HEALTH AND SAFETY AUTHORITY

A Review of **Work-Related Deaths Involving Vehicles** in Ireland **2010–2019**

Our Vision:
Healthy, safe and productive lives and enterprises

Contents

Glossary of Acronyms

CSO – Central Statistics Office

ESAW – European Statistics on Accidents at Work

HSA – Health and Safety Authority

ISCO-08 – International Standard Classification of Occupations

LFS – Labour Force Survey

MEWP - Mobile Elevated Work Platforms

NACE rev 2 - Statistical Classification of Economic Activities in the European Community

PTO – Power Take-off

SUV – Sports Utility Vehicle

FOREWORD

Dr Sharon McGuinness
Chief Executive Officer

The Health and Safety Authority reports on non-fatal and fatal work related incidents on an annual basis. One area which has come to the fore as being important in relation to work related deaths is that involving vehicles. Over the ten-year period 2010-2019, 44% of all reported work-related fatal incidents have involved vehicles. This report focuses on the key characteristics associated with those deaths.

Many workers drive or operate a vehicle; or routinely work with, on, or around vehicles as part of their job. For many others however, driving for work is a secondary activity to their main occupation and many of these work-related deaths involving vehicles come from within workplaces (e.g. construction sites, farms, manufacturing plants) as well as on the roads. Incidents involving those vehicles contribute considerably to work-related deaths in Ireland. All workers who operate or work with, on, or around vehicles are at risk of injury, regardless of whether their activity involves cars, light, heavy or specialised vehicles or whether it is a main or incidental part of their work.

We know that at-work drivers have a higher collision rate than the general driving population, even after their higher mileages are taken into account. It is estimated that driving for work accounts for involvement in one in three fatal road collisions every year.

Work-related incidents involving vehicles are not just an issue for those operating or working around vehicles. While workers accounted for the majority of those who died as a result of work-related vehicle activities, other workers, by-standers and non-workers also tragically lost their lives in such incidents.

Employers or self-employed people must, by law, manage the risks that may arise when they or their employees drive for work. While working drivers are responsible for how they drive, employers are responsible for putting procedures in place to make sure their employees drive for work safely at all times. Recognising and managing the risks associated with driving for work will have a positive impact on outcomes for those who operate vehicles for work in any setting.

Agriculture was highlighted as the most dangerous sector in which to work in terms of vehicle safety, with over half of work-related deaths involving vehicles occurring in this sector; tractors accounted for just over half of those deaths. In addition, the evidence suggests that older farmers are most at risk. Of the total work-related deaths involving vehicles reported to the Authority during this ten-year period, 104 (48%) involved people over the age of 55.

This report also highlights the substantial risk that work-related vehicles pose to children and young people. Almost half of all non-worker victims were under 18 years of age; with the vast majority of those (75%) losing their lives on farms. We can see from the evidence that work-related deaths involving vehicles increases during the summer months and in particular in the Agriculture sector. Children often help out on farms during their summer holidays and can tragically be the victims of fatal incidents involving vehicles. Farmers and all working on the farm need to be extra vigilant when children are about and ensure all good safety practices are in place to protect the most vulnerable. Most children killed on a farm are members of the farmer's own family, which makes these deaths even more tragic.

Other sectors, which have experienced high numbers of work-related deaths involving vehicles are transportation and storage, construction and wholesale and retail trade; repair of vehicles. Our focus on these sectors, and in particular agriculture and construction, remains strong and these have been identified as key priority sectors under our present strategy 2019-2021. Through the efforts of the work-related vehicle safety program, the Authority is committed to influencing a sustainable reduction in the numbers of people killed, seriously injured or who suffer ill-health as a result of vehicles being used for work, in all sectors.

The Authority's programme of work involves the provision of guidance, resources and educational supports, as well as monitoring compliance through inspection and carrying out investigations and prosecutions. We are committed to working with employers, workers and key stakeholders to ensure vehicle risks are understood and well managed to prevent vehicle-related harm at work. In terms of additional support and advice, we encourage workers and employers to access vehicle risk management resources at www.vehiclesatwork.ie, www.loadsafe.ie and www.drivingforwork.ie.

I would like to acknowledge and thank partners such as the Road Safety Authority (RSA), An Garda Síochána, relevant government departments, education bodies, industry associations, insurance bodies, employer groups and trade unions with whom we work closely to promote the importance of work-related vehicle safety across all work sectors.

The dedication and effort of all those involved in the work-related vehicle safety program in the past 10 years has no doubt saved lives. I would also like to thank the staff of the Authority as they continue their commitment to our vision of realising healthy, safe and productive lives and enterprises.

Through our own work programme and through collaborative actions with key partners in the national Road Safety Strategy, I look forward to continuing our efforts to influence a further reduction in deaths and injuries associated with work-related vehicle operations in Irish businesses that occur in the workplace and on the road.

Dr Sharon McGuinness
Chief Executive Officer

April 2021

Executive Summary

In the ten-year period 2010-2019, there were 490 work-related deaths in the Republic of Ireland. Of these, 217 (44%) involved vehicles.

This report focuses on the characteristics of those 217 work-related deaths. It aims to deliver a complete picture of all deaths that have been reported to the Authority where a vehicle is identified as being at the centre of a work activity immediately preceding the death. It includes deaths that occurred as a result of vehicles being driven, people working on or around moving vehicles, and also includes those that occurred as a result of machinery powered by vehicles, vehicle attachments, towed equipment and trailers, vehicle loading and unloading operations, maintenance and repair of vehicle attachments etc. (A full list of what is considered 'vehicle-related' is included in Appendix 1).

Some victims may have died immediately at the scene of the incident, whereas others may have died from their injuries days or weeks after the incident occurred. These deaths could also have occurred at a different location to that in which the incident occurred. This report describes the incidents that led to death, however, it generally uses the word *deaths*, both for consistency and to highlight the tragic loss of life involved in these events.

Key Findings

- Of the 217 work-related deaths involving vehicles, 82% occurred in four economic sectors, with the Agriculture sector alone accounting for over half (110). Other sectors with 20 or more deaths included Transportation and Storage (25), Construction (24) and Wholesale and Retail Trade; Repair of Vehicles (20).
- Most deaths (183, 84%) occurred to workers, with 34 deaths of non-workers.
- For workers, deaths occurred in all age groups; however the 55-64 year age group was the most affected, with 43 fatalities.
- Almost one in two non-worker victims were aged under 18 years.
- The majority of victims were male (95%).
- The vehicles involved in the greatest number of work-related deaths were tractors (64), followed by trucks (35), loaders/telehandlers (20), quad bikes (13) and forklifts (13).
- Work-related deaths involving vehicles increased during the summer months from May to July; this was driven by the Agriculture sector, possibly reflecting increased farming activity in summer.
- The most common type of fatal incident involved vehicles striking people on foot or on bicycles (82). Of these, 27 involved parked vehicles rolling out of control, in most cases because the handbrake was insufficiently engaged, or was faulty. Forty-four cases involved vehicle collisions[1] and 21 cases involved falls from vehicles.
- Forty-three deaths occurred on public roads, of which 21 involved vehicle collisions. Other environments had a wider variety of incidents leading to deaths, with vehicles striking people either on foot or on bicycles being the most prominent (68).
- The single most common working process of victims at the time of the incident was maintenance of vehicles (30). Other important working processes were storing, including loading and unloading (28), agricultural work with live animals (20) and agricultural work, working the land (18).
- Altogether, 60 work-related deaths involving vehicles were associated with various agricultural working processes (33% of all worker deaths). Twenty-five worker victims were engaged in farm related construction activities at the time of the incident.

1 Vehicle collisions represent incidents where vehicles struck other vehicles, structures or natural objects like trees, or overturned while driving. These are distinguished from incidents where vehicles struck a person on foot or riding a bicycle, where the damage was to the exposed victim outside the vehicle, not to the drivers or passengers.

- Work-related deaths involving vehicles were recorded in all counties except Louth and Longford. The greatest number were recorded in Cork (39) and Dublin (17). However, the Dublin region had the lowest rate of deaths per 100,000 workers. The highest rates were in the Border region (Donegal, Sligo, Leitrim, Cavan and Monaghan).
- Excluding Agriculture, fewer work-related deaths involving vehicles affected self-employed people (20%). However, deaths were still concentrated in smaller businesses with 33% involving businesses with 1-9 employees, and 29% involving businesses with 10-49 employees. Only 17% of deaths outside Agriculture occurred in businesses with 50 or more employees.

Agriculture Sector

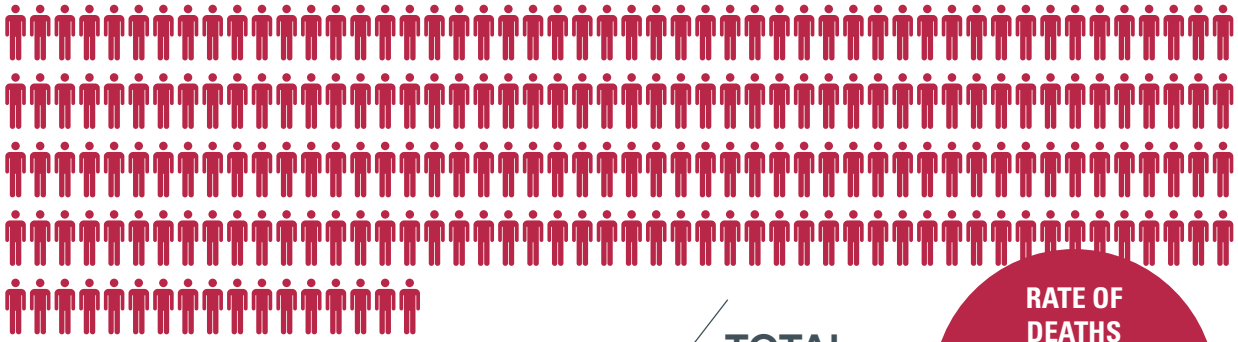
- The Agriculture sector accounted for over half (110, 51%) of work-related deaths involving vehicles.
- The deaths recorded in Agriculture disproportionately affected older people. Among workers, 65% of victims were aged 55 years or more. (For more information on the risk of work-related deaths among older workers in Agriculture and other sectors, see *The Ageing Workforce in Ireland: Working Conditions, Health and Extending Working Lives*, prepared by the Economic and Social Research Institute in 2019.[2])
- There were 15 deaths of non-workers in the Agriculture sector, of which 80% were under the age of 18. This indicates the risks vehicles at work pose to children and young people on farms.
- Deaths in Agriculture mainly involved smaller enterprises, with 76% involving self-employed people with no employee and 21% involving enterprises with 1-9 employees.

Agriculture alone accounted for over half of the 217 work-related deaths involving vehicles (110)

2 See: https://www.hsa.ie/eng/publications_and_forms/publications/corporate/esri_report_2019.pdf.

Work-related deaths involving vehicles 2010-2019

Total number of work-related deaths involving vehicles

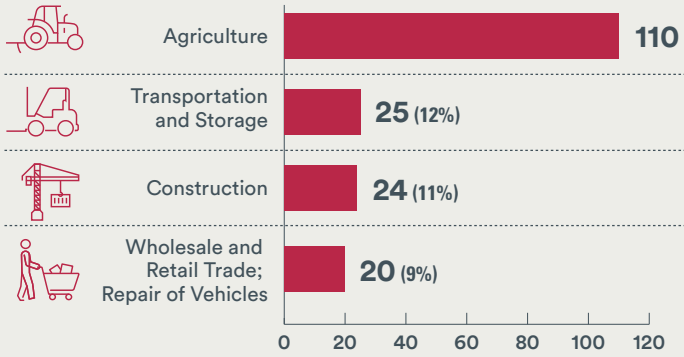


Percentage of all work-related deaths that involved vehicles **44%**

TOTAL 217

RATE OF DEATHS PER 100,000 WORKERS 1.1

82% of deaths occurred in four economic sectors



Most common vehicles involved

Tractor 64 (29%)

Truck 35 (16%)

Loader/telehandler 20 (9%)

Quad bike 13 (6%)

Forklift 13 (6%)

90%

deaths occurred in businesses with fewer than 50 employees

48%

deaths occurred in self-employed businesses with no employees

50%

worker victims were aged 55 years or more

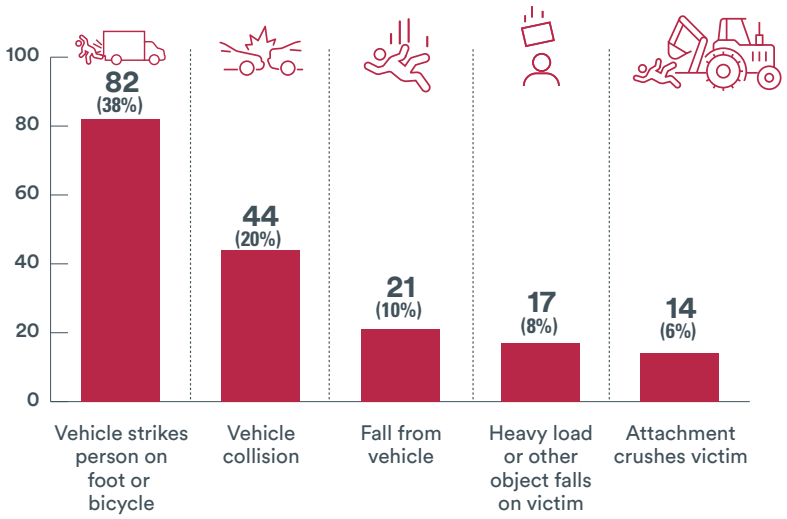
16%

victims were non-workers

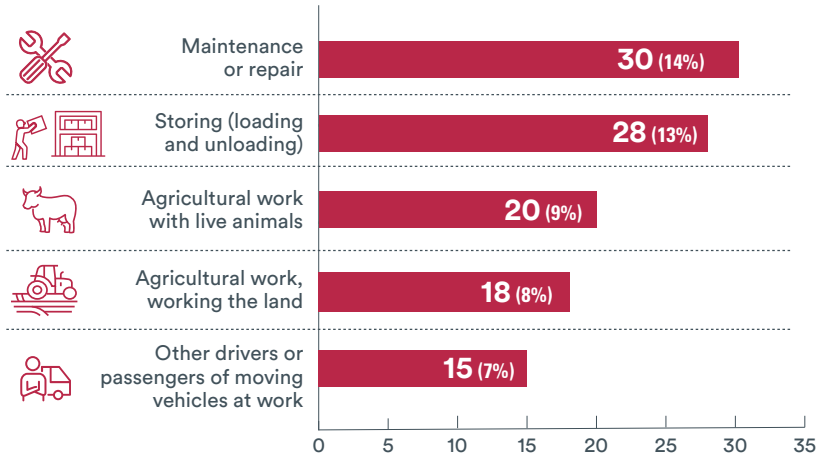
47%

non-worker victims were under 18 years of age

Most common types of incident

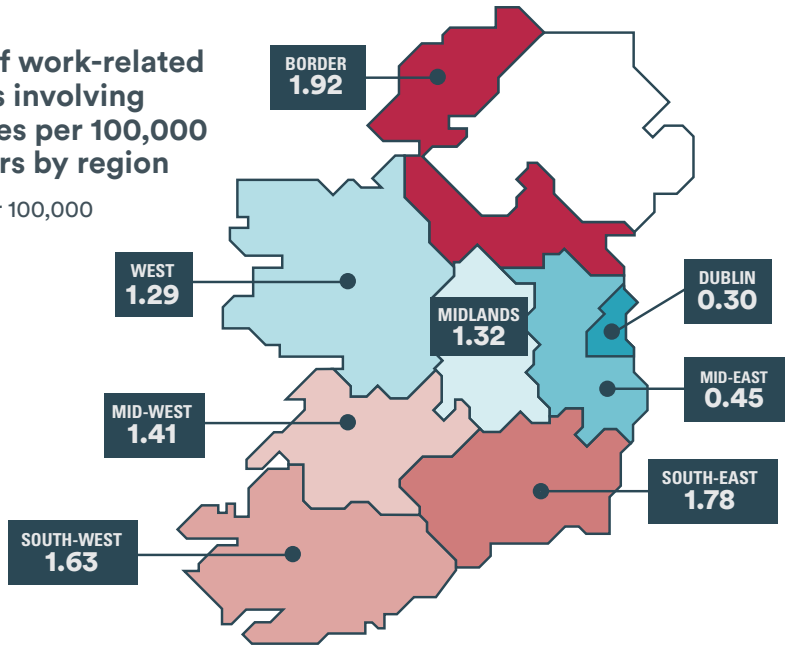


Most common working processes of victims at the time of incident



Rate of work-related deaths involving vehicles per 100,000 workers by region

Rate per 100,000 workers



Agriculture

Total number of deaths

Workers **95**

Non-workers **15**

TOTAL 110

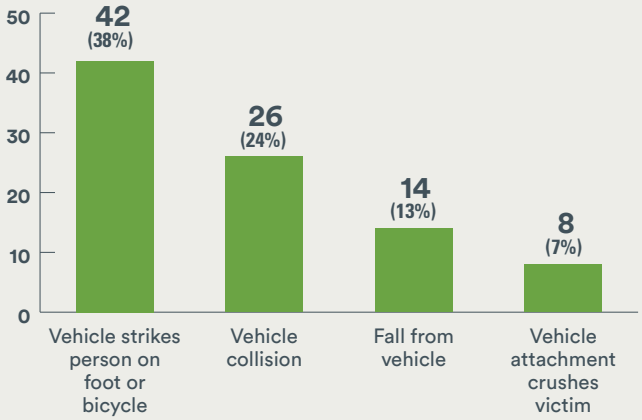
Most common vehicles involved in deaths

Tractor
60 (55%)

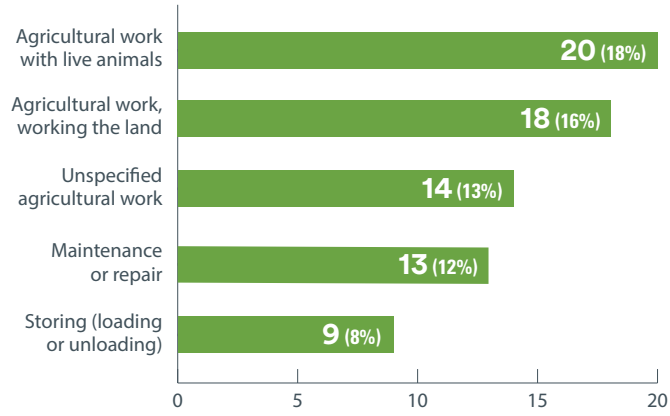
Loader/telehandler
13 (12%)

Quad bike
12 (11%)

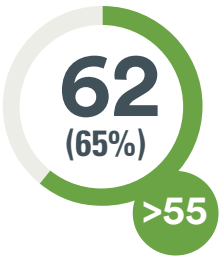
Most common type of incident



Most common working processes of worker victims at time of incident



Worker victims aged **55+ years**



Non-worker victims aged **under 18 years**

65% of victims were **self-employed**

50% of victims under 18 years were killed during the **summer holiday months of July and August**

Transportation and Storage

Total number of deaths Workers **19** Non-workers **6** TOTAL **25**

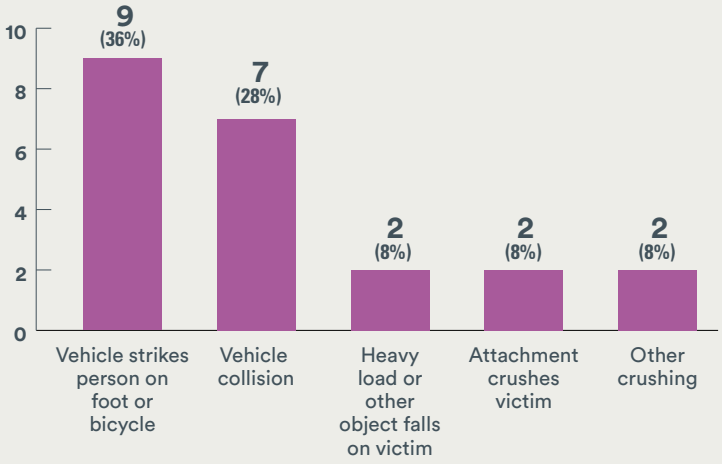
Most common vehicles involved in deaths

Truck 15 (60%)

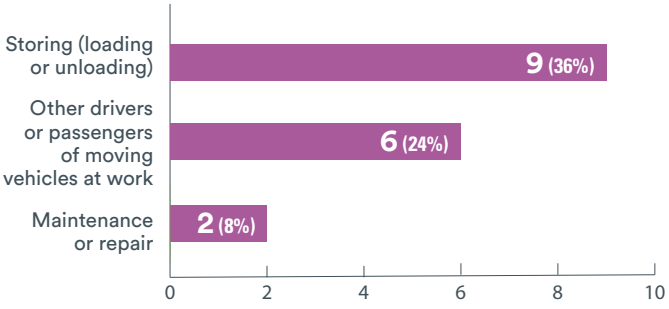
Mobile crane 2 (8%)

Horse and cart 2 (8%)

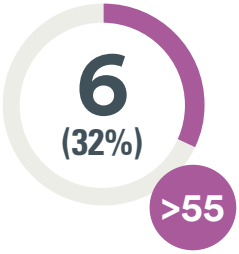
Most common type of incident



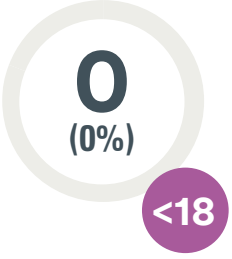
Most common working processes of worker victims at time of incident



Worker victims aged **55+ years**



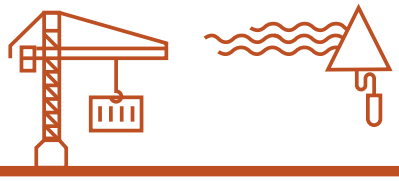
Non-worker victims aged **under 18 years**



48% of victims were **truck drivers**

44% of incidents occurred on **public roads**

Construction



Total number of deaths

Workers **21** Non-workers **3**

TOTAL 24

Most common vehicles involved in deaths

Mobile crane **4 (17%)**

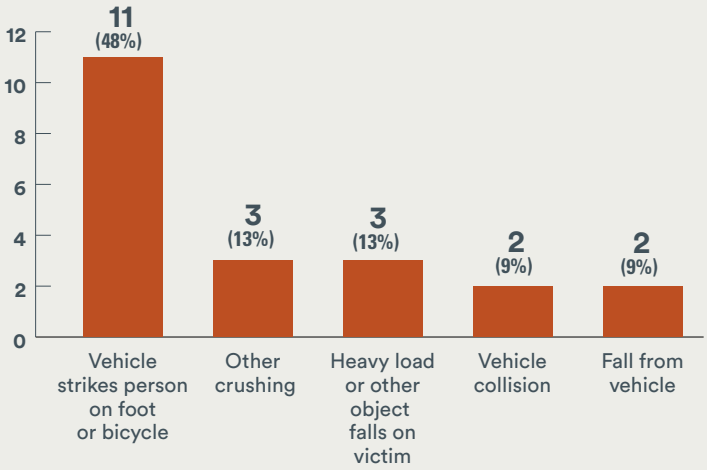
Loader/telehandler **3 (13%)**

Trailer **3 (13%)**

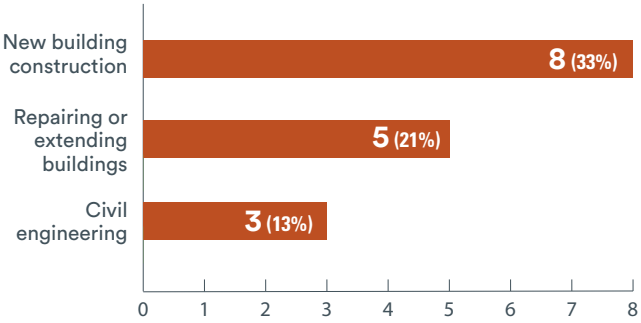
Excavator **3 (13%)**

Dump truck **3 (13%)**

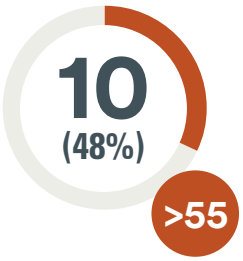
Most common type of incident



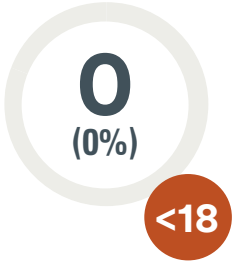
Most common working processes of worker victims at time of incident



Worker victims aged **55+ years**



Non-worker victims aged **under 18 years**



63% of incidents occurred on **construction sites**

Wholesale and Retail Trade; Repair of Vehicles

Total number of deaths Workers **18** Non-workers **2** TOTAL **20**

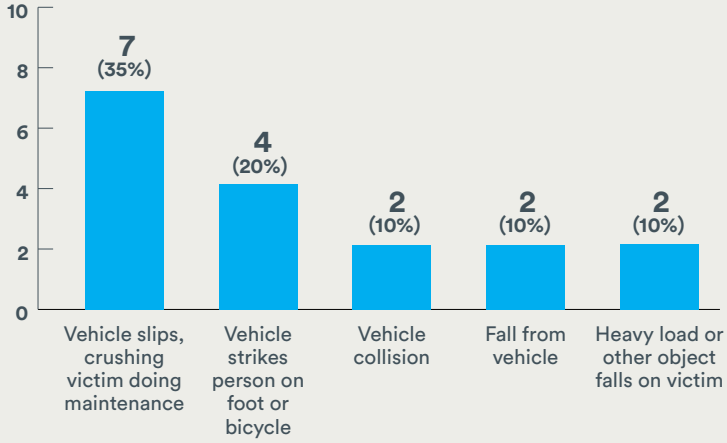
Most common vehicles involved in deaths

Car **6 (30%)**

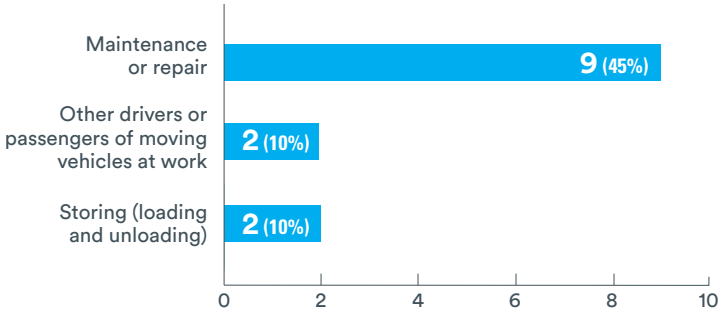
Truck **4 (20%)**

Forklift **3 (15%)**

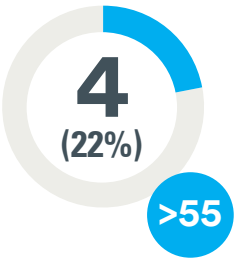
Most common type of incident



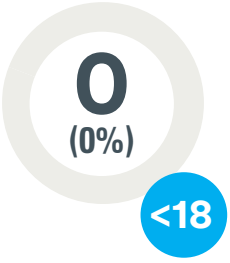
Most common working processes of worker victims at time of incident



Worker victims aged **55+ years**



Non-worker victims aged **under 18 years**



44% of worker victims were **vehicle mechanics**

45% of deaths occurred in **maintenance workshops**

SECTION 1

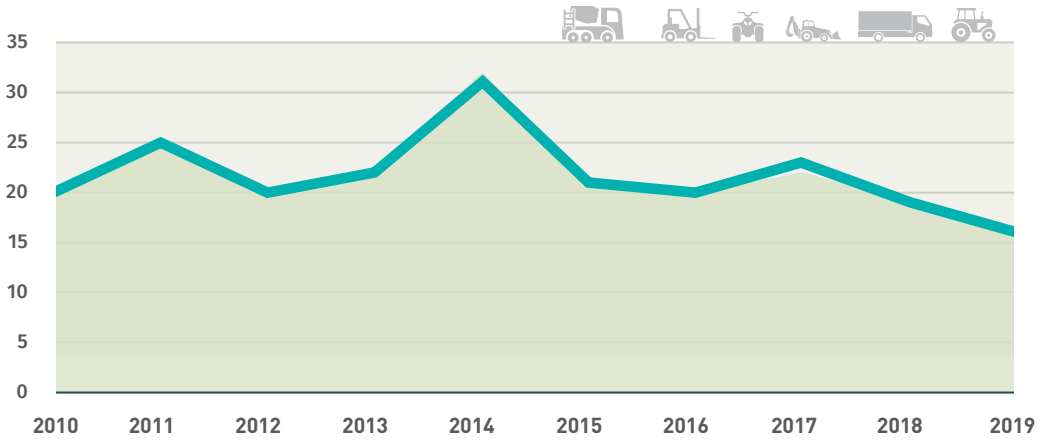
TRENDS AND DEMOGRAPHICS

1.1 Trend, 2010-2019

In the ten year period from 2010 to 2019 there were a total of 217 work-related deaths involving vehicles. The annual number rose from 20 in 2010 to 31 in 2014, before falling to 16 in 2019, an overall 20% decrease. Figure 1.1a shows that the number of deaths fluctuated considerably from year to year, so it is difficult to discern a long-term trend.

Figure 1.1a:

Number of work-related deaths involving vehicles, 2010-2019

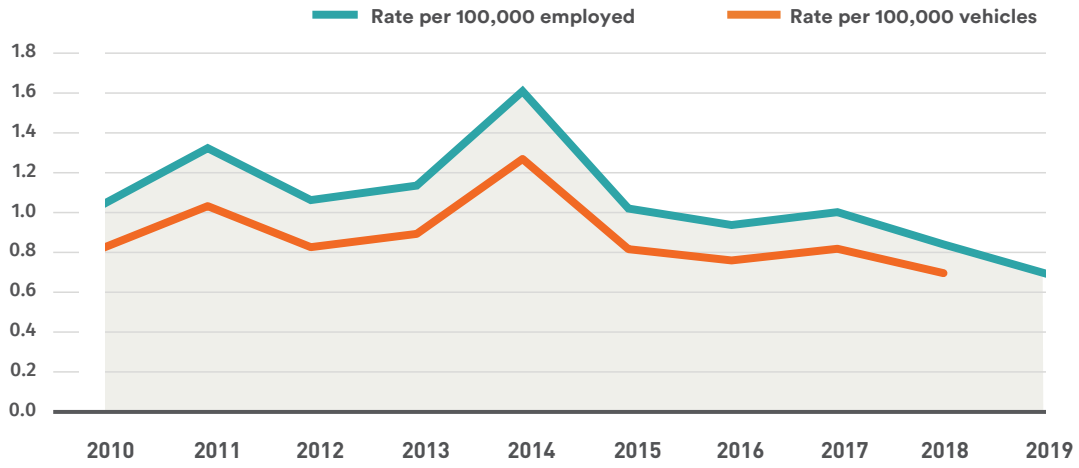


The number of workers in the Irish economy and the number of vehicles in use have changed over time. Figure 1.1b shows the rate of work-related deaths involving vehicles per 100,000 workers and per 100,000 vehicles in operation.

This shows a broadly similar pattern, suggesting a decline in work-related deaths involving vehicles over time, when taking economic activity and number of vehicles into account. The rate of deaths per 100,000 workers fell from 1.0 to 0.7 over the period, representing a 34% decrease.

Figure 1.1b:

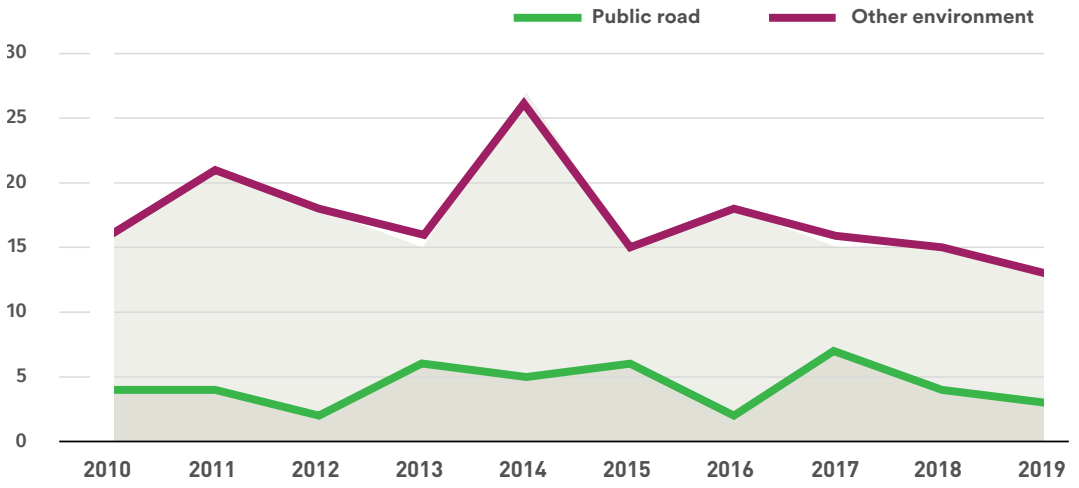
Rate of work-related deaths involving vehicles per 100,000 workers[3], and per 100,000 vehicles in use nationally, 2010-2019 [4]



The number of work-related deaths involving vehicles that occurred on public roads[5], versus all other working environments, as notified to the Authority are shown in Figure 1.1c.

Figure 1.1c:

Number of work-related deaths involving vehicles that occurred on public roads and in all other environments, 2010-2019



3 Based on data from the CSO's Labour Force Survey, table *QLF01: Persons aged 15 years and over in Employment by Sex, ILO Economic Status and Quarter*, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=QLF01&PLanguage=0. Includes self-employed workers.

4 Based on data from the CSO's Road Traffic Volumes, table *THA10: Road Traffic Volumes by Type of Vehicle, Year and Statistic*, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA10&PLanguage=0. No data is currently available for 2019.

5 See *Limitations of Data* in this report, in Section 4.

1.2 | Economic Sector

Economic sectors are assigned using NACE Rev 2. Classification system.[6]

- 82% of all work-related deaths involving vehicles occurred in four economic sectors - Agriculture, Transportation and Storage, Construction and Wholesale and Retail Trade; Repair of Vehicles.
- Over half of all work-related deaths involving vehicles occurred in NACE A – Agriculture, Forestry and Fishing (110). All of these deaths occurred in Agriculture, with none in either Forestry or Fishing.
- There were 25 deaths in Transportation and Storage, 24 in Construction and 20 in Wholesale and Retail Trade; Repair of Vehicles.
- The remaining deaths occurred across a further nine economic sectors.

Table 1.2a shows the number of work-related deaths involving vehicles that occurred on public roads and in other working environments.

- Nine of the 110 deaths in Agriculture occurred on public roads (8%). By contrast, 11 of 25 deaths in Transportation and Storage occurred on public roads (44%).

Table 1.2a:

Number and percentage of work-related deaths involving vehicles on public roads and other environments in each NACE economic sector, 2010-2019

		Public road	Other environment	Total	%
A	Agriculture, forestry and fishing	9	101	**110**	50.7%
H	Transportation and storage	11	14	**25**	11.5%
F	Construction	5	19	**24**	11.1%
G	Wholesale and retail trade; repair of vehicles	2	18	**20**	9.2%
E	Water supply and waste management	5	8	**13**	6.0%
C	Manufacturing	0	8	**8**	3.7%
M	Professional, scientific and technical activities	3	0	**3**	1.4%
N	Administrative and support service activities	2	1	**3**	1.4%
O	Public administration and defence	2	1	**3**	1.4%
Q	Human health and social work activities	2	1	**3**	1.4%
B	Mining and quarrying	0	2	**2**	0.9%
R	Arts, entertainment and recreation	2	0	**2**	0.9%
P	Education	0	1	**1**	0.5%
	Total	**43**	**174**	**217**	**100.0%**

The figures in Table 1.2a are represented in Figure 1.2 for the six economic sectors with the highest number of deaths. Of these six economic sectors, all had deaths both on public roads and in other working environments, except Manufacturing, which had no deaths on public roads. Relatively high proportions of work-related deaths involving vehicles occurred on public roads in Transportation and Storage, as well as Water Supply and Waste Management.

6 Statistical Classification of Economic Activities in the European Community, Rev. 2, available: https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC&CFID=1110191&CFTOKEN=3ca0f6dadb71d377-1F2DE4F0-F7BF-BCAE-31C18C386EA88F92&jsessionid=f900daad75c14b465532m.

Figure 1.2:

Number of work-related deaths involving vehicles on public roads and other working environments in the six NACE economic sectors with the highest number of deaths

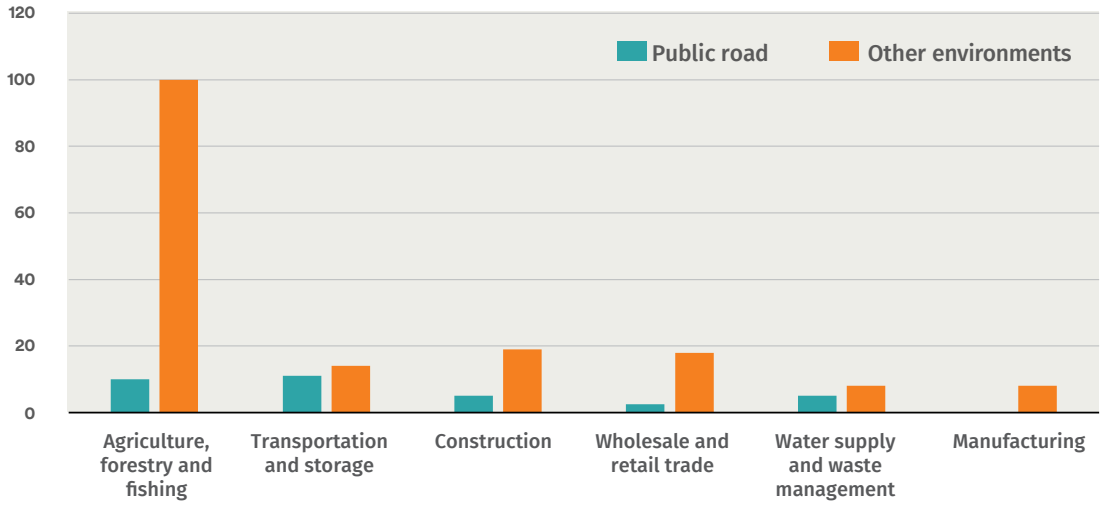


Table 1.2b shows the number of work-related deaths involving vehicles in each economic sector per 100,000 workers in the sector.

- Rates were much higher in Agriculture, Forestry and Fishing (10.1 per 100,000 workers) compared with other sectors.
- Relatively high rates were also found in Transportation and Storage (2.8 per 100,000 workers) and Construction (2.2 per 100,000 workers).

Note, however, that higher numbers of workers in Agriculture were reported in the CSO's Census of Agriculture, which would lead to a lower rate for this sector.[7] Thus, caution should be exercised in interpreting this table.

Table 1.2b:

Number and rate of work-related deaths per 100,000 workers involving vehicles in relevant NACE economic sector, 2010-2019

		Deaths	Rate per 100,000 workers[8]
A	Agriculture, forestry and fishing	110	10.1
H	Transportation and storage	25	2.8
F	Construction	24	2.2
B-E[9]	Industry	23	0.9
G	Wholesale and retail trade; repair of vehicles	20	0.7
N	Administrative and support service activities	3	0.3
O	Public administration and defence	3	0.3
M	Professional, scientific and technical activities	3	0.2
R	Arts, entertainment and recreation	2	0.2
Q	Human health and social work activities	3	0.1
P	Education	1	0.1
	Total	**217**	**1.1**

7 CSO Census of Agriculture, table *AVA21: Farm Labour Input by Type of Farm Labour Input, County, Year and Statistic*, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?Maintable=AVA21&Planguage=0.

8 Rates are generated using CSO's Labour Force Survey table *QLF03: Person aged 15 years and over in Employment by Sex, NACE Rev 2 Economic Sector, Quarter and Statistic*, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=QLF03&PLanguage=0.

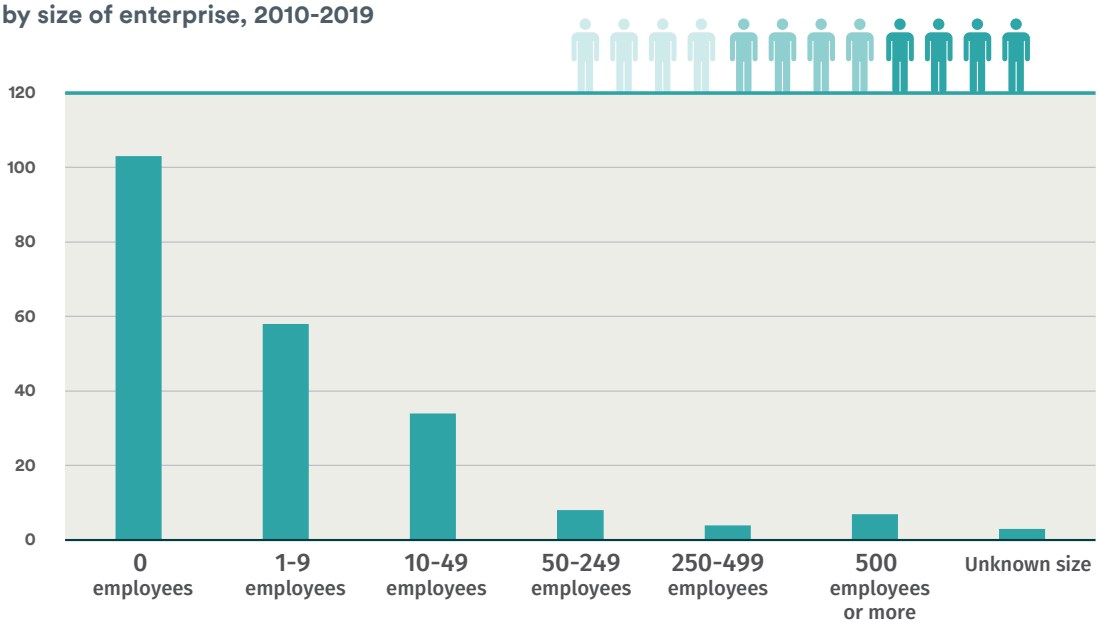
9 The CSO provides numbers employed only for the economic sectors B – Mining and quarrying, C – Manufacturing, D – Electricity, gas, steam and air conditioning supply, and E – Water supply and waste management combined into one category: B-E – Industry.

1.3 | Size of Enterprise

Most work-related deaths involving vehicles occurred in smaller businesses (Figure 1.3a). Almost one in two involved self-employed people with no employees. Nine in ten deaths involved businesses with fewer than 50 employees.

Figure 1.3a:

Number of work-related deaths involving vehicles, by size of enterprise, 2010-2019

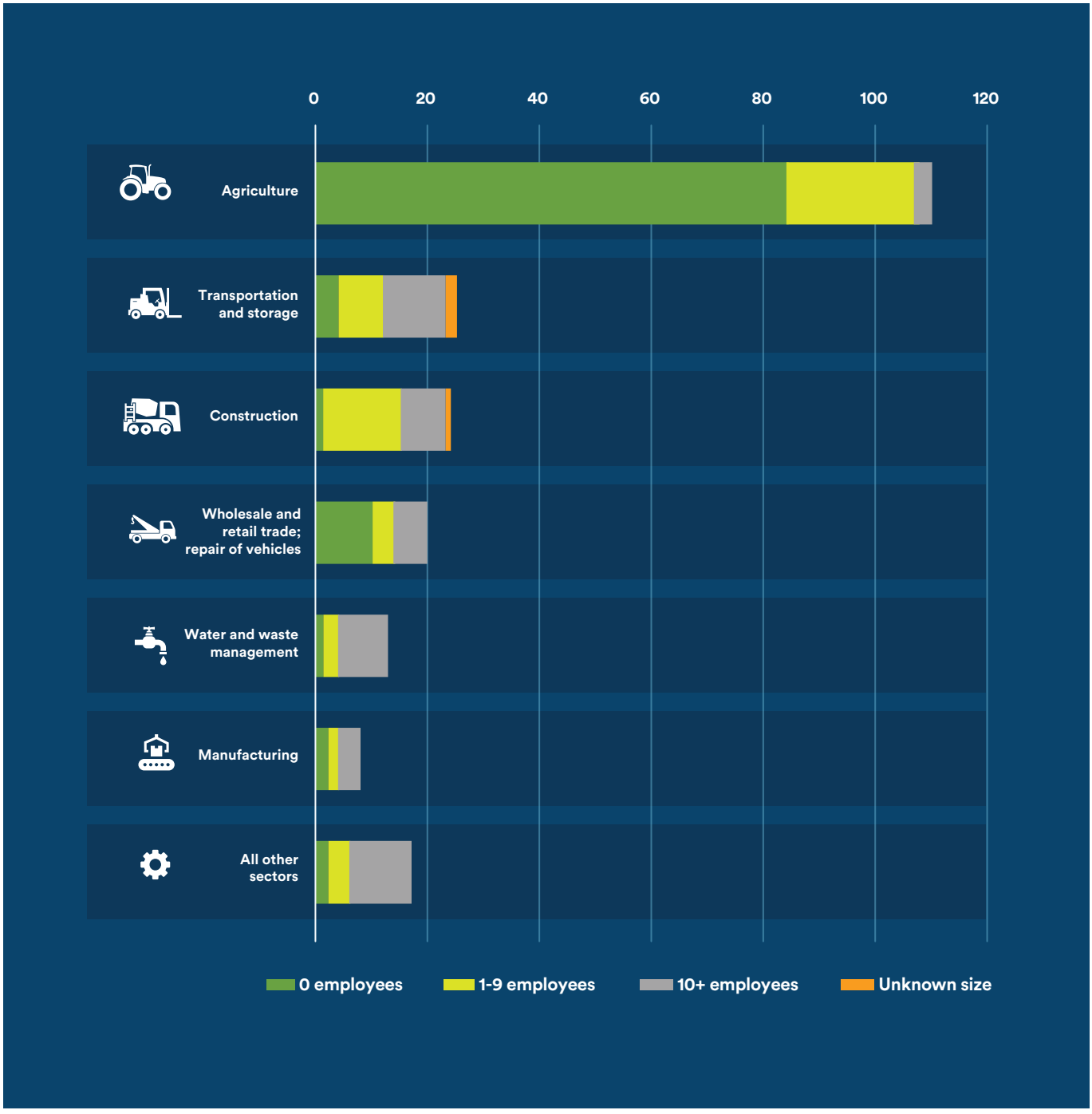


Breaking this down by economic sector, Figure 1.3b shows that most of the work-related deaths involving vehicles in Agriculture (84), and Wholesale and Retail Trade; Repair of Vehicles (10) involved self-employed people with no employees. In other sectors, work-related deaths involving vehicles generally affected businesses with one or more employee.

Most of the work-related deaths involving vehicles in Agriculture (84), and Wholesale and Retail Trade; Repair of Vehicles (10) involved self-employed people with no employees

Figure 1.3b:

Number of work-related deaths involving vehicles, by NACE economic sector and size of enterprise, 2010-2019[10]



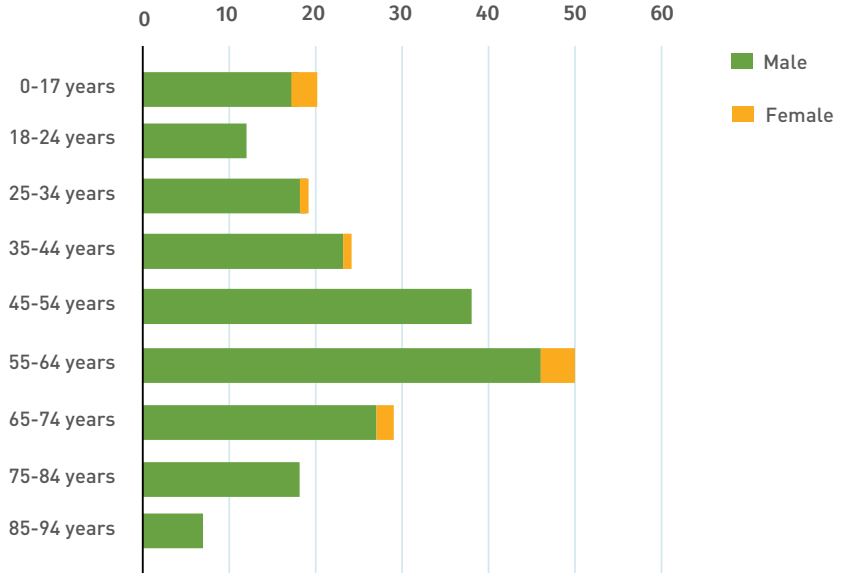
10 In Figure 1.3b, businesses with 10-49 employees, 50-249 employees and 500 or more employees are combined for clarity.

1.4 | Age and Sex of Victim

Of the 217 work-related deaths involving vehicles over the ten year period, 206 (95%) were male. The highest number of deaths occurred in the 55-64 years age group (50, 23%) (Figure 1.4).

Figure 1.4:

Number of work-related deaths involving vehicles, by age group and sex, 2010-2019

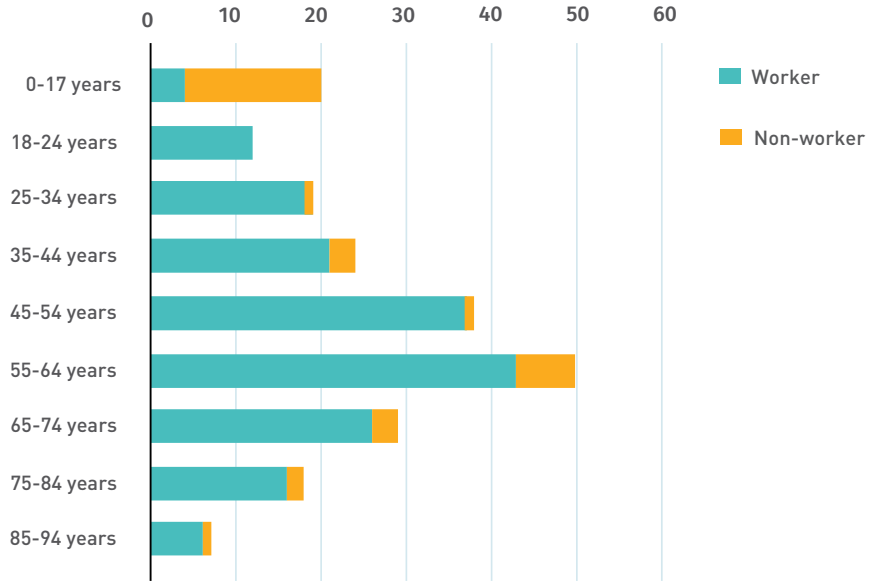


1.5 | Age and Employment Status of Victim

Workers accounted for 183 (84%) of the 217 victims of work-related deaths involving vehicles. Figure 1.5 separates age categories into workers and non-workers, and shows that almost half of all non-worker victims were under 18 years of age (16 deaths). This shows the significant risk that work-related vehicles pose to children and young people.

Figure 1.5:

Number of work-related deaths involving vehicles, by age group and employment status, 2010-2019



1.6 | Occupation of Victim

The occupations of victims are assigned according to the International Standard Classification of Occupations (ISCO-08). For simplicity, these are listed in Table 1.6 according to their headline categories; however, the list extends to over 600 occupations.

- Taking the total number of deaths, over one in three victims were skilled agricultural workers. Of these, all but three worked in the Agriculture sector[11].
- Thirty-four victims were plant or machine operators. These were mainly truck drivers (19), but also drivers of farm and forestry vehicles (six), earthmoving vehicles (four) and other vehicles. Of the 24 victims in Transportation and Storage, 14 were plant or machine operators.
- Thirty victims were classified as having elementary occupations. These included labourers in construction, farming, manufacturing and turf-cutting, as well as rubbish collectors and sorters, freight handlers and cleaners.
- Seventeen victims were craft and related trades workers. These were mainly vehicle mechanics and tyre fitters (11). Most of the other victims were involved in construction (stonemasons, house builders, etc.).

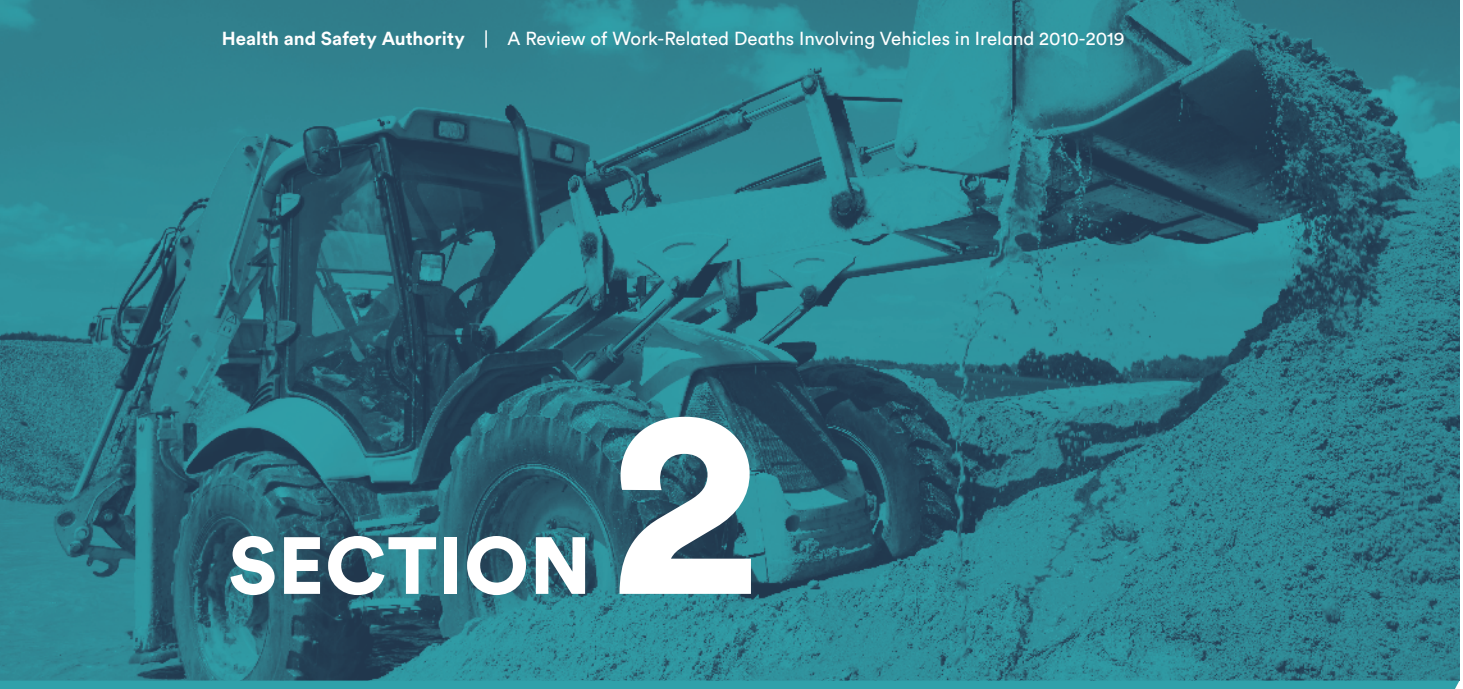
In general, the occupations of victims of work-related deaths involving vehicles tended to involve physical labour in the presence of vehicles.

Table 1.6:

Number and percentage of work-related deaths involving vehicles by occupation of victim, in selected NACE economic sectors, 2010-2019

	Agriculture	Transportation and storage	Construction	Wholesale and Retail Trade; Repair of Vehicles	Other sectors	Total	%
Skilled agricultural, forestry and fishery workers	76	0	2	0	1	**79**	36.4%
Plant and machine operators and assemblers	8	14	2	5	5	**34**	15.7%
Elementary occupations	8	1	6	2	13	**30**	13.8%
Craft and related trades workers	1	2	5	8	1	**17**	7.8%
Technicians and associate professionals	0	0	3	0	4	**7**	3.2%
Managers	0	0	3	2	1	**6**	2.8%
Professionals	0	0	0	1	3	**4**	1.8%
Service and sales workers	2	0	0	0	1	**3**	1.4%
Clerical support workers	0	2	0	0	0	**2**	0.9%
Unknown	0	0	0	0	1	**1**	0.5%
Non-worker	15	6	3	2	8	**34**	15.7%
Total	**110**	**25**	**24**	**20**	**38**	**217**	**100.0%**

11 These victims were part-time farmers who were engaged in economic activity outside the agriculture sector when fatal incidents occurred.



SECTION 2

CHARACTERISTICS OF INCIDENTS CAUSING DEATH

While many victims of work-related deaths involving vehicles died at the scene of the incident, some survived but died later at a different location from where they sustained their injuries. This section deals with the time and place of the incident where injuries occurred, not the time of death. For consistency, the word *death* is used throughout.

2.1 | Time of Day

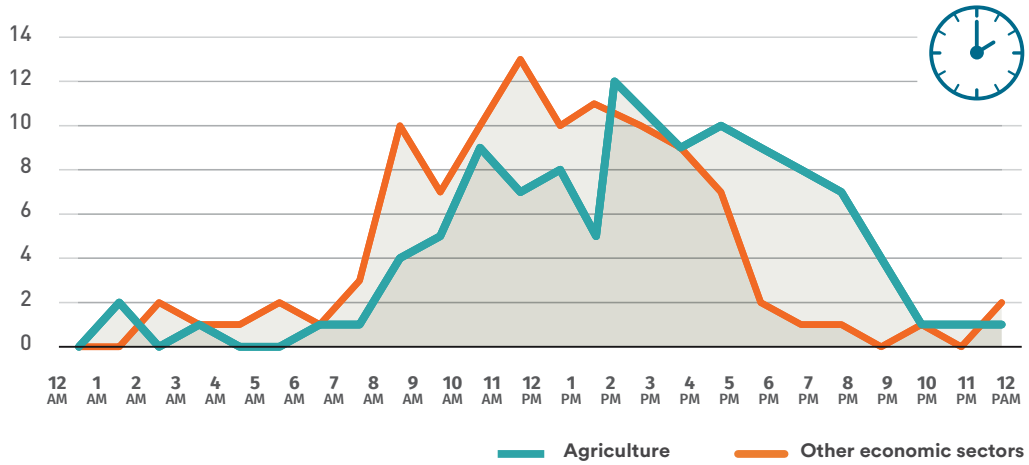
Figure 2.1 shows the hour of day in which work-related deaths involving vehicles occurred, in Agriculture and in all other economic sectors. Nine deaths occurred at unknown times; these are excluded from this graph.

- Most deaths were clustered around conventional working hours, from 8am to 5pm.
- There were fewer deaths in Agriculture in the early part of the day, compared with other sectors. Deaths in Agriculture peaked around 2pm, and 27% of all deaths in Agriculture occurred from 5pm or later, compared with just 7% in other sectors.
- Agricultural activity may continue later into the evening than other economic sectors. This is particularly the case during the busy farming period of summer and early autumn. Of the deaths involving vehicles in Agriculture that occurred from 5pm or later, 63% happened during the summer-autumn period of May to September.

Deaths in Agriculture peaked around 2pm

Figure 2.1:

Number of work-related deaths involving vehicles in Agriculture and other sectors, by hour of incident, 2010-2019



2.2 | Day of the Week

Figure 2.2a shows that work-related deaths involving vehicles were spread across the week, with noticeably fewer on Sundays (11, 5%).

Figure 2.2a:

Number of work-related deaths involving vehicles, by day of week of incident, 2010-2019

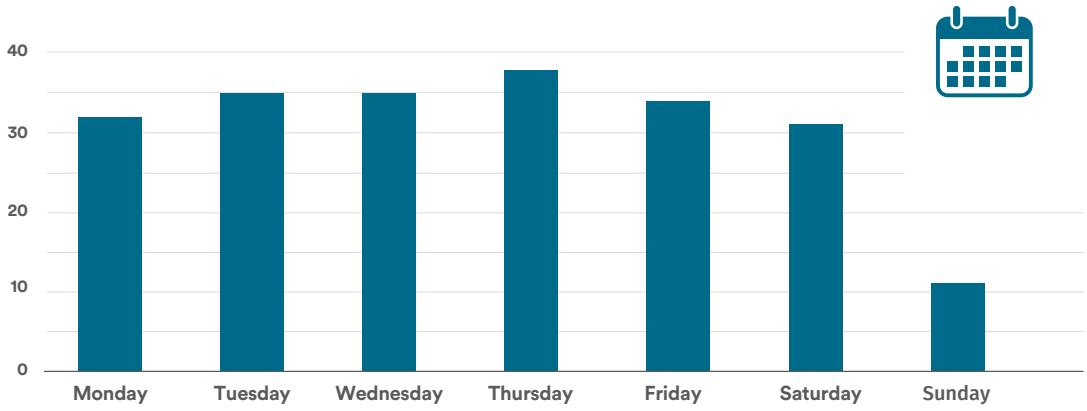
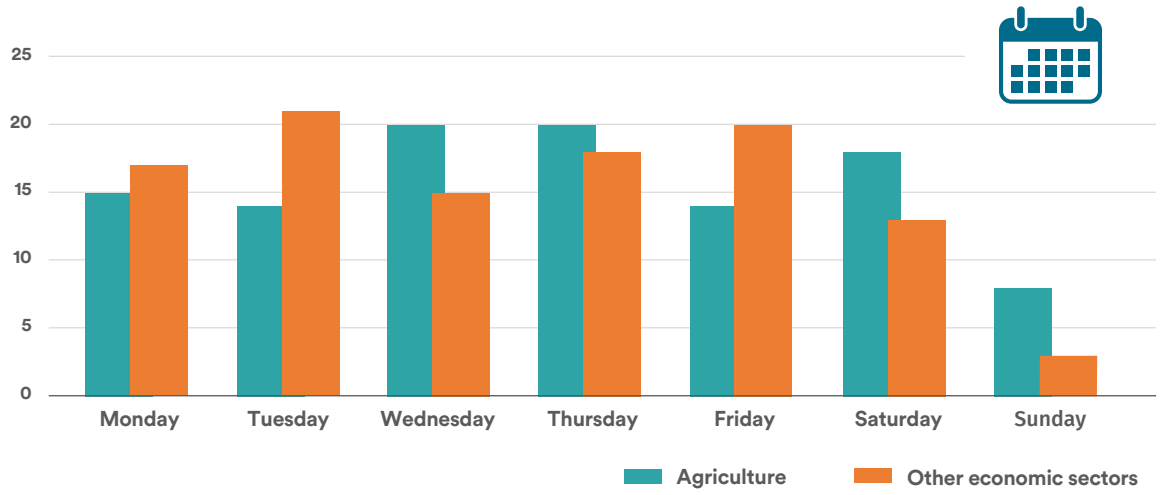


Figure 2.2b further breaks down the number of deaths by day of the week into Agriculture and all other sectors.

- A higher number of deaths occurred on Saturdays and Sundays in Agriculture (26) compared with other economic sectors (16). This may reflect continued farming activity over weekends, when some other economic sectors were less active.

Figure 2.2b:

Number of work-related deaths involving vehicles in Agriculture and other economic sectors, by day of week of incident, 2010-2019



2.3 | Month

Figure 2.3a shows the months in which work-related deaths involving vehicles occurred. These are broken down by the economic sector involved.

This shows that the number of deaths rose considerably during the summer months of May (24), June (24) and July (26). Note, however, that most of these summer deaths involved the Agriculture sector; excluding Agriculture the greatest number of deaths occurred in October (13).

The rise of deaths during summer in Agriculture is probably related to increased farm activity during those months.

Figure 2.3a:

Number of work-related deaths involving vehicles, by month of incident and NACE economic sector, 2010-2019

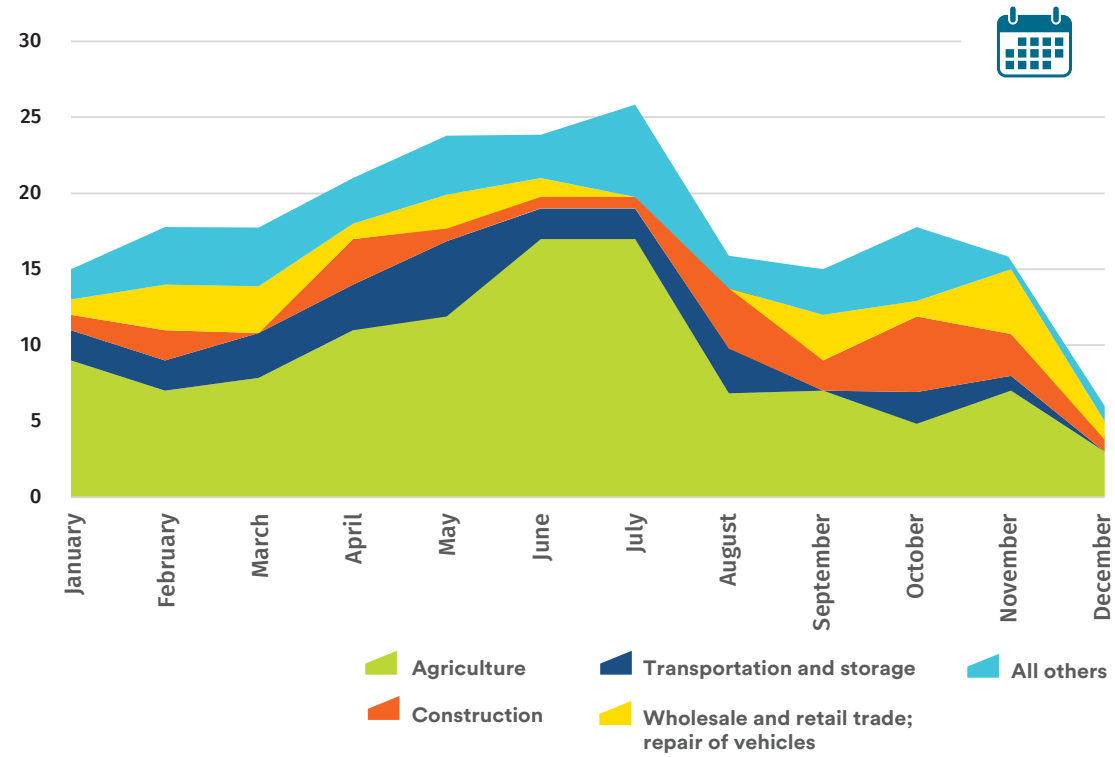
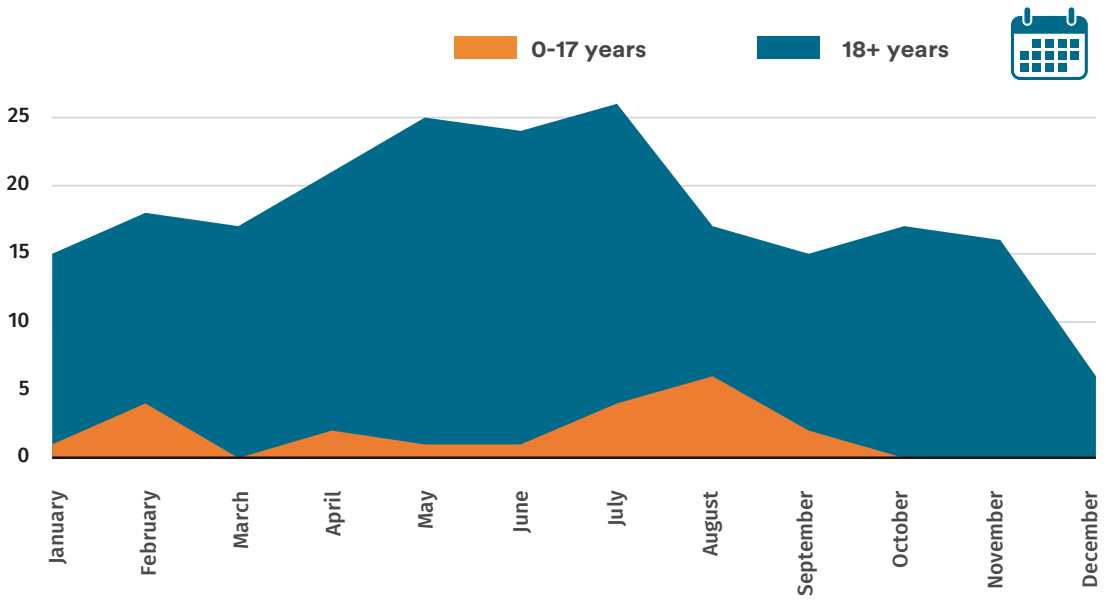


Figure 2.3b shows that deaths involving victims aged under 18 years were highest during the summer holiday months of July (four) and August (five). Almost one in two deaths to children and young people under 18 years occurred during these summer holiday months.

Eighty-nine percent of deaths in the under 18 age group during July and August occurred in the Agriculture sector. This shows that a high proportion of work-related vehicle deaths involving children and young people were associated with farming activity during the summer holiday months.

Figure 2.3b:

Number of work-related deaths involving vehicles by month of incident, young person under 18 years or adult, 2010-2019



2.4 | Region

Table 2.4 shows that the number of work-related deaths involving vehicles by county.

- The highest number of deaths occurred in Cork (39), Dublin (17) and Tipperary (14).
- No work-related deaths involving vehicles were reported in Louth or Longford.

The number of deaths can be affected by the number of people working and the kinds of economic activities that are happening in these counties. Table 2.4 shows the deaths recorded in each county for the four sectors which account for the highest number of work-related deaths involving vehicles.

- All of the work-related deaths involving vehicles in the county of Dublin occurred in sectors other than Agriculture.
- Twenty-four counties reported work-related deaths involving vehicles. In 18 (75%) of these counties, at least half of the deaths occurred in Agriculture.

Table 2.4:

Number and percentage of work-related deaths involving vehicles by county, in Agriculture and other economic sectors, 2010-2019

	Agriculture	Transportation and storage	Construction	Wholesale and Retail Trade; Repair of Vehicles	Other	Total	%
Cork	21	4	4	5	5	**39**	18.0%
Dublin	0	5	3	3	6	**17**	7.8%
Tipperary	9	1	1	3	0	**14**	6.5%
Kerry	8	2	0	0	2	**12**	5.5%
Wexford	5	1	2	0	3	**11**	5.1%
Galway	3	2	2	1	3	**11**	5.1%
Clare	6	0	1	1	2	**10**	4.6%
Mayo	6	2	1	0	1	**10**	4.6%
Donegal	5	0	0	2	2	**9**	4.1%
Kilkenny	5	0	1	1	2	**9**	4.1%
Limerick	5	1	2	0	1	**9**	4.1%
Kildare	2	1	1	1	3	**8**	3.7%
Waterford	5	2	0	0	1	**8**	3.7%
Laois	5	1	0	1	0	**7**	3.2%
Offaly	5	0	2	0	0	**7**	3.2%
Cavan	4	0	0	0	2	**6**	2.8%
Monaghan	1	1	1	2	1	**6**	2.8%
Roscommon	4	2	0	0	0	**6**	2.8%
Leitrim	3	0	2	0	0	**5**	2.3%
Meath	3	0	0	0	1	**4**	1.8%
Sligo	1	0	0	0	3	**4**	1.8%
Carlow	2	0	0	0	0	**2**	0.9%
Westmeath	1	0	1	0	0	**2**	0.9%
Wicklow	1	0	0	0	0	**1**	0.5%
Longford	0	0	0	0	0	**0**	0.0%
Louth	0	0	0	0	0	**0**	0.0%
Total	**110**	**25**	**24**	**20**	**38**	**217**	**100.0%**

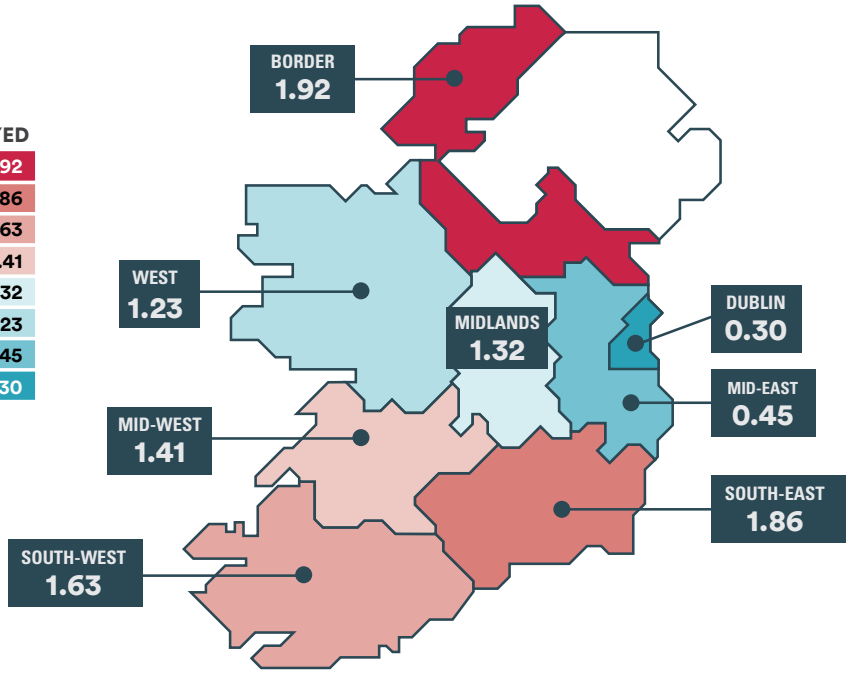
Table 2.4 does not take into account the number of people involved in economic activity in each county. CSO Labour Force Survey data breaks down the number of workers into eight regions, based on NUTS-2016 classification.[12] Figure 2.4 shows the rates of work-related deaths involving vehicles per 100,000 workers in these regions for the years 2012-2019.[13]

- Rates were highest in the Border (1.92 per 100,000 workers) and South-East (1.78 per 100,000 workers) regions.
- Rates were lowest in Dublin (0.30) and Mid-East (0.45).

Figure 2.4:

Rate of work-related deaths involving vehicles per 100,000 workers by NUTS-2016 region, 2012-2019

RATE PER 100,000 EMPLOYED	
BORDER	1.92
SOUTH-EAST	1.86
SOUTH-WEST	1.63
MID-WEST	1.41
MIDLANDS	1.32
WEST	1.23
MID-EAST	0.45
DUBLIN	0.30



2.5 | Working Environment

The working environment where work-related deaths involving vehicles occurred is outlined in Table 2.5.

- The single most common location of a death was a "breeding area", which is a farm area where cattle or other animals are kept. These are typically farm fields or sheds. There were 49 such deaths.
- Agricultural deaths also occurred in other unspecified farming areas (25), ground crop areas (13), storage/loading areas (four), maintenance workshops (three) and areas permanently open to the public, which were mainly public roads (9).
- There were 43 deaths associated with public roads.
- Deaths in Transportation and Storage took place mainly on public roads (11) and storage/loading areas (10).
- Most deaths in Construction occurred in sites of new buildings (nine) or public roads (five).
- Deaths in Wholesale and Retail Trade; Repair of Vehicles were most common in maintenance areas – typically where mechanics were working on vehicles (nine).

12 The Nomenclature of Territorial Units for Statistics (NUTS) 2016 is the current European Union standard for referencing subdivisions of countries. See: https://ec.europa.eu/eurostat/web/nuts/background.

13 Central Statistics Office Labour Force Survey table QLF07: Persons aged 15 years and over in Employment by Sex, NACE Rev, Region and Quarter, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=QLF07&PLanguage=0. Data on number of people employed by region is available only for the period 2012-2019.

Table 2.5:

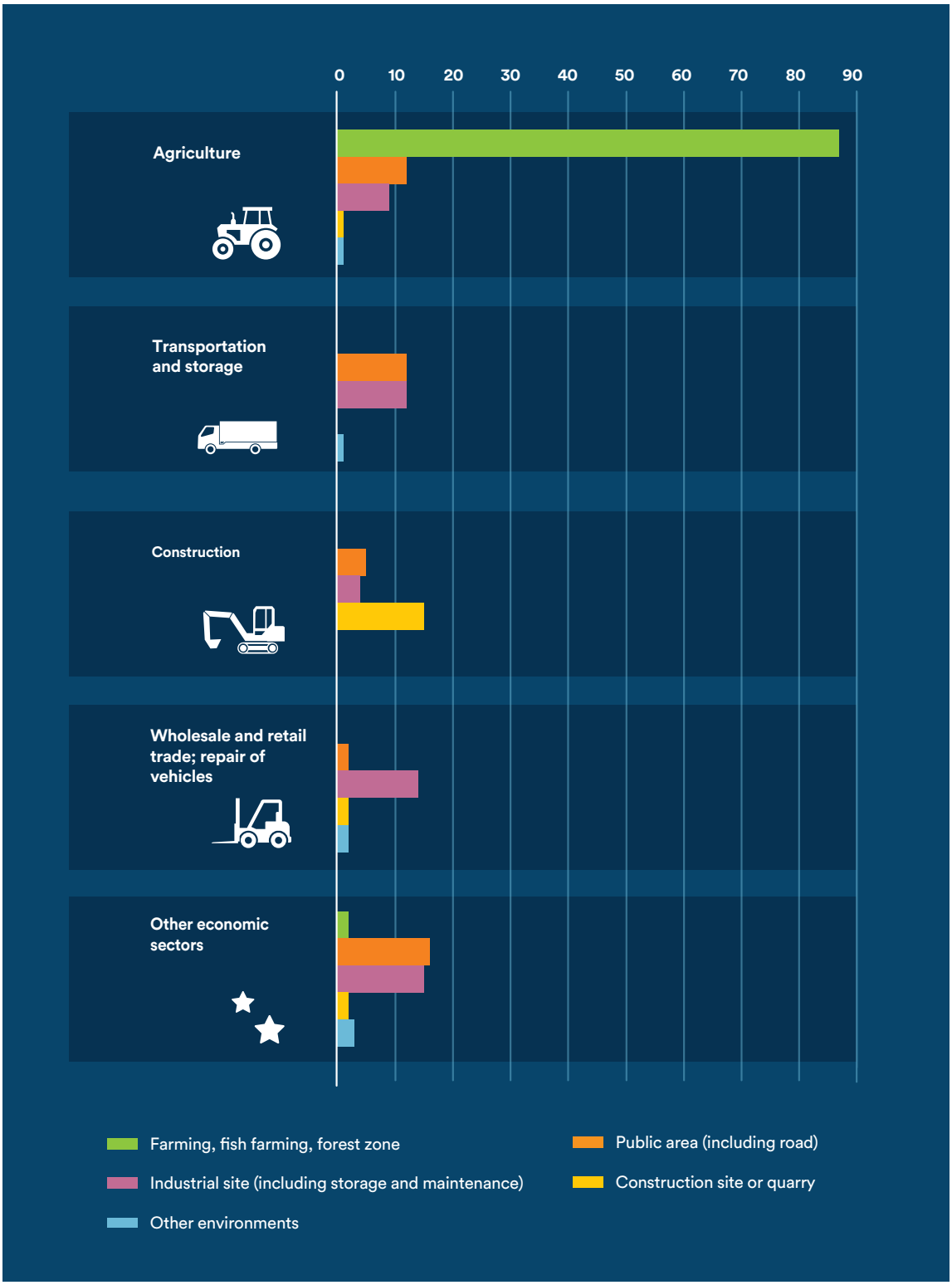
Number and percentage of work-related deaths involving vehicles by working environment in four major NACE economic sectors, and overall, 2010-2019.

	Agriculture	Transportation and storage	Construction	Wholesale and Retail Trade; Repair of Vehicles	Other economic sectors	Total	%
Breeding area	49	0	0	0	0	**49**	22.6%
Area open to public thoroughfare (roads, parking areas, etc.)	9	11	5	2	16	**43**	19.8%
Area used principally for storage, loading, unloading	4	10	2	4	10	**30**	13.8%
Unspecified farming area	25	0	0	0	2	**27**	12.4%
Maintenance area, repair workshop	3	2	2	9	3	**19**	8.8%
Farming area - ground crop	13	0	0	0	0	**13**	6.0%
Construction site - building being constructed	0	0	9	1	0	**10**	4.6%
Construction site - building being demolished, repaired, maintained	1	0	4	1	1	**7**	3.2%
Communal parts of a building, annexes, private family garden	1	0	0	2	1	**4**	1.8%
All others	5	2	2	1	5	**15**	6.9%
Total	**110**	**25**	**24**	**20**	**38**	**217**	**100%**

These details are summarised with broad categories of working environment in Figure 2.5.

Figure 2.5:

Broad categories of work environments where work-related deaths involving vehicles occurred in selected NACE economic sectors, 2010-2019



2.6 | Type of Vehicle

Table 2.6 shows the types of vehicles involved in these work-related deaths.[14]

Tractors were involved in **64** deaths (29%).

Trucks were involved in **35** deaths (16%).

These involved several categories, including articulated trucks (13), rubbish trucks (five), tipper trucks (three), rigid trucks (three), car recovery vehicles (two), road-sweepers (two) and others.

Loaders or telehandlers were involved in **20** deaths (9%).

Quad bikes were involved in **13** deaths (6%).

Forklifts were involved in **13** deaths (6%).

14 A fatal incident may involve more than one vehicle. For example, two vehicles may collide on a public road. An attempt has been made here to identify the vehicle responsible for each incident. For example, if a truck strikes a delivery van on the road, causing fatal injuries to the driver of the van, the truck is entered as the vehicle responsible.

Table 2.6:

Number and percentage of work-related deaths involving vehicles by type of vehicle, 2010-2019

	Fatal incidents	%
Tractor	64	29.5%
Truck	35	16.1%
- Articulated truck	*13*	*6.0%*
- Rubbish truck	*5*	*2.3%*
- Tipper truck	*3*	*1.4%*
- Rigid truck	*3*	*1.4%*
- Unknown truck	*3*	*1.4%*
- Recovery vehicle	*2*	*0.9%*
- Road sweeper	*2*	*0.9%*
- Fuel truck	*1*	*0.5%*
- Bitumen truck	*1*	*0.5%*
- Skip collection vehicle	*1*	*0.5%*
- Vacuum tanker	*1*	*0.5%*
Loader/telehandler	20	9.2%
Quad bikes	13	6.0%
Forklift	13	6.0%
Car	10	4.6%
Excavator	8	3.7%
Trailer	10	4.6%
Mobile crane	7	3.2%

	Fatal incidents	%
Tractor attachment	6	2.8%
- Potato harvester	*2*	*0.9%*
- Baler	*1*	*0.5%*
- Bale wrapper	*1*	*0.5%*
- Diet feeder	*1*	*0.5%*
- Meal bin	*1*	*0.5%*
- Slurry agitator	*1*	*0.5%*
SUV/Jeep	4	1.8%
Van	4	1.8%
Dump truck	3	1.4%
MEWP	3	1.4%
Loading shovel	3	1.4%
Tug/shunter	3	1.4%
Ambulance	2	0.9%
Train	2	0.9%
Horse and cart	2	0.9%
Bus	1	0.5%
Converted motorcaravan	1	0.5%
Motorbike	1	0.5%
Mobility scooter	1	0.5%
Combine harvester	1	0.5%
Total	**217**	**100.0%**

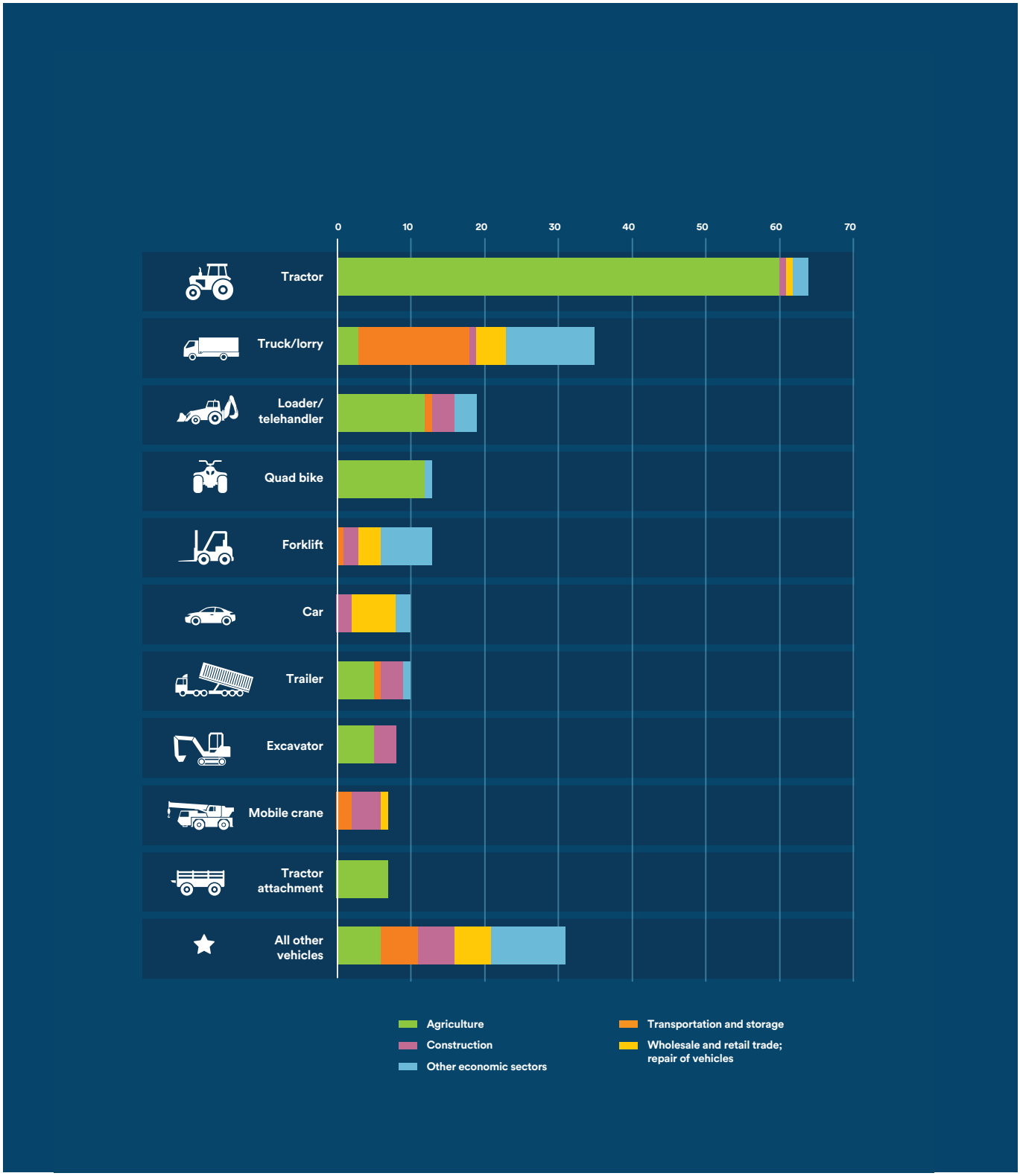
These figures are broken into the four main economic sectors in Figure 2.6.

- Work-related deaths involving vehicles in Agriculture were associated mainly with tractors (60), loader/telehandlers (13), quad bikes (12), excavators (five), trailers (five) and various tractor attachments[15] such as balers (six).
- Most deaths in Transportation and Storage involved trucks (15).
- Deaths in Construction mainly involved mobile cranes (four), loaders/telehandlers (three), excavators (three), and trailers (three). Three deaths in Construction also involved dump trucks (included among "all other vehicles").
- Deaths in Wholesale and Retail Trade; Repair of Vehicles mainly involved cars (six), trucks (four) and forklifts (three).

15 Tractor attachments exclude trailers, which are included as a separate category.

Figure 2.6:

Number of work-related deaths involving vehicles by type of vehicle in selected NACE economic sectors, 2010-2019



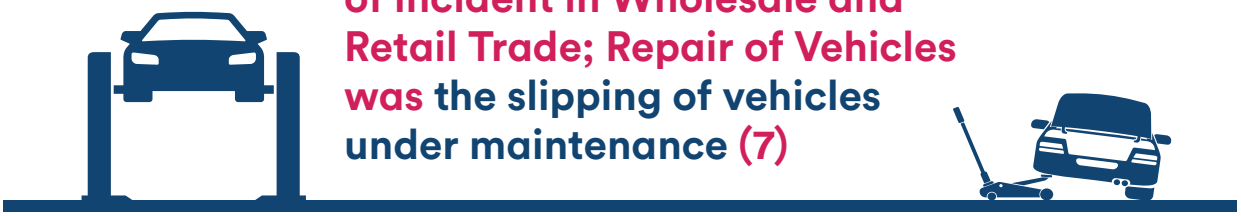
2.7 | Type of Incident

Table 2.7a breaks down the main kinds of work-related deaths involving vehicles.

- In over one in three deaths, vehicles struck victims on foot or on a bicycle (82).
  - Of these, 27 involved parked vehicles that rolled out of control and struck someone on foot, either because the vehicle's handbrake was faulty, or because it was insufficiently engaged.
  - There were 21 deaths where vehicles reversed into victims who were on foot.
  - Four cyclists were struck by vehicles. Three of these were non-workers; one was delivering post on a bicycle.
  - Twenty-eight other victims on foot were struck by vehicles in other ways, such as being struck by forklifts, or by traffic on public roads.
- Work-related vehicle collisions were involved in 44 deaths. Vehicle collisions represent incidents where vehicles either collided with other vehicles or else collided with structures or other objects, or overturned. These are distinguished from incidents where vehicles strike a person on foot or riding a bicycle, where the damage is to the exposed victim outside the vehicle, not to the drivers or passengers. Of 44 work-related vehicle collisions, 32 involved single vehicles while 12 involved two or more vehicles.
- Victims fell to their deaths from vehicles in 21 cases. These included drivers and passengers falling from moving vehicles, for example because they were riding open trailers or tractors with faulty doors, without seatbelts. Other victims fell from stationary vehicles.
- Heavy loads or falling objects were involved in 17 deaths. These mainly involved heavy loads being lifted by vehicles, which slipped and struck the victim. A few cases also involved parts of vehicles breaking and falling onto the victim.
- Fourteen deaths involved attachments crushing the victim. These often involved raised hydraulic attachments losing pressure and falling onto the victim, or attachments operating unexpectedly and crushing the victim.
- The remaining 39 deaths (18%) were spread across nine other types of incident.

Table 2.7a also breaks down the main types of incident by four key NACE economic sectors.

- Over one in two of all the work-related deaths involving vehicles striking people on foot or on bicycles occurred in Agriculture. Of 27 deaths involving parked vehicles that rolled and struck their victims, 23 (85%) occurred in Agriculture.
- Work-related deaths involving vehicles in Transportation and Storage mainly involved vehicles striking people on foot or on bicycles (nine) and vehicle collisions (seven).
- Vehicles striking people on foot or on bicycles accounted for 11 of the 24 work-related deaths involving vehicles in Construction.
- The single most common kind of incident in Wholesale and Retail Trade; Repair of Vehicles was the slipping of vehicles under maintenance (seven). This illustrates the hazards for mechanics and tyre fitters of working on unstable vehicles under maintenance.



The single most common kind of incident in Wholesale and Retail Trade; Repair of Vehicles was the slipping of vehicles under maintenance (7)

Table 2.7a:

Number and percentage of work-related deaths involving vehicles by type of incident, in selected NACE economic sectors, 2010-2019

	Agriculture	Transportation and storage	Construction	Wholesale and Retail Trade; Repair of Vehicles	All other sectors	Total	%
Vehicle strikes person on foot or bicycle	42	9	11	4	16	**82**	37.8%
- *Pedestrian struck by vehicle*	*10*	*4*	*5*	*1*	*8*	***28***	*12.9%*
- *Struck/crushed by parked vehicle that rolls*	*23*	*1*	*1*	*2*	*0*	***27***	*12.4%*
- *Reversing vehicle over victim*	*6*	*3*	*4*	*1*	*7*	***21***	*9.7%*
- *Cyclist struck by vehicle*	*1*	*1*	*1*	*0*	*1*	***4***	*1.8%*
- *Struck by train at level crossing*	*2*	*0*	*0*	*0*	*0*	***2***	*0.9%*
Vehicle collision	26	7	2	2	7	**44**	20.3%
- *Single vehicle collision*	*25*	*3*	*1*	*1*	*2*	***32***	*15.2%*
- *Two or more vehicle collision*	*1*	*4*	*1*	*1*	*5*	***12***	*5.1%*
Fall from vehicle	14	1	2	2	2	**21**	9.7%
Heavy load or other object falls on victim	6	2	3	2	4	**17**	7.8%
Attachment crushes victim	8	2	2	1	1	**14**	6.5%
Crushing	2	2	3	1	5	**13**	6.0%
Vehicle slips, crushing victim doing maintenance	3	0	1	7	1	**12**	5.5%
Tyre explosion	4	1	0	0	0	**5**	2.3%
Injured by PTO	1	0	0	0	1	**2**	0.9%
Struck by out of control machinery	2	0	0	0	0	**2**	0.9%
Cut on sharp object	1	0	0	0	0	**1**	0.5%
Overturning[16]	0	0	0	1	0	**1**	0.5%
Fire	0	0	0	0	1	**1**	0.5%
Unknown	1	1	0	0	0	**2**	0.9%
Total	**110**	**25**	**24**	**21**	**37**	**217**	**100.0%**

16 The vehicle collisions category includes 16 cases where vehicles overturned while driving at speed. Overturning has been isolated here in one case, where a mobile elevated working platform became tangled in the hoses of a moving bus washer unit, and overturned.

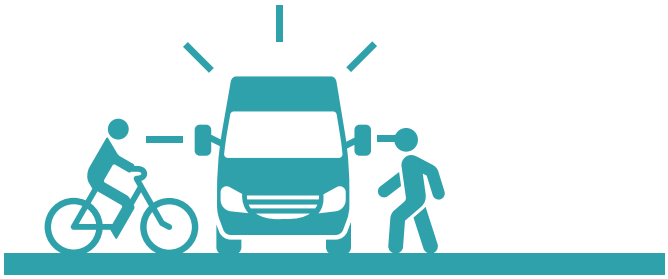
Table 2.7b separates the kinds of incidents into those which occurred on public roads and those which occurred in other environments.

- Almost half of the 43 work-related deaths involving vehicles on public roads were vehicle collisions (21). Every death caused by two or more vehicles colliding occurred on public roads.
- Almost one in three work-related deaths involving vehicles on public roads involved vehicles striking people on foot or on bicycles (14).
- In other environments a wider range of incidents occurred. The most common was the striking of people on foot or on bicycles by vehicles (68), followed by vehicle collisions (23).

Table 2.7b:

Number and percentage of work-related deaths involving vehicles by type of fatal incident, on public roads and in other working environments, 2010-2019

	Public road		Other environment		Total	
	Number	%	Number	%	Number	%
Vehicle strikes person on foot or bicycle	14	31.8%	68	39.3%	**82**	37.8%
- *Struck/crushed by parked vehicle that rolls*	*1*	*2.3%*	*26*	*15.0%*	*27*	*12.4%*
- *Pedestrian struck by vehicle*	*6*	*13.6%*	*22*	*12.7%*	*28*	*12.9%*
- *Reversing vehicle over victim*	*4*	*9.1%*	*17*	*9.8%*	*21*	*9.7%*
- *Cyclist struck by vehicle*	*3*	*6.8%*	*1*	*0.6%*	*4*	*1.8%*
- *Struck by train at level crossing*	*0*	*0.0%*	*2*	*1.2%*	*2*	*0.9%*
Vehicle collision	21	47.7%	23	13.3%	**44**	20.3%
- *Single vehicle collision*	*9*	*20.5%*	*23*	*13.3%*	*32*	*14.7%*
- *Two or more vehicle collision*	*12*	*27.3%*	*0*	*0.0%*	*12*	*5.5%*
Fall from vehicle	6	14.0%	15	8.6%	**21**	9.7%
Heavy load or other object falls on victim	0	0.0%	17	9.8%	**17**	7.8%
Attachment crushes victim	0	0.0%	14	8.1%	**14**	6.5%
Other crushing	2	4.5%	11	6.4%	**13**	6.0%
Vehicle slips, crushing victim doing maintenance	0	0.0%	12	6.9%	**12**	5.5%
Tyre explosion	0	0.0%	5	2.9%	**5**	2.3%
Injured by PTO	0	0.0%	2	1.2%	**2**	0.9%
Struck by out of control machinery	0	0.0%	2	1.2%	**2**	0.9%
Cut on sharp object	0	0.0%	1	0.6%	**1**	0.5%
Overturning	0	0.0%	1	0.6%	**1**	0.5%
Fire	0	0.0%	1	0.6%	**1**	0.5%
Unknown	0	0.0%	2	1.2%	**2**	0.9%
Total	**43**	**100.0%**	**174**	**100.0%**	**217**	**100.0%**



Almost one in three work-related deaths involving vehicles on public roads involved vehicles striking people on foot or on bicycles (14)

2.8 | Working Process of Victims

Working process describes the general kind of work that victims were doing at the time of the incident. Non-workers have been included in Table 2.8 below for completeness, but are not assigned any working process.

- The single most common working process was the maintenance of vehicles (30, 14%).
- Twenty-eight deaths occurred during the storing of objects. These included the loading or unloading of vehicles, stocking warehouses, etc.
- Several working processes involved agricultural work. The most common of these was agricultural work with live animals (20), which mainly involved cattle, and working of the land (18). Working the land might include activities including ploughing or spreading slurry.

These figures have also been separated into the four main economic sectors.

- Deaths in Agriculture occurred during a wide range of working processes, including agricultural work with live animals (20), working the land (18), maintenance or repair (13), and unspecified agricultural work (14).
- The most common working process involving deaths in Transportation and Storage was storing, including loading and unloading (nine), followed by other drivers or passengers of vehicles at work (six). This category represents cases where the victim was a driver or passenger of a moving vehicle, but was not involved in the other categories of work such as agriculture, construction or waste management.
- Most work-related deaths involving vehicles in Construction occurred during the construction of new buildings (eight) or the repair or demolition of existing buildings (five).
- Almost one in two (nine) of the deaths in Wholesale and Retail Trade; Repair of Vehicles occurred during the maintenance of vehicles.

Table 2.8:

Number and percentage of work-related deaths involving vehicles by working process of victim, in selected NACE economic sectors, 2010-2019

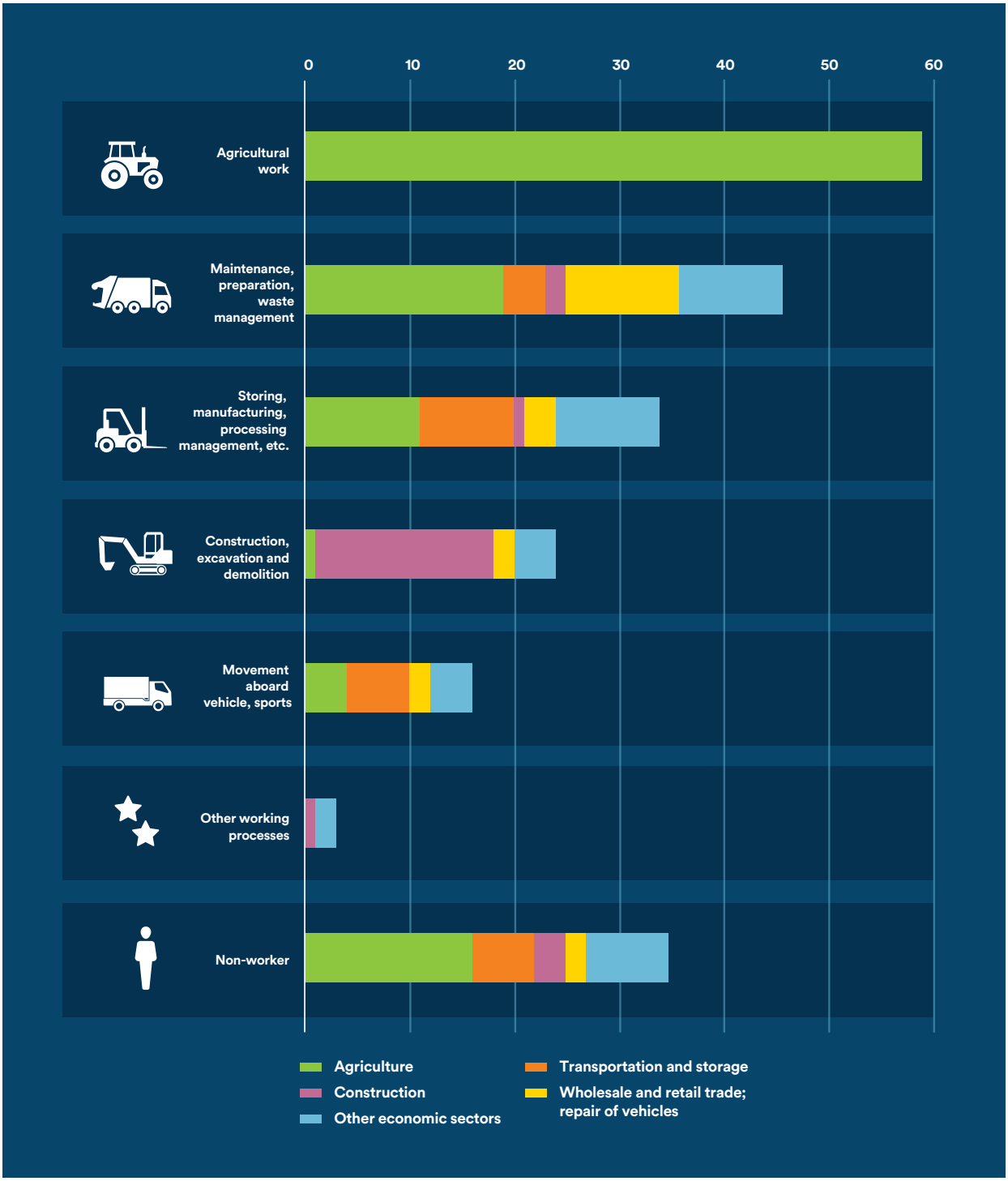
	Agriculture	Transportation and storage	Construction	Wholesale and Retail Trade; Repair of Vehicles	Other economic sectors	Total	%
Maintenance or repair	13	2	1	9	5	**30**	13.8%
Storing (loading and unloading)	9	9	1	2	7	**28**	12.9%
Agricultural work with live animals	20	0	0	0	0	**20**	9.2%
Agricultural work, working the land	18	0	0	0	0	**18**	8.3%
Other drivers or passengers of moving vehicles at work[17]	4	6	0	2	3	**15**	6.9%
Unspecified agricultural work	14	0	0	0	0	**14**	6.5%
New building construction	0	0	8	1	0	**9**	4.1%
Setting up, preparation, installation	3	1	1	1	2	**8**	3.7%
Repairing or extending buildings	1	0	5	1	2	**9**	4.1%
Agricultural work with vegetables, horticultural	7	0	0	0	0	**7**	3.2%
Manufacturing and processing	2	0	0	0	3	**5**	2.3%
Waste management and disposal	0	0	0	1	3	**4**	1.8%
All other working processes	4	1	5	1	5	**16**	7.4%
Non-worker	15	6	3	2	8	**34**	15.7%
Total	**110**	**25**	**24**	**20**	**38**	**217**	**100%**

These working processes are summarised into broad categories, by the four main economic sectors, in Figure 2.8.

17 This category represents cases where the victim was a driver or passenger of a moving vehicle at the time of work, but was not involved in the other categories of work such as agriculture, construction or waste management. All but one of such incidents occurred on public roads.

Figure 2.8:

Number of work-related deaths involving vehicles, by broad working process of victim, in selected NACE economic sectors, 2010-2019



SECTION 3

FOCUS ON AGRICULTURE

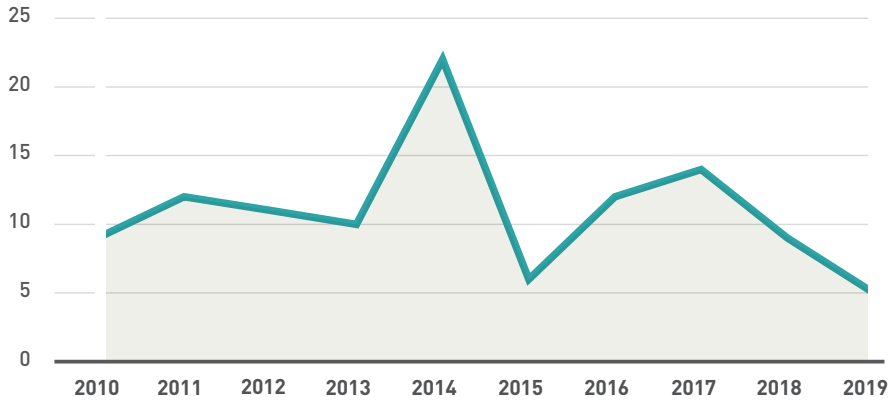
Over one in two of the work-related deaths involving vehicles between 2010 and 2019 occurred in the Agricultural sector. This section adds some additional analysis of fatal incidents in Agriculture.

3.1 | Trend, 2010-2019

Figure 3.1 shows that the number of work-related deaths involving vehicles in Agriculture has fluctuated considerably over the ten-year period. Between 2010 and 2019 there were 110 work-related deaths involving vehicles in Agriculture, an average of 11 per year.

Figure 3.1:

Number of work-related deaths involving vehicles in Agriculture, 2010-2019



3.2 | Age and Employment Status of Victim

Figure 3.2 shows the age and employment status of victims of work-related deaths involving vehicles in Agriculture.

- Of 15 deaths involving non-workers, 12 (80%) occurred to victims aged under 18 years. This illustrates the dangers of farm vehicles to children and young people.
- Among worker victims, 62 (65%) were aged 55 years or more. Of these, 15 were aged 80-89 years, while one worker victim was aged 90 years.

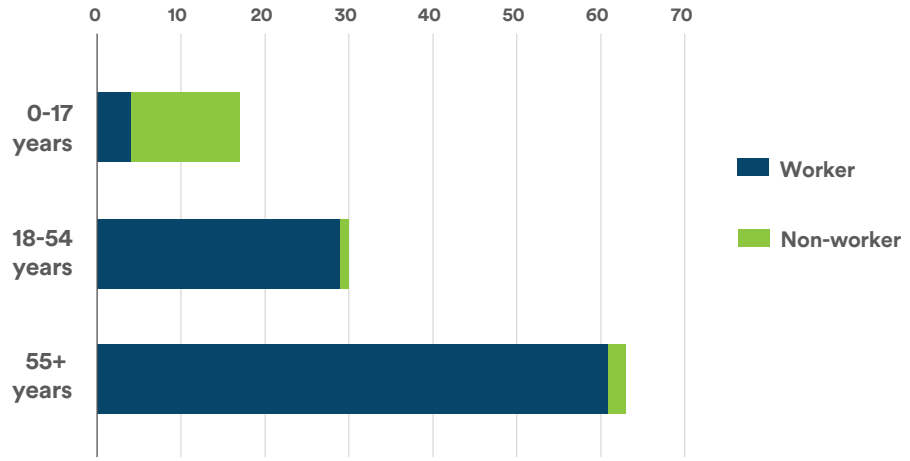
In general, worker victims in Agriculture were older than in other sectors. The average age of worker victims of work-related deaths involving vehicles in Agriculture was 58 years, compared with 46 years in other sectors.

This may be related to the tendency for some farmers to continue to work full or part-time on their farms into old age. Injuries to older victims can also be more serious than those suffered by younger victims.

For more information on the risk of work-related deaths among older workers in Agriculture and other sectors, see The Ageing Workforce in Ireland: Working Conditions, Health and Extending Working Lives, prepared by the Economic and Social Research Institute in 2019.[18]

Figure 3.2:

Number of work-related deaths involving vehicles in Agriculture, by age group and employment status, 2010-2019



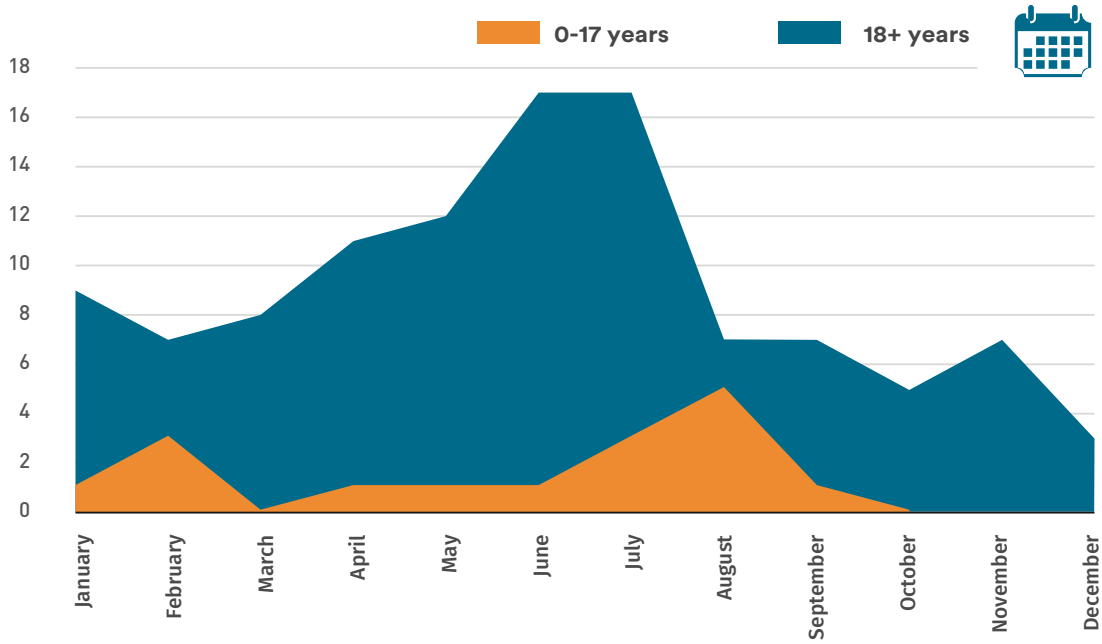
3.3 | Month and Young People

Work-related deaths involving vehicles in Agriculture peaked during the summer period between May and July. This may be related to increased intensity of farming work during the summer.

- Deaths involving young people aged under 18 years peaked in August (five) and July (three), suggesting that their proximity to farming activity during the summer holiday months may have been a factor.

Figure 3.3:

Number of work-related deaths involving vehicles, by month in Agriculture, young person under 18 years or adult, 2010-2019



18 See: https://www.hsa.ie/eng/publications_and_forms/publications/corporate/esri_report_2019.pdf.

SECTION 4

DATA AND LIMITATIONS

Source of Data

Health and Safety Authority inspectors investigate deaths that are related to work activity. These inspectors compile reports, which are coded according to European Statistics on Accidents at Work (ESAW) methodology, the standard required to be used by all European Union member states.[19] The data used in this report is derived from these investigations, and wherever possible figures in this report are related to ESAW variables.

Limitations of Data

Some deaths involve work vehicles that are clearly engaged in work activity, such as tractors pulling trailers or forklifts raising loads. However, it is acknowledged that the Authority is not always notified about fatal road collisions involving work activity. Analysis of coroners' reports for the years 2008-2011 counted nearly one and a half times as many deaths of workers than were reported to the Authority, and nearly ten times as many deaths of non-workers, where work activity contributed directly to the incident.[20] This shows that there is considerable under-reporting of fatal work-related road traffic collisions.

Table 4.1 shows the number of work-related deaths involving vehicles on public roads reported to the Authority in 2010 and 2011 – two of the years covered in this report – compared with the numbers found in the coroners' reports. Victims in the coroners' reports are categorised into workers, bystander type 1 victims (where a work activity directly contributed to the death of a non-worker) and bystander type 2 victims (where a work activity was a secondary contributor to the death). On each measure, many more deaths were counted on public roads in the coroners' reports than were notified to the Authority.

This report focuses only on deaths notified to the Authority. As such, caution is advised when interpreting data, particularly regarding vehicle collisions on public roads.

Table 4.1:

Number of fatal road collisions recorded by the Authority and by coroner reports in 2010 and 2011

	HSA	Coroner reports			
	Worker and non-worker	Worker	Bystander Type 1	Bystander Type 2	Total
2010	4	5	12	14	**31**
2011	4	6	5	22	**33**
2010-2011 total	8	11	17	36	**64**

19 *ESAW Summary Methodology 2013*, available: https://ec.europa.eu/eurostat/documents/3859598/5926181/KS-RA-12-102-EN.PDF.

20 *Fatal collisions on the road and safety and health: Using narrative data from coroners' files to determine the extent of underestimation of fatal work-related road collisions in the Republic of Ireland; Report submitted to the IOSH Research Committee*, available: https://iosh.com/media/1499/iosh-fatal-collisions-on-the-road-full-report-2016.pdf.

References

Central Statistics Office (2010) AVA21: Farm Labour Input by Type of Farm Labour Input, County, Year and Statistic, Central Statistics Office, Ireland, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?Maintable=AVA21&Planguage=0 [accessed 30 June 2020].

Central Statistics Office (2020) THA10: Road Traffic Volumes by Type of Vehicle, Year and Statistic, Central Statistics Office, Ireland, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=THA10&PLanguage=0 [accessed 10 June 2020].

Central Statistics Office (2020) QLF01: Persons aged 15 years and over in Employment by Sex, ILO Economic Status and Quarter, Central Statistics Office, Ireland, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=QLF01&PLanguage=0 [accessed 10 June 2020].

Central Statistics Office (2020) QLF03: Person aged 15 years and over in Employment by Sex, NACE Rev 2 Economic Sector, Quarter and Statistic, Central Statistics Office, Ireland, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=QLF03&PLanguage=0 [accessed 30 June 2020].

Central Statistics Office (2020) QLF07: Persons aged 15 years and over in Employment by Sex, NACE Rev, Region and Quarter, Central Statistics Office, Ireland, available: https://statbank.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=QLF07&PLanguage=0 [accessed 10 June 2020].

Drummond, A., Codd, M., and McQuillan, N. (2016) Fatal collisions on the road and safety and health; Using narrative data from coroners' files to determine the extent of underestimation of fatal work-related road collisions in the Republic of Ireland, Dublin, University College Dublin, available: https://iosh.com/media/1499/iosh-fatal-collisions-on-the-road-full-report-2016.pdf.

Eurostat (2003) Nomenclature of Territorial Units for Statistics – 2016, Luxembourg, available: https://ec.europa.eu/eurostat/web/nuts/background [accessed 23 June 2020].

Eurostat (2008) Statistical Classification of Economic Activities in the European Community, Rev. 2, Luxembourg, Publications Office of the European Union, available: https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC&CFID=1110191&CFTOKEN=3ca0f6dadb71d377-1F2DE4F0-F7BF-BCAE-31C18C386EA88F92&jsessionid=f900daad75c14b465532m [accessed 23 June 2020].

Eurostat (2013) European Statistics on Incidents at Work (ESAW) Summary methodology, Luxembourg, Publications Office of the European Union, available: https://ec.europa.eu/eurostat/documents/3859598/5926181/KS-RA-12-102-EN.PDF/56cd35ba-1e8a-4af3-9f9a-b3c47611ff1c [accessed 23 June 2020].

Privalko, I., Russell, H. and Maître, B. (2019) The Ageing Workforce In Ireland: Working Conditions, Health And Extending Working Lives, Dublin, The Economic and Social Research Institute, available: https://www.hsa.ie/eng/publications_and_forms/publications/corporate/esri_report_2019.pdf [accessed 16 September 2020].

Appendix 1: Criteria Used to Define 'Vehicle-Related'

This report aims to deliver a complete picture of deaths that have been reported to the Authority where a vehicle is identified as being at the centre of an activity immediately preceding the death.

The results are a reflection of many vehicle-related activities across all work sectors and include the following:

- Vehicles being used to tow machinery or other equipment;
- Vehicles being used to power machinery connected to their power train/power take off. e.g. tractor power take-off connected to a range of common farm machinery, slurry agitators etc.
- Persons driving vehicles in the workplace and on the road;
- Persons working on or near the road in the vicinity of moving vehicles or varying speeds. This included roadworks, maintenance, utility installation and repair, verge maintenance;
- Load or part of load falling on person;
- Vehicle loading and unloading operations;
- Vehicle and trailer maintenance and repair (in combination or as separate entities);
- Vehicle being used to power machinery in agriculture (some of these may also be classified as plant and machinery in specific sector terminology);
- Removal and attachment of vehicle attachments, e.g., hedge cutters on tractors, loading shovels or forks;
- Maintenance and repair of vehicle attachments, while connected to vehicle;
- Falls from vehicles (cab, trailer bed, tanker, 5th wheel area) and their attachments;
- Entanglement in moving vehicle or vehicle attachment part(s).

Further Information and Guidance:

HEALTH AND SAFETY AUTHORITY

Visit our website **www.hsa.ie**, telephone our contact centre on **1890 289 389** or email **wcu@hsa.ie**

Our vehicle risk management resources are available at **www.drivingforwork.ie, www.vehiclesatwork.ie** and **www.loadsafe.ie**

Use BeSmart, our free online risk assessment tool at **www.besmart.ie**

Check out our range of free online courses at **www.hsalearning.ie**

Our Vision:

Healthy, safe and productive lives and enterprises

HEALTH AND SAFETY AUTHORITY

Health and Safety Authority

Tel: 1890 289 389

International callers

00353 1 614 7000

www.hsa.ie

ISBN 978-1-84496-281-5

HSA0507