57.8 years old. By age group, drivers in their 20s make up 0.3%, 30s make up 2.8%, 40s make up 14.2%, 50s make up 36.9%, 60s make up 39.6%, and those 70 and older account for 6.3%. Currently, unlike in other countries, there is no significant issue of driver shortages in Korea.

	In a collision with...										
Fatalities*	**Pedestrians**	**Motorised micro-mobility devices**	**Cyclists**	**Moped riders**	**Motorcyclists**	**Car occupants + taxi**	**Lorry & heavy goods vehicles (>3,5 t)**	**Bus or coach occupants**	**Other vehicle/unknown**	**No other vehicle involved**	**Total**
Pedestrians		3	4	1	28	512	198	77	36		**859**
Motorised micro-mobility devices						10	3	4	1	15	**33**
Cyclists		1	1			47	27	10	15	23	**124**
Moped riders		1		1		20	7		5	22	**56**
Motorcyclists			2		13	88	51	10	7	163	**334**
car occupants + taxi		2	18	10	70	136	41	6	15	230	**528**
Lorry & heavy goods vehicles (>3,5 t)		1	7		36	91	103	8	6	112	**364**
Bus or coach occupants		1	6	1	7	22	13	5	2	10	**67**
Other/unknown			3	1	10	44	40	6	8	74	**186**
Total	**0**	**9**	**41**	**14**	**164**	**970**	**483**	**126**	**95**	**649**	**2551**

*Figure 6: Collision matrix for Korea year 2023 delivered by the Korean authority (*Methodological note: the data cover fatalities in single-vehicle crashes and crashes involving one or more traffic units. For the majority of fatal crashes, only one other vehicle is involved in the crash. For multi-vehicle crashes, the 'main vehicle' is the heaviest of the vehicles involved as this tends to be responsible for the most serious consequences. As a result, the figures in each column likely underestimate the number of cases a particular vehicle was involved in a crash. Source: EU CARE database on road crashes).*

Based on the dialogue with the Korean administration and their membership in IRTAD, the project concludes that necessary data to build a collision matrix is available.

In Table 1, you will find a summary per country of traffic safety facts to facilitate a comparison between countries. One could notice that the heterogeneity of the HGV definition varies between 3,5 t to 5 t.

Table 1: Summary of traffic safety facts per country selected.

	Argentina	Brazil	Korea	Japan	USA	EU (27 countries)
HGV definition	>3,5 t	>3,5 t	>5 t	>4,5t	>4,5t	>3,5t
Top 3 road users fatality injured	Motorcyclists (42%) Car occupants (34%) Pedestrians (10%)	-	Pedestrians (34%) Car occupants (12%) HGV/lorry (10%)	Pedestrians (39%) Cyclists (17%) Car occupants (15%)	Lorry occupants (30%) Car occupants (30%) Pedestrians (17%)	Car occupants (45%) Pedestrians (18%) Motorcyclists (16%)
Top 3 fatalities in collision with HGV	Motorcyclists Car Light HGV	-	Pedestrians HGV/lorry Motorcyclists	Car occupants Pedestrians Cyclists	Lorry occupants Car occupants Pedestrians	Pedestrians Cyclists Car occupants

5. Conclusions, Lessons Learnt and Next Steps

The present work achieved in this project has been shared and discuss together with global partners that might be relevant to continue this work globally. The project has promoted the collision matrix for HGVs and also more generally for all road users. This discussion has mainly involved WHO with their road observatory, ITF with their IRTAD network and some of the road observatories globally. Thanks to many stakeholders, mentioned at the beginning of the report, who shared and helped us in our task, the project was successful to gather a significant information on the collision matrix topic.
WHO initiated the road observatory in different regions of the world. There are seven road observatories worldwide (European, Ibero-American, African, Asia Pacific, Western Balkan, Eastern partnership, Arab integrated) coordinating road safety data in those regions. After a joint effort by FIA, the World Bank and ITF to coordinate regional observatories where WHO played a prominent role, it is ITF that is now organising informal, periodic meetings with observatories. WHO is usually represented in these meetings.
A dialogue with IRTAD secretary showed a strong interest to publish a collision matrix for countries outside the EU region. At the beginning of September, IRTAD secretary communicated to us that during a meeting with some IRTAD members, they agreed that IRTAD will try to collect data for a collision matrix among their non- EU countries. This ambition is welcome and SAFER will follow this initiative in the future.

Regarding the step forward, several challenges has been identified during our project. Below, the reader can take part in our conclusions:

- Harmonisation of the HGV definition: to merge a large data set between countries, there is a need of a definition that makes entities comparable. HGV definition varies between many countries and a work is to be done to select the relevant segment of HGV that is to be included regarding the gross weight of the vehicle.
- Ensure the data is comparable regarding the selection criteria and no other data is included (i.e. no single vehicle collision included). In this particular case, single vehicles crashes are also important to identify to be able to address them in the future.
- Ensure that suicides are not included in the dataset.

6. Dissemination and Publications

A SAFER seminar has been organized on November 5th to spread the results and gather stakeholders to discuss the topic. The seminar gathered EU, Ministry of Argentina, IRTAD, Volvo/Scania and WHO.

Further reading

Japan Trucking Association 2024 aboutjta2024eng.pdf
National Highway Traffic Safety Administration (NHTSA). Data Visualisation – Fatality Analysis Reporting System (FARS) Data Visualization - Fatality Analysis Reporting System (FARS) (dot.gov)
Brazil Ministery of Transport. National Database of Traffic Accidents in Brazil (Renaest) Registro Nacional de Sinistros e Estatísticas de Trânsito — Ministério dos Transportes (www.gov.br) (under construction).
Korean Ministry of land, Infrastructure and Transport Ministry of Land,Infrastructure and Transport (molit.go.kr)
European Road Safety Observatory - European Commission (europa.eu)
Ibero-American Road SAfety Observatory | OISEVI
African Road Safety Observatory | SSATP
Asia Pacific Road Safety Observatory (APRSO)
About Western Balkans Road Safety Observatory - Transport Community (transport-community.org)
Eastern Partnership Regional Road Safety Observatory (EaP RSO) Work starts on the Eastern Partnership Road Safety Observatory - EASST
Arab Integrated Road Safety Observatory (AIRSO)

7. Acknowledgement

Thanks SAFER for the opportunity to perform this explorative study. Thanks project partners that contributed to this study and bring on their knowledge and expertise. Thank you to all people globally who coutributed with their engagement, contacts and ideas to dig into the collision matrix topic and to propose a way of working forward in the future:

AB Volvo - Sava Iancovici, Anna Thenader, Kristian Holmquist
Argentina – National Road Safety Agency (ANSV) - Mercedes LAVEZZOLO
Chalmers University of Technology - Jordanka Kovaceva
European Commission Directorate General Transport and Mobility –Peter Whitten
Folksam – Anders Kullgren
Head of the National Road Safety Observatory -Álvaro Gómez Méndez
International Transport Forum – International Road Traffic Safety Database – Véronique Feypell
Ministry of Transport Brazil - National Database of Traffic Accidents- Basilio Militani Neto
National Highway Traffic Safety Administration – Ann Mallory
National Police Agency Japan – Takeba Yasuto

National Technical University of Athens (NTUA) –George Yannis
Traffic Science Institute, Korea Road Traffic Authority Korea – KOROAD - Hyo Seung Han
Trivector - Francisco Malucelli
Scania – Reimert Sjöblom
Swedish Transport Agency - Tomas Fredlund
Swedish National Road and Transport Research Institute – Anna Vadeby
Universidade Federal do Parana (Brazil) - Jorge Tiago Bastos
World Health Organisation WHO Secretary for Road Traffic - Maria Segui Gomez, Matts-Åke Belin