

Mapping Risk

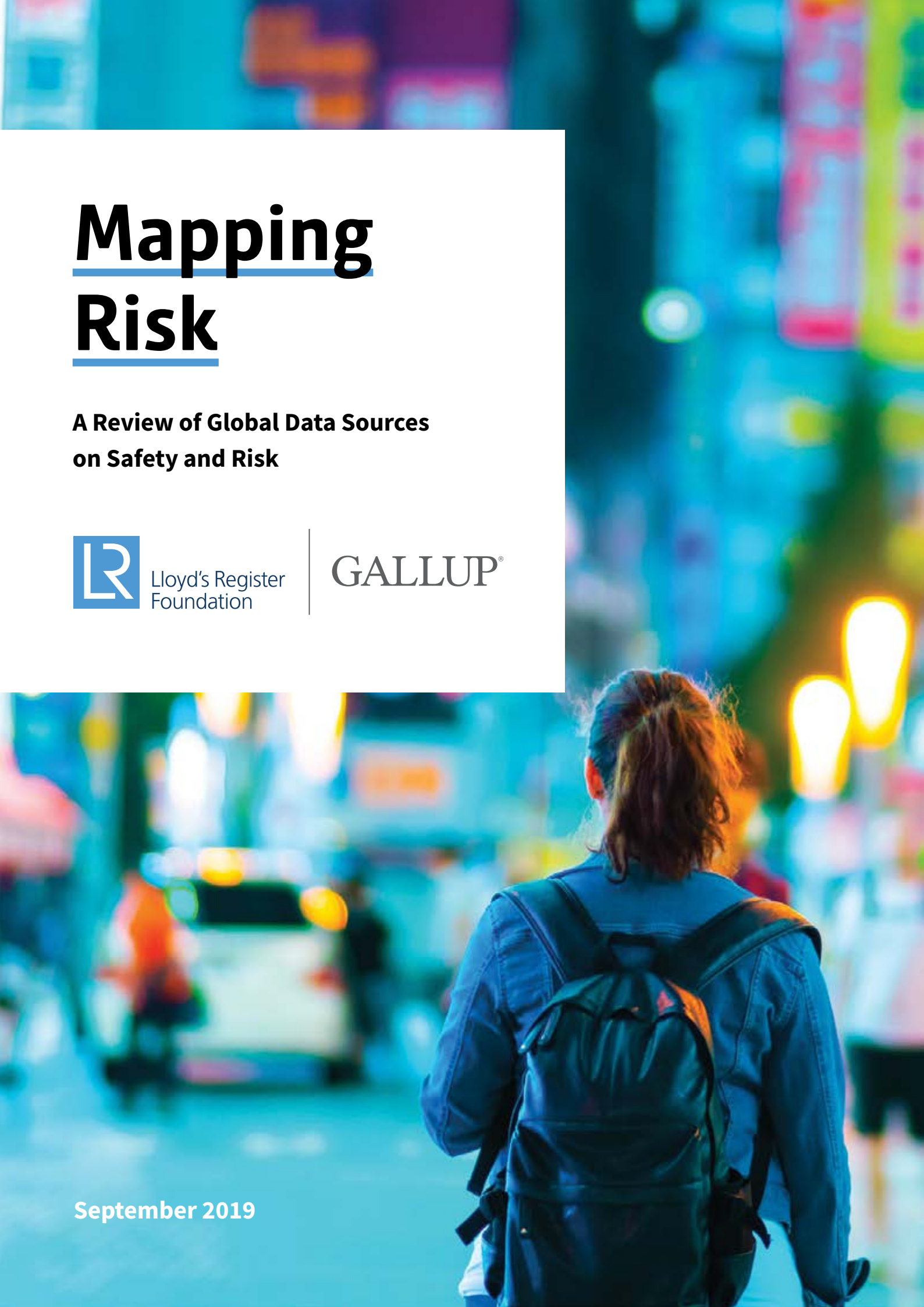
**A Review of Global Data Sources
on Safety and Risk**



Lloyd's Register
Foundation

GALLUP®

September 2019





Lloyd's Register Foundation is an independent global charity that helps to protect life and property at sea, on land, and in the air. To do this, we support education, research, public engagement, and promote scientific excellence.

Lloyd's Register Foundation, 71 Fenchurch Street, London, EC3M 4BS, United Kingdom,

Telephone: +44 20 7709 9166

Lloyd's Register Foundation is a Registered Charity (Reg. no. 1145988) and limited company (Reg. no. 7905861) registered in England and Wales, and owner of Lloyd's Register Group Limited. Copyright © Lloyd's Register Foundation, 2019.

www.lrfoundation.org.uk

The information in this report has been obtained from other third party data sources that are believed to be accurate and reliable. However, none of the data or information have been independently verified by the authors of this report and no representation or warranty is made as to any of the data's accuracy or reliability.

Contents

5	Introduction & Overview
6	Introduction
6	Context
9	Selected Key Findings
13	Section I: A Selection of the Main Multinational Data Sources on Safety and Risk
15	European Union Sources
16	Eurostat
18	ESENER
21	Eurobarometer European Surveys
24	European Food Safety Authority
27	Safety
28	ILOSTAT
30	Global Database on Occupational Safety and Health Legislation (LEGOSH)
33	UL Safety Index
37	Health & Mortality
38	Global Health Observatory (GHO)
41	Global Health Estimates
44	WHO Mortality Database
46	The Global Burden of Disease
49	Disaster-Related Risk
50	PreventionWeb
58	The Global Facility for Disaster Reduction and Recovery (GFDRR)
61	Index for Risk Management (INFORM)
65	The International Disaster Database (EM-DAT)
69	Perception or Subjective Data
70	The Risks that Matter Report
72	The Global Risks Report
74	The Afrobarometer
77	Section II: A Selection of National Data Sources on Safety and Risk
79	The Health and Safety Executive (UK)
81	U.S. Occupational Safety and Health Administration
84	China Labour Bulletin
87	Safe Work Australia
90	Workplace Safety and Health Reports (Singapore)
93	Appendices
94	Appendix I: References
97	Appendix II: Photographs Credits



A scenic view of a lake at sunset. The sky is filled with soft, pink and orange clouds. In the background, there are dark, silhouetted mountains. The water in the foreground is dark and has gentle ripples. On the left side, a wooden pole is visible, extending from the bottom edge towards the middle of the frame. The overall mood is calm and serene.

Introduction & Overview

Introduction

The Lloyd's Register Foundation works to make people safer. When designing policies and interventions that aim to make people safer, it is essential to consider the data and evidence that exist as the foundations for decision-making regarding the most appropriate interventions for the different contexts. Risk can be interpreted differently across different contexts, countries and cultures. Typically, risk involves a situation where people are facing forces outside their control, thereby having to make decisions about how to act in the face of potentially harmful consequences. The role of reliable, credible, and timely data and information is essential in this decision-making process, in order to reduce risk and enhance safety.

This report summarises some of the main data sources on safety and risk in an easy-to-view manner. It is not an exhaustive listing; only a compendium of some of the main data sources available on the topics of interest.

In researching various data sources on risk and safety, it became apparent that the data are dispersed and fragmented and there is no uniform set of health and safety performance indicators. International organisations such as the International Labour Organisation (ILO) and the World Health Organization (WHO) have established excellent datasets and conventions on safety. Yet, despite ratification of many of those conventions by a large number of countries, implementation, reporting, monitoring, compliance and enforcement remain weak in many countries across the world.

In addition, when researching data at the country level, it quickly became apparent that some countries provide comprehensive data on topics such as occupational risk and safety, while others provide very patchy data, if any. Data quality and reliability were widely divergent, as were data collection institutions and systems. This divergence often mirrored levels of economic development, although not always, and even some of the wealthier countries (such as the Gulf Cooperation Council countries), did not publish regular, reliable data on issues such as workplace accidents and fatalities.

The decision on which of the publicly available data sources to include in this report was informed by a number of factors, including country coverage by multi-country sources, how recent the latest publications and datasets are from specific sources, the reported credibility and reliability of the data source, the methodological soundness of the data collection approach and the scope and focus of this report.

Context

The study of risk from a scientific or empirical perspective is a relatively recent development. As discussed in the Lloyd's Register Foundation's *Talking Risk: Developing the Questionnaire for the Lloyd's Register Foundation World Risk Poll*,¹ for much of history, risk was often seen as something similar to fate or destiny; predetermined by a higher being or force.

In more recent times, many different fields of research have contributed to improving people's understanding of risk, both as a general concept and in terms of specific dangers or threats people face. Statistics and mathematics developed various tools – such as probability theory – which could be used to estimate or even calculate risk. Various branches of science and engineering have been instrumental in improving our ability to identify threats and develop methods, technologies and instruments to deal with them as safely as possible. The social sciences have assisted with identifying the social factors which may make a community more vulnerable to certain threats than others.

Yet, risk assessment and the public understanding of risk remain predominantly subjective. For most people, the factors that determine how they react to and understand risk and safety are complex and not necessarily based on 'scientific' factors. Risk and safety priorities may be different in different economic, social and political contexts, and across different countries and cultures.



1 <https://www.lrfoundation.org.uk/en/funding/our-major-grants/world-risk-poll/>

They may also evolve over time as technologies and associated risks, amongst other things, change. A clear recent example of such a change is the global rise of what is known as the ‘sharing economy’,² which is adding a new dimension to occupational risks and safety.

While the analytical approaches to assessing risk may differ, the main ones focus on some common components in making that assessment. These include:³

- **Hazards or event probability.** This relates to the actual source of risk – a fall, a natural disaster, a nuclear meltdown – and the likelihood, or probability, that this type of event could happen within a specified period of time. Analytical choices can influence *how probable* an event seems, including the time-frame or area of focus. Many of the data sources reviewed in this report that speak to this component of risk, estimate probability in the frame of historical frequency – how often an event has happened in the past.⁴
- **Exposure or magnitude of impact.** This refers to the consequences (or potential consequences) of an event, in terms of the number of casualties or economic output lost, or alternative framings. Again, analytical choices matter. As Fischhoff & Kadavany note in *Risk: A Very Short Introduction*, how we measure this particular component of risk can be determinative in whether we view the risk seriously.⁵ In some of the data sources this report reviews, this approach or component of risk is usually represented by outcome-oriented data, such as the number of people injured on the job or killed due to natural disasters in a given year.
- **Vulnerability or social factors.** This approach refers to the social or economic forces that may make people more or less susceptible to a particular type of risk. For large-scale disasters, this can also refer to the quality of infrastructure or other key features and characteristics of the affected area which may mitigate or exacerbate the impact of an event. Sometimes, this concept is discussed from the point of view of the ‘resiliency’ of a person or community to a certain type of risk.⁶



2 The sharing economy broadly describes a way of working where people have temporary jobs or separate pieces of work which are paid separately, rather than working formally under contract for an employer. See for example: U. Bajwa, D. Gastaldo, E. Di Ruggiero & L. Knorr, “The health of workers in the global gig economy”, *Globalization and Health*, Volume 14, Article number: 124 (2018). (<https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-018-0444-8>) And: “Digital Platforms, Gig Economy, Precarious Employment, and the Invisible Hand of Social Class”, C. Muntaner, *International Journal of Health Services*, Volume: 48, Issue: 4: 597-600. Article first published online: September 13, 2018; issue published: October 1, 2018.

3 See also the discussion on page 21; https://www.gfdrr.org/sites/gfdrr/files/publication/Understanding_Risk-Web_Version-rev_1.8.0.pdf

4 http://thinkhazard.org/static/0b4a348d7ec1ebefdbfcac0ec20f2493/documents/thinkhazard-methodology-report_v2_0.pdf (point 2.1)

5 Fischhoff, Kadavany. *Risk: A Very Short Introduction*. Oxford University Press, 2011.

6 https://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/3_disaster_risk_resilience.pdf

Some of the data sources reviewed in this report focus on one of the three approaches to risk, or provide an overall estimate of a particular type of risk, sometimes by producing a composite figure based on the three components (see page 7). They also include perception or subjective data. In the review of each data source, a brief description of the source and the methodology is given, and one or more notable findings are presented briefly. The data sources discussed in this report provide information about several different forms of risk, related to work, weather, food and others. While not exhaustive, this report presents only some of the publicly freely available data sources on risk and safety, and some sectors are not discussed in the scope of this report. For example, no data sources are included on crime data or economic and financial risks. In addition, there are many private sector companies which have valuable data on risk and safety (such as insurance companies), but their data are not published.⁷

Furthermore, there are countless valuable qualitative studies and academic publications on the subject which are not reviewed in this report. In addition, newer forms of data sources which use ‘big data’ tools are not covered, and undoubtedly, the use of big data to better understand risk and safety will increase and will contribute substantially to our understanding of key dimensions of risk and safety.

One of the objectives of this report is to help highlight the different sources of risk and safety information that are available, and to encourage efforts to integrate and cross-analyse data from these (and other) different sources.

An increasing number of researchers and organisations are calling for increased openness of risk and safety data, including what the UN Office for Disaster Risk Reduction in the 2019 Global Assessment Report (GAR) calls “the democratization of risk information.”⁸ According to GAR, greater openness in the provision of data on risk has allowed “individuals, communities and governments to draw conclusions and influence their own exposure and vulnerability.” This openness, the report continues, is bringing about a greater degree of collaboration between the different stakeholders that will help us better understand risk, and therefore contribute to improving safety and saving lives.



⁷ Please see the Lloyd’s Register Foundation Insight report on Open Data: <https://www.lrfoundation.org.uk/en/publications/>

⁸ Global Assessment Report (GAR) 2019, Chapter 3.

Selected Key Findings

This section reviews some key findings as they relate to the question of assessing the current state of data in the fields of risk and safety,⁹ and what the data tell us about the current state of risk and safety in general. These include:

1. An estimated 2.78 million workers die each year from occupational accidents and work-related diseases¹⁰ – this represents around 7,600 deaths per day. Some two-thirds of work-related deaths are in Asia, while Africa and Europe each account for just under 12% of global workplace fatalities.
2. Diseases related to work cause the most deaths among workers. Hazardous substances alone are estimated to cause 651,279 deaths a year.¹¹
3. In countries where risks to health and fatalities from hazardous substances are marginally lower, the construction sector appears to be a source of high numbers of workplace accidents and fatalities (where reliable recent data are available).
4. While leading multinational agencies such as the ILO and WHO have provided guidance in terms of how best to measure some aspects of risk and safety, compliance across different countries varies. Indeed, many developing countries do not currently report statistics on key issues, such as occupational safety or disaster-loss metrics. Data on public understanding of risk are also unavailable in many parts of the world.
5. It is often the case that even for the countries (or entities) which collect risk and safety data, there are important methodological differences that can hinder cross-country comparisons.
6. According to ILO estimates, globally, there are around 340 million occupational accidents and 160 million victims of work-related diseases each year.¹² The corresponding loss of workdays accounts for almost 4% of the world's GDP, or some US\$3.2 trillion.
7. In the European Union, there were over 3,000 work-related fatalities in 2015.¹³ The European Union's Occupational Safety and Health Agency (OSHA) estimates that work-related ill-health and injury cost the European Union around 3.3% of its GDP a year, or some €476 billion.¹⁴ In most European countries, work-related cancer accounts for the majority of costs (€119.5 billion or 0.81% of the EU's GDP), with musculoskeletal disorders being the second largest contributor.¹⁵
8. In the U.S., 5,147 workers died on the job in 2017 – 14 deaths on average every day. Of the total, 4,674 worker fatalities were in private industry, of which 971 people, or 20.7%, were in the construction sector. Fatal falls were at their highest level in the 26-year history of the Census of Fatal Occupational Injuries (CFOI) accounting for 17% of workers' deaths.¹⁶

Unintentional overdoses due to nonmedical use of drugs or alcohol while at work increased by 25% from 217 in 2016 to 272 in 2017. This was the fifth consecutive year in which unintentional workplace overdose deaths have increased.¹⁷
9. The ILO reports that “the estimated fatal occupational accidents in the Commonwealth of Independent States (CIS) countries [are] over 11,000 cases, compared to the 5,850 reported cases [...]. The gross under-reporting of occupational accidents and diseases [in the region...] is giving a false picture of the scope of the problem.”¹⁸

Although official reliable statistics are challenging to find, according to a report by the Russian news agency Tass, “more than 1,700 people in Russia died from work-related injuries last year with roughly 25% of this total being construction workers.”¹⁹

9 <https://www.lrfoundation.org.uk/en/publications/download-the-foresight-review-on-global-safety-evidence/>

10 <https://www.ioshmagazine.com/article/global-work-deaths-total-278-million-year>

11 https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang-en/index.htm

12 Ibid.

13 https://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics#Number_of_accidents

14 <http://www.icohweb.org/site/images/news/pdf/Safety%20and%20health%20at%20work%20-%20EU-OSHA%20-%20Work-related%20accidents%20and%20injuries%20cost%20EU%20%E2%82%AC476%20billion%20a%20year%20according%20to%20new%20global%20estimates%20-%202017-09-01.pdf>

15 <https://osha.europa.eu/en/about-eu-osha/press-room/eu-osha-presents-new-figures-costs-poor-workplace-safety-and-health-world>

16 <https://www.bls.gov/news.release/cfoi.nr0.htm>

17 <https://ohsonline.com/articles/2018/12/18/fatal-work-injury-rate-dropped-in-2017.aspx>

18 https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang-en/index.htm

19 <http://tass.com/society/1030624>

10. Data on fatalities from natural disasters and other sources of risks to health are available from a number of sources but are incident-related and therefore fluctuate according to the frequency of natural disasters in each country.
11. The ILO is the main reliable source globally of relatively regular data on occupational health and safety, but much of the data are not very recent. Although many countries are signatories to international ILO conventions on workplace health and safety and have relevant laws and regulations in place,²⁰ monitoring and gathering data on work-related injuries and fatalities is occasional, at best, in most countries. In addition, in cases of employer violation of the laws, there is little or nominal enforcement, and worker compensation levels are poor.
12. Although it was challenging for the authors of this report to catalogue all available regular data sources on risks to occupational health and safety in every country, for reasons of both scope of this report and lack of knowledge of local languages, it was evident that reliable and credible data and consistent monitoring did not exist in a usable format for a large number of countries in Africa, the Middle East, Asia, and Latin America.
13. European Union agencies appear to provide comprehensive information and support for member states on the subject of workplace health and safety. This enables better implementation of safety regulations and stronger reporting of work-related injuries and fatalities across the region. Systems are also in place that enable monitoring and the collection of data on injuries and fatalities arising from natural disasters and other sources of risks to health.
14. In China, one estimate suggests that there were some 34,600 work-related fatalities in 2018, the highest percentage of which (36%) having been in the construction sector.²¹
15. Data for many countries are not available in a structured or timely manner, but various sources – including academic and other research and press reports – report figures which are often several years old.²²
16. Worldwide, natural disasters are estimated to have resulted in 10,300 fatalities in 2018, of which the earthquake and resulting tsunami in Indonesia were the most deadly, resulting in an estimated 2,256 fatalities.²³ This stands in contrast to a high in 2010 of more than 300,000 deaths from natural disasters – the year in which an earthquake is estimated to have killed more than 100,000 people in Haiti.²⁴



20 <https://www.ilo.org/safework/countries/lang--en/index.htm>

21 <https://clb.org.hk/content/work-safety>

22 See for example: https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-manila/documents/publication/wcms_126058.pdf and

23 <https://www.statista.com/statistics/510952/number-of-deaths-from-natural-disasters-globally/>

24 Athena R. Kolbe, Royce A. Hutson, Harry Shannon, Eileen Trzcinski, Bart Miles, Naomi Levitz, Marie Puccio, Leah James, Jean Roger Noel & Robert Muggah (2010) Mortality, crime and access to basic needs before and after the Haiti earthquake: a random survey of Port-au-Prince households, *Medicine, Conflict and Survival*, 26:4, 281-297, DOI: 10.1080/13623699.2010.535279

A Note on Academic Research and Academic Journals

Improving public safety and managing risk requires a joint effort from governments, non-governmental organisations, individuals and academia. While academic sources are not explicitly listed in this report, academia contributes significantly to this field of study and to many of the data sources listed in this report. Research involving the estimation of causal effects or analysing accidents to provide evidence for safety threats and evaluate programme efficiency is vital, as are models that shed light on behavioural, social and psychological aspects of health and safety, among other topics. Those allow for greater understanding of the underlying causes and threats to safety. Some examples of journal publications on risk, health and safety include:

- International Journal of Occupational Safety and Ergonomics
- Occupational Health Science
- Safety Science
- Safety and Health at Work
- Journal of Safety Research
- Science
- Journal of Behavioural Decision Making
- Risk Analysis
- Journal of Risk Research

Many scientists and researchers at universities and elsewhere are working on methodological improvements related to risk assessments and safety enhancement, and exploring new approaches to tackle data limitations (e.g., by using big data). Examples include:

- The Lloyd's Register Foundation Transport Risk Management Centre at Imperial College, London, developing tools to improve data quality, reliability and continuity, as well as tools for accident analysis to assess transport safety and prevention strategies.
- A project run by the Max-Planck Institute for Human Development and the Harding Zentrum für Risikokompetenz called the *RisikoAtlas*. This project is working on various issues including the development of new digital tools to visualise risks and provide learning resources to navigate uncertainties.
- Decision Research, an independent non-profit organisation that investigates human judgment, decision-making, and risk across various sectors through scientific research and investigation.

Further research is needed to obtain better data on risk and safety, especially in developing countries where data on those topics are scant.





RUBBER STAMP
E2
CP

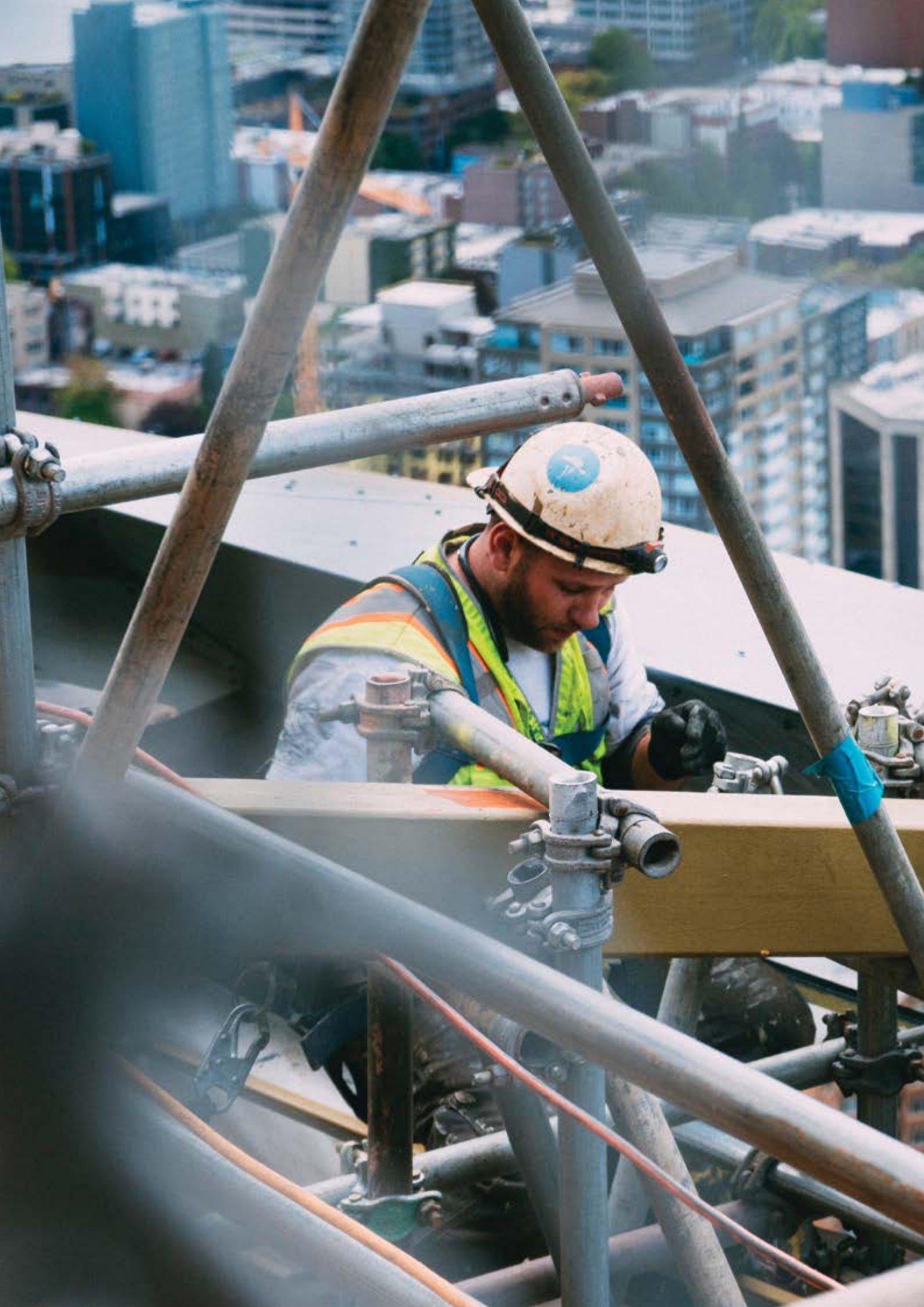
BIKE

MULTIPLICATION
SERVICE
CAR-SAFE GLASS



Section I

A Selection of the Main Multinational Data Sources on Safety and Risk



An aerial photograph of a city with various buildings and greenery. A white rectangular box is overlaid on the right side of the image, containing the text 'European Union Sources'. The text is in a bold, black, sans-serif font, with the words 'European' and 'Union' underlined in blue. The background shows a dense urban area with a mix of modern and older buildings, some with flat roofs and others with more complex structures. There are also some green trees scattered throughout the city.

European Union Sources

Eurostat

European Commission

Statistical Office of the European Union.

Data Provider:	European Commission
Organisation Type:	Institution of the European Union
Data Source Name and Website:	Eurostat https://ec.europa.eu/eurostat/data/database/
Type of Data:	Official statistics
Frequency of Release:	Annual
Country Coverage:	European Union (28 countries)
Public Access:	Free access to the online database
Latest Update:	May 2019

Description and Summary of Methodology

A key role of Eurostat, which is part of the portfolio of the Commissioner for Employment, Social Affairs and Inclusion, is to provide statistics to EU member-states and contribute data to EU policy discussions. Eurostat's mission includes providing high-quality statistics on the economic, social, environmental and financial state of European countries. The database covers a broad range of sectors and dimensions, and allows for comparisons between countries over time, enabling public policy evaluations. It is widely used by governments, businesses, the education sector, journalists and the public in general.

The data are gathered in close cooperation between Eurostat and the National Statistical Institutes/Offices (NSIs/NSOs) in the different EU countries. To ensure comparability, NSIs/NSOs collect and produce harmonised data according to agreed standards. Eurostat compiles the data to construct statistics at the European Union level.

Indicators Covered

The Eurostat database includes statistics on country and regional levels, economy and finance, population and social conditions, industry, trade and services, agriculture and fisheries, international trade, transport, environment and energy, science, and technology and digital society.

Statistics on the following indicators related to safety and health are included:

- **Health and safety at work:** data on accidents at work, work-related health problems and exposure to risk factors.
- **Causes of death:** information on mortality patterns.
- **Health status and health determinants:** information on various aspects of the health status and health determinants of a population, including data on healthy life years, self-perceived health and wellbeing, injuries from accidents and absence from work due to health problems, body mass index, consumption of fruits and vegetables, tobacco and alcohol consumption and the social environment.

Notable Findings

In 2017, life expectancy in the EU-28 was estimated at 83.5 years for women and 78.3 for men.²⁵

The most common causes of death in the EU in 2016 were ischaemic heart diseases (heart attacks), followed by cerebrovascular diseases (strokes) and malignant neoplasm (cancer) of trachea, bronchus and lung. With the exception of breast cancer, death rates were higher for men than for women for all the leading causes of death. In particular, the death rates for alcohol abuse and drug dependence were more than four times higher for men as for women.

²⁵ <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/1274.pdf>

Chart 1 and Chart 2. Causes of Death – Standardised Death Rate, EU-28, 2016 (Per 100,000 Inhabitants)²⁶

Chart 1

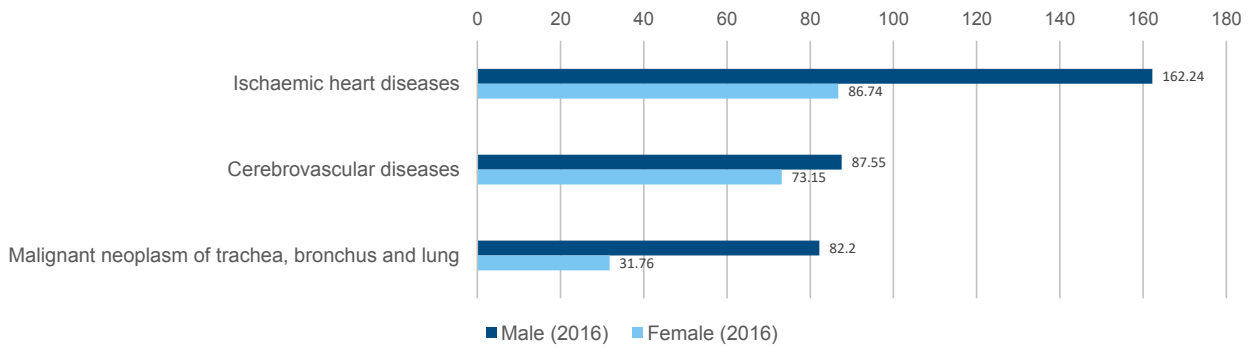
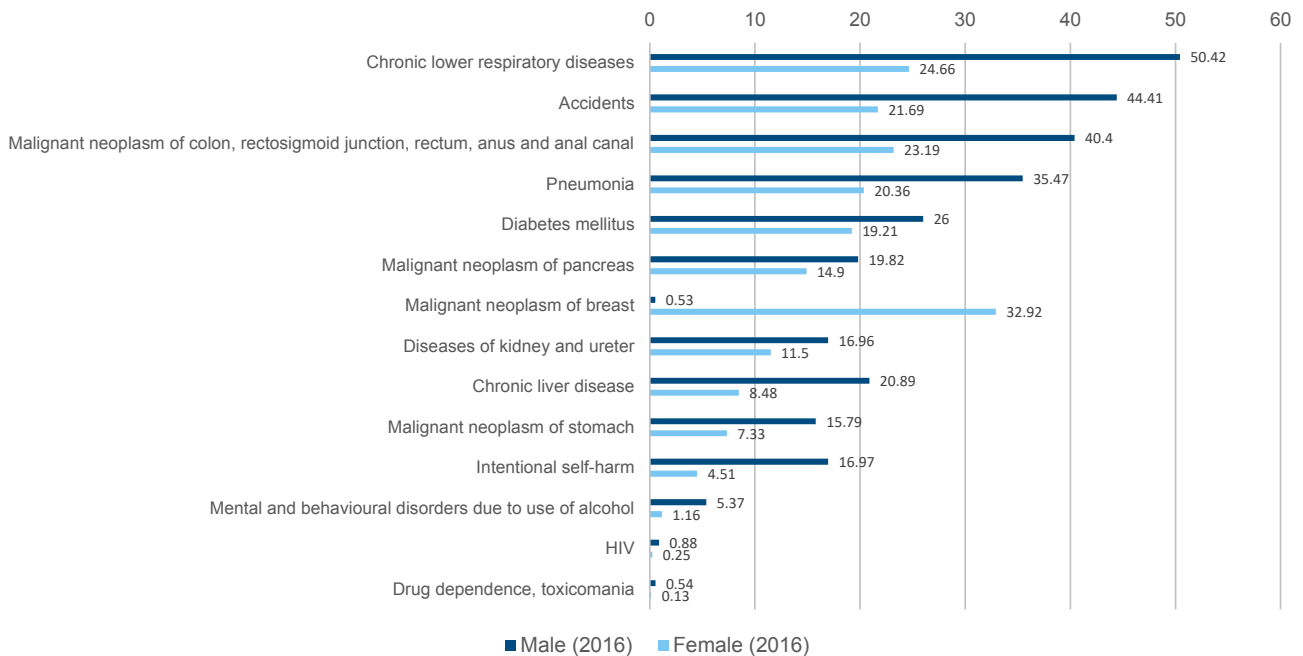


Chart 2



Data Uses and Limitations

European statistics have become increasingly important for the development, implementation, monitoring and evaluation of EU policies. There has been an ongoing effort to accelerate the collection of statistics within the European Statistical System (ESS) through legislation rather than voluntary agreements with the member states. This legal approach has been successful in ensuring quality in all dimensions, including comparability and completeness of EU statistics.

²⁶ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Causes_of_death_%E2%80%94_standardised_death_rate,_EU-28,_2016_\(per_100_000_inhabitants\)_HLTH19.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Causes_of_death_%E2%80%94_standardised_death_rate,_EU-28,_2016_(per_100_000_inhabitants)_HLTH19.png)

ESENER

European Survey of Enterprises of New and Emerging Risks (ESENER)

EU-OSHA's European Survey of Enterprises on New and Emerging Risks (ESENER) is an extensive survey that examines how European workplaces manage safety and health risks in practice.

Data Provider:	European Agency for Safety and Health at Work (EU-OSHA)
Organisation Type:	Institution of the European Union
Data Source Name and Website:	https://osha.europa.eu/en/surveys-and-statistics-osh/esener
Type of Data:	Survey data
Frequency of Release:	Every five years (since 2009)
Respondent:	Businesses or types of employees
Unit of Measurement:	Percentage of respondents selecting each answer option of survey questions
Country Coverage:	Up to 36 countries, including EU-28
Public Access:	Freely publicly available – Interactive survey dashboard on the website; raw data available with UK Data Archive
Latest Release:	2014; Current survey is in progress

Description and Summary of Methodology

Conducted in 2009, the first ESENER survey asked thousands of businesses and organisations across Europe to respond to a questionnaire that focused on:

- General safety and health risks in the workplace and how they are managed
- Psychosocial risks such as stress, bullying and harassment
- Drivers of and barriers to Occupational Safety and Health (OSH) management
- Worker participation in safety and health practices

In the first survey, 36,000 managers and OSH representatives were interviewed across all EU Member States as well as Turkey, Switzerland and Norway. The interviewees worked in private- and public-sector organisations with ten or more employees. In 2014, the survey sample sizes increased by half, and in three countries the national samples were further expanded. ESENER-2 included microenterprises of five to ten employees and agricultural businesses for the first time. Additionally, five new countries – Albania, Iceland, North Macedonia, Montenegro and Serbia – were added to the 31 countries included in 2009.

The results from these interviews are complemented by secondary analyses involving a series of in-depth studies that focus on specific topics. Quantitative and qualitative research methodologies were applied in these studies to better understand the main findings from the survey. The third survey was in the process of being fielded at the time of writing this report.

Indicators Covered

Risk factors present in the establishment: A series of questions about whether certain types of hazards or risks are present in the respondents' workplace, including:

- Tiring or painful positions
- Lifting or moving people or heavy loads
- Loud noise
- Repetitive hand or arm movements
- Heat, cold or draught



- Risk of accidents with machines
- Risk of accidents with vehicles in the course of work
- Chemical or biological substances
- Increased risk of slips, trips and falls

Psychosocial risk factors present in the establishment:

A series of questions about health risks resulting from the way a workplace is organised, including:

- Time pressure
- Poor communication or cooperation
- Employees' lack of influence
- Job insecurity
- Difficult customers, patients, pupils
- Long or irregular working hours
- Discrimination

Workplace efforts to discuss or promote safety:

Respondents are asked if their workplace regularly carries out workplace risk assessments. Respondents are also asked about different types of health or safety-related training they may have received, and if these types of issues are discussed in the workplace.

Availability of critical services: Questions include if workers are able to use certain types of health and safety services, including talking to an occupational health medical specialist or a psychologist.

Lack of information about workplace risks: Respondents are asked if their establishment provides adequate information to help prevent any type of risk examined in the survey, be it physical or psychosocial risks.

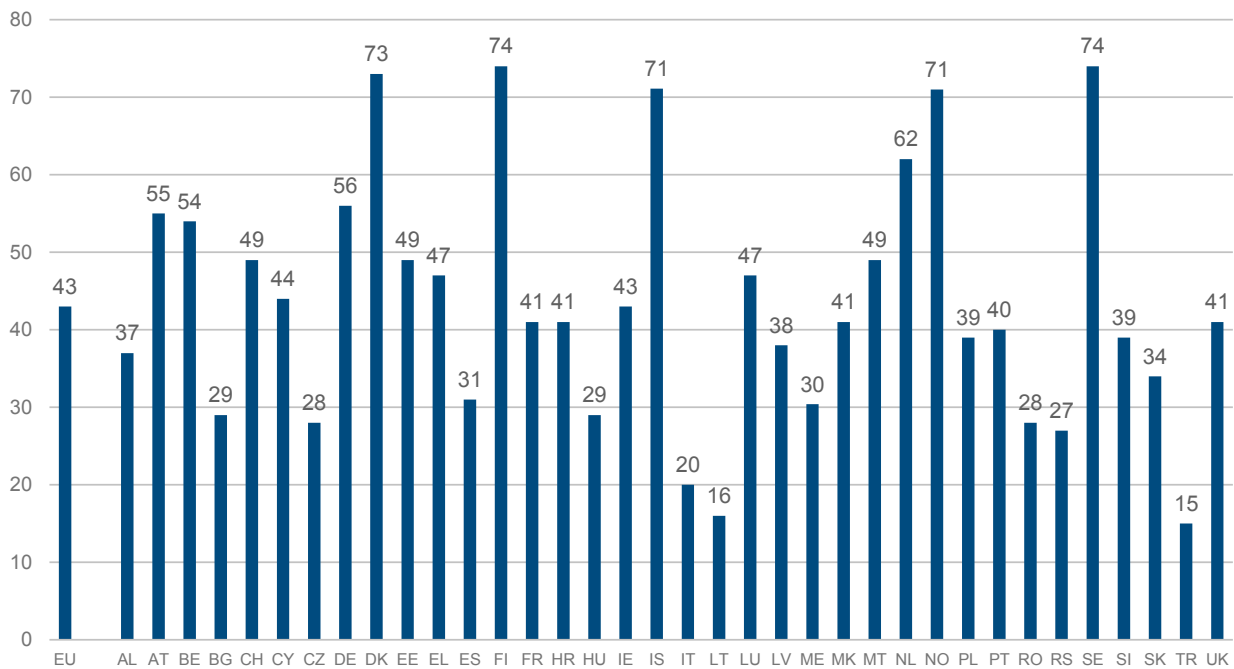
Notable Findings

According to EU-OSHA, workers will be increasingly susceptible to psychosocial risks in the coming years due to technological changes and increased globalisation. The 2014 survey found that, other than the physical risk of sitting for too long, most workers were likely to say some type of psychosocial risk was present in their workplace, such as time pressure (see Chart 3).²⁷



27 <https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014>

Chart 3. Survey question: Besides these risks, there may also be health risks resulting from the way work is organised, from social relations at work or from the economic situation. Please tell me for each of the following risks whether or not it is present in the establishment? 'Time pressure' % of people saying Yes, by country.



Data Uses and Limitations

The data are analytically rich and valuable. Some of the underlining survey questions have changed over the three survey iterations, somewhat limiting trend analysis.

In their reports, EU-OSHA discuss potential methodological improvements to data analysis, most notably relating to the issue of causality as it relates to the major research questions driving the survey series. The analysis of the second survey found evidence that “national context matters”²⁸ in the management of psychosocial risks.



28 <https://osha.europa.eu/en/tools-and-publications/publications/management-psychosocial-risks-european-workplaces-evidence/view>

Eurobarometer European Surveys

Eurobarometer

EU-associated public opinion surveys conducted regularly on behalf of the European Commission.

Data Provider:	Eurobarometer
Organisation Type:	Public opinion surveys on behalf of the European Commission
Data Source Website:	https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/General/index
Type of Data:	Nationally representative public opinion survey data for the 28 countries in the European Union
Frequency of Release:	Standard data are released twice a year; topical or special surveys are released periodically
Respondent:	Adults aged 18+ living in the European Union
Unit of Measurement:	Percentage of respondents selecting each answer option of survey questions
Country Coverage:	Up to 28 countries
Public Access:	Data freely publicly available – Eurobarometer Interactive; UK Data Archive
Latest Release:	November 2018

Description and Summary of Methodology

Eurobarometer regularly conducts a series of public opinion surveys on behalf of the European Commission. The topics measured by the survey vary but have periodically asked questions on issues related to public risk perception, concerns about safety, and other risks, such as those associated with climate change. The organisation conducts nationally representative surveys in the EU-28 countries or a subset of those nations. It fields four general types of surveys: the Standard Questionnaire, which repeats a core set of questions about wellbeing and social views as well as political and economic attitudes; the Special Questionnaire, which takes an in-depth look at specific subjects; qualitative studies, and the Flash Questionnaire, which is shorter in length and narrower in focus. Flash Questionnaires might touch on “hot-button” issues.

Indicators Covered

The Eurobarometer has featured a number of items that help measure public risk perception, attitudes about specific threats, general attitudes about safety and other related issues. The table below highlights some of the specific questionnaires (Special or Flash) that have examined these topics.

Table 1. Risk or Safety-Related Modules on Eurobarometer, in Reverse Chronological Order

Year	Survey Topic	Survey Type
2019	Europeans’ attitudes towards vaccines	Special
2018	Future of Europe (including “Climate Change”)	Special
2017	Europeans’ attitudes towards security	Special
2017	Europeans’ attitudes towards cybersecurity	Special
2016	Chemical safety	Special
2015	Climate change/data protection	Special
2014	Public perceptions of science, research and innovation	Special



Year	Survey Topic	Survey Type
2014	Quality of transport	Special
2013/2017	Sport and physical activity	Special
2012	Public attitudes towards robots	Special
2012	Safety of services	Flash
2010	Consumer understanding of labels and the safe use of chemicals	Special
2010	Food-related risks	Special
2010	Mental health	Special
2009	Global threats	Special
2008	Attitudes toward radioactive waste	Special
2005	Risk issues	Special

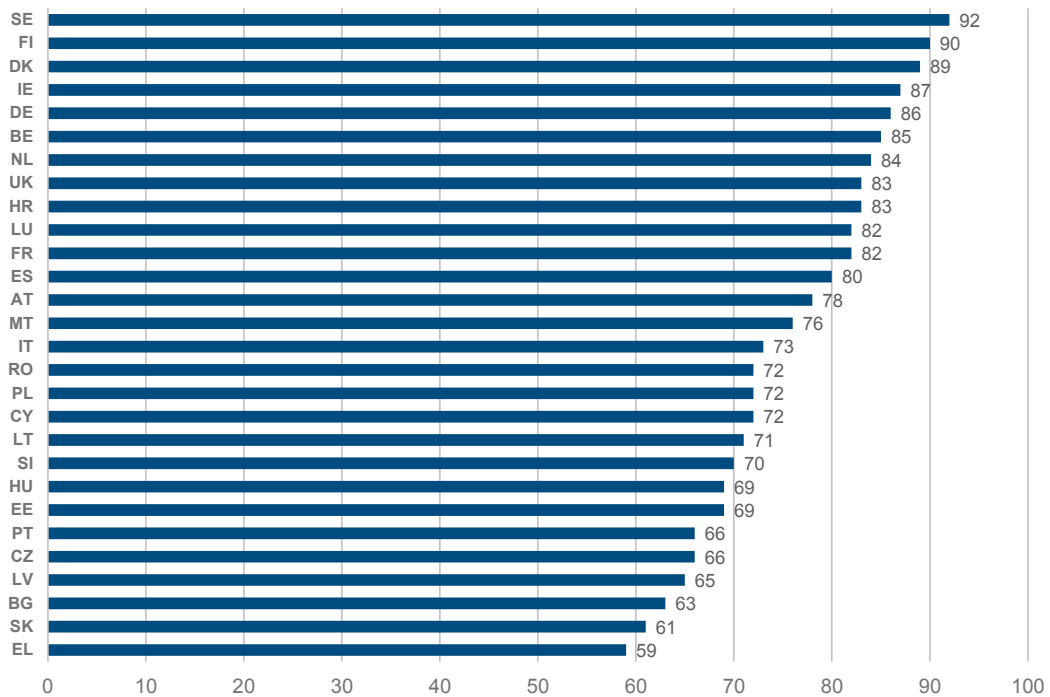


Notable Findings

The Eurobarometer has increasingly focused on two major risk areas: climate change and cybersecurity. According to these surveys, a large proportion of Europeans say they are worried about climate change, though the figures have generally been stable over the past five years.

Additionally, a 2018 Eurobarometer survey found that 79% of people across Europe agreed that “the risk of becoming a victim of a cybercrime” is increasing.²⁹ The Eurobarometer found important differences on this item in line with levels of education – with individuals having lower levels of education being less likely to agree.

Chart 4. Eurobarometer Survey Question, October 2018: Please tell me if you agree or disagree with the following statement: You are increasingly likely to become a victim of a cybercrime. % of people Saying “agree”.



Data Uses and Limitations

The Eurobarometer items on risk and safety are valuable and insightful, but are not regularly repeated. As a result, trend or detailed subgroup analyses may be limited for some question items.

29 <http://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/ResultDoc/download/DocumentKy/85495>

European Food Safety Authority

European Food Safety Authority

Scientific assessment of food-related risks and communication of food safety issues.

Data Provider:	European Food Safety Authority (EFSA)
Organisation Type:	European agency
Data Source Name and Website:	European Food Safety Authority http://www.efsa.europa.eu/
Type of Data:	Various from European countries
Country Coverage:	Up to 28 countries
Public Access:	Free public access to aggregated statistics

Description and Summary of Methodology

The European Food Safety Authority (EFSA) was founded in 2002 by the European Union following a series of food safety crises in late 1990s. The organisation is a key source of scientific advice and communication on food-related risks. The EFSA collects and analyses data to provide a comprehensive scientific framework to assess risks. The results of their research are not only communicated to stakeholders and principal partners for policy discussions and advice, but are also available to the broader public to raise awareness on food safety issues. All scientific outputs are published in an open-access online scientific journal, the EFSA Journal.

The data collected come from various sources: official statistics collected by member states, analytical data from universities, research centres or industries (sometimes in response to a call for data/research), and experimental data by food operators as part of a market authorisation process. Additionally, data from other external sources, e.g. Eurostat or the World Health Organization, are used to complement the database. The food classification system FoodEx2 has been developed by the EFSA to standardise the identification and characterisation of food and feed items.

The EFSA uses a scientific approach to analyse the data collected and estimate risks. This includes describing the scientific question, known as “problem formulation”, planning a strategy for risk assessment and defining relevant data, as well as how data are gathered, appraised and integrated. The analysis follows a defined plan and is followed by an evaluation process to ensure quality. All steps are documented for evidence transparency.

Indicators Covered

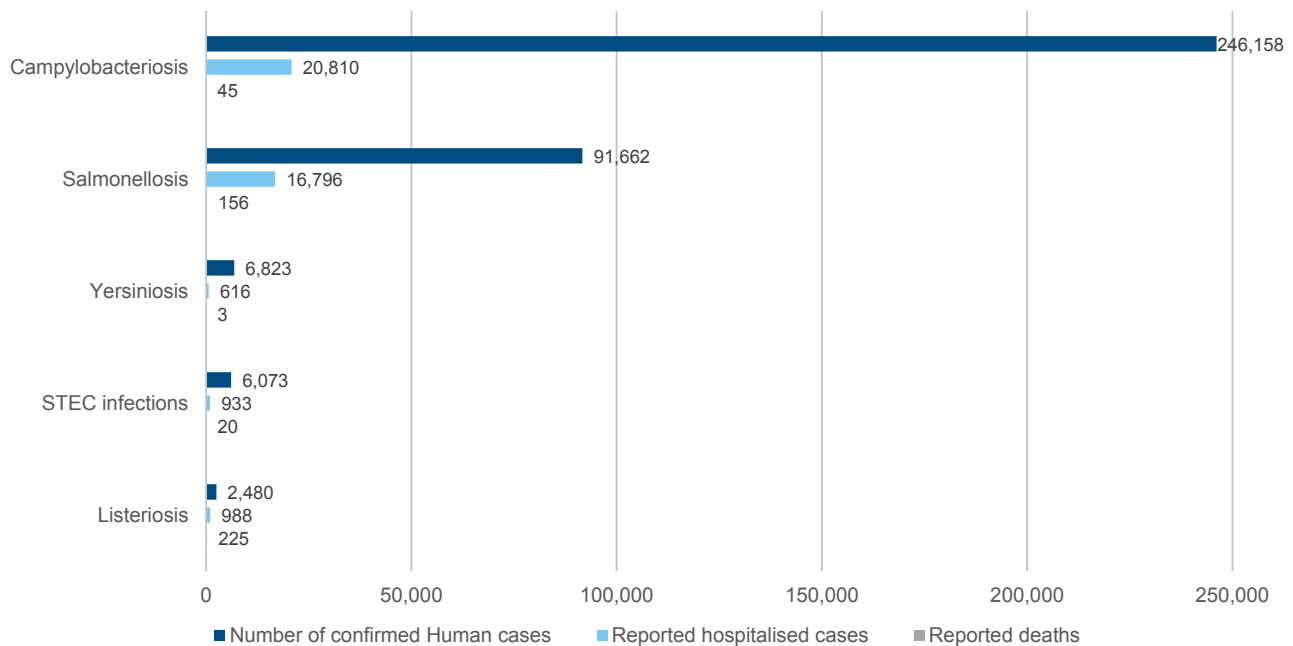
The main topics covered by the EFSA include food and feed safety, nutrition, animal health and welfare, and plant protection and health. The main areas in which EFSA collects data are:

- **Food consumption:** Food consumption habits and patterns across the EU.
- **Biological hazards:** Data on zoonotic diseases (infections and diseases that are transmissible between animals and humans), antimicrobial resistance and food-borne outbreaks across the EU.
- **Chemical contaminants:** Contaminants that can be found in food or animal feed due to food production, distribution, packaging or consumption.
- **Chemical residues:** Unintentional residues as a result of food production, such as pesticide residues and veterinary medicinal product residues.

Notable Findings

According to the EFSA, food-borne zoonotic diseases are a significant and widespread global public health threat with over 350,000 cases reported in the European Union each year.³⁰ Diseases transmitted between animals and humans are caused by agents such as bacteria, viruses, parasites and fungi, and are mostly caused by consuming contaminated water or food. In 2017, the most commonly reported cases were campylobacteriosis, a bacteria normally found in cattle, swine and birds, and accounted for almost 70% of all the reported cases.³¹ Based on severity, listeriosis was the most severe with the highest hospitalisation and mortality rate.³²

Chart 5. Most Common Food-Borne Zoonoses³³



Data Uses and Limitations

Recent and comparable data are crucial for informed risk assessment and risk management decisions, for example, determining which foods are contaminated with bacteria, combined with food consumption data, to calculate consumer exposure to a certain hazard. Food safety data can also be used to monitor the effectiveness of programmes, such as the EU-wide effort to reduce the incidence of Salmonella in chickens.

Risk assessments are naturally associated with uncertainty, therefore the way uncertainty is calculated and interpreted is crucial for the statistical significance of the results. To tackle this issue, the EFSA has developed guidelines on how to capture and address uncertainty and which weights to apply to bring pieces of evidence together and ensure accuracy and methodological soundness of scientific insights.

30 <https://www.efsa.europa.eu/en/topics/topic/food-borne-zoonotic-diseases>

31 <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2017.5077>

32 Ibid.

33 <https://efsa.onlinelibrary.wiley.com/doi/full/10.2903/j.efsa.2018.5500>

注意
この扉は、火災発生時に、避難経路の確保が
重要となるため、必ずしも閉めておく必要は
ありません。火災発生時は、必ずこの扉を
閉めておく必要があります。



Safety



ILOSTAT

International Labour Organization

The leading source of labour statistics.

Data Provider:	International Labour Organization (ILO)
Organisation Type:	United Nations specialised agency - Multilateral organisation
Data Source Name and Website:	ILOSTAT https://ilostat.ilo.org/
Type of Data:	Various including official statistics and survey data
Frequency of Release:	Annual and other
Country Coverage:	up to 170 countries
Public Access:	Free public access to the online database
Latest Release:	January 2018

Description and Summary of Methodology

ILOSTAT is a global labour data source hosted by the ILO department of statistics. The organisation sets international standards for labour statistics, compiles and produces labour statistics, and provides technical assistance and training in labour statistics. The ILOSTAT database covers over 165 indicators in up to 170 countries, including statistics on employment, earnings and labour costs, productivity and other labour-related data. It also provides a wide range of statistics on occupational health and safety, such as workplace fatalities, illness and injury.

ILOSTAT uses a variety of national sources to gather information on fatal and nonfatal occupational injuries, disaggregated by sex, migrant status and economic activity. The majority of the data comes from administrative records (e.g., insurance or labour inspections), however, establishment or household surveys are also often used to collect data.

For easier interpretation and comparability between countries and over time, ILOSTAT uses relative measures. For example, the occupational injuries incidence rate is calculated as the number of occupational injuries during the reference period, averaged by the number of workers in a reference group multiplied by 100,000. These statistics enable discussions on national policies concerning safe work for everyone and the tracking of progress made towards this goal.

Indicators Covered

Safety and health at work: These indicators cover fatal and nonfatal occupational injuries, time lost due to occupational injuries and labour inspection.

Notable Findings

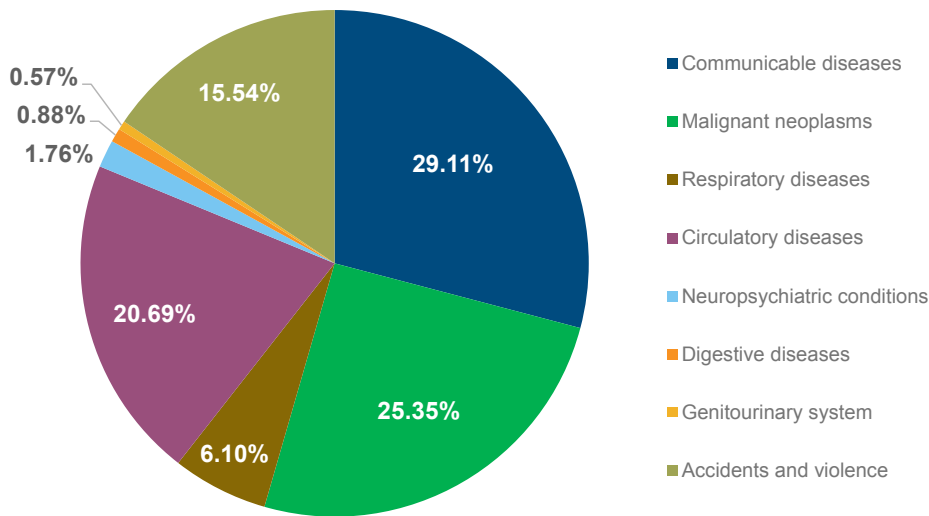
Across the globe, there are around 340 million occupational accidents and 160 million victims of work-related diseases each year.³⁴ The lost workdays globally account for almost 4% of the world's GDP.

Additionally, according to recent ILO estimates, 2.3 million workers die each year from occupational accidents and work-related diseases — this corresponds to approximately 6,300 deaths per day.³⁵ Communicable diseases (29%), work-related cancers (25%) and circulatory diseases (21%) contribute to almost three-quarters of the total work-related mortality. Some 15.5% of the deaths are related to fatal occupational accidents.

³⁴ https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm

³⁵ Ibid.

Chart 6. Global Work-Related Mortality (ILO)

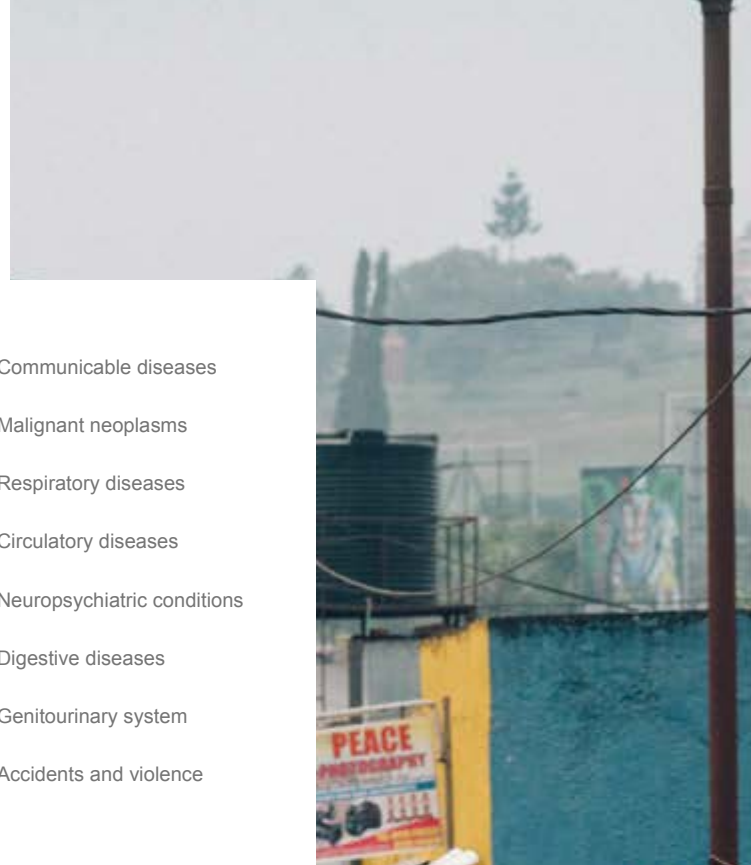


Data Uses and Limitations

ILOSTAT provides a wealth of valuable data and labour statistics. It sets standards and methodological rigour for labour statistics, and disseminates the data and analyses supporting all member states with the implementation of those standards, data production, analyses and dissemination.

Statistics on occupational injuries are essential for accident prevention and can be used to develop strategies and programmes to improve workplace safety. They can also be used to assess the effectiveness of a programme or policy. Presenting the data by gender, migrant status and economic activity, also offers valuable insights for targeted strategies.

For several key indicators and many countries, the data are not recent and, in some cases, the information dates back 10 years or more.



Global Database on Occupational Safety and Health Legislation (LEGOSH)

International Labour Organization

A database providing a picture of the regulatory framework.

Data Provider:	International Labour Organization (ILO)
Organisation Type:	United Nations specialised agency - Multilateral organisation
Data Source Name and Website:	LEGOSH https://www.ilo.org/dyn/legosh/en
Type of Data:	OSH legislation from around the world
Frequency of Release:	Irregular updates
Country Coverage:	Global
Public Access:	Free public access to the online database
Latest Update:	2017

Description and Summary of Methodology

LEGOSH provides a picture of the regulatory framework of the main elements of OSH legislation, including OSH management and administration, employers' duties and obligations, workers' rights and duties, OSH inspection and enforcement, among others. LEGOSH encompasses available occupational safety and health (OSH) legislation from around the world. Elements of OSH legislation are typically found in general labour laws, public health laws, workers' compensation acts, social security legislation and sector-specific acts. LEGOSH aims to provide a platform to support policy-making decisions to protect the safety and health of workers.

Reinforcement of safety and health conditions at work are critical aspects of workplace safety. LEGOSH assists countries in delivering safer and healthier working conditions and allows them to learn from more advanced laws and criteria. It helps to shape national OSH strategies, policies, and programmes. However, it does not capture regulatory roles or the extent to which legislative standards are being enforced and applied.

The database includes summaries of or quotes from specific paragraphs of laws and regulations concerning OSH. Researchers collect the information by reviewing and summarising existing laws submitted to the ILO by member states, official government websites, and legal databases, among other things. Cross-cutting analyses enrich the database with targeted policy briefs, comparative studies on selected topics, technical guidance notes and information sheets. Analytical content aimed at supporting priority action on the ILO's areas of critical importance is also provided.

Indicators Covered

The LEGOSH classification structure is based on 11 themes which follows and captures the main part of the key ILO standards:

- **Description of national OSH regulatory framework:** A general description and overview of the OSH national regulatory framework.
- **Scope, coverage and exclusions:** Definition of OSH at the national level and coverage of national legislation.
- **Institutions and programmes relating to OSH administration and for enforcement of OSH legislation:** Investigation of whether a national authority for safety and health at work exists; whether a national OSH research programme is envisioned; and whether a national OSH programme is overseen by law.
- **Employers' duties and responsibilities to protect the safety and health of workers and others:** The general duty to ensure health and safety of employees; conduct surveillance of workers' health, work environment and working practices; provide personal protective equipment and ensure its usage; and the duty to provide first-aid and welfare facilities.

- **Employers' duty to organise prevention formally along generally accepted OSH management principles and practices.**
- **Employers' duty to ensure the availability of expertise and competence in health and safety.**
- **Workers' rights and duties:** The right of workers to inquire about risks and preventive measures and their duty to take reasonable steps to protect their safety and health.
- **Consultation, collaboration and cooperation with workers and their representatives:** Legal provisions related to the national OSH committee, commission, council or similar bodies.
- **Specific hazards or risks:** Legislation covering specific hazards or risks, e.g., biological hazards, chemical hazards, etc.
- **Recording, notification and investigation of work-related accidents/incidents and occupational diseases:** Employers' duty to record and investigate the causes of workplace accidents.
- **OSH inspection and enforcement of OSH legislation:** Information on financial and nonfinancial penalties and criminal liability for violation of OSH legislation.

Notable Findings

As an example, the database offers a comprehensive country comparison tool, enabling users to explore national occupational OSH legislation by each of the 11 themes. For instance, a comparison between South Africa and the United Kingdom shows that both countries have a seemingly effective OSH framework in place.

The leading safety and health legislation in South Africa is the Occupational Health and Safety Act (OHSA), which aims:

- To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery;
- To protect persons other than persons at work against hazards to health and safety arising out of or in connection with activities of persons at work;
- To establish an advisory council for occupational health and safety; and
- To provide for matters connected therewith (the Preamble of the OHSA).

In addition to this, health and safety of employees at mines and other persons in South Africa are protected by the Mines Health and Safety Act 29 of 1996 (MHSA).³⁶



³⁶ https://www.ilo.org/dyn/legosh/fr/?p=14100:1100:0::NO:1100:P1100_ISO_CODE3,P1100_SUBCODE_CODE,P1100_YEAR:ZAF,,2013:NO

In the United Kingdom, the foundation law of the existing system is the Health and Safety at Work Act 1974 (HSWA). The key principle of the HSWA is that those who create risks for employees or others are responsible for controlling those risks. In addition to the HSWA, there are more than 200 other occupational safety and health-related acts and subsidiary regulations.³⁷

The South African law requires the Minister of Labour to designate an officer serving in the Department as chief inspector for the purposes of the OHSA. In the UK, the Health and Safety Executive is appointed to make arrangements to secure the health, safety and welfare of people at work and of the public. Parallel to this, local authorities conduct OSH investigations and enforcement in specified cases.

In both countries, employers play a crucial role in protecting the health and safety of employees. Every employer has a general duty to provide and maintain, as far as reasonably practicable, a working environment which is safe and without risk to the health of employees (Occupational Health and Safety Act 85 of 1993, §§ 8,12). The Mine Health and Safety Act incorporates similar legislation – "As far as reasonably practicable, every employer must provide and maintain a working environment that is safe and without risk to the health of employees." (Mine Health and Safety Act 29 of 1996, § 5(1)). The Health and Safety at Work Act cites, "It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees."

Data Uses and Limitations

The database³⁸ contains information that was available to or found by the organisation's researchers. If a member state did not forward its current legislation to the ILO, LEGOSH might not provide the most recent legislation. Additionally, errors may arise from lack of, or unofficial translations, creating misunderstandings or problems in interpretation. It should be noted that relevant legal provisions have been summarised by researchers, which may imply a certain degree of interpretation. Therefore, LEGOSH should be used for information purposes only, and not taken as legal advice.

37 https://www.ilo.org/dyn/legosh/fr/?p=14100:1100:0::NO:1100:P1100_ISO_CODE3,P1100_SUBCODE_CODE,P1100_YEAR:GBR,,2013:NO

38 ILO Global Database on Occupational Safety and Health Legislation (LEGOSH). ILO, Geneva.



UL Safety Index

Underwriters Laboratories (UL)

A data science initiative intended to increase the global awareness of health, security, sustainability and safety through information, dialog and collaboration.

Data Provider:	Underwriters Laboratories (UL)
Organisation Type:	Multilateral organisation
Data Source Name and Website:	UL Safety Index https://ulsafetyindex.org/
Type of Data:	Various
Frequency of Release:	Annual
Country coverage:	187 countries
Public Access:	Free public access to country data through an interactive world map
Latest Release:	2018

Description and Summary of Methodology

The UL Safety Index quantifies the relative state of safety in 187 countries measuring three critical drivers of the national safety environment: the contributions of national resources and institutions, safety frameworks, and safety outcomes. The UL Safety Index provides data to support governments, safety professionals, policymakers, and non-governmental organisations to better understand safety issues and identify programmes and policies to improve safety around the world.³⁹

Using an interactive safety world map, the UL Safety Index depicts a snapshot of a country's relative safety performance and allows country comparisons, supporting drivers and indicators. Users can explore country-level data in the full data view to access a time-series history of the index and analyse the drivers and indicators. The resource library provides related research, policies and intervention summaries linked to the country to help connect data to action.

The Safety Index is based on the following conceptual model of safety: Incidents of injury, disability and death are a function of the interaction of people and hazards, amplified or mitigated by socioeconomic forces, protective frameworks, safety interventions and behaviour. The conceptual model is quantified to calculate a Safety Index number for each country, with scores ranging from 0 (lowest level of safety) to 100 (highest level of safety). The UL Safety Index is the geometric mean of the three main drivers: Institutions and Resources, Safety Frameworks and Safety Outcomes. Each driver is derived from the arithmetic mean of multiple indicators in that area. In total, there are 17 indicators.

According to the data source, all data used to compute the UL Safety Index are collected from reliable organisations with experience in measuring indicators on a worldwide basis.

Indicators Covered

Institutions and Resources: Calculated as the arithmetic mean of the indicators of Wealth (GDP per capita), Technology (UL uses a variant of WEF's Network Readiness Index), Government Effectiveness (Worldwide Governance Indicators) and Education (The U.N. Development Programme Education Index). The data show the broad economic, social institutions and resources that support a country's safety environment.

Safety Framework: The Safety Framework Driver consists of indicators for Codes and Standards, Consumer Protections, Labour Protections (UL Labour Rights Index) and Road Safety Frameworks. This driver focuses on the overall safety frameworks in place for each country.

Safety Outcomes: This driver is based on Disability Adjusted Life Year (DALY) data from the Institute for Health Metrics

³⁹ <https://ulsafetyindex.org/library/the-ul-safety-index-quantifying-the-global-state-of-safety-2017-edition-digital.pdf>

and Evaluation (IHME). Indicators covered by this driver are causes associated with unintentional injury: transport injuries, falls, drowning, fires, poisoning, mechanical forces, foreign bodies, forces of nature and other causes.

Notable Findings

The UL Safety Index 2018 ranges from a score of 19 for Somalia to 92 for Norway. Table 2 provides an overview of the countries with the highest and lowest Safety Index.

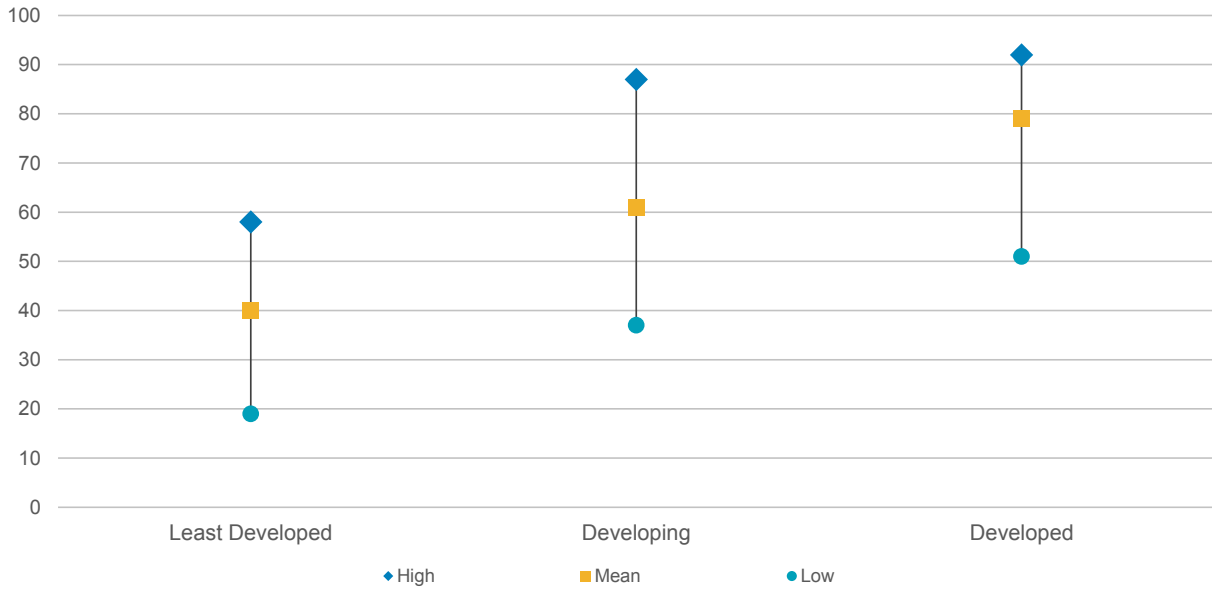
When examining the UL Safety Index by country development status, there are significant inequalities between the least developed and the more developed countries. The maximum value for the least developed countries is 58 for Rwanda — only slightly higher than the minimum value for developed countries, which is 51 for the Republic of Moldova. Chart 7 shows that minimum, mean and maximum values increase with development status.

Table 2. Highest and Lowest Safety Indices

Highest Safety Index		Lowest Safety Index	
Country	Index	Country	Index
Norway	92	Somalia	19
Netherlands	92	South Sudan	22
Sweden	90	Central African Republic	24
Ireland	89	Solomon Islands	28
Luxembourg	89	Burundi	28
Australia	89	Chad	28
Japan	89	Guinea-Bissau	29
Canada	88	Haiti	31
Switzerland	88	Afghanistan	31
Iceland	88	Liberia	31



Chart 7. UL Safety Index by Economic Development Status



Data Uses and Limitations

Generally, the dataset has good data coverage (94.8%). However, values for each indicator were not available for every country. Specifically, North Korea lacks three of four indicators for the Institutions and Resource, and the Safety Framework drivers; and South Sudan is missing data for three of the four indicators in the Safety Frameworks drivers. The driver scores for these two countries should be interpreted with caution.

Based on the availability of new data, the UL Safety Index is updated by including new data sources (e.g., the addition of the Road Safety Framework in 2017) or changes to the underlying methodologies and source data. These variations may impact exact comparisons over time.





A woman is seen from the side, carrying a large, dark, rounded water pot balanced on her head. She is walking on a wide, dusty dirt road that stretches into the distance. The landscape is arid and dry, characterized by several large, conical mounds of light-colored sand or earth along the roadside. Sparse, dry trees with thin branches and some brown leaves are scattered in the background under a pale, overcast sky. The overall scene conveys a sense of hardship and the challenges of water scarcity in a dry environment.

Health & Mortality

Global Health Observatory (GHO)

World Health Organization

WHO's gateway to health-related statistics.

Data Provider:	World Health Organization (WHO)
Organisation Type:	United Nations specialised agency - Multilateral organisation
Data Source Name and Website:	Global Health Observatory http://www.who.int/gho/en/
Type of Data:	Official statistics and various
Frequency of Release:	Annual
Country Coverage:	194 countries
Public Access:	Free public access to the online database and PDF download of World Health Statistics report
Latest Release:	2018

Description and Summary of Methodology

The Global Health Observatory (GHO) covers statistics on over 1,000 health-related indicators. Its main purpose is to monitor progress made towards the Sustainable Development Goals (SDG) and global health trends. The GHO portal offers comparable country data and statistics and WHO's analyses on global, regional and national trends. For easier navigation, the platform is categorised by theme pages, which cover global health priorities related to the SDGs. On each theme page, users can explore related topics with interactive data visualisation tools, such as maps and country profiles, relevant publications and links to other resources.

In addition, the GHO contributes to the annual World Health Statistics publication, which provides a snapshot of the global state of health and summarises trends. To compile statistics for the SDG indicators, WHO uses different data categories. The report contains two types of statistics: primary data and comparable estimates. Primary data are compiled by international agencies or come from publicly available sources such as demographic and health surveys. To allow comparison between countries or across time, country data are adjusted or modelled, with the outcome being comparable estimates across countries.

Indicators Covered

The GHO data repository contains an extensive list of indicators which are organised to monitor SDG health and health-related targets. Additionally, statistics to monitor advancement in overall health goals such as health status and health equity are included as well. Most of the SDG targets monitored are from Goal 3: *Ensure healthy lives and promote wellbeing for all at all ages*. All targets and indicators related to SDG 3 can be found in Table 3 below.

Table 3. SDG Health and Health-Related Targets

Target (Including SDG Number)	Indicator
3.1 Maternal mortality	Maternal mortality ratio Proportion of births attended
3.2 New-born and child mortality	Under-five and neonatal mortality rate
3.3 Communicable diseases	Number of HIV, Tuberculosis, Malaria (etc.) incidence
3.4 Noncommunicable diseases and mental health	Cardiovascular disease, cancer, diabetes or chronic respiratory disease Suicide mortality rate

Target (Including SDG Number)	Indicator
3.5 Substance abuse	Coverage of treatment interventions for substance use disorders Harmful use of alcohol
3.6 Road traffic injuries	Death rate due to road traffic injuries
3.7 Sexual and reproductive health	Access to reproductive health Adolescent birth rate
3.8 Universal health coverage	Coverage of essential health services Share of household expenditures on health
3.9 Mortality from environmental pollution	Mortality rate attributed to household and ambient air pollution Mortality rate attributed to unsafe water, sanitation or lack of hygiene Mortality rate attributed to unintentional poisoning
3.10 Tobacco control	Prevalence of current tobacco use
3.11 Essential medicines and vaccines	Access to affordable medicines and vaccines Total net development assistance to medical research and basic health sectors
3.12 Health financing and health workforce	Health worker density and distribution
3.13 National and global health risks	International Health Regulations capacity and health emergency preparedness





Notable Findings

Globally, the majority of health and health-related SDG indicators (56%) have seen improvements in recent years. In particular, under-5 mortality and neonatal mortality rates seem to be progressing fast enough to be able to attain the explicit target by 2030. The total number of under-5 deaths was reduced by 45% and dropped from 9.8 million in 2000 to 5.4 million in 2017. Neonatal mortality also experienced a long downward trend and has dropped from 31 deaths per 1,000 live births in 2000 to 18 deaths per 1,000 live births in 2017, equivalent to a 42% reduction.

However, there are still huge disparities in health outcomes between high- and low-income countries: for example, one in 41 women die from maternal causes in low-income countries, while this rarely occurs in middle- or high-income countries. Differences in health outcomes can also be observed between genders: globally, men's life expectancy is 4.4 years lower than women's, with higher death rates for multiple causes. Men are also more vulnerable to occupational risks and have a higher prevalence of tobacco use and alcohol consumption. This gap can be observed globally.

Out of the nine health-related SDG indicators that have explicit targets for 2030, only two (under-5 and neonatal mortality rates) seem to be on track. A summary of progress made in each of the SDG indicators with explicit targets for 2030 can be seen in Table 4 below.

Table 4. Progress on Health and Health-Related SDGs

Progress Stalled or Trend in Wrong Direction

3.6.1 Road traffic mortality

Progress Made but too Slow to Meet Target

3.1.1 Maternal mortality

3.4.1 Noncommunicable diseases mortality

3.4.2 Suicide mortality

6.1.1 Safe drinking-water coverage

6.2.1 Safe sanitation coverage

7.1.2 Clean energy coverage

Progress Fast Enough to Attain Target

3.2.1 Under-5 mortality

3.2.2 Neonatal mortality

Data Uses and Limitations

Comparable estimates rely on the availability and quality of the underlying data used to generate the estimates. Hence, uncertainty intervals should be taken into account. Primary data rely on the methodology of data collection, which may change over years or vary across countries, and may therefore lack strict comparability. It is important to note that comparable estimates are sometimes subject to considerable uncertainty, especially for countries where the availability and quality of the underlying primary data is limited.

Global Health Estimates

World Health Organization

Statistics on mortality and loss of health.

Data Provider:	World Health Organization (WHO)
Organisation Type:	United Nations specialised agency - Multilateral organisation
Data Source Name and Website:	Global Health Estimates (GHE) https://www.who.int/healthinfo/global_burden_disease/en/
Type of Data:	Official statistics and various
Frequency of Release:	Annual
Country Coverage:	194 countries
Public Access:	Free access to the online database
Latest Update:	May 2019

Description and Summary of Methodology

The Global Health Estimates is another health statistics and information system of the World Health Organization. It focuses on the assessment of mortality and loss of health due to diseases and injuries for all regions of the world and provides evidence on the world's most fatal diseases.

To collect necessary data for analysis and estimations, the WHO uses various data sources: civil registration and vital statistics from member states and household surveys such as the World Health Survey and the WHO Study on Global Ageing and Adult Health (SAGE – a longitudinal study). The WHO then applies standard methods to analyse member states' data to ensure comparability of estimates across countries. Death registration data usually yield the most accurate estimates for life expectancy. For countries without useable death registration data, uncertainties are higher. Therefore, these countries are typically divided into two categories: those countries where there is independent evidence on adult mortality rates from surveys or censuses, and those where estimates of adult mortality levels are derived from model life tables with estimated infant and child mortality rates as inputs.

Indicators Covered

Life expectancy: The number of years a person can expect to live at any age.

Child mortality and causes of death: This includes the total number of deaths and the probability of dying per 1,000 children and new-borns. Each death is categorised into a cause according to the International Classification of Diseases (ICD).

Adult mortality and causes of death: This includes the total number of deaths and the probability of dying. Each death is categorised into a cause according to the International Classification of Diseases (ICD).

Disability-adjusted life year (DALY): This indicator is the sum of years of life lost (YLLs) and years lived with disability (YLD). One DALY equals one lost year of healthy life. It estimates the total number of years lost due to specific causes and risk factors.

Healthy life expectancy (HALE): This indicator combines the sum of years lived with disability and years of life lost in a single measure of average population health for individual countries. Unlike life expectancy, HALE takes into account mortality and nonfatal outcomes.

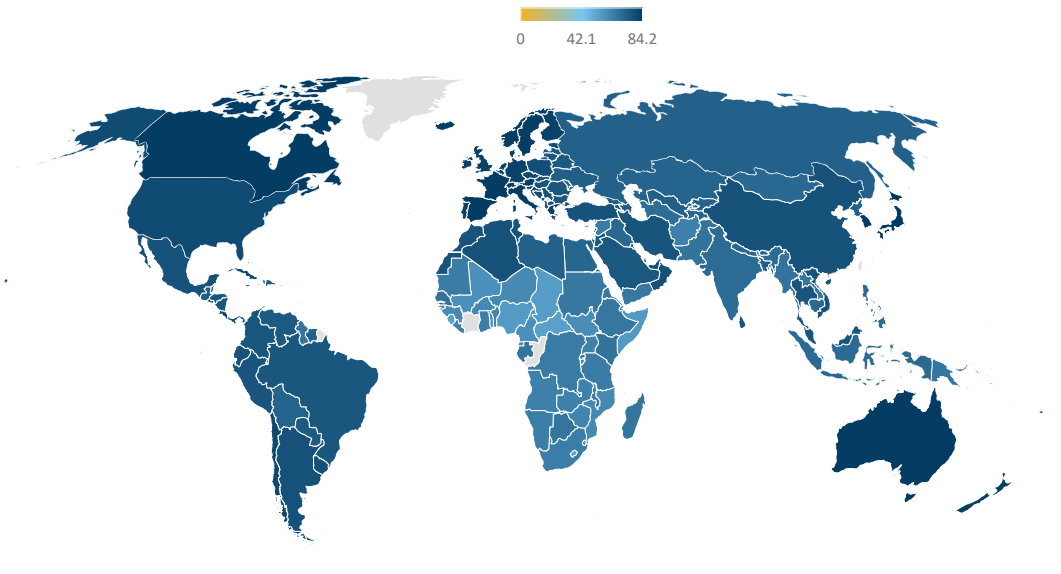
Notable Findings

The average life expectancy at birth of the global population in 2016 was 72 years (74.2 years for females and 69.8 years for males), ranging from 61.2 years in the WHO African Region to 77.5 years in the WHO European Region. On average,

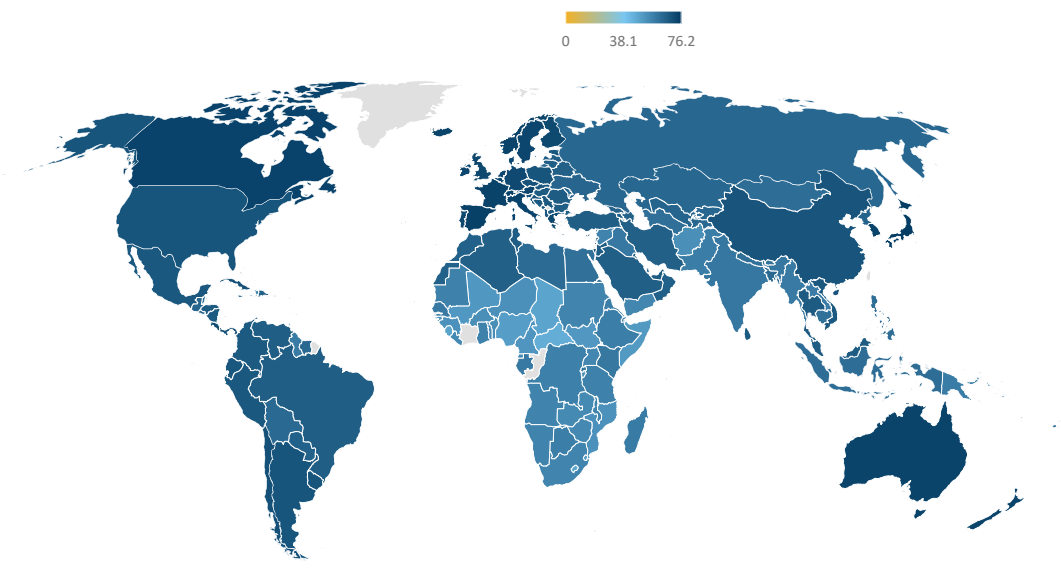
women live longer than men all around the world. The gap in life expectancy between the sexes was 4.3 years in 2000 and had remained almost the same by 2016. Global average life expectancy increased by 5.5 years between 2000 and 2016, the fastest increase since the 1960s. Those gains reverse declines during the 1990s, when life expectancy fell in Africa largely because of the AIDS epidemic, and in Eastern Europe following the collapse of the Soviet Union. The 2000-2016 increase was greatest in the WHO African Region, where life expectancy increased by 10.3 years to 61.2 years, driven mainly by improvements in child survival and expanded access to antiretrovirals for treatment of HIV.⁴⁰

The gap between life expectancy and healthy life expectancy is about 10 years. Further health research aims to improve health conditions related to ageing and seeks to narrow the gap between quantity and quality of life.

Map 1. Life Expectancy at Birth (years), Both Sexes, 2016



Map 2. Healthy Life Expectancy (HALE) at Birth (years), Both Sexes, 2016



40 https://www.who.int/gho/mortality_burden_disease/life_tables/situation_trends_text/en/



Data Uses and Limitations

In many low- and middle-income countries, mortality and health data quality are still relatively poor due to lack of necessary tools and resources. Health estimates compensate for non-existent or unreliable data and provide a framework for policy-makers and health institutions. For instance, mortality and causes of death data from the GHE are used to quantify health effects and assess health risks for various diseases.

Depending on the source used, the type and complexity of models used for global health estimates vary. Where data are available and of high quality, estimates from different institutions are generally in agreement. Discrepancies are more likely to arise for countries where data are poor and sparse and therefore potentially biased. This issue is best addressed by improving the primary data. To tackle this issue, the WHO developed a tool to assist countries to assess and monitor service availability and health sector readiness. It also continues to seek new ways of improving data quality.

Even though the GHE estimates for some causes and regions have significant uncertainty ranges, they are still highly valuable to assess broad relativities of disease burden, regional patterns and overall causes of death and disability trends.

WHO Mortality Database

World Health Organization

A global source for mortality data by age, sex and cause of death.

Data Provider:	World Health Organization (WHO)
Organisation Type:	United Nations specialised agency - Multilateral organisation
Data Source Name and Website:	WHO Mortality Database https://www.who.int/healthinfo/mortality_data/en/
Type of Data:	Official statistics
Frequency of Release:	Annual
Country Coverage:	194 countries
Public Access:	Free access to online database
Latest Update:	May 2019

Description and Summary of Methodology

The WHO Mortality Database is a global source for mortality data by age, sex and cause of death. This database is an invaluable resource that allows in-depth analyses of deaths occurring all around the world. It allows age- and sex-specific analysis of mortality trends by broad disease groups to assess current challenges and focus on the most urgent threats to life.

Mortality data indicate numbers of deaths by place, time and cause. WHO's mortality data reflect deaths registered by national civil registration systems of deaths, with the underlying cause of death coded by the national authority. The underlying cause of death is defined as "the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury,"⁴¹ in accordance with the rules of the International Classification of Diseases (ICD).

Indicators Covered

Number of deaths: The total number of deaths that occurred in a specific region or country. All deaths are coded in accordance with the standards of the ICD.

Age-standardised death rates: A weighted average of the age-specific mortality rates per 100,000 persons, where the weights are the proportions of persons in the corresponding age groups of the WHO standard population.

Notable Findings

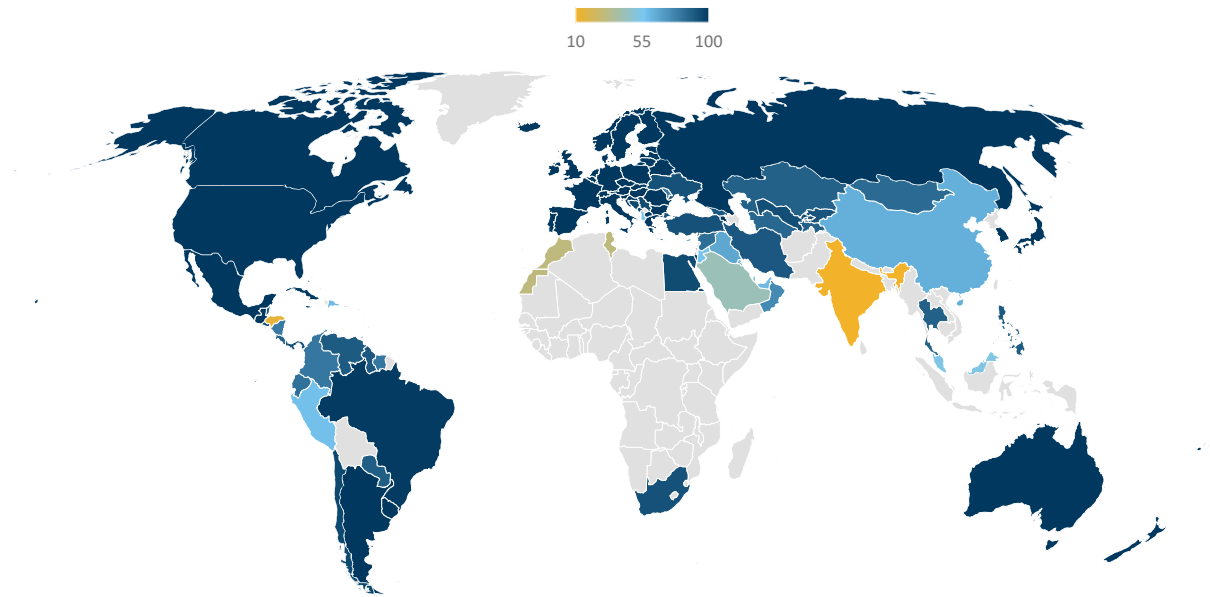
In 2013, 1.25 million people died in road traffic accidents. 54% of those dying on the roads are those with the least protection – motorcyclists, cyclists and pedestrians. Low- and middle-income countries had higher road traffic fatality rates per population (24.1% and 18.4%, respectively) than high-income countries.⁴²



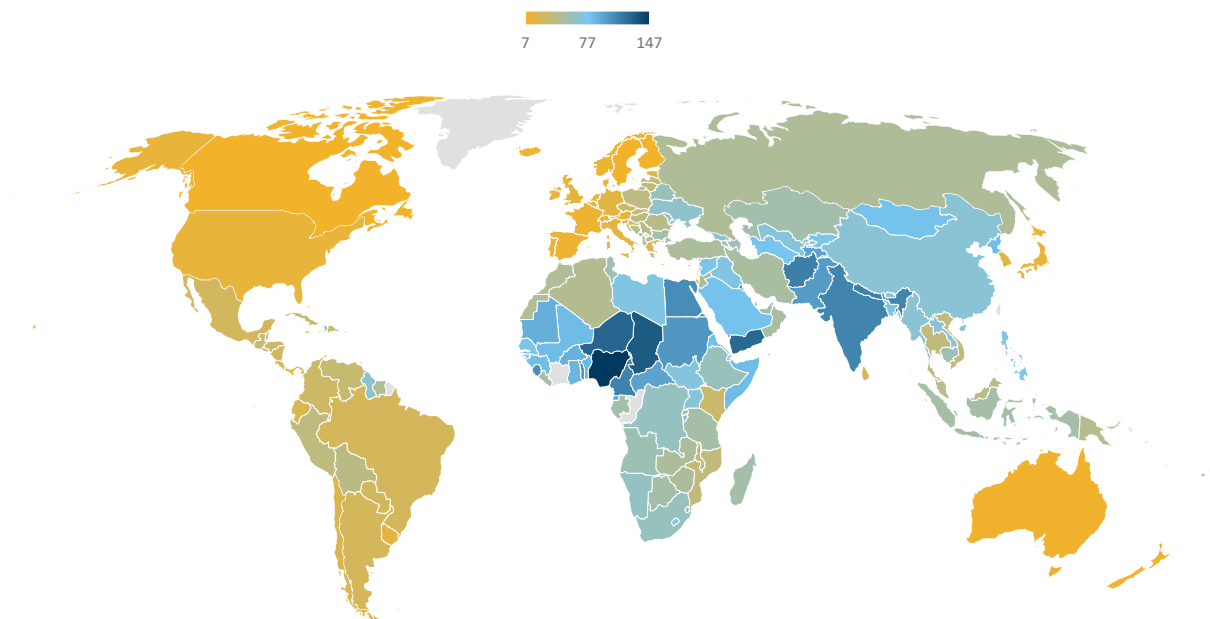
41 https://www.who.int/healthinfo/mortality_data/en/

42 https://www.who.int/gho/road_safety/mortality/en/

Map 3. Global Coverage of Completeness of Cause-of-Death Data, (%) 2007-2016



Map 4. Road Traffic Mortality Rate, 2016 (per 100,000 population)



Data Uses and Limitations

Good understanding of mortality data is essential for developing and evaluating health policies. The causes of death are reported in accordance with the International Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) and data are collected in a standardised and consistent way. However, deaths are often caused by more than one disease. Many countries are characterised by an ageing population and decreasing mortality and fertility rates, while death due to infectious diseases is progressively being replaced by death due to chronic and degenerative diseases.

The WHO is reliant on the member states to provide data and no adjustments are made to account for under-coverage. For those countries that do not submit such data, there are no data available; this particularly affects African countries. The concept of ICD-10 helps to provide standardised requirements for categorisation and enables comparability across countries.

The Global Burden of Disease

Institute for Health Metrics and Evaluation (IHME) & Independent Research Collaborators

The IHME⁴³ is an independent global health research center at the University of Washington. The Global Burden of Disease study is a tool to support health evidence worldwide.

Data Provider:	Institute for Health Metrics and Evaluation (IHME)
Organisation Type:	Global health research institute
Data Source Name and Website:	The Global Burden of Disease (GBD) http://www.healthdata.org/gbd
Type of Data:	Various
Frequency of Release:	Annual since 1990
Country Coverage:	195 countries
Public Access:	Free public access to the online database
Latest Update:	November 2018

Description and Summary of Methodology

The Global Burden of Disease (GBD) is the most comprehensive observational epidemiological study to date. Over 3,600 researchers from more than 140 countries have contributed to this global project. It was first commissioned by the World Bank in 1990 as part of the World Development Report 1993, *Investing in Health*. Back then, the study was institutionalised at the World Health Organization (WHO) and was carried out in cooperation with Harvard University. For the GBD 2010, a community of 500 experts from around the world were involved for the first time. Today, the IHME is coordinating the international network of GBD contributors.

The data capture mortality and morbidity from more than 350 diseases and injuries in 195 countries. The results can be accessed through the Global Health Data Exchange (GHDx), IHME's catalogue of the world's health data and data visualisations. The database contains disaggregated data by age and sex from 1990 to the present, allowing comparisons over time, across age and among populations. The tool helps policymakers better understand global, national and local health trends and assess leading causes of health loss that could potentially be avoided. Input data are gathered through official records, studies, scientific literature and surveys. Mortality incidents are categorised within the GBD cause list, making sure each death is assigned to a single underlying cause. GBD uses an iterative approach for its estimations, where revisions result in a re-estimation of the entire time series to ensure that results are consistent over time. These revisions arise from new data and methodological innovation.

Indicators Covered

The Global Health Data Exchange (GHDx) is a catalog of global health and demographic data. Indicators covered include:

Disability-adjusted life year (DALY): This indicator is the sum of years of life lost (YLLs) and years lived with disability (YLD).

Years of life lost (YLLs): This indicator is calculated by subtracting the age at death from the longest possible life expectancy for a person at that age.

Years lived with disability (YLD): This indicator is measured by taking the prevalence of the condition multiplied by the disability weight for that condition.

Life expectancy: The number of years a person can expect to live at any age.

Healthy life expectancy (HALE): This indicator combines the sum of years lived with disability and years of life lost in a single measure of average population health for individual countries. Unlike life expectancy, HALE takes into account mortality and nonfatal outcomes.

Total fertility rate: This indicator measures the average number of children a woman would give birth to during her lifetime.

⁴³ Institute for Health Metrics and Evaluation (IHME). Seattle, WA: IHME, University of Washington, 2018. <http://www.healthdata.org/>

Notable Findings

The study “Health effects of dietary risks in 195 countries, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017,” has found that a healthier diet could save one in five lives every year. In 2017, more than 11 million deaths were linked to poor diet worldwide. Dietary risks are associated with more deaths in 2017 than high blood pressure and tobacco. Among those deaths were 9.5 million deaths from cardiovascular disease, 913,090 deaths from cancer and 338,713 deaths from diabetes. Many of these deaths are caused by eating too much sodium and not enough whole grains and fruit: the recommended intake for sodium would be no more than 3,000 mg per day, whereas the actual intake is 5,600 mg per day; for whole grains the recommended intake is 100-150 grams per day, and the actual intake is only 29 grams per day.

Chart 8. Top Risk Factors for Death, Globally, 2017

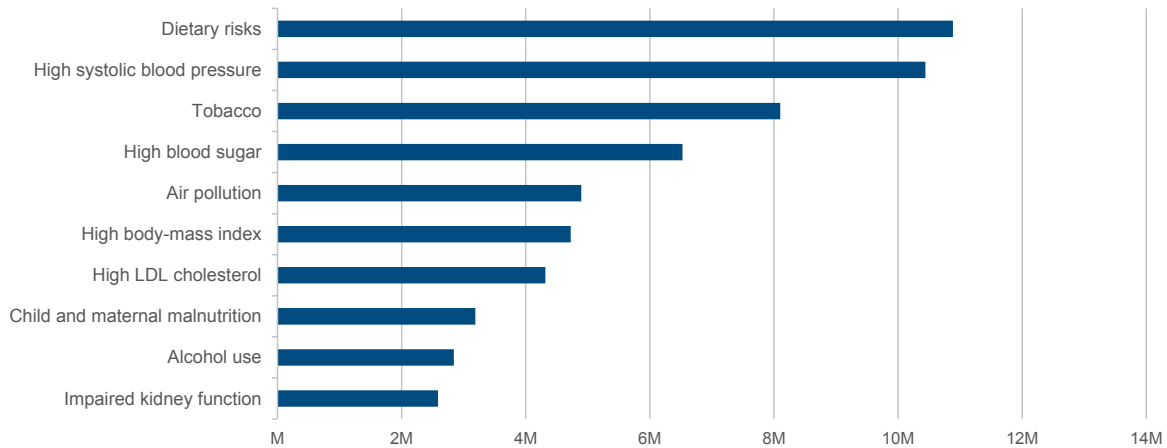
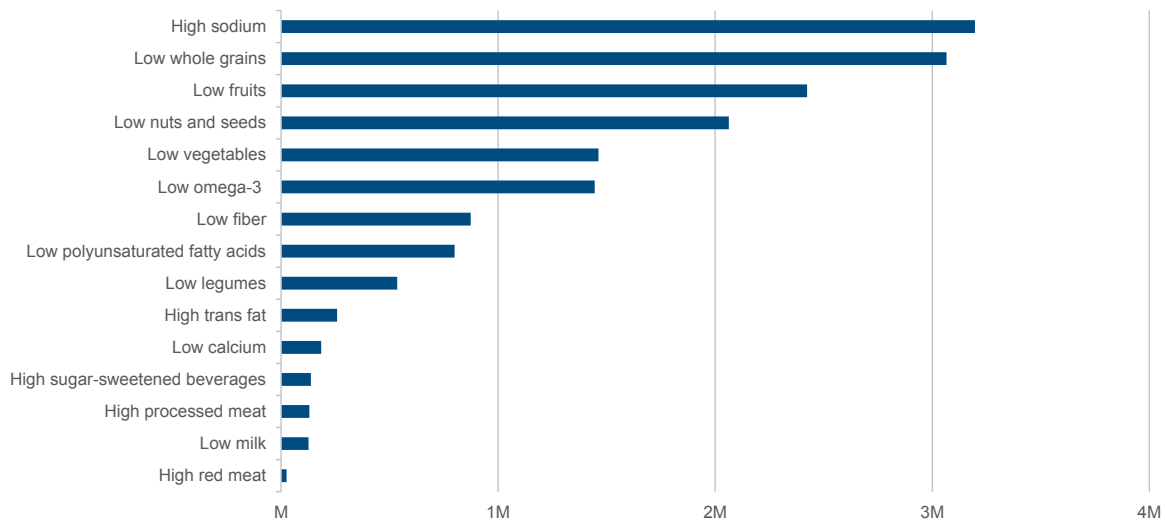


Chart 9. Top Dietary Risks for Death, 2017

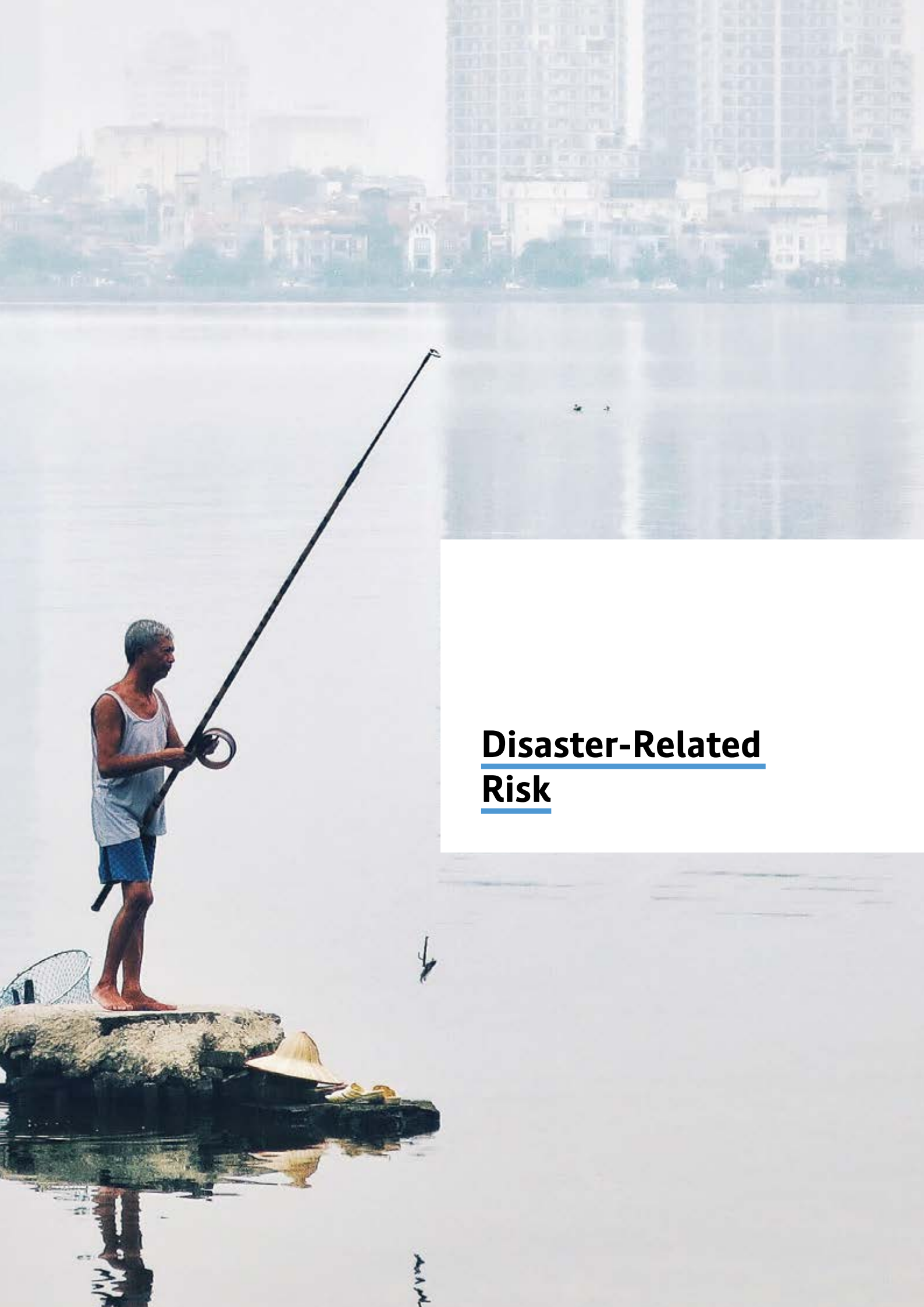


Data Uses and Limitations

The GBD approach facilitates comparisons of health indicators. The platform is designed to provide insights into a population’s health challenges in comparison to the effect of other conditions that threaten people’s lives or cause disability. GBD aims to ensure that the most current, detailed, comprehensive results are available to policymakers to support decisions regarding the improvement of national and global health status.

The GBD engages a network of experts who contribute to the project by assessing data sources used and adding new data sources, critically reviewing estimation results and models used, developing their own publications based on GBD data and informing policy discussions. Collaborators help raise data quality issues and ensure methodological soundness of the estimates. However, data availability and quality from some countries remain a significant challenge.





Disaster-Related Risk

PreventionWeb

United Nations Office for Disaster Risk Reduction (UNDRR)

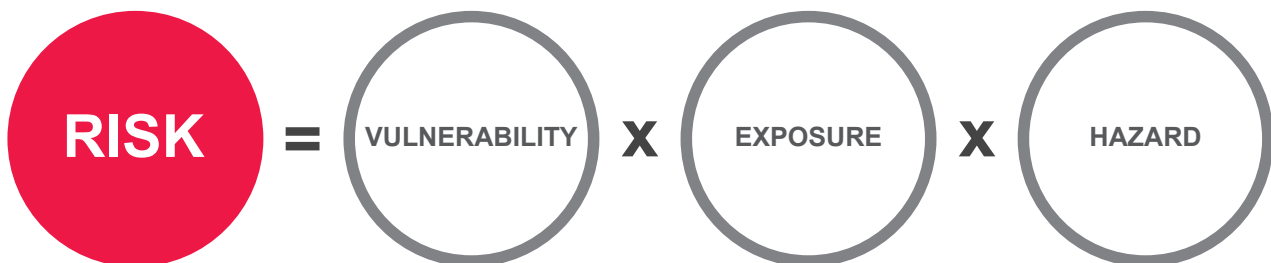
A collaborative knowledge sharing platform on disaster risk reduction, managed by the UNDRR. The site offers a range of knowledge products and services to facilitate the work of Disaster Risk Reduction professionals.

Data Provider:	United Nations Office for Disaster Risk Reduction
Organisation Type:	Multilateral institution
Data Source Name and Website:	PreventionWeb https://www.preventionweb.net/risk
Type of Data:	Various
Frequency of Release:	Various
Respondent:	Country level data
Unit of Measurement:	Various
Country Coverage:	Various
Public Access:	World Bank website
Latest Release:	N/A

Description and Summary of Methodology

UNDRR was created in December 1999, to help implement the International Strategy for Disaster Reduction, a resolution endorsed by the UN General Assembly. In 2015, the UN General Assembly passed an agreement known as the Sendai Framework for Disaster Risk Reduction 2015-2030, which seeks to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health, and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities in countries.⁴⁴ PreventionWeb was set up by UNDRR to help provide the resources and knowledge “to facilitate the work of DRR professionals.”⁴⁵

PreventionWeb describes itself as a “collaborative knowledge-sharing platform on disaster risk reduction.”⁴⁶ It provides information which may be useful to risk analysts. For instance, the platform defines the elements of risk – hazard, exposure and vulnerability – and discusses how each of these concepts can be measured. Equally of value for risk analysts, the platform also describes the major drivers of disaster risk, including “poverty and inequality, badly planned and managed urban and regional development, climate change and environmental degradation.”⁴⁷ As these factors can also be measured with widely available quantitative indicators, this framework is useful in attempting to measure overall risk.



44 <https://www.unisdr.org/we/coordinate/sendai-framework>

45 <https://www.preventionweb.net/about/aboutpw>

46 Ibid.

47 <https://www.preventionweb.net/risk/disaster-risk>

PreventionWeb also hosts analytical reports, research briefs and technical papers which address issues related to best practices in terms of how to measure aspects of disaster risk, particularly loss data.⁴⁸

PreventionWeb provides the “Disaster & Risk Profile” information for over 190 countries; these reports include general macro-statistics such as population data (including percent in urban or rural areas), economic indicators, internationally reported losses as reported by EM-DAT⁴⁹, the probabilistic risk of selected hazards (as reported in UNISDR Global Atlas on Risk), information about exposure to certain hazards (sources vary) and the country’s score on the INFORM Risk Index (an output from a multi-agency group including the European Commission). Notably, all of these indicators are from other data sources.

The “Disaster Data & Statistics” page⁵⁰ features headline statistics (often presented in charts) about some aspects of disaster risk – such as the number of people affected per disaster type, 1998-2017. This page also features a number of UNISDR reports; in some instances, readers of the report have the option to download the data discussed in the report.

Indicators Covered

PreventionWeb features a number of indicators, each of which helps measure some component of disaster risk (see below table). As noted, PreventionWeb does not collect the data itself, though it does identify other databases of relevance to the topic.



48 See, for instance, “Disaster Loss Data: Raising the Standard”, or the “Sendai Framework data readiness review 2017 – Global Summary Report.”

49 <https://www.emdat.be/>

50 <https://www.preventionweb.net/knowledgebase/disaster-statistics>

Table 5. Indicators Included in PreventionWeb Country Reports

	Unit	Measures
Total Population	Million people	Vulnerability
Urban	% of total population	Vulnerability
Rural	% of total population	Vulnerability
Urban Population Growth	% annual growth	Vulnerability
Population Density	People/km ²	Vulnerability
GDP	Million US\$	Vulnerability
GDP per Capita	US\$	Vulnerability
Capital Stock	Million US\$	Vulnerability
Gross Fixed Capital Formation	Million US\$	Vulnerability
Social Expenditure	Million US\$	Vulnerability
Gross Savings	Million US\$	Vulnerability
Total Reserves	Million US\$	Vulnerability
Frequency of Disaster	Number of disasters in a year	Hazard
Mortality Losses in Nationally Reported Disasters	Number of lives lost due to disasters in a year	Exposure
Economic Losses in Nationally Reported Disasters	US\$	Exposure
Internationally Reported Losses, 1990-2014	As calculated by EM-DAT	Exposure
Probabilistic Risk Results	As calculated by UNISDR, GAR	Risk
Inform 2019 Risk Index	Index for Risk Management	Risk

Notable Findings

A key driver of disaster risk is climate change, according to the information on PreventionWeb. This risk is “disproportionately concentrated in developing countries and, within these countries, in poorer sectors of the population.”⁵¹

Data Uses and Limitations

PreventionWeb is a valuable global knowledge base and resource in the analysis of disaster risk, rather than a source of raw data as such. While the platform provides direct access to a number of indicators, they must be retrieved by the user – the data do not appear to be stored in one file which users can download.

51 <https://www.preventionweb.net/risk/climate-change>

Sendai Framework for Disaster Risk Reduction

UNDRR/PreventionWeb

A new approach to understanding disaster risk.

Data Provider:	Member-states of Sendai Framework
Organisation Type:	Multilateral institution/agreement
Data Source Name and Website:	Sendai Framework Monitor data https://sendaimonitor.unisdr.org/analytics/global-targets/13
Type of Data:	Varies by target
Frequency of Release:	Varies by target/country
Respondent:	Country level data
Unit of Measurement:	Varies by target/country
Country Coverage:	Nearly-global
Public Access:	Analytics platform
Latest Release:	2019

Description and Summary of Methodology

The Sendai Framework is a 15-year, voluntary, non-binding agreement which recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders. It aims for the following outcome: *The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.*

The Sendai Framework is a multi-country agreement to find ways to reduce the level of disaster risk in the world, as well as mitigate the consequences of that risk.⁵² The Framework highlights seven global targets that will help realise the overarching vision (see box below). There are four priorities for action: Understanding disaster risk, strengthening disaster risk governance to manage disaster risk, investing in disaster risk reduction for resilience, enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.

The Seven Global Targets of the Sendai Framework

1. Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015.
2. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020-2030 compared to the period 2005-2015.
3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

52 <https://www.unisdr.org/we/coordinate/sendai-framework>

These goals ultimately translate into 38 indicators which member states are to monitor over the lifespan of the agreement.⁵³ As of early 2019, these indicators are publicly available as part of an “Analytics” module that offers “access to data provided and validated by member states, documenting progress against the seven global targets and 38 indicators of the Sendai Framework and its related sustainable development dimensions.”⁵⁴

The data featured on the Analytics module are collected by the individual member states of the Sendai Framework. These indicators were “developed by the members and observers of the open-ended intergovernmental expert working group on indicators relating to disaster risk reduction.”⁵⁵ Member states were advised about methodological best-practices, though not all have implemented such recommendations. For instance, the Data Readiness Review 2017 found that 60% of the countries in the agreement produce “[disaster] loss data using a standardized and comparable methodology.”⁵⁶

These indicators are validated by multiple agencies, including UNISDR. The Analytics platform features only indicators which have been independently validated, and it also provides a progress report for all countries in terms of how their data collection process is progressing.

Indicators Covered

There are 38 individual indicators used to measure the seven global targets. The module includes data for all targets, provided that the individual countries submit the data which was also validated.



53 <https://www.preventionweb.net/sendai-framework/sendai-framework-monitor/indicators>

54 <https://www.preventionweb.net/news/view/63059>

55 Disaster-Related Data for Sustainable Development: Sendai Framework Data Readiness Review 2017, UN 2017.

56 Ibid.

Table 6. Targets and Associated Indicators of the Sendai Framework for Disaster Risk Reduction

Target	Indicator
Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015.	Number of deaths and missing persons attributed to disasters
	Number of deaths attributed to disasters
	Number of missing persons attributed to disasters
Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020-2030 compared to the period 2005-2015.	Number of directly affected people attributed to disasters
	Number of injured or ill people attributed to disasters
	Number of people whose damaged dwellings were attributed to disasters
	Number of people whose destroyed dwellings were attributed to disasters
	Number of people whose livelihoods were disrupted or destroyed, attributed to disasters
Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.	Direct economic loss attributed to disasters in relations to global gross domestic product
	Direct agricultural loss attributed to disasters
	Direct economic loss in the housing sector
	Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters
	Direct economic loss to cultural heritage damaged or destroyed attributed to disasters
	Direct economic loss to all other damaged or destroyed productive assets attributed to disasters
Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.	Damage to critical infrastructure attributed to disasters
	Number of destroyed or damaged health facilities attributed to disasters
	Number of destroyed or damaged educational facilities attributed to disasters
	Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters
	Number of disruptions to basic services attributed to disasters
	Number of disruptions to educational services attributed to disasters
	Number of disruptions to health services attributed to disasters
	Number of disruptions to other basic services attributed to disasters
Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030
	Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies

Target	Indicator
<p>Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.</p>	Total official international support, (official development assistance (ODA) plus other official flows), for national disaster risk reduction actions
	Total official international support (ODA plus other official flows) for national disaster risk reduction actions provided by multilateral agencies
	Total official international support (ODA plus other official flows) for national disaster risk reduction actions provided bilaterally
	Total official international support (ODA plus other official flows) for the transfer and exchange of disaster risk reduction-related technology
	Number of international, regional and bilateral programmes and initiatives for the transfer and exchange of science, technology and innovation in disaster risk reduction for developing countries
	Total official international support (ODA plus other official flows) for disaster risk reduction capacity-building
	Number of international, regional and bilateral programmes and initiatives for disaster risk reduction-related capacity-building in developing countries
	Number of developing countries supported by international, regional and bilateral initiatives to strengthen their disaster risk reduction-related statistical capacity
<p>Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.</p>	Number of countries that have multi-hazard early warning systems
	Number of countries that have multi-hazard monitoring and forecasting systems
	Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms
	Percentage of local governments having a plan to act on early warnings
	Number of countries that have accessible, understandable, usable and relevant disaster risk information and assessment available to the people at the national and local levels
	Percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning



Notable Findings

In 2018, nine countries submitted all the data required to monitor their progress on all of the global targets – less than 5% of all countries in the framework. Another three countries have submitted their data for validation, while 84 are in progress.⁵⁷

Table 7. Progress of Global Targets for Sendai Framework, 2018

195 Countries total	99 Not started	84 In progress	3 Ready for validation	9 Validated
-------------------------------	--------------------------	--------------------------	----------------------------------	-----------------------

This high rate of missing or at least not validated data is an area of concern for UNISDR – and one they are working on with member states to resolve. A 2017 survey sent out by the organisation to statistical authorities in the relevant countries found that “94% of those countries which are not currently collecting disaster loss data, indicated that they require the capacities to do so”⁵⁸ – in other words, they are not currently in a position to collect the data. A follow-up question was asked: “Do you intend to start collecting this data by 2018?”. All countries who did not collect data at that time said they do intend to.

Data Uses and Limitations

As suggested above, a major constraint is the high volume of missing data. Note that individual sub-indicators tend to have a greater number of data points than the overall or sub-targets. This is because validated items are uploaded onto the platform, even if the country has not submitted all the information required to assess their progress. The platform provides a map of how each country performed, given a selected indicator and selected year.

⁵⁷ <https://sendaimonitor.unisdr.org/>

⁵⁸ Disaster-related Data for Sustainable Development: Sendai Framework Data Readiness Review 2017, UN 2017 https://www.unisdr.org/files/53080_entrybgpaperglobalsummaryreportdisa.pdf

The Global Facility for Disaster Reduction and Recovery (GFDRR)

GFDRR is a grant-funding mechanism, managed by the World Bank

GFDRR supports disaster risk management projects worldwide. As a consultative group, it is managed by the World Bank, supporting the implementation of the Sendai Framework, and more generally helping to “build resilient societies that manage and adapt to emerging disaster and climate risks, and to contribute to the substantial reduction of disaster risk and losses in lives [...]”⁵⁹

Data Provider:	GFDRR
Organisation Type:	Consultative Group
Data Source Name and Website:	Varies https://www.gfdrr.org/en/online-utilities
Type of Data:	Varies
Frequency of Release:	Varies, annually
Respondent:	Country-level data
Unit of Measurement:	Varies
Country Coverage:	Nearly-global
Public Access:	World Bank website
Latest Release:	N/A

Description and Summary of Methodology

GFDRR’s website provides access to six tools, platforms or software which “allow decision-makers and communities to collect, share, and understand risk information.”⁶⁰ All were developed by GFDRR, though not all of the tools on the website can be accessed. Two main tools include:

ThinkHazard! An interactive tool designed “to facilitate greater access to hazard information and risk management guidance for development sector professionals.”⁶¹ Users enter a specific project location (or a general area; the area can be no bigger than a country) into the interface; they will then receive a report assessing the level of general risk concerning a number of hazards in that area (see Table 8). There are four categories of risk: very low, low, medium and high⁶² (a fifth category signifies that no data are available). These categories of risk are assessed differently depending on the hazard type, varying between quantitative probabilities-based data (such as for floods and earthquakes), and spatial hazard index data which is used for ‘less rare’ hazards. The geographical area of the data determines the classification procedure used to assign the risk estimate. While this report does not offer a perspective on the methodological approach of the process, the organisation notes in its Frequently Asked Questions section that an independent analysis had been conducted on “how well ThinkHazard! estimated hazard levels for up to 77 developing countries around the world.”⁶³

Open Data for Resilience Index Beta (OpenDRI Beta) Like ThinkHazard!, OpenDRI Beta is also ultimately managed by GFDRR. The mission of OpenDRI Beta is to improve “risk information through better access to data.”⁶⁴ This website tracks what risk-related data sources exist and assesses how open they are to the public.

Other tools offered by GFDRR could not be reviewed or are outside the scope of this report.

59 <https://www.gfdrr.org/sites/default/files/publication/partnership-charter.pdf>

60 <https://www.gfdrr.org/ru/innovation-lab?page=2>

61 ThinkHazard! Methodology Report http://thinkhazard.org/static/0b4a348d7ec1ebefdbfcac0ec20f2493/documents/thinkhazard-methodology-report_v2_0.pdf

62 Ibid.

63 <http://thinkhazard.org/en/>

64 <https://index.opendri.org/about.html>

Indicators Covered

For any given location (at the country level or lower), ThinkHazard! provides the risk level for the following types of hazards: river flood, coastal flood, wildfire, urban flood, earthquake, landslide, tsunami, water scarcity, extreme heat, cyclone and volcano. There is no specific time associated with these estimates, as they speak to the general risk an area faces with respect to these adverse events. ThinkHazard! allows users to update information and data, and this could theoretically change the risk level, but this does not occur on a regular basis.

OpenDRI Beta offers, primarily, metadata information (publisher, last time updated, license, etc.) as well as information about how the dataset might be useful in its risk analysis. 172 datasets are registered in this manner.

Notable Findings

Compared to other nearby large European countries, the United Kingdom enjoys a somewhat lower hazard risk. In particular, both France and Germany have a 'medium' earthquake risk, according to ThinkHazard!

Table 8. Level of Hazard Risks in the United Kingdom, France & Germany, according to ThinkHazard!

	United Kingdom	France	Germany
River flood	High	High	High
Coastal flood	High	High	High
Wildfire	High	High	High
Urban flood	Medium	High	High
Earthquake	Low	Medium	Medium
Landslide	Low	Low	Low
Tsunami	Low	Low	Very low
Water scarcity	Low	Medium	Medium
Extreme heat	Low	Medium	Medium
Cyclone	Very low	Very low	Very low
Volcano	No data	Medium	Medium

However, looking at historical data of volcanic eruptions available on OpenDRI Beta, a United Kingdom overseas territory was the area which most recently experienced a volcanic eruption in 2013: the Caribbean island of Montserrat.⁶⁵

Data Uses and Limitations

ThinkHazard! is an innovative, user-friendly tool that communicates important information about the types of hazards a given area is likely (or not likely) to face. While most users will probably find the tool accessible and easy to navigate, it was designed for a specific audience as ThinkHazard! states: development sector professionals looking to better understand the major types of risks some areas of interest may face.



⁶⁵ <https://www.theguardian.com/world/2016/jan/28/montserrat-volcano-british-territory-geothermal-energy-tourism-sand-mining>

It is possible to download a PDF version⁶⁶ of any hazard report, and this will provide the risk level for each hazard. ThinkHazard! is also open-source, and users can request or suggest changes.

OpenDRI Beta is a valuable resource for exploring open-access datasets that broadly relate to the topic of 'risk'. OpenDRI Beta also provides essential metadata. The beta website notes that it tracks over 160 websites; half of these datasets are open to the public.⁶⁷



66 Currently, ThinkHazard! directs users looking for raw data to another website, InnovationLab GeoNode, however, the authors of this report were unable to access this website.

67 <https://opendri.org/about-the-opendri-index/>

Index for Risk Management (INFORM)

Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness, and the European Commission

INFORM, according to its website, “is a way to measure the risk of humanitarian crises and disasters, and how the conditions that lead to them affect sustainable development. It is a risk index that identifies where crises or disasters requiring international assistance may occur and analyses that risk so it can be better managed by everyone.”⁶⁸

Data Provider:	Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness & European Commission
Organisation Type:	Partnership of multilateral and bilateral organisations
Data Source Name and Website:	INFORM, or Index for Risk Management http://www.inform-index.org/
Type of Data:	Index or rating indicating the amount of risk a country faces regarding hazards and exposure, vulnerability and lack of coping capacity
Frequency of Release:	Annually, though mid-year estimates for the current year are provided
Respondent:	Country-level macro statistics
Unit of Measurement:	Index
Country Coverage:	Global
Public Access:	Downloadable in CSV or Excel; interactive data on the website
Latest Release:	June 2019 (mid-year estimate)

Description and Summary of Methodology

INFORM is based on existing scientific research on risk. INFORM identifies three dimensions of risk: hazards and exposure, vulnerability and lack of coping capacity. Building off UNISDR’s definition of risk, INFORM models risk in the following way:

$$R = (H * E)^{\frac{1}{3}} * (V)^{\frac{1}{3}} * (C)^{\frac{1}{3}}$$

Where “R” is equal to risk, “H” is equal to hazard, “E” is equal to exposure, “V” is equal to vulnerability and “C” represents lack of coping capacity.

INFORM is a composite indicator, formed by three main dimensions. Each dimension consists of different categories, which are related “to the needs of humanitarian and resilience actors.”

Each dimension is itself made up of two risk categories. For the hazard & exposure dimension, the two categories are natural or human. For the vulnerability dimension, the two categories are socio-economic and vulnerable groups. For the lack of coping capacity, the two dimensions are institutional and infrastructure.

These categories are then made up by a number of components. These components are themselves measured by individual indicators.

The final Global Risk Index score is then classified into 5 classes – very high, high, medium, low or very low. The thresholds for each of these rank levels, as defined in INFORM’s 2017 methodology note, appear in Table 9.

68 <http://www.inform-index.org/Portals/0/InfoRM/2016/INFORM%20FAQ%20October%202015.pdf?ver=2015-11-25-173810-607>

Table 9. Categories of Risk Based on Value of Inform

Risk level	Minimum inform value	Maximum inform value
Very high	6.5	10
High	5.0	6.4
Medium	3.5	4.9
Low	2.0	3.4
Very low	0.0	1.9

Indicators Covered

According to INFORM’s 2017 methodology note, there are over 50 core indicators which are used to help measure the three dimensions of risk as well as risk itself.

Table 10. Core Indicators of INFORM Global Risk Index

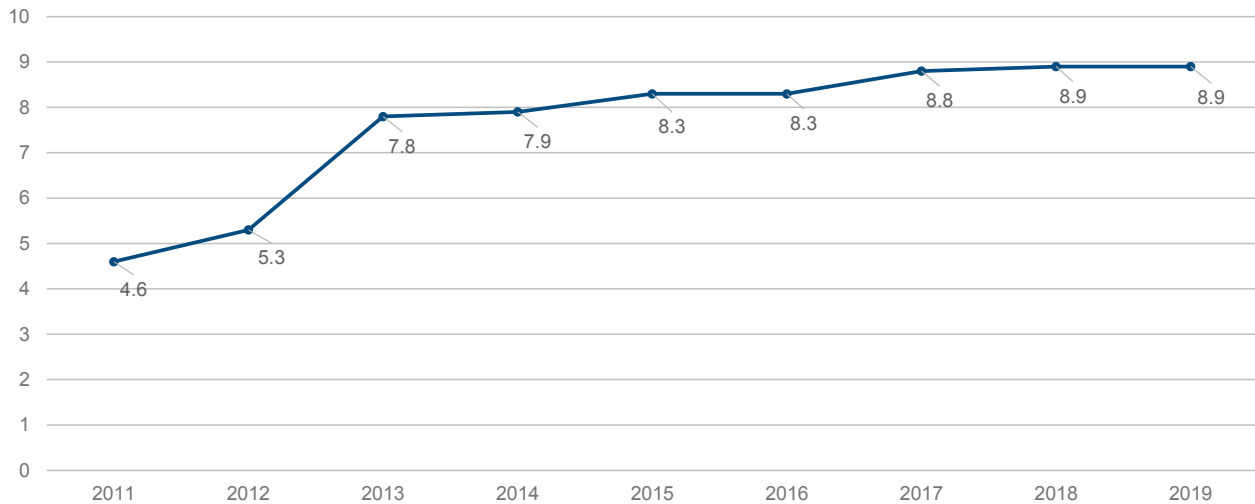
Sub-index	Indicator	Source
Hazard & Exposure	Physical Exposure to Earthquake MMI VI (absolute)	GSHAP, JRC
	Physical Exposure to Earthquake MMI VIII (relative)	GSHAP, JRC
	Physical Exposure to Earthquake MMI VI (absolute)	GSHAP, JRC
	Physical Exposure to Earthquake MMI VI (relative)	GSHAP, JRC
	Physical Exposure to Tsunamis (absolute)	UNISDR, JRC
	Physical Exposure to Tsunamis (relative)	UNISDR, JRC
	Physical Exposure to Flood (absolute)	UNISDR, JRC
	Physical Exposure to Flood (relative)	UNISDR, JRC
	Physical Exposure to Surge from Tropical Cyclone (absolute)	UNISDR, JRC
	Physical Exposure to Surge from Tropical Cyclone (relative)	UNISDR, JRC
	Physical Exposure to Tropical Cyclone of SS 1 (absolute)	UNISDR, JRC
	Physical Exposure to Tropical Cyclone of SS 1 (relative)	UNISDR, JRC
	Physical Exposure to Tropical Cyclone of SS 3 (absolute)	UNISDR, JRC
	Physical Exposure to Tropical Cyclone of SS 3 (relative)	UNISDR, JRC
	People Affected by Droughts (absolute)	EM-DAT, CRED
	People Affected by Droughts (relative)	EM-DAT, CRED
	Frequency of Drought Events	EM-DAT
	Agriculture Drought Probability	FAO
	GCRI Violent Internal Conflict Probability	EC, JRC
	GCRI High Violent Internal Conflict Probability	EC, JRC
Current National Power Conflict Intensity	Heidelberg Institute	
Current Subnational Conflict Intensity	Heidelberg Institute	

Sub-index	Indicator	Source
Vulnerability	Human Development Index	UNDP
	Multidimensional Poverty Index	UNDP
	Gender Inequality Index	UNDP
	Gini Coefficient	World Bank
	Public Aid per Capita	OECD
	Net ODA Received (% of GNI)	World Bank
	Total Persons of Concern (absolute)	UNHCR
	Total Persons of Concern (relative)	UNHCR
	Children Underweight	WHO
	Child Mortality	UN
	Prevalence of HIV-AIDS above 15 years	WHO
	Tuberculosis Prevalence	WHO
	Malaria Mortality Rate	UN
	Relative Number of Affected Population by Natural Disasters in the Last Three Years	EM-DAT, CRED
	Prevalence of Undernourishment	FAO
	Average Dietary Supply Adequacy	FAO
	Domestic Food Price Level Index	FAO
	Domestic Food Price Volatility Index	FAO
Lack of Coping Capacity	Hyogo Framework for Action	UNISDR
	Government Effectiveness	World Bank
	Corruption Perception Index	Transparency International
	Access to Electricity (% of population)	World Bank
	Internet Users (per 100 people)	International Telecommunication Union
	Mobile Cellular Subscriptions (per 100 people)	International Telecommunication Union
	Adult Literacy Rate	UNESCO
	Road Density (km of road per 100 sq. km of land area)	OpenStreetMap OSM
	Access to Improved Water Source (% of population with access)	World Bank
	Access to Improved Sanitation Facilities (% of population with access)	WHO/UNICEF
	Physicians Density	WHO/UNICER
	Health Expenditure per Capita	WHO
	Total Population (GHS-POP)	World Bank
	Measles Immunisation Coverage	World Bank

Notable Findings

According to the INFORM Global Risk Index, five countries have seen their level of risk grow substantially since 2011 – South Sudan, Libya, Ukraine, North Korea and Syria. The level of risk is rising fastest in South Sudan – with that country’s 2019 Global Risk Index nearly twice as high as in 2011 (8.9 compared to 4.6, respectively).⁶⁹

Chart 10. INFORM Global Risk Index for South Sudan, 2011-2019



Data Uses and Limitations

INFORM is a very valuable knowledge base that provides an overview of both the methodological and data limitations associated with this composite indicator in its methodological report, specifically in chapter 5.⁷⁰



⁶⁹ As measured by year-over-year change of Global Risk Index in 2019 compared to 2011. Data was downloaded here: <https://drmkc.jrc.ec.europa.eu/inform-index/Results/Global>

⁷⁰ See chapter 5 of following report: <https://drmkc.jrc.ec.europa.eu/inform-index/Portals/0/InfoRM/2017/INFORM%20Concept%20and%20Methodology%20Version%202017%20Pdf%20FINAL.pdf?ver=2017-07-11-104935-783>

The International Disaster Database (EM-DAT)

The Centre for Research on the Epidemiology of Disasters (CRED), the School of Public Health, The Université Catholique de Louvain

A global database on natural and technological disasters, containing essential core data on the occurrence and effects of more than 21,000 disasters in the world, from 1900 to present.

Data Provider:	Centre for Research on the Epidemiology of Disasters (CRED)
Organisation Type:	Non-profit
Data Source Name and Website:	International Disaster Database (EM-DAT) https://www.emdat.be/
Type of Data:	Various indicators related to disasters
Frequency of Release:	Database is updated on a daily basis
Respondent:	Country-level data
Unit of Measurement:	Range includes the number of disasters; the number of individuals killed; the number of individuals affected; the cost of events in USD
Country Coverage:	Global
Public Access:	Yes (login required)
Latest Release:	N/A

Description and Summary of Methodology

The International Disaster Database (EM-DAT) is an effort to systematically collect disparate data sources on the frequency and/or costs of natural disasters, as well as to help develop best practices in the collection of these data. EM-DAT seeks to provide “an objective basis for vulnerability assessment and rational decision-making in disaster situations.”⁷¹

According to CRED, “EM-DAT contains essential core data on the occurrence and effects of over 22,000 mass disasters in the world from 1900 to the present day.”⁷² EM-DAT provides definitions for specific events to help classify and organise the data. Disasters are defined as involving at least one of the following four criteria:

- 10 or more people dead
- 100 or more people affected
- The declaration of a state of emergency
- A call for international assistance

Disasters are then classified as belonging to one of two broad types – natural and technological. Natural disasters consist of six different subgroups with the following definitions:

Table 11. Definitions of Different Types of Natural Disasters

Subgroup	Definition
Geophysical	A hazard originating from solid earth. This term is used interchangeably with the term geological hazard.
Meteorological	A hazard caused by short, micro- to mesoscale extreme weather and atmospheric conditions that last from minutes to days.

71 EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium

72 Ibid.

Subgroup	Definition
Hydrological	A hazard caused by the occurrence, movement and distribution of surface and subsurface freshwater and saltwater.
Climatological	A hazard caused by long-lived, meso- to macro-scale atmospheric processes ranging from intra-seasonal to multidecadal climate variability.
Biological	A hazard caused by the exposure to living organisms and their toxic substances (e.g., venom, mould) or vector-borne diseases that they may carry. Examples are venomous wildlife and insects, poisonous plants and mosquitoes carrying disease-causing agents such as parasites, bacteria or viruses (e.g., malaria).
Extra-terrestrial	A hazard caused by asteroids, meteoroids and comets as they pass near Earth, enter the Earth's atmosphere or strike the Earth, and by changes in interplanetary conditions that affect the Earth's magnetosphere, ionosphere and thermosphere.

Technological disasters are divided into three categories – industrial, transport and miscellaneous accidents.⁷³

The database is compiled from various sources including U.N., governmental and non-governmental agencies, insurance companies, research institutes and press agencies. As there can be conflicting information and figures, CRED has established a method of ranking these sources according to their ability to provide trustworthy and complete data. In the majority of cases, a disaster will only be entered into EM-DAT if at least two sources report the disaster's occurrence in terms of deaths and/or affected persons.

The final figures in EM-DAT usually originate from the primary source, but they can also be completed by a secondary source. In certain cases, a secondary source can become a primary one – for example, when final figures are made available long after the disaster has occurred. Also, some sources are used for specific disasters only (i.e., USGS for earthquakes, WHO for epidemics).

Indicators Covered

EM-DAT data cover geographical, temporal, human and economic information on disasters at the country level. For any given year, EM-DAT provides statistics on the number of disaster events, the number of people affected, the total number of deaths and the cost (in U.S. dollars) of these events. EM-DAT breaks down these headline figures in terms of the type of disaster events (according to the categories covered in the previous section) and the associated human or monetary costs.

Data Uses and Limitations

CRED relies on a range of sources in compiling the data, which can be of varying quality. The organisation prioritises certain types of data sources, such as data from U.N. agencies or government sources.⁷⁴ However, CRED states that its data do not cover all types of data sources and, in some instances, “have political limitations that could affect the figures.”⁷⁵

Notable Findings

According to CRED, the number of disaster events in 2018 – and the associated costs of those events – was below the annual 10-year average, particularly in terms of the number of people killed or affected. Floods were the most common form of disaster in 2018, a finding which is in line with recent trends. According to the organisation, “floods have affected more people than any other type of disaster in the 21st century.”⁷⁶

⁷³ <https://www.emdat.be/classification>

⁷⁴ <https://www.emdat.be/frequently-asked-questions>

⁷⁵ Ibid.

⁷⁶ <https://www.cred.be/sites/default/files/CREDNaturalDisaster2018.pdf>



Table 12. Global Disaster Statistics in 2018

	2018 Total	2008-2017 Annual Average
Disaster events	315	348
Number of deaths	11,804	67,572
Number of people affected	68.5 million	198.8 million
Total damages	\$131.7 billion	\$166.7 billion





Perception or
Subjective Data

The Risks that Matter Report

Organisation for Economic Co-operation and Development (OECD)

A multilateral organisation with a goal to shape policies that foster prosperity, equality, opportunity and well-being for all.

Data Provider:	The Organisation for Economic Co-operation and Development
Organisation Type:	Multilateral Organisation
Data Source Name and Website:	The Risks that Matter Report https://www.oecd.org/social/risks-that-matter.htm
Type of Data:	Non-Governmental Organisation
Frequency of Release:	One-time study
Respondent:	Cross-national survey of adults aged 18-70
Unit of Measurement:	Public opinion survey data
Country Coverage:	21 OECD Countries
Public Access:	Free to download in PDF format
Latest Release:	Autumn 2018

Description and Summary of Methodology

The Risks That Matter report is a cross-national survey which aims to “put the principle of “listening to people” into practice, in order to better understand people’s worries and concerns, to capture their views on current social policies, and to learn what they expect from social policy in the future. The survey asked over 22,000 people in 21 OECD countries in 2018 about their social and economic risks and how well they think their government tackles these risks.”

The survey was web-based conducted in the national language of each country, with respondents 18-70 years old, recruited via the internet and phone.

Indicators Covered

In the report, the OECD states that the aim of the survey “is to understand better what citizens want and need from social policy⁷⁷ – a topic the OECD believes is greatly understudied, or at least under-measured so far: “data sources rarely illuminate people’s concerns, perceived vulnerabilities and preferences, especially with regard to government policy.”⁷⁸

The survey covers risk perceptions and the social and economic challenges facing respondents and their families; satisfaction with social protection and government, and how well government performs in providing public services and benefits; as well as desired policies, or preferences for social protection going forward.

Selected relevant risk and safety questions in the OECD Risks that Matter Survey include:

- In the near future (the next year or two), which of the following do you perceive as the greatest risks to yourself or your immediate family?
- What about your medium-term worries? In the next five years, which of the following do you perceive as the greatest risks to yourself or your immediate family?
- Looking beyond the next ten years, what are your long-term worries? Which of the following do you perceive as the greatest risk to yourself or your immediate family beyond the next decade?
- If you (or your partner) lost your income and there were no unemployment or social assistance benefits, would you struggle to cover your basic needs (housing, bills, food) for two months?

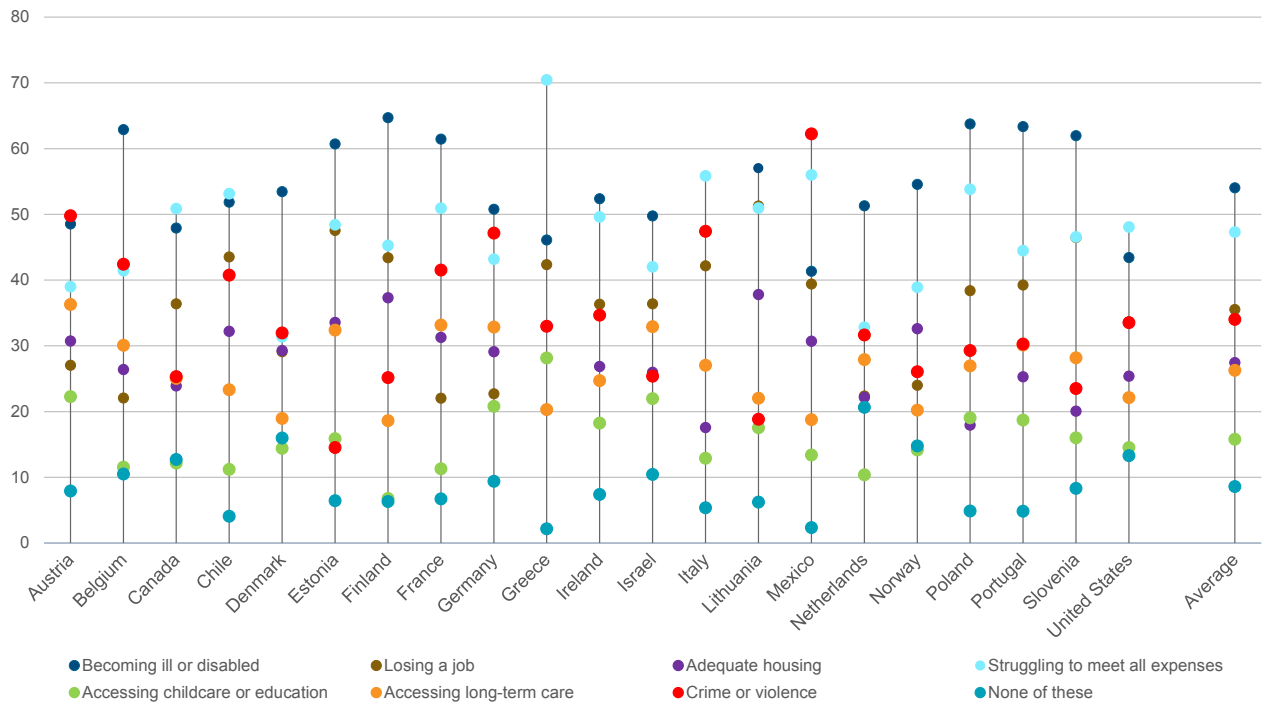
77 <https://www.oecd.org/els/soc/Risks-That-Matter-2018-Main-Findings.pdf>

78 Ibid.

Notable Findings

The survey found that the top concerns of people in the 21 OECD countries included becoming ill or disabled and to struggle to meet all expenses. Chart 11 below appears in the OECD report and illustrates the percentage of people who selected each risk as one of their top-three greatest short-term risks to themselves or their immediate family. People were least concerned about accessing either childcare or education.

Chart 11. Top Risks Concerning the Public



Data Uses and Limitations

The survey and associated report provide very useful and valuable information. The survey was conducted online in the member states of the OECD.



The Global Risks Report

The World Economic Forum

An annual report assessing global risks through a survey of experts across the world.

Data Provider:	The World Economic Forum (WEF)
Organisation Type:	Non-Governmental Organisation
Data Source Name and Website:	The Global Risks Report https://www.weforum.org/reports/the-global-risks-report-2019
Type of Data:	Expert opinion/key informant surveys
Frequency of Release:	Annual since 2005
Respondent:	The survey asks a range of company executives, academics, and — to a lesser extent — governments and non-governmental organisations questions on their perceptions of various risks
Unit of Measurement:	Questions with a response scale of 1-5
Country Coverage:	Focus on assessments of global risks in 140 countries — experts are from a global network, but the data are risk-focused.
Public Access:	Free to download in PDF format
Latest Release:	January 2019

Description and Summary of Methodology

According to the WEF,⁷⁹ the Global Risks Report 2019 provides an opportunity to place the global risk landscape into context at the beginning of the year and identify priority areas for action. The report presents the results of the WEF's latest Global Risks Perception Survey, in which nearly 1,000 decision-makers from the private sector, academia and, to a lesser extent, from the public sector and civil society assess the risks facing the world. Indicators measure five broad categories of risks: economic, environmental, geopolitical, societal and technological. Each question has response options on a scale of 1-5. In most cases, respondents were asked to base their answers on developments in their region, for example: "In your region specifically, do you think that in 2019 the risks presented by the following issues will increase or decrease compared to 2018?" For a few issues, the question was framed globally: "On a global level, do you think that in 2019 the risks presented by the following issues will increase or decrease compared to 2018?" Response options ranged from "significantly decrease" to "significantly increase" along the 1-5 scale.

Indicators Covered

Economic risks: Asset bubbles in a major economy, Deflation in a major economy or region, Failure of a major financial mechanism or institution, Failure/shortfall of critical infrastructure, Fiscal crises in key economies, High structural unemployment or underemployment, A sustained high level of unemployment or under-utilization of the productive capacity of the employed population, Illicit trade (e.g. illicit financial flows, tax evasion, human trafficking, organized crime, etc.), Severe energy price shock (increase or decrease), Unmanageable inflation.

⁷⁹ http://www3.weforum.org/docs/WEF_Global_Risks_Report_2019.pdf

Environmental risks: Extreme weather events, failure of climate change mitigation and adaptation, major biodiversity loss and ecosystem collapse, major natural disasters, man-made environmental damage and disasters.

Geopolitical risks: Failure of national governance, failure of regional or global governance, interstate conflict, large-scale terrorist attacks, state collapse or crisis, weapons of mass destruction.

Societal risks: Failure of urban planning, food crises, large-scale involuntary migration, profound social instability, Rapid and massive spread of infectious diseases, water crises.

Technological risks: Adverse consequences of technological advances, breakdown of critical information infrastructure and networks, large-scale cyberattacks, massive incidents of data fraud or theft.

Trends/long-term patterns: Focuses on those trends or patterns which could impact/amplify other risks: ageing population, changing landscape of international governance, changing climate, degrading environment, growing middle class in emerging economies, increasing national sentiment, increasing polarisation of societies, rising chronic disease, rising cyber dependency, rising geographic mobility, rising income and wealth disparity, shifting power (from state to non-state actors and individuals, or across regions), rising urbanisation.



The Afrobarometer

Afrobarometer Public Attitudes Surveys

A non-partisan pan-African series of national public attitudes surveys on democracy, governance, the economy and society.

Data Provider:	Afrobarometer
Organisation Type:	Non-Governmental Organisation
Data Source Name and Website:	Survey data http://afrobarometer.org/data/
Type of Data:	Nationally representative survey data
Frequency of Release:	Approximately annual - different waves of data collection
Respondent:	Individual respondent and country level
Unit of Measurement:	Varies - survey questions
Country Coverage:	Up to 37 African countries
Public Access:	Publicly available – Afrobarometer and World Bank website
Latest Release:	N/A

Description and Summary of Methodology

Afrobarometer is a non-partisan, pan-African research institution conducting nationally representative public attitude surveys on democracy, governance, the economy and society in 30+ countries repeated on a regular cycle. Surveys are conducted through face-to-face interviews with a randomly selected sample of 1,200 or 2,400 people in each country.

Survey questions cover a wide range of topics, including economic, political and social issues.



Indicators Covered

The survey regularly features questions related to security as well as climate or disaster-related items.

Security items on the survey:

- Fear of political intimidation or violence
- Feeling unsafe walking in the neighbourhood
- Feared crime at home
- Had something stolen from house
- Have been physically attacked
- Feared violence in the neighbourhood
- Feared violence at a political event
- Likelihood of response: reporting a crime
- Feared violence during a public protest
- Feared violence by extremists
- Better or worse: personal safety
- Likelihood of response: reporting teacher misconduct

Climate items on the survey:

- Climate conditions compared to ten years ago
- Severity of droughts
- Severity of flooding
- Heard about climate change
- Climate change: meaning
- Climate change: main cause
- Climate change: affecting the country
- Does climate change need to be stopped? By ordinary people?

Notable Findings

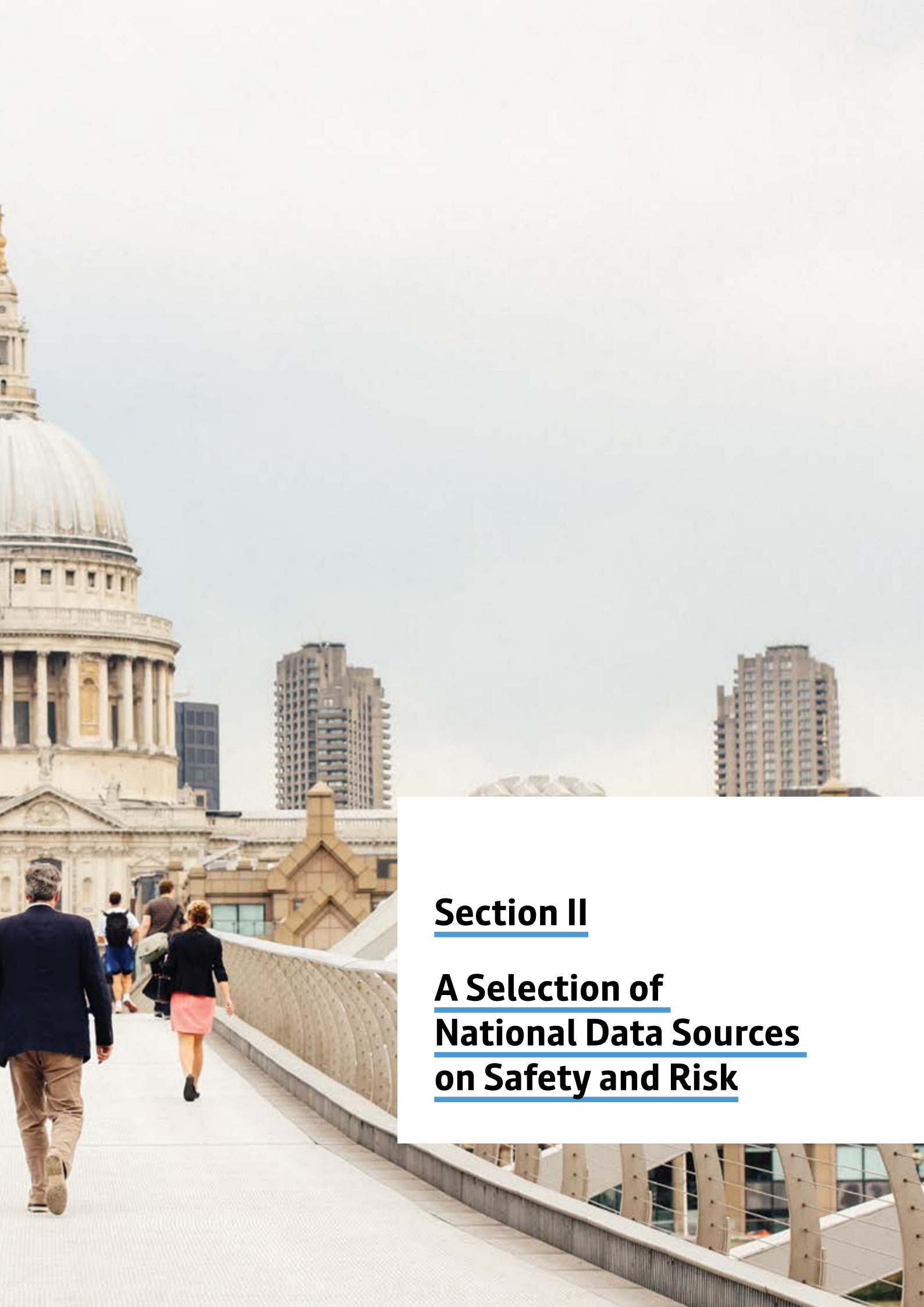
According to the most recent wave of Afrobarometer survey data (2016-2018), nearly half of people living in 35 African countries (48%) believe climate conditions in their area have become worse in the past ten years, compared to 20% who believe they have become better. In Uganda, 85% of people believe conditions have become worse, higher than any other country in the study.⁸⁰

Data Uses and Limitations

This rich and valuable data source is focused on up to 37 countries in Africa. Not all questions are asked in every survey wave, which could limit time-series analysis.

80 <https://afrobarometer.org/online-data-analysis>





Section II

A Selection of National Data Sources on Safety and Risk



A Note on Section II

This section presents information from a few selected national sources on safety and health. Given the scope limitations of this report, only five countries are covered: the UK, the U.S., China, Australia and Singapore. Efforts were made to select countries from every continent, but the authors of this report could not find clear or comprehensive data sources (in the English language) on risk and safety in many countries, despite several countries having an entity that was tasked with matters relating to occupational health and safety.

Therefore, many countries were not included in this report. Even for those countries that are included, some have several agencies responsible for health and safety, but only one leading agency was profiled.

It is notable that while many countries list laws and regulations, and ratify international conventions regarding occupational health and safety, very few countries have systematic monitoring and reporting of work-related injuries and fatalities.

The ILO presents country profiles for member states here:

<https://www.ilo.org/safework/countries/lang--en/index.htm>

Additionally, there are many academic studies about occupational health and safety in some regions of the world, especially relating to countries where there are large migrant communities and/or weak enforcement of safety laws. It is clear that there are significant data gaps of health and safety data for a very large number of countries across the world.



The Health and Safety Executive (UK)

United Kingdom

A United Kingdom government agency with a mission to reduce work-related death, injury and ill health.

Data Provider:	The Health and Safety Executive (HSE)
Organisation Type:	Independent Regulator — UK Government
Data Source Name and Website:	http://www.hse.gov.uk/statistics/
Type of Data:	Official statistics and survey-based (including self-reporting and surveillance)
Frequency of Release:	Regular throughout the year, as and when data are collected
Respondent:	General public perceptions survey (as part of the national Labour Force Survey), reports from employers, reports from physicians/health practitioners, industrial injuries disablement benefit reports, death certificates, and other
Unit of Measurement:	Various, but mainly number of people affected by different types of workplace injuries or deaths, and estimates of the economic costs to the UK
Country Coverage:	UK, with some European country comparisons
Public Access:	Free to view or download
Latest Release:	2019

Description and Summary of Methodology

The HSE publishes a range of statistics relating to health and safety in Great Britain. A variety of data sources are used, including surveys and surveillance schemes, to provide statistics on work-related ill health and disease, workplace injury, enforcement of health and safety legislation, working days lost and costs to Britain as a result of health and safety incidents, working conditions, and management of health and safety in the workplace.

The HSE team that produces and disseminates the statistics includes members of the Government Statistical Service. HSE products and systems are audited by the U.K. Statistics Authority and have been designated with the National Statistics Quality standard.

The primary data sources used for injury and ill-health statistics include:⁸¹

- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, through which fatal and defined nonfatal injuries to workers and members of the public are reported by employers
- The Labour Force Survey — a national survey run by the Office for National Statistics, for which HSE commissions annual questions to gain a view of work-related illness and workplace injury based on individuals' perceptions
- Reports of ill health by doctors and specialist physicians
- Ill health assessed for disablement benefit
- Death certificates
- European data sources, such as Eurostat, the European Survey of New and Emerging Risks (ESENER) and the European Union Labour Force Survey

81 <http://www.hse.gov.uk/STATISTICS/sources.htm>

Indicators Covered

Data cover many aspects of occupational safety including injuries or deaths at work. Sources of injury include musculoskeletal disorders, occupational lung disease, work-related stress, depression or anxiety, and other workplace injuries. The data also include the cost of workplace injuries to the UK, with totals reported per industry. Additionally, HSE reports on enforcement notices including improvement notices that require employers to put right a contravention of health and safety legislation within a specified time limit, as well as the number of cases of prosecution against employers and fines issued.

Notable Findings

Data from the HSE show that each year, over a million workers in Great Britain are injured or made ill by their work. These illnesses and injuries can have serious effects on these individuals and their families, as well as employers, government and the wider society. The impact can be measured in terms of human costs (the impact on the individual's quality of life and, for fatal injuries, loss of life), and financial costs, such as loss of production and healthcare costs. HSE's estimate of the total costs of workplace injuries and ill health includes both financial costs and valuation of human costs.

The total estimated cost of workplace self-reported injuries and ill health in 2016/17 was £15 billion. Ill health causes the biggest proportion of total costs at around 65% (£9.7 billion), with an injury resulting in around 35% of total costs (£5.2 billion). Ill health contributes a greater proportion of total costs, despite injuries accounting for a greater proportion of cases, as ill-health cases result in more time off work, on average, which drives higher costs.

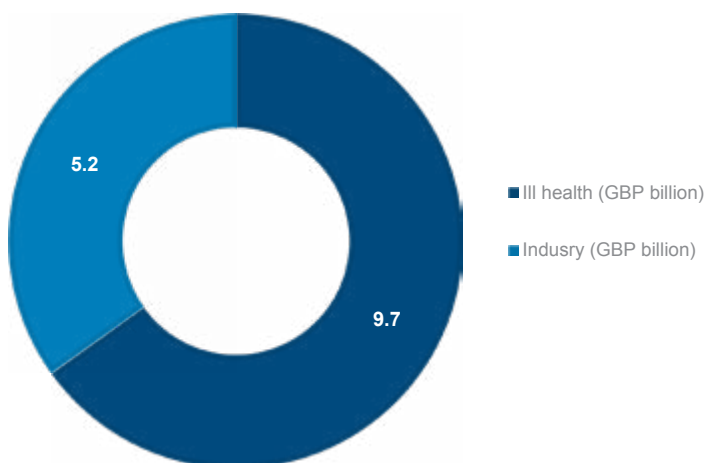


Chart 13.A. Estimating the Economic Costs of Workplace Injuries and New Cases of Work-related Ill Health in the UK: 2016/17⁸²

In 2016/2017, 144 workers were killed, the largest number having been in the construction sector. Concerning types of fatal accidents, 24% resulted from falls from a height, 18% from being struck by a moving vehicle, 16% by being struck by a moving object and 11% having been trapped by something collapsing or overturning, while 9% of fatalities were the result of contact with moving machinery. Approximately 60% of fatalities were people aged 16-59 years old.

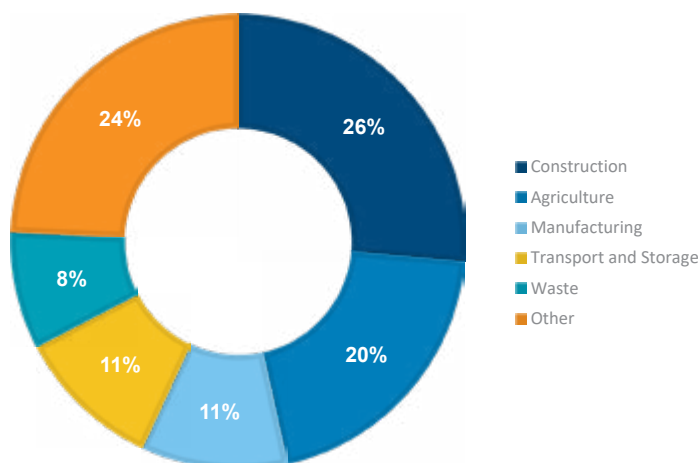


Chart 13.B. Fatal Injuries to Workers by Main Industry in the UK: 2016/17⁸³

Data Uses and Limitations

The database is rich and comprehensive for the UK, and a limited number of comparisons are made with selected EU countries (source: Eurostat). An independent review of the HSE was conducted in 2014.⁸⁴

⁸² <http://www.hse.gov.uk/statistics/cost.htm>

⁸³ Ibid.

⁸⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275233/hse-function-form-governance-triennial-review.pdf

U.S. Occupational Safety and Health Administration

United States

A U.S. government agency with a mission to “assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance.”⁸⁵

Data Provider:	The Occupational Safety and Health Administration
Organisation Type:	U.S. Government – Department of Labour
Data Source Name and Website:	https://www.osha.gov https://www.osha.gov/oshstats/index.html https://stats.bls.gov/iif/home.htm
Type of Data:	Official statistics and survey-based (including reporting and surveillance)
Frequency of Release:	Regular throughout the year, as and when data are collected
Respondent:	General public surveys, employers and other reporting
Unit of Measurement:	Various, including the number of people affected by different types of workplace injuries or deaths
Country Coverage:	United States
Public Access:	Free to view or download
Latest Release:	2019

Description and Summary of Methodology

The Occupational Safety and Health Administration (OSHA) collects work-related injury and illness data from employers within a specific industry and employment size specifications. Additionally, reports are collected from various sources (such as hospitals and physicians), as well as from labour force surveys.

Indicators Covered

Data are available for various sectors of the economy including on regulations, inspections, compliance, enforcement and penalties, industrial hygiene, air sampling, fatalities, severe injuries and illness statistics.

Source material, data and tables are provided by the Bureau of Labour Statistics, Department of Labour and OSHA's Area Offices. OSHA-specific statistics on data and time-series information are monitored through the OSHA Office of Statistics; fatalities in federal states are compiled by the OSHA Directorate of Enforcement Programs; fatalities in State Plan states are compiled by the OSHA Directorate of Cooperative and State Programs.

Data and information on health and safety in the U.S. are also available from other sources including the following:

- Bureau of Labour Statistics (BLS): Injuries, Illnesses and Fatalities programme⁸⁶
- Mine Safety and Health Administration (for mining industries)
- The National Institute for Occupational Safety and Health
- The National Safety Council
- The National Highway Traffic Safety Administration

Of the above, the BLS dataset provides annual information on the rate and number of work-related injuries, illnesses and fatal injuries, and how these statistics vary by incident, industry, geography, occupation and other characteristics. These data are collected through the Survey of Occupational Injuries and Illnesses and the Census of Fatal Occupational Injuries.

85 <https://www.osha.gov>

86 <https://www.bls.gov/iif/>

Notable Findings

In the U.S., 5,147 workers died on the job in 2017 — on average, more than 14 deaths every day, of which 4,674 worker fatalities were in private industry. Of the fatalities in the private sector, 971, or 20.7%, were in the construction sector. The leading causes of private sector worker deaths (excluding highway collisions) in the construction industry were falls, struck by object, electrocution and caught-in/between injuries.

Fatal falls were at their highest level in the 26-year history of the Census of Fatal Occupational Injuries (CFOI) accounting for 17% of worker deaths. Unintentional overdoses due to nonmedical use of drugs or alcohol while at work increased by 25 per cent from 217 in 2016 to 272 in 2017. This was the fifth consecutive year in which unintentional workplace overdose deaths have increased by at least 25 per cent.

Chart 14.A. U.S. Number of Fatal Injuries by Sector, 2017⁸⁷

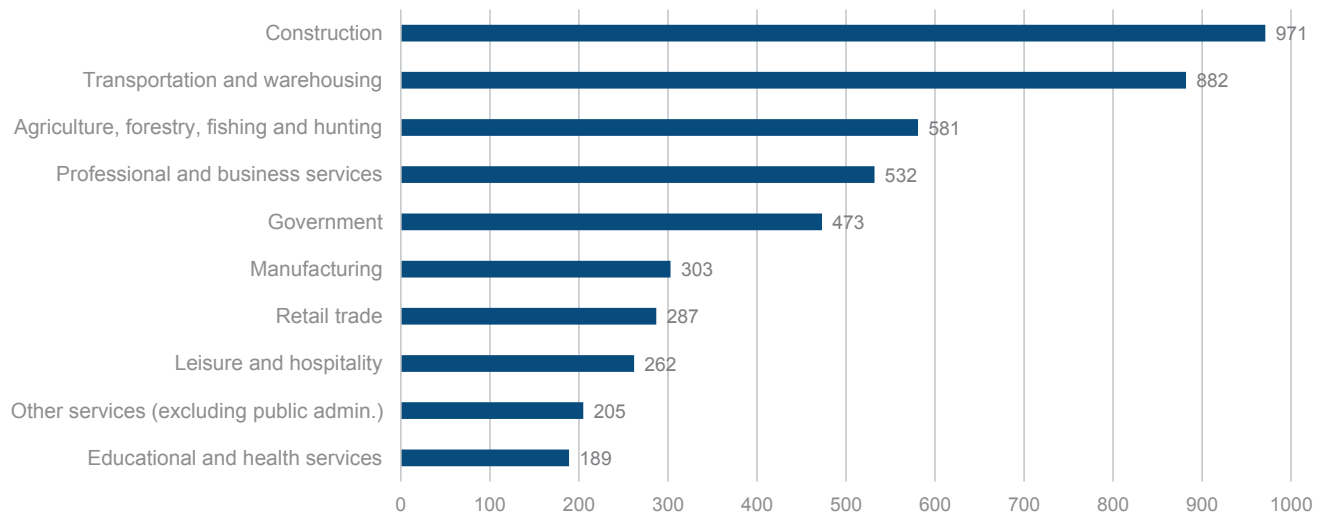
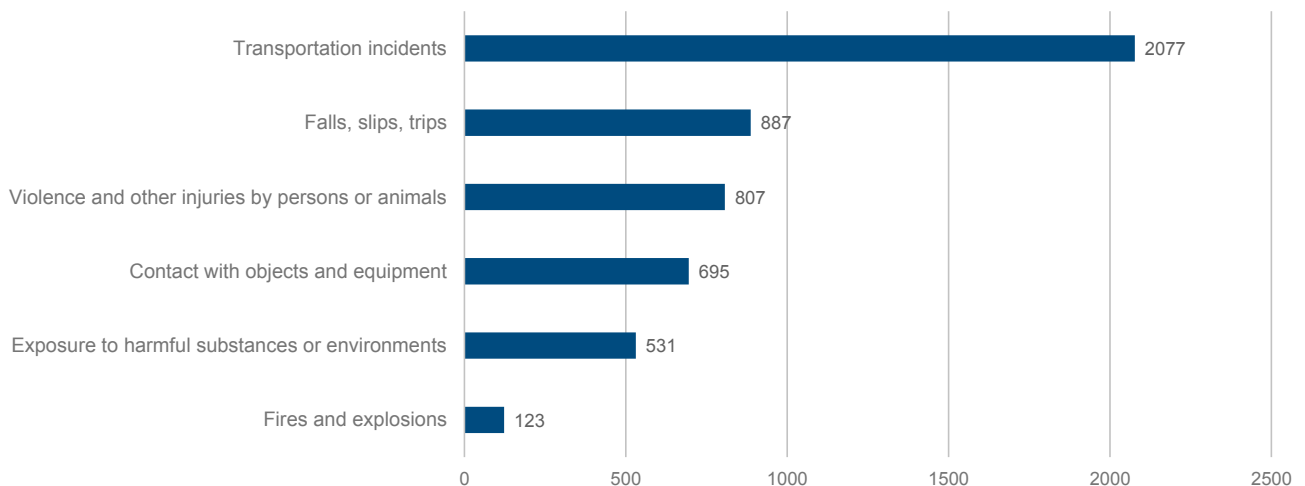
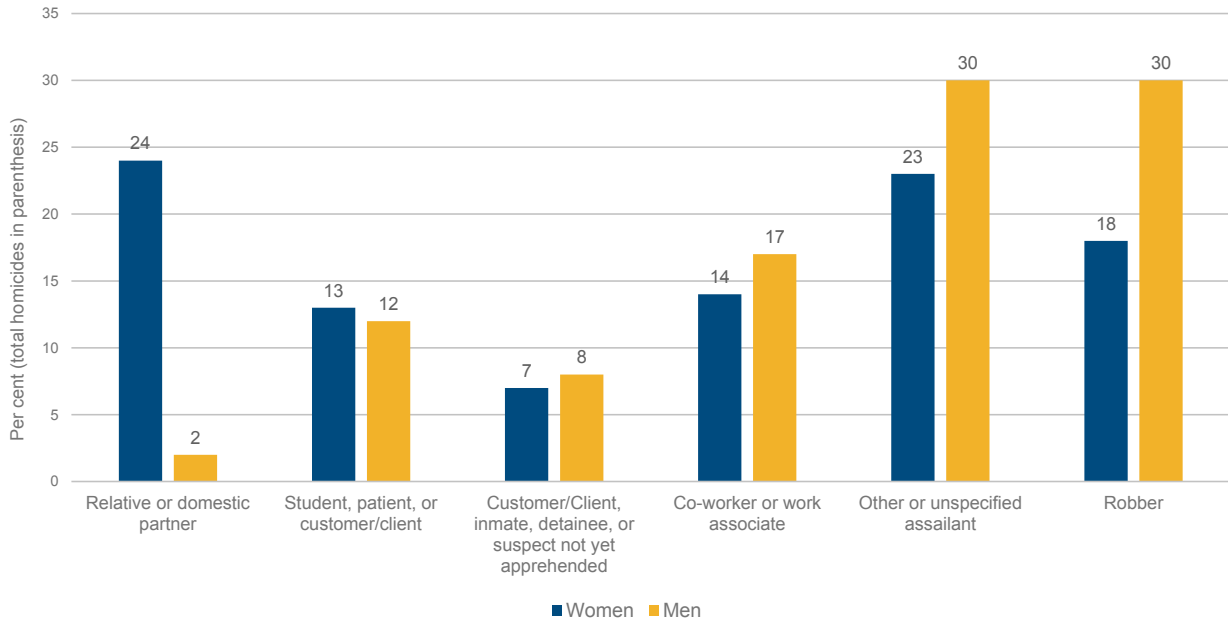


Chart 14.B. U.S. Number of Fatal Occupational Injuries by Major Event, 2017



87 <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/number-of-fatal-work-injuries-by-employee-status-self-employed-wage-salary.htm#>

Chart 14.C. U.S. Percent of Work-related Homicides by Gender and Assailant Type, 2017



Data Uses and Limitations

The data are not all available in one central location and are therefore sometimes challenging to find. According to the data source, at least the following must be noted (more details can be found on the source website):

1. **Scope of the data:** For each data collection cycle, OSHA collects data from a small portion of all private sector establishments in the United States (80,000 out of 7.5 million total establishments). Therefore, these data are not representative of all businesses and general conclusions pertaining to all U.S. business should not be drawn.
2. **Data quality:** While OSHA takes multiple steps to ensure the data collected are accurate, problems and errors invariably exist for a small percentage of establishments.
3. **State participation:** Not all State Plan states participate.

China Labour Bulletin

China

“A registered limited company in Hong Kong, which operates as a non-profit organisation supporting the workers’ movement in China.”⁸⁸

Data Provider:	The China Labour Bulletin (CLB)
Organisation Type:	Limited company – non-profit
Data Source Name and Website:	https://clb.org.hk/
Type of Data:	Based on official statistics
Frequency of Release:	Website data are updated as and when data are released by official sources
Respondent:	Official government statistics and reports
Unit of Measurement:	Various, but mainly number of people affected by different types of workplace injuries or deaths
Country Coverage:	China
Public Access:	Free to view or download
Latest Release:	April 2019

Description and Summary of Methodology

According to the China Labour Bulletin’s website, the organisation supports the workers’ movement in China.⁸⁹ The CLB receives grants from a wide range of government or quasi-government bodies, trade unions and private foundations, all of which are based outside China. The organisation’s mission is summarised as: “China Labour Bulletin supports and actively engages with the emergent workers’ movement in China. We recognise that at this stage of their long struggle for decent pay and decent work, China’s workers need a trade union that can actually defend their interests and represent them in collective bargaining with their employer.”⁹⁰

The data and reports published by CLB are based on official statistics from the National Bureau of Statistics of China: <http://data.stats.gov.cn/staticreq.htm> and a selection of other official data sources.

Indicators Covered

The Bulletin publishes data, information and research reports based on official statistics (which are released in Chinese). Indicators include the number of accidents and fatalities in each sector and region in the country, as well as the number of strikes and working conditions. There is also an interactive map showing work accidents across the country.

Notable Findings

In 2018, the China Labour Bulletin reported that there were 49,000 production safety accidents (accidents which took place at work), which resulted in 34,600 deaths.⁹¹ The most common type of accident is a structural or mechanical failure, which accounted for 31% of the total. Around two-thirds of these accidents occurred in the construction industry, and typically involved the failure of lifting equipment (cranes, elevators etc.) or a scaffolding collapse. Because many workers are not properly tethered or sites lack the safety equipment needed to secure workers and material, such structural and mechanical failures often result in workers falling from a height or being hit by falling objects. In 2018, data suggested that the construction sector is the most dangerous industry in China, as it had been for the previous nine years, according to the CLB.

⁸⁸ <https://clb.org.hk/content/aboutus#aboutus-1>

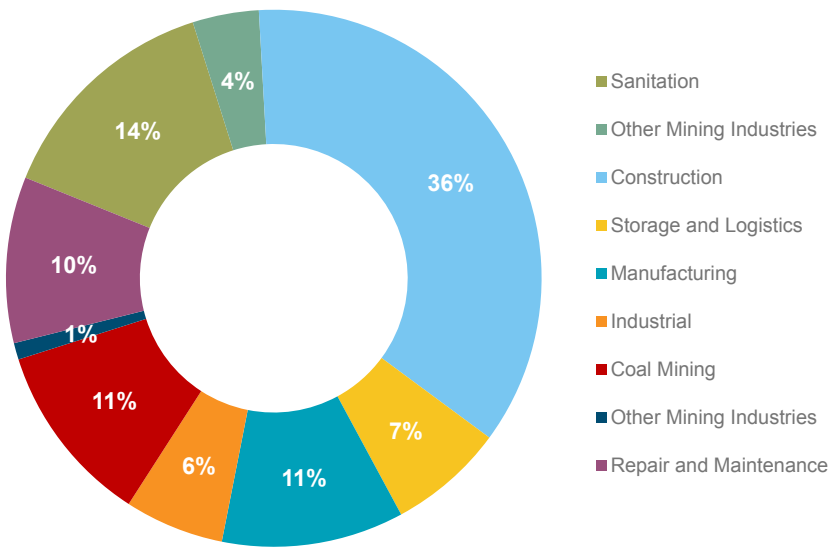
⁸⁹ Ibid.

⁹⁰ Ibid.

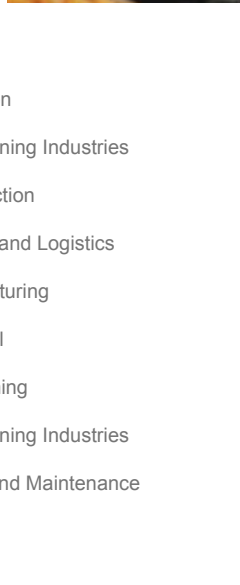
⁹¹ China Labour Bulletin source for this data is the official Chinese news report: <https://www.anhuanjia.com/c/2019-01-11/515805.shtml>



Chart 15. Distribution of Work Accidents in China Across Industrial Sectors⁹²

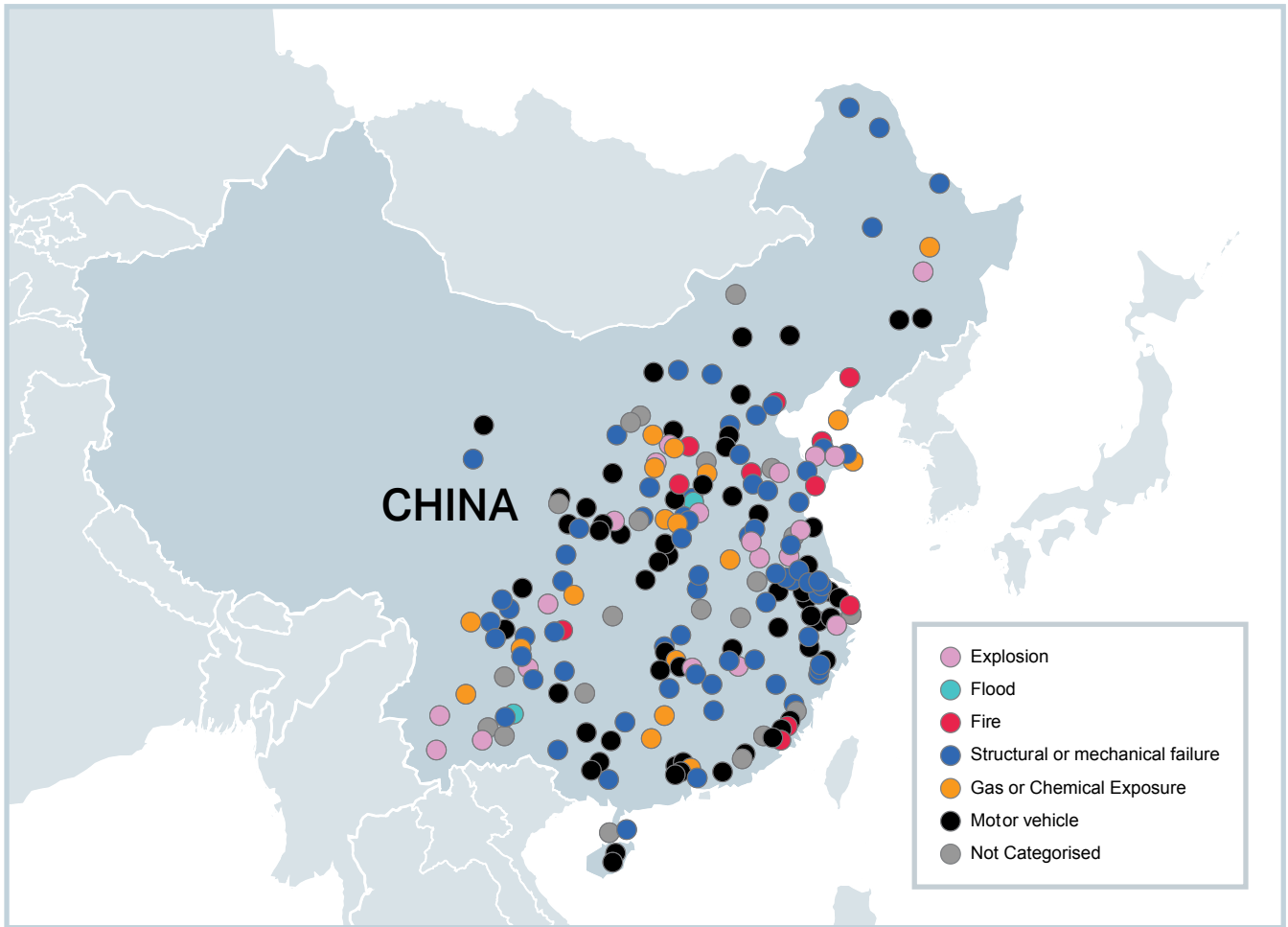


The China Labour Bulletin also publishes a Work Accident Map which can show various indicators of accidents and fatalities across the country. Page 86 shows a snapshot of this map showing data for 2018. The map shows updated data on a monthly basis, as and when official data are publicly released.



92 <https://clb.org.hk/content/work-safety>

Map 5. China Work Accident Map⁹³



Data Uses and Limitations

The data given by the China Labour Bulletin appear to be based on figures obtained from official sources, although that is difficult for the non-Chinese speaking authors of this report to verify, given challenges in finding official statistics on the subject. It appears that the main data sources are the websites of the Ministry of Emergency Management of the People's Republic of China, the National Bureau of Statistics of China, and the National Institute of Occupational Health and Poison Control.⁹⁴

Other academic papers⁹⁵ written on occupational health and safety in China portray a similar picture.

93 <https://maps.clb.org.hk/accidents/en>

94 http://www.chinasafety.gov.cn/xw/bndt/201804/t20180416_229390.shtml

95 See for example: Wu F, Chi Y. Regulatory system reform of occupational health and safety in China. *Ind Health*. 2015;53(3):300–306. doi:10.2486/indhealth.2014-0119, obtained online here: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4466881/>

Safe Work Australia

Australia

An Australian government statutory body.

Data Provider:	Safe Work Australia (SWA)
Organisation Type:	Australian government
Data Source Name and Website:	https://www.safeworkaustralia.gov.au/
Type of Data:	Mostly official statistics
Frequency of Release:	Regular throughout the year, as and when data are collected
Respondent:	Administrative (official) data, Australian Bureau of Statistics, and National Coronial Information Service
Unit of Measurement:	Various, including the number of people affected by different types of workplace injuries or deaths
Country Coverage:	Australia
Public Access:	Free to view or download
Latest Release:	2016; 2017-2018 preliminary overall figures in some areas

Description and Summary of Methodology

SWA is an Australian government statutory body established in 2008 to develop national policy relating to Work Health and Safety and workers' compensation. The organisation is jointly funded by the Commonwealth, state and territory governments through an Intergovernmental Agreement. The SWA works in partnership with governments, employers and employees to drive national policy development on Work Health and Safety and workers' compensation matters to:

- Develop and evaluate national policy and strategies
- Develop and evaluate the model WHS legislative framework
- Undertake research
- Collect, analyse and report data

SWA is a national entity that does not regulate Work Health and Safety laws. The Commonwealth, states and territories retain responsibility for regulating and enforcing Work Health and Safety laws in their own jurisdictions.

Indicators Covered

A core function of SWA work is developing and maintaining an evidence base to inform Work Health and Safety, and workers' compensation policy and practice. It also helps to significantly reduce the incidence of work-related death, injury and illness. SWA compiles and maintains three key national data collections including the:

- National Dataset for Compensation-based Statistics
- Work-related Traumatic Injury Fatalities collection
- Comparative Performance Monitoring programme

SWA publishes four key annual reports including the:

1. Work-related Traumatic Injury Fatalities report that provides detailed statistics on people who die each year from injuries caused by work-related activity, including both workers and bystanders.
2. Australian Workers' Compensation Statistics report that provides detailed workers' compensation statistics including trends over time, time lost from work and compensation paid.
3. Comparative Performance Monitoring report that provides trend analysis on Work Health and Safety and

workers' compensation schemes operating in Australia and New Zealand.

4. Key Work Health and Safety Statistics that provide information on work-related fatalities, work-related injury and disease and costs to raise awareness of work health and safety in Australia.

The main sources of the data SWA present include:

- Administrative data provided by jurisdictional authorities
- Fatality data from the National Coronial Information Service
- Employment data from the Australian Bureau of Statistics

Notable Findings

In 2015, 195 workers were fatally injured at work. Of the 195 fatalities, 187 (96%) involved male workers, and 115 of the 195 fatalities (59%) involved a vehicle. 53 workers (27%) were killed in a vehicle collision, 27 workers (14%) were killed when they were hit by moving objects, and 26 workers (13%) died after falling from a height.

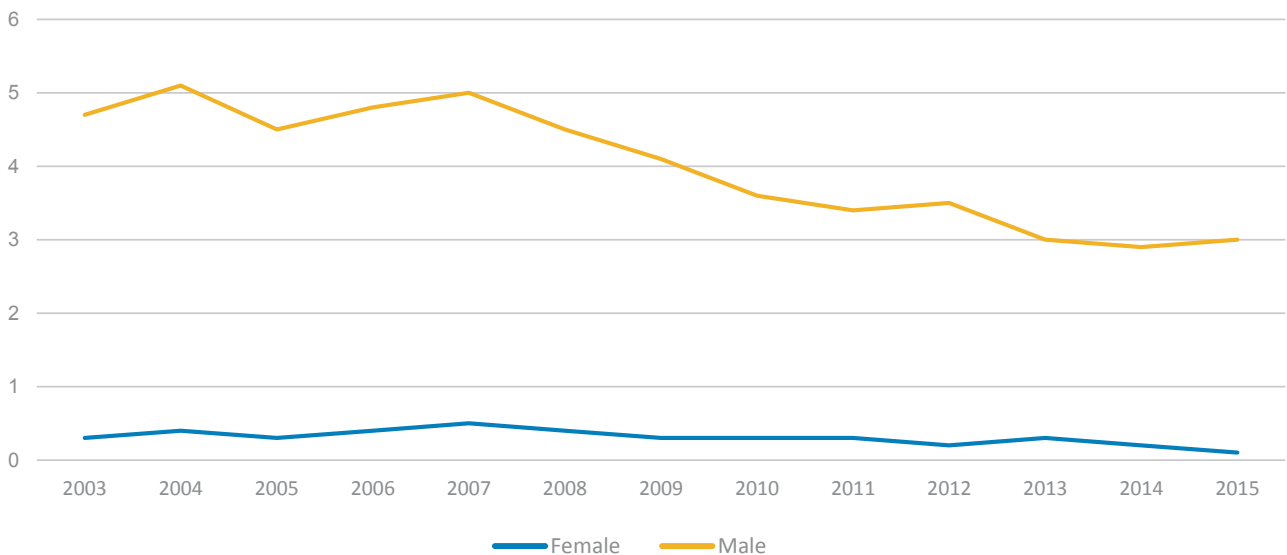
AUS\$480 million
The total amount of workers' compensation paid annually for **work-related mental disorders**.

AUS\$61.8bn
The cost of **work-related injury and disease** to the Australian economy.

Almost half (47%) of the worker fatalities occurred within the transport, postal & warehousing and agriculture, forestry and fishing industries.

In 2018, SWA published preliminary data showing there were 157 Australian workers killed at work, compared with 190 workers in 2017. These 2018 figures are preliminary and will be updated when more information becomes available.

Chart 16. Fatalities per 100,000 Workers in Australia⁹⁶



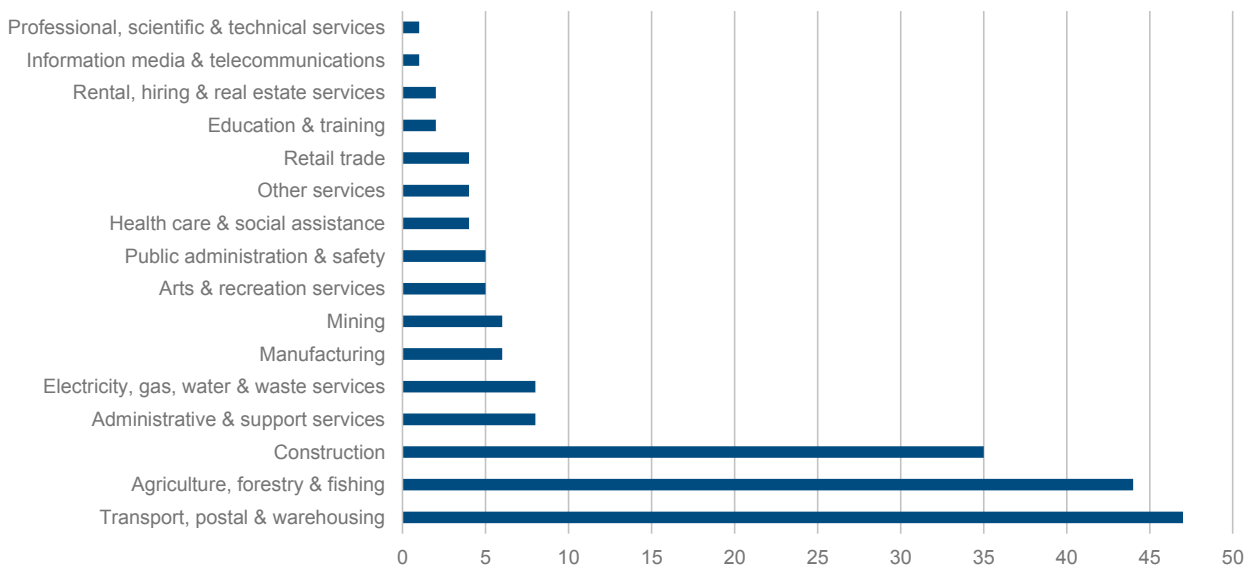
96 <https://www.safeworkaustralia.gov.au/system/files/documents/1702/work-related-traumatic-injury-fatalities.pdf>

Table 13. Worker Fatalities: Number by Mechanism of Incident, 2003 to 2015 (Selected Years, Sorted by 2015 Fatalities)

Mechanism of incident	2003	2005	2007	2009	2011	2013	2015	% of 2015 fatalities	% of total fatalities
Vehicle collision	108	103	129	112	78	69	53	27%	39%
Being hit by moving objects	40	29	38	31	19	24	27	14%	12%
Falls from a height	27	26	32	29	22	24	26	13%	11%
Being hit by falling objects	15	25	24	15	27	25	21	11%	9%
Rollover of non-road vehicle	9	11	12	12	11	15	13	7%	4%
Being trapped between stationary and moving objects	9	12	11	7	13	7	12	6%	4%
Being trapped by moving machinery	6	11	11	11	13	10	9	5%	4%
Contact with electricity	13	13	13	13	10	8	8	4%	4%
Drowning	4	2	5	8	3	4	5	3%	2%
Explosion	3	2	1	1	5	1	5	3%	1%
Being assaulted by a person or persons	12	7	8	4	3	6	4	2%	2%
Being hit by an animal	1	2	2	2	6	2	1	1%	1%
Other mechanisms	12	15	24	13	14	6	11	6%	5%
Total*	259	258	310	258	224	201	195	100%*	100%*

*The percentages shown in this table have been rounded to the nearest whole number, therefore the sum of percentage figures for each column may not equal the total.

Chart 17. Worker Fatalities, Number by Industry of Employer, 2016 (Total=182)



Data Uses and Limitations

This data source contains a rich dataset on Australian health and safety at work.

Workplace Safety and Health Reports (Singapore)

Singapore

The Singapore Ministry of Manpower/The Occupational Safety and Health Division (OSHD), “promotes workplace safety and health (WSH) at the national level. We work with employers, employees and other stakeholders to identify, assess and manage workplace safety and health risks to eliminate death, injury and ill-health.”⁹⁷

Data Provider:	Ministry of Manpower (MOM)
Organisation Type:	Singapore government entity
Data Source Name and Website:	https://www.osha.gov https://www.mom.gov.sg/about-us/divisions-and-statutory-boards/occupational-safety-and-health-division
Type of Data:	Mostly official statistics
Frequency of Release:	Annual, and regular updates throughout the year, as and when data are collected
Respondent:	Administrative (official) data, employers reporting
Unit of Measurement:	Various, including the number of people affected by different types of workplace injuries or fatalities
Country Coverage:	Singapore
Public Access:	Free to view or download
Latest Release:	2018

Description and Summary of Methodology

The Singapore Ministry of Manpower publishes much information about various aspects of work and labour, including passes and permits, employment practices, employment rights and conditions, and workplace health and safety information. The Ministry also publishes statistics and reports about various aspects of work. The Workplace Safety and Health (WSH) section includes details and information about several topics, including legal requirements, certification and registration, monitoring and surveillance of the workplace for hazards, accident reporting and work injury compensation. Statistics and reports are published regularly via the Ministry’s website, such as, for example, the detailed annual Workplace Safety and Health report.⁹⁸

According to the report, “data on workplace and work-related traffic injuries, dangerous occurrences and occupational diseases were collated from incident reports made by employers, occupiers and medical practitioners in fulfilment of their obligations under the Workplace Safety and Health Act and Workplace Safety and Health (Incident Reporting) Regulations. Medical and Hygiene Surveillance data were collated from reports submitted to the Occupational Safety and Health Division (OSHD) at MOM as well as industrial hygiene data from assessments conducted by OSHD and MOM. Business Under Surveillance information was obtained from OSHD and MOM. Employment data used in the computation of workplace fatal, injury and occupational disease incidence rates and data on the average weekly hours worked used in the estimation of man-hours worked were extracted from records within the Ministry of Manpower.”⁹⁹

In addition to reporting outcome indicators like workplace injury rates and occupational disease incidence rates, this report included leading indicators from prevention activities. The proactive activities include workplace Medical and Hygiene surveillance which monitors health risks from exposures to physical and toxic or harmful substances at work, and Business Under Surveillance (BUS), which guides poor performing companies to improve their WSH management system.

⁹⁷ <https://www.mom.gov.sg/about-us/divisions-and-statutory-boards/occupational-safety-and-health-division>

⁹⁸ <https://www.mom.gov.sg/-/media/mom/documents/safety-health/reports-stats/wsh-national-statistics/wsh-national-stats-2018.pdf?la=en&hash=C47676360704372708B0750A7E124FA5>

⁹⁹ Ibid.

Indicators Covered

Several indicators are covered in the Ministry’s reports, including workplace injuries and workplace fatalities (both by type of injury and by sector), and results of hygiene surveillance (noise exposure, chemical exposure levels and the number of man-days lost to workplace accidents by sector).

Notable Findings

The Construction sector remains the top contributor with 14 workplace fatal injuries. There were three fewer fatal injuries in both Manufacturing, and Transportation & Storage sectors in 2018 compared to 2017. However, fatal injuries in Wholesale Trade increased from three to five in 2018.

The total amount of work injury compensation awarded in 2018 was SGDollar 111.73 million (around Euro 73 million).

Table 14. Number of Workplace Injuries, Dangerous Occurrences and Occupational Diseases, 2018¹⁰⁰

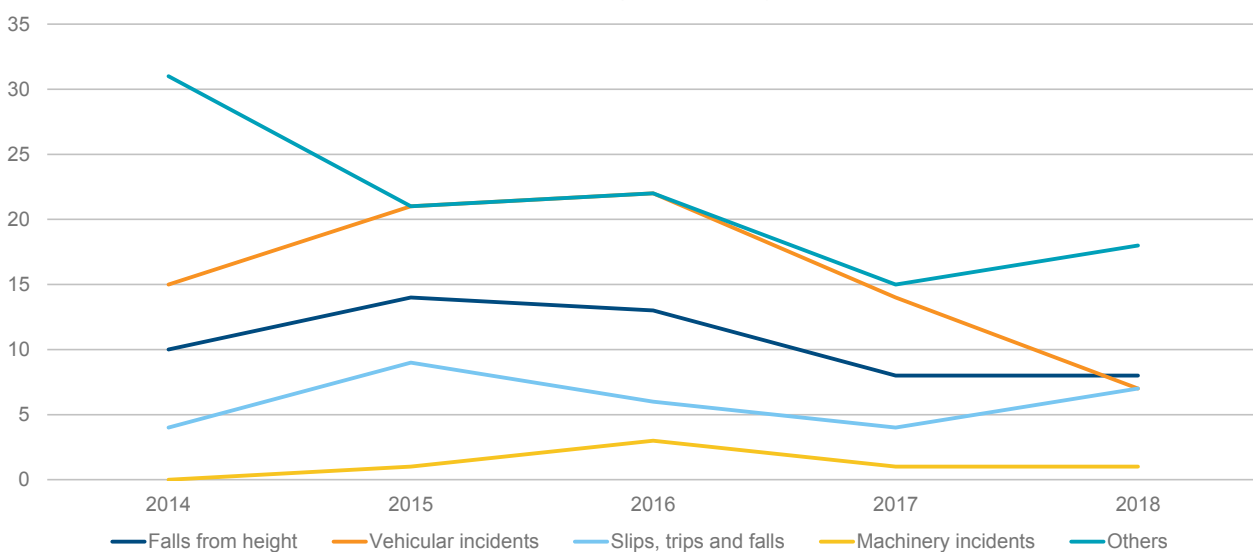
	Number of workplace injuries, 2018
Fatal Injuries	41
Major Injuries	596
Minor Injuries	12,173
Dangerous Occurrences	23
Occupational Diseases	563

In 2018, the top three causes of fatal injuries were falls from height; slips, trips and falls; and, vehicular incidents. Collectively, they accounted for 54% (22 cases) of all workplace fatal injuries in 2018.

Data Uses and Limitations

This data source is highly informative on occupational risk and safety issues in Singapore.

Chart 18. Causes of Workplace Fatal Injuries, 2014-2018



100 <https://www.mom.gov.sg/-/media/mom/documents/safety-health/reports-stats/wsh-national-statistics/wsh-national-stats-2018.pdf?la=en&hash=C47676360704372708B0750A7E124FA5>



Appendices



Appendix I: References

- Anhuanjia (2019). “最新数据：2018年生产安全事故4.9万起，死亡3.46万人。” Retrieved online at <https://www.anhuanjia.com/c/2019-01-11/515805.shtml>
- Afrobarometer (2019). “Afrobarometer.” [Database] Retrieved online at <https://afrobarometer.org/online-data-analysis>
- Bajwa, U., Gastaldo, D., Ruggiero, E. & Knorr, L. (2018). “The Health of Workers in the Global Gig Economy.” *Globalization and Health*, 14 (124). <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-018-0444-8>
- Centre for Research on the Epidemiology of Disasters (2019). “The International Disaster Database: EM-DAT.” [Database] Retrieved online at <https://www.emdat.be/>
- Centre for Research on the Epidemiology of Disasters (2019). “Natural Disasters 2018.” Retrieved online at <https://www.cred.be/sites/default/files/CREDNaturalDisaster2018.pdf>
- China Labour Bulletin (2019). “About us.” Retrieved online at <https://clb.org.hk/content/aboutus#aboutus-1>
- China Labour Bulletin (2018). “Work Safety.” Retrieved online at <https://clb.org.hk/content/work-safety>
- Department for Work & Pensions (2014). “Triennial Review Report: Health and Safety Executive.” Retrieved online at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275233/hse-function-form-governance-triennial-review.pdf
- European Agency for Safety and Health at Work (2017). “Work-related accidents and injuries cost EU €476 billion a year according to new global estimates.” *Safety and health at work – EU-OSHA*. Retrieved online at <http://www.icohweb.org/site/images/news/pdf/Safety%20and%20health%20at%20work%20-%20EU-OSHA%20-%20Work-related%20accidents%20and%20injuries%20cost%20EU%20%E2%82%AC476%20billion%20a%20year%20according%20to%20new%20global%20estimates%20-%202017-09-01.pdf>
- European Agency for Safety and Health at Work (2014). “European Survey of Enterprises of New and Emerging Risks – ESENER-2.” [Database] Retrieved online at <https://osha.europa.eu/en/surveys-and-statistics-osh/esener/2014>
- European Commission (2019). “Eurostat.” [Database] Retrieved online at <https://ec.europa.eu/eurostat/home?>
- European Commission (2018). “Eurobarometer.” [Database] Retrieved online at <https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm>
- European Food Safety Authority and European Centre for Disease Prevention and Control (2018). “The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic agents and Food-borne Outbreaks in 2017.” *EFSA Journal* 2018,16(12). <https://doi.org/10.2903/j.efsa.2018.5500>
- Eurostat (2018). “Accidents at Work Statistics.” Retrieved online at https://ec.europa.eu/eurostat/statistics-explained/index.php/Accidents_at_work_statistics#Number_of_accidents
- Fischhoff, B. & Kadavy, J. (2011). *Risk: A Very Short Introduction*. Oxford University Press.
- Global Burden of Disease Collaborative Network (2018). “Global Burden of Disease Study 2017 (GBD 2017).” Seattle, United States: Institute for Health Metrics and Evaluation (IHME).
- Global Disaster Research (2017). “Disaster Loss Data: Raising the Standard – A White Paper.” Zenodo. Retrieved online at <https://doi.org/10.5281/zenodo.1000126>
- Global Facility for Disaster Reduction and Recovery (2019). “Partnership Charter.” Retrieved online at <https://www.gfdr.org/sites/default/files/publication/partnership-charter.pdf>
- Global Facility for Disaster Reduction and Recovery (2019). “Open Data for Resilience Index Beta.” Retrieved online at <https://index.opendri.org/about.html>
- Global Facility for Disaster Reduction and Recovery (2019). “ThinkHazard!” Retrieved online at <http://thinkhazard.org/en/>
- Health and Safety Executive (2019). “HSE Statistics.” [Database] Retrieved online at <http://www.hse.gov.uk/STATISTICS/sources.htm>

International Labour Organization (2019). “World Statistic: The Enormous Burden of Poor Working Conditions.” Retrieved online at https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm

International Labour Organization (2019). “ILOSTAT.” [Database] Retrieved online at <https://ilostat.ilo.org/>

International Labour Organization (2017). “Global Database on Occupational Safety and Health Legislation (LEGOSH). ILO, Geneva.” [Database] Retrieved online at <https://www.ilo.org/dyn/legosh/en>

International Labour Organization (2004). “Occupational Safety and Health in Indonesia.” ILO Subregional Office for South-East Asia and the Pacific, Manila, Philippines.

Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness & the European Commission (2019). “Index for Risk Management.” Retrieved online at <http://www.inform-index.org/>

IOSH Magazine (2017). “Global Work Deaths Total 2.78 Million a Year.” Retrieved online at <https://www.ioshmagazine.com/article/global-work-deaths-total-278-million-year>

Kolbe, A.R., Hutson, R.A., Shannon, H., Trzcinski, E., Miles, B., Levitz, N., Puccio, M., James, L., Noel, J.R. & Muggah, R. (2010). “Mortality, Crime and Access to Basic Needs before and after the Haiti Earthquake: A Random Survey of Port-au-Prince Households.” *Medicine, Conflict and Survival*, 26(4), 281-297.

Lloyd’s Register Foundation (2019). “Talking Risk: Developing the Questionnaire for the Lloyd’s Register Foundation World Risk Poll.” Retrieved online at <https://www.lrfoundation.org.uk/en/funding/our-major-grants/world-risk-poll/>

Lloyd’s Register Foundation (2018). “Foresight Review on Global Safety Evidence.” Lloyd’s Register Foundation Report Series: No.2018.1v2. Retrieved online at <https://www.lrfoundation.org.uk/en/publications/download-the-foresight-review-on-global-safety-evidence/>

Marin-Ferrer, M., Vernaccini, L. & Poljansek, K. (2017). “Index for Risk Management INFORM Concept and Methodology Report Version 2017.” Luxembourg: Publications Office of the European Union. Retrieved online at http://publications.europa.eu/resource/cellar/b1ef756c-5fbc-11e7-954d-01aa75ed71a1.0001.02/DOC_1

Ministry of Manpower (2018). “Workplace Safety and Health Reports.” [Database] Retrieved online at <https://www.mom.gov.sg/about-us/divisions-and-statutory-boards/occupational-safety-and-health-division>

Muntaner, C. (2018). “Digital Platforms, Gig Economy, Precarious Employment, and the Invisible Hand of Social Class.” *International Journal of Health Services*, 48(4), 597–600. Retrieved online at <https://doi.org/10.1177/0020731418801413>

National Bureau of Statistics of China (2019). “National Data” [Database] Retrieved online at <http://data.stats.gov.cn/english/>

Occupational Health and Safety (2018). “U.S. Fatal Work Injury Rate Dropped in 2017.” Retrieved online at <https://ohsonline.com/articles/2018/12/18/fatal-work-injury-rate-dropped-in-2017.aspx>

Organisation for Economic Co-operation and Development (2018). “Risks that Matter. Main Findings from the 2018 OECD Risks that Matter Survey.” Retrieved online at <https://www.oecd.org/social/risks-that-matter.htm>

Safe Work Australia (2019). “Statistics and Research.” [Database] Retrieved online at <https://www.safeworkaustralia.gov.au/statistics-and-research>

Schuessler, R. (2016). “‘Ash to cash’: Montserrat gambles future on the volcano that nearly destroyed it.” *The Guardian*, 28 January, 2018. Retrieved online at <https://www.theguardian.com/world/2016/jan/28/montserrat-volcano-british-territory-geothermal-energy-tourism-sand-mining>

TASS (2018). “Occupational Fatalities: Over 1,700 Russians died from workplace injuries last year.” TASS, 13 November, 2018. Retrieved online at <https://tass.com/society/1030624>

Underwriters Laboratories Inc. (2018). “UL Safety Index™” [Database] Retrieved online at <https://ulsafetyindex.org/>

Underwriters Laboratories Inc. (2018). “Quantifying the Global State of Safety 2018 Edition: The UL Safety Index”, <https://ULSafetyIndex.org>

United Nations Office for Disaster Risk Reduction (2019). “Global Assessment Report on Disaster Risk Reduction 2019.” United Nations, New York. <https://doi.org/10.18356/f4ae4888-en>. And <https://www.unisdr.org/we/inform/publications/66715>

United Nations Office for Disaster Risk Reduction (2017). “Sendai Framework Data Readiness Review 2017 – Global Summary Report.” United Nations Office for Disaster Risk Reduction

United Nations Office for Disaster Risk Reduction (2019). “Sendai Framework for Disaster Risk Reduction.” Retrieved online at <https://www.unisdr.org/we/coordinate/sendai-framework>

United Nations Office for Disaster Risk Reduction: PreventionWeb (2019). “Sendai Framework Indicators.” Retrieved online at <https://www.preventionweb.net/sendai-framework/sendai-framework-monitor/indicators>

United Nations Office for Disaster Risk Reduction: PreventionWeb (2019). “Sendai Framework monitor data now publicly available.” Retrieved online at <https://www.preventionweb.net/news/view/63059>

United Nations Office for Disaster Risk Reduction: PreventionWeb (2019). “Measuring Implementation of the Sendai Framework.” Retrieved online at <https://sendaimonitor.unisdr.org/>

United Nations Office for Disaster Risk Reduction: PreventionWeb (2015). “Disaster Risk.” Retrieved online at <https://www.preventionweb.net/risk/disaster-risk>

United Nations Office for Disaster Risk Reduction: PreventionWeb (2015). “Climate Change.” Retrieved online at <https://www.preventionweb.net/risk/climate-change>

United States Department of Labour (2019). “Occupational Safety and Health Administration.” [Database] Retrieved online at <https://www.osha.gov>

United States Department of Labour (2019). “Bureau of Labor Statistics – Injuries, Illnesses, and Fatalities.” [Database] Retrieved online at <https://www.bls.gov/iif/>

World Bank and Global Facility for Disaster Reduction and Recovery (2017). “Methodology Report: Updated for ThinkHazard! Version 2.” Retrieved online at http://thinkhazard.org/static/0b4a348d7ec1ebefdbfcac0ec20f2493/documents/thinkhazard-methodology-report_v2_0.pdf

World Bank (2014). “Understanding Risk in an Evolving World: Emerging Best Practices in Natural Disaster Risk Assessment.” Washington, DC: World Bank Group. <http://documents.worldbank.org/curated/en/907841468181459620/Understanding-risk-in-an-evolving-world-emerging-best-practices-in-natural-disaster-risk-assessment>

World Economic Forum (2019). “The Global Risks Report 2019.” Retrieved online at <https://www.weforum.org/reports/the-global-risks-report-2019>

World Health Organization (2019). “Global Health Observatory.” [Database] Retrieved online at <http://www.who.int/gho/en/>

World Health Organization (2019). “World Health Statistics 2019: Monitoring Health for the SDGs, Sustainable Development Goals.” World Health Organization. Retrieved online at <https://apps.who.int/iris/handle/10665/324835>

World Health Organization (2019). “Global Health Estimates.” [Database] Retrieved online at https://www.who.int/healthinfo/global_burden_disease/en/

World Health Organization (2019). “WHO Mortality Database.” [Database] Retrieved online at https://www.who.int/healthinfo/mortality_data/en/

World Meteorological Organization & United Nations International Strategy for Disaster Reduction (2012). “UN System Task Team on the Post-2015 UN Development Agenda: Disaster Risk and Resilience.” https://www.un.org/en/development/desa/policy/untaskteam_undf/thinkpieces/3_disaster_risk_resilience.pdf

Wu, F., & Chi, Y. (2015). “Regulatory System Reform of Occupational Health and Safety in China.” *Industrial Health*, 53(3), 300–306

Appendix II: Photographs Credits

Photographs Credits:

Source: <https://unsplash.com>

Pages: Front & Back Cover Jezael Melgoza, 4-5 Zheng Hong Chua, 7 Walter Otto, 8 Sherman Yang, 10 Nick Karvounis, 11 Thomas Willmott, 12-13 Yanni Panesa, 14-15 Anthony Ginsbrook, 19 Anna Dziubinska, 20 Elevate, 22-23 Abi Ismail, 26-27 Andrew Leu, 29 Random Institute, 31 Fachri Mochamad, 32 Doran Erickson, 34-35 Annie Spratt, 36-37 Ninno Jack jr, 39 Maarten van den Heuvel, 40 Javier Borrego, 42-43 Andre Benz, 44 Richard Catabay, 48-49 William McCue, 51 Andre Benz, 54 Roman Fox, 57 Kelly Sikkema, 59 Kat Maryschuk, 60 Midhun George, 64 Iwzee, 68-69 Ban Yido, 71 Vera Gorbunova, 72-73 Luca Capioni, 74 Jordan Rowland, 76-77 Yulia Chinato, 78 Victor, 83 Annie Spratt, 85 Christie Kim, 92-93 Marco Bianchetti.

Source: <https://pixabay.com>

Page: 67



Lloyd's Register
Foundation

GALLUP®