Workplace Violence

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March 20, 2025

Abstract

In this paper, we use detailed information in Danish workplace injury records to distinguish injuries caused by violence versus accidents. We link this data to police reports and cross-validate our classification: injured workers file a police report for 19% violent cases versus 2% of accidents. We document that women are massively overrepresented among workplace violence victims (75%), partly because it is concentrated in the Health, Education and Hospitality sectors. Yet, women are less likely than men to report violence to the police. We then link the workplace injuries to health and labor market administrative data and estimate their impact on victims' outcomes using event studies. Workplace violence has similar effects as workplace accidents on sick leaves and doctor fees overall, but generates more treatment fees for mental health. Violence causes a greater drop than accidents in employment (4.1 versus 2.5 ppt), and especially in employment *at the same establishment* (10.5 versus 3.2 ppt). Victims hence experience greater earnings losses in the years following violence than accidents (by 10.4% versus 7.3%). Violence victims are more likely to move to establishments paying low wages and providing a low injury risk, consistent with the idea that they are willing to forego earnings to avoid risky workplaces.

Keywords: Work environment; Workplace violence; Job search; Sorting; Gender inequality

JEL codes: J16; J17; J28; J81

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1 Introduction

Workplace violence is widespread: According to a recent ILO survey, one in five workers has experienced psychological violence at their job, one in ten physical violence, and one in fifteen sexual harassment (ILO, 2022). Understanding the effects of workplace violence is key to foster the adoption of prevention measures and mitigate its harm. Victims of workplace violence might experience health and earnings losses that resemble those caused by other workplace injuries (e.g., mental breakdowns due to excess work or physical injuries following machinery malfunction). Yet, workplace violence may also raise unique challenges. In particular, violence may be less visible as it may disproportionately hit isolated workers, cause primarily psychological (versus physical) harm, and be associated with very high reporting costs for victims. In this paper, we explore the specific mechanisms behind the effects of workplace violence on workers' careers.

One major challenge when studying the consequences of workplace violence is measurement. While surveys are very useful to measure the prevalence of workplace violence, they typically don't allow to follow individuals around the time of a violent incident. In contrast, administrative data allow to track individual trajectories around reported incidents. However, they only cover a selected subsample of incidents since most cases go unreported. Adams-Prassl et al. (2024) provided new insights on the impact of workplace violence, by detecting violence between co-workers in police reports in Finland. But one may worry that their findings do not apply to the most common type of workplace violence, e.g. since the cases that get reported to the police might be more severe and since the authors can only detect cases where perpetrators are co-workers (and not clients, students, patients, etc.). Note that reporting to the police might also in itself change the consequences of workplace violence.

We break new ground by combining police reports in Denmark with a novel source of administrative data on workplace violence: workplace injuries. By law, Danish employers are required to report all workplace incidents that may result in at least one day of absence. Importantly, they must provide precise information about the reported injury, as the government use this data to track workplace safety risk. Specifically, we identify injuries due to workplace violence as those falling in the "Shocks after aggression and threats" category. By contrast, we refer to the injuries in other categories as accidental. Since psychological injuries are more frequent among violent cases, we also systematically distinguish between psychological and physical injuries. Between 2004-2017, there are 443,362 workplace injuries recorded in Denmark, including 11,709 violence-related cases (8,700 psychological and 3,009 physical). In addition, we link the data work injuries to administrative police reports at the victim and calendar month level. This allows us to both detect the victims of workplace injury who file a police report, and among them, who file a police report where the perpetrator is a co-worker—which corresponds to the case analyzed in Adams-

Prassl et al. (2024). Finally, we link these data to various administrative datasets about employment, income, government transfers including sick leaves, doctor visit fees.

Our linked data allow us detect workplace violence in both workplace injuries and police reports. To our knowledge, this is the first time that one can link two administrative sources on workplace violence, and it offers unique opportunities to describe it. First, the police reports allow us to cross-validate our categorization of violence in the workplace injuries data: we see that 19% violent injuries are associated with a police report, compared to just 2% of accidents. This also reveals that a significant portion of workplace violence remains unreported to the police. Strikingly, women are much less likely than men to report violence to the police: in cases of physical violence, only 20% of women file a police report, compared to 38% of men. Moreover, comparing the two data sources highlights that the vast majority of workplace violence cases does not involve co-workers: among all workplace injuries associated with a police report, those involving a co-worker represent less than 5%. This showcases the importance of being able to detect broader types of violence in the workplace injuries data. Finally, we describe the victims of workplace violence, using broader measure from the work injury data. Women are massively overrepresented: they represent about 75% of victims. This is in part because violence is concentrated in three female-dominated sectors: Health, Education and Hospitality—and to a lesser extent in the Research and Analytical sector.[1]

To estimate the causal effects of injuries on workers, we implement a combination of matching and event study design. To compare injured workers to more similar individuals, we build a control group using exact matching in the sample of workers who never experience a workplace injury during our study period. We match each injured worker to a control worker who has the same age, gender, education, tenure at her firm, and working hours at the time of the injury. We estimate an event study model in our matched sample.

We start by considering the effect of workplace violence and accidents on victims' health. Injured workers experience a sharp increase in sick leaves by 15-20 percentage points in the two months following the injury. Thereafter, sick leave registrations gradually decline, though 5% more workers continue to take sick leave even five years after the incidents. Importantly, injuries due to accidents and violence have very similar effects on workers' sick leaves at all times. We also estimate that injuries persistently increase the amount spent on doctors' fees by 9-12% in the five years following injuries, and that the effects are comparable for violence cases and accidents. However, when looking at the details of doctor fees, we find that injuries from violence result in a lower increase in fees for physical health treatment than those from accidents, and a larger increase in fees for mental health treatment.

[1]In contrast, women represent 44% of victims of physical accidents and 54% of mental accidents and accidents are spread among a wider range of sectors (Farming, Manufacturing, Construction, Hospitality, Health).

As a next step, we analyze the effect of workplace injuries caused by violence and accidents on victims' labor market trajectories. Violence causes a larger drop in employment than accidents: 4.1 ppt versus 2.5 ppt after five years. This is true both for physical and psychological injuries. Moreover, violence importantly decreases the probability to work at the *firm of the incident* by 8.1 ppt (vs 2.6 ppt for accidents) and at the *plant of the incident* by 10.5 ppt (vs 3.2 ppt for accidents) in the five years after. As a result, violence causes larger labor market earnings losses: earnings drop by 10.4% in the five years following violence and by 7.3% in the five years following accidents. We show that violence generates a larger drop in earnings both because it induces more workers to lose their employment and because workers who leave the firm of the incident experience a larger drop in earnings.

Our results show that violence lead to greater labor market losses than other types of workplace injuries. Why is that? We explore potential mechanisms in two ways. First, we examine the heterogeneity of the effects of violence versus accidents on labor market outcomes. In particular, we document that workplace violence has a smaller effect on victims' employment when it is reported to the police—though the health impact is identical. It suggests that employers might provide more support to victims when violence is more broadly publicized. Second, we analyze the characteristics of the new employers that workers sort into in the case when they leave their establishment after the injury. Our preliminary results suggest that workers exposed to violence are more likely to move to establishments with a lower injury risk and a lower average wage. One potential explanation is that workers were always correctly informed about workplace-specific risks, but experiencing violence increases their willingness-to-pay for safety. Another potential explanation is that workers always had a positive willingness-to-pay for workplace safety, but experiencing violence helps them learn about workplace-specific risks.

Our findings contribute to four strands of literature. Firstly, we expand the evidence on the recent literature on workplace violence (Batut et al. (2021); Folke and Rickne (2022); Conway et al. (2022); Adams-Prassl et al. (2024)). Closest to our study is the work by Adams-Prassl et al. (2024), on the effect of police-reported assaults by co-workers. Using data on a broader scope of violence, we demonstrate the external validity of their finding of large and persistent negative effects of workplace violence on earnings. We provide new insights on the mechanisms: by using other workplace injuries as a benchmark and analyzing the effect on health outcomes, we highlight that violence generates specific behavioral reactions from workers. We further track labor market transitions and show that violence victims seek firms with lower injury risks. Our results confirm the suggestive evidence provided by Folke and Rickne (2022) about the effect on labor market transitions of sexual harassment reported in a survey.

Second, our study connects to the literature analyzing workers' trade-off between workplace safety and wage (Smith (1973), Thaler and Rosen (1976), Viscusi (1993), Viscusi and Aldy (2003)), based on models of compensating differentials (Rosen (1986)). In particu-

lar, Folke and Rickne (2022) show in a survey experiment with hypothetical job scenarios that workers are willing to accept lower wages to avoid harassment risk (provided they can detect it). Our findings that victims of workplace violence who switch employers are more likely to sort into establishment offering relatively low levels of both wage and safety risk are broadly consistent with compensating differentials models. But they also provide new evidence that getting injured at work modifies how individuals make this trade-off. Importantly, it suggests that the vast majority of workers who has not (yet) been injured at work may misperceive or under-value safety risk.

Third, we contribute to a strand of research quantifying the consequences of workplace injuries for victims (Leth-Petersen and Rotger (2009); Dworsky and Powell (2022); Broten et al. (2022)). Beyond conventional physical injuries, recent articles also consider mental health (Humlum et al. (2024), Nekoei et al. (2024)). In this paper, we study side by side common physical and psychological injuries and highlight the even larger consequences of psychological shocks. We go beyond quantifying the costs of injuries and explore how workers adapt their labor market behavior afterwards.

Fourth, we contribute to the literature on the impact of violence more generally (i.e. including beyond the workplace) by exploring how reporting to the police may mitigate the effects of violence.[2] A critical challenge in this field is underreporting (Boudreau et al. (2023)). Our linked datasets offer unique opportunities to compare cases of workplace that were police-reported and non-reported cases. We find that the negative impact of workplace violence on earnings is slightly larger when workplace is not reported to the police. This provides suggestive evidence that reporting violence to the police might help victims' economic recovery.

The remainder of the paper is structured as follows. Section 2 outlines the institutional context and provides an overview of workplace injury data alongside the Danish administrative registers. Section 3 provides novel descriptive statistics about workplace violence. Section 4 explains the sample construction, matching procedure, and statistical model used in the analysis. Section 5 presents the estimated effects of workplace injuries on workers' outcomes. Finally, Section 6 examines the underlying mechanisms.

2 Institutional setting and data

2.1 Workplace injuries in Denmark

Workplace injuries are defined as any mental or physical harm stemming from a sudden event occurring in the office or work area. In Denmark, employers are legally required to report workplace injuries to both their company's insurance provider and the Danish

[2]Previous research highlights the detrimental impacts of violence in the home (Bhalotra et al. (2021); Chang et al. (2023); Adams et al. (2024)), at school (Bonsaksen et al. (2024)) on victims' psychological, physical, or financial well-being.

Working Environment Authority within 14 days of the first day of absence, provided that the injury results in an absence from work beyond the day of the incident (European Commission (2024)). Additionally, employers must report incidents that, while not leading to absence, could justify a claim for benefits under the law. Medical professionals, such as doctors and dentists, are similarly mandated to report workplace injuries if they suspect or confirm that a condition is caused by work or working conditions. In rare cases where neither the employer nor medical professionals report the incident, workers have the option to register the injury themselves. All cases are reported electronically through an online portal notification system (EASY).

Individuals affected by workplace injuries in Denmark are entitled to economic assistance to cover medical expenses and income losses resulting from the incident. Denmark's universal health care system guarantees access to medical care for all citizens, with hospitalization costs fully covered by public funding. Additionally, income insurance provides financial support for workers unable to work due to injury. Initially, employees are typically entitled to full pay during their absence, the duration of which depends on their employment contract. Once employer-paid sick leave ends, or if no such provision exists in the employment contract, injured workers may apply for state-funded sickness benefits through their local municipality. These benefits last up to 22 weeks.[3] Extended support is available under specific circumstances but requires screening or medical evaluation. For individuals permanently unable to return to work, long-term disability benefits are administered by municipalities and provide annual financial support.[4]

2.2 Identifying violence in workplace injury data

We use data on workplace injuries reported to the Danish Working Environment Authority. When reporting a workplace injury, people must provide precise information about the circumstances surrounding it and the resulting harm. These categories of injuries are then used to track the risk of workplace safety in public statistics. The exact categorization has been harmonized in the European Union as part of the European Statistics on Accidents at Work (ESAW) project European Commission. Eurostat. (2013)). The purpose of ESAW is to facilitate the development of safety policies in Europe. Specifically, we identify injuries due to workplace violence using the category "Shocks after aggression and threats" in the ESAW "Type of injury". By contrast, we refer to the injuries in other categories as accidental. To cross-validate our definition of workplace violence, we link victims of workplace injury cases to police report data: we show that injuries attributed to violence are reported to the police more often than those attributed to accidents. This confirms that our classification is meaningful. We discuss these descriptive statistics further in Section 3.

[3] As of 2019, the maximum weekly benefit was 4,355 DKK ($702).

[4] In 2019, approved applicants received 192,528 DKK ($31,053) if married or cohabitating and 226,500 DKK ($36,532) if single.

When comparing injuries that we classify as violent or accidental, it is important to keep in mind that they might differ in other dimensions too. In particular, psychological injuries might be more frequent among violent cases than among accidental cases. We hence also distinguish injuries that are primarily caused by psychological shocks to those caused by physical shocks. We use the ESAW "Contact-mode of injury". Throughout the paper, we hence often split workplace injuries into four distinct groups (as illustrated in Figure 1): violent physical injuries, violent psychological injuries, accidental physical injuries, and accidental psychological injuries. Violent physical injuries involve incidents such as physical assaults by colleagues or clients. Violent psychological injuries refer to experiences like bullying, verbal abuse. Accidental physical injuries include conventional workplace accidents, such as injuries caused by machinery malfunctions or being struck by falling objects. Finally, accidental psychological injuries refers to cases of mental breakdowns, trauma, or sudden stress from overwork.

2.3 Other administrative data

We link cases of workplace accidents and violence to various administrative datasets in Denmark using unique firm and individual identifiers provided through the injury data. Firstly, we link cases to the Danish Employer-Employee data (BFL), population registers (BEF), and income registers (IND). The BFL dataset provides spell-level data on monthly income, hours worked, and employment for all workers in Denmark from 2008 to 2022. The IND and BEF registers contain annual information on demographic characteristics for the entire population from 1995 to 2022.

Secondly, we utilize the DREAM dataset to obtain detailed information on government transfers, including data on sick leave, unemployment insurance, participation in training programs, and disability benefits for all Danish citizens. To measure individuals' health conditions, we incorporate data from registers of doctor visit fees (SSSY and SYSI), which allow us to identify the timing and costs of medical consultations.

3 Descriptive statistics on workplace violence

3.1 Workplace injuries and police reports

Table 1 reports a total of 443,362 workplace injury cases recorded in Denmark from 2004 to 2017 (Column 1).[5] Among these, 11,709 cases (2.7%) are classified as violence-related. Column 3 and 4 of Table 1 present the share of injuries in each category where the victim filed a police report in the same year as the incident. 25% of violent cases involving physical harm and 17% involving mental harm are reported to the police, compared to just 2% of

[5]Cases are counted at the individual-firm-month level.

accidents. This suggests that we have correctly detected the cases caused by violence in the work injury data. It also reveals that a significant portion of workplace violence remains unreported to the police. This is in line with prior evidence of underreporting.[6] Strikingly, women are significantly less likely than men to report violence to the police. In cases of physical violence, only 20% of women file a police report, compared to 38% of men. In Section 5.2, we further explore the differences in outcomes between police-reported and non-reported injuries, and discuss the broader implications of underreporting.

In addition, among all workplace injuries associated with a police report, we focus on those where the perpetrator is identified as a co-worker in Columns 5 and 6 of Table 1. This corresponds to the specific cases analyzed in Adams-Prassl et al. (2024). We see that among reported cases of workplace violence, those inflicted by a co-workers only represent about 5% (556 cases). The vast majority of workplace violence hence appears to be inflicted by clients, patients, students or even strangers rather than co-workers.

Overall, Table 1 demonstrates how much broader the scope of workplace violence captured in the workplace injuries data is relative to that captured in the police reports involving co-workers analyzed by Adams-Prassl et al. (2024). First, workplace injuries include cases that are not reported to the police—which represent the vast majority of violent incidents. To the extent that the cases that get reported to the police are specific, the impact on victims of police reported violence may not be be representative. One may be concerned in particular that the cases reported to the police might be the most severe or that they may involve workers with higher education levels and economic resources. Moreover, the police report may in itself have an impact which may confound the impact of workplace violence. Second, in addition to violence perpetrated by co-workers, they include violence at the workplace perpetrated by strangers, clients, patients, students.

3.2 The victims of workplace violence

Table 2 presents descriptive statistics for all injured workers at the time of injury. Note that we only include injuries occurring in 2008-2017 to be able to track individuals for up to 5 years before an injury. Compared to a random sample from the Danish working population (column 1), injured individuals (colomn 2) are of similar age and exhibit comparable levels of earnings and education. However, they work longer hours, have a higher number of sick leave months, and are over-represented in the public sector as well as in the medical industry. Injured workers also have slightly higher doctor fees in the year prior to injury than the general population. When analyzing occupational distribution by injury type, professional and service/sales workers are predominantly represented in cases of violence,

[6]The National Crime Victimization Survey conducted by the US Department of Justice show that only 44% of violent victimization were reported to the police in 2016 (Morgan and Kena (2017)). For nonvisible injuries, the reported share is much lower: three out of four people who experience some form of harassment in their workplace do not even mention this to a supervisor, manager or union representative (U.S. Equal Employment Opportunity Commission (2016)).

whereas most injuries from accidents occur among workers in manual labor.

We then describe separately the victims of physical violence, mental violence, physical accidents and mental accidents in Columns (3)-(6). Strikingly, while women account for less than half (46%) of all injuries, they represent 75% of violence cases. This is in part because violence is concentrated in three female-dominated sectors: Health, Education and Hospitality. It can also be noted that 9% of mental violent victims work in the Research and Analytical sector. In contrast, women represent 44% of victims of physical accidents and 54% of mental accidents and accidents are spread among a wider range of sectors (Farming, Manufacturing, Construction, Hospitality, Health).

4 Identification strategy

We estimate the impact of experiencing a workplace injury on health and labor market outcomes, using matching and event studies.

4.1 Sample construction

We select the sample of workers who experienced an injury at their workplace between 2008 and 2017, which we refer to as "treated" individuals.[7] In our main analysis, we narrow down the sample of workers experiencing a physical accidental injury by focusing on the most common sub-category, defined as "Struck by/collision with object in motion." [8] We have seen that injured workers differ from the average Danish worker. For example, Table 2 shows that the working hours of injured victims are higher than the average hours of the working population.[9] To compare injured workers to more similar individuals, we build a control group using exact matching in the sample of workers who never experience a workplace injury during our study period. We match each injured worker to a control worker who has the same age, gender, education, tenure at her firm, and working hours at the time of the injury.

Table 3 describe the matched treated individuals at the time of injury, alongside the matched controls. After matching, our study sample includes 58,946 injured workers: 908 cases of violent injuries with physical harm, 4,576 cases of violent injuries with mental harm, 28,849 cases of accidents with physical harm, and 24,613 cases of accidents with mental harm. The control group comprises 58,935 workers.[10] The treated and control groups

[7] If workers appear in multiple injury reports, we use the first reported case for the main sample, ensuring that individuals are only treated once.

[8] This restriction is relaxed in robustness checks, where we include various other types of physical accidents. The results remain consistent.

[9] Note that more time spent at work mechanically increase the likelihood of experiencing a workplace injury.

[10] The number of control workers is lower than the number of treated workers because control individuals can serve as matches for more than one treated worker.

exhibit similar characteristics across observable variables: they work the same number of hours, tenure, and have the same number of jobs. Moreover, their firms are similar in terms of the share of females, female managers and managers overall.

4.2 Empirical model

We analyze the effect of workplace injuries on victims, by implementing an event study design in our matched sample. The empirical model is specified as:

$$Y_{it} = \sum_{\substack{j=j_{min} \\ j\neq -1}}^{j_{max}} \delta_j D_{i,t}^{j} + \alpha_i + \omega_t + \varepsilon_{it} \tag{1}$$

where Y_{it} represents the outcome of individual i at calendar time t, $D_{i,t}^{j}$ is an indicator for whether for individual i, calendar time t comes j periods after a workplace injury (or before for $j < 0$) . We take as a reference the period immediately preceding the injury: $j = -1$. We include individual fixed effects (α_i) to account for time-invariant characteristics of individuals, and time-since-event fixed effects (ω_t) to control for common time trends. δ_j aims to capture the dynamic effect of the injury in the periods after it happened, and to provide a test for the parallel trend assumption in the periods before.

We consider various outcomes: health conditions, measured through sick leave and doctor fees, and labor market variables, assessed through employment and earnings. Our administrative data on sick leave and labor market outcomes are available at a monthly frequency, while those on doctor fee are recorded annually. To accommodate these differences, we construct one monthly and one yearly dataset. The monthly dataset traces individuals' outcomes 24 months before and 48 months after the injury, while the yearly dataset covers a longer window, spanning 10 years before and after the injury. The parameters j_{min} and j_{max} hence depend on the dataset: for the monthly dataset, $j_{min} = -24$ and $j_{max} = 48$, while for the yearly dataset, $j_{min} = -10$ and $j_{max} = 10$.

Our identifying assumption is that, in the absence of treatment, the outcomes for injured (treated) individuals would have followed the same trajectory as those in the control group. This assumption ensures that the differences in outcomes can be attributed to the injury.

5 The impact of workplace violence on victims

5.1 The impact on victims' health

We start by considering the effect of workplace violence and accidents on victims' health. Figure 2 illustrate the effects on sick leave and doctor visit fees. Each panel displays the results for specific injury types, as described in Figure 1. We report the corresponding coefficients in Table 4. Panel a of Figure 2 shows that injured workers experience a sharp

increase in sick leave, rising by 15-20 percentage points in the two months following the injury. Thereafter, sick leave registrations gradually decline, though 5% more workers continue to take sick leave even five years after the incidents. Since about 4% of treated workers go on sick leave each month on average in normal times, this implies that the amount of sick leaves persistently remains at least twice more frequent than usual. The effects are larger for mental injuries than for accidental ones in the short-run, but comparable after one year. Strikingly, injuries due to accidents and violence have very similar effects on workers' sick leaves at all times.

Does the sharp rise in sick leave registrations reflect a deterioration in workers' physical and mental health? Panel b of Figure 2 shows that workers increase their medical expenses in the two years following the accident and remain elevated for up to 10 years. In the 4 years following the injury, the average effect amounts to an additional 196 dkk per year for violence and 220 dkk for accidents. This corresponds to a 9% increase for violence and 12% for accidents, relative to pre-treatment outcome means. Here again, the effect on doctor fees does not differ significantly between cases of violence and accidents.

Finally, we investigate the type of health damage in columns 5-8 of Table 4: we report separately the impact on the fees spent for psychological doctor specialists and physical doctor specialists. The results indicate that injuries from violence result in no fees from physical health treatment, while fees are higher for accidents (relative increase by 0% vs. 27%). In contrast, they generate higher fees for mental health treatment (relative increase by 56% vs. 32%). This suggests that while the overall magnitude of health effects is similar across injury types, the nature of health costs differs. Furthermore, this is a first indication that the labor market impact of violence may diverge from that of accidents. Mental health issues may be less visible to employers and therefore may result in fewer workplace interventions or compensatory measures.

5.2 The impact on victims' labor market outcomes

Employment We then analyze the effect of workplace injuries caused by violence and accidents on victims' labor market trajectory. Figure 3 illustrates the effects on employment, and Table 5 presents the coefficients for the average effects in the five following years. In Figure 3, Panel a shows that injuries make victims' employment drop gradually: Violence causes a 6 percentage point drop in employment after five years while accidents cause a 3 percentage point drop. Consistently, we find that injuries have positive effects on the receipt of unemployment benefits, which are significantly higher for violence cases than for accidents (results available upon request).

To investigate workers' firm-switching behavior, panel b of Figure 3 illustrates the impact of injuries on employment *at the establishment where the incident occurred*. The effects of violence and accidents clearly diverge: individuals exposed to violence are 10.5

percentage points less likely to work at the same establishment in the five years after the incident, while the corresponding effect for accident cases is much smaller – 3.2 percentage points.

Earnings We report the impact on the ratio of contemporary earnings over earnings in the reference period in Figure 4, and in columns 7-8 of Table 5. The earnings drop is visible from six months after the incident, and increases in size over the following 3 years. The average decline in earnings over the five year period following the incident is 10.4% for violence and 7.3% for accidents (relative to the average earnings of the treated group before). After five years, the corresponding reduction in earnings is 20% for violence and 10% for accidents.

The observed drop in earnings can be due to various reasons. Workers may lose their employment, get lower earnings at new firms, or experience an earnings drop within their firm. For violence, most of the drop is explained by individuals losing their employment, or changing jobs. Columns 9-10 of Table 5 show that violence cause a larger decrease in earnings than accidents among those who remain employed (-5.4 ppt vs -3.7 ppt). This indicates that violence generates a larger drop in earnings not only because it induces more workers to lose their employment, but also because employed workers experience earnings losses. In contrast, columns 11-14 of Table 5 show that violence and accidents cause a similarly small or insignificant decrease in earnings among those who remain in the same firm or establishment. This suggests that workers who switch firms after violence experience a larger drop in earnings than those who switch firms after accidents. Finally, workers who remain in the same plant after experiencing violence face a larger earnings drop than those who shift plant within their firm. Importantly, the effect is not there for accidents. This indicates that victims of violence may benefit from avoiding the establishment location where the incident occurred.

Comparison with prior literature How do our estimates for the effects of various types of work injuries on earnings compare with the few estimates found in recent literature? Nekoei et al. (2024) report an annual income loss of 12% seven years after the onset of stress-related illness due to burnout. This is very close to our estimate of the impact of a mental injury. On workplace violence specifically, Adams et al. (2024) document a 20% earnings decline five years after reporting a co-worker for assault to the police. This is a bit larger than the 10.4% decrease we estimate for workplace violence. There are various potential explanations. It could be that violence inflicted by co-workers has even more dramatic effects. Alternatively, it could be that cases that get reported to the police have larger effects (e.g. for instance because the selection of case that gets reported might be more severe). We explore this possibility by comparing the effects of police reported cases versus non-reported cases in Section 6.1.

6 Mechanisms behind the effect of workplace violence

We have shown that the labor market costs of workplace violence are higher than for other forms of injuries, driven primarily by stronger effects on employment loss and job switching. What are the mechanisms underlying the specific effect of violence?

6.1 Heterogeneity analysis

Police reported versus unreported cases We test whether police reported cases indeed have different impacts on victims in Denmark. We separately estimate the effects of violence-caused injuries on employment and earnings for workers who filed a police report in the month of the injury, and all other cases. Figure 5 present the results: police-reported violence has similar effects on employment and earnings than unreported violence but the negative effects are *larger* when violence in unreported.[11] It is consistent with the idea that employers may be more likely to try to improve workplace conditions when violence is police-reported. It also suggests that the reason why the effect on earnings found in Finland by Adams et al. (2024) is slightly larger than our estimate is not that they focus on police-reported cases.

Women versus men Previous research on police-reported violence between colleagues suggests that female victims experience greater declines in employment than male victims (Adams-Prassl et al. (2024)). Do these gender differences persist for violence incidents beyond police-reported cases? Tables 6 and 7 present the impact of workplace injuries on health and labor market outcomes separately for men and women. Interestingly, the results show that the mental and physical health consequences of workplace injuries, as reflected in doctor fees, are generally similar across gender groups. Yet, a larger share of women are on sick leave following an injury. We then examine labor market outcomes. In Table 7, columns 1-2 suggest small gender differences in the effect of violence on employment. Women reduce their employment by an average of 3.6 percentage points in the five years after a violent incident, while the corresponding drop is 5.7 for men. For accidents, the employment drop is more similar: women reduce their employment by 3 ppt and men by 2.2 ppt. Furthermore, columns 3-6 indicate that women are less likely to stay in the establishment where the incident occurred than men (-10.9 ppt vs -8.9 ppt), both in the aftermath of violence and accidents. The propensity to remain in the incident firm is similar for men and women at -8 ppt, indicating that women are more likely to move to a different establishment within the firm.

[11] We find no difference in health effects (results available upon request).

6.2 Sorting after workplace violence

We know relatively little about how workplace violence alters the labor market behavior of men and women after they leave the job where they were exposed to violence. Folke and Rickne (2022) find that women who report harassment in surveys are more likely to move to jobs with a higher share of female employees and lower wages. This pattern suggests that victims of violence may prioritize safety over earnings and actively avoid high-risk firms.

To investigate whether injured workers in our data avoid high-risk firms in their search for a new job, we construct firm-based risk measures using data on all workplace injuries reported between 2008 and 2017. We obtain the risk measure for firms as:

$$Risk_{ftj} = \frac{\sum I_{ftj}}{N_{ft}} \tag{2}$$

where $Risk_{ftj}$ represents the monthly injury risk in the firm, calculated as the number of incidents I_{ftj} in firm f in time t of type $j = \{Incidents, Accidents, Violence\}$, divided by the monthly number of workers in the firm N_{ft}. This measure allows us to quantify the risk exposure associated with each firm and analyze whether workers systematically avoid high-risk firms following a workplace violence incident. In our estimation, we run specification (1) with the firm-average risk ($\bar{Risk}_{ftj}$) as dependent variable.

Firms in the treated group are likely to differ from firms in the control group in terms of injury or violence risk. To address this, we conduct a new matching procedure. We match the treated sample to a control group using the same variables as before (education, age, year, tenure, and hours), while also accounting for the firm's historical risk of injury or sick leave and its industry. This results in a slightly smaller sample of approximately 18,000 treated individuals and 18,000 controls.

Table 8 presents the preliminary results of the analysis. Overall, injured workers transition to firms with lower average wages (a reduction of 1.2% for violence-related injuries and 0.8% for accidents) and lower monthly risks of workplace incidents, including accidents and exposure to violence. Monthly incident rates decline by 0.014 (a 9% decrease) for violence-related injuries and by 0.005 (a 3.2% decrease) for accidents. We find no significant change in the average sick-leave rate of the new firms.

When examining the results by gender, both women and men tend to transition to firms with incident risk after a violent incident or accident. However, while women also move to firms with lower average wage, men who experience violence do not experience a significant change in firm average wage overall.

7 Conclusion

We have used workplace injury records to identify injuries caused by violence and accidents, and analyze their health and labor market consequences. We find that violence-related injuries have significantly more severe effects compared to accidents. Violent incidents are more likely to result in job separation and prolonged non-employment, leading to persistent earnings losses. Earnings drop by 10.4% after violence while they drop by 7.3% after accidents. After the incident, injured workers are more likely to leave their establishment and to sort into a lower-risk, lower-paying establishment. One potential explanation is that workers were always correctly informed about workplace-specific risks, but experiencing violence increases their willingness-to-pay for safety. Another potential explanation is that workers always had a positive willingness-to-pay for workplace safety, but experiencing violence helps them learn about workplace-specific risks. Our ongoing analyses will help us distinguish between these mechanisms.

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8 Tables and Figures

Figure 1: Classification of workplace injuries by type and contact-mode of injury.

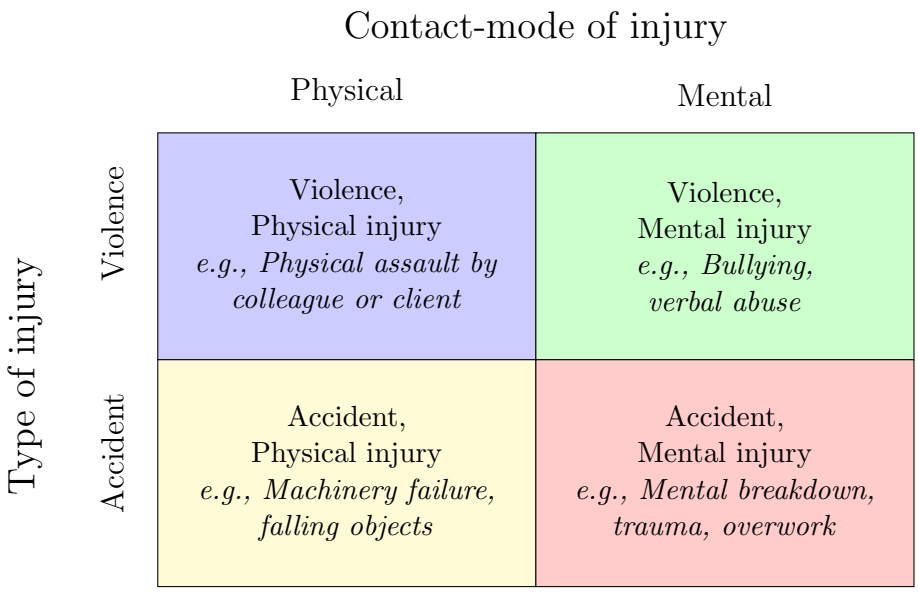
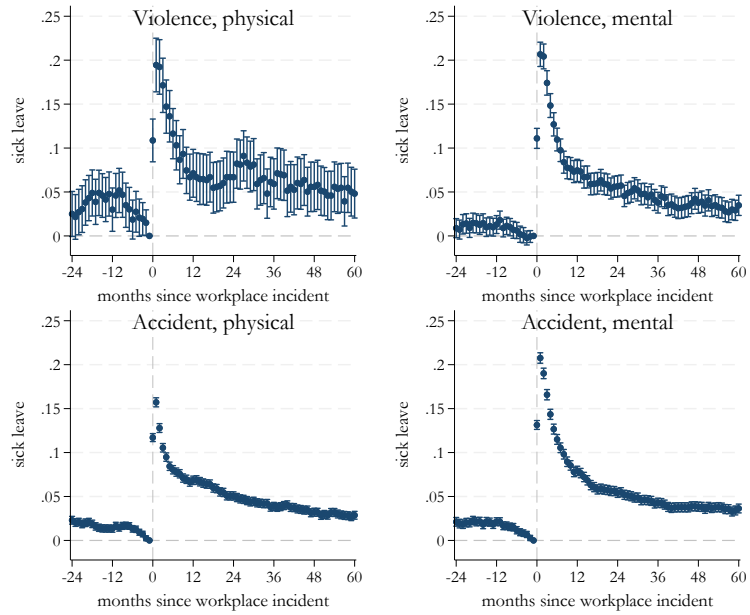
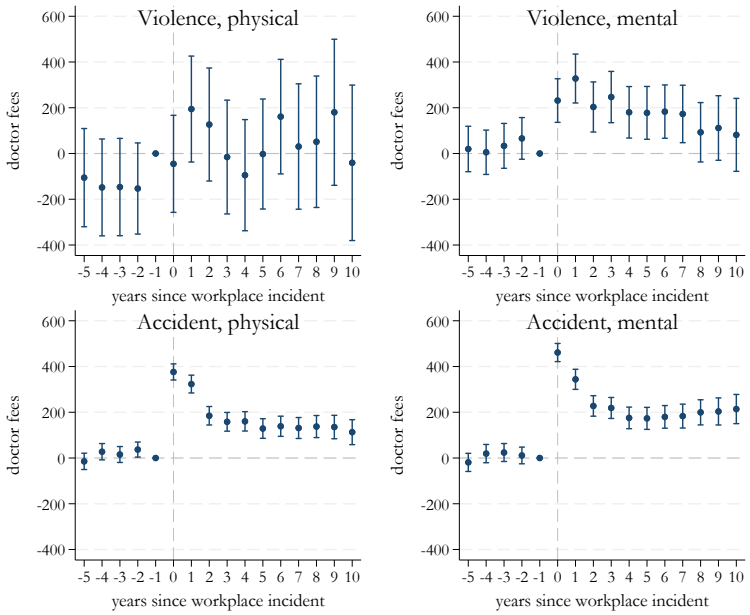


Figure 2: Effect of workplace injuries on health outcomes

(a) Sick leave (monthly)



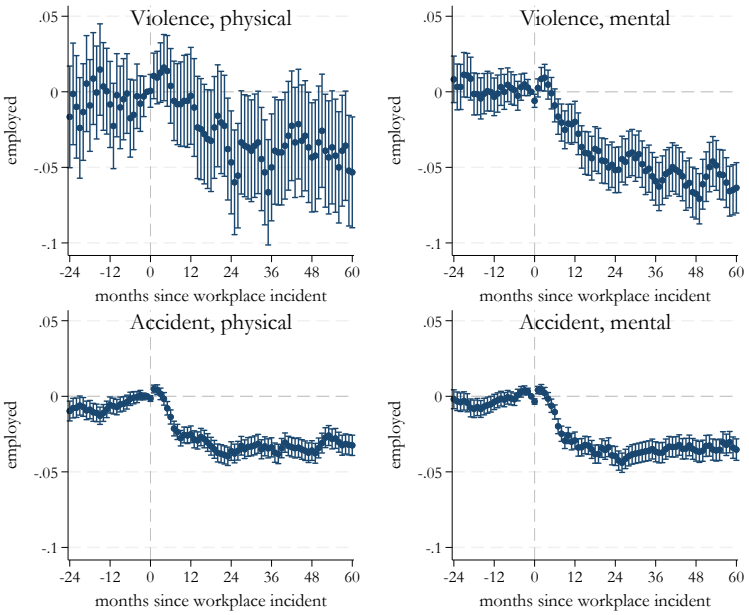
(b) Doctor fees (yearly)



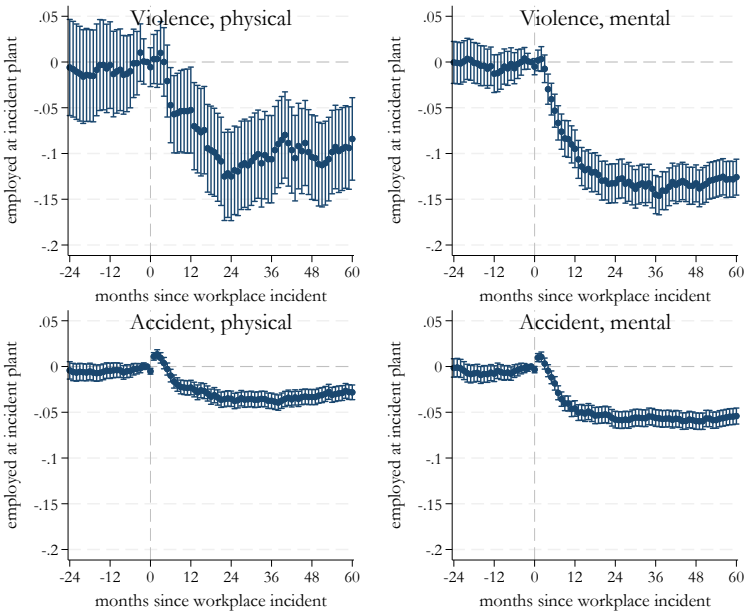
Notes: This figure presents event study estimates of the effect of workplace injuries on workers sick leave and medical fees. Panel a show coefficients for sick leave and panel b for doctor fees. Results are shown separately for injuries caused by (1) Violence (physical harm), (2) Violence (mental harm), (3) Accident (physical harm), and (4) Accident (mental harm). Each coefficient is plotted with its 95% confidence interval. The y-axis shows medical expenses in dkk. The x-axis represents time relative to the injury. The model includes person and time-since-event fixed effects. Standard errors are clustered at the individual level.

Figure 3: Effect of workplace injuries on employment

(a) Employment

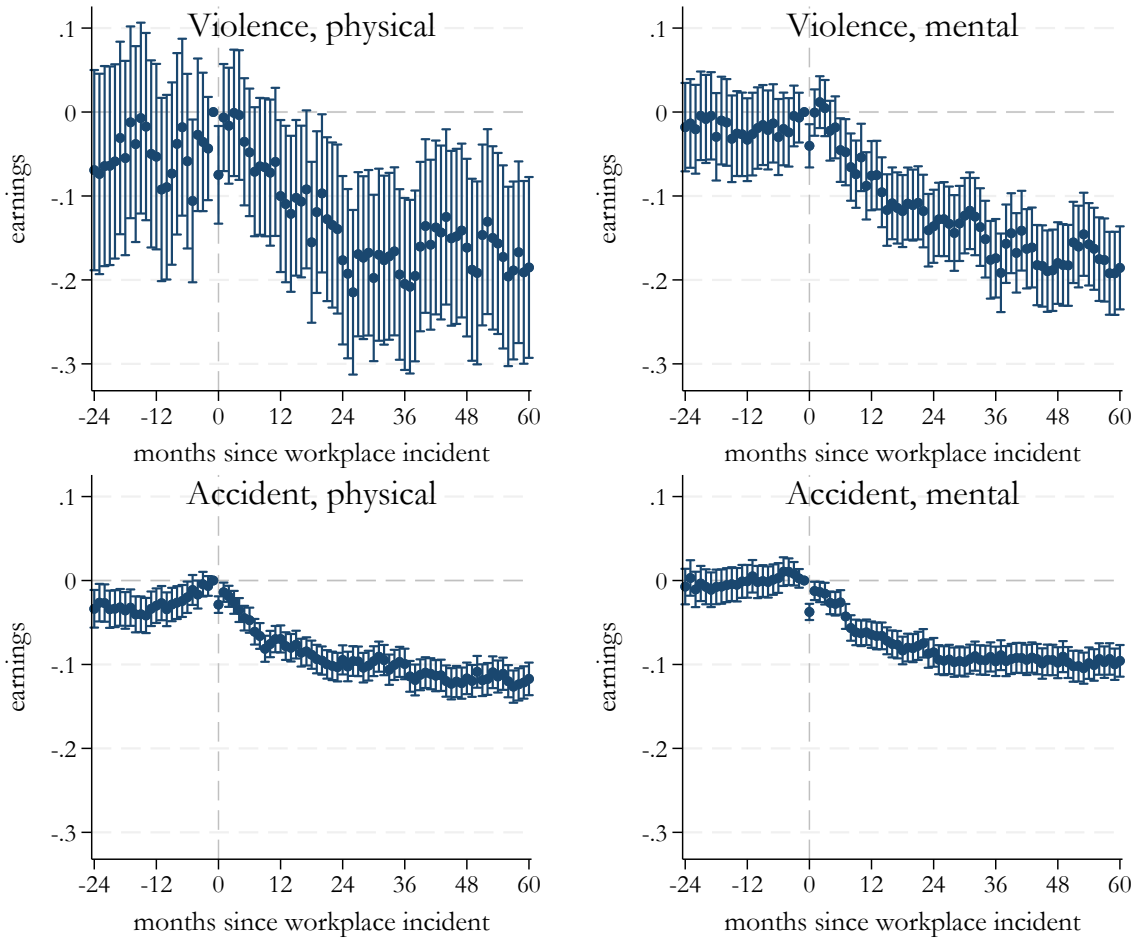


(b) Employment at incident plant



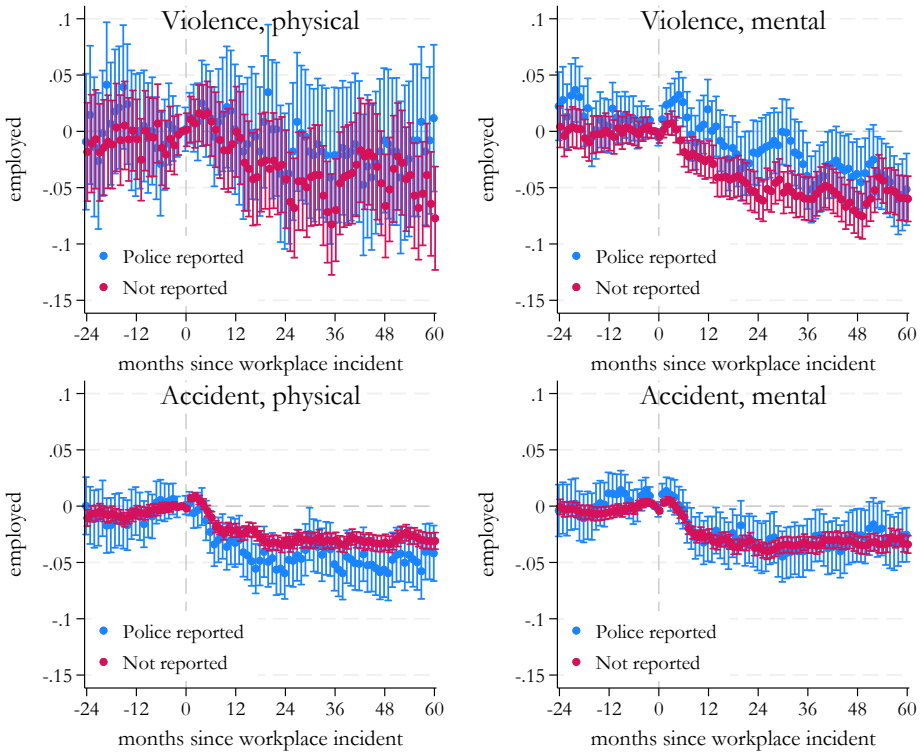
Notes: This figure presents event study estimates of the effect of workplace injuries on workers employment. Panel a show coefficients for overall employment and panel b for employment at the incident firm. Results are shown separately for injuries caused by (1) Violence (physical harm), (2) Violence (mental harm), (3) Accident (physical harm), and (4) Accident (mental harm). Each coefficient is plotted with its 95% confidence interval. The y-axis shows medical expenses in dkk. The x-axis represents time relative to the injury. The model includes person and time-since-event fixed effects. Standard errors are clustered at the individual level.

Figure 4: Effect of workplace injuries on earnings



Notes: This figure presents event study estimates of the impact of workplace injuries on earnings (working income). Results are shown separately for injuries caused by (1) Violence (physical harm), (2) Violence (mental harm), (3) Accident (physical harm), and (4) Accident (mental harm). Each coefficient is plotted with its 95% confidence interval. The Y-axis denotes the ratio of contemporary earnings over earnings in the reference period. The x-axis represents months relative to the injury. The model includes person fixed effects, time-since-event fixed effects. Standard errors are clustered at the individual level.

Figure 5: Effects on employment and earnings by police report.



Notes: This figure presents event study estimates of the impact of workplace injuries on employment and earnings. Results are shown separately for injuries caused by (1) Violence (physical harm), (2) Violence (mental harm), (3) Accident (physical harm), and (4) Accident (mental harm). For each panel, regressions are run separately for police reported and non-reported cases. Each coefficient is plotted with its 95% confidence interval. The y-axis show earnings in 1,000 dkk. The x-axis represents months relative to the injury. The model includes person fixed effects, time-since-event fixed effects. Standard errors are clustered at the individual level.

Table 1: Workplace injuries, 2004-2017.

Injury type, harm	Total		Police reported		Police reported colleague	
	(1) Count	(2) Share	(3) Count	(4) Share	(5) Count	(6) Share
All						
Violence, physical	3,009	0.007	757	0.251	35	0.012
Violence, mental	8,700	0.020	1,503	0.173	105	0.012
Accident, physical	384,155	0.866	8,291	0.022	354	0.001
Accident, mental	47,498	0.107	1,114	0.023	62	0.001
Count all	443,362	1.000	11,665	0.026	556	0.001
Women						
Violence, physical	2,163	0.012	434	0.201	23	0.011
Violence, mental	6,498	0.035	961	0.148	70	0.011
Accident, physical	151,667	0.820	3,819	0.025	199	0.001
Accident, mental	24,778	0.134	654	0.026	44	0.002
Count women	185,106	1.000	5,868	0.032	336	0.002
Share women	0.417					
Men						
Violence, physical	846	0.003	323	0.382	12	0.014
Violence, mental	2,202	0.009	542	0.246	35	0.016
Accident, physical	232,488	0.900	4,472	0.019	155	0.001
Accident, mental	22,720	0.088	460	0.020	18	0.001
Count men	258,256	1.000	5,797	0.022	220	0.001
Share men	0.583					

Notes: This table shows all reported injuries in Denmark in the years 2004-2017. The counts and shares are shown separately for all, women, and men. Moreover, each section divides injuries into four types: violence (physical harm), violence (mental harm), accident (physical harm), and accident (mental harm). Column 1 shows the number of cases in each category reported to the Danish Working Environment Agency. Column (2) and (3) show the number and share of cases that are police reported. Column (4) and (5) show the number and share of cases that are police reported, where a colleague is listed as a perpetrator.

Table 2: Descriptive averages for workplace injuries and general population

	(1) Population sample	(2) Injuries All	(3) Violence, physical	(4) Violence, mental	(5) Accident, physical	(6) Accident, mental
Age	41.74	42.56	42.14	40.37	42.66	42.63
Female (d)	0.48	0.46	0.74	0.75	0.43	0.52
Education	14.07	13.36	14.56	14.22	13.24	13.60
Employed (d)	1.00	1.00	1.00	1.00	1.00	1.00
Earnings (1,000 dkk)	31.03	27.43	28.53	26.85	27.35	27.80
Monthly hours worked	134.88	147.13	149.90	143.39	146.88	148.70
Hours worked last year	1349.20	1429.17	1477.96	1407.45	1422.17	1458.32
Number of jobs	1.20	1.10	1.12	1.12	1.10	1.10
Public sector	0.33	0.46	0.87	0.75	0.41	0.59
Health Outcomes						
Sick leave months t-12	0.32	0.58	0.67	0.58	0.58	0.59
UI months t-12	0.32	0.47	0.49	0.34	0.48	0.43
Total doctor fees t-12	1656.82	1894.43	2250.57	2156.72	1855.73	1977.75
Tenure						
Less than 1 year	0.33	0.35	0.37	0.37	0.35	0.33
2-4 years	0.40	0.44	0.44	0.44	0.45	0.44
More than 4 years	0.27	0.21	0.20	0.19	0.21	0.23
Industry						
Farming, industry, raw materials	0.14	0.17	0.00	0.00	0.19	0.13
Construction	0.06	0.11	0.00	0.00	0.12	0.08
Restaurant, services, sales	0.24	0.20	0.15	0.23	0.21	0.16
Communication	0.03	0.01	0.00	0.00	0.01	0.00
Finance & real estate	0.05	0.01	0.00	0.02	0.01	0.01
Research & analytical	0.16	0.11	0.02	0.09	0.12	0.11
Teaching	0.09	0.07	0.20	0.10	0.07	0.07
Medical	0.18	0.28	0.61	0.56	0.23	0.41
Creative and recreational	0.04	0.02	0.00	0.01	0.02	0.02
Occupation						
Manager	0.04	0.02	0.00	0.02	0.02	0.01
Professional worker	0.33	0.23	0.52	0.47	0.21	0.26
Office worker	0.08	0.06	0.01	0.04	0.06	0.04
Service or sales worker	0.19	0.24	0.39	0.40	0.21	0.32
Manual labor	0.22	0.40	0.05	0.06	0.44	0.33
Firm monthly turnover (%)	4.13	3.56	3.66	4.01	3.56	3.47
Firm female share (%)	42.93	42.97	63.45	62.69	39.92	49.97
Firm manager share (%)	5.99	5.32	2.59	5.68	5.48	4.72
Firm female manager share (%)	17.25	16.59	22.07	20.69	15.98	17.92
Observations	512,989	188,106	1,415	7,253	142,248	37,190

Notes: This table shows the descriptive means across different subgroups, measured at event date 0. Note that we only include injuries occurring in 2008-2017 to be able to track individuals for up to 5 years before an injury. Column 1 shows averages for a sample of the Danish population, column 2 shows it for all injuries at the individual-firm-month-year level, and columns 3-6 show averages by injury category.

Table 3: Descriptive averages, matched sample and controls

	(1) Controls	(2) Treated sample	(3) Violence, physical	(4) Violence, mental	(5) Accident, physical	(6) Accident, mental
Age	40.59	40.59	40.47	40.08	39.56	41.88
Female (d)	0.47	0.47	0.76	0.77	0.36	0.54
Education	13.46	13.46	14.54	14.30	13.21	13.55
Employed (d)	1.00	1.00	1.00	1.00	1.00	1.00
Earnings (1,000 dkk)	28.74	27.21	27.50	27.13	27.13	27.30
Monthly hours worked	148.77	147.69	147.18	147.21	146.99	148.61
Hours worked last year	1373.98	1373.26	1405.83	1401.45	1328.42	1419.36
Number of jobs	1.12	1.10	1.14	1.13	1.10	1.10
Public sector	0.34	0.51	0.86	0.78	0.37	0.61
Health Outcomes						
Sick leave months t-12	0.35	0.54	0.67	0.57	0.52	0.55
UI months t-12	0.38	0.46	0.54	0.39	0.50	0.42
Total doctor fees t-12	1592.45	1834.90	2205.01	2143.10	1689.70	1934.12
Tenure						
Less than 1 year	0.39	0.39	0.42	0.40	0.41	0.36
2-4 years	0.43	0.43	0.41	0.42	0.43	0.43
More than 4 years	0.18	0.18	0.17	0.17	0.16	0.21
Industry						
Farming, industry, raw materials	0.15	0.16	0.00	0.00	0.22	0.12
Construction	0.06	0.09	0.00	0.00	0.13	0.08
Restaurant, services, sales	0.25	0.19	0.12	0.18	0.23	0.15
Communication	0.04	0.01	0.00	0.00	0.01	0.01
Finance & real estate	0.06	0.01	0.00	0.02	0.01	0.01
Research & analytical	0.15	0.12	0.03	0.10	0.11	0.12
Teaching	0.08	0.08	0.24	0.11	0.07	0.08
Medical	0.19	0.32	0.60	0.56	0.19	0.41
Creative and recreational	0.03	0.02	0.01	0.01	0.02	0.02
Occupation						
Manager	0.04	0.02	0.00	0.02	0.02	0.02
Professional worker	0.32	0.28	0.57	0.51	0.22	0.29
Office worker	0.10	0.05	0.01	0.05	0.05	0.05
Service or sales worker	0.19	0.25	0.34	0.35	0.18	0.31
Manual labor	0.24	0.36	0.05	0.05	0.47	0.30
Firm Size						
<20 workers	0.32	0.22	0.13	0.23	0.25	0.19
20-100 workers	0.36	0.41	0.55	0.44	0.42	0.40
>100 workers	0.32	0.37	0.32	0.33	0.33	0.41
Firm female share (%)	43.89	44.87	63.41	63.99	36.09	50.90
Firm manager share (%)	6.24	5.45	2.89	4.96	6.10	4.87
Firm female manager share (%)	16.00	17.21	22.51	21.42	15.28	18.49
Observations	58,946	58,946	908	4,576	28,849	24,613

Notes: This table shows descriptive means for the control and treated samples across various subgroups, measured at event date 0. Note that we only include injuries occurring in 2008-2017 to be able to track individuals for up to 5 years before an injury. Column 1 shows averages for a control group matched on year, age, education, tenure and monthly working hours. Column 2 shows averages for the main sample of treated individuals at the individual-firm-month-year level, and columns 3-6 show averages by injury category for the main sample.

Table 4: Effect of workplace injury on health outcomes

			Doctor fees					
	Sick leave		Total		Physical specialist		Psychological	
	(1) Violence	(2) Accident	(3) Violence	(4) Accident	(5) Violence	(6) Accident	(7) Violence	(8) Accident
$1.treated \times 1.post$	0.050***	0.043***	196.419***	220.311***	-6.469	59.042***	70.344***	20.026***
	(0.003)	(0.001)	(30.424)	(8.850)	(12.707)	(3.622)	(9.903)	(2.352)
Outcome mean	0.0460	0.0420	2157	1793	295.7	219.1	125.2	63.44
Observations	903,796	8,722,297	87,824	856,448	87,824	856,448	87,824	856,448

Robust standard errors in parentheses. Outcome mean shows the average for the subgroup prior to the incident.
*** p<0.01, ** p<0.05, * p<0.1.

Notes. The table reports treatment coefficients from a static difference-in-differences regression, comparing health outcomes between a group of injured workers and a matched control group. The independent variable, $1.treated \times 1.post$, equals one if an individual is observed in the same month or later following an injury. Results are presented separately for injuries caused by violence and accidents. The control group is matched on year, age, education, tenure, and working hours. The outcome mean corresponds to the average of the outcome variable in the two years prior to the incident. The statistical model includes individual fixed effects and post-treatment fixed effects. Standard errors are clustered at the individual level.

Table 5: Effect of workplace injury on employment and earnings

	Employed		Employed at firm		Employed at plant		Earnings		Earnings (employed)		Earnings (same firm)		Earnings (same plant)	
	(1) Violence	(2) Accident	(3) Violence	(4) Accident	(5) Violence	(6) Accident	(7) Violence	(8) Accident	(9) Violence	(10) Accident	(11) Violence	(12) Accident	(13) Violence	(14) Accident
$1.treated \times 1.post$	-0.041***	-0.025***	-0.081***	-0.026***	-0.105***	-0.032***	-0.104***	-0.073***	-0.054***	-0.037***	-0.010	-0.017***	-0.014**	-0.019***
	(0.005)	(0.002)	(0.008)	(0.002)	(0.008)	(0.003)	(0.016)	(0.005)	(0.011)	(0.003)	(0.006)	(0.002)	(0.006)	(0.002)
Outcome mean	0.924	0.924	0.782	0.781	0.782	0.781	0.994	0.995	1.076	1.075	1.081	1.071	1.085	1.073
Observations	903,796	8,722,297	903,796	8,722,297	903,567	8,716,444	895,382	8,612,407	779,945	7,522,566	591,399	5,733,327	477,607	4,997,031

Robust standard errors in parentheses. Outcome mean shows average for subgroup prior to incident.

*** p<0.01, ** p<0.05, * p<0.1.

Notes. The table reports treatment coefficients from a static difference-in-differences regression, comparing economic outcomes between a group of injured workers and a matched control group. The independent variable, $1.treated \times 1.post$, equals one if an individual is observed in the same month or later following an injury. Results are presented separately for injuries caused by violence and accidents. The control group is matched on year, age, education, tenure, and working hours. Earnings are expressed as a share of level earnings in event year -1. The outcome mean corresponds to the average of the outcome variable in the two years prior to the incident. The statistical model includes individual fixed effects and post-treatment fixed effects. Standard errors are clustered at the individual level.

Table 6: Effect of workplace injury on health by gender

			Doctor fees					
	Sick leave		Total		Physical specialist		Psychological	
	(1) Violence	(2) Accident	(3) Violence	(4) Accident	(5) Violence	(6) Accident	(7) Violence	(8) Accident
Women								
$1.treated \times 1.post$	0.052***	0.048***	219.862***	271.649***	-2.242	78.161***	67.643***	28.383***
	(0.003)	(0.001)	(36.396)	(15.284)	(15.472)	(6.587)	(12.138)	(4.328)
Outcome mean	0.0500	0.0480	2363	2351	342.9	336.1	144.6	97.49
Observations	691,062	3,891,953	67,152	380,992	67,152	380,992	67,152	380,992
Men								
$1.treated \times 1.post$	0.045***	0.038***	120.269**	179.173***	-20.201	43.722***	79.119***	13.329***
	(0.005)	(0.001)	(52.224)	(10.194)	(19.684)	(3.825)	(14.671)	(2.432)
Outcome mean	0.0340	0.0370	1485	1345	142.1	125.4	62.39	36.15
Observations	212,734	4,830,341	20,672	475,456	20,672	475,456	20,672	475,456

Robust standard errors in parentheses. Outcome mean shows average for subgroup prior to incident.
*** p<0.01, ** p<0.05, * p<0.1.

Notes. The table reports treatment coefficients from a static difference-in-differences regression, comparing health outcomes between a group of injured workers and a matched control group. The two panels depict results separately for men and women. The independent variable, $1.treated \times 1.post$, equals one if an individual is observed in the same month or later following an injury. Results are presented separately for injuries caused by violence and accidents. The control group is matched on year, age, education, tenure, and working hours. The outcome mean corresponds to the average of the outcome variable in the two years prior to the incident. The statistical model includes individual fixed effects and post-treatment fixed effects. Standard errors are clustered at the individual level.

Table 7: Effect of workplace injury on employment and earnings by gender

	Employed		Employed at firm		Employed at plant		Earnings		Earnings (employed)		Earnings (same firm)		Earnings (same plant)	
	(1) Violence	(2) Accident	(3) Violence	(4) Accident	(5) Violence	(6) Accident	(7) Violence	(8) Accident	(9) Violence	(10) Accident	(11) Violence	(12) Accident	(13) Violence	(14) Accident
Women														
1.*treated*×1.*post*	-0.036***	-0.030***	-0.081***	-0.029***	-0.109***	-0.042***	-0.094***	-0.078***	-0.052***	-0.034***	-0.009	-0.009***	-0.014**	-0.012***
	(0.005)	(0.002)	(0.009)	(0.004)	(0.009)	(0.004)	(0.019)	(0.008)	(0.012)	(0.005)	(0.007)	(0.003)	(0.006)	(0.002)
Outcome mean	0.924	0.925	0.788	0.802	0.788	0.802	0.994	0.995	1.075	1.075	1.082	1.074	1.087	1.076
Observations	691,062	3,891,953	691,062	3,891,953	690,833	3,889,419	684,894	3,852,006	597,834	3,360,138	458,981	2,663,075	367,014	2,222,333
Men														
1.*treated*×1.*post*	-0.057***	-0.022***	-0.082***	-0.024***	-0.089***	-0.024***	-0.137***	-0.069***	-0.060***	-0.040***	-0.011	-0.025***	-0.013	-0.024***
	(0.010)	(0.002)	(0.016)	(0.003)	(0.017)	(0.004)	(0.035)	(0.007)	(0.023)	(0.004)	(0.014)	(0.002)	(0.013)	(0.002)
Outcome mean	0.923	0.924	0.761	0.764	0.761	0.764	0.996	0.995	1.078	1.075	1.077	1.068	1.081	1.070
Observations	212,734	4,830,341	212,734	4,830,341	212,734	4,827,022	210,488	4,760,398	182,111	4,162,428	132,418	3,070,252	110,593	2,774,698

Robust standard errors in parentheses. Outcome mean shows average for subgroup prior to incident.

*** p<0.01, ** p<0.05, * p<0.1.

Notes. The table reports treatment coefficients from a static difference-in-differences regression, comparing economic outcomes between a group of injured workers and a matched control group. The two panels depict results separately for men and women. The independent variable, 1.*treated*×1.*post*, equals one if an individual is observed in the same month or later following an injury. Results are presented separately for injuries caused by violence and accidents. The control group is matched on year, age, education, tenure, and working hours. Earnings are expressed as a share of level earnings in event year −1. The outcome mean corresponds to the average of the outcome variable in the two years prior to the incident. The statistical model includes individual fixed effects and post-treatment fixed effects. Standard errors are clustered at the individual level.

Table 8: Effect of workplace injury on firm risk

	Firm wage		Firm incident rate		Firm sick leave rate	
	(1) Violence	(2) Accident	(3) Violence	(4) Accident	(5) Violence	(6) Accident
All						
$1.treated \times 1.post$	-0.322**	-0.227***	-0.014***	-0.005***	0.020	0.017
	(0.129)	(0.049)	(0.003)	(0.001)	(0.038)	(0.013)
Outcome mean	25.37	26.43	0.156	0.154	3.784	3.400
Observations	298,473	2,448,982	298,473	2,448,982	298,473	2,448,982
Women						
$1.treated \times 1.post$	-0.381***	-0.209***	-0.013***	-0.004***	-0.018	0.013
	(0.145)	(0.061)	(0.003)	(0.001)	(0.042)	(0.016)
Outcome mean	25.24	24.98	0.148	0.129	3.919	3.794
Observations	237,563	1,364,455	237,563	1,364,455	237,563	1,364,455
Men						
$1.treated \times 1.post$	-0.092	-0.248***	-0.016*	-0.007***	0.172*	0.022
	(0.282)	(0.080)	(0.008)	(0.002)	(0.089)	(0.022)
Outcome mean	25.89	28.28	0.189	0.187	3.250	2.900
Observations	60,910	1,084,527	60,910	1,084,527	60,910	1,084,527

Robust standard errors in parentheses. Outcome mean shows average for subgroup prior to incident.
*** p<0.01, ** p<0.05, * p<0.1.

Notes. The table reports treatment coefficients from a static difference-in-differences regression, comparing firm risk between a group of injured workers and a matched control group. The three panels depict results separately for all workers, men, and women. The independent variable, $1.treated \times 1.post$, equals one if an individual is observed in the same month or later following an injury. Firm wage corresponds to the average wage in the firm in 1,000 dkk. Incident rates are calculated following equation (2). Results are presented separately for injuries caused by violence and accidents. The control group is matched on year, age, education, tenure, and working hours. The statistical model includes individual fixed effects and post-treatment fixed effects. Standard errors are clustered at the individual level.