

Comparative Analysis of Workplace Injuries and Fatalities Between Northern and Southern Italy (2019-2023)

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ABSTRACT

Despite gradual improvements over the years, workplace injuries remain a significant public health concern. The Italian Ministry of Labor defines a workplace injury as any injury sustained due to a violent cause occurring during work, which results in death or partial or total disability.

This research aims to analyze workplace injury trends by comparing the northern and southern regions of Italy. The primary objective is to identify potential significant differences in workplace injury rates between these two geographical areas by analyzing data from 2019 to 2023. The absolute number of workplace injuries, extracted from the INAIL database, is correlated with employment figures obtained from the ISTAT database. Additionally, fatal workplace injuries have been analyzed separately and compared to the total number of injuries.

The results indicate that northern regions report higher rates of workplace injuries than southern regions; however, fatal workplace injuries are more frequent in the South. This discrepancy may be attributed to underreporting, particularly for non-fatal injuries. Understanding the underlying factors behind these disparities could provide valuable insights for implementing effective prevention policies. Such differences may stem from varying levels of workplace safety enforcement and socio-economic and cultural factors that require targeted intervention. Thus, adopting region-specific measures is crucial to reducing workplace injury disparities and fostering a widespread safety culture across the country.

INTRODUCTION

Although the number of workplace injuries has been declining, they remain a major public health issue due to their wide-ranging consequences:

- Impact on individuals: Physical and psychological harm, disability, death, job loss, or job downgrading.
- Impact on businesses: Increased insurance premiums, reduced productivity, and potential civil or criminal liability.
- Impact on society: The EU-OSHA estimates that workplace injuries and occupational diseases generate a global economic burden of €2.68 trillion, representing 3.9% of the global GDP.

In 2023, reported workplace injury cases declined compared to the previous year, with over 590,000 reported cases (-16.1% compared to approximately 704,000 in 2022), including 1,147 fatalities (-9.5% compared to 1,268 in 2022).

Regarding fatal injuries, 550 cases (48% of reported fatalities) were confirmed as workplace accidents in 2023, with 52.2% occurring "outside the company" (i.e., "during work-related transportation" or commuting accidents). An additional 51 cases were still under investigation.

It is crucial to examine whether there are significant differences in the number of workplace injuries between Northern and Southern Italy, considering variations in economic activities, labor market structures, and socio-cultural factors. Understanding these disparities could inform the development of

place-based prevention policies aimed at enhancing workplace safety. In this context, the study "Accidents at Work in Italy: An Empirical Analysis at the Regional Level" supports the importance of considering regional dimensions when designing policy interventions.

The objective of this study is to determine whether significant regional differences exist in workplace injury rates between the North and South of Italy. Identifying the causes of these disparities can serve as a foundation for designing and implementing targeted prevention strategies to reduce workplace injuries nationwide.

MATERIALS AND METHODS

This study employs two primary comparative analyses:

1. Comparison of workplace injuries (2019-2023) in relation to the number of employed individuals, categorized by geographical region (North and South).
2. Comparison of fatal workplace injuries (2019-2023) relative to total workplace injuries, also categorized by region.

Both comparisons were conducted using ratio calculations, processed with Microsoft Excel.

Data Sources:

- Workplace injury and fatality data were extracted from INAIL's "Open Data" section, available at [INAIL database](#).
- Employment data were obtained from



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ISTAT's database, accessible via [ISTAT database](#). Employment data (Table 1) include both salaried and self-employed workers aged 15 and older, divided into two main geographic areas:

- North (North-East & North-West): Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Piedmont, Valle d'Aosta, Liguria, and Lombardy.
- South (Mezzogiorno & Islands): Abruzzo, Basilicata, Campania, Calabria, Molise, Puglia, Sicily, and Sardinia.

In Table 2, the data on reported workplace injuries, extracted from the INAIL database, are presented and categorized by the same geographical areas. The

included data cover all sectors (industry, agriculture, public administration), all genders, and all types of workplace accidents for individuals aged 15 and older. The data refer to the period from 2019 to 2023. To contextualize the workplace injury phenomenon, it was necessary to correlate injury data with employment data to obtain incidence rates. For this purpose, the absolute values of injuries (Table 2) were compared with employment figures (Table 1) using Microsoft Excel to calculate ratios and determine incidence rates. These incidence rates, shown in Table 3, are expressed as percentages to facilitate geographical comparisons. The incidence rates help highlight the differences in workplace injury numbers between Northern and Southern Italy.

Table 1: Employment Figures (Extracted from the ISTAT Database)

TIPO DATO	POPOLAZIONE OCCUPATI				
SESSO	TOTALE				
CLASSE DI ETÀ	15 ANNI E PIÙ				
PERIODO	2019	2020	2021	2022	2023
TERRITORIO					
NORD (ovest+est)	23.778.000	23.798.000	23.751.000	23.762.000	23.781.000
NORD OVEST	13.786.000	13.789.000	13.750.000	13.753.000	13.767.000
NORD EST	9.991.000	10.009.000	10.001.000	10.010.000	10.014.000
SUD (Mezzogiorno + Isole)	17.497.000	17.430.000	17.338.000	17.197.000	17.201.000
MEZZOGIORNO	11.861.000	11.820.000	11.757.000	11.654.000	11.654.000
ISOLE	5.636.000	5.610.000	5.581.000	5.543.000	5.547.000

Table 2: Number of workplace injuries extracted from the INAIL database.

TIPO DATO	INFORTUNI DENUNCIATI				
PERIODO	2019	2020	2021	2022	2023
TERRITORIO					
NORD	394.420	364.240	351.374	423.370	360.313
Nord-Ovest	190.121	186.691	168.237	216.859	174.275
Nord-Est	204.299	177.549	183.137	206.511	186.038
MEZZOGIORNO	125.483	105.665	106.224	143.011	114.598
Sud	84.148	71.497	70.579	95.882	76.267
Isole	41.335	34.168	35.645	47.129	38.331



Considering workforce size and employment dynamics (and thus exposure to risk) is essential to properly contextualize the workplace injury phenomenon within Italy’s labor market. Therefore, the absolute injury values from Table 2 were correlated with the employment data from Table 1 to obtain incidence rates.

Table 3: Workplace injury incidence rates (percentage)

PERIODO	2019	2020	2021	2022	2023
TERRITORIO					
NORD (ovest+est)	1,66%	1,53%	1,48%	1,78%	1,52%
SUD (Mezzogiorno + Isole)	0,72%	0,61%	0,61%	0,83%	0,67%

Subsequently, Table 4 presents data on fatal workplace injuries during the five-year period 2019-2023, divided by geographical area. Table 5 reports the percentage of fatal workplace injuries (from Table 4) in relation to the total number of workplace injuries (from Table 2). These percentages were also calculated using Microsoft Excel by determining the ratio between the two datasets.

Table 4: Fatal workplace injuries, extracted from the INAIL database

DATO	N.INFORTUNI MORTALI				
PERIODO	2019	2020	2021	2022	2023
TERRITORIO					
NORD	606	866	685	625	561
Nord-Ovest	326	554	370	340	301
Nord-Est	280	312	315	285	260
Mezzogiorno	390	561	493	379	404
Sud	279	422	374	270	298
Isole	111	139	119	109	106

Table 5: Percentage of fatal workplace injuries (ratio of fatal injuries to total reported injuries).

Dato	% INFORTUNI MORTALI				
Periodo	2019	2020	2021	2022	2023
Territorio					
NORD (Nord Ovest+Nord Est)	0,15%	0,22%	0,17%	0,17%	0,16%
SUD (Mezzogiorno e Isole)	0,31%	0,44%	0,39%	0,36%	0,38%

RESULTS AND DISCUSSION

The data analysis reveals significant geographical differences in workplace injuries over the studied period.

1. Reported Workplace Injuries:

- The highest number of injuries in the North

occurred in 2022 (423,370 cases), while the lowest was in 2021 (351,374 cases).

- In the South, the highest number was recorded in 2022 (143,011 cases), with the lowest in 2021 (106,224 cases).
- Overall, Northern Italy consistently reported significantly higher numbers of workplace injuries than the South.

2. Workplace Injury Incidence Rate:

- The highest incidence rate in the North was 1.78% in 2022, while the lowest was 1.48% in 2021.
- The highest incidence rate in the South was 0.83% in 2022, while the lowest was 0.61% in both 2020 and 2021.
- The injury incidence rate was consistently higher in the North, suggesting greater occupational risk exposure.

3. Fatal Workplace Injuries:

- The highest number of fatal injuries in the North occurred in 2020 (866 deaths), while the lowest was in 2023 (561 deaths).
- In the South, the highest number was recorded in 2020 (561 deaths), with the lowest in 2022 (379 deaths).

4. Percentage of Fatal Injuries Relative to Total Injuries:

- The highest fatality rate in the South was 0.44% in 2020, followed by 0.31% in 2019, while the lowest was 0.36% in 2022.
- In the North, the highest rate was 0.22% in 2020, with the lowest in 2019 and 2023 (0.15% and 0.16%).
- The percentage of fatal injuries was consistently higher in the South, suggesting greater accident severity despite fewer reported cases.

DISCUSSION

Workplace injury data suggest that more accidents actually occur in Southern Italy than in the North, despite the absolute number of reported injuries being significantly higher in the North across all analyzed years. However, this discrepancy could be explained by the phenomenon of under-reporting in Southern Italy. Underreporting is a well-documented issue in southern regions, where irregular employment is more prevalent, and fear of employer retaliation may discourage workers from reporting incidents. Undeclared labor, particularly in sectors such as agriculture, construction, and services, often leads many workers to refrain from reporting workplace injuries due to fear of losing their jobs or facing penalties. Moreover, the higher percentage of fatal



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injuries in the South (0.44% in 2020 compared to 0.22% in the North) suggests that severe accidents are proportionally more frequent. This could indicate lower attention to workplace safety, higher exposure to hazardous tasks, or, once again, underreporting of less severe injuries.

Finally, differences in economic structures between the North and South may also contribute to data discrepancies. In the North, large, structured industries with a strong safety culture ensure better tracking of workplace incidents. In contrast, the South's economy is more fragmented, dominated by small businesses and self-employment, where injury reporting may be less stringent.

In summary, official data show a higher number of workplace injuries in the North, but factors such as underreporting and the higher incidence of fatal injuries in the South suggest that the actual number of accidents may be greater in Southern Italy than official statistics indicate.

CONCLUSION

This study highlights critical regional disparities in workplace injuries across Italy, raising concerns

about the accuracy of official reporting. While the North reports more injuries, the South exhibits a higher percentage of fatal injuries, suggesting possible underreporting of non-fatal incidents.

Key factors influencing these disparities include:

1. Underreporting in the South: Informal labor and fear of employer retaliation may discourage injury reporting.
2. Different industrial structures: The North has more structured industries with robust safety protocols, whereas the South relies on smaller businesses and self-employment, where safety enforcement may be weaker.
3. Higher fatality rates in the South: The disproportionate number of fatal injuries suggests more hazardous working conditions or weaker regulatory enforcement.

Addressing these discrepancies requires region-specific prevention policies, including stricter inspections, incentives for formal employment, and awareness campaigns to strengthen workplace safety culture.

In conclusion, tackling underreporting and implementing targeted interventions is essential to reducing workplace injuries, especially in high-risk areas.

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