Indicators in Occupational Health

Fatal occupational injuries in France
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References
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Fatal occupational injuries in France

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### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baac</td>
<td>Bulletin of Physical Injury Traffic Accident Analysis (Bulletin d’analyse d’accident corporel de la circulation)</td>
</tr>
<tr>
<td>CépiDC</td>
<td>Epidemiological Center on the Medical Causes of Death (Centre d’épidémiologie des causes de décès)</td>
</tr>
<tr>
<td>CFOI</td>
<td>Census of Fatal Occupational Injuries</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence interval</td>
</tr>
<tr>
<td>CPAM</td>
<td>Primary Health Insurance Fund (Caisse primaire d’assurance maladie)</td>
</tr>
<tr>
<td>DST</td>
<td>Department of Occupational Health of the French Institute for Public Health Surveillance</td>
</tr>
<tr>
<td>ICD10</td>
<td>International Classification of Diseases 10th revision</td>
</tr>
<tr>
<td>Insee</td>
<td>National Institute of Statistics and Economic Studies (Institut national de la statistique et des études économiques)</td>
</tr>
<tr>
<td>Inserm</td>
<td>National Institute for Health and Medical Research (Institut national de la santé et de la recherche médicale)</td>
</tr>
<tr>
<td>InVS</td>
<td>French Institute for Public Health Surveillance (Institut de veille sanitaire)</td>
</tr>
<tr>
<td>MSA</td>
<td>Farmers’ and Agricultural Workers’ Social Insurance Fund (Mutualité sociale agricole)</td>
</tr>
<tr>
<td>NTOF</td>
<td>National Traumatic Occupational Fatalities</td>
</tr>
<tr>
<td>ONISR</td>
<td>Interministerial Road and Traffic Safety Observatory (Observatoire national interministériel de sécurité routière)</td>
</tr>
<tr>
<td>PCS</td>
<td>French nomenclature of occupational categories (Profession et catégorie socioprofessionnelle)</td>
</tr>
<tr>
<td>RGSS</td>
<td>Private Sector Employees Fund (Régime général de la Sécurité sociale)</td>
</tr>
<tr>
<td>SD</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>YPLL</td>
<td>Years of potential life lost</td>
</tr>
</tbody>
</table>
Occupational Health Indicators: why?

The French government has sought to develop a series of national indicators intended to monitor trends in the health in the French population, most especially since the passage of new Public Health Policy Act (Act n°2004-9 dated 9 August 2004) and the establishment of different national action plans concerning the environment, cancer, and occupational health. It has not yet assembled all the necessary information about working conditions and their health effects at the population scale, which is required to develop useful and reliable risk indicators. The basic reason for this delay is that each of the principal data sources available is limited, in terms of populations covered, exhaustiveness, representativeness of the data collected, regularity of production, etc.

Nonetheless, since its creation in 1998, the Department of Occupational Health (DST) of the French Institute for Public Health Surveillance (InVS) has worked to develop monitoring programs in various domains with the goal of producing such data regularly, and thereby improving our knowledge of occupational health risks.

Today, the data sources have been fleshed out substantially in some areas of occupational risks, but this has increased the difficulty of producing indicators from diverse sources.

In 2009, therefore, the DST established a nation-wide program for the regular production of indicators intended to report health problems related to the workplace environment, working conditions and exposures, and to enable the study of their trends over time. These indicators are established from different sources and will be published periodically on the InVS website (www.invs.sante.fr), thereby documenting the situation and changes in occupational risks and helping to determine priorities for action and to assess the results of these activities.

This document is the second in this series that began with the "occupational risks associated with asbestos" [1].
France has no global annual statistics about fatal occupational injuries that make it possible to describe the circumstances in which they occur and the sectors and occupations at highest risk. It is accordingly very difficult today to measure the extent of this occupational risk, to analyze its trends over time and its geographic disparities, and to assess the effectiveness of the protective measures implemented.

1.1 What is a Fatal Occupational Accident?

One of the principal problems responsible for these difficulties involves the definition: what does the term “fatal occupational accident” mean?

The concept of accident is not as simple as it may appear. In French, as in English, the term “accident” suggests an event that is unpredictable and therefore cannot be foreseen [2]. Safety specialists are increasingly abandoning this term, replacing it by the word “injury”[3,4], which has been defined by World Health Organization [5] as “the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute exposure to energy in amounts that exceed the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements (i.e., air, water, warmth), as in drowning, strangulation or freezing. The time between exposure to the energy and the appearance of an injury is short.” This definition enlarges the field of the accident to a great number of health problems that occur suddenly.

The association with work introduced an additional difficulty. In France, the social insurance funds1 use the following definition to determine whether an accident should be attributed to work and a financial compensation paid to the victim: “An occupational accident is one that, regardless of the cause, occurs because of or during work, to any person employed or working on any basis or in any place for one or more employers or company heads” (Article L. 411-1 of the Social Security Code). Jurisprudence and advances in scientific knowledge have led to modifications in this definition, and some “fatal medical events” (strokes and myocardial infarctions) in the workplace and work-related suicides are now recognized as occupational accidents. Because these events generally have multifactorial causes, it is not easy to establish their association with work [6], as can be seen in the example of sudden death by myocardial infarction in the workplace, for which occupational stress is one of the possible risk factors. Commuting accidents, defined as injuries occurring on the usual road between home and workplace (Article L. 411-2 of the Social Security Code), also lead to compensation from social insurance funds but are distinguished from occupational accidents in the strict sense of the term.

Fatal occupational injuries can occur in a great variety of conditions: in the workplace or on the road for work assignments requiring travel. According to the Road and Motor Vehicle Traffic Safety Bureau, the following are considered to be traffic accidents: “accidents involving bodily injury and at least one vehicle and occurring on a road open to public traffic”. Some fatal accidents are therefore simultaneously occupational and traffic accidents. Similarly, commuting accidents can also be traffic accidents but the two concepts are distinct: in the category of commuting accidents, we also include, for example, falls from level surfaces, on the sidewalk, and falls on subway (underground rapid transit) staircases.

A final difficulty in defining fatal occupational injuries comes from the definition of the time separating the occurrence of the accident from death. The European Union has opted for a period of one year, but notes that countries vary considerably in the period they apply: one day in the Netherlands (which thus counts only those victims who die the day of the accident), 30 days in Germany, and no time limit in most of the other countries [7]. In France, the national health insurance fund for salaried workers publishes statistics counting as fatal accidents those for which death occurs immediately or later but before the general practitioner has determined that no further improvement is foreseeable.

1.2 Data Sources

Four independent data sources can be used to identify fatal occupational accidents or injuries (box 1):

1) data from the various social insurance funds that administer indemnification for the occupational injuries and diseases and commuting accidents of salaried workers and farmers. Most of these funds have computerized the handling of workers’ compensation for their beneficiaries, but these data are not currently centralized anywhere. Because self-employed workers have no workers’ compensation coverage in their social insurance funds, there is no information about their work-related accidents. This data source thus covers only employees and farmers;

2) for traffic accidents, the data recorded by police officials from bulletins of traffic accident analyses (Baac), which collect information about “home-work commute” and “occupational use” for drivers only, but not passengers;

3) death certificates completed by physicians and centralized nationally at the epidemiological center on medical causes of death (Centre d’épidémiologie sur les causes médicales de décès) of the national institute for health and medical research (Institut national de la santé et de la recherche médicale) (CépiDc-Inserm), which includes the question: “in case of accident, was it an occupational accident (or presumed to be so)? Yes/No/Not specified”;

4) reports to the Ministry of Labor and Occupational Health & Safety, completed by monitoring officers of the Labor Inspectorate.

This document uses only the first two of these data sources. We will designate as “occupational accidents” those occurring in the workplace or while working, in the strict sense of these terms, and will thus exclude commuting accidents, which are analyzed independently.

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1 Social welfare funds are the systems that provide health and retirement insurance for various sectors of employees (hourly or salaried) and other workers. Some of these “regimes”, or groups of funds, also provide workers’ compensation insurance for occupational accidents. Different groups of funds cover workers according to their employer or other status (private sector employees, several different groups of government employees, utility employees, etc. There is also a group of funds for farmers and agricultural workers. Finally, one group of funds, which does not provide workers’ compensation insurance, covers independent self-employed workers, including professionals, tradespeople, shopkeepers, and free-lance service providers.
1.3 Population health impact indicators

To assess the burden of fatal occupational injuries, we calculated four indicators:
- the number of accidents, distinguishing occupational from commuting accidents;
- the mortality rate per accident;
- years of potential life lost (YPLL), defined as mean number of years that a person who died prematurely did not live [8];
- the proportion of accidental deaths attributable to work [9], in order to complete the analysis of the effect of work on health in comparing them with other accidents, such as home and leisure (household, sports/exercise) and traffic accidents.

Data sources for fatal occupational injuries

Four data sources were identified.

1) Social insurance funds
In cases of occupational or commuting accidents, the employer must make a report to the social insurance fund, which determines whether the accident is attributable to work. It relies on the fairly general definition of an occupational accident in the Social Security Code (see 1.1). In addition to accidental injuries, both suicides and fatal sudden medical events in the workplace are recognized by these funds as occupational accidents.

In cases of death, indemnification takes the form of an income paid to the beneficiaries (by law or named by the victim). The data collected about the circumstances of the accident, the occupational characteristics of the victims and those of the company are quite succinct because they are collected principally for administrative purposes, including setting employers’ contribution.

People insured by the principal national social insurance fund (the Régime général de la sécurité sociale, RGSS, covering all private-sector employees and more than 80% of the French population) who are victims of serious or fatal injuries are investigated particularly, to ascertain the circumstances of the accident. These surveys are conducted by the primary health insurance funds (CPAM), or the retirement or workers’ compensation insurance funds. These accidents may be recorded in the Épica data base (prevention studies based on computerized post-accident reports) of the national research and safety institute, which collects the accidents that are fatal, serious or significant for prevention among those covered by the RGSS. This database is unfortunately not exhaustive.

2) Baac
These data, which can be identified only for drivers injured while commuting or on work assignments, but not their passengers, are centralized in a national accident file administered by the interministerial road and traffic safety observatory (ONISR) [10].

3) Death certificates
In 2007, 26,149 deaths — a little more than 5% of all deaths — were due to “accidents” according to CépiDc-Inserm. The section on “external causes” of death in the 10th revision of the International Classification of Diseases (ICD-10) does not allow workplace accidents to be identified, even though it theoretically takes into account the different components of the circumstances of the accident, such as mechanism, place, and activity at the onset of death. These can, however, be identified by a specific item on death certificates (see 1.2).

DST conducted an initial analysis of death certificates for 2005 and found that this source is not currently reliable: of 1,420 certificates for which “work accident” was checked, 48% were not even accidents. Certifying physicians apparently do not always have available all the information necessary to relate a death to the decedent’s work. Moreover, in some cases, physicians may use this question to signal an occupational disease.

This problem with coding accidents and, in particular, occupational accidents, is not unique to France [11]. Coding errors can result in substantial underestimates. Since 1997, US researchers working in this field have met regularly in National Occupational Injury Research Symposiums to try to resolve these difficulties. In Europe, the ANAMORT project (Analysis of fatal injury in European Union countries) [12] is intended to furnish pertinent indicators usable in Europe to assess fatal injuries and to enable comparisons between countries, but it specifically excludes occupational injuries.

4) Reports by labor inspectors
In cases of fatal occupational accidents, labor inspectors (monitoring agents from the labor Inspectorate) conduct an investigation and draft a report. Although a system of immediate transmission to the ministry of labor was set up in 2005, the information is not routinely recorded in a database and is therefore not currently usable.

* All causes of death from section XX "external causes of morbidity and mortality (V01-Y98)" from the International Classification of Diseases 10th revision, except for suicides (X60-X84) and homicides (X85-Y09).
The results reported here cover all employees, that is, all public and private hourly and salaried workers (22 million people according to the 2004 job survey by Insee (national institute of statistics and economic studies). The events counted are the fatal occupational and commuting injuries reported and recognized by eight health insurance funds from 2002 through 2004 (box 2) [13]. To try to uncover the most worrisome situations, the numbers of deaths and mortality rates by age, economic sector, and mechanism of injury among men and women separately and by type of accident (work/commute) were analyzed.

### Data collected from the social insurance funds

The study covers fatal accidents in 2002-2004 reported and recognized as occupational or commuting accidents and recorded in the databases of the principal social insurance funds for workers. The data for two funds (national civil servants and postal workers and local government and hospital employees) covered the period from 2004 through 2006. For both, we assumed the number of deaths in 2004-2006 was equal to the number in 2002-2004.

**The study population: Employees covered by eight social insurance funds**

<table>
<thead>
<tr>
<th>Employees</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private-sector employees (RGSS)</td>
<td></td>
</tr>
<tr>
<td>Employees affiliated with the Farmers’ and agricultural workers’ social insurance fund (Mutualité sociale agricole) (MSA)</td>
<td></td>
</tr>
<tr>
<td>Employees of the French railroad company (Société nationale des chemins de fer français)</td>
<td></td>
</tr>
<tr>
<td>Employees of the Paris metropolitan transit system (Régie autonome des transports parisiens)</td>
<td></td>
</tr>
<tr>
<td>Employees of the French national power utilities (Electricité de France and Gaz de France – Suez)</td>
<td></td>
</tr>
<tr>
<td>Civil servants working for the national government and the postal service</td>
<td></td>
</tr>
<tr>
<td>Civil servants working for local governments and public hospitals</td>
<td></td>
</tr>
<tr>
<td>Seamen</td>
<td></td>
</tr>
</tbody>
</table>

Each fund was asked to provide individual information about the deceased’s sex, age, and economic sector (coded according to each fund’s classification), the type of accident (occupational or commuting) and the mechanism of injury (material element).

Two funds (seamen and national government and postal employees), which accounted for 4% of the fatal injuries, did not have individual data available. Missing data were estimated by applying the distribution from the principal fund, the RGSS.

The economic sector of each victim was recoded according to a common code: Insee’s synthetic economic nomenclature (nomenclature économique de synthèse, NES) [14]. The mechanism of injury was recoded according to the RGSS (private-sector employees) nomenclature in six categories: accident involving a vehicle, fall from a height, machine accident, electrical accident, other accidents (including but not limited to accidents on level surfaces, explosions, homicides) and unclassified accidents. The latter include, among others, sudden deaths (myocardial infarction, stroke, etc.) and suicides in the workplace, even though we could not identify them. The vehicular accident category allowed us to examine traffic accidents.

No time limit was set for the interval between the accident and the death.

Within each social insurance fund, we calculated the mean annual number of fatal accidents for 2002-2004, as well as the mean annual number by type of accident (occupational or commuting accident), sex, age, economic sector and mechanism of injury. The global count for all employees welfare funds was obtained by adding together the mean counts for each fund.

The denominator used to calculate the mortality rate for all employees was reconstructed from the data from the Insee 2004 job study [15] because the RGSS could not provide the distribution of these recipients by sex and age.

The YPLL from each fatal accident is the number of years that this prematurely dead person did not live, determined by the life expectancy of people alive at the victim’s age at death. For example, for a man who died of a fatal accident at the age of 47 years, the YPLL equals the life expectancy of men aged 47 years, that is, 32 years according to the Insee mortality table for 2004-2006. The mean YPLL value, by occupational or commuting accident, was calculated for all victims, and then by economic sector and cause of accident for men.
2.1 Number of deaths and mortality rate by sex

> Number of deaths

During the period 2002-2004, the mean annual number of work-related fatal accidents (occupational and commuting) recorded by the social insurance funds was 1,330: 739 occupational and 591 commuting injuries. These fatal accidents mainly involved men (94% of the occupational accidents and 78% of the commuting accidents) (Table 1).

| Table 1 |

Mean annual number of deaths according to accident type and sex

<table>
<thead>
<tr>
<th></th>
<th>Occupational accidents</th>
<th>Commuting accidents</th>
<th>Occupational and commuting accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of deaths</td>
<td>%</td>
<td>Number of deaths</td>
</tr>
<tr>
<td>Men</td>
<td>695</td>
<td>94</td>
<td>459</td>
</tr>
<tr>
<td>Women</td>
<td>44</td>
<td>6</td>
<td>132</td>
</tr>
<tr>
<td>Total</td>
<td>739</td>
<td>100</td>
<td>591</td>
</tr>
</tbody>
</table>

> Mortality rates

The mortality rate per occupational accident was 3.3 per 100,000 employees. For men, it was 6.0 per 100,000, and for women 0.4 per 100,000, one fifteenth of the number for men. The mortality rate for commuting accidents reached 2.7 per 100,000 for all employees. It was three times higher among men than women (Table 2).

| Table 2 |

Mortality rate per 100,000 employees by accident type and sex

<table>
<thead>
<tr>
<th></th>
<th>Occupational accidents</th>
<th>Commuting accidents</th>
<th>Occupational and commuting accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rate/100,000</td>
<td>Rate/100,000</td>
<td>Rate/100,000</td>
</tr>
<tr>
<td>Men</td>
<td>6.0</td>
<td>3.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Women</td>
<td>0.4</td>
<td>1.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>3.3</td>
<td>2.7</td>
<td>6.0</td>
</tr>
</tbody>
</table>

The detailed results presented in the remainder of this section concern only men, in view of the low mortality observed among women.

2.2 Numbers of deaths and mortality rates by age and years of potential life lost among men

Two-thirds of the fatal occupational injuries occurred in employees older than 40 years, but only one third of the commuting accidents.

For occupational accidents, the mortality rate increased with age: from 4.1 per 100,000 in those aged 15-29 years to 9.7 per 100,000 for the group aged 50 years or more. Commuting accidents, on the other hand, occurred at the highest rate in the youngest age group, those 15-29 years (7.8 per 100,000) (Figure 1).

The mean YPLL was higher for the commuting accidents (44 years, standard deviation (SD): 11 years) than for the occupational accidents (36 years, SD: 10 years), consistently with the younger mean age of death from commuting accidents.

| Figure 1 |

Mean annual number of deaths during the period 2002-2004 and mortality rate according to accident type and sex among men
2.3 Mechanisms of fatal injuries among men

Distribution of occupational accidents according to the mechanism of the injury

Accidents involving vehicles, the category most closely related to traffic accidents during work-related travel (as opposed to commuting), were the most numerous (30% of workplace accidents), followed by falls from heights (13%) and machine accidents (11%). Most vehicle accidents involved automobiles, trucks or vans. We note that a substantial portion of occupational injuries (28%) were coded as "unclassified" (Figure 2).

Mortality rate for occupational accidents by age and mechanism of injury

The mortality rate increased significantly with age for falls from heights and unclassified accidents, which included deaths from sudden medical events in the workplace. The mortality rate varied little by age for the other mechanisms of injury (Figure 3).

Years of potential life lost (YPLL) because of an occupational accident by the mechanism of injury

The mean YPLL from fatal occupational injuries varied according to the mechanism from 31 years for the unclassified accidents (which included deaths from sudden medical events at the workplace and suicides) to almost 42 years for electrical accidents (Figure 4).

Mean YPLL (± standard deviation) because of an occupational accident by the mechanism of injury among men

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2 All of the accidents involving a vehicle in the sense of the material element code “8 – Vehicles” of the RGSS. This category includes accidents involving automobiles, trucks, vans, motorcycles, and bicycles, as well as accidents in trains, airplanes, and helicopters, and accidents involving agricultural vehicles and pedestrians hit by or caught onto vehicles. This category does not include accidents involving handling trolleys or cars or earthmoving machinery.
2.4 Economic sector among men

- **Number of deaths and mortality rate from occupational accidents (according to economic sector)**

The sectors of construction, industry, and transportation generated the greatest number of deaths from occupational injuries among men (Figure 5). The mortality rate (Figure 5) is higher for agriculture-forestry-fishing (28 per 100,000), followed by transportation (14 per 100,000) and construction (13 per 100,000).

![Figure 5](image)

**Figure 5**

Mean annual number of deaths and mortality rate from occupational accidents according to economic sector among men

<table>
<thead>
<tr>
<th>Economic sector</th>
<th>Number of deaths</th>
<th>Rate/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, fishing</td>
<td>63</td>
<td>28.2</td>
</tr>
<tr>
<td>Industry</td>
<td>134</td>
<td>4.8</td>
</tr>
<tr>
<td>Construction</td>
<td>144</td>
<td>12.8</td>
</tr>
<tr>
<td>Trade</td>
<td>63</td>
<td>4.4</td>
</tr>
<tr>
<td>Transportation</td>
<td>112</td>
<td>14.3</td>
</tr>
<tr>
<td>Financial activities</td>
<td>7</td>
<td>2.6</td>
</tr>
<tr>
<td>Services to businesses and real estate activities</td>
<td>99</td>
<td>5.5</td>
</tr>
<tr>
<td>Services to individuals</td>
<td>21</td>
<td>3.2</td>
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<tr>
<td>Education, health, social services</td>
<td>23</td>
<td>2.1</td>
</tr>
<tr>
<td>Administration</td>
<td>29</td>
<td>2.2</td>
</tr>
</tbody>
</table>

- **Mechanism of injury according to economic sector**

In construction, falls from heights (3.9 per 100,000) ranked first, followed by accidents involving vehicles (2.0) and machines (1.5) (Table 3). In the transportation sector, the main risk concerned vehicle accidents (8.5). In agriculture-forestry-fishing, vehicles were again the leading cause of injuries (5.7), followed by falls from heights (4.0), and machine accidents (3.0). In this sector, the mortality rate for the "other accidents" category was very high (10.8). It mainly covered deaths due to being crushed by a tree or branch, or from asphyxia or drowning, or due to animals. In manufacturing, fatal accidents involved mainly vehicles (1.0) or other machines (0.8).

A substantial portion of injuries (0.7 to 3.8 per 100,000 according to sector) in all sectors remained unclassified.

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1 The industrial sector includes the industries of agricultural and food processing (agrofood), consumer goods, automobiles, capital goods, intermediate products, and energy.
### Table 3

Mortality rates for men from occupational accidents per 100,000 employees according to economic sector and mechanism of injury

<table>
<thead>
<tr>
<th>Mechanism of injury</th>
<th>Vehicles</th>
<th>Falls from heights</th>
<th>Machines</th>
<th>Electricity</th>
<th>Other accidents</th>
<th>Unclassified accidents</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic sector</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture, forestry, fishing</td>
<td>5.7</td>
<td>4.0</td>
<td>3.0</td>
<td>0.9</td>
<td>10.8</td>
<td>3.8</td>
<td>28.2</td>
</tr>
<tr>
<td>Industry</td>
<td>1.0</td>
<td>0.5</td>
<td>0.8</td>
<td>0.1</td>
<td>0.8</td>
<td>1.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Construction</td>
<td>2.0</td>
<td>3.9</td>
<td>1.5</td>
<td>0.5</td>
<td>2.0</td>
<td>2.9</td>
<td>12.8</td>
</tr>
<tr>
<td>Trade</td>
<td>1.9</td>
<td>0.1</td>
<td>0.4</td>
<td>0.0</td>
<td>0.5</td>
<td>1.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Transportation</td>
<td>8.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.1</td>
<td>1.0</td>
<td>3.6</td>
<td>14.3</td>
</tr>
<tr>
<td>Financial activities</td>
<td>0.6</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Services to businesses and real estate activities</td>
<td>1.4</td>
<td>0.8</td>
<td>0.7</td>
<td>0.2</td>
<td>0.9</td>
<td>1.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Services to individuals</td>
<td>0.8</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.9</td>
<td>1.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Education, health, social services</td>
<td>0.8</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.3</td>
<td>0.7</td>
<td>2.1</td>
</tr>
<tr>
<td>Administration</td>
<td>0.7</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.4</td>
<td>0.7</td>
<td>2.2</td>
</tr>
<tr>
<td>All sectors</td>
<td>1.8</td>
<td>0.8</td>
<td>0.6</td>
<td>0.1</td>
<td>1.0</td>
<td>1.7</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Years of potential life lost (YPLL) due to fatal occupational injuries by economic sector

The mean YPLL (calculated excluding unclassified occupational accidents) was highest in the sectors of education-health-social work, transportation and commerce (Figure 6). These three sectors are characterized by a higher proportion of accidents involving vehicles than the other sectors. Young employees were more often affected by accidents involving vehicles, while most of the other mechanisms of injury were more frequent among older employees (Figure 4). The mean YPLL was lowest in the construction industry. This sector was marked by a high proportion of deaths due to falls from heights, which occur more frequently among the oldest employees.

### Figure 6

Mean YPLL (± standard deviation) because of an occupational accident (calculated excluding unclassified occupational accidents) by economic sector

*Note: the mean YPLL was calculated only for economic sectors where more than 10 deaths occurred each year.*
Summary for employees

Fatal occupational and commuting injuries happened mainly to men, who were the victims of 94% of the fatal occupational accidents and 78% of the commuting accidents.

The risk of fatal occupational injury increased with age among men. This phenomenon was most marked for the unclassified accidents, including deaths from sudden medical events (strokes and myocardial infarctions), which occurred most frequently in workers aged 50 years or more. The oldest also died at the highest rates from falls from heights and machine accidents. Various hypotheses should be explored to explain the increased risk with age: the reduction of vigilance, balance, and physical strength with age can promote accidents in settings where the intensity of work has increased in recent years for the oldest employees as well as the youngest [16].

Unlike fatal occupational injuries, fatal commuting injuries risk diminished with age.

Accidents involving vehicles were the leading cause of fatal occupational accidents among men: 30% of the deaths for the 2002-2004 period. Contrary to the commuting accidents, they showed no clear difference of mortality rate by age.

The three sectors with the highest mortality rates for occupational accidents were: agriculture-forestry-fishing (28 per 100,000), transportation (14 per 100,000) and construction (13 per 100,000). The three sectors that generated the most fatal workplace injuries were construction (144 deaths), industry (134), and transportation (112).

Despite the high proportion of unclassified accidents in each sector, the distribution of mechanisms of injury differed by sector: falls from heights and both vehicle and machine accidents came in first in construction, vehicle and machine accidents rauhed first in industry.
This section considers all workers (24.7 million people according to the Insee 2004 job survey), that is, employees and self-employed workers. Among the latter, farmers (700,000 people) are now covered by a mandatory "occupational risk" or workers compensation coverage, and the MSA transmitted data about them. On the other hand, tradespeople, shopkeepers and independent professionals, who together account for approximately two million people, have no such workers’ compensation coverage in their social protection fund. The indicators for mortality rate and number of workplace accidents for all workers were estimated from observations in the population covered by workers’ compensation insurance, that is, employees and farmers (box 3).

### Box 3

**Estimates for all workers**

The mortality rate per occupational accident in the population of workers was estimated by assuming that the mortality rate for tradespeople, shopkeepers, small-business owners, and professionals was similar to that of all employees and farmers. The mean annual number of all fatal occupational injuries (strictly occupational and commuting) was then estimated by multiplying the corresponding rate by the number of all workers. These estimates were calculated by type of accident (occupational or commuting), sex, and age.

The proportion of accidental deaths due to work (attributable fraction) was then calculated by dividing the estimated mean number of annual work-related fatal injuries by the mean number of annual deaths from accidental injuries (excluding suicides and homicides [codes V01-X59 and Y10-Y98 of the ICD-10] recorded by CépiDc-Inserm for the 2002-2004 period, with selection of deaths for the 15-59-year-old age group [presumed working life]). The decision to exclude suicides from the denominator is based on the assumption that this cause of death, fairly high in France, concerns very few of the cases recognized as occupational accidents.

### 3.1 Number of deaths and work-attributable fraction by sex

**Number of deaths**

The annual number of fatal occupational injuries for all workers in the 2002-2004 period was estimated at 1,557 [95% confidence interval (CI): 1,478-1,640]. This figure is composed of 905 [95% CI: 845-969] occupational accidents and 652 [95% CI: 601-706] commuting accidents (Table 4).

### Table 4

Mean number of annual deaths and confidence intervals according to type of accident and sex

<table>
<thead>
<tr>
<th></th>
<th>Occupational accidents</th>
<th>Commuting accidents</th>
<th>Occupational and commuting accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of deaths</td>
<td>95% CI</td>
<td>Number of deaths</td>
</tr>
<tr>
<td>Men</td>
<td>868                   [808-931]</td>
<td>519                [473-568]</td>
<td>1,387               [1,311-1,466]</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>905</strong>               [845-969]</td>
<td><strong>652</strong>            [601-706]</td>
<td><strong>1,557</strong>           [1,478-1,640]</td>
</tr>
</tbody>
</table>
Proportion of deaths from accidents attributable to work among people aged 15-59 years

According to CepiDc-Inserm, 7,055 annual deaths from accidents (all circumstances combined) occurred during the 2002-2004 period among men aged 15 to 59 years. The fraction of these deaths due to work is estimated at 19%, including 12% to occupational injuries and 7% to commuting injuries (Table 5).

Among women aged 15 to 59 years, the mean number of annual deaths from accidents was 1,946 during the 2002-2004 period. This figure is one third that of men. The proportion of these accidents due to work was assessed at 10%, of which 3% were occupational and 7% commuting.

3.2 WORK-ATTRIBUTABLE FRACTION BY AGE, AMONG MEN

Among men, the fraction of fatal occupational injuries, in the strict sense of the term, that are attributable to work increased with age; inversely, those attributable to commuting between home and work diminished with age (Table 6).

<table>
<thead>
<tr>
<th>Table 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Estimate of the fraction of fatal occupational injuries attributable to work according to sex and type of accident in the French population aged 15-59 years</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Women</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Estimate of the fraction of fatal occupational accidents attributable to work according to type of accident and age in the population of men aged 15-59 years</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>15-29 years</td>
</tr>
<tr>
<td>30-39 years</td>
</tr>
<tr>
<td>40-49 years</td>
</tr>
</tbody>
</table>

Summary for all workers

For the 2002-2004 period, the estimated annual number of fatal occupational injuries (including commuting) for all workers ranged from 1,478 to 1,640, which have made possible to assess the importance of this occupational risk and to compare it with other serious work-related health problems.

Among men, fatal occupational injuries ranked second after deaths from lung cancer attributable to occupational exposure (for which the estimated number for 1999 ranged from 2,713 to 6,051 [17]) and ahead of deaths from mesothelioma attributable to occupational asbestos exposure (estimated number between 500 and 580 deaths in 2002 [18]). It should be noted that the estimated number of deaths presented here is a minimum because it is based on the hypothesis that self-employed workers have the same risk of fatal accidents as employees do. However, this category includes numerous construction trades workers (in 2006, among the 872,000 small or very small companies, 39% worked in construction [19]), who are subject to at least the same risks as employees in this sector, and they in turn rank first for fatal occupational accidents among all economic sectors for employees; it is therefore probable that the figures above are underestimated.

Among men aged 15-59 years, the fraction of accidental deaths due to work and commuting was approximately 20%. This fraction was lower among women, whose attributable fraction was 10% of their accidental deaths, with an absolute number of deaths one third that among men. Restricted to occupational accidents in the strict sense of the term, the attributable fraction for work among men (12%) was similar to that estimated by WHO for the region of western Europe (11%) [9].

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4 Query of CépiDc-Inserm website (consulted on 2 December 2010), available from the URL: [http://www.cepidc.vesinet.inserm.fr/](http://www.cepidc.vesinet.inserm.fr/)
The preceding analysis of the mechanisms responsible for fatal injuries in employees showed that accidents involving vehicles (a proxy for traffic accidents) accounted for approximately 30% of all deaths from occupational injuries in the strict sense of the term. Accidents involving vehicles accounted for more than 90% of the commuting deaths. Traffic accidents, whether they occur during travel for work or during the trip between home and workplace, are therefore the leading cause of the fatal occupational accidents recognized by the social insurance funds. A reduction in their number was one of the objectives of the Public Health Law of 2004 [20] and is also part of the Workplace health plan n° 2 (activity 14), covering the 2010-2014 period [21].

To document this category of accidents, a supplementary data source was used: the Baac, written up by police in the case of motor vehicle accidents that cause bodily harm (sidebar 4). Beyond the value of comparing results from two sources, the Baac allow us to analyze complementary information that is not recorded by the health insurance funds. Moreover, they cover a broader population, since they include traffic accidents involving tradespeople, shopkeepers and independent professionals (all occupations not covered by any workers’ compensation insurance). This analysis was conducted in collaboration with the joint unit on epidemiologic research and surveillance of transportation, work, and environment [22].

### 4.1 Number of deaths and mortality rates by sex (Sources: Social insurance funds and Baac)

Although the two sources differ in the populations covered and the case definitions (box 4), the order of magnitude of their numbers and mortality rates are the same (Table 7). Twice as many men were killed during commuting accidents as during travel for work. Among women, nearly all fatal occupational traffic accidents occurred while commuting.

<table>
<thead>
<tr>
<th></th>
<th>Travel for work</th>
<th></th>
<th>Home-work commuting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social insurance funds</td>
<td>Baac</td>
<td>Social insurance funds</td>
<td>Baac</td>
</tr>
<tr>
<td><strong>Number of deaths</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>207</td>
<td>245</td>
<td>422</td>
<td>502</td>
</tr>
<tr>
<td>Women</td>
<td>17</td>
<td>18</td>
<td>121</td>
<td>128</td>
</tr>
<tr>
<td><strong>Mortality rate/100,000</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>1.8</td>
<td>1.8</td>
<td>3.6</td>
<td>3.7</td>
</tr>
<tr>
<td>Women</td>
<td>0.2</td>
<td>0.2</td>
<td>1.2</td>
<td>1.1</td>
</tr>
</tbody>
</table>
# Data about fatal occupational traffic accidents

## Definitions

A traffic accident involving bodily injury (fatal or non-fatal) is defined as follows (decree dated 27 March 2007, relative to the conditions for developing statistics about bodily injury in traffic accidents, published in the Journal officiel n° 89 dated 15 April 2007):

"An accident that:
- results in at least one victim, that is, one person requiring medical care;
- occurs on a road open to public circulation;
- involving at least one vehicle.

Among the victims, we distinguish:
- the persons killed: all person (drivers or pedestrians) who die immediately or in the six days following the accident;
- the injured: victims not killed."

Note that from 2005, the definition changed to include among those killed those who died within 30 days of the accident, as in other European countries. The results presented here, because they cover the 2002-2004 period, list as deaths only those who died within six days, in accordance with the definition in force during this period.

## Data extracted from the Baac

We extracted data about the deaths in the six days that followed the accident of drivers or pedestrians aged 15 to 64 years old who were traveling either between home and work or for work during the 2002-2004 period.

## Differences with the data from the social insurance funds

- The Baac cover all accidents, independent of their relation to work, while the social insurance funds cover only those involving employees.
- Traffic accidents at work recognized by the social insurance funds may occur outside of roads open to public traffic, for example, on private company property.
- The instructions for completing the Baac specifically stipulate that the "type of trip" must be completed only for drivers and pedestrians; data from the Baac therefore do not cover passengers.
- Occupational data differ in the two sources: occupational category in the Baac, economic sector in the data from the social insurance funds.

## Calculation of the mortality rate due to traffic accidents (by age, vehicle category, economic sector and occupation for each sex)

1) Rates calculated with the Baac data

**Numerator:** number of drivers and pedestrians who died within six days of the accident, were 15 to 64 years old, and were traveling between home and work or for work during the 2002-2004 period.

**Denominator:** number of workers (currently employed workers), from the Insee 2004 job survey.

2) Rates calculated with data from the social insurance funds

**Numerator:** number of deaths from work or commuting accidents involving vehicles among employees in the 2002-2004 period.

**Denominator:** number of employees, from the Insee 2004 job survey.
4.2 Mortality rates by age among men (sources: Social insurance funds and Baac)

The mortality rate profiles by age are similar in the two sources (Figure 7). The mortality rate for traffic accidents during work-related travel varies little by age. On the other hand, for traffic accidents while commuting, the mortality rate is highest among those aged 15 to 29 years.

| Figure 7 |

Mortality rate for traffic accidents by type of accident and age among men

4.3 Mortality rate by vehicle category (sources: Social insurance funds and Baac)

The mortality rate profiles according to vehicle category were similar in the two sources. Automobiles and trucks were the vehicles associated with the highest risk of deaths during travel for work. For commuting accidents, risk was highest with automobiles and motorcycles (Figure 8).

| Figure 8 |

Mortality rate for traffic accidents by type of accident and vehicle category among men
4.4 Number of deaths and mortality rate by economic sector (source: Social Insurance Funds)

The most deaths were recorded in the transportation sector. The risk of death while traveling for work was especially high in two sectors: transport and agriculture-forestry-fishing (Figure 9).

**Figure 9**
Mean annual number of deaths and mortality rate for traffic accidents during travel for work by economic sector among men

<table>
<thead>
<tr>
<th>Economic sectors</th>
<th>Number of deaths</th>
<th>Rate/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, fishing</td>
<td>13</td>
<td>5.7</td>
</tr>
<tr>
<td>Industry</td>
<td>28</td>
<td>1.0</td>
</tr>
<tr>
<td>Construction</td>
<td>22</td>
<td>2.0</td>
</tr>
<tr>
<td>Trade</td>
<td>27</td>
<td>1.9</td>
</tr>
<tr>
<td>Transportation</td>
<td>67</td>
<td>8.5</td>
</tr>
<tr>
<td>Financial activities</td>
<td>2</td>
<td>0.6</td>
</tr>
<tr>
<td>Services to businesses and real estates activities</td>
<td>25</td>
<td>1.4</td>
</tr>
<tr>
<td>Services to individuals</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Education, health, social services</td>
<td>9</td>
<td>0.8</td>
</tr>
<tr>
<td>Administration</td>
<td>9</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Source: Social insurance funds.

4.5 Number of deaths and mortality rate by occupational category (source: Baac)

In the Baac, occupational category is expressed by a variable in 9 categories: 1: professional drivers; 2: farmers; 3: tradespeople, shopkeepers, self-employed (free lancers); 4: upper management, professionals, company heads; 5: lower-level managers, office, sales, and service employees; 6: laborers; 7: retired; 8: unemployed; 9: other.

Among men, the professional drivers (this category, specific to the Baac, was considered equivalent to the category of “drivers” in the Insee’s nomenclature of French socioprofessional categories, PCS)\(^5\) have the highest risk of death during trips for work. The mortality rate for tradespeople and shopkeepers also appears worrisome. Note the small number of accidents observed for the “farmers” category, which includes both farmers and their employees (Figure 10). This observation may be due to the police officers' difficulty in differentiating what is work-related from what is personal for farmers.

**Figure 10**
Mean annual number of deaths and mortality rate for traffic accidents during travel for work by occupational category among men

<table>
<thead>
<tr>
<th>Occupational category</th>
<th>Number of death</th>
<th>Rate/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional drivers</td>
<td>63</td>
<td>10.7</td>
</tr>
<tr>
<td>Farmers</td>
<td>7</td>
<td>1.6</td>
</tr>
<tr>
<td>Tradespeople, shopkeepers, self-employed</td>
<td>31</td>
<td>3.0</td>
</tr>
<tr>
<td>Employees and middle managers</td>
<td>73</td>
<td>1.0</td>
</tr>
<tr>
<td>Laborers</td>
<td>47</td>
<td>1.1</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Source: Baac.

---

\(^5\) The category “drivers” in the PCS groups together local and long-distance truck drivers as well drivers of buses, taxis, personal chauffeurs, and delivery personnel and messengers.
4.6 Distribution by type of road (source: Baac)

Most fatal occupational traffic accidents occur on main roads ("routes départementales") (Figure 11). We note that the proportion of deaths on highways is substantially higher for work-related trips than for commuting.

**Distribution of fatal traffic accidents by type of accident and type of road among men**

<table>
<thead>
<tr>
<th>Type of road</th>
<th>Proportion of fatal travel for work (n=number of deaths)</th>
<th>Proportion of fatal home-work commuting (n=number of deaths)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways</td>
<td>21% (n=52)</td>
<td>5% (n=27)</td>
</tr>
<tr>
<td>Main road</td>
<td>27% (n=67)</td>
<td>26% (n=128)</td>
</tr>
<tr>
<td>County road</td>
<td>42% (n=102)</td>
<td>57% (n=285)</td>
</tr>
<tr>
<td>Street</td>
<td>9% (n=22)</td>
<td>11% (n=56)</td>
</tr>
<tr>
<td>Private road</td>
<td>0% (n=0)</td>
<td>0% (n=1)</td>
</tr>
<tr>
<td>Parking garage</td>
<td>0% (n=0)</td>
<td>0% (n=0)</td>
</tr>
<tr>
<td>Other</td>
<td>0% (n=1)</td>
<td>1% (n=5)</td>
</tr>
</tbody>
</table>

Source: Baac.

**Summary of deaths from occupational traffic accidents**

The analysis of the components common to both sources (Social insurance funds and Baac) shows very similar results. Both show rates with the same order of magnitude, regardless of the type of accident. Mortality rate patterns by sex and age are also similar.

In particular, both sources show that the mortality rate by age is stable for work-related travel but falls with age for commuting. The comprehensive analysis of traffic accidents over the past several years has shown a high mortality rate among young men, which may be explained by their specific attitude towards risk-taking. The difference observed for accidents while traveling for work purposes suggests more careful behavior while working.

The Baac provide specific information about tradespeople, shopkeepers and self-employed people, for whom we have little information about their occupational risks: their mortality rate from traffic accidents during travel for work ranks second only to that of professional drivers.
5. Open questions

**Question 1**
Can the census of fatal occupational injuries collected via the social insurance funds be considered exhaustive?

Some elements may have led to an undercount at the national level. These include the accidents for which the time between the accident and death is long (several weeks or several months) and which may thus be recorded as accidental deaths only much later; accidents whose victim did not have an eligible heir are not always recorded, since no expenses were associated with them. Finally, it is probable that some of the fatal workplace injuries were not reported to the social insurance fund. The lack of centralized administration of these occupational and commuting accidents for civil servants is also likely to lead to undercounting: the available information is based on an annual survey of the ministries, which covers only some of the cases.

**Question 2**
Can the scale of the undercounting of these fatal occupational injuries be assessed by compensation data?

This undercounting can only be demonstrated by comparing the number of fatal workplace injuries identified by compensation systems to other data sources. As stated above, there is not currently another data source in France that can really be used to assess the number of fatal workplace injuries. Nonetheless, the existence of an undercount is very probable; indeed, studies in other industrialized countries suggest it might even be substantial. Thus in the United States, Layne [23] compared the two principal surveillance systems for fatal occupational injuries:
- the National Traumatic Occupational Fatalities (NTOF) established by the National Institute for Occupational Safety and Health and based on death certificates (the item “in the case of accident, was it a work accident?”);
- and the Census of Fatal Occupational Injuries (CFOI) established in 1992 by the Bureau of Labor Statistics, which is based on a variety of different data sources, including death certificates, compensation data, police reports, physicians’ report, the press, etc.

This study shows that NTOF records fewer cases than the CFOI (from 83% to 88% according to the year) but that the profile (according to sex, age, and economic sector) is similar in both surveillance systems. Other authors have shown that as many as 20% of the deaths may be missing from the CFOI itself.

An interesting study by Smith *et al.* [24] conducted in Maryland from three types of accidents considered “sentinels” because they are frequently occupational (falls from heights, electrocutions and machine accidents) used the capture-recapture method to show that the best source of information was a study of the certifying physicians who register all sudden and unexpected deaths in Maryland. Such registration does not exist in all countries. In Australia [25] and Quebec [26], data from the coroners’ files are most exhaustive. In Australia, a study comparing deaths from external injuries recorded by the coroners with the official statistics (from the ministry of labor, compensation data, death certificates, etc.) showed that 34% of work-related deaths are not listed by any of these organisms. The statistics of the ministry of labor were the least exhaustive since only 35% of deaths were found there, while the compensation data covered 57% of these deaths. Substantial variations were observed according to economic sector, occupation, worker status and the type of accident. Again, these useful data are not easily accessible. This study of the underrecording of deaths in the official Australian databases was performed on the occasion of a large-scale ad hoc study.

It is interesting to underline that the most exhaustive databases also appear to vary by country, thus reflecting each society’s cultural and organizational differences in relation to work.

It is thus necessary to consider the figures presented above not as absolute figures but as a basic minimum. On the other hand, the profiles according to sex, economic sector and age appear to be reliable.
Question 3: Are the results seen in France comparable to those in other industrialized countries?

The indicators calculated made it possible to compare results with those available for the United States. Accordingly, the mortality rate per occupational accident among French employees (3.3 per 100,000) is of the same order of magnitude as that in the United States for 2004: 3.5 per 100,000 employees according to the CFOI [27]. Similarly, the European Union statistics report a mortality rate of 3.8 per 100,000 (nine economic sectors of the general nomenclature for economic activities in the European communities (NACE) [28].

The analysis by sector showed that high mortality rates for occupational accidents in France were found in the same sectors as in the United States: among the four sectors with the highest mortality rates in the US, according to the CFOI, three are also at the top of the list in France: agriculture-forestry-fishing, transportation, and construction. The fourth sector, mining (extraction of petroleum, gas, coal and supporting activities), essentially no longer exists today in France [29]. We find the same sectors at risk among the nine branches of activity studied by the European Union.

The study of the mechanism of injury showed, as it did in the US, that traffic accidents are the leading cause of fatal occupational injuries: across the Atlantic, 43% of fatal workplace injuries resulted from transport injuries (the field of which is slightly broader than that of traffic accidents in the strict sense of the word) in 2005 [30].

Question 4: What is the relation between fatal and non-fatal occupational injuries? Is the profile (by sex, age and sector) of these injuries similar to that of non-fatal injuries?

The frequency of fatal workplace injuries among men (6.5 per 100,000 employees) in 2004 was 12 times higher than that among women (0.5 per 100,000 employees). The sex-ratio is much lower for non-fatal accidents: the frequency among men (8.8 per 100 employees) is only twice as high as among women (4.6 per 100 employees).

The profile of frequencies by economic sector (in 16 economic branches) is relatively close to that of non-fatal injuries among men. On the other hand, differences according to age are observed (Figure 12): the frequency of fatal injuries increases with age, while that of nonfatal accidents is reduced with age.

Figure 12

Frequency and mortality rate for occupational injuries among men in 2004

Note: the mortality rate is the number of fatal injuries in the RGSS and MSA (employees only) fund data for 2004 divided the number of employees in these funds that year.

The frequency of non fatal occupational injuries is the number of non fatal occupational injuries recognized by the RGSS and MSA (employees only) workers compensation funds for 2004 divided by the number of employees in these funds that year.
**Question 5: Can we count the work-related suicides in France with social insurance funds data?**

The real scale of work-related suicides in France is not known. No comprehensive reliable data appear to exist on this subject. In the social insurance fund databases, work-related suicides are neither identifiable nor exhaustive. Nonetheless, a specific search at the RGSS from the primary health insurance funds showed that in 2008, 51 suicide deaths were reported as occupational injuries/accidents (56 in 2009) [31]. Half took place in the workplace, half at the victims’ homes. The InVS DST is currently examining the investigation of other sources [32, 33].
6.1 Centralization of Workplace Injury and Occupational Disease Compensation Data from the Social Insurance Funds

The Public Health Law dated 9 August 2004 assigned InVS, in liaison with the health insurance funds and the statistics departments of the relevant ministries, to set up a tool making it possible to centralize and analyze the statistics about workplace injuries and occupational diseases.

The principal objective is to use compensation data to have a better national overview of the impact of work on the health of employees (the only group, together with farmers, with workers’ compensation insurance) and to be able to identify the economic sectors whose workers are at the greatest risk. Currently, each social insurance fund publishes its own statistics, designed more for cost assessment than health surveillance.

The feasibility study has just been completed. It used data from three large social insurance funds (RGSS, MSA, and CNRACL for local government and hospital workers). A group of indicators was constructed to grasp more fully the diverse components of occupational risks: number of cases, to assess the extent of the phenomenon, index of frequency, to measure the “risk” or dangerousness, percentage of “serious” cases, that is, involving permanent partial disability or long sick-leave. These indicators must be able to be supplied at the national level for each sex by age, economic sector (NAF nomenclature), occupation (PCS nomenclature), and region for all the social insurance funds combined.

The next step involves the effective centralization of the compensation data by the tool designed for this purpose. At the same time, specific studies are planned from the data collected in the feasibility study, in particular, of work-related traffic accidents in France.

To more informations:


6.2 Program on Suicide and Work

Over the past several years (since 2002-2003), the InVS DST has been developing a surveillance program for work-related mental health. In 2009, this program added a project on suicide.

The first step in the project described mortality due to suicide according to occupational categories and economic sectors. This study was conducted through the Cosmop project [34], a general program already set up at InVS DST that describes mortality by causes according to job (occupational category and economic sector) [32,33].

The InVS DST also seeks to set up a surveillance system for work-related suicides (that is, those occurring in the workplace or recognized as work-related). The objective of this system would be to quantify these suicides, describe them according to occupational category and economic sector, and monitor their trends over time. Several sources producing data in France can contribute to feeding this system, although none is exhaustive. These comprise mainly the different health insurance funds, Inserm-CépiDc (though the use of death certificates), the Labor Inspectorate and forensics departments (through the performance of autopsies). The feasibility study for the establishment of such a surveillance system was conducted in 2010, and experimentation will take place in one region of France in 2011.

To more informations:
References


Occupational health indicators
Fatal occupational injuries in France

The French government decided to develop a battery of indicators in order to monitor the French population’s health at national level. Since its creation in 1998, the Department of Occupational Health (DST) of the French Institute for Public Health Surveillance (InVS) has developed several health surveillance programs aimed at producing regularly data about occupational risks in the French population. During the last years, different data sources have been established, and in 2009 the DST set up an occupational health indicators program. These indicators are established using several different data sources, and will be regularly available on the InVS website (www.invs.sante.fr).

The second report of this series is devoted to fatal occupational injuries. In this document, data on mortality by accident at work and commuting accident in France according to economic sector and main causes of accident are reported. The fraction of accidental deaths due to work and the years of potential life lost further to these accidents are also presented. A particular chapter deals with work related road accidents, first cause of fatal occupational injuries in France. Finally, questions allowing to put into perspective the results are listed.

Mots clés: mortality, accidental death, occupational injury, commuting accident, traffic accident, compensation claims

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