

# Are Immigrants at Increased Risk of Occupational Injury? A Literature Review

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**Abstract:** The aim of this review is to examine whether immigrant workers have a higher occupational injury rate than native employees. We collected 72 studies from around the world. A calculation based on 31 of these studies shows that the risk of occupational injury for foreign-born workers is 2.13 times higher than that of native-born workers. In seven studies immigrants actually had a lower occupational injury rate. At highest, immigrant workers had ten times the injury rate of native workers, whereas in one USA study the occupational injury rate of immigrant workers was only half of that of American-born workers. However, three studies consistently showed that immigrant workers had a higher injury rate than the original population during their first five years at the workplace, but that after five years their rate decreased to below the level of native workers. The conclusion of this study is that immigrant workers have a worse work conditions than native workers.

**Keywords:** Immigrant, foreign-born, native, occupational accidents, review.

## INTRODUCTION

The baby boomers are reaching retirement age, which means a reduction in the workforce in the near future. Many Western countries may need to increase their productivity to ensure the well-being of the aging population. Increasing immigration is one solution to the problem. About 3.5 million people have settled down in a new country in the European Union in the last few years [1].

The aim of this review is to examine the studies on immigrant workers' occupational injuries around the world. Occupational injuries reduce the contribution of immigrant workers to the national economy.

## METHODS

The studies for this literature review were chosen according to the following criteria:

- 1) The studies were published, most of them in peer-reviewed journals. All the studies reviewed were published in English.
- 2) The studies included a comparison of the injury rates of immigrants and native workers.
- 3) The injury rates are based injuries on the job.

The studies in the summary table fulfill these criteria. In some studies the injury rate was not explicitly presented, but the injury rate was calculated by the author based on the information on the articles.

The original studies have used different methods in data collecting. Some studies are based on the national registers, some on the self-reported questionnaires and some on interviews. This variety of methods did not influence on the

relation between native and immigrant workers, because same method is used both for native and immigrant workers in the same study.

## FIRST STUDIES

The first study on immigrants' occupational injuries was carried out in Singapore, when Collins showed that Chinese dockyard workers had a slightly higher injury frequency than Malay workers [2]. Non-citizens were involved in occupational fatalities three times more often than Singapore citizens [3]. A later study in Singapore showed that foreign workers had one and half times higher injury rate than local workers [4]. However, foreign workers were mostly satisfied with safety training in Singapore [5]. These studies showed that immigrant employees were more often involved in occupational injuries than native employees.

## EUROPE

In Europe, immigrants' occupational injuries were first studied in England. In the Birmingham area male immigrants had higher accident rates than male English workers [6]. In a vehicle manufacturing company operating in south east England, immigrant workers were involved in occupational injuries 1.3 times more often than English workers [7]. Among patients of construction-related eye injuries in an Irish hospital, 48% were foreign-born, although their proportion among construction workers was 9% [8]. In the same line, of plastic surgery patients in Dublin, 40% of victims of occupational injuries were foreign-born workers, whereas their proportion was only 9% of the total Irish workforce [9]. These four studies show that immigrant workers have a higher injury rate than the native population in both England and Ireland.

In the Netherlands Turkish scaffolders suffered disabilities two and half times more often than Dutch scaffolders [10]. A higher injury-related mortality rate among ethnic minorities was found among men but not among women in the Netherlands [11]. Half of Dutch safety

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experts perceived a higher risk when working with foreign contractors and employees [12]. In the Netherlands, immigrant men had an increased risk of occupational injury, but for women the evidence was not clear.

In the Lazio region in Italy, immigrants were involved in occupational injuries 1.2 times more often than Italian workers [13]. Immigrant workers were also involved in injuries over three times more often than Italian workers in the Fabriano region [14]. In the factories of the area of Friuli-Venezia Giulia, immigrants were injured 1.6 times more often than Italian workers [15], and on the construction site of the high-speed railway from Torino to Novara, immigrant workers were more often involved in occupational injuries than Italian workers [16]. These four studies from Italy consistently show that immigrant workers are slightly more often involved in injuries than Italian workers.

In Spain, foreign workers were injured over four times more often than Spanish workers. Female and older foreign workers in particular had a higher injury rate than the native population [17]. Later the same authors showed that in non-fatal and fatal injuries, immigrants had over a four times higher injury rate than Spaniards [18]. The same research group again showed that foreign workers had a higher injury rate than Spanish workers [19]. One explanation for the huge difference in the injury rate between immigrant and Spanish workers is that there are two labor markets in Spain: Spanish workers pick up the better and safer jobs and immigrants are left with the more hazardous jobs [20]. Immigrants from poor African countries were more often in precarious jobs [21].

Three studies on immigrants' occupational injuries have been carried out in Scandinavia, and they all had different results to other studies in European countries. In Sweden, foreign workers had a lower accident frequency than Swedish workers [22, 23]. In Oslo, immigrant workers suffered 30% of the occupational injuries, whereas their proportion of the work force was only 12% [24]. Immigrant bus drivers in Helsinki were involved in occupational accidents less often than Finnish drivers [25]. In these studies, immigrant workers performed the same job as the native workers: they worked at an automobile plant (Sweden) or drove a bus (Finland). Thus under the same working conditions, it is possible for immigrants to work as safely as native workers.

In Germany, immigrant construction workers died accidentally less often than native workers [26]. However, male German immigrants born in the former Soviet Union (Aussedlers) had 39% higher accident mortality than native Germans [27]. In the construction industry of Switzerland, immigrant workers had a higher injury rate than Swiss workers [28].

In conclusion, the situation of immigrant workers varied in European countries. The highest difference between immigrant and native workers was in Spain, where immigrants had even four times more occupational injuries than native workers. On the other hand, in Scandinavian countries immigrants were involved in occupational injuries less than the native population. The work life situation of immigrant workers is obviously different in these countries.

## ASIA AND AUSTRALIA

In Australia, workers born overseas had slightly higher fatality rates than the native population [29]. Indian workers had a three times higher occupational injury rate than native workers in Malaysia [30]. In Taiwan, foreign workers had not higher risk of occupational injury than Taiwanese workers [31]. The studies showed that in the Far East, immigrant workers were generally at a higher risk of occupational injury.

In the Middle East, the occupational injuries of foreign workers were studied in three countries. In Bahrain, foreign workers were involved in occupational injuries over three times more often than local workers [32]. In Al-Khobar city, Saudi Arabia, the incidence of occupational injury was four times higher for foreign workers than for Saudi workers [33]. In the city of Al Ain, United Arab Emirates, foreign workers suffered 96% of occupational injuries leading to hospital treatment, whereas their proportion of the workforce was 71% [34]. There were no differences in the severity of occupational injuries between Lebanese and foreign workers [35]. The huge concentration of occupational injuries among immigrant workers was explained by the existence of two different labor markets for immigrant and native workers.

## NORTH AMERICA

The first study on immigrants' occupational injury in the United States was most likely carried out by Fuentes [36], who showed that the accident rate for foreign farm workers in California was three times higher than that of the rest of the population. The California Agricultural Workers Health Survey later showed that 27% of male and 11% of female immigrant workers were involved in occupational injuries [37]. Male migrant farm workers had a similar rate of occupational injury in South Carolina compared to other hired farm workers, but they encountered personal violence more often [38]. Children of migrant farm workers had a two- to four-fold higher work-related injury rate than other students in South Texas [39]. Musculoskeletal strains/sprains, falls and contact with poison ivy were the most common injury types among migrant farm workers [40, 41]. They attributed the responsibility of their injuries to supervisors and bosses, although they assessed carefulness as the main injury prevention method [42]. It seems on farms, that the position of foreign workers is of a lower level than that of native farm workers.

Immigrants in the city of Alexandria, Virginia, were more often involved in occupational injuries than native workers [43]. Non-US citizens had a 1.8 times higher fatality rate than US citizens in New Mexico [44].

Almost one fifth of the US workforce is foreign-born. Hispanics are the greatest group among immigrants. Their proportion in fatalities at work has consistently increased [45]. Twenty-eight percent of Latino poultry workers in North Carolina were involved in occupational injuries [46]. When a male Latino worker is injured, his identity is dealt a double blow: he feels a failure both as a provider and as a father [47].

Several studies in the United States are based on the national statistical data sets. Based on the Bureau of Labor Statistics, foreign-born workers had a higher fatality rate

than natives [48]. Foreign-born Hispanic workers had a 44% higher fatality rate than the national rate [49]. They also had a 68% higher injury rate than their US-born colleagues [50]. These studies showed that foreign-born Hispanic workers were usually more often involved in occupational injuries.

Self-reported questionnaires or interviews were the second common method for examining the occupational injuries of immigrant workers. Based on the 1990-2003 National Health Interview Survey, foreign-born workers were significantly more likely to be injured while working in a paid job than US-born workers [51]. However, based on the same interview data from 1997 to 2005, foreign-born workers had a lower injury rate than US-born workers [52].

A review of three American studies shows that in general immigrants have a higher occupational injury rate than native-born American workers [53].

In addition to occupational injury, immigrant workers encountered violence at their workplace more often than the workforce as a whole. Foreign-born Asian workers had a one third lower fatality rate than the national rate, but their workplace homicide rate was almost three times higher [54]. Foreign-born nursing assistants suffered black eyes due to violence at work one and half times more often than US-born assistants [55]. Obviously clients considered immigrants especially those with a different ethnicity easy target for their aggression. Immigrant workers were at an increased risk of bullying at work [56]. The problem becomes even worse when we assume that immigrants are less likely to report violence to their supervisors.

The United States is the only advanced country that does not guarantee health care services for all of its population. This is why only 54% of injured workers met a doctor for the first day after their accident [57]. Immigrants can stay without necessary medical services, because they often work without enough sickness insurance.

In Alberta, Canada, immigrant workers were involved in occupational injuries over one and half times more often than Canadian workers [58].

## SUMMARY

In Table 1, 31 studies on the occupational injuries of immigrant workers were reviewed. In the right column of the table, the rate is over 1 if the injury rate of immigrant workers was higher than that of the native population. The rate is below 1 if immigrant workers had a lower injury rate than native workers.

Table 1 indicates that 24 out of 31 studies showed that immigrant workers had a higher injury rate than native workers. Immigrants had a lower injury rate in seven studies.

The highest difference between immigrant and native workers was in the city of Al-Ain, United Arab Emirates, where immigrants had ten times more occupational injuries than native workers [34]. In Spain [17] and in Saudi Arabia [33] immigrants were involved in occupational injuries four times more often than the native population. The rate was lowest in the study [52] based on the National Health Interview Survey in the USA, where the injury rate of immigrant workers was only half that of American workers.

The gap between the highest and lowest rates was almost 18-fold.

The average of the immigrant score in these 31 studies was 2.13, showing that immigrant workers are on average over twice more often involved in occupational injuries than native workers.

## OTHER RESULTS OF POTENTIAL CAUSES

This section concerned other points about the occupational safety of immigrant workers than the occupational accident rates. These factors are seriousness of injuries, dangerousness of immigrants' jobs, language barrier, overtime and unskilled jobs.

Injuries of immigrant workers were often more serious than those of the native population. This is true for example among farm workers in Greece [59]. The mortality of immigrant workers was probably underestimated in Switzerland [28].

Immigrant workers were over-represented in more dangerous jobs [6,24,60,61]. Foreign workers were also overrepresented in unskilled manual jobs in Switzerland [28] and in more physically demanding jobs in Canada [62,63]. In addition, they also knew very little about their rights at work and were thus vulnerable to employers' unfairness regarding working conditions [20]. Language and cultural differences partly explained these results.

Immigrants felt that their health and well-being was less important for their employers than production goals [20]. This is partly due to the language barrier, because many immigrants did not understand when occupational health and safety people spoke to them [64]. Immigrant workers did not receive enough safety training [60]. Safety training in English is useless for Spanish-speaking Latino workers in the United States [65]. Small construction contractors in particular should provide more safety training in Spanish [66]. Poor safety training partly explained the higher injury rate of immigrant workers.

Dutch safety experts believe that immigrant workers want to complete the job in as short a time as possible to earn as much money as possible. This is why they are ready to work as much overtime as possible [67].

Immigrant workers had a higher injury frequency than the native population during the first five years at their workplace. After five years, the frequency decreased to below that of the native population. This was true in Sweden [22,23], Australia [29] and Canada [68]. However, in the city of Alexandria, Virginia, immigrants who stayed longer in the United States were more often involved in occupational injuries [43].

## DISCUSSION

This review showed that on average immigrants were involved in occupational injuries twice more often than native workers. This result is based on 31 studies from sixteen different countries. It shows that immigrant workers have a worse work life situation than the native population.

The main divider in this review is the place of birth. Immigrants are assumed to be born in countries other than the country in the study focus. However, depending on the

**Table 1. The Injury Rate of Immigrant Workers Compared to Native Population**

Source	Data	Rate
Collins [2]	Naval shipyard in Singapore, 1955-1956	1.02
Fuentes [36]	Migrant farm workers in California, 1969	3.00
Bong, Chao & Lee [3]	Fatal occupational accidents in Singapore, 1970-1972	3.11
Lee & Wrench [6]	Asian factory workers in Birmingham, 1974-1975	1.84
Baker [7]	Asian car engine factory workers in south east England, 1979	1.28
Egger, Minder & Smith [28]	Migrant construction workers in Switzerland, 1982	1.45
Corvalan, Driscoll & Harrison [29]	Fatalities of overseas-born mine workers in Australia, 1982-1984	1.09
Döös, Laflamme & Backström [23]	Migrant workers at Swedish automobile factory, 1986-1987	0.83
Al-Arrayed & Hamza [32]	Migrant workers in Bahrain, 1988-1991	3.77
Wu <i>et al.</i> [31]	Migrant workers in Taiwan, 1991-1993	0.86
Al-Dawood [33]	Migrant workers in Al-Khobar city, Saudi Arabia, 1995	4.35
Pransky <i>et al.</i> [43]	Immigrant Latino workers in Alexandria, Virginia, 1997-1998	1.72
Thurston & Verhoef [58]	Migrant workers in Alberta, Canada, 1994	1.70
Arndt <i>et al.</i> [26]	Foreign construction workers in Baden-Württemberg, Germany, 1986-2000	0.86
Carangan <i>et al.</i> [4]	Foreign workers in Singapore, 1998-1999	4.48
Elders <i>et al.</i> [10]	Turkish scaffolders in the Netherlands, 1981-2000	2.48
Loh & Richardson [48]	Fatalities of foreign-born workers in USA, 2000	1.18
Farchi <i>et al.</i> [13]	Hospitalized foreign workers in the Lazio Region, Italy, 2000	1.19
Richardson [49]	Fatalities among foreign-born Hispanic workers, USA, 2004	1.44
Sincavage [54]	Fatalities of foreign-born Asian workers, USA, 2000-2003	0.69
Ahonen & Benavides [17]	Non-fatal injuries of foreign workers in Spain, 2003	4.38
Sinclair <i>et al.</i> [51]	Nonfatal injuries of foreign-born workers, USA, 2000-2003	1.46
Colao <i>et al.</i> [14]	Foreign workers in the Fabriano Region, Italy, 2000-2003	3.20
Mulloy <i>et al.</i> [44]	Non-US citizenship in New Mexico, 1998-2002	1.75
Benavides <i>et al.</i> [18]	Foreign workers in Spain, 2004	0.95
Patussi <i>et al.</i> [15]	Immigrant workers in Friuli-Venezia Giulia, Italy	1.63
López-Jacob <i>et al.</i> [19]	Fatalities of foreign workers in Spain, 2005	1.34
Cierpich <i>et al.</i> [50]	Hispanic workers in the US, 2003-2006	1.68
Zhang <i>et al.</i> [52]	National Health Interview Survey, USA, 1997-2005	0.56
Salminen <i>et al.</i> [25]	Bus drivers in Helsinki, Finland, 2005-2006	0.68
Barss <i>et al.</i> [34]	Hospitalization in the city of Al-Ain, UAE, 2003-2005	10.04

country children of immigrants are sometimes counted as immigrants and sometimes as natives. In the same way, it is not necessarily true that all people born in the country are counted as native population. An additional problem is those people with double citizenships, whose parents are born in different countries. Despite this, however, the place of birth is the best criteria for distinguishing immigrant and native workers.

I assume that the most of immigrants in these studies are legal ones. Illegal immigrants perhaps don't want to answer questionnaires or their injuries are not included in the official statistics. Studies based on the hospital data could include

also illegal immigrants, because in the case of serious injury one has to find medical help.

Most studies are based on self-reporting of occupational injuries. Cultural factors and language skills may determine the reporting of injuries. For example, immigrant workers from Southeastern Asia in Lowell, Massachusetts [69], and immigrants from many different countries in Montreal [64] did not report all their injuries. Latino workers in the United States fear employer punishment and thus did not report workplace incidents or injuries [65]. Another reason is their illiteracy: they are more willing to participate in a telephone interview about safety climate in their company rather than

answer questionnaires [70]. In conclusion, immigrant workers generally underreport their occupational injuries.

Some studies from Sweden and Australia showed that during first five years immigrants had a higher injury rates than native workers. Of course first days and weeks on the new job are the most dangerous [71]: that is true both for immigrant and native workers. The injury rate of immigrants decreased slower with the experience than that of native workers [23].

Education is one possible solution for the unfavorable conditions of immigrant workers, because part of them is illiteracy workers. However, education protects foreign-born Asians less than native-born Americans against disability, because Asian immigrants have more language difficulties [72]. Migration from Asia to the United States is good for the immigrants' mental health [73]. Thus the means for achieving equality for immigrant workers must be found in work life.

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#### CONFLICT OF INTEREST

None declared.

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