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 often involve considerable harm for the workers concerned and their families and they have the potential to force people, for example, to live with a permanent disability, to leave the labour market, or to change job. Indeed, they may result in a considerable number of working days being lost within the European economy.

### Number of accidents

In 2015, there were just over 3.2 million non-fatal accidents that resulted in at least four calendar days of absence from work and an estimated 3,876 fatal accidents in the EU-28 (see Table 1), a ratio of approximately 830 non-fatal accidents for every fatal accident. There was a slight decrease in the total number of non-fatal accidents at work in the EU-28 between 2014 and 2015, some 9,118 fewer (equivalent to a reduction of 0.3%). By contrast, there were 102 additional fatal accidents at work in the EU-28 during 2015 when compared with a year before (equivalent to an increase of 2.7%).

Men were considerably more likely than women to have an accident at work. In 2015, more than two out of every three (68.4%) non-fatal accidents at work in the EU-28 involved men. The difference was even starker in relation to fatal accidents at work, as 19 out of every 20 fatal accidents 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 2015, the number of fatal accidents per 100 000 employed persons ranged from less than 1.00 in Germany, the United Kingdom, Sweden and the Netherlands to more than 3.50 fatal accidents per 100 000 persons employed in Portugal, Bulgaria, Lithuania and Romania (see Figure 1); the highest rate among the EU Member States was recorded in Romania, at 5.56 fatal accidents per 100 000 persons employed.

Across the whole of the EU-28 there were, on average, 1.83 fatal accidents per 100 000 persons employed in 2015, however it should be noted that fatal accidents at work are 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, on average, 1 513 non-fatal accidents per 100 000 persons employed in 2015. The range for incidence rates among the EU Member States was from less than 100 accidents per 100 000 persons employed in Bulgaria and Romania to more than 2 750 per 100 000 persons employed in Spain, Portugal and France (see Figure 2); the highest rate was recorded in France, at 3 160 non-fatal accidents per 100 000 persons employed. Particularly low incidence rates for non-fatal accidents may reflect reporting systems that offer no or little financial incentive for victims to report their accidents. 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.
When comparing data between countries these simple 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 (as shown below in Figures 5 and 6) and the relative importance (weight) of different activities varies between countries according to the structure of each 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 cover only 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, 2.38 fatal accidents per 100 000 persons employed in 2015 (see Figure 3), while there were 1 642 non-fatal accidents per 100 000 persons employed (see Figure 4). The highest standardised incidence of fatal accidents at work was recorded in Romania (7.49 deaths per 100 000 persons employed), confirming the situation recorded a year earlier, when Romania also had the highest incidence of fatal accidents at work among the EU Member States (7.13 deaths per 100 000 persons employed in 2014). Portugal, Luxembourg, Bulgaria, Lithuania, Austria and Latvia followed with standardised rates within the range of 4.1-4.7 fatalities per 100 000 persons employed. By contrast, at the other end of the range, the Netherlands recorded the lowest standardised incidence rate among the Member States, 0.76 fatal accidents per 100 000 persons employed.
The standardised incidence rate of non-fatal accidents at work in 2015 was generally highest in some southern and western EU Member States with insurance based accident reporting systems: Portugal reported 3 677 non-fatal accidents per 100 000 persons employed, followed by France and Spain with rates of 3 490 and 3 151 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 was the only one 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 86 and 83 non-fatal work accidents per 100 000 persons employed in 2015; again it should be noted that these values are thought to reflect a relatively high degree of under-reporting.
Analysis by activity

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, manufacturing, transportation and storage, and agriculture, forestry and fishing sectors together accounted for just over two thirds (67.8 %) of all fatal accidents at work and somewhat less than half (44.9 %) of all non-fatal accidents at work in 2015. More than one in five (21.0 %) fatal accidents at work in the EU-28 in 2015 took place within the construction sector, while the manufacturing sector had the next highest share (17.0 %), closely followed by transportation and storage (16.5 %). Agriculture, forestry and fishing (13.2 %) was the only other NACE section to record a double-digit share of the total number of fatal accidents.

Leaving aside transportation and storage, most service activities recorded relatively low shares of the total number of fatal accidents. Nevertheless, non-fatal accidents were relatively common within wholesale and retail trade (12.8 % of the total in the EU-28 in 2015), human health and social work activities (11.5 %), administrative and support service activities (7.6 %), as well as public administration and defence (6.3 %).
Fatal and non-fatal accidents at work, by NACE Section, EU-28, 2015 (% of fatal and non-fatal accidents)

Figure 5: Fatal and non-fatal accidents at work, by NACE section, EU-28, 2015 (% of fatal and non-fatal accidents)Source: Eurostat (hsw_n2_01) and (hsw_n2_02)

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 EU-28, for 2015, there were two types of particularly common injury, namely, wounds and superficial injuries (29.9% of the total) and dislocations, sprains and strains (27.8%), followed by two other relatively common types, namely concussion and internal injuries (17.3%) and bone fractures (11.6%); 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 (3.4%) and for burns, scalds and frostbite (1.8%).

Note that the data collected in the context of ESAW also includes 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.
Accidents 2010 to 2015 - absolute changes

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 2015. 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 significant breaks in series; this is particularly the case for Belgium, Greece, France, the Netherlands and Finland for reference year 2014 — see the ‘Data sources’ section below for more details.

Figure 7 provides details concerning the change in the total number of fatal accidents in the EU-28 between 2010 and 2015; the overall number of fatalities fell by 575 during the period under consideration. An analysis by NACE section reveals that the largest reductions in fatal accidents at work were recorded (perhaps unsurprisingly) for several activities that had relatively high numbers of fatalities. This was particularly the case for the construction sector, where the number of fatal accidents at work was down by 234; the next largest reductions were recorded for wholesale and retail trade, for agriculture, forestry and fishing, and for manufacturing.

By contrast, there were only four NACE sections where the total number of fatal accidents at work increased between 2010 and 2015. Across the EU-28, there were 14 additional fatalities for accommodation and food service activities, while there were four additional fatalities for information and communication services, three for administrative and support service activities, and one additional fatality for water supply; sewerage; waste management.
A similar analysis for the number of non-fatal accidents reveals similar results, insofar as between 2010 and 2015 the largest reduction in accidents was recorded for those activities that had the highest overall numbers of accidents. The number of non-fatal accidents in the EU-28’s manufacturing sector was down by 145 223 during the period under consideration, while there were 132 250 fewer non-fatal accidents in construction; the next largest reductions in numbers of non-fatal accidents were recorded for wholesale and retail trade (−68 426) and transportation and storage (−40 461).

There were four NACE sections which reported an increase in their number of non-fatal accidents across the EU-28 between 2010 and 2015. The largest changes were recorded for public administration and defence (with an additional 51 016 non-fatal accidents) and for human health and social work activities (46 322), while much smaller increases were recorded for agriculture, forestry and fishing (6 110) and for activities of households as employers (574).
Figure 8: Overall change in the number of non-fatal accidents at work, by NACE section, EU-28, 2010-2015 (persons)

Source: Eurostat (hsn2_07)

Figure 9 presents information at a more detailed activity level, for NACE divisions. It shows that between 2010 and 2015 some of the biggest reductions in incidence rates for non-fatal accidents were often recorded for industrial activities. However, the largest reduction was for forestry and logging where the incidence rate for non-fatal accidents fell by 1,654 accidents per 100,000 persons employed during the period under consideration. There were four more activities where the incidence rate fell by more than 1,000 per 100,000 persons employed, they were: remediation activities and other waste management services; the manufacture of furniture; other mining and quarrying; and the mining of metal ores. By contrast, fishing and aquaculture was the only NACE division to report an increase in its incidence rate for non-fatal accidents that was greater than 1,000 per 100,000 persons employed (up 1,489 per 100,000 persons employed).
Overall change in the incidence of non-fatal accidents at work, by NACE Division, EU-28, 2010-2015

(Figure 9: Overall change in the incidence of non-fatal accidents at work, by NACE division, EU-28, 2010-2015 (incidence rates per 100 000 persons employed)

Source: Eurostat (hsw_n2_01)

This final section looks at relative changes in the number of accidents for the period from 2010 to 2015. 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 10 shows the five NACE sections with the highest/lowest relative changes. Between 2010 and 2015, the number of fatal accidents in the EU-28 increased by approximately one quarter (25.5 %) for accommodation and food service activities, and by just over one tenth (10.3 %) for information and communication services. By contrast, it was more common to find that the number of fatal accidents fell during the period under consideration. This was particularly the case for wholesale and retail trade and construction (where the number of fatal accidents fell by around one fifth) and even more so for other service activities (almost one third fewer fatal accidents), financial and insurance activities (-37.1 %) and education (-46.2 %) — although the absolute number of fatalities was much smaller for these last three services.

Accidents 2010 to 2015 - relative changes

This final section looks at relative changes in the number of accidents for the period from 2010 to 2015. 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 10 shows the five NACE sections with the highest/lowest relative changes. Between 2010 and 2015, the number of fatal accidents in the EU-28 increased by approximately one quarter (25.5 %) for accommodation and food service activities, and by just over one tenth (10.3 %) for information and communication services. By contrast, it was more common to find that the number of fatal accidents fell during the period under consideration. This was particularly the case for wholesale and retail trade and construction (where the number of fatal accidents fell by around one fifth) and even more so for other service activities (almost one third fewer fatal accidents), financial and insurance activities (-37.1 %) and education (-46.2 %) — although the absolute number of fatalities was much smaller for these last three services.
Figure 10: Development of fatal accidents at work — highest and lowest relative changes, by NACE section, EU-28, 2010-2015 (persons)

Source: Eurostat (hsw_n2_07)

Figure 11 complements the information shown in Figure 10, presenting a similar analysis for non-fatal accidents. Across the EU-28, there were only three NACE sections where the total number of non-fatal accidents at work increased between 2010 and 2015: public administration and defence; compulsory social security (an increase of 33.8 %), human health and social work activities (14.3 %), and agriculture, forestry and fishing (3.7 %). By contrast, there were five NACE sections where the number of non-fatal accidents at work fell by more than one quarter during the period under consideration: construction (-26.2 %), financial and insurance activities (-26.6 %), real estate activities (-28.8 %), information and communication services (-33.4 %), and mining and quarrying (-40.2 %).
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 2015. Across the EU-28, the number of non-fatal accidents per 100 000 persons employed fell by more than 40 % for seven different activities (only the top five are shown in Figure 12); the other two activities were the manufacture of leather and related products (-40.5 %) and the manufacture of furniture (-41.2 %). The incidence of non-fatal accidents in the EU-28 fell by 40-50 % for the manufacture of other transport equipment, the extraction of crude petroleum and natural gas, and the mining of metal ores. However, the largest reductions (in relative terms) were recorded for two information and communication services, namely, programming and broadcasting activities (where the incidence rate for non-fatal accidents fell by 59.8 %) and computer programming, consultancy and related activities (which recorded a fall of 64.0 %).
Development of non-fatal accidents at work — highest and lowest relative changes, by NACE division, EU-28, 2010-2015

(incidence rates per 100 000 persons employed)

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. The figure shows the five NACE divisions with the highest/lowest relative changes in their incidence rates between 2010 and 2015. The scales used for the y-axes are different in the two parts of the figure.

Source: Eurostat (online data code: hsw_n2_01)

Figure 12: Development of non-fatal accidents at work — highest and lowest relative changes, by NACE division, EU-28, 2010-2015 (incidence rates per 100 000 persons employed) Source: Eurostat (hsw_n2_01)

Source data for tables and graphs

- Accidents at work

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 to either 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 analysis in Figures 3 and 4 covers 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 process 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 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 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. EU Member State governments 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 preventing 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 a Communication titled 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 developing 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
- Health statistics introduced
- Accidents and injuries statistics
- Health in the European Union — facts and figures — online publication

Database
- Health and safety at work (hsw), see:

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, see:
  - Health and safety at work

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)
- International Labour Organisation (ILO) — Safety and health at work

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