

THE ECONOMIC EFFECTS OF WORK-RELATED INJURIES AND OCCUPATIONAL DISEASES

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Abstract. *Work-related injuries and occupational diseases greatly affect the economy at the national level. Thus, on the one hand, the people with an affected health status will no longer be able to be included in the field of work and, thus, the tax collections on the state budget will be reduced and, on the other hand, the state budget will have to bear the insurance the medical services required for this category of persons, as well as the payment of pensions. The effects of work-related injuries and occupational diseases are reflected at the microeconomic level, through production losses, reinvestment expenses in the labour force, etc., and at the macroeconomic level, respectively by social insurance, medical assistance expenses, diminishing the possibility of being placed in the work field. By conducting this study, we propose an analysis of the impact of work-related injuries and occupational diseases on the Romanian economy. This objective is to be achieved with the help of qualitative analysis, namely the inventory of specialized literature, as well as with the help of quantitative analysis, the necessary data is collected from sources such as www.ec.europa.eu, www.insse.ro, www.ssmregis.ro. Thus, we can affirm that one of the aspects of the economic dimension of the phenomenon envisaged is the economic effects of accidents and occupational diseases, respectively their consequences on the elements and the functioning of micro and macroeconomics.*

Key words: *economy, work-related injuries, occupational diseases, Romania*

JEL classification: A10, A12, E24, F63

Introduction

A good state of health signifies a balance between mind, body, and spirit. Occupational safety supports a good state of health, as physical illnesses influence the mental health and the attitudes of the workers towards the workplace. As the deterioration of the health status of the workplace, as well as the lost time is associated with an extraordinary economic loss, it is necessary to focus on safety and promoting health among the workers. Thus, occupational health and safety data are fundamental to information and efforts to prevent occupational injuries and occupational disease trends among workers.

The International Labour Organization estimates that about 2.2 million people die annually from work-related injuries or occupational diseases. This means that 5,000 people die daily. Thus, work-related injuries and occupational diseases have been and are still one of the hardest human tragedies of all activities in the field of work, which has as a consequence important economic losses, regardless of the level of development of a country. Realizing the importance of the health status of the workers, the specific objectives set in the different action programs regarding occupational health and safety are: (1) improving working conditions by increasing the safety and health protection of the employees; (2) knowledge of the causes of work-related injuries and occupational diseases, identification and assessment of risks and implementation of effective methods of monitoring and preventing them; (3) promoting and developing a culture on occupational health and safety.

Research methodology

The present research combines qualitative research with quantitative research; thus, qualitative research refers to the revision of the specialized literature, respectively of the articles and books relevant in this field; The quantitative method supported the present research by the

possibility of collecting data on the average of work-related accidents and the incidence of the evolution of occupational diseases in Romania, as well as the average of work-related accidents in the EU. The data needed for the quantitative analysis were collected from official sources, respectively www.ec.europa.eu, www.inspectiamuncii.ro, www.cnmrmc.insp.gov.ro.

Classification of occupational accidents and occupational diseases

Because the precise definition of work-related injuries and occupational diseases has legal implications, each country has approached the issue in its way, which has led to quite difficult interstate comparative analyses. Thus, international specialized organizations, such as the International Labour Organization and the International Social Security Association, make sustained efforts to reach a consensus on the delimitation of accidents and occupational diseases. Depending on several parameters, work-related accidents can be classified as follows:

a) According to the number of people affected, accidents can be (1) individual, when only one person is affected; (2) groups, when at least three persons are affected.

b) Following the consequences (effects) on the victim, accidents can be (1) accidents that cause temporary incapacity for work; (2) accidents that cause invalidity; (3) fatal accident.

c) According to the nature of the direct causes that cause the existing injury: (1) mechanical accidents; (2) electrical accidents; (3) chemical accidents; (4) thermal accidents; (5) accidents by irradiation; (6) complex accidents.

d) Depending on the nature of the damage caused to the body.

e) After the effects are felt, work accidents are divided into (1) accidents with immediate effect; (2) accidents with subsequent effect.

Occupational diseases, respectively the diseases that occur as a result of the exercise of a profession or profession, caused by harmful physical, chemical or biological factors specific to the workplace, as well as by the overloading of the different organs or systems of the body in the work process. Occupational diseases can be classified as follows:

a) Depending on the nature of the risk factor that generated them, occupational diseases can be classified into the following groups: (1) intoxication, caused by inhalation, ingestion or contact of the epidermis with toxic substances; (2) pneumoconiosis, caused by inhalation of non-toxic powders; (3) diseases by exposure to radiant energy; (4) diseases by exposure to high or low temperatures; (5) diseases by exposure to noise and vibration; (6) diseases by exposure to high or low atmospheric pressure; (7) professional allergies; (8) professional dermatoses; (9) occupational cancer; (10) infectious and parasitic diseases; (11) diseases by overload; (12) other diseases (not included in the previous categories).

b) According to the way the risk factor acts on the body, there are (1) diseases with general action, which affect the whole body; (2) diseases with local action, which affect a part of the body, an apparatus or an organ.

c) After the exposure time to the action of the risk factor, there are (1) acute poisoning (it is investigated both as an occupational disease and as an accident at work), generated by a short exposure to the action of the risk factor, but at high doses; (2) chronic poisoning (it is researched as occupational diseases), usually caused by relatively small doses, but which act for a long time on the body. (<https://www.ssmregis.ro/blog/consultanta/clasificarea-accidentelor-de-munca-si-a-bolilor-profesionale.html>). Usually, the effects, often non-toxic, appear on several days, months, even years after exposure. Exposure often goes unnoticed, especially if the product has no odour or irritating effect.

Regarding occupational diseases, biological factors also play an important role. Research from the 1970s-'80s explored that depression and manic episodes may both occur from disturbances in the balance

of brain chemistry levels called biogenic amines. Biogenic amines serve as neuronal transmitters or modulators to regulate the movement of nerve impulses across synapses from one neuron to another. Two such amines involved in affective disorders are norepinephrine and 5-hydroxytryptamine (serotonin). It is known that some drugs have antidepressant properties and biochemically increase concentrations of one or the other (or both) of these emitters. (Kahn, Ada, P., 2004, p. 10).

The economic consequences of work-related injuries and occupational diseases

The main lever by which any current society acts on its resources is the economic mechanism; macro and micro social decisions are based on the criterion of economic efficiency. Thus, the economic consequences of work-related injuries and occupational diseases result both from the impairment of the values characteristic of the human performer hypostasis, and the effect of the other elements of the work system. These economic consequences can be:

- **consequences at the microeconomic level** (economic agent), such as losses of production, loss of potential production capacities, deterioration and destruction of fixed assets, expenses of reinvestment in the labour force, machinery, deterioration of the social work environment, etc .;
- **consequences at the level of the society** (macroeconomic), such as social insurance expenses, medical assistance, diminishing the general creative potential, etc.

According to the research, the economic consequences are reflected in two categories of costs: (1) direct and (2) indirect; The direct costs category includes those related to accident and illness insurance and those for risk prevention; as indirect costs are considered the economic losses not covered by the accident and illness insurance, which grabs both the national budget and the company: expenses for repairing damaged cars or replacing them, losses of materials, working time at the level of the victim's first-aid workers, the cost of the labour force that replaces the victim, the time used for talks, investigations, penalties for delays in delivering products, etc.

Grouping the consequences by economically reporting them are particularly important for guiding managerial decisions in the field of occupational safety and health. However, the dimensions of the economic repercussions are only the starting point. In the analysis of the labour protection activity, the economic criterion appears to be conjugated and at the same time subordinate to the social one. Due to the nature of the subsystem-system relationship, between micro and macroeconomics, the consequences of accidents and occupational diseases at the firm level propagate to the level of the national economy. Therefore, it can be stated that one of the sides of the economic dimension of the phenomenon envisaged is the economic effects of accidents and occupational diseases, respectively their consequences on the elements and the functioning of micro and macroeconomics. A quantitative assessment of all the consequences of accidents and occupational diseases, or at least the quantifiable ones, determine the introduction of the cost name of these events, which can be used as an economic indicator. It can be said that the economic dimension of the phenomenon of an accident and occupational disease includes two components: the economic effects of accidents/diseases, as well as the cost of accidents and diseases, as an economic indicator that reflects all the quantifiable effects of these events. (Wuellner, Sara; Phipps, Polly, 2018, pp. 1 – 14).

The cost of accidents and occupational disease

In Romania, the insurance system for work-related injuries and occupational diseases represents support granted to the workers, through the implementation of the laws in force. According to Law 346/2002 updated in 2018, regarding insurance for work-related injuries and occupational diseases, it is a person insurance, it is part of the social insurance system, it is guaranteed by the state and contains specific reports through which the social protection of

employees is insured against the diminution or loss of work capacity and their death, as a result of work accidents and occupational diseases.

In the conditions in which the health of the workers is affected, it is necessary to consider a professional reorientation, as long as the physical and mental state allows. Thus, the services and services for vocational rehabilitation and reconversion are provided by the insurer at the request of the insured persons who, although they have not completely lost their ability to work, can no longer perform the activity for which they have been qualified, as a result of a work accident. or professional illness. The insurer takes over the expenses for the following services and services of rehabilitation and professional reconversion: (1) the expenses regarding the medical and psychological services for the assessment of the physical, mental and aptitude for the professional reconversion; (2) the cost of the qualification or conversion courses; (3) payment of an allowance during the qualification and conversion courses. (Upton, Arthur, C., 1987, pp. 291-309).

Also, the Romanian state assumes the responsibility to support persons who are temporarily or permanently incapable of work. *The temporary work disability allowance* provides that the insured persons benefit from compensation for the period during which they are temporarily unable to work due to an occupational accident or occupational disease. The compensation for temporary incapacity for work in the event of an accident at work or occupational disease is incurred during the first 3 days of incapacity by the employer, and from the 4th day of incapacity, from the insurance contribution for occupational accidents and diseases and is grant based on the medical certificate issued in accordance with the legal provisions.

The allowance for the temporary transfer to another place of work and the allowance for the reduction of the working time provides that insured persons who, due to a professional illness or an accident at work, can no longer perform their activity at the workplace before the risk manifestation, may temporarily pass in another job. The allowance for the reduction of working time with a quarter of the normal duration, as a result of illnesses caused by accidents at work or occupational diseases, is granted to the insured who, under these conditions, can no longer achieve the normal working time.

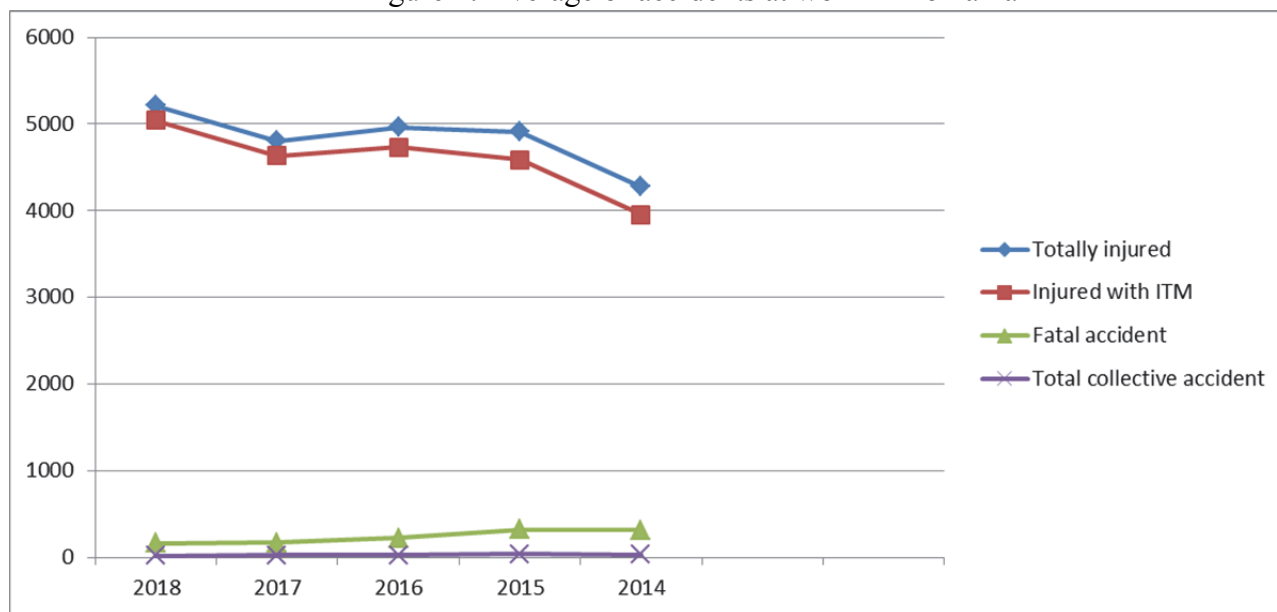
Compensations for achieving integrity are allocated to the insured who, following work-related injuries or occupational diseases, remain with permanent injuries that cause deficiencies and reduce the work capacity between 20-50%. The amount of compensation for the achievement of integrity is established according to the severity of the injury, within a maximum limit of 12 gross average salaries, communicated by the National Institute of Statistics. Thus, the compensation for achieving integrity is granted only once based on the decision of the insurer's expert physician who performs single medical expertise for insured persons who have been registered with a work-related injury or occupational disease.

Compensation in the case of death stipulates that, in the case of the death of the insured person, as a result of an accident at work or a professional illness, only one person is entitled to compensation, who maybe, as the case may be, a family member, in the absence thereof, natural / legal person, who proves that he/she has borne the expenses caused by the death. The amount of the compensation in case of death is 4 gross average wages, communicated by the National Institute of Statistics for the month in which the death of the insured occurred or, as the case may be, the last gross average salary per economy known at the date of the request.

Reimbursement of expenses: the insurer (Territorial House of pensions) grants reimbursement of expenses in the following situations: (1) emergency transport, in duly justified cases, when rescuing the victim requires the use of other means than usual; (2) making glasses, hearing aids, eye prostheses, in case they were damaged as a result of a work accident resulting in

personal injury; (3) in the case of the application of implantable medical devices through surgical intervention in order to recover the organic, functional or physical deficiencies caused by accidents at work and occupational diseases. The requests regarding the application of the insurance rights for work-related accidents and occupational diseases are addressed by the insured person to the Territorial pension house based on which the insured has his domicile. (<https://edirect.e-guvernare.ro/informatiigenerale/SitePages/cetateni.aspx?IDC=37>).

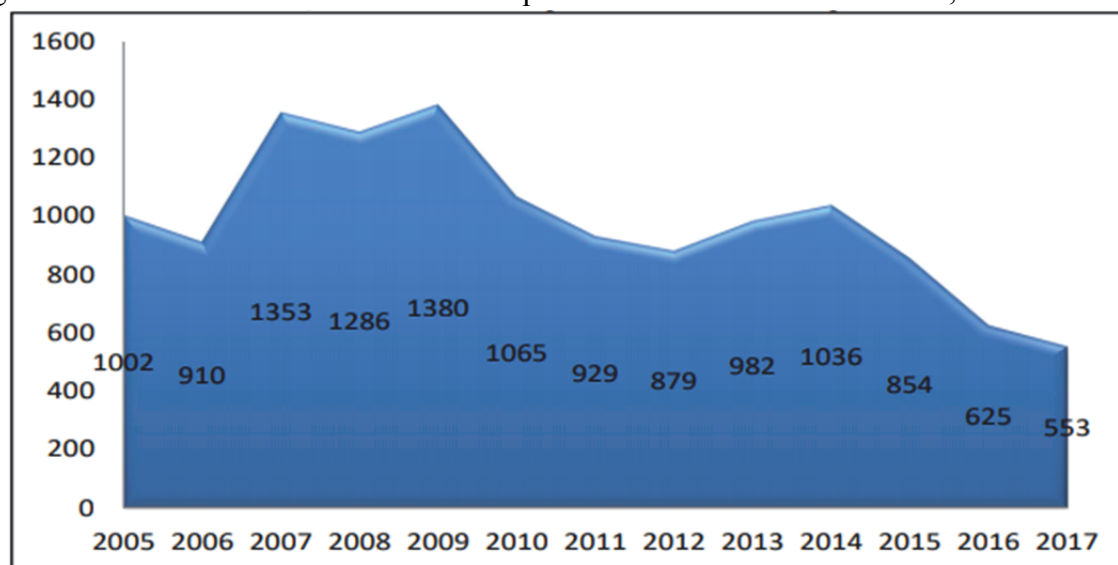
Figure 1: Average of accidents at work in Romania



Source: author, based on data available at <https://www.inspectiamuncii.ro/statistici-accidente-de-munca>

According to the analyzed period, the total number of persons with accidents at work is increasing, thus: in 2018 there were reported 5212 cases of accidents at work, in 2017 there were 4804 cases, with 157 cases less compared to 2016; in 2015, 4908 cases were registered, and in 2014, 4277 cases. Regarding the number of people injured with ITM, this is also increasing, respectively for the year 2018, there were registered several 5045 injured, in 2017 several 4632, with 104 less compared to 2016. The statistics show the fact that the number of fatal accidents is decreasing, respectively 167 in 2018, with 152 cases less compared to 2014. The number of collective accidents is also decreasing, the year 2018 recording several 22 collective accidents, compared with 32 registered ones in 2014 and 39 registered in 2015.

Figure 2: The incidence of the evolution of professional diseases in Romania, between 2005-2017

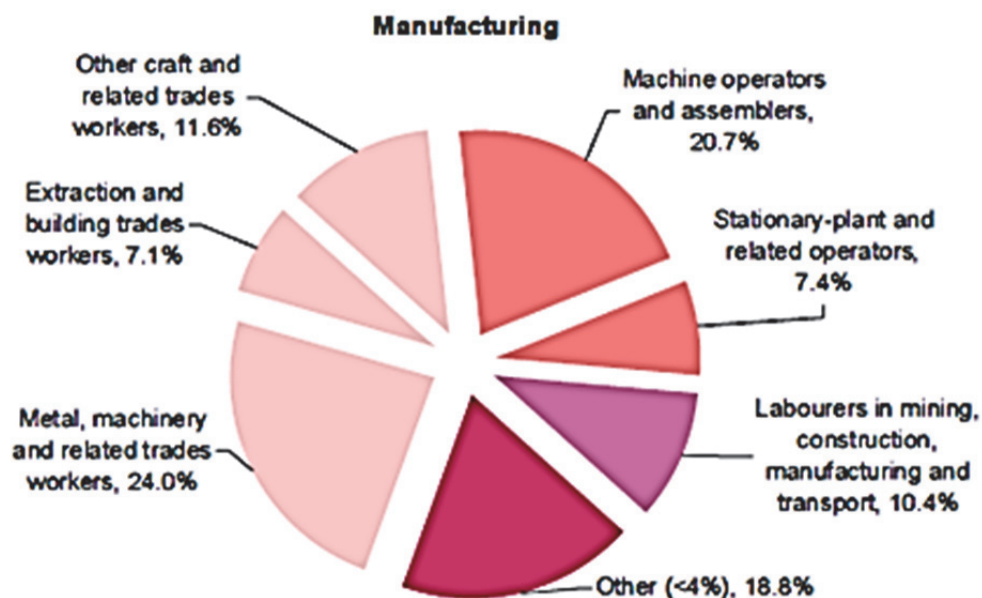


Source: <https://cnmrmc.insp.gov.ro/images/rapoarte/BoliProfesionale2017.pdf>

In the period 2005-2017 there is a slight decrease in the incidence of occupational diseases, due to the following reasons: (1) improvement of working conditions: implementation of new technologies, together with the policies of companies regarding the implementation of intense technical-organizational actions, the prevention of exposing a series of physical, chemical or biological harmful agents, when the neuro-psycho-sensory overload in the working environment, the creation of safe and healthy working conditions; (2) the increase of the number of specialists in occupational medicine in Romania led to a better supervision of the workers and an increase in the number of cases detected by occupational diseases.

The distribution of cases by activity shows that in Romania, in 2017, most cases of illness were reported in the metallurgical industry (213 cases - 15.59% of the total reports), the extraction of metalliferous ores (187 cases - 13.69%) and the manufacture of road transport vehicles, trailers and semi-trailers (153 cases - 11.20%). Bronchial asthma (93 new cases), musculoskeletal disorders (39 new cases) and silicosis (37 new cases) predominate in the metallurgical industry; Musculoskeletal disorders (56 new cases), silicosis (49 new cases) and occupational diseases caused by noise (43 new cases) predominate in the extraction of metalliferous minerals. Silicosis (67 new cases) predominates in the manufacture of motor vehicles, followed by musculoskeletal disorders (32 new cases) and chronic bronchitis (18 cases). (http://www.insse.ro/cms/files/publicatii/Metodologia%20bolilor%20profesionale%20%20EODS%20Studiu%20experimental_RO.pdf).

Figure 3: Average of accidents at work in the E.U. in the field of manufacturing, year 2017



Source:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics

Regarding Manufacturing, the highest percentage of accidents at work was recorded in Metal, machinery, and related trades workers, respectively 24.0%; the lowest percentage is registered in Extraction and building trades workers, respectively 7.1%.

Figure 4: Average of accidents at work in the E.U. in the field of wholesale and retail trade, year 2017

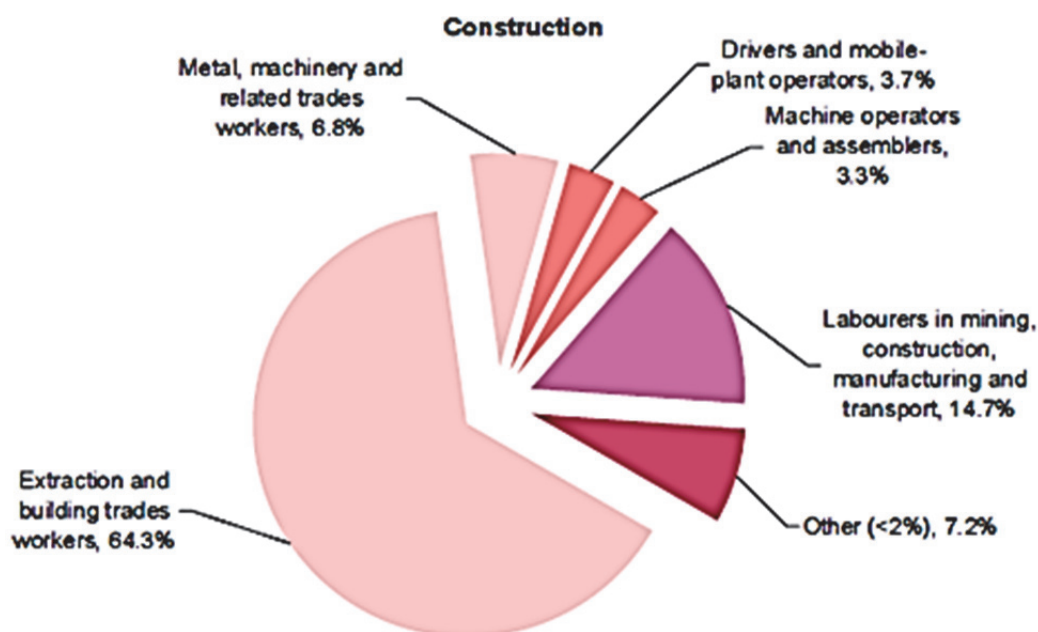


Source:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics

In the Wholesale and retail trade, most accidents were registered in Models, salespersons, and demonstrators, a percentage of 27.1% and the lowest percentage was registered in Office clerks, respectively 6.7%.

Figure 5: Average of accidents at work in the E.U. in the field of construction, year 2017

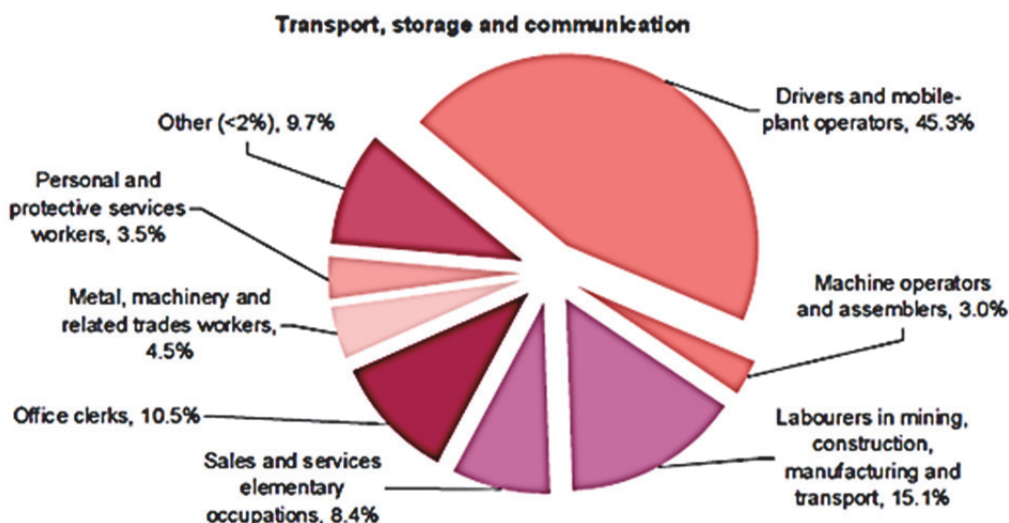


Source:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics

Within the constructions, most accidents were recorded in Extraction and building trades workers, 64.3%; the lowest number of accidents was registered in the Drivers and mobile-plant operators, 3.3%.

Figure 6: Average of accidents at work in the E.U. in the field of transport, storage and communication, year 2017



Source:

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics

As for the average U.E. of accidents at work, most such incidents were reported in transportation, storage, and communication, respectively in Drivers and mobile-plant operation, respectively 45.3%. The fewest accidents in this area were registered in Machine operators and assemblers, respectively 3%.

Conclusions

Under the conditions of the modern economy, characterized by extremely dynamic market relations and especially by the phenomenon of globalization, the ability to improve the economic performance of a company is a vital element for its survival. If, as far as the technical component is concerned, the improvement efforts are limited by the financial possibilities of the unit, in the field of production and labour organization modifications with much smaller efforts and considerable positive effects on the efficiency of the activity can be made. Among the measures of the nature of the organization of work are those that concern the safety and health at work. Therefore, establishing the size and meaning of the economic effects of the accident or occupational disease offers an important premise for finding new resources to increase the economic performance of the company.

In the present era, the health of workers has become much more vulnerable and dependent on the health of other communities and the state of technology. The working conditions of the people and the goods with which they interact present a risk that can only be partially controlled by the health authorities, despite the efficiency of the national policies adopted in the field. Thus, the safety and health problems in the workplace of less developed companies can indirectly affect the developed companies. These types of problems have generated common strategies for regional cooperation, between countries, with the support of global organizations, such as the World Health Organization or regional ones, such as European Union forums, to find solutions to improve working conditions, to reduce the number of work-related injuries and occupational diseases, which have repercussions on the economy of the states.

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