This article presents a set of main statistical findings in relation to indicators concerning non-fatal and fatal accidents at work in the European Union (EU); the statistics presented have been collected within the framework of the European statistics on accidents at work (ESAW) administrative data collection exercise.

An accident at work is defined in ESAW methodology as a discrete occurrence during the course of work which leads to physical or mental harm. Fatal accidents at work are those that lead to the death of the victim within one year of the accident taking place. Non-fatal accidents at work are defined as those that imply at least four full calendar days of absence from work (they are sometimes also called 'serious accidents at work'). Non-fatal accidents at work may result in a considerable number of working days being lost and often involve considerable harm for the workers concerned and their families, they have the potential to force people, for example, to live with a permanent disability, to leave the labour market, or to change job.

**Number of accidents**

In 2017, there were just over 3.3 million non-fatal accidents that resulted in at least four calendar days of absence from work and 3 552 fatal accidents in the EU-28 (see Table 1), a ratio of approximately 942 non-fatal accidents for every fatal accident. There was an increase in the total number of non-fatal accidents at work in the EU-28 between 2016 and 2017, some 4 574 more (equivalent to growth of 0.1 %). By contrast, there were 36 fewer fatal accidents at work in the EU-28 during 2017 when compared with a year before (equivalent to a decrease of 1 %).

Men were considerably more likely than women to have an accident at work. In 2017, two out of every three (66.8 %) non-fatal accidents at work in the EU-28 involved men. One factor that influences these statistics is the different types of work that men and women carry out and the activities in which they work; for example, there are far more accidents in the mining, manufacturing or construction sectors, which tend to be male-dominated. Finally, it is also generally the case that men tend to work on a full-time basis, whereas women are more likely to work on a part-time basis; as such, with women spending a shorter period of time (on average) in the workplace this may also reduce their chances of having an accident.
Incidence rates

An alternative way to analyse the information on accidents at work is to express the number of accidents in relation to the number of persons employed (referred to as the ‘incidence rate’); in Figures 1 and 2 simple incidence rates are shown, relating the number of accidents to the overall number of persons employed. For any given country, these statistics give an indication of the likelihood that someone has an accident.

In 2017, the number of fatal accidents per 100 000 employed persons ranged from less than 1.00 in Finland, Denmark, Sweden, Germany, the United Kingdom, the Netherlands, Cyprus and Malta, to more than 3.00 fatal accidents per 100 000 persons employed in Bulgaria and Romania (see Figure 1); the highest incidence rate among the EU Member States was recorded in Romania, at 4.49 fatal accidents per 100 000 persons employed.

Across the whole of the EU-28 there were 1.65 fatal accidents per 100 000 persons employed in 2017; fatal accidents at work are therefore relatively rare events. Because of this, incidence rates for fatal accidents can vary greatly from one year to the next.
Across the EU-28, there were 1 558 non-fatal accidents per 100 000 persons employed in 2017. In 2017, the range for incidence rates among the EU Member States was from less than 100 non-fatal accidents per 100 000 persons employed in Bulgaria and Romania to more than 2 800 per 100 000 persons employed in Spain and Portugal, while a considerably higher rate was recorded in France (3 396 accidents per 100 000 persons employed; see Figure 2). Particularly low incidence rates for non-fatal accidents may reflect an under-reporting problem caused by a poorly-established reporting system, little financial incentive for victims to report, non-binding legal obligation for the employers, etc. In the same way, the well-established reporting/recognition systems may often explain the high incidence rate in some countries. The phenomenon of low non-fatal incidence rates can be considered to reflect under-reporting following the assumption that many accidents remain unreported. The situation for incidence rates of fatal accidents is different as it is much more difficult to avoid reporting fatal accidents.
Non-fatal accidents at work, 2016 and 2017

(incidence rates per 100 000 persons employed)

Note: non-fatal (serious) accidents reported in the framework of EASAW are accidents that imply at least four full calendar days of absence from work. Ranked on the values for 2017.

(*) 2016 data.
Source: Eurostat (online data code: hsw_n2_01)

Figure 2: Non-fatal accidents at work, 2016 and 2017

Standardised incidence rates

When comparing data between countries the incidence rates can be difficult to interpret, for example when comparing the effectiveness of measures to prevent accidents at work. This is because the likelihood of having an accident is related to the economic activity in which a person works and the relative importance (weight) of different activities varies between countries according to the structure of each domestic economy.

To account for this, standardised incidence rates are calculated and data for these rates are shown in Figures 3 and 4. Such rates assume that the relative sizes of economic activities within each national economy are the same as within the EU-28 as a whole. As such, these standardised incidence rates give a more neutral comparison of the health and safety situation in different countries. Note that these standardised incidence rates have a slightly narrower activity coverage than the simple incidence rates, as they exclude the mining and quarrying sector as well as some service activities. Standardised incidence rates only cover NACE Sections A and C-N, thus excluding Sections B and O-U.

On this basis and across the EU-28, there were, on average, 2.12 fatal accidents per 100 000 persons employed in 2017 (see Figure 3), while there were 1 667 non-fatal accidents per 100 000 persons employed (see Figure 4). In 2017, the highest standardised incidence of fatal accidents at work was recorded in Romania (5.72 deaths per 100 000 persons employed), followed by Bulgaria (4.30 deaths per 100 000 persons employed). By contrast, at the other end of the range, Malta, the Netherlands and Cyprus recorded the lowest standardised incidence rates among the Member States with less than 1 fatal accident per 100 000 persons employed in 2017.
Figure 3: Fatal accidents at work, 2016 and 2017 (standardised incidence rates per 100 000 persons employed)

Source: Eurostat (hsw_mi01)

Figure 4 shows that in 2017, the standardised incidence rate of non-fatal accidents at work was generally highest in some EU Member States with insurance based accident reporting systems: Portugal reported 3 563 non-fatal accidents per 100 000 persons employed, followed by France and Spain with rates of 3 307 and 3 268 per 100 000 persons employed. Insurance based accident reporting systems offer a significant financial compensation for the victim when an accident is reported, as opposed to legal obligation systems in which victims are covered by the general social security system. Among the eastern EU Member States, which mostly have legal obligation systems, Slovenia and Croatia were the only countries to report an incidence rate of more than 1 000 non-fatal accidents per 100 000 persons employed. By far the lowest standardised incidence rates were reported in Romania and Bulgaria, at 92 and 79 non-fatal work accidents per 100 000 persons employed in 2017; again it should be noted that these values may reflect a relatively high degree of under-reporting.
As noted above, one of the main reasons why the incidence of accidents may be higher for men (than for women) is related to the economic activities where they are more likely to work. Indeed, the number of accidents at work varies greatly depending upon the economic activity in question (see Figure 5) and is positively skewed in relation to male-dominated activities.

Within the EU-28, the construction, transportation and storage, manufacturing, and agriculture, forestry and fishing sectors together accounted for around two thirds (65.2 %) of all fatal accidents at work and more than two fifths (43.6 %) of all non-fatal accidents at work in 2017. In 2017, one fifth (20.6 %) of all fatal accidents at work in the EU-28 took place within the construction sector, while the transportation and storage sector (17.8 %) had the next highest share; manufacturing (14.0 %) and agriculture, forestry and fishing (12.8 %) were the only other NACE sections to record double-digit shares of the total number of fatal accidents.

Non-fatal accidents were relatively high within manufacturing (18.7 %), wholesale and retail trade (12.5 % of the total in the EU-28 in 2017), construction (11.3 %), human health and social work activities (11.3 %). Administrative and support service activities as well as public administration and defence accounted for 8.6 % and respectively 6 %.
Fatal and non-fatal accidents at work by NACE section, EU-28, 2017 (% of fatal and non-fatal accidents)

Analysis by type of injury

Figure 6 contains an analysis of data according to the type of injury sustained when people were involved in accidents. In the EU-28, there were two types of particularly common injury in 2017, namely, wounds and superficial injuries (29.1% of the total) and dislocations, sprains and strains (27.4%), followed by two other relatively common types, namely concussion and internal injuries (17.7%) and bone fractures (11.3%). None of the other types of injury accounted for a double-digit share of the total number of accidents in the EU-28, with the next highest shares for shock (3.5%) and for burns, scalds and frostbite (1.7%).

Note that the data collected in the context of ESAW also include an analysis of which body parts were injured in accidents (such as head, neck, back, torso and organs, arms and hands, legs and feet) as well as information on the causes and circumstances of accidents.
Fatal and non-fatal accidents at work by type of injury, EU-28, 2017 (% of accidents)

- Wounds and superficial injuries
- Dislocations, sprains and strains
- Concussion and internal injuries
- Bone fractures
- Shock
- Burns, scalds and frostbite
- Multiple injuries
- Traumatic amputations (loss of body parts)
- Poisoning and infections
- Effects of extreme temperatures, light and radiation
- Effects of sound, vibration and pressure
- Drowning and asphyxiation
- Other and unspecified

Note: non-fatal (serious) accidents reported in the framework of ESAW are accidents that imply at least four full calendar days of absence from work.
Source: Eurostat (online data code: hsw_n2_07)

Figure 6: Fatal and non-fatal accidents at work by type of injury, EU-28, 2017 (% of accidents) Source: Eurostat (hsw_n2_07)

Accidents 2010 to 2017 — absolute changes in incidence rates

It is also possible to analyse ESAW data over time, with information for all 28 of the EU Member States available for 2010 and for 2017. Note however that there were some considerable changes in the way that data were collected during this period and as a result there are a number of breaks in series; this is particularly the case for Belgium, Greece, France, Italy, the Netherlands and Finland — see the ‘Data sources’ section below for more details.

Figure 7 presents information at a more detailed activity level, for NACE divisions. It shows that between 2010 and 2017 industrial activities accounted for many of the biggest reductions in incidence rates for non-fatal accidents. However, the largest reduction was for forestry and logging where the incidence rate for non-fatal accidents fell by 2 029 accidents per 100 000 persons employed during the period under consideration. There were five more activities where the incidence rate fell by more than 1 000 per 100 000 persons employed: remediation activities and other waste management services; the manufacture of furniture; mining of metal ores; employment activities; and mining of coal and lignite.
Accidents 2010 to 2017 — relative changes

This final section looks at relative changes in the number of accidents and their incidence rates for the period from 2010 to 2017. The number of accidents in a particular year is likely to be related, at least to some extent, to the overall level of economic activity and the total number of persons in employment, with fewer accidents during periods when there was a contraction in overall levels of economic activity.

Figure 8 shows the five NACE sections with the highest/lowest relative changes. Between 2010 and 2017, the highest rates of change were recorded for arts, entertainment and recreation (where the number of fatalities increased by 50 %); for accommodation and food service activities (up 41.8 %). The number of fatal cases also increased in the following sectors: administrative and support services (increase of 7.5 %); water supply; sewerage, waste management and remediation activities (up 7.3 %) and real estate activities (5.6 %). None of the remaining NACE divisions recorded an increase in their number of fatal accidents at work between 2010 and 2017.

As such, it was more common to find that the number of fatal accidents fell during the period under consideration. This was particularly the case for activities of extraterritorial organisations and bodies (where the
The number of fatal accidents at work fell from two to zero between 2010 and 2017, for financial and insurance activities (where the number of fatal accidents fell by 57.1%), education (-43.6%), mining and quarrying (-41.5%); and other service activities (-30.2%).

![Development of fatal accidents at work for the five NACE sections with the highest and lowest relative changes in the number of persons, EU-28, 2010-2017 (persons)](image)

**Figure 8:** Development of fatal accidents at work for the five NACE sections with the highest and lowest relative changes in the number of persons, EU-28, 2010-2017 (persons)

Source: Eurostat (hsw_n2_07)

Figure 9 complements the information shown in Figure 8, presenting a similar analysis for non-fatal accidents. Across the EU-28, there were only six NACE sections where the total number of non-fatal accidents at work increased between 2010 and 2017: public administration and defence, and compulsory social security (an increase of 31.8%); human health and social work activities (16.3%) and administrative and support service activities (12.9%) had the highest increases.

Between 2010 and 2017, the total number of non-fatal accidents at work in the EU-28 fell by 6.6%. There were much larger reductions recorded for some specific economic activities, as the number of non-fatal accidents at work fell by more than 30.0% overall during the period under consideration for: activities of extraterritorial organisations and bodies (-66.7%); mining and quarrying (-39.4%); information and communication (-39.3%).
The final analysis is presented for NACE divisions, detailing those activities with the highest/lowest relative changes in their incidence rates for non-fatal accidents between 2010 and 2017. Across the EU-28, the number of non-fatal accidents per 100,000 persons employed fell by more than 50% for the activities shown in Figure 10 (excluding activities of extraterritorial organisations and bodies): mining of metal ores; mining of coal and lignite; publishing activities; manufacture of computer, electronic and optical products; programming and broadcasting activities. The incidence of non-fatal accidents in the EU-28 significantly increased in crop and animal production, hunting and related service activities (up 77.8%), and fishing and aquaculture (32.8%). Water transport (up 24.6%) and other professional, scientific and technical activities (up 22.3%) were the other two activities that recorded increases in the incidence rates above 20%.
Figure 10: Development of non-fatal accidents at work for the five NACE divisions with the highest and lowest relative changes in the incidence rates, EU-28, 2010-2017 (incidence rates per 100 000 persons employed)
Source: Eurostat (hsw_n2_01)

Source data for tables and graphs
- Accidents at work: tables and figures

Data sources
In December 2008, the European Parliament and the Council adopted Regulation (EC) No 1338/2008 on Community statistics on public health and health and safety at work. The Regulation is designed to ensure that health statistics provide adequate information for all EU Member States to monitor Community actions in the field of public health and health and safety at work. In April 2011, a European Commission Regulation (EU) No 349/2011 on statistics on accidents at work was adopted specifying in detail the variables, breakdowns and metadata that Member States are required to deliver; this legislation is being implemented in a number of phases.

European statistics on accidents at work (ESAW) is the main data source for EU statistics relating to health and safety at work issues. ESAW includes data on occupational accidents that result in at least four calendar days of absence from work, including fatal accidents. The phrase ‘during the course of work’ means while engaged in an occupational activity or during the time spent at work. This generally includes cases of road traffic accidents in the course of work but excludes accidents during the journey between home and the workplace.

The statistics presented for accidents at work refer to declarations made either to public (social security administrations) or private insurance schemes, or to other relevant national authorities (for example, those controlling labour or workplace inspections). Indicators on accidents at work may be presented as absolute values, as percentage distributions, as incidence rates in relation to every 100 000 persons employed (the denominator being provided by the authorities in the EU Member States that are responsible for ESAW data collection or
by the EU’s labour force survey (LFS) or as standardised incidence rates.

The data generally relate to all economic activities, unless otherwise specified. For example, the analyses in Figures 3 and 4 cover NACE Sections A and C to N. Because the frequency of accidents at work varies between NACE activities — high risk activities include agriculture, manufacturing, construction and transport — a standardisation procedure is performed to facilitate the comparison of national data. A direct standardisation method is used with weights calculated for the European reference population (EU-28): the weights represent the proportion of the reference (working) population in each NACE activity. For each EU Member State the national incidence rates are calculated for each NACE activity and these are combined using the fixed set of EU-28 weights to produce an overall standardised incidence rate for the Member State concerned. More details are available in a methodological note.

Statistics on accidents at work may reflect under-coverage or under-reporting. Under-coverage exists when the appropriate population is not covered by the data source for accidents, for example when a certain economic sector or employment type is excluded. Under-reporting relates to the situation where an accident occurs but is not reported although the related economic sector is included. The extent of under-coverage of ESAW data can be analysed partially by comparing the reference population (of workers) in ESAW with data derived from the LFS. Under-reporting is more difficult to analyse and establish but some comparisons are available. One method is to compare results from the reporting systems used for the legal obligation to report an accident with systems based on insurance reports; this may indicate under-reporting in the system for the legal obligation of accidents or over-reporting in insurance systems. Another method is to compare (geographically or over time) the ratio of fatal to non-fatal accidents, as the reporting of fatal accidents is thought to be more likely to be accurate due to their severe nature. Comparisons can also be made with data from household surveys, for example from the LFS (which included an ad hoc module in 2013 on accidents at work and work-related health problems).

In addition, changes in the way data are collected and processed in the EU Member States may have an influence on the number and incidence of accidents at work in a particular year. For example, on 30 June 2016 a number of derogations from provisions in the EU regulation governing ESAW ended in several of the Member States. This had a significant effect on the data concerning accidents at work for reference year 2014. For example, for the first time French data included full coverage of all employees in economic sectors covered by NACE Sections A-S. This led to a substantial apparent increase in the number of accidents recorded in France (compared with 2013). In a similar vein, for the first time the 2014 data for Belgium included information pertaining to accidents in the public sector and this also resulted in an increase in the reported number of accidents. At the same time, in 2016 some correction factors were removed from Greek data by the national statistical office due to methodological issues which caused a very considerable reduction in the number of accidents reported for reference year 2014 (compared with 2013); it is expected that a more complete Greek dataset will be received in the coming years, which should lead to a higher number of reported accidents again. Finally, Dutch and Norwegian data (the latter are not included in the EU-28 total) for the 2014 reference year for non-fatal accidents displayed a significant decrease due to methodological issues. If the Belgian, Greek, French, Dutch and Finnish data were to be removed from the EU-28 total, the development in the total number of accidents between 2013 and 2014 would be almost unchanged, with a small decrease (down 1.3%).

Context

A safe, healthy working environment is a crucial factor in an individual’s quality of life and is also a collective concern. Governments in the EU Member States recognise the social and economic benefits of better health and safety at work. Reliable, comparable, up-to-date statistical information is vital for setting policy objectives and adopting suitable policy measures and preventative actions.

The Treaty on the Functioning of the European Union (Article 153) states that ‘[…] the Union shall support and complement the activities of the Member States in the following fields: (a) improvement in particular of the working environment to protect workers’ health and safety; […]’.

The main principles governing the protection of workers’ health and safety are laid down in a 1989 framework Directive (89/391/EEC), the basic objective of which is to encourage improvements in occupational health and safety. All sectors of activity, both public and private, are covered by this legislation, which establishes the principle that the employer has a duty to ensure workers’ health and safety in all aspects relating to work, while the worker has an obligation to follow the employer’s health and safety instructions and report potential dangers.
Within this field, the European Commission’s policy agenda for the period 2014-2020 was set out in the Communication **EU strategic framework on health and safety at work for 2014-2020** (COM(2014) 332 final), which outlined three major challenges: to improve implementation of existing health and safety rules; to improve the prevention of work-related diseases by tackling new and emerging risks without neglecting existing risks; to take account of the ageing of the EU’s workforce. This framework is designed to ensure that the EU continues to play a leading role in the promotion of high standards for working conditions within Europe (as well as wider afield), in keeping with the Europe 2020 strategy.

The framework put forward a range of actions under seven key strategic objectives, one of which was to improve statistical data collection to have better evidence and to develop monitoring tools. In this context, the Communication noted that it is important for evidence-based policymaking to collect reliable, timely and comparable statistical data on work-related accidents and diseases, occupational exposures, work-related ill-health, and to analyse the costs and benefits in the area of occupational safety and health. Specifically, the Communication proposed the following action directly related to accident at work statistics: assess the quality of data transmitted by EU Member States in the framework of the European statistics on accidents at work data collection, with the aim of improving coverage, reliability, comparability and timeliness.

Other articles

- Accidents and injuries statistics
- Accidents at work - statistics by economic activity
- Accidents at work - statistics on causes and circumstances
- Health in the European Union — facts and figures — online publication
- Health statistics introduced

Database

- Health, see:

Health and safety at work (hsw)

- Accidents at work (ESAW, 2008 onwards) (hsw_acc_work)
- Main indicators (hsw_mi)
- Details by NACE Rev. 2 activity (2008 onwards) (hsw_n2)
- Causes and circumstances of accidents at work (ESAW phase III) (hsw_ph3)
- Accidents at work (ESAW) - until 2007 (hsw_acc7_work)
- Accidents at work and other work-related health problems (source LFS) (hsw_apex)
- Work related health problems and accidental injuries — LFS 1999 (hsw_inj_pb)

Dedicated section

- Health

Methodology

ESMS metadata files

- Accidents at work (ESAW, 2008 onwards) (ESMS metadata file — hsw_acc_work_esms)
- Accidents at work and other work-related health problems (source LFS) (ESMS metadata file — hsw_apex_esms)

Publication

- European statistics on accidents at work (ESAW) — Summary methodology — 2013 edition
External links

- European Agency for Safety and Health at Work
- European Commission — Employment, Social Affairs and Inclusion — Health and safety at work
- European Foundation for the Improvement of Living and Working Conditions (EUROFOUND) — Health and well-being at work
- International Labour Organisation (ILO) — Safety and health at work

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