



Türkiye’de Şehir ve Ülke Perspektifinden Ölümlü İş Kazaları Fatal Occupational Accidents in Turkey from a City and Country Perspectiv

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Öz

İş kazaları ve iş kazası sonucu ölüm vakaları, iş barışını tehdit eden en kritik unsurlar arasında yer alıyor. İş kazaları birçok çalışanın yaralanmasına, sakat kalmasına ve hatta ölümüne neden olmaktadır. Türkiye’de 2021 yılında iş kazaları nedeniyle 1394 çalışan hayatını kaybederken, 3123 çalışan da sürekli iş göremez hale geldi, yani ömür boyu sakat kaldı. Ayrıca on binlerce çalışan iş kazalarında yaralanmış, geçici iş göremezlikle sonuçlanmış, kendilerini ve ailelerini duygusal sıkıntılara maruz bırakmıştır. İş kazalarının büyük ölçüde önlenbilir olaylar olması, iş kazalarının neden olduğu ölüm, uzuv kaybı, ağır yaralanma gibi olayları daha da trajik hale getirmektedir. Özellikle çok ölümlü iş kazaları, ülkelerin insan hayatına verdiği önemin bir göstergesi olarak kabul edilmektedir. İnsan hayatı her türlü ekonomik değerinin üzerindedir. Türkiye, ölümlü iş kazası görülme oranları açısından Avrupa’da en kötü performansa sahip ülkedir. Tüm bu nedenlerle, bu çalışmada Türkiye’de 2012-2022 yılları arasında meydana gelen ölümlü iş kazaları, İşçi Sağlığı ve İş Güvenliği Meclisi verileri ile analiz edilmiştir. Ayrıca 2012-2021 yıllarına ait Sosyal Güvenlik Kurumu (SGK) verileri İşçi Sağlığı ve İş Güvenliği Meclisi verileri ile karşılaştırılmış ve ölümlü iş kazalarının resmi kayıtlara geçip geçmediği incelenmiştir. Son olarak, resmi SGK verileri kullanılarak, Türkiye ve AB-27 ülkeleri iş kazası sonucu ölüm vakalarının sayısı ve ölümlü iş kazası görülme oranları açısından karşılaştırılmıştır. Çalışma şu sonuçları ortaya koymuştur; Türkiye’de ölümlü iş kazalarının bir kısmı kayıt altına alınamamaktadır, İSG kanunundan sonra iş kazası sonucu ölüm vakalarının sayısı artmıştır, AB-27 ülkeleri ile karşılaştırıldığında, Türkiye hem iş kazası sonucu ölüm vakalarının sayısı hem de ölümlü iş kazası görülme oranı açısından en kötü performansa sahiptir.

Anahtar Kelimeler: Ölümlü İş Kazaları, Türkiye, İşçi Sağlığı ve İş Güvenliği Meclisi

ABSTRACT

Occupational accidents and death cases resulting from occupational accidents are among the most critical factors threatening work peace. Occupational accidents cause injury, disability and even death for many employees. In 2021, 1394 employees died due to occupational accidents in Turkey, while 3123 became permanently incapacitated, that is, disabled for life. In addition, tens of thousands of employees were injured in occupational accidents, resulting in temporary incapacitation and exposing them and their families to emotional distress. The fact that occupational accidents are preventable events to a large extent makes the incidents caused by occupational accidents, such as death, loss of limb, and severe injury due to occupational accidents, even more tragic. Especially multiple-fatality occupational accidents are accepted as an indicator of the importance countries place on human life. Human life is above any economic value. Turkey is the country with the worst performance in Europe in terms of fatal occupational accident incidence rates. For all these reasons, in this study, fatal occupational accidents in Turkey in 2012-2022 were analyzed with the Health and Safety Labour Watch-Turkey (HESA Labour Watch) data. In addition, Social Security Institution (SSI) data for 2012-2021 was compared with the HESA Labour Watch data, and it was examined whether fatal occupational accidents were officially recorded. Finally, using official SSI data, Turkey and EU-27 countries were compared regarding the number of death cases resulting from occupational accidents and fatal occupational accident incidence rates. The study revealed the following results; Some of the fatal occupational accidents cannot be recorded in Turkey, After the OSH law, the number of death cases as a result of occupational accidents increased, compared to the EU-27 countries, Turkey has the worst performance in terms of both the number of death cases as a result of occupational accidents and the fatal accidents incidence rate.

Keywords: Fatal Occupational Accidents, Turkey, Health and Safety Labour Watch-Turkey

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INTRODUCTION:

Technology and production systems have become more complex, and the ambition to earn more, the increasing importance of competition in terms of the sustainability of companies with globalization, and the neglect of the human element in production systems; makes working environments much more dangerous for employees. According to the International Labour Organization (ILO) report dated 2019, 300,000 workers die from occupational accidents yearly, 2.48 million from occupational diseases, and 374 million are exposed to non-fatal occupational accidents. Again, according to the ILO, these numbers tend to increase yearly (ILO, 2019). ILO and EUROSTAT data show that countries such as Germany, Finland, the United Kingdom, the United States of America, Japan, and Canada, where Occupational Health and Safety (OHS) measures are strictly implemented, have improved OHS indicators (such as the number of occupational accidents, the number of deaths due to occupational accidents). This situation reveals that OHS indicators deteriorate much faster in countries with poor OHS performance, such as India, Russia, China, Pakistan, Bangladesh, Algeria, including Turkey (Ceylan, 2021).

Although occupational accidents have negative consequences for both the state and businesses, the ones most affected by occupational accidents are the employees. Human life is above any economic value. As a result of occupational accidents, workers can be injured, become temporarily or permanently disabled, and become disabled for life. However, the most crucial result of occupational accidents for employees is workers' death. The fact that occupational accidents are preventable events with a very high rate (98%) reveals how tragic death and disability events are (Ceylan, 2016). In addition, if the employee is the head of the family, the death of this employee due to an occupational accident can cause significant financial and moral problems for the family. If occupational accidents result in disability, the person may lose their working power entirely or partially, or they may lose their earning power by working in the profession before the accident and become unable to do their main job.

The death, disability, or injury of an employee due to an occupational accident can cause many financial and moral problems for the employer. In addition to the psychological distress experienced by the employer, occupational accidents can also cause high financial costs. First of all, fatal accidents negatively affect the reputation of companies in the eyes of society. The cessation of production due to occupational accidents and the failure of companies to fulfill their obligations on time can cause a loss of confidence and various compensations. Other adverse consequences of accidents for employers include treatment costs, court costs, compensation, temporary and/or permanent incapacity benefits, penalties, loss of workforce, working days and production, repair, and maintenance of damaged equipment, re-supply of raw materials, and many other costs (Ceylan, 2014).

Occupational accidents also bring severe losses for countries. According to the ILO, the cost of occupational accidents and diseases to countries is estimated to be between 1% and 6% of a country's gross domestic product. While this rate is close to 1% of the OHS mechanism, it is around 6% in countries where the system does not work correctly (ILO, 2019). According to official figures, Turkey's gross domestic product is 15 trillion 6 billion 574 million TL for 2022 (TUIK, 2023). Considering Turkey's OHS performance, it can be said that the financial loss caused by occupational accidents and diseases is more than 4%, even from an optimistic point of view. This reveals that the financial loss for 2022 is over 600 billion TL. In addition, fatal occupational accidents, especially multiple fatalities, also affect the reputation of countries in the international community. The number of registered work-related deaths in Turkey is 1394 for 2021 (SSI, 2021). This value is more than one-third of the cases in all European Union countries. In terms of fatal occupational accident incidence rate, it is seen that Turkey exhibits the worst performance compared to the European Union countries (EU-27), and when

compared with the countries reporting data to the ILO, it has the third worst performance after India and Russia (Ceylan, 2021). Multiple fatality occupational accidents are unacceptable events in today's world. For example, the death of 301 miners in the mining accident that occurred in Soma in 2014 caused a severe problem in terms of moral values, on the one hand, and caused Turkey to be perceived as a country that does not value human life on the other hand (Ceylan, 2021).

1. Literature Review

There are many studies in the literature regarding occupational accidents in Turkey. Here, some of the most important studies will be summarized. Dülger (2023) examined the criminal responsibilities of the employer's representative arising from occupational accidents and occupational diseases in line with the obligations within the scope of the law, based on the increasing rates of occupational accidents and disease today. Öner and Solak (2020), on the other hand, researched applications based on "Programmable Logic Controller" depending on the increasing automation systems and determined that the human-machine interface systems minimized human errors and interventions, thus reducing the probability of employees suffering occupational accidents. In their study, Calis and Büyükakıncı (2021) presented Turkey's situation in occupational accidents by comparing the data of ILOSTAT and SSI between 2013-2016. They also emphasized the inadequacy of the measures taken regarding the table of occupational accidents in Turkey. Aşkın and Öztürk (2022) statistically examined occupational accidents and occupational diseases in furniture sector workers; They determined that furniture sector employees do not use personal protective equipment regularly, carelessness is the most significant cause of accidents, and they are exposed to accidents during the cutting process. In their study, Şen and Dursun (2018) made various evaluations about occupational accidents in Turkey; Comparing the European Union (EU) countries and Turkey in terms of occupational accidents, they concluded that the number of fatal occupational accidents in Turkey is relatively high compared to EU countries. In their study, Gizlenci and Aybek (2021) tried to statistically determine the factors that are effective in the formation of occupational accidents in agricultural enterprises; they revealed that the accidents were caused by agricultural machinery, agricultural tractors, electric shock, animals, and other vehicles, respectively. Yıldız and Özdemir (2021) tried to reveal the relationship between Turkey's development level and occupational accident statistics; For this purpose, they examined the relationship between the level of development indicators such as gross domestic product (GDP), average years of education and Human Development Index (HDI) data with fatal and non-fatal occupational accidents using simple regression analysis. Demir and Özay (2022) compared Turkey and various EU countries regarding general accident incidence rate and fatal occupational accident incidence rate based on the 2013-2019 occupational accident data obtained from SSI and EUROSTAT. They found that Turkey's fatal occupational accident incidence rate value for the examined period was much higher than the EU average. In addition, they examined the relationship between the data obtained for Turkey in general and the occupational accident data in the health sector using correlation analysis. Özdemir and Serin (2022) analyzed the data on occupational accidents and diseases in Turkey based on the SSI data and found that fatal occupational accidents in Turkey occurred in the construction sector. Öztürk (2022), on the other hand, classified 35 ILO member countries, including Turkey, with the clustering method in terms of death rate as a result of occupational accidents and compared each cluster with other clusters in terms of the death rate due to occupational accidents. In their study, Öztürk and Akın (2021) examined whether the age of the casualty affected the occupational accident rate and occupational accident death rate values using the Pearson Chi-Square Relationship Analysis method, and they revealed that the age of the casualty affected both the occupational accident rate and occupational accident death rate values. Tezdoğan and Taylan (2009) analyzed the shipyard accidents in Turkey statistically by comparing them with the data of Hong Kong, Singapore, the USA, and England, and they revealed that this sector is in a better condition than some sectors such as the construction sector,

contrary to the common belief in the society in terms of fatal occupational accidents. Koç and Akbıyık (2011) explained the importance of occupational accidents by revealing the economic costs of occupational accidents; they have opened up for discussion on solutions to reduce the accidents. Ceylan (2012) evaluated the accidents occurring in the mining, metal, and construction sectors by using the accident data of the SSI for 2004-2010. Altın et al. (2017) in the construction sector in our country, classified occupational accidents caused by formwork and scaffolding, put forward the causes and emphasized the effects of these accidents on the construction sector and the country's economy. In their study, Çoban and Kartal (2016) tried to observe the interaction between the decisions taken to ensure economic development-occupational health and safety and the number of fatal occupational accidents and to determine what measures can be applied to ensure occupational health and safety in Turkey. For this purpose, considering the 2002-2013 period, the policies put into practice to ensure occupational health and safety in Turkey, China, England, Germany, and the United States, the number of fatal occupational accidents and national income (GDP) figures in these countries as a result of these policies. they examined comparatively. Öztürk (2022) on the other hand, examined occupational accidents and subsequent injuries based on provinces in Turkey. In the studies of Yılmaz and Yıldırım (2022) occupational accidents that took place in the last five years were evaluated in order to reduce occupational accidents in the education sector, to create healthy and safe educational environments, to increase awareness of the school administrative structure about OHS services, to remind legal obligations and to adopt a proactive approach in schools. Baygeldi and Gerdan (2019) on the other hand, examined the Supreme Court decisions on fatal occupational accidents in Turkey between 2013 and 2018 and revealed that a causal link should be established between the damage caused and any action or attitude of the employer in order for the employer to be liable for an accident. Asadi et al. (2018) analyzed 6052 work accidents in a cross-sectional study and found that employees with more than one year of seniority were less likely to have fatal accidents. They also found that fatalities due to electrocution were higher than other causes of accidents. Bravo et al. (2022) found in their study in Chile, using occupational accident records between 2015 and 2019, that older workers were more likely to have fatal work accidents than younger workers. Ayob et al. (2018) conducted a descriptive study to identify common fatal occupational injuries associated with the Malaysian construction industry, as well as their causes and accident-related factors and concluded that manufacturing, agriculture, forestry, logging and fishing are the riskiest occupational sectors in Malaysia, followed by construction. Benavides et al. (2005) analyzed the annual occupational accident data of Austria, Finland, France, Spain and Sweden and found that the occupational accident rates of these countries have decreased. González-Delgado et al. (2015), in their study in Mexico, found a link between demographic characteristics, working environment and workplace conditions. Lilley et al. (2020) found high mortality rates among male workers aged 70-84 years in their study. Wergeland et al. (2011) emphasized in their study in Norway that fatal accidents are 44% higher than those shown in official statistics and that this is due to inadequate recording of accidents, especially in transportation. Perotti and Russo (2018) analyzed fatal accidents in Italy between 1982 and 2015 and found that the sector with the highest fatalities was construction and that most of the fatalities were caused by traumatic brain injury. In a study on healthcare workers, Braun et al. (2021) found that suicide had a more significant share in fatal work accidents. Woolford et al. (2017) emphasized that approximately 317 million fatal cases occur annually worldwide and stated that this number is still high.

Occupational accidents and diseases are recorded in Turkey as well as in the rest of the world. According to law No. 6331, the employer reports occupational accidents and diseases in Turkey to the Social Security Institution (SSI) within three working days through the OHS Clerk program (Official Gazette of the Republic of Turkey, 2012). The main reason for this is to find the causes of occupational

accidents and to prevent the repetition of similar negativities by making the necessary corrections. Accident reports are analyzed both at the enterprise and national levels. While the analysis made at the enterprise level aims to reveal the sources of risk-generating risk of that enterprise, the analysis made on the national database aims to find the failing aspects of the OHS mechanism at the national level and to create a reliable decision support system for decision makers. For this purpose, in this study, to draw attention to the human dimension of occupational accidents, fatal occupational accidents that occurred in Turkey in 2012-2022 were analyzed with the data of the Health and Safety Labour Watch-Turkey (HESA Labour Watch). In addition, SSI data for 2012-2021 were compared with the HESA Labour Watch data, and it was examined whether fatal accidents could be officially recorded. Finally, using official SSI data, Turkey and EU-27 countries were compared regarding the number of death cases resulting from occupational accidents and fatal occupational accident incidence rate.

2. Materials and Methods

Studies conducted to obtain statistical results about cases are called Descriptive Research (Yıldırım & Asal, 2012). "Descriptive Research Model" was used in this study. The SSI data used in the study were obtained from the SSI occupational accident and occupational diseases statistical annuals. EUROSTAT is the official statistical agency of the European Union. The EUROSTAT data, which constitutes the other official data, were similarly accessed from the official website of EUROSTAT. Since the number of Occupational Accident Death Cases and Fatal occupational accident incidence rate values prepared by EUROSTAT for EU-27 countries are on the site until 2020, a comparison could not be made for 2021 and 2022. EU-27 countries, Germany, Italy, Spain, France, Netherlands, Belgium, Austria, Denmark, Finland, Greece, Luxembourg, Poland, Sweden, Ireland, Czechia, Malta, Portugal, Croatia, Slovakia, Hungary, Slovenia, Romania, Estonia, Lithuania, Bulgaria, Latvia and Cyprus. Health and Safety Labour Watch-Turkey (HESA Labour Watch); is a non-governmental organization that has operated since 2011 and records fatal occupational accidents (Health and Safety Labour Watch-Turkey, 2023). Finally, the HESA Labour Watch data were obtained from the fatal occupational accident reports on the official website of HESA Labour Watch. The "Fatal occupational accident incidence rate" parameter used in the study is an essential benchmark for comparing countries' OHS performances. It shows how many of every 100,000 employees working in a country die due to occupational accidents in a calendar year. It is calculated with the following formula:

$$\text{Fatal Occupational accident incidence rate} = \left(\frac{\text{Number of fatal occupational accident}}{\text{Number of employee}} \right) * 100.000$$

(1)

The data for the EU-27 countries were taken directly from the EUROSTAT, and the data for Turkey was calculated according to the above formula based on the SSI data.

3. Employee Deaths Caused by Occupational Accidents in Turkey

The number of death cases resulting from occupational accidents, which have been officially recorded in Turkey since 2012, is given in Table-1. The OHS law, which aims to include all employees within the scope of OHS legislation, was adopted in 2012. It aims to gradually expand its coverage to include all employees as of 2013. As of January 1, 2024, the OHS legislation will also cover civil servants working in the public sector, and the OHS legislation will encompass all employees (Official Gazette of the Republic of Turkey, 2012). Therefore, the number of Civil Servants who died due to occupational accidents is not included in Table-1. The provided data, which are SSI data, represent the number of people who died as a result of occupational accidents. This includes both workers in WORKER status within the scope of Article 4-1/a of Law No. 5510 (SSI) and employees with the status of CRAFT within the scope of Article 4-1/b of Law No. 5510 (Insurance Self-Employed Institution). Between 2012 and 2021, the highest number of deaths was recorded in 2017 and 2014. After the OHS law came into force, the number of deaths due to occupational accidents increased in all years. Compared to 2012, when there was no OHS law, the number of deaths increased by 120% in 2017 and 119% in 2014. The years

with the lowest increase were 2019, with 54%, with 68% in 2015. This situation can be interpreted in two different ways. Either the expected benefit from the OHS law, which was enacted in 2012 and came into effect gradually since 2013, could not be achieved, or the improvements in OHS performance were not reflected in the figures since fatal accidents were recorded at a higher rate with the obligation to employ an occupational safety specialist after the OHS law.

Table 1. Number of Work-related Deaths in Turkey – Official Social Security Institution

Years	SSI	Insurance Self-Employed Institution	TOTAL
2012	744	---	744
2013	1360	---	1360
2014	1626	---	1626
2015	1252	---	1252
2016	1405	---	1405
2017	1633	3	1636
2018	1541	1	1542
2019	1147	2	1149
2020	1231	9	1240
2021	1382	12	1394
2022	1517	3	1520

Table-2 shows the number of death cases resulting from occupational accidents recorded by HESA Labour Watch and the SSI data. HESA Labour Watch reports annually the fatal occupational accident data it collects nationwide through its volunteers or the press. Therefore, there may be fatal occupational accidents that cannot be recorded in HESA Labour Watch. For this reason, they express the number of deaths reported as "at least." HESA Labour Watch has been continuing this work since 2012. When the table is analyzed, it is seen that in the 11 years between 2012 and 2022, 14868 employees lost their lives due to occupational accidents, according to SSI, while this number was at least 19807 according to HESA Labour Watch. In other words, SSI could not record at least 4939 worker deaths. These figures reveal unregistered cases, at least 33% of the number registered by SSI. Moreover, it shows that the informality rate has increased recently (2019-2021). This is a significant problem. Not only is it impossible to determine the cause of an unrecorded accident and prevent its recurrence, but also the lack of an accurate national database prevents the creation of appropriate policies.

Table 2. Number of Deaths as a Result of Occupational accidents in Turkey - Comparison of HESA Labour Watch and SSI Data

Years	HESA Labour Watch	SSI	Difference	% Difference
2012	878	744	134	≈ % 18
2013	1235	1360	-125	≈ % -9

2014	1886	1626	260	≈ % 16
2015	1730	1252	478	≈ % 38
2016	1970	1405	565	≈ % 40
2017	2006	1636	370	≈ % 23
2018	1923	1542	381	≈ % 25
2019	1739	1149	590	≈ % 51
2020	2427	1240	1187	≈ % 96
2021	2170	1394	776	≈ % 56
2022	1843	1520	323	≈ % 18
TOTAL	19807	14868	4939	≈ % 33

Even fatal occupational accidents cannot be recorded to a large extent in Turkey. The main reason for this is unregistered employment. According to the Turkish Statistical Institute (TUIK), the unregistered employment rate in Turkey is 33% (Yanıcı Erdal, 2019). In other words, one out of every three employees is unregistered. Therefore, it is impossible to record an accident suffered by an already unregistered employee. Apart from this, many factors, such as employees' ignorance of their rights arising from OHS Law No. 6331 and inadequate penalties, prevent the recording of occupational accidents.

4. Comparison of Turkey and Eu-27 Countries in Terms of Fatal Occupational Accidents

Table-3 shows the number of deaths from occupational accidents recorded in Turkey, 27 European Union member states, and all EU-27 countries. The data given for Turkey are official SSI data. The data given for EU-27 countries are official data from EUROSTAT (Eurostat, 2023). When Table 3 is analyzed, the number of fatalities recorded only in Turkey in 2012-2020 is approximately 39% of the total fatalities recorded in EU-27 countries. When compared with each of the EU-27 countries individually, Turkey ranks first by far. Even compared to Germany, whose population is close to Turkey's and whose number of workers is about 1.5 times that of Turkey, the number of fatalities due to occupational accidents in Turkey in 2020 is 3.34 times higher than in Germany. In the 9 years of 2012-2020, 11954 fatalities occurred in Turkey, followed by France with 5452 fatalities, Italy with 4941 fatalities, Germany with 4050 fatalities, and Spain with 2868 fatalities. Moreover, the data used for Turkey in this table are SSI data. According to HESA Labour Watch, at least 33% of deaths due to occupational accidents are not recorded. Turkey's OHS performance in terms of fatal occupational accidents will become more apparent when this is considered.

Table 3. Number of Deaths as a Result of Occupational Accidents

COUNTRIES	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU - 27 Countries (TOTAL)	3757	3408	3562	3643	3336	3272	3332	3408	3358	not available
Turkey	744	1360	1626	1252	1405	1636	1542	1149	1240	1394
France	576	553	589	595	595	585	615	803	541	674
Italy	604	517	522	543	481	484	523	491	776	601
Germany	516	466	527	477	450	430	397	416	371	435

Spain	299	270	280	344	296	317	323	347	392	376
Poland	350	277	263	304	243	270	211	184	190	220
Romania	276	269	272	281	236	241	235	227	179	172
Portugal	169	160	160	161	138	140	103	104	131	93
Austria	144	143	126	134	109	96	124	106	85	105
Czechia	113	113	118	132	106	95	123	95	108	88
Bulgaria	98	87	117	95	81	93	87	85	88	70
Hungary	65	55	81	86	83	80	79	84	64	82
Belgium	49	66	52	64	64	59	77	52	54	47
Lithuania	58	58	55	45	44	33	37	37	38	49
Slovakia	53	55	40	55	45	43	40	33	32	32
Ireland	43	40	47	49	43	41	34	41	41	34
Sweden	45	35	40	34	37	44	50	36	24	39
Croatia	54	29	26	30	33	37	44	43	45	35
Denmark	47	39	38	28	34	28	37	39	39	not available
Greece	26	22	28	28	33	32	37	35	33	not available
Netherlands	35	42	45	35	36	43	45	37	23	25
Latvia	35	31	41	26	38	21	30	29	22	38
Finland	36	22	35	35	35	23	25	29	24	19
Slovenia	22	20	25	23	14	16	15	15	17	14
Estonia	14	20	16	17	26	8	12	15	10	13
Luxembourg	14	6	10	13	22	10	16	12	7	7
Greek Section of Cyprus	9	9	5	4	5	2	9	10	16	5
Malta	7	4	4	5	7	1	4	3	8	9

Not all countries have the same population structure. Therefore, the number of employees is very different. Therefore, looking only at the number of fatalities due to occupational accidents may not be an accurate measure for comparing countries regarding fatal occupational accidents. For this reason, the measure of fatal occupational accident incidence rate, which shows how many of every 100,000 workers die in a year, will be used here. Table-4 presents the fatal occupational accident incidence rate values calculated for Turkey, the 27 member states of the European Union, and all EU-27 countries. The data for Turkey are calculated using official SSI data. The data for EU-27 countries are also taken directly from EUROSTAT (Eurostat, 2023). When these data are analyzed, Turkey's fatal occupational accident incidence rate for the entire period 2012-2020 is much higher than of all 27 compared countries and the EU-27 average. For example, in 2020, Turkish workers lost their lives in occupational accidents, approximately 4 to 6 times more than the European average. Turkey's situation is much worse than countries with lower fatal accident rates, such as the Netherlands, Sweden, and Germany. For example, in 2020, Turkish workers lost their lives in occupational accidents, 27 times more than Dutch workers. Turkey is the worst-performing country in Europe regarding fatal occupational accident incidence rate. In the world, it is generally the third worst-performing country after India and Russia (Ceylan, 2021). The data in Table-4, unfortunately, shows that Turkey's performance in terms of fatal occupational accident incidence rate has worsened rather than improved after the new OHS law. This situation reveals the necessity to review the OHS mechanism.

Table 4. Fatal Occupational Accident Incidence Rate

COUNTRIES	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU - 27 Countries	2,14	1,92	2,00	2,01	1,84	1,79	1,77	1,74	1,77	not available
Turkey	6,23	10,89	12,28	8,94	10,20	11,28	10,83	8,01	8,10	8,55
Greek Section of Cyprus	2,74	2,47	1,74	1,29	1,40	0,54	2,29	2,45	4,45	1,30
Bulgaria	3,82	3,35	4,45	3,57	3,00	3,40	3,14	3,37	3,68	2,85
Italy	2,64	2,31	2,34	2,42	2,11	2,10	2,25	2,10	3,39	2,66
Romania	5,78	5,60	5,50	5,56	4,52	4,49	4,33	3,00	3,31	3,11
Lithuania	4,98	4,49	4,74	3,84	3,69	2,77	3,05	3,01	3,17	3,75

Malta	4,59	2,27	2,20	2,69	3,65	0,45	1,68	1,18	3,07	3,34
Croatia	3,87	2,09	1,94	2,16	2,37	2,63	3,04	2,96	2,89	2,18
Portugal	4,80	3,61	3,56	3,54	3,00	2,94	2,12	2,12	2,72	1,93
France	3,07	2,96	2,70	2,57	2,74	2,64	2,74	3,53	2,54	3,32
Latvia	4,12	3,59	4,5	3,32	4,22	2,29	3,27	2,78	2,47	4,29
Austria	3,44	3,43	3,06	3,23	2,91	2,53	2,87	2,49	2,36	2,86
Czechia	2,40	2,29	2,37	2,76	2,07	1,82	2,59	2,01	2,30	1,87
Spain	2,16	1,88	1,93	2,3	1,92	1,99	1,96	1,78	2,06	1,93
Slovenia	2,61	2,38	3,09	2,79	1,65	1,85	1,67	1,61	1,85	1,51
Ireland	2,34	2,13	2,46	2,51	2,14	1,87	1,51	1,77	1,79	1,42
Estonia	2,24	3,22	2,56	2,93	4,45	1,21	1,81	2,51	1,73	2,23
Luxembourg	3,38	1,60	2,55	3,30	6,32	2,74	4,22	3,13	1,71	1,71
Hungary	1,68	1,4	2,22	2,29	2,14	2,01	1,97	2,09	1,63	2,01
Slovakia	2,17	2,36	1,69	2,67	2,13	2,00	1,83	1,50	1,49	1,47
Poland	2,30	1,83	1,75	1,89	1,54	2,00	1,56	1,10	1,35	1,56
Denmark	1,75	1,45	1,4	1,02	1,23	0,92	1,28	1,43	1,34	not available
Belgium	1,78	2,46	1,28	1,41	1,8	1,68	1,91	1,27	1,33	1,13
Finland	1,45	0,9	1,44	1,44	1,43	0,93	0,99	1,13	0,95	0,75
Greece	0,69	0,63	0,79	1,19	1,29	1,22	0,97	0,92	0,88	not available
Germany	1,18	1,04	1,15	1,02	0,96	0,89	0,78	0,79	0,73	0,84
Sweden	0,98	0,77	0,87	0,73	0,77	0,90	1,01	0,72	0,49	0,77
Netherlands	0,49	0,50	0,64	0,50	0,50	0,59	0,60	0,48	0,30	0,33

5. Analysis of Fatal Occupational Accidents in Turkey

This section analyzes fatal occupational accidents in Turkey based on the Health and Safety Labour Watch-Turkey data. HESA Labour Watch has been collecting this data since 2012. In order to see the situation before and after the OHS law, all data covering the 12 years between 2012 and 2022 is included here.

5.1. Sectorial Distribution of Fatal Occupational Accidents

Table-5 shows the sectorial distribution of fatal occupational accidents recorded by the HESA Labour Watch in the last 12 years. The sector with the highest number of fatal occupational accidents in Turkey was the construction-highway sector. Four thousand one hundred fifty-five workers lost their lives only in this sector during the period in question. Agriculture-Forestry follows this sector with 3794 fatalities and Transportation with 221 fatalities. The top 5 sectors with the highest number of fatal occupational accidents are Construction-Road, Agriculture-Forestry, Transportation, Trade-Office, and Mining. These 5 sectors alone accounted for more than 65% of all fatalities. Construction, Transportation, and Mining are also the sectors with the highest fatalities in the SSI data. Therefore, it is possible to say that some fatal occupational accidents in the agriculture-forestry and trade-office sectors are not recorded.

Table 5. Sectorial Distribution of Fatal Occupational Accidents in Turkey

Sectors	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	%
Construction-Highway	279	294	423	426	442	453	438	336	355	335	374	4155	20,98
Agriculture-Forest	90	198	309	405	389	385	457	442	442	318	359	3794	19,15
Transportation	48	131	138	236	265	272	233	234	248	186	220	2211	11,16
Trade-Office	35	95	93	101	124	154	118	104	296	345	99	1564	7,90
Mining	81	93	386	67	74	93	66	63	61	70	105	1159	5,85

Municipality- General Affairs	25	62	87	93	109	89	88	105	141	113	97	1009	5,09
Metal	50	79	81	61	96	116	114	70	106	102	101	976	4,93
OTHERS	230	267	344	307	431	224	359	337	731	648	424	4302	21,72
UNCERTAIN	40	16	25	34	40	220	50	48	47	53	64	637	3,22
TOTAL	878	1235	1886	1730	1970	2006	1923	1739	2427	2170	1843	19807	100

5.2. Distribution of Fatal Occupational Accidents by Causes of Accidents

Table-6 shows the distribution of fatal occupational accidents recorded by the HESA Labour Watch in the last 12 years according to accident causes. When Table-6 is analyzed, it is seen that occupational traffic accidents are the most important cause of accidents, with 4397 fatalities. Occupational traffic accidents, crashes, and falls account for approximately 54% of all accident causes. Covid-19 ranks fourth as the cause of 1412 deaths, especially in 2020 and 2021. SSI did not acknowledge a large part of the deaths caused by Covid-19 as occupational accidents. This was because it could not be proven with certainty that the Covid-19 virus was contracted at work. Therefore, the difference between SSI and HESA Labour Watch data stems from this, especially in 2020 and 2021.

Table 6. Distribution of Fatal Occupational Accidents in Turkey by Causes of Accidents

CAUSES OF ACCIDENT	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Percent
Occupational Traffic Accident	197	433	421	506	442	446	408	392	388	342	422	4397	22,20
Crush, Dent	189	222	289	315	355	341	379	285	296	296	347	3314	16,73
Falling	175	189	298	277	323	317	325	259	237	254	295	2949	14,89
Covid-19	---	---	---	---	---	---	---	---	741	625	46	1412	7,13
Heart Attack	---	---	---	---	217	183	200	202	190	156	201	1349	6,81
Poisoning, Drowning	81	60	395	82	51	100	82	108	87	77	77	1200	6,06
Electric Shock	82	79	112	100	113	135	113	100	104	74	78	1090	5,50
Violence	---	---	---	---	159	164	112	88	105	72	68	768	3,88
Explosion-Burn	63	79	49	51	53	60	50	83	53	56	97	694	3,50
Suicide	---	---	---	---	90	100	73	82	73	98	71	587	2,96
Object Fall	20	33	36	20	49	40	40	33	27	23	27	348	1,76
Other Causes	71	140	286	379	118	120	141	107	126	97	114	1699	8,58
TOTAL	878	1235	1886	1730	1970	2006	1923	1739	2427	2170	1843	19807	100

5.3. Distribution of Fatal Occupational Accidents by Age Groups

Table-7 shows the distribution of fatal occupational accidents recorded by the HESA Labour Watch in the last 12 years according to the age groups of the victims. According to Labor Law No. 4857, in Turkey, a child worker is defined as "a person who has completed 14 years of age but not yet 15 years of age and has completed primary education," and a young worker is defined as "a person who has completed 15 years of age but not yet 18 years of age" (Official Gazette of the Republic of Turkey, 2003). In Turkey, it is generally forbidden to employ children under the age of 14. In addition, there are various restrictions on working hours and working patterns of children and young workers. For example, it is forbidden to employ children and young workers in heavy and hazardous work, to make them work overtime, and to make them work in shifts. Despite all this legislation, as can be seen from Table-7, at least 228 children and 426 young workers have lost their lives in the last 12 years. This indicates the lack of compliance with legal regulations for children and young workers. It is well-known that children who have not reached the legal working age are employed as seasonal agricultural workers or shepherds, while older children are employed in the textile, metal, and construction sectors.

In Turkey, there are no legal obstacles to employing older workers. However, it is known that the elderly are a particular risk group in working life due to many physiological facts such as decreased vision and hearing abilities, weakening of skeletal-muscular systems, increased reaction time in sudden situations, and weakening of reflexes with aging. It would be an ergonomic approach to employ them in jobs that do not pose a danger, do not require much physical effort, and where the experience and knowledge of older workers can be utilized. However, in our country, the fact that pensioners are seen as a cheap labour force that can be employed without insurance results in much risky employment, especially in construction. This situation causes us to perceive the news of workers in their 60s and 70s losing their lives by falling, poisoning, or traffic accidents while collecting waste in construction, agriculture, or on the street as usual.

While the HESA Labour Watch Turkey classified those over the age of 51 as a single age group until 2016, it has started to categorize those over the age of 51-64 and those over the age of 65 in two different classes as of this year. Especially those over 65 are expected to retire and withdraw from working life. On the other hand, it is unacceptable that 792 older people lost their lives in occupational accidents in the 7 years covering 2016-2022. The fact that 25% of those who lost their lives in occupational accidents in the last 12 years were aged 51 and over reveals that ergonomic principles regarding the employment of older workers are not followed.

Table 7. Distribution of Fatal Occupational Accidents by Age Groups in Turkey

Years	0-14 Years	15-17 Years	18-27 Years	28-50 Years	51-64 Years	65 +	Unknown	Total
2012	15	19	164	392	89	---	199	878
2013	18	41	249	594	189	---	144	1235
2014	19	35	297	905	331	---	299	1886
2015	18	45	275	800	444	---	148	1730
2016	18	38	294	998	339	77	206	1970
2017	18	42	299	1017	360	101	169	2006
2018	23	44	285	944	371	98	158	1923
2019	29	38	246	833	366	115	112	1739
2020	22	46	258	1079	708	159	155	2427
2021	21	41	222	1091	544	143	108	2170
2022	27	37	390	756	428	99	106	1843
Total	228	426	2979	9409	4169	792	1804	19807

5.4. Distribution of Fatal Occupational Accidents by Gender of the Victim

Table-8 shows the distribution of fatal occupational accidents recorded by the HESA Labour Watch in the last 12 years according to the gender of the victims. In the last 12 years, 1305 women workers lost their lives in occupational accidents. This proportionally corresponds to 7% of all worker deaths. In the SSI occupational accident statistics, female worker deaths account for 2% of total deaths. This situation reveals that many women's deaths are not recorded because they are mainly concentrated in agriculture (working uninsured).

Men are exposed to much more fatal occupational accidents than women. Male workers account for 97% of all worker fatalities. Many factors, such as the high rate of male participation in the labour

force, legal restrictions on the employment of female workers in some risky lines of work, some legal restrictions on the working order of pregnant or lactating workers, and the fact that women are not allowed to perform some heavy and dangerous jobs in the work environment due to Turkish culture can explain the fact that male workers are more likely to die in occupational accidents.

Table 8. Distribution of Fatal Occupational Accidents in Turkey by Gender of the Victim

Years	Male	Female	% Male	% Female	Total
2012	808	70	92	8	878
2013	1132	103	91	9	1235
2014	1755	131	93	7	1886
2015	1610	120	93	7	1730
2016	1860	110	94	6	1970
2017	1890	116	94	6	2006
2018	1804	119	94	6	1923
2019	1621	115	93	7	1739
2020	2279	148	94	6	2427
2021	2005	165	92	8	2170
2022	1735	108	94	6	1843
Total	18499	1305	93	7	19807

5.5. Fatal Occupational Accidents Exposed to Migrant Workers

Table-9 shows the distribution by nationality of 829 migrant workers who lost their lives in occupational accidents recorded by the HESA LABOUR WATCH in the last 11 years. 2012 HESA Labour Watch data did not include any data on migrant workers, so it could not be used in this. In 2017, HESA Labour Watch only provided the number of migrant workers who lost their lives in occupational accidents but did not provide a breakdown by nationality. Of the 18929 workers who lost their lives in occupational accidents in the last 11 years, approximately 4.4% were migrant workers. In parallel with the number of illegal/migrant workers coming to Turkey, the number of migrant workers who lost their lives in occupational accidents is also increasing. For example, while this number was 22 in 2013, it increased to 90 in 2022. Approximately 57% of those who lost their lives in occupational accidents are Syrians and Afghans. The fact that most migrant workers are unregistered causes migrant worker deaths not to be reflected in official SSI data.

Table 9. Distribution of Migrant Workers Died as a Result of Occupational accidents in Turkey by Nationality

Nationality	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	Percent
Syrian	10	26	12	61	---	48	40	48	42	39	326	39,32
Afghan	1	2	---	12	---	28	36	28	17	20	144	17,37
Turkmen	---	4	7	---	---	4	---	5	7	8	35	4,22
Iranian	5	2	10	3	---	---	6	2	2	5	35	4,22

Georgian	2	7	5	---	---	4	2	---	20	2,41		
Ukrainian	---	2	4	4	---	4	2	1	1	18	2,17	
Pakistani	---	1	5	---	---	4	---	1	5	1	17	2,05
Uzbek	---	---	---	---	---	4	4	---	5	13	1,57	
Other Countries	4	9	29	11	88	26	18	7	18	11	221	26,66
TOTAL	22	53	67	96	88	110	108	101	94	90	829	100

5.6. Union Membership Status of Victims Who Lost Their Lives in Occupational accidents

Table-10 shows the distribution of 10102 workers who lost their lives in occupational accidents in the last 5 years according to their union membership status. Since there is no information on union membership status in the 2018 data in the HESA Labour Watch data, it could not be used here. When Table-10 is examined, it is seen that only 4% of the workers who lost their lives in occupational accidents were unionized. This can be seen as an indication that more importance is attached to worker safety in unionized workplaces.

Table 10. Union Membership Status of Workers Who Lost Their Lives in Occupational accidents in Turkey

Years	Unionized	Non-Unionized	Total
2018	48	1875	1923
2019	23	1716	1739
2020	109	2318	2427
2021	122	2048	2170
2022	92	1751	1843
Total	394	9708	10102

5.7. Distribution of Fatal Occupational Accidents by Cities

Table-11 shows the top ten cities with the highest number of fatal occupational accidents in Turkey in the last 12 years, and Table-12 shows the top ten cities with the highest number of fatal occupational accidents in Turkey. The cities with the highest fatalities are those with high industrialization and the number of employees. In Turkey, 41.37% of the fatalities due to occupational accidents were recorded in these 10 cities. The cities with the least fatal occupational accidents are those with low industrialization and a working population. Only 2.18% of the fatalities due to occupational accidents in Turkey were recorded in these 10 provinces. The province with the least number of fatal occupational accidents is Bayburt. In 2012, no fatalities were recorded in Ardahan, Bayburt, Tunceli, and Aksaray provinces. In 2013, no fatal occupational accidents were recorded in Bayburt province. In 2014, fatal occupational accidents were recorded in all provinces. Again in 2015, there were no fatalities due to occupational accidents in Bayburt province. In 2021, no deaths due to occupational accidents were recorded in Muş province, and in 2022 in Bitlis province.

Table 11. Cities where the highest number of deaths due to Occupational accidents in Turkey

Province	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	TOTAL	Percent
İstanbul	103	96	198	142	262	230	226	181	325	260	256	2279	11,51
İzmir	39	53	49	88	74	93	66	74	111	102	87	836	4,22
Manisa	18	40	343	56	56	65	70	42	54	43	40	827	4,18
Kocaeli	16	37	67	55	89	71	81	71	99	99	55	740	3,74

Bursa	28	45	57	77	81	88	69	66	79	73	64	727	3,67
Antalya	23	46	47	75	70	79	68	72	67	72	59	678	3,42
Ankara	34	26	58	44	72	67	56	56	80	66	44	603	3,04
Konya	30	29	44	64	61	72	43	46	66	51	49	555	2,80
Adana	32	36	43	68	45	62	48	25	60	50	33	502	2,53
Gaziantep	24	29	29	33	35	35	50	49	58	56	50	448	2,26
TURKEY	878	1235	1886	1730	1970	2006	1923	1739	2427	2170	1843	19807	100,00

Table 12. Cities where the least number of deaths due to Occupational accidents in Turkey

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	TOTAL	Percent
Bayburt	0	0	1	0	2	4	1	6	4	2	2	22	0,11
Ardahan	0	5	2	3	1	2	6	3	2	2	2	28	0,14
Muş	4	3	4	4	2	5	3	2	3	0	3	33	0,17
Iğdır	1	1	6	4	1	4	7	2	2	3	6	37	0,19
Bitlis	4	2	3	5	7	6	1	3	5	2	0	38	0,19
Tunceli	0	1	3	2	6	7	3	6	3	6	1	38	0,19
Kilis	2	1	4	1	9	5	1	7	6	6	5	47	0,24
Kars	2	5	9	5	6	6	9	5	4	6	5	62	0,31
Kırşehir	4	1	8	2	9	7	8	4	8	7	5	63	0,32
Çankırı	7	3	7	4	4	4	3	10	11	3	7	63	0,32
TURKEY	878	1235	1886	1730	1970	2006	1923	1739	2427	2170	1843	19807	100

5.8. Distribution of Fatal Occupational Accidents by Month

Table-13 shows the distribution of fatal occupational accidents recorded by the HESA Labour Watch in the last 12 years according to the months of the year. When Table-13 is examined, it is seen that although there is a balanced distribution in general, fewer fatal occupational accidents were recorded in January, February, and March. This may be attributed to the seasonal decrease in the number of workers in construction and agriculture sectors. While the least number of fatal occupational accidents occurred in February, the highest number of fatal occupational accidents occurred in May.

Table 13. Distribution of Fatal Occupational accidents by Month

MONTHS	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total	percent
January	62	81	101	128	119	161	144	159	114	205	120	1394	7,04%
February	42	60	84	85	144	126	128	127	132	142	109	1179	5,95%
Mart	59	74	122	140	160	148	130	114	113	144	123	1327	6,70%
April	87	74	124	135	172	145	189	153	223	258	130	1690	8,53%
May	69	114	427	167	127	146	169	164	166	240	178	1967	9,93%
June	59	104	151	155	210	170	151	131	190	180	189	1690	8,53%

July	110	120	130	172	176	207	201	178	164	155	172	1785	9,01%
August	71	130	160	160	206	217	185	149	218	178	189	1863	9,41%
September	83	124	152	177	150	147	167	147	211	189	161	1708	8,62%
October	78	113	171	144	169	182	179	158	232	167	163	1756	8,87%
November	82	129	137	130	196	170	154	129	308	177	128	1740	8,78%
December	76	112	127	137	141	187	126	130	356	135	181	1708	8,62%
TOTAL	878	1235	1886	1730	1970	2006	1923	1739	2427	2170	1843	19807	100

6. OHS Registration System in TURKEY

In Turkey, it is a legal obligation for all work accidents and occupational diseases to be reported to the SSI by the employer within 3 working days (OHS Law No. 6331 - Article 14). SSI prepares work accident and occupational disease yearbooks by spending huge effort and money. For example, the statistical yearbook for 2022 has not been published yet, although more than 8 months have passed since the year ended. Even this reveals how much effort was spent on this data. 'Work Accident and Occupational Disease Data' can be compared to the hospital laboratory. Just as laboratory tests reveal the malfunctioning aspects of the body system, doctors benefit from this data for accurate diagnosis and treatment; similarly, these data also reveal the aspects where OHS system is flawed. Failure of the devices in the laboratory may cause incorrect diagnoses, incorrect treatment, and even fatal consequences for the patient. Similarly, incomplete notifications in the OHS Registry mechanism may prevent reveal of problems in OHS and their solutions. Due to all these reasons, it is very important to report and record work accidents and occupational diseases to the Social Security Institution.

Problems related to the OHS Registration Mechanism in Turkey can be grouped under three main headings;

- ✓ Failure to report a work accident or occupational disease to SSI.
- ✓ Reporting work accident or occupational disease to SSI with incomplete or incorrect information
- ✓ Inadequate use of SSI's work accident and occupational disease database

6.1. Failure to Report a Work Accident or Occupational Disease to SSI

Underreporting of work accidents and occupational diseases is a problem all over the world. However, if under-reporting exceeds a certain level, it causes the OHS recording mechanism to measure incorrect results. This raises the problem of not being able to obtain the expected benefit from the OHS registration system.

In Turkey, work accidents, especially occupational diseases, cannot be recorded at a serious rate. The reasons for these can be summarized as follows:

- ✓ The Ministry of Labor and Social Security has been seriously struggling with the problem of employing unregistered workers since 2003, when the Labor Law No. 4857 was enacted. Although many measures or incentives taken by the Ministry have yielded positive results, the unregistered employment rate is still 33% according to official TURKSTAT data (TUIK, 2020). This figure reveals that one in every three employees in Turkey works unregistered. The legal definition of the concepts of work accident and occupational disease in Turkey is defined in the 13th and 14th articles of the Social Insurance and Health Insurance Law No. 5510 (Official Gazette, 5510). According to these definitions, for an incident to be legally considered a work accident or occupational disease, the employee must be insured. Therefore, it is not possible for the employer who employs him without insurance to report a work accident or occupational disease suffered by an uninsured employee to the SSI. In addition, if a work accident suffered by an uninsured worker is reported to SSI through a complaint or other means, these incidents are not included in SSI statistics as they do not meet the official definition. Therefore, the failure to record the number of deaths and permanent incapacity in

these unregistered accidents is one of the most important reasons for the difference between SSI and OSH data in this study. The fact that occupational diseases, unlike work accidents, occur over many years makes it even more difficult to record these events.

- ✓ It is a legal obligation for the employer to immediately report work accidents to law enforcement (Official Gazette, 5510). Many employers, thinking that the gendarmerie or police coming to the workplace will damage the reputation of the company, refrain from reporting work accidents to the Social Security Institution. Many accidents, especially those that do not involve a life-threatening injury or death, remain within company and are not reported to SSI. Even in many corporate enterprises, it can be seen in private meetings during business visits that separate folders are kept for work accidents that are reported to SSI and those that are not reported to SSI.
- ✓ Labor inspectors affiliated to the labor inspectorate, while choosing the enterprises for inspection in a province, firstly choose the enterprises with fatal accidents or serious increase in the number of occupational accidents. Because of this, employers or safety experts who are aware of this do not consciously record some work accidents. However it was determined by ministry inspectors that some fatal work accidents were recorded as injury accidents in the OHS-Clerk system, as employees lost their lives afterwards.
- ✓ Since 2013, Turkey has aligned its OSH registration mechanism with EUROSTAT norms. According to these norms, if the accident victim dies within one month from the date of the accident, this is recorded as a fatal work accident. If the victim dies more than a month after the accident, it is recorded as a non-fatal accident. This may be one of the reasons for the difference in the number of death cases between SSI and ISIG data.
- ✓ According to official SSI data, 422,463 work accidents were recorded in Turkey in 2019, 384,262 work accidents in 2020, and 511,084 work accidents in 2021 (SSI 2019, 2020, 2021). There has been no change in the OHS legislation in Turkey in the last three years, the risky sectors in Turkey have not changed, and there is no abnormal change in the number of employees. On the other hand, there is a largely fluctuating trend in the number of recorded accidents. For example, while the number of accidents recorded in 2020 decreased by approximately 10% compared to 2019; The number of accidents in 2021 increased by approximately 33% compared to 2020. This situation is not normal and is an indication that work accidents in Turkey are not fully recorded.
- ✓ According to the Harrington Criterion, although it varies between countries, it is known that 4-12 out of every thousand workers are likely to contract an occupational disease annually (Harrington, 1998). According to this assumption; According to 2021 data in Turkey, the expected number of occupational disease cases out of 16,169,679 compulsory insured employees is between 64,679 - 194,036, while according to 2021 SSI statistics, the number of occupational disease cases is only 1207. This situation reveals that we can only record 1.87% of the minimum number of occupational diseases expected according to international criteria. This shows that we cannot record a large proportion of occupational diseases in Turkey.
- ✓ ILO is one of the top international reference organizations in the field of OSH. According to ILO's 2019 report titled "Safety and health at the heart of the future of work", the number of deaths due to occupational diseases is estimated to be approximately 6 times the number of deaths due to work accidents (ILO, 2019). On the other hand, according to official data, in Turkey, where yearly an average of 1331 employees die as a result of work accidents, only 41 employees died as a result of occupational diseases in the last 10 years, and even there were no deaths due to occupational diseases in the 7-year period covering 2013-2019. This reveals that it does not reflect.

- ✓ The National Occupational Health and Safety Council is the highest body in the field of OSH in Turkey, operating under the Ministry of Labor and Social Security. The 4th paragraph of the section named "Current Situation Analysis of Occupational Health and Safety in Turkey" of the document titled "The National OSH Policy Document III and Action Plan for the period 2014-2018" prepared by this body is as follows: "According to the data of Social Security Institution (SSI), especially the figures of occupational accidents are seen to be at critical levels in our country while the figures of occupational diseases are seen to be much lower than expected. Furthermore, losses resulting from occupational accidents and diseases which are not reflected on statistical data of SSI and which are out-of-scope and unrecorded must also be taken into consideration. In addition, it must be noted that the data available on occupational diseases are only related to resolve cases and medical diagnosis of occupational diseases have yet to be collected in our country. These statistics reveal the necessity of mitigation of occupational accidents and that there are problems in detection and notification of occupational diseases and that, result-oriented protective and proactive studies must be carried out for this purpose." (ÇSGB, 2013) As we see in these official document statements, the state accepts that at least some of the cases of work accidents, occupational diseases and deaths and permanent incapacity resulting from them cannot be recorded. In addition, similar statements are also available in the "National OHS Policy Document-II" covering the years 2009-2013. Unfortunately, the National OHS Policy Document-IV covering the years 2019-2023 has not been published yet, which should be prepared by the Ministry of Labor and Social Security.

You cannot control a factor that you do not measure accurately. Therefore, in order to protect employees against work accidents and occupational diseases, it is necessary to record work accidents and occupational diseases. Ignoring work accidents or occupational diseases eliminates the possibility of revealing the cause of these cases. You can't prevent something you don't know why.

6.2. Reporting of Work Accident or Occupational Disease to SSI with Incomplete or Incorrect Information

Another problem with the OHS registration mechanism in Turkey is that work accidents or occupational diseases are reported to SSI with incomplete and/or incorrect information. During investigation of official SSI data, it is seen that many data, such as 'Age of Casualty', 'Employment Date of Casualty' and 'Time of Accident' are not entered into the database, which is impossible for the employer not to know. This situation negatively affects the effectiveness of the analysis studies. It reveals that the work accident and occupational disease registration system in Turkey, currently is seen as a chore used only to fulfill legal regulations. In order to use these data more effectively and to produce meaningful results from the analyzes made in the OHS database, employers must ensure that all data in the work accident/occupational disease notification report is completely filled in. Serious sanctions should be applied to reports made with incomplete and/or incorrect data. In addition, changes should be made in the legal legislation to ensure that occupational safety experts and workplace physicians are responsible for the accuracy of the data in the work accident/occupational disease notification reports.

6.3. Failure to Benefit from Work Accident and Occupational Diseases Database of SSI

The work accident and occupational disease database is the largest one that can reveal the flaws in Turkey's OHS mechanism. This database, which was created with serious efforts, is unfortunately not used sufficiently by both academicians and OHS general directorate experts in Turkey. This data should be firstly used in order to have any meaning. For this, working groups should be formed for all risky sectors at the OHS general directorate. Data in sectoral basis should be analyzed for all sectors, especially risky sectors, and developments in OHS performance should be followed yearly. In the light

of the findings, the OHS mechanism in Turkey should be updated. In addition, all kinds of facilities should be provided to academicians who want to benefit from this database.

7. Discussion

Turkey has made serious efforts to minimize work accidents, occupational diseases, the deaths and injuries resulting from them since 2003. Undoubtedly, one of the most important efforts was making an independent OSH law. Despite this, since 2013, when the OSH law came into force, the desired improvements in OHS performance have not been achieved in terms of many criteria, such as the number of deaths resulting from work accidents and the fatal occupational accident incidence rate. In fact, while the number of deaths resulting from work accidents was 744 in 2012 before the OSH law, the number of deaths has never fallen below this value since 2013, when the law came into force. (Lowest 2019, 1149; highest 2017 1636). In addition, the accident that caused the most deaths in the history of the Republic of Turkey was recorded as the accident in Manisa-Soma in 2014, in which 301 miners lost their lives (As of now, Turkey is still on the ILO's black list). The fact that the number of deaths resulting from work accidents in Turkey does not decrease, the expected improvement in the fatal occupational accident incidence rate does not occur, especially the Soma mining accident in 2014, has discouraged decision-makers from their well-intentioned efforts to improve Turkey's OSH performance. Except for the 2 ILO conventions signed in 2014, no serious improvement steps have been taken in the field of OSH in Turkey afterwards. Turkey's OHS registration system underlies the fact that the well-intentioned efforts to improve Turkey's OHS performance until 2014 seem to have failed. In fact, actions in the field of OHS since 2003 have significantly improved Turkey's OHS mechanism. Many steps such as the dissemination of OHS services, risk assessment, and the obligation to employ occupational safety specialists and occupational physicians have improved OHS performance of Turkey. However, with these innovations, OHS recording mechanism of Turkey, which can be compared to an in-accurate measuring instrument, could not measure this improvement in Turkey's OHS performance, especially since work accidents can be recorded at a greater rate than before, and produced false signals for decision makers. This study was conducted to reveal this painful truth that directly concerns the lives of employees.

Decision makers in Turkey should not hesitate to record work accidents and occupational diseases. In fact, all kinds of precautions should be taken to ensure that work accidents and occupational diseases are recorded at a higher rate, and those who are found to be responsible for under-reporting should be punished in the most severe way. At this point, not only employers, but also occupational safety experts and workplace physicians should be responsible for reporting work accidents and occupational diseases in terms of the health of the system. The fact that the OHS recording mechanism works like a measuring instrument and incorrect measurement results will have vital consequences for employees should not be forgotten. In this context, using HESA Labour Watch data, which records fatal work accidents, could be a good start to determine which fatalities were not recorded and why. Recording work accidents or occupational diseases at a greater rate may increase the financial burden of SSI. However, the sentence "Turkey is the country with the worst performance in Europe in terms of the fatal occupational accident incidence rate" brings a greater cost as it damages Turkey's reputation all over the world.

CONCLUSION:

Human life is above any economic value. All production systems are established for profit. However, it is impossible for businesses that do not value people in the production system to be sustainable. Occupational accidents and diseases are critical problems for all countries. However, while OHS indicators continuously improve in countries that properly establish and operate the OHS mechanism, in countries like Turkey, where the mechanism is not adequately established, the loss of life increases rather than decreases. Within the framework of harmonization with the European Union, many steps have been taken in the field of OHS in Turkey since 2003.

Despite all these efforts, Turkey's OHS performance has not improved significantly. Especially after the OHS Law No. 6331, which entered into force in 2012, expectations have increased. The official SSI data and the findings of this study show that Turkey's OHS performance has not improved.

The findings of this study can be summarized as follows.

- According to HESA Labour Watch, at least 33% of fatal accidents in Turkey are not recorded.
- Although there is no significant change in the OHS legislation and mechanism in Turkey, the fluctuating course of official accident data indicates a problem with recording OHS data.
- After the OHS law was enacted in 2013, the number of deaths due to occupational accidents has increased rather than decreased.
- Turkey has the worst performance compared to EU-27 countries in terms of both the number of fatalities and the fatal occupational accident incidence rate.
- Turkey has the highest number of fatal occupational accidents in the Construction, Transportation, and Mining sectors.
- Occupational traffic accidents are the most important cause of fatal occupational accidents.
- In Turkey, children and young workers are employed in heavy and dangerous work, violating the legislation. According to the HESA Labour Watch data, 646 children and young workers have lost their lives in occupational accidents in the last 12 years. This corresponds to approximately 3.3% of all deaths.
- There is no legal limit on the employment of the elderly in Turkey. However, the fact that 25% of those killed in occupational accidents were aged 51 and over reveals that ergonomic principles regarding the employment of older workers are not followed.
- In Turkey, 8% of the victims who lost their lives in occupational accidents are women. According to SSI data, this value is around 2%. This situation reveals that many female workers are employed informally, so deaths are not recorded.
- Approximately 4.4% of the 18929 workers who lost their lives in occupational accidents in the last 11 years are migrant workers. In parallel with the number of illegal/migrant workers coming to Turkey, the number of migrant workers who lost their lives in occupational accidents is also increasing. Approximately 57% of those who died in occupational accidents are Syrians and Afghans. The fact that most migrant workers are unregistered causes the deaths of migrant workers not to be reflected in official SSI data.
- It has been determined that 96% of the workers who died in occupational accidents were not unionized. This can be seen as an indication that more importance is attached to worker safety in organized workplaces.
- The highest number of fatal occupational accidents in Turkey occurs in Istanbul. The cities with the highest fatalities are cities with high industrialization and the number of employees. Bayburt has the lowest number of fatal occupational accidents in Turkey. The low number of employees can explain this.
- Turkey had fewer fatal accidents in January, February, and March. This may be attributed to the seasonal decrease in the number of workers in the construction and agriculture sectors.

All these findings reveal that Turkey needs to review its OHS mechanism. In particular, problems arising from OHS legislation impede the system. Occupational safety experts and occupational physicians cannot inspect and sanction employers who pay their salaries. Lack of adequate inspections, reluctance to enforce the legislation because administrative fines would force employers, failure to record occupational accidents and diseases, and similar problems can be listed as the weaknesses in Turkey's OHS report card.

Etik Standart ile Uyumluluk

Çıkar Çatışması: [TR] Yazar / yazarlar, kendileri ve / veya diğer üçüncü kişi ve kurumlarla çıkar çatışmasının olmadığını veya varsa bu çıkar çatışmasının nasıl oluştuğuna ve çözüleceğine ilişkin beyanlar ile yazar katkısı beyan formları makale süreç dosyalarına ıslak imzalı olarak eklenmiştir.

[EN] The author(s) declare that they do not have a conflict of interest with themselves and/or other third parties and institutions, or if so, how this conflict of interest arose and will be resolved, and author contribution declaration forms are added to the article process files with wet signatures.

Etik Kurul İzni: Bu makalede etik kurul iznine gerek yoktur, buna ilişkin ıslak imzalı etik kurul kararı gerekmediğine ilişkin onam formu sistem üzerindeki makale süreci dosyalarına eklenmiştir

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