Biostatistics and Biometrics
Open Access Journal
ISSN: 2573-2633

Research Article
Volume 10 Issue 4 - December 2021
DOI: 10.19080/BBOAJ.2021.10.555792

Biostat Biom Open Access J

A note on occupational accidents in Portugal from 2000 to 2018

Ana Dias[1] and Carla Santos[2]*

[1]*Department of Engineering of Polytechnic, Institute of Beja, Portugal*

[2]*Department of Mathematics and Physical Sciences of Polytechnic Institute of Beja, Portugal*

Submission: June 23, 2021; **Published:** December 14, 2021

***Corresponding author:** Carla Santos, Department of Mathematics and Physical Sciences of Polytechnic Institute of Beja. Center for Mathematics and Applications - FCT- New University of Lisbon, Portugal

Abstract

For economic and other reasons, there is a pressing need to improve occupational safety and health conditions in the European Union. In Portugal, this need is even more urgent as it has been verified that occupational accidents number and incidence rate are higher than in most of the European Union countries. The uneasiness caused by these values determined their reduction as the main objective of the Portuguese National Strategy for the Promotion of Safety and Health at Work for the years 2015-2020. Previous studies on occupational accidents in Portugal, presented different approaches to the problem, almost always focusing on accidents in specific activities. Considering the impact that occupational accidents have on the health and lives of workers, but also for companies and the country, it is also pertinent and relevant to look at the global present situation of occupational accidents in Portugal and compare Portugal's indicators with those of the European Union. To this end, an analysis of occupational accidents in Portugal and in European Union was carried out, using the most recent data provided by PORDATA.

Keywords: Accidents at work; Occupational safety and health; Accidents incidence rate

Abbreviations: ACT: Authority for the Working Conditions; EEC: European Economic Community; EC: European Community; ESAW: European Statistics on Accidents at Work; EU: European Union; FFMS: Francisco Manuel dos Santos Foundation; ILO: International Labour Organization; OSH: Occupational Safety and Health

Introduction

In 2016, approximately 2.4 million non-fatal accidents with at least four days off work and 3,182 fatal accidents were reported in European Union (EU) Member States. In addition to these, 2013 statistics show that 7.9% of the workforce suffered from occupational health problems, of which 36% resulted in absence from work for at least four days [1]. The economic impact of work-related illnesses and accidents represents a cost of at least 476 billion euros per year in the EU [2]. The costs associated with work-related illnesses and accidents are high, both for companies and countries, and it is estimated that the costs of occupational accidents and diseases, for most countries, are between 2.6% and 3.8% of gross domestic product (GDP) [3]. These statistics reflect the reality of the EU in recent times regarding occupational safety and health, reinforcing the urgency of improvement, but for more than a century, occupational accidents have been considered a serious global public health problem. This concern promoted the implementation of measures to improve working conditions and, with special emphasis on developed countries, triggered the regulation of these conditions and the responsibilities of employers.

Although the improvement of working conditions is a reality in many countries, technological development and the growing complexity of many production processes add new risks and hazards for workers, and put workers' health and lives at risk, with inevitable repercussions in labour productivity and in the economy.

Thus, occupational safety and health is critical for workers, companies, workers unions, national institutes for occupational safety and health and countries, since those countries with better conditions of safety at work perform better in terms of competitiveness [4,5]. The current approach to occupational health and safety, therefore, goes beyond surveillance of the environment and working conditions, aiming to guarantee the sustainable integrity of the entire production process, including workers [6].

"*Occupational safety and health (OSH) is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment*" [7]

The European Union's commitment to improving labour policies began in 1951, with the treaty that established the European Coal and Steel Community. Later, with the Treaty of Rome, this commitment was extended to all workplaces. In 1987, the Single European Act emphasized the relevance of OSH in the workplace [8]. Since 1992, with the enactment of Directive 89/391/EEC, approved by the European Union (EU) in 1989, containing measures to improve OSH in all European member states, significant efforts were made by all EU members to adopt and implement these regulations for the prevention of accidents at work, to better protect the safety and health of the worker [9]. In 2000, another decisive step was taken to consolidate the European Union's commitment to improve working conditions, with the Lisbon European Council having developed the strategy "Creating more and better jobs" which involves the definition of actions and objectives to be followed [8]. In a global perspective and in the time horizon of the third decade of the 21st century, the importance of OSH was recognized in the 2030 Agenda for Sustainable Development, whose 17 goals, aimed at eradicating poverty and promoting sustainable development, were adopted by all UN member states in 2015 [10].

With the collection, recording and notification of data relating to accidents and occupational diseases, it is possible to prevent accidents and occupational diseases, identifying and studying their causes to develop preventive measures [11]. Thus, in decision-making for planning, development, and implementation of "occupational safety and health" measures to protect workers and minimize hazards and risks in the workplace, statistical data play a key role both at the company level, in the OSH management systems, and at the national level, in state policies, as shown by ILO by highlighting the role of labour statistics as an information and analysis tool [10]. Working conditions, obligations and associated policies asymmetries and heterogeneity across different countries, as well as a non-harmonized accident recording and notification systems, make it extremely difficult to support a databased comparison of realities of different countries, making it impossible to obtain a picture of the evolution of occupational safety and health on a global scale. However, these difficulties are not only related to the quality and reliability of data available on safety and health at work, since even countries with a well-established statistical data collection system cannot have a rigorous idea due to underreporting of occurrences, related to the safety and health of workers, particularly regarding work-related illnesses and non-fatal occupational accidents [12].

In literature we can find some studies about occupational accidents in Portugal with different approaches. Occupational accidents causes and factors, in specific activities, were studied by Antão et al. [13] and Jacinto et al. [14]. On Marques et al. [15], we can find an analysis of drugs and alcohol influence on the risk of occupational accidents. Silva & Jacinto [16] performed a typification of the accidents in extractive industry. Santos [17] intended to contribute to improving the effectiveness of occupational prevention, with the identification of predictors of fatal work-related accidents. Macedo & Silva [18] analysed the number of work-related accidents in Portugal, between 1992 and 2001, noting that periods in which there is a decrease in accident rates are followed by periods in which it increases and concluding that it is not possible to find evidence that the strategies implemented are being successful in consistently reducing occupational accidents in Portugal. Macedo & Silva [18] estimated that, in Portugal, 0.14% of all accidents are fatal. Comparing the number of occupational accidents and their respective incidence rate in Portugal with those in other European Union countries, it has been found that over the years most EU members have lower values than Portugal. The concern with these values determined their reduction as the main objective of the National Strategy for the Promotion of Safety and Health at Work for the years 2015-2020 [19]. About the standardization of measures related to the safety and health of workers at work, in the member states of the European Union, Directive No. 89/391/EEC, of the Council of the EEC, amended by Directive No. 2007/30/EC, of the European Parliament and of the Council, refers to the introduction of measures to encourage improvements in the safety and health of workers at work. According to Article 4 of Directive 2007/30/EC, "Member States shall take the necessary measures to comply with this Directive by 31 December 2012".

Assuming that the statistical analysis of occupational accidents is a good way to describe and assess the evolution of a country's accident profile, as suggested by Rantanen et al. [20] and being pertinent and relevant to update the characterization of the situation in Portugal, with the data available to date, in this work we statistically address and analyse the issue of occupational accidents, in Portugal, from 2000 to 2018. Furthermore, for a comparative analysis of accidents at work that occurred after the application of the Directive No. 2007/30/EC in all Member States, we calculated the incidence rates of occupational accidents in Portugal and in EU countries, from the year 2013. For this purpose, we carried out a survey of the occupational safety and health data available in the PORDATA database.

PORDATA

PORDATA is a database of Contemporary Portugal, organized and developed by the Francisco Manuel dos Santos Foundation (FFMS - Fundação Francisco Manuel dos Santos). In line with FFMS' commitment to disseminating among the population fundamental

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

information about Portugal, PORDATA focuses on the collection, compilation, systematization, and dissemination of data on multiple areas of society, for Portugal and its municipalities, and for the European countries. FFMS and PORDATA provide a public service to the Portuguese society, by collecting and organizing the data available, making it as clear and accessible as possible and providing it without any cost to the user. The statistics reported in PORDATA present information on demographic, social and economic conditions, health, education, work, government spending, culture, sport, and others. These statistics derive from official and certified sources, to fulfil the commitment that motivated the PORDATA project, which is "to respond to the need for credible information, which is often scant and difficult to access for a wider public, regardless of the public's ability to deal with statistics", this project has the cooperation of over sixty official agencies, with particular emphasis to Statistics Portugal.

Occupational accidents indicators

Descriptive analysis of statistical data in the field of occupational health and safety is an important approach, since, as mentioned by Loeb et al. [21]., this type of analysis, allows the characterization of a phenomena, obtaining information on "who, what, where, when, and to what extent", contributing to the understanding of the phenomenon and allowing the "use of that knowledge to prioritize possible causal mechanisms, generate hypotheses and intervention strategies, interpret the findings of causal research, diagnose problems for practitioners and policymakers to address, and identify new issues to study". In descriptive analysis, absolute frequency is a component of basic data collection, useful in some data visualizations as well as to show the most commonly occurring data piece, however, these absolute frequencies does not allow for a rigorous representation of the phenomenon in study. Rather, the interest often lies in knowing the proportion that a given set of statistical units represents in relation to the whole, this is, knowing the relative frequency, given by the quotient between the absolute frequency and the total of studied units [22].

In studies on occupational health and safety, the number of accidents, injuries or occupational diseases has analytic interest if it is put into context. This is, it is necessary to look at the frequency of these occurrences as a function of people's exposure to risk, so that it is possible to draw more useful conclusions from statistical analyses and to favour comparability whether these comparisons are made between countries, activities or over time. The usefulness of the numbers related to occupational accidents is, therefore, fundamentally based on the analysis and interpretation of relative frequencies and rates, that are relative indicators of the number of accidents (non-fatal or fatal) to the corresponding working population. These indicators give the likelihood that someone had an accident [8]. European Statistics on Accidents at Work defines an accident at work as a discrete event that occurs during organizational activity and results in physical or mental injury to the worker [8]. The distinction between fatal and non-fatal accidents is made as follows. Fatal accidents at work are those that lead to the victim's death within one year of the accident . In the framework of ESAW non-fatal workplace accidents , sometimes also called serious accidents at the workplace, are those that involve at least four complete days of absence from work. The fatal accidents incidence rate (FAI) indicates the relative importance of fatal accidents at work in the working population. This indicator is calculated as follows [8]:

FAI=(Number of fatal accidents)/(Number of employed persons in the covered population) ×100000

To be more rigorous in characterizing the situation of occupational accidents in Portugal and for comparison purposes with EU data, it is also important to highlight serious accidents since, in Portugal, only serious and fatal accidents have mandatory notification to the labour authority.

It is established that an occupational accident evidences a particularly serious situation if this work-related accident in which a worker or self-employed worker who works in other people's facilities suffers a serious physical injury that requires medical treatment specialized in health establishment [23]. Since the legislation in Portugal does not have a typification for serious accidents, the Authority for Working Conditions (ACT) has a publication, with practical guidelines as an example, that clarifies and specifies a set of situations, that may be considered as a reference for the action of the ACT, based on the United Kingdom law "Reporting of Injuries, Diseases and Dangerous Occurrences Regulations" [24].

The non-fatal accidents incidence rate (NFAI) , or serious accidents at the workplace rate, indicates the relative importance of non-fatal accidents at work in the working population. This indicator is calculated as follows (ESAW, 2013):

NFAI=(Number of non-fatal accidents)/(Number of employed persons in the covered population) ×100000

Materials and Methods

The approach adopted in this study is based on the descriptive analysis of statistical data related to occupational accidents in Portugal, recorded between 2000 and 2018. Statistical data on the employed working population and on fatal and non-fatal occupational accidents, in Portugal and in the EU, were obtained from the PORDATA database. To highlight the situation of the incidence rate of occupational accidents in Portugal compared to the situation in the EU, the incidence rates of fatal and serious accidents were calculated to analyse differences between Portugal and EU.

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

Results and Discussion

Since year 2000 working age population in Portugal had been decreasing as well as the number of employees. In 2000 the working age population was 5041300 and in 2018 it was 4866700. Considering the total of the working age population, the percentage of employees in Portugal from 2000 to 2018 increased from 75,6% to 78,1%. Analysing separately by gender we find different realities, with an increase in the percentage of employed women, from 67,5% in 2000 to 74,9% in 2018, and a decrease in the percentage of employed men, from 84,1% in 2000 to 83% in 2018 (Figure 1). As can be seen in Figure 2, also regarding the different age groups, the evolution of the working age population showed different trends in the period between 2000 and 2018. Of note is the sharp decrease registered in the younger age group, which include people under 25 years old, in the opposite direction, it was a notable growing trend in the age groups between 35 and 54 years old. Despite many fluctuations during the period, there was a decrease in the number of occupational accidents in Portugal, from 234192 accidents in 2000 to 19,5761 in 2018, which represents a decrease of more than 15% (Figure 3). When analysing the number of serious work accidents in Portugal, there was a decrease from 172599 accidents in 2000 to 130430 in 2018, which represents a decrease of more than 24% (Figure 4). Fatal occupational accidents decreased significantly, from 368 accidents in 2000 to 103 accidents in 2018, which corresponds to a decrease of more than 70% (Figure 5).

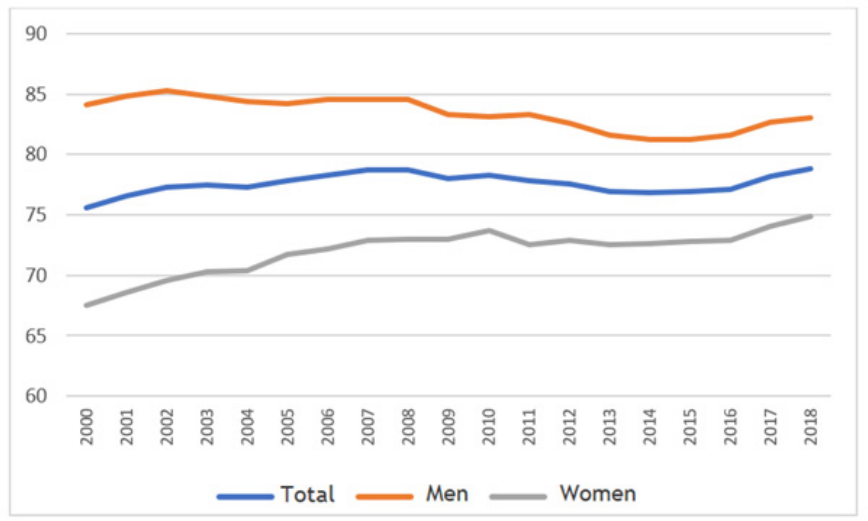

Figure 1: Percentage of Employed population in working age population in Portugal (Data from PORDATA).

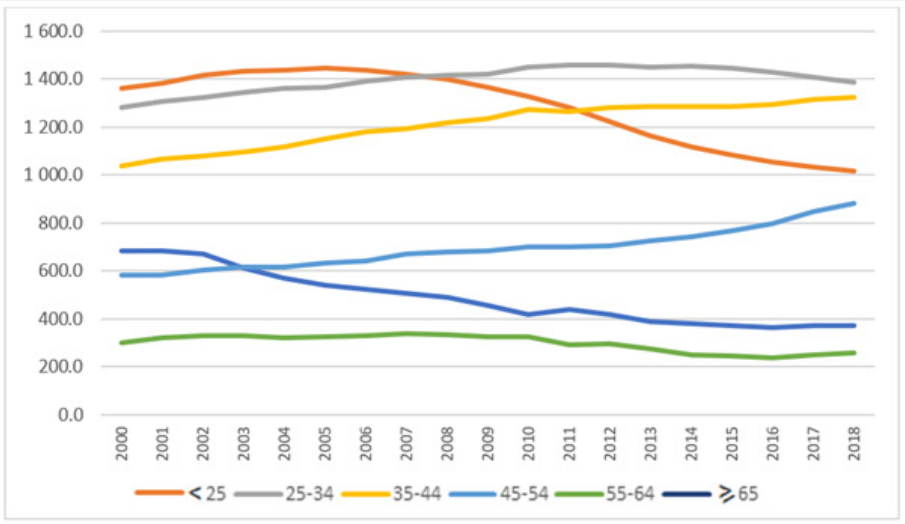

Figure 2: Working age population in Portugal, by age group (Data from PORDATA).

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

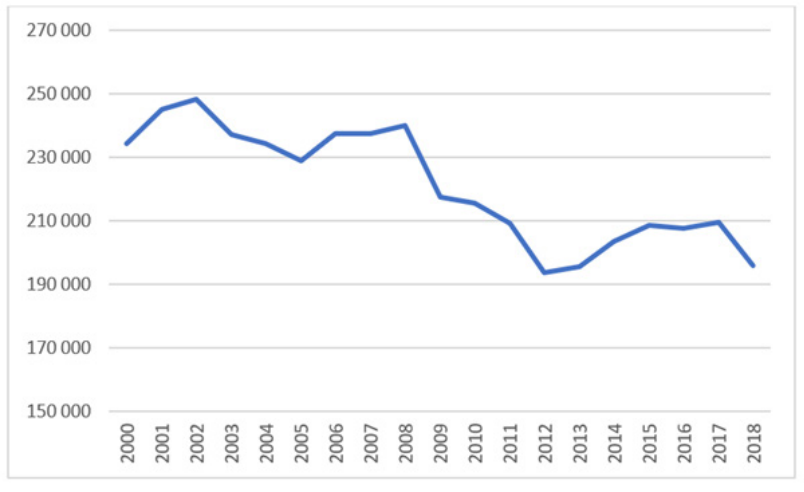

Figure 3: Total of occupational accidents in Portugal (Data from PORDATA).

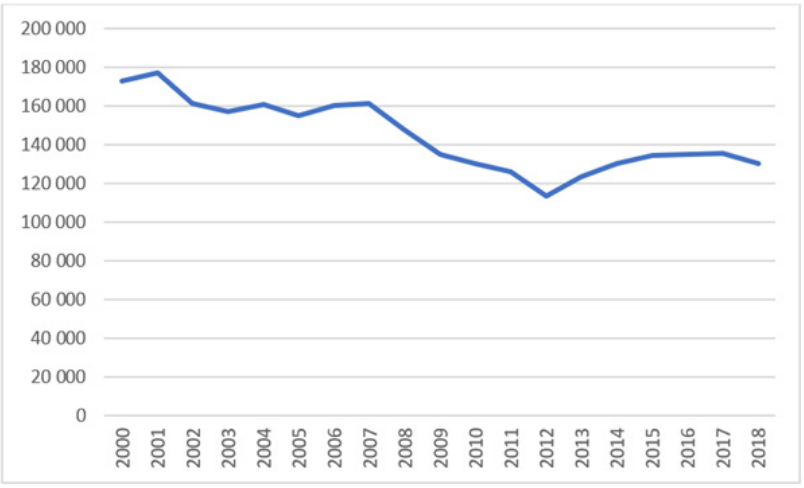

Figure 4: Serious occupational accidents in Portugal (Data from PORDATA).

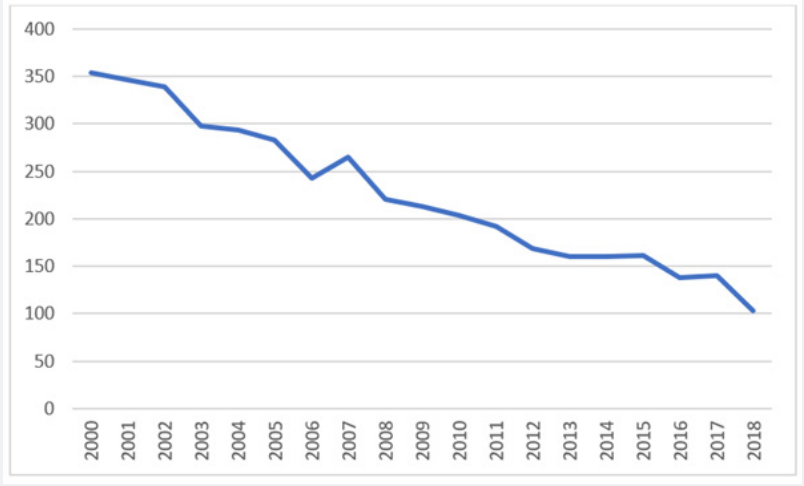

Figure 5: Fatal occupational accidents (data from PORDATA)

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

In the 19 years covered by this study, there were a total of 4198379 occupational accidents in Portugal, corresponding to an average number of 220967 accidents per year. When we carried out the same analysis for fatal occupational accidents, we found that a total of 4426 accidents occurred in this period, corresponding to an average number of 233 fatal accidents per year. As evident in Figure 6, during the entire period between 2000 and 2018, the male gender had a much higher number of accidents at work than the female gender. In this period the annual average number of occupational accidents among women was 7 and for men the average number was 212. This discrepancy, between men and women, is in line with what is seen in most countries, since, as highlighted by Stergiou-Kita et al. [25] men are overrepresented in higher risk occupational activities such as construction, mining, firefighting, and others, having greater exposure to health and safety risks.

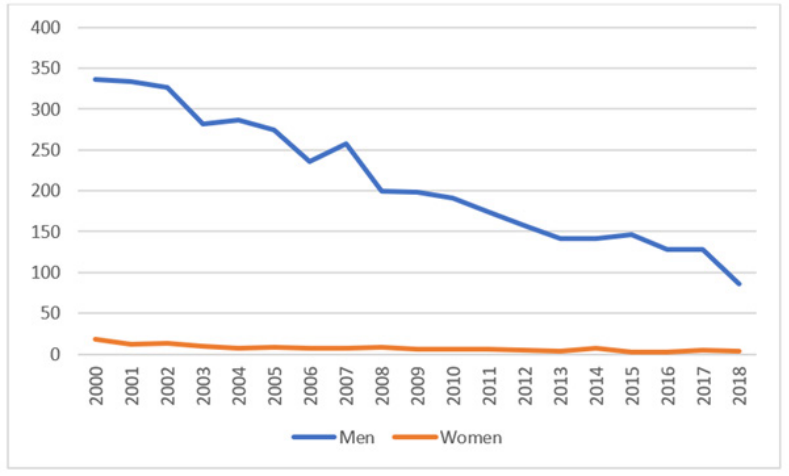

Figure 6: Fatal occupational accidents in Portugal, by gender (Data from PORDATA).

Analysing occupational accidents according to the economic sector (Figure 7), it was found that the primary sector was the sector that presented the lowest number of occupational accidents, and with a reduction of more than two thousand cases in the period from 2000 to 2018. The secondary sector verified a decrease in the number of accidents, 141418 accidents in 2000 and 79626 accidents in 2018, and the tertiary sector verified an increase, 76850 accidents in 2000 to 108913 accidents in 2018. Data from the secondary sector reveal a decrease of almost 44% in the number of occupational accidents from the year 2000 to 2018. Data from the tertiary sector reveal an increase of more than 40% in the number of occupational accidents from the year 2000 to 2018. Regarding the number of fatal accidents by economic sector (Figure 8), there was a decrease in all sectors from the year 2000 to 2018.

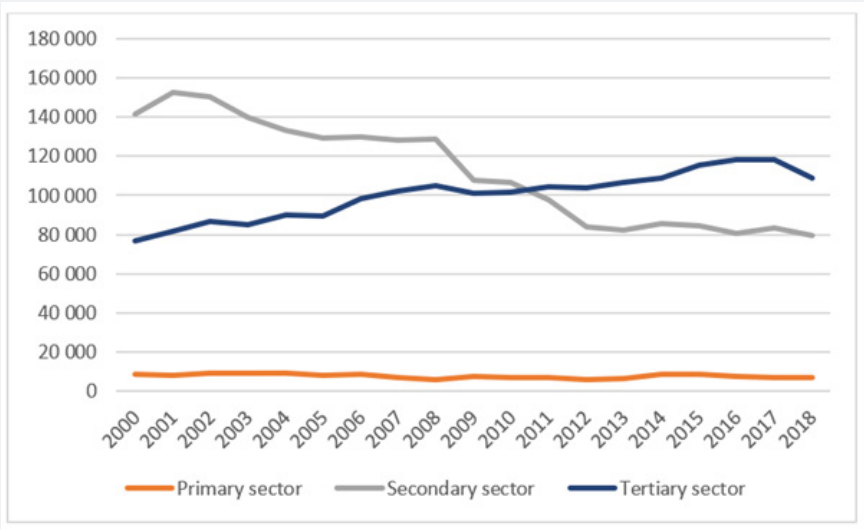

Figure 7: Occupational accidents in Portugal, by economic sector (Data from PORDATA)

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

For a more rigorous representation of the phenomenon of occupational accidents in Portugal and for the purposes of comparison with the values recorded in the EU, it is important to address relative measures of the number of occupational accidents, that is, the incidence rates. Considering occupational accident rates per 100000 employees, between 2000 and 2018 it was found that the non-fatal accidents incidence rate decreased from 4638.2 to 4020.3, and that the fatal accidents incidence rate decreased from 7.3 to 2.1. Figure 9 shows the evolution of the non-fatal occupational accidents incidence rate between 2000 and 2018. Regarding the fatal accidents incidence rate, its decline was verified in almost the entire period between 2000 and 2018. In 2018, it reaches an incidence rate very close to 2 deaths per 100,000 elements of the employed population (Figure 10). For the comparative analysis of the situation of occupational accidents in Portugal and in the EU, we considered data from the year 2013, as this is the year from which all Member States would have already introduced the measures referred to in Directive No. 89/ 391/EEC, of the Council of the EEC, amended by Directive No. 2007/30/EC. Due to the lack of more recent data, the study period was, again, until 2018, however, for this year of 2018 the figures referring to the EU do not include France, as these data are not available.

Calculating the incidence rate for each year, in period from 2013 to 2018, we can see that Portugal has an incidence rate much higher than the EU average, registering values that almost double the values registered in the other countries of the European Union (Table 1). For fatal occupation accidents in Portugal, the calculations we carried out show incidence rates well above the mean values for the EU, revealing for Portugal, once again, incidence rates of fatal accidents at work twice as high as those registered in the EU (Table 2).

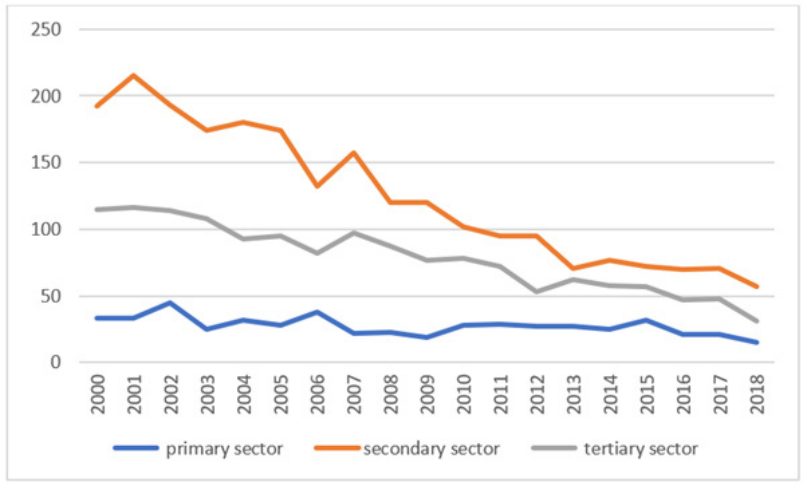

Figure 8: Fatal occupational accidents in Portugal, by economic sector (Data from PORDATA).

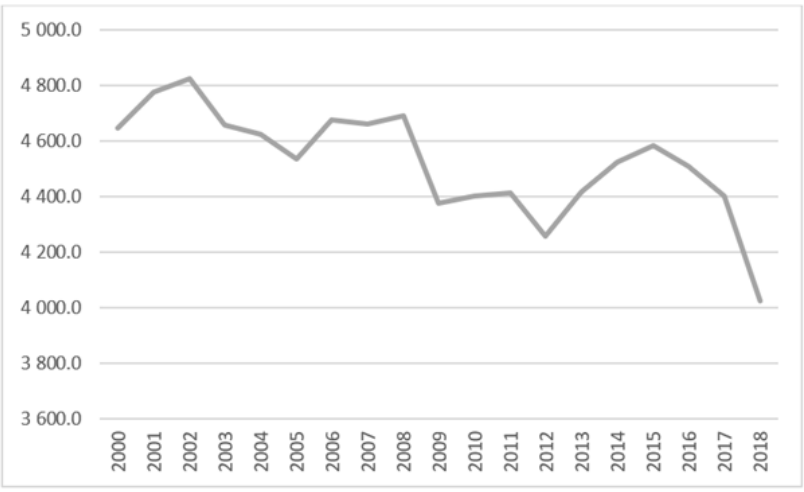

Figure 9: incidence rate in Portugal (Data from PORDATA).

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

Table 1: Serious occupational accidents incidence rate (Data from PORDATA).

Years	Portugal	EU28 except Portugal
2013	2780	1449
2014	2892,6	1471,3
2015	2954,2	1447,9
2016	2932,2	1459,2
2017	2848,4	1439,4
2018	2680,05	1089,56*

Table 2: Fatal accidents incidence rate (Data from PORDATA).

Years	Portugal	EU28 except Portugal
2013	3,61	1,67
2014	3,56	1,70
2015	3,54	1,73
2016	3,00	1,57
2017	2,94	1,53
2018	2,12	1,32*

Conclusion

Over the years, records of occupational accidents in Portugal have revealed a worrying reality, with high levels of accidents, both in absolute terms, and when comparing the incidence rates with those of other countries of the European Union. Given this, the reduction of occupational accidents in Portugal, was established to the main objective of the National Strategy for the Promotion of Safety and Health at Work for the years 2015-2020. In view of these objectives, we considered it important to make an up-to-date picture of the situation of occupational accidents with the most recent data available. For this, we used information on occupational accidents between 2000 and 2018, using the data available in PORDATA. The reality revealed does not differ greatly from that which occurred in Portugal in previous years, and the high number of occupational accidents continues to occur. In the 19 years covered by our study, there were a total of 4198379 occupational accidents in Portugal, corresponding to an average number of 220967 accidents per year. For fatal occupational accidents, we found a total of 4426 accidents occurred in this period, corresponding to an average number of 233 fatal accidents per year. For the purposes of comparing the numbers of accidents at work in Portugal and in the countries of the European Union, we used data from 2013, as this was the first year after the implementation period of standardization of measures related to the safety and health of workers at work in the member states of the European Union. The calculation of the incidence rates, for each year, for Portugal and the EU28 countries reveals that, both in the case of serious accidents and in the case of fatal accidents, the incidence rate in Portugal is close to double the average rate of other countries of the European Union.

Acknowledgments

This work is partially funded by National Funds through the FCT - Fundação para a Ciência e a Tecnologia, I.P., under the scope of the project UIDB/00297/2020 (Center for Mathematics and Applications).

Conflict of interest

It is hereby declared that this manuscript represents an original document and that there are no conflicts of interest for the authors or any economic interest.

References

1. EUROSTAT (2021) Accidents at work statistics (ESAW). Fatal and non-fatal accidents at work, by sex, age groups, injury groups and NACE Rev. 2 economic sectors. Eurostat, 2021.
2. EU OSHA (2017) Comparação internacional do custo dos acidentes e doenças relacionadas com o trabalho. Agência europeia para a Segurança e Saúde do Trabalho: 1–10.
3. Chagas D (2015) Os custos dos acidentes de trabalho e doenças profissionais.
4. Sanmiquel L, Rossell J M, Vintro C (2015) Study of Spanish mining accidents using data mining techniques. Safety Science 75: 49-55.
5. ILO (2003) Safety in numbers: Pointers for global safety culture at work. Geneva. International Labor Organization.
6. Sanmiquel L, Bascompta M, Rossell JM, Anticoi HF, Guash E (2018) Analysis of Occupational Accidents in Underground and Surface Mining in Spain Using Data-Mining Techniques. Int J of Environmental Research and Public Health 15(3): 462.
7. Alli BO (2008) Fundamental principles of occupational health and safety. International Labour Office – Geneva: ILO.

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792

8. ESAW (2013) European Statistics on Accidents at Work (ESAW): Summary methodology. Luxembourg: Publications Office of the European Union.
9. Morillas RM, Rubio Romero JC, Fuertes AA (2013) Comparative analysis of occupational health and safety risk prevention practices in Sweden and Spain. J Safety Research, 47: 57-65.
10. ILO (2020) Quick guide on sources and uses of statistics on occupational safety and health. Geneva. International Labor Organization.
11. ILO (1996) Recording and notification of occupational accidents and diseases. An ILO code of practice. Geneva. International Labor Organization.
12. ILO (2019) Safety and health at the heart of the future of work. Geneva. International Labor Organization.
13. Antão P, Almeida T, Jacinto C, Soares CG (2008) Causes of occupational accidents in the fishing sector in Portugal. Safety Science 46(6): 885-899.
14. Jacinto C, Canoa M, Guedes Soares C (2009) Workplace and organisational factors in accident analysis within the Food Industry. Safety Science 47: 626-635.
15. Marques PH, Jesus V, Olea SA, Vairinhos V, Jacinto C (2014) The effect of alcohol and drug testing at the workplace on individual's occupational accident risk. Safety science 68: 108-120.
16. Silva JF, Jacinto C (2012) Finding occupational accident patterns in the extractive industry using a systematic data mining approach. Reliability Engineering and System Safety 108: 108-122.
17. Santos A (2017) Work-related accidents in Portugal: Contributions to the improvement of prevention effectiveness. PhD Thesis-Universidade do Algarve.
18. Macedo AC, Silva IL (2005) Analysis of occupational accidents in Portugal between 1992 and 2001. Safety Science 43: 269-286.
19. Governo de Portugal (2015) Resolução do Conselho de Ministros n.º 77/2015 – Aprovação da Estratégia Nacional para a Segurança e Saúde no Trabalho 2015-2020. Diário da República, 1.ª série — N.º 183 — 18 de setembro de 2015.
20. Rantanen J, Kauppinen T, Toikkanen J (2001) Accidents at work. In: Work and Health Country Profiles: Country Profiles and National Surveillance Indicators in Occupational Health and Safety. Finnish Institute of Occupational Health, Helsinki: 42-48.
21. Loeb S, Dynarski S, McFarland D, Morris P, Reardon S, Reber S (2017) Descriptive analysis in education: A guide for researchers. (NCEE 2017-4023). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.
22. Santos C (2018) Estatística Descritiva: Manual de auto-aprendizagem – 3rd ed., Ed. Silabo – Lisboa.
23. ACT (2015) A Autoridade para as Condições do Trabalho e os Inquéritos de Acidente de Trabalho e Doença Profissional. Autoridade para as Condições do Trabalho: 1-19.
24. HSE SE (2013) A brief guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR). Occupational Health Law: 347-357.
25. Stergiou Kita M, Mansfield E, Bezo R, Colantonio A, Garritano E, et al. (2015) Danger zone: Men, masculinity and occupational health and safety in high-risk occupations. Safety science, 80: 213-220.

DOI: 10.19080/BBOAJ.2021.10.555792

How to cite this article: Ana D, Carla S. A note on occupational accidents in Portugal from 2000 to 2018. Biostat Biom Open Access J. 2021; 10(4): 555792. DOI: 10.19080/BBOAJ.2021.10.555792