

# Working PAPER

BY NAN L. MAXWELL AND NATHAN WOZNY

## **Risk Factors Associated with Disability Following Work-Related Injuries**

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## **Abstract**

This study uses a previously untapped database—administrative data on claims filed under the Federal Employees' Compensation Act (FECA)—to show how risk factors underlying disability following a work-related injury differ across groups defined by demographics, employment characteristics, and injury type (that is, injury or illness). Differences exist in three areas: the probability of incurring an injury, the probability of incurring a disability once an injury has occurred, and the size of the association between a risk factor and the probability of incurring a disability. This heterogeneity was previously undetected in narrower data sources and highlights the importance of tailoring efforts to identify and support individuals at-risk of disability to the population of interest.

*Keywords:* work-related injury, disability, lost productivity, work absence, return to work, Federal Employees' Compensation Act, FECA, loss of earnings

## I. Introduction

Work-related injuries<sup>1</sup> that result in disability can disrupt quality of life substantially. Approximately 3.9 million American workers sustained a work-related injury in 2011, with about 30 percent missing work as a result (Bureau of Labor Statistics 2011a, 2011b).<sup>2</sup> These injured workers might face reduced future job opportunities (Belton 2011), a rehabilitation period that restricts personal activities and overall lifestyle, and social and psychological harm (Kirsh et al. 2012; Banks 1995). Their employers must pay for medical treatments and lost wages and adjust production decisions or recruit and train new employees to replace injured workers (Leigh et al. 2000). Most of these costs are incurred by injuries to a small proportion of injured workers. About 93 percent of the approximately \$57.5 million in medical and cash benefits workers' compensation programs paid in 2010 were incurred by one in four injuries (24 percent) (Sengupta et al. 2012). Similarly, administrative data indicate that 11 percent of injuries reported under the Federal Employees' Compensation Act (FECA) involved a disability and incurred an average of nearly \$20,000 in compensation and medical benefits in the first year—much greater than the \$3,000 average across all reported injuries (author's calculations).

The high cost of disabilities from work-related injuries, especially with respect to lost wages and productivity, suggests that understanding the risk factors that might lead to disabilities among workers could help policymakers to build safety nets for injured workers most at risk of diminished earnings, heads of workers' compensation programs to target resources toward cases most likely to need them, and employers with injured workers to plan for replacement workers. Unfortunately, many of the existing studies on risk factors (Table 1) suffer from the use of less than adequate data (Krause et al. 2001). Most important, studies have examined risk factors using data on a specific injury, occupation, or industry, leaving in question the generalizability of the relationships observed to other groups.

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<sup>1</sup> We refer to injuries, which are sudden events, and illnesses, which develop over time, collectively as injuries when the distinction is not relevant.

<sup>2</sup> These numbers are based on the percentage of injured private sector and state and local government employees who miss days from work. Fourteen percent missed more than 10 days away from work.

This study uses a previously untapped data source—administrative data from the FECA—to expand existing research by providing insights into the risk factors associated with experiencing a disability from work-related injuries across a broad range of occupations and injuries. Data on claims and supplemental data on the workforce enabled the measurement of injury incidence rates and the identification of risk factors correlated with disability following those injuries. Furthermore, the breadth of the data enabled comparisons of risk factors across groups of workers. We find that some groups of workers, defined by demographics and employment characteristics, were more likely than others to sustain an injury at work and report it through FECA. A minority of work-related injuries resulted in a disability, but the frequency of disability among injured workers varied notably across groups defined by demographics, employment characteristics, and injury type (that is, injury or illness). Risk factors associated with disability were qualitatively similar across these groups, but their quantitative relationships with disability were notably different. Finally, incomplete specifications used to identify risk factors may be measuring proxy effects for excluded variables (such as injury severity).

## **II. Framework and Previous Literature**

Identifying risk factors—individual or employment characteristics associated with work-related injuries resulting in a disability—is useful in setting policies that can help prevent disabilities or mitigate their effects, even if the risk factors are not shown to have a causal effect on disability incidence. We lay out a framework of disability and the factors that may influence its incidence, provide an overview of relevant research in the context of this framework, and highlight contributions that this paper makes to the research literature.

### **A. Framework**

The International Classification of Functioning, Disability, and Health (ICF) considers a disability to encompass medical diagnoses as well as how the interaction between the injury and environmental and personal factors limit activities (World Health Organization 2002). In the workplace, such impairments would limit a worker’s ability to perform the activities required for

the job they performed at the time of the injury without accommodation. Accordingly, measures of disability associated with work-related injuries frequently focus on lost productivity.

Understanding the factors associated with incurring a disability from a work-related injury<sup>3</sup> requires understanding two sets of probabilities.

First, the probability of an employee incurring a work-related injury—or incidence rate—may vary with worker demographics and employment characteristics:

$$(1) \Pr(I_i) = f(\mathbf{X}_{1i}, \mathbf{X}_{2i}),$$

where  $\Pr(I_i)$  is the probability that worker  $i$  sustains a work-related injury in a given time period and vectors of demographic ( $\mathbf{X}_{1i}$ ) and employment characteristics ( $\mathbf{X}_{2i}$ ).

Second, the probability that an injury results in a disability may vary with many of the same demographic and employment characteristics, although additional factors may also have an effect:

$$(2) \Pr(D_i | I) = g(\mathbf{X}_{1i}, \mathbf{X}_{2i}, \mathbf{X}_{3i}, \mathbf{X}_{4i}).$$

where  $\Pr(D_i | I)$  is probability that an injury leads to a disability,  $\mathbf{X}_{3i}$  captures the type and severity of the injury, and  $\mathbf{X}_{4i}$  measures the receipt of injury-appropriate services, including medical services or workplace accommodations.

Inferring these causal relationships from observational data is difficult. Unobserved factors, such as motivation to work, might affect the probabilities shown in both equations (1) and (2), so the parameters are not readily inferred from most available data sets. Controlling for proxies of omitted variables is also difficult. For instance, injury severity is likely to be correlated with disability outcomes and other factors in  $g(\cdot)$  in equation (2), but commonly used proxies for severity, such as time missed from work, are more appropriately considered disability outcomes. Furthermore, some observable factors, such as injury-appropriate services, may proxy for injury severity.

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<sup>3</sup> Consistent with many data sets, including ours, that track injury claims defined by particular incidents, we refer to a single injury even if the worker sustained multiple injuries during a single incident.

Estimation of equations (1) and (2) using observational data is still useful. Causal inference is not needed to identify risk factors—those characteristics in the  $\mathbf{X}_i$  vectors that are associated with injury incidence or with a disability following an injury. Knowledge of observable risk factors may help target efforts to prevent injuries or reduce their impact on disability, even if those risk factors do not have a causal effect on injury incidence or disability after an injury. Indeed, because injury-appropriate services ( $\mathbf{X}_{4i}$ ) are measured after the injury occurs, a model including such measures would not be useful for identifying risk factors at the time of the injury even if they could be empirically separated from injury severity.

## **B. Previous Literature**

A substantial literature has identified risk factors using observational data. This literature could be characterized as having separate strands estimating equations (1) and (2) (Table 1), a distinction that is mirrored in practice as efforts to prevent work-related injuries and mitigate their negative consequences are often treated separately from efforts to return injured employees to work. Past research shows differences in injury incidence rates (equation 1) with measures of demographics ( $\mathbf{X}_1$ ), such as age, gender, and race/ethnicity (Breslin et al. 2003; Loomis and Richardson 1998); and employment characteristics ( $\mathbf{X}_2$ ), such as occupation, industry, union representation, hours worked, tenure (Breslin et al. 2007; Verma et al. 2007; Dembe et al. 2005; Strong and Zimmerman 2005), environmental conditions, policies and programs, and organization and co-worker support (DeJoy et al. 2004). Identified risk factors for disability (equation 2) after a workplace injury include demographics ( $\mathbf{X}_1$ ) (Boden and Galizzi 2003; Cheadle et al. 1994; MacKenzie et al. 1987); employment characteristics ( $\mathbf{X}_2$ ) (Seabury and McLaren 2010; Cheadle et al. 1994; Johnson and Ondrich 1990), including work environment (MacKenzie et al. 1987; MacKenzie et al., 1998); injury characteristics ( $\mathbf{X}_3$ ) (Cheadle et al. 1994; Johnson and Ondrich 1990); and the timeliness in provision of appropriate medical services ( $\mathbf{X}_4$ ) (Blackwell et al. 2003).

Unfortunately, most observational studies examining risk factors face at least three types of data limitations that may limit the applicability of findings or lead to correlations with the potential to mislead policy decisions. First, previous studies rely on data on a specific injury, occupation, or industry thereby providing information limited to those injuries (for example). Fallacious comparisons across such studies might suggest inconsistencies in the factors associated with a work-related injury becoming a disability.<sup>4</sup> Data covering many impairments are required to learn about impairments and the risk factors for disabilities in general or to compare risk factors among impairments.

Second, studies often lack information for complete model specification of equations (1) and (2) and, potentially, such difficulties might lead researchers to identify risk factors that are correlates for excluded variables. For example, research shows that females are generally more prone to injury (Liao et al. 2001) and have greater work absence once injured (Cheadle et al. 1994), yet more complete model specifications can cause such differences to disappear (Boden and Galizzi 2003). In this case, it may be that gender is capturing (that is, proxying for) other risk factors that are not included in estimations when data available for estimation do not have measures of all risk factors.

Finally, available data generally do not allow estimation of both sets of probabilities<sup>5</sup> and often limit estimation of risk factors associated with returning to work for injuries that are reported through workers' compensation or medical center visits (Table 1). As a result, equation (1) cannot be estimated, and we cannot gain a complete understanding of the unconditional probability that a worker will incur an injury that leads to a disability. As a result, showing that injuries among protective service workers (for example) are more likely to lead to disability compared to workers in other occupations could reflect their greater impact on limiting

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<sup>4</sup> For example, the type of impairment was a key factor in returning to work in a study of partially disabled workers (Johnson and Ondrich 1990) but was less important than nonmedical factors (for example, demographics) in a sample of patients in Level I trauma centers (MacKenzie et al. 1998).

<sup>5</sup> The notable exception is the National Longitudinal Surveys, which has been used to estimate the probability of incurring a work-related injury (Dembe et al. 2003) and to estimate independent probabilities of injury and risk factors for missing work (Strong and Zimmerman 2005).

productivity for protective service workers than workers in other occupations, or a greater severity of injuries among protective service workers.

This study builds on previous literature by addressing or further illuminating the nature of these problems. Our broad sample of workers illustrates how findings may differ across more narrowly defined populations. Although complete model specification is impossible with any real-world data set, we explore the sensitivity of model findings to alternate specifications, including controls not commonly available. Finally, we estimate both injury incidence rates (equation 1) and disability following injury (equation 2) by combining data on injuries with data on workers.

### **III. Empirical Methods**

The administrative data from FECA contain a wide variety of work-related injuries and illnesses that were incurred in a broad set of occupations across the country and were compensated under relatively consistent program rules and management practices. Their richness allows us to examine how the factors for a work-related injury becoming a disability (equation 2) vary among different groups—demographic, employment characteristics, and injury type—and the possibility of proxy effects of identified risk factors due to omitted variables. In addition, when augmented with data from FedScope (<http://www.fedscope.opm.gov/employment.asp>), we can use the FECA data to provide a cursory examination of the extent to which some groups incur injuries (equation 1).

The public-use version of the FECA administrative data (<http://www.dol.gov/asp/evaluation/AllStudies.htm>) describe 800,791 workplace injury and illness claims reported from January 1, 2005, through December 31, 2010, with information captured up to one year after the report date.<sup>6</sup> The data file does not include claims that were denied (that is, were deemed not to be work-related) and includes both traumatic injuries,

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<sup>6</sup> A claim includes a single incident of an injury and any records of disability and treatment related to that incident. The data file does not contain claims for which work outcomes were not relevant to returning to work following an injury (for example, a fatality) or in which the information did not meet data quality checks (Maxwell et al. 2013).

defined as occurring in a single day, and occupational illnesses, defined as occurring over more than one day.

The FECA program on which the data are based provides insurance against incurring a work-related injury to all appropriated fund civilian federal employees (U.S. Department of Labor 2002). As staff members administer the FECA, they record a wealth of information in an administrative database. Each record in the database describes detailed information about the claimant at the time the injury was reported, pre-injury employment, and work outcomes during the first year after the injury was reported.<sup>7</sup>

The database has several features making it useful for this research. Most important, it contains a measure of lost productivity (lost wage-earning capacity) that can be used to define a disability's impact on productivity. A loss of wage-earning capacity is defined as an absence, reduction in hours, or transfer to a lower-paying job that is due to the work-related injury, as supported by medical evidence. The data also contain information for a large group of workers from across the country, employed in a variety of occupations, who incurred a wide variety of injuries. The breadth of information provides a unique opportunity to examine how the risk factors associated with a disability following a work-related injury might vary across different groups (demographics, employment characteristics, and injury type) for a sample of workers that comprises a relatively large proportion of the nation's workforce.

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<sup>7</sup> Three key features about the data need to be emphasized. First, they contain information on injuries reported and not on individual claimants. Claimants with more than one reported injury are therefore included separately for each claim filed. Studies show that about one-third of claimants file a second claim within a few years, with most second claims filed for a distinct injury (Ruseckaite and Collie 2011; Gotz et al. 2000). These findings suggest that our data include multiple claims and, as a result, our standard error calculations could ignore some correlation among outcomes of individuals with multiple claims. Second, like other studies (Table 1), the data contain only injuries reported to FECA. Studies suggest that databases on reported injuries exclude an estimated 40 percent of injured workers who do not submit a workers' compensation claim, with about 30 percent of those workers losing time from work (Shannon and Lowe 2002). A bias in our estimated relationship between risk factors and work outcomes could therefore arise because those with less serious injuries are less likely to report them. Third, like other studies, the data lack a concrete measure of injury severity.

## **A. Injury Incidence**

Because FECA data do not contain information on how many federal workers were at risk for incurring a work-related injury, we augment it with employment data from FedScope<sup>8</sup> to compute the number of reported injuries per 1,000 covered federal workers. We present these incidence rates for all federal workers and for different groups, and we use a chi-squared statistic to test for differences in rates across groups. Groups with higher incidence rates would have either a greater probability to sustain a work-related injury or to file a claim if injured, and they might not be representative of the population of covered workers.

Differences in incidence rates have two potential implications. If some groups are more likely to sustain a work-related injury than others, efforts to reduce work-related injuries may benefit from targeting those groups. Second, such differences provide a context—lacking in studies that use only data on injured workers—for interpreting findings on the risk factors of disability.

## **B. Disability**

To identify risk factors associated with disability (equation 2), we developed two dichotomous measures of disability. We say that an injury resulted in *any disability* if the claimant was not working full-time at his or her regular job, or another job, at the pre-injury wage, at any time during the first year after the injury was reported. An injury resulted in a *long-term disability* if the claimant was not working, or was working at a lower-paying job, one year after the injury was reported. Both measures capture productivity loss, using the pre-injury wage as a baseline measure. Accordingly, any drop in wage over the course of one year indicated a negative impact of the injury with our measure of any disability, while workers who continue to face a work absence, reduction in hours, or lower-paying job one year after the injury was reported are considered to have a long-term disability.

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<sup>8</sup> Because these data define groups differently than the FECA data, the number of covered workers in a group may be overestimated or underestimated. The differences in classification schemes make comparisons by occupation untenable.

Identifying risk factors also requires measures of them. Although no data set contains exhaustive information on demographics, employment characteristics, and injury characteristics and severity, and medical services received, the FECA data contain rich measures of key inputs to disability risk. Demographic data ( $\mathbf{X}_1$ ) include gender, age, and dependent status; employment characteristics ( $\mathbf{X}_2$ ) include occupation categories and employing department, which is analogous to industry in the private sector; and injury characteristics ( $\mathbf{X}_3$ ) include the nature, area, and cause of injury, as well as whether the injury was characterized as a traumatic injury or occupational illness (that is injury type).<sup>9</sup> The appendix provides detailed information about all measures.

**Identifying Risk Factors.** A straightforward way to identify risk factors is to compare rates of each disability measure by other characteristics. Accordingly, we compute the mean rate of incurring any disability and long-term disability after a work-related injury separately for groups defined by demographics, employment characteristics, and injury type. For each group, we use a two-tailed *t*-test to determine whether the mean of each disability measure differs significantly ( $p < 0.05$ ) between that group and all other injury claims.

Comparing mean disability rates across groups may reflect both direct effects and proxy effects of identified factors. By direct effect, we mean the causal effect of an individual or injury characteristic on the probability of disability, as reflected in equation (2). A proxy effect, by contrast, is the effect of another characteristic that is not measured but is correlated with the modeled characteristic. For instance, if females are found to have greater rates of disability than males, but females tend to have more severe injuries, it is uncertain whether being female inherently leads to a greater risk of disability (direct effect), or whether the higher disability rates can be attributed to injury severity (proxy effect). Although no observational data set on injuries can fully separate direct and proxy effects, adjusting for known differences across groups can

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<sup>9</sup> Injury type has been found to predict outcomes, with occupational illnesses more likely to be severe than traumatic injuries (Maxwell et al. 2013).

help to reduce proxy effects. Accordingly, we compute the mean rate of any disability and long-term disability for each, adjusting for differences in all other measured characteristics.

We computed adjusted means using a multivariate regression framework to estimate a streamlined version of equation (2):<sup>10</sup>

$$(3) \quad Y_i | I = \alpha + \beta_1' \mathbf{X}_{1i} + \beta_2' \mathbf{X}_{2i} + \beta_3' \mathbf{X}_{3i} + \varepsilon_i$$

where  $Y_i$  is one of the two binary measures of whether an injury claim  $i$  results in a claimant's disability, each  $\mathbf{X}$  is a vector of groupings as defined above, and  $\varepsilon_i$  is an idiosyncratic error term.<sup>11</sup> Similar to equation (2), the three vectors of risk factors are demographics ( $\mathbf{X}_{1i}$ ), employment characteristics ( $\mathbf{X}_{2i}$ ), and injury characteristics ( $\mathbf{X}_{3i}$ ).<sup>12</sup> We eliminated injury-appropriate services ( $\mathbf{X}_4$ ) included in equation (2) for reasons discussed in the previous section.

The adjusted mean for a group, such as injuries among healthcare workers, is computed as the predicted value of the disability outcome for an individual in that group using the mean value of all other characteristics in an ordinary least squares (OLS) estimation. We performed a  $t$ -test to determine whether each adjusted mean differed significantly ( $p < 0.05$ ) from the adjusted mean of all other individuals.<sup>13</sup> If adjusted means of disability measures differ less across groups than unadjusted means, proxy effects may explain the differences in unadjusted means. Given that adjusted means remove these proxy effects to the extent possible with our data, we focus on the adjusted means. It is worth noting that the parameters  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  contain the same information as the adjusted means. Specifically, the coefficient on an indicator variable for

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<sup>10</sup> In addition to this linear probability model, we also estimated a logit model and found qualitatively similar results for our overall specification. These findings are available from the authors upon request.

<sup>11</sup> The estimation also includes a vector of binary variables for region of the country in which the claim was processed to control for differences in the work environment. Although this specification is estimated on a pooled cross-section, controlling for a time trend through year-specific intercepts had little impact on the findings. Accordingly, we have omitted the time trend for parsimony.

<sup>12</sup> Here and in subsequent analyses, we create separate categories for missing values of gender, age, and occupation. Coefficients for these variables are not reported in the tables.

<sup>13</sup> Specifically, we estimated equation (3) using only a single dummy variable for the category being tested. For example, to compute the adjusted mean for injuries among employees in healthcare occupations, we included a dummy variable equal to 1 if the injury was reported by a healthcare worker, but no other occupational dummies. The coefficient on that dummy represents the difference in adjusted means between injuries among healthcare workers and injuries among workers in other occupations, and the  $t$ -statistic associated with that coefficient was used to perform the statistical test of significance.

a given group represents the difference in disability rates between that group and the omitted category for that characteristic, adjusting for differences in other characteristics. Equivalently, the coefficients that differ from zero identify the risk factors associated with disability.

**Differences in Risk Factors Across Groups.** We examine whether the risk factors for disability differ across groups, defined by demographics, employment characteristics, and injury type. Because the FECA data contain a wide variety of worker demographics, employment characteristics, and injury characteristics, the observed differences in disability rates are essentially average differences over disparate injuries. The breadth of the data provides the opportunity to compare risk factors across groups using the same regression framework for all groups. We repeat the estimation of equation (3), separately by demographics, employment characteristics, and injury type. In each stratified analyses, the corresponding vector of characteristics is excluded from the estimations. For instance, when stratifying by age,  $X_1$  includes indicators for gender and dependents but not age. The resulting coefficients have the same interpretation as for the entire sample but allow for the identification of risk factors stratified by each characteristic.<sup>14</sup>

Comparing estimated parameters across groups in each stratification shows differences in risk factors. If we find that risk factors differ across groups, programs and policies intended to address disabilities among high-risk groups should use information relevant to the specific population of interest. More broadly, caution would be warranted in extrapolating findings from much of the literature, which examines risk factors data on very specific groups.

#### **IV. Findings**

The FECA administrative data shed light on identifying risk factors of disability following workplace injuries and their differences across groups and compute crude injury incidence rates. The large number of observations in the FECA data means that even small differences in

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<sup>14</sup> An identical approach would have been to estimate the model on the full sample, controlling for the interactions of indicators for each group with all other independent variables. We present separate regressions for simplicity of exposition.

outcomes across groups may be statistically significant, however. Rather than presenting an exhaustive discussion of statistically significant findings, we focus on relatively large differences across groups that could reasonably be considered the most substantive. While these choices are inevitably subjective, we discuss all statistically significant demographic differences due to the potential implications of even small differences across gender, age, or dependent status. We also focus on the any disability outcome, discussing the long-term disability outcome only in situations with findings that are qualitatively different.

Our analyses show three ways in which risk factors for incurring a disability differed across groups, defined by demographics, employment characteristics, and injury type: the probability of incurring an injury, the probability of incurring a disability once an injury occurs, and the size of the association between a risk factor and the probability of incurring a disability.

#### **A. Injury Incidence**

Not all workers were equally likely to sustain an injury at work and report it through FECA (Table 2). In 2010, each 1,000 covered employees filed an average of 42 FECA claims, although this incidence rate differed slightly with demographic characteristics of the claimant and dramatically across employing department. Workers aged 14 to 24 were more likely to report an injury than average (80 injuries per 1,000 workers), and employees in the Department of Homeland Security reported 67 injuries per 1,000 covered workers, while employees in the Department of Defense reported 28.

#### **B. Identifying Risk Factors for Disability**

A minority of work-related injuries resulted in a disability, but these rates differed notably across groups (Table 3). Overall, only 11 percent of work-related injuries resulted in any disability, and 4 percent resulted in a long-term disability. Injuries among females and workers age 55 and over were more likely to be associated with any disability (12 percent) than other injuries. Across occupational groups, injured office and administrative support workers had the greatest incidence of any disability following injury (14 percent), while protective service workers

had the least (9 percent). Across employing departments, 14 percent of injuries reported by U.S. Postal Service workers resulted in any disability, as compared to 8 percent for Defense and Veterans Affairs workers. Differences across injury characteristics were particularly stark: above-average proportions of injuries classified as pain (13 percent), those affecting the knee (16 percent) or shoulder (21 percent), and those caused by handling mail (16 percent) resulted in any disability. By contrast, below-average proportions of wounds (4 percent), injuries affecting the head externally (7 percent) or internally (4 percent), and injuries caused by an animal or insect bite (2 percent) resulted in any disability. A large fraction of occupational illnesses also resulted in any disability (17 percent). Patterns across groups in long-term disability were qualitatively similar, but the differences were smaller in magnitude, consistent with the lower frequency of this measure overall.

Some differences in the frequency of disability were altered upon adjustment for other differences. Most notably, the adjusted mean of any disability differed from the overall mean by no more than 3 percentage points for any occupation. Several other differences in raw means shrank upon adjusting for other differences. For instance, 8 percent of injuries sustained by workers aged 14 to 24 and having otherwise average characteristics resulted in any disability (compared with 4 percent of injuries sustained by this group overall). Adjusted frequency of any disability for wounds (6 percent), injuries classified as pain (11 percent), injuries affecting the shoulder (20 percent) or head externally (8 percent), and injuries caused by handling mail (12 percent) were closer to the overall mean. Few disability rates moved away from the overall mean by the adjustment, and none more than 2 percentage points. In the aggregate, these patterns suggest that some of the differences across groups in rates of disability incidence are explained by other factors, although clear differences remain. Of course, we cannot ascertain whether the remaining differences represent direct effects of those groups or proxy effects of other characteristics, such as injury severity.

### C. Differences in Risk Factors Across Groups

Risk factors were qualitatively similar across groups but showed important quantitative differences (Tables 4 to 7). Risk factors identified in Table 3 were associated with a higher risk of disability for most subgroups. However, a risk factor associated with a small increase in the risk of disability in one group may be associated with a much larger increase in the risk of disability in another. Furthermore, a small number of risk factors identified on all claimants were not associated with any increased risk of disability for specific subgroups.

We note, however, that the explanatory power of all available characteristics is poor. Demographic characteristics, detailed injury information, occupation, employing department, and location explain less than 5 percent of the variation in any disability and 2 percent of the variation in long-term disability. This explanatory power varies slightly across groups, but no more than 8 percent of the variation in either disability measure is explained in any group. While this low explanatory power need not detract from the statistically significant and potentially useful relationships detected in this and other analyses, it is a reminder that many other factors affect whether work-related injuries are associated with a disability. In particular, controlling for other measures of injury severity not measured reliably in any administrative database would likely alter the observed relationships further.

**Injury Type.** Risk factors were similar across injury type but were frequently associated with greater risk of disability following occupational illnesses compared to traumatic injuries (Table 4). The same demographic, employment, and injury characteristics tended to predict a greater likelihood of any disability and long-term disability for both traumatic injuries and occupational illnesses. However, each disability outcome was nearly twice as common following occupational illnesses compared to traumatic injuries, and this increased incidence of disability was also found in many subgroups. For instance, occupational illnesses sustained by females were 4 percentage points more likely than otherwise similar illnesses sustained by males to result in any disability, while traumatic injuries sustained by females were only 1 percentage

point more likely to have this outcome. Occupational illnesses sustained by workers with dependents and employees of the U.S. Postal Service were similarly more likely to be associated with any disability relative to otherwise similar traumatic injuries. Differences in risk factors across injury type had less clear patterns, possibly because traumatic injuries and occupational illnesses tend to have very different natures, areas, and causes.

**Demographics.** Risk factors were similar across demographic groups, but some factors predicted different likelihoods of disability across those groups (Table 5). Injuries reported by U.S. Postal Service employees were more likely to result in any disability if the injured worker was female. Knee, arm, and shoulder injuries were risk factors for both genders but were associated with a greater likelihood of any disability for male workers. By contrast, occupational illness was associated with a greater likelihood of any disability for female workers. Injuries affecting the knee, arm, or shoulder were more likely to be associated with any disability if sustained by a worker age 25 or older, while injuries affecting the head internally were less likely to be associated with any disability for older workers. Occupational illnesses were also the greatest risk for workers age 25 to 54, with no difference in incidence rates of any disability for workers age 14 to 24. Patterns were similar for risk factors of long-term disability, but quantitative differences in risk factors were small for workers with and without dependents.

**Employment Characteristics.** Differences in risk factors across occupation were relatively minor compared to other stratifications (Table 6). The most notable differences were in the area of injury: knee injuries were particularly likely to be associated with any disability among protective service workers, while shoulder injuries were particularly likely to be associated with any disability among installation, maintenance, and repair workers. Long-term disability incidence again showed similar patterns, although differences in risk factors across occupations were very small.

Differences in risk factors across employing department varied, particularly among demographic risk factors (Table 7). Gender had no statistically significant relationship with

disability among injuries in Department of Defense employees, while injuries occurring in the U.S. Postal Service were 3 percentage points more likely to result in any disability if reported by a female. Injuries reported by Department of Homeland Security workers were also more likely to result in any disability when the injured worker was age 55 or older. Associations between injury characteristics and risk factors also varied with department. For instance, shoulder injuries were more likely to result in any disability when reported by U.S. Postal Service or Department of Defense workers.

These relationships highlight several implications for the study of risk factors. While the qualitative consistency of the relationships between characteristics and disability outcomes across groups allows for broad generalizations about risk factors, caution is needed in extrapolating numerical predictions of disability incidence observed in one group. For instance, a risk factor identified in one occupation is likely to be a risk factor in other occupations, but the factor may be associated with a greater likelihood of disability in one occupation than another. Information about these numerical differences may be useful in developing policies and procedures for helping specific groups of injured workers. The numerical differences in relationships across groups are also a reminder that the risk factors may be proxies for unobserved factors. For instance, differences in the gender-disability relationship across employing agencies cast some doubt on a hypothesis that higher severity injuries among females are due to an inherent gender difference. Instead, females may tend to face other unobserved risk factors in some industries but not in others.

## **V. Summary and Discussion**

We use the FECA data to extend the research risk factors for incurring a disability after a work-related injury. These data cover a broad population of workers' compensation claims and allow us to examine demographics, employment characteristics, and injury characteristics that were associated with a greater likelihood of incurring a disability after a work-related injury was reported. Although the data are not representative of injuries among the workforce nationally,

the population of eligible employees represents a major portion of the workforce, and the claimants are subject to the same set of incentives to return to work following a work-related injury. This broad and heterogeneous set of claims data provides an opportunity to examine risk factors for disability across different groups of individuals, injuries, and employment characteristics.

Our analyses identified three ways in which risk factors for incurring a disability differed across groups, defined by demographics, employment characteristics, and injury type. First, injury incidence varied substantially across groups, which suggests that the group of federal workers reporting injuries might differ from the population of federal workers because of differences in the probability of incurring an injury. Second, the probability of incurring a disability among injured workers varied across groups. Although some of these disability differences were partially explained by differences in other characteristics, clear differences still remain across the groups we examined. Third, although the risk factors most strongly associated with disability were similar across groups, the numerical associations between these risk factors and outcomes varied across groups, suggesting that a risk factor may predict a small increase of a disability in one group but a large increase in another group.

More specifically, our results suggest that injuries reported by females, workers age 55 and over, and U.S. Postal Service employees were more likely than otherwise similar injuries to result in a disability. Certain injuries were also risk factors: back injuries, those affecting the shoulder or knee, and falls were all more likely than other injuries to result in disability. Occupational illnesses, which occur over more than one day, were also far more likely to result in a disability than traumatic injuries, which occur within a single day. In addition, many risk factors were more strongly associated with disability for occupational illnesses compared to traumatic injuries. We also show that identification of these risk factors is sensitive to controls for other characteristics. The associations between some risk factors and incidence of disability appear to include proxy effects of other factors correlated with the risk factors.

The heterogeneity in risk factors that our research uncovered has several important implications. First, it provides valuable information for practitioners to use in helping injured workers recover from the injury. For example, if a particular injury is associated with a disability, programs for occupations or demographic groups with high prevalence rates of this injury might focus efforts on injury prevention. Second, it highlights ways for researchers and practitioners to identify promising practices to aid in recovery after a work-related injury. If an organization is concerned about gender disparities in disability incidence, for example, research might focus on what we learn from the Department of Defense, for which disability incidence following injury is equally likely for females and males. Third, it provides information specific to many groups of individuals and injuries that may not be garnered from data on a narrowly defined population, which can help identify which risk factors faced by workers in a particular occupation or industry might differ from a different group of workers.

Our findings also highlight some cautions for future research. Because our injury incidence rates suggest that some groups of workers are more likely to be injured and report the injury than others, injured workers are not representative of all workers. This finding suggests that risk factors identified through observational data should not be interpreted causally: risk factors measured without adequate controls were shown to proxy for other correlated characteristics. Even rich data on individuals and injuries has limited ability to predict disability, highlighting the many other factors, such as injury severity not captured by recorded injury characteristics, that affect injured workers. Unfortunately, we cannot offer a panacea to these problems. While correlational analysis of administrative data offers many important insights that may be valuable to preventing work-related injuries and minimizing their impacts, more research is needed to identify the most effective methods of improving programs intended to help this population.

**Table 1. Studies on Work-related Injuries and Work Outcomes**

Authors	Dependent Variable	Sample	Estimation Method	Individual or Claim Characteristics	Injuries Examined	Occupation	Industry	Services	Key findings
<b>Injuries</b>									
Breslin et al. (2003)	Claim rates by age and gender	Workers' compensation claim rates with lost time between 1993 and 2000 in Ontario, Canada	Incidence rates	Age and gender	Reported for workers compensation	Unknown, not examined	Goods and services	Unknown, not examined	Younger males had higher claim rates than adults, while adult females had the highest claim rates. Age was positively associated with injury severity.
Breslin et al. (2007)	Yearly claim rates (by injury)	Workers' compensation claim rates between 1990 and 2003 in Ontario, Canada	Ordinary least squares regression	Age, gender, job tenure, and occupation physical demand	Reported for workers compensation	Manual, mixed, nonmanual	All, coded into 12 categories	Unknown, not examined	Reduced work-related compensation claims were more strongly correlated with a decrease in workers in occupations with high physical demands than with changes in workforce demographics.
DeJoy et al. (2004)		2,208 employees in a large national retail chain in 21 locations responding to a survey	Hierarchical regression	Age, gender, tenure, and hours worked per week	Self report	Unknown, not examined	Retail	Unknown, not examined	Three factors—environmental conditions, safety-related policies and programs, and general organizational climate—accounted for 55 percent of the variance in perceived safety climate.
Dembe et al. (2005)	Whether injury occurred	National Longitudinal Survey of Youth for 1987 to 2000 injuries	Cox proportional hazard regression	Age, gender, race, ethnicity, urban, covered by union, dislikes job, and wages	Self reported in survey	Census categories	Census categories	Unknown, not examined	Increased injury hazard rates were associated with jobs with overtime schedules, at least 12 hours per day, and at least 60 hours per week. Blacks occupational fatality 1.3 to 1.5 times higher than whites, with the difference partially explained by occupational employment structure.
Loomis and Richardson (1998)	Fatality rates	Medical examiner and census data in North Carolina	Fatality rates	Black-white, gender, age	Fatalities	Census categories	Census categories	Unknown, not examined	Blacks occupational fatality 1.3 to 1.5 times higher than whites, with the difference partially explained by occupational employment structure.
Verma et al. (2007)	Whether fall resulted in a fracture	Workers' compensation claims in 2000 to 2002 (females) from a large insurer operating in all states, except North Dakota, and Washington D.C.	Log-binomial regression	Claim date of injury, age, sex, date of report, accident description, injury cause, occupation, job description, tenure, and industry	Same level falls (to different body parts)	Occupations linked to O*NET to assess physical activities	Unknown, not examined	Unknown, not examined	Risk of fracture increased with age. Lowest risk observed in occupations was those with moderate physical activity levels.
<b>Work Outcomes</b>									
Blackwell et al (2003)	Return to work	502 injured workers in Montana referred to vocational rehabilitation services between 1984 and 1991	Logistic regression in a pre-post model of behavior after legislation	Age, education, attorney involvement, and time from injury to referral	Back, upper body, lower body	Unknown, not examined	Unknown, not examined	Mandated vocational rehabilitation	Education was a strong predictor of work outcomes with age, attorney involvement, mandated vocational rehabilitation, and timely provision of services also significant.
Boden and Galizzi (2003)	Earnings for workers who received workers' compensation for at least eight days	Matched records from Wisconsin workers' and unemployment compensation wage, and employment security data	Generalized least squares, difference in difference, and Blinder-Oaxaca decompositions	Age, years at work, employer characteristics, claim characteristics, and earnings	Head/neck/back, back only, upper extremities, carpal tunnel, trunk/multiple/different injuries	All, coded into six categories	All coded into eight categories	Unknown, not examined	Women lost a greater percent of earnings 3.5 years after injury, but differences in injury-related nonemployment account for about half the gap and changes in hours worked may explain rest..

Authors	Dependent Variable	Sample	Estimation Method	Individual or Claim Characteristics	Injuries Examined	Occupation	Industry	Services	Key findings
Cheadle et al. (1994)	Length of time payment was made for lost wages	28,473 randomly selected workers compensation claims in the state of Washington from injuries occurring 1987 to 1989	Multivariate survival analysis (Cox proportional hazards)	Gender, age, marital status, dependents, county, year of injury, unemployment, firm size, and private/government	Fracture, sprain (back/neck), sprain other, carpal tunnel, and other	Unknown, not examined	All, coded into 11 categories	Hospitalized within 28 days, workers' compensation program status, and benefit rate	Older, female, carpal tunnel or back/neck sprain longer duration of disability (adjusting for severity). Lower magnitude predictors: divorced, small firm, higher unemployment, construction, and agriculture.
Johnson and Ondrich (1990)	Number of months absent from work associated with injury	1,040 permanently partially disabled workers (excluded illnesses and lower back pain) injured in 1970 in Florida, New York, and Wisconsin	Weibull hazard without random effects, with gamma-distributed random effect, and with a nonparametric random effect	Age, benefit, education, experience, severity of impairment, race, married, male, union, and log wage	Amputation, bruises/contusions/poisons, burns, hearing loss, sprains/dislocations/fractures, and vision	Unknown, not examined.	Construction and transportation binaries in estimation	Unknown, not examined	Type of physical impairment is more important on return to work than severity of impairment.
MacKenzie et al. (1998)	Time (in days) from injury to the first time returned to work	312 patients from three Level I trauma centers in Seattle, Washington; Baltimore, Maryland; and Nashville, Tennessee	Cox regression	Age, gender, education, poverty, marital status, social support, alcohol problem, physical demands, job tenure, benefits, flexibility, job satisfaction, work motivation, pre-injury compensation, and lawyer	Blunt, unilateral lower extremity fracture, excluding patellar fractures and minor (metatarsal and phalangeal) foot fractures	All occupations with six categories used in estimations	Unknown, not examined	Unknown, not examined	Although impairment is a significant determinant of returning to work, many nonmedical factors influence the translation of an impairment into poor vocational outcome.
MacKenzie et al. (1987)	Work full time at 12 months after injury	266 trauma patients in two Maryland shock trauma units who worked full time before injury	Regression	Age, race, sex, marital status, education, income, head household, type prior work, social supports	Trauma patients head/neck, spine, extremities, abdomen/thorax	Blue collar, white collar as binaries in estimation	Unknown, not examined	Unknown, not examined	Confidants, income, and education are key determinants of returning to work.
Seabury and McLaren (2010)	Earnings and employment after injury	Bureau of Labor Statistics injury and illness data and medical expenditure surveys for California	Multivariate regression	Age, earnings, and occupation	Musculoskeletal, with others compared to it	Firefighters, police, corrections, teachers, construction, and laborers	Spans industries but focus is protective service	Chiropractic care and physical or occupational therapy	Increase in the frequency of musculoskeletal disorders for older firefighters is consistent with exposure to cumulative trauma.
<b>Both Injuries and Work Outcomes</b>									
Liao et al. (2001)	Injury frequency and duration out of work.	171 firefighters in a major Midwestern city	Negative binomial regression and Weibull survival model estimations	Gender, marital status, race, psychological tests, and weekly wage	Back sprain, other strains/sprains, burns/chemical exposure, fracture/laceration, contusion, contagious disease exposure	Firefighters (for example, captain, chief, trainee)	Protective services	Indicator for whether the injury claim was approved	Females are more prone to injury and age, tenure, gender, marital status, type of injury, wage, and psychology indices predict duration out of work.
Strong and Zimmerman (2005)	Self-reported injury status and the number of workdays missed.	National Longitudinal Survey of Youth aged 14 to 24 in 1978	Logistic and negative binomial regression models using generalized	Race/ethnicity, age, marital status, education, gender, region, job and workforce tenure, collective bargaining agreement, work shift, wage, full-time status, second job, and paid hourly or salary	None	Three-digit census codes, with laborer the omitted category	Three-digit census codes	Unknown, not examined	Blue-collar, full-time, tenure, multiple jobs, and late shift associated with increased odds of occupational injury or illness. Racial/ethnic minority workers missed more workdays than whites, but were not more likely to report injury or illness.

**Table 2. Incidence of Workplace Injury Among Federal Employees in 2010**

	Number of Employees	Number of Injuries	Incidence Rate
United States	1,926,279	79,952	41.5
<b>Demographic Characteristics</b>			
Gender			
Female	826,513	33,795	40.9
Male	1,099,765	46,157	42.0
Age			
14–24	69,897	5,583	79.9
25–54	1,332,938	54,037	40.5
55 +	473,995	19,033	40.2
<b>Employment Characteristics</b>			
Department			
Defense	764,299	21,640	28.3
Homeland Security	188,983	12,617	66.8
Veterans Affairs	308,814	14,160	45.9
Other departments	664,183	31,535	47.5

Source: FECA Administrative Data, available at <http://www.dol.gov/asp/evaluation/AllStudies.htm>, and FedScope data, available at <http://www.fedscope.opm.gov/employment.asp>.

Notes: Number of employees as measured in September 2010, and incidence rate is the ratio of injuries per 1,000 employees. The U.S. Postal Service is excluded from this table only due to limitations of employment data. The number of employees in each geographic region is obtained by adding employee counts by state, but regions may not match those of injury data, which do not follow state lines exclusively. FECA claims with missing gender (1 claim) or age (1,299 claims) are excluded from the respective tabulations, and location tabulations exclude employees outside of the United States.

**Table 3. Characteristics of Claims with Disability**

	Distribution		Any Disability		Long-Term Disability	
	Number	Percentage	Mean	Adjusted Mean	Mean	Adjusted Mean
All	800,791	100.0	10.6	10.6	4.1	4.1
<b>Demographic Characteristics</b>						
Gender						
Male	452,770	56.5	9.5*	9.9*	3.6*	3.7*
Female	347,936	43.4	11.9*	11.5*	4.9*	4.7*
Age						
14–24	39,009	4.9	4.2*	7.5*	1.9*	3.1*
25–54	576,288	72.0	10.6*	10.5	4.1	4.1*
55+	177,702	22.2	11.7*	11.3*	4.5*	4.5*
Has Dependents						
No	349,321	43.6	10.0*	9.9*	4.2	3.9*
Yes	451,470	56.4	11.0*	11.1*	4.1	4.3*
<b>Employment Characteristics</b>						
Occupation						
Office and administrative support	243,554	30.4	13.5*	10.6*	5.3*	4.2*
Protective service	60,244	7.5	8.5*	10.5*	3.0*	3.6*
Healthcare	52,272	6.5	10.1*	12.1*	5.1*	5.7*
Installation, maintenance, and repair	41,443	5.2	8.9*	11.7*	3.1*	4.3*
Business and financial	33,097	4.1	10.1*	10.5	3.7*	3.5*
Other occupations	140,968	17.6	8.6*	11.1*	3.3*	4.2
Department						
U.S. Postal Service	327,051	40.8	13.9*	13.7*	5.3*	5.2*
Defense	133,347	16.7	8.3*	8.8*	3.0*	3.3*
Homeland Security	93,146	11.6	9.8*	9.4*	4.0	4.0*
Veterans Affairs	78,781	9.8	8.0*	6.2*	3.3*	2.1*
Other departments	168,466	21.0	7.5*	8.5*	3.2*	3.7*
<b>Injury Characteristics</b>						
Nature of Injury						
Sprain	162,819	20.3	12.2*	10.5*	4.0*	3.9*
Wound	149,826	18.7	4.2*	6.2*	1.8*	2.6*
Back	101,440	12.7	10.6	11.5*	5.4*	5.2*
Pain	61,125	7.6	13.4*	10.9*	5.0*	4.2
Other natures	325,581	40.7	12.1*	12.2*	4.7*	4.6*
Area of Injury						
External (trunk area)	143,022	17.9	10.5	9.6*	5.2*	4.4*
Knee	81,298	10.2	16.3*	16.7*	5.0*	5.3*
Arm	69,726	8.7	11.9*	11.5*	4.1	4.0
Shoulder	59,127	7.4	21.2*	19.6*	7.1*	6.7*
Head, external	57,835	7.2	6.6*	7.9*	3.3*	3.8*
Leg	56,738	7.1	9.0*	10.4*	3.4*	4.1*
Head, internal	49,446	6.2	3.9*	2.4*	2.2*	1.8*
Hand	43,539	5.4	10.3	10.3	3.7*	3.7*
Other areas	240,060	30.0	8.4*	9.0*	3.3*	3.6*
Cause of Injury						
Fall	140,188	17.5	12.1*	12.7*	4.5*	4.8*
Handling mail	81,016	10.1	15.6*	12.2*	6.3*	4.7*
Handling equipment	76,511	9.6	12.3*	11.0*	4.5*	4.1
Slip	58,568	7.3	12.3*	11.4*	4.1	4.1
Animal or insect	46,448	5.8	2.0*	3.8*	1.0*	1.7*
Other causes	398,060	49.7	9.4*	10.1*	3.9*	4.1*
Injury Type						
Traumatic Injury	693,491	86.6	9.6*	9.7*	3.8*	3.8*
Occupational Illness	107,300	13.4	17.1*	15.8*	6.5*	6.1*
<b>Number of Claims</b>	800,791		n.a.		n.a.	

Source: FECA Administrative Data, available at <http://www.dol.gov/asp/evaluation/AllStudies.htm>.

Note: The number and percentage of claims (out of 800,791) in each category is shown in the first and second columns. The remaining columns show the means and adjusted means (in percentages) of the disability probability within each group. The adjusted mean is the group's average level of disability after a regression adjustment to the mean of all other independent variables, as well as location dummies. n.a. means not applicable.

\* indicates that the mean or adjusted mean for that group differs statistically from that of all other claims ( $p \leq 0.05$ ).

**Table 4. Characteristics and Disability in Aggregate and by Injury Type: Multivariate Analysis**

	Any Disability			Long-Term Disability		
	All Claims	Traumatic Injury	Occupational Illness	All Claims	Traumatic Injury	Occupational Illness
<b>Demographic Characteristics</b>						
Female	0.016*	0.011*	0.040*	0.011*	0.009*	0.019*
Age (25–54)						
14–24	-0.030*	-0.030*	-0.058*	-0.010*	-0.010*	-0.024*
55+	0.008*	0.012*	-0.002	0.004*	0.005*	0.002
Has Dependents	0.012*	0.010*	0.023*	0.004*	0.004*	0.007*
<b>Employment Characteristics</b>						
Occupation (Office and administrative support)						
Protective service	-0.001	-0.003	-0.021*	-0.006*	-0.007*	-0.005
Healthcare	0.015*	0.018*	-0.013*	0.015*	0.016*	0.003
Installation, maintenance, and repair	0.011*	0.012*	0.004	0.001	0.002	-0.002
Business and financial	-0.001	0.000	0.007	-0.007*	-0.008*	0.003
Other occupations	0.004*	0.004*	-0.002	0.000	-0.000	0.001
Department (U.S. Postal Service)						
Defense	-0.050*	-0.040*	-0.090*	-0.019*	-0.014*	-0.040*
Homeland Security	-0.043*	-0.032*	-0.111*	-0.013*	-0.007*	-0.048*
Veterans Affairs	-0.076*	-0.058*	-0.165*	-0.031*	-0.024*	-0.068*
Other departments	-0.052*	-0.044*	-0.104*	-0.016*	-0.011*	-0.040*
<b>Injury Characteristics</b>						
Nature of Injury (Sprain)						
Wound	-0.043*	-0.044*	-0.166*	-0.013*	-0.013*	-0.032
Back	0.010*	0.005*	-0.075*	0.014*	0.011*	0.004
Pain	0.004*	0.000	-0.089*	0.003*	0.002	-0.016
Other natures	0.017*	0.013*	-0.075*	0.007*	0.006*	-0.011
Area of Injury (External, trunk area)						
Knee	0.071*	0.067*	0.054*	0.009*	0.006*	0.016*
Arm	0.019*	0.008*	0.060*	-0.004*	-0.005*	0.002
Shoulder	0.100*	0.094*	0.107*	0.023*	0.020*	0.026*
Head, external	-0.017*	-0.021*	-0.003	-0.006*	-0.007*	0.004
Leg	0.008*	0.003	0.031*	-0.003*	-0.005*	0.015*
Head, internal	-0.072*	-0.050*	-0.072*	-0.026*	-0.016*	-0.033*
Hand	0.007*	-0.026*	0.102*	-0.008*	-0.015*	0.014*
Other areas	-0.006*	-0.010*	0.010*	-0.008*	-0.009*	-0.004
Cause of Injury (Fall)						
Handling mail	-0.004*	-0.010*	0.072*	-0.001	-0.001	0.009
Handling equipment	-0.016*	-0.023*	0.073*	-0.008*	-0.009*	0.013
Slip	-0.013*	-0.013*	0.049*	-0.007*	-0.006*	-0.001
Animal or insect	-0.088*	-0.081*	-0.013	-0.031*	-0.029*	-0.008
Other causes	-0.026*	-0.026*	0.050*	-0.008*	-0.008*	0.014
Occupational Illness	0.061*	-	-	0.023*	-	-
Mean Dependent Variable	0.106	0.096	0.171	0.041	0.038	0.065
R <sup>2</sup>	0.048	0.039	0.079	0.018	0.015	0.027
<b>Number of Claims</b>	<b>800,791</b>	<b>693,491</b>	<b>107,300</b>	<b>800,791</b>	<b>693,491</b>	<b>107,300</b>

Source: FECA Administrative Data, available at <http://www.dol.gov/asp/evaluation/AllStudies.htm>. Accessed June 13, 2014.

Note: Numbers are coefficients from ordinary least squares estimations of equation (1) except where noted. \* indicates a significant ( $p \leq 0.05$ ) coefficient. Omitted categories are in parenthesis after each category name. Location variables were also included in the estimations as controls, but coefficients are not reported here. Full results are available from the authors.

**Table 5. Characteristics and Disability by Demographic Characteristics: Multivariate Analysis**

	Any Disability							Long-Term Disability						
	Male	Female	14-24	25-54	55+	No dependents	Dependents	Male	Female	14-24	25-54	55+	No dependents	Dependents
<b>Demographic Characteristics</b>														
Female	--	--	-0.003	0.018*	0.014*	0.014*	0.019*	--	--	-0.000	0.012*	0.009*	0.010*	0.011*
<b>Age</b>														
14-24	-0.027*	-0.039*	--	--	--	-0.026*	-0.043*	-0.008*	-0.015*	--	--	--	-0.008*	-0.013*
55+	0.010*	0.008*	--	--	--	0.007*	0.008*	0.005*	0.004*	--	--	--	0.004*	0.004*
Has Dependents	0.010*	0.014*	-0.001	0.013*	0.014*	--	--	0.003*	0.005*	0.001	0.005*	0.004*	--	--
<b>Employment Characteristics</b>														
<b>Occupation</b>														
Protective service	-0.006*	0.006	-0.009	0.002	-0.005	-0.010*	0.006*	-0.009*	-0.002	-0.011*	-0.005*	-0.003	-0.010*	-0.004*
Healthcare	0.021*	0.016*	0.016*	0.017*	0.011*	0.009*	0.020*	0.023*	0.014*	0.028*	0.016*	0.009*	0.010*	0.018*
Installation, maintenance, and repair	0.006*	0.021*	-0.008	0.014*	0.012*	0.010*	0.015*	-0.003*	0.009*	-0.003	0.004*	-0.003	0.001	0.002
Business and financial	-0.001	0.003	-0.031*	0.001	0.000	-0.011*	0.008*	-0.009*	-0.003	-0.016*	-0.006*	-0.006*	-0.012*	-0.003
Other occupations	0.004*	-0.000	-0.020*	0.007*	0.006*	-0.004*	0.011*	-0.002	-0.000	-0.008*	0.001	0.002	-0.004*	0.003*
<b>Department</b>														
Defense	-0.035*	-0.070*	-0.028*	-0.050*	-0.049*	-0.050*	-0.050*	-0.011*	-0.030*	-0.011*	-0.019*	-0.020*	-0.019*	-0.019*
Homeland Security	-0.033*	-0.054*	0.006	-0.047*	-0.028*	-0.037*	-0.047*	-0.008*	-0.019*	-0.001	-0.014*	-0.005	-0.012*	-0.014*
Veterans Affairs	-0.057*	-0.090*	-0.028*	-0.078*	-0.075*	-0.074*	-0.077*	-0.019*	-0.040*	-0.015*	-0.032*	-0.032*	-0.031*	-0.032*
Other departments	-0.039*	-0.068*	-0.007	-0.055*	-0.052*	-0.054*	-0.051*	-0.008*	-0.025*	-0.001	-0.017*	-0.015*	-0.017*	-0.015*
<b>Injury Characteristics</b>														
<b>Nature of injury</b>														
Wound	-0.044*	-0.038*	-0.011*	-0.043*	-0.054*	-0.041*	-0.045*	-0.012*	-0.014*	-0.004	-0.013*	-0.015*	-0.013*	-0.013*
Back	0.003	0.020*	0.028*	0.013*	-0.005	0.013*	0.009*	0.013*	0.014*	0.014*	0.014*	0.012*	0.015*	0.013*
Pain	0.005*	0.006*	0.001	0.004*	-0.003	0.009*	-0.001	0.004*	0.002	0.002	0.002	0.004	0.007*	-0.001
Other natures	0.015*	0.021*	0.009*	0.014*	0.023*	0.016*	0.018*	0.007*	0.008*	0.003	0.006*	0.009*	0.007*	0.007*
<b>Area of injury</b>														
Knee	0.082*	0.054*	0.047*	0.074*	0.066*	0.059*	0.080*	0.010*	0.007*	0.012*	0.008*	0.011*	0.009*	0.008*
Arm	0.007*	0.029*	-0.000	0.016*	0.030*	0.015*	0.022*	-0.006*	-0.002	-0.003	-0.006*	-0.000	-0.005*	-0.003
Shoulder	0.106*	0.090*	0.031*	0.091*	0.130*	0.087*	0.109*	0.021*	0.024*	0.010*	0.019*	0.033*	0.024*	0.022*
Head, external	-0.025*	-0.008*	-0.007	-0.016*	-0.024*	-0.018*	-0.016*	-0.008*	-0.005*	-0.005	-0.006*	-0.008*	-0.007*	-0.006*
Leg	0.001	0.018*	0.010	0.004	0.022*	0.008*	0.008*	-0.004*	-0.002	0.002	-0.005*	-0.001	-0.004*	-0.003
Head, internal	-0.072*	-0.069*	-0.007	-0.065*	-0.096*	-0.062*	-0.079*	-0.025*	-0.028*	-0.001	-0.022*	-0.037*	-0.024*	-0.028*
Hand	-0.006*	0.017*	-0.001	0.005*	0.013*	0.005	0.009*	-0.010*	-0.007*	-0.001	-0.009*	-0.005	-0.008*	-0.008*
Other areas	-0.010*	-0.002	0.003	-0.007*	-0.007*	-0.010*	-0.003	-0.008*	-0.008*	-0.002	-0.009*	-0.008*	-0.009*	-0.007*
<b>Cause of injury</b>														
Handling mail	-0.011*	-0.003	-0.019*	-0.001	-0.012*	-0.006*	-0.003	-0.006*	-0.000	-0.007	-0.000	-0.004*	0.000	-0.002
Handling equipment	-0.020*	-0.019*	-0.020*	-0.014*	-0.020*	-0.021*	-0.013*	-0.010*	-0.008*	-0.008*	-0.008*	-0.007*	-0.008*	-0.007*
Slip	-0.019*	-0.010*	-0.024*	-0.010*	-0.011*	-0.015*	-0.011*	-0.008*	-0.007*	-0.011*	-0.006*	-0.008*	-0.008*	-0.006*
Animal or insect	-0.084*	-0.099*	-0.056*	-0.085*	-0.100*	-0.090*	-0.086*	-0.029*	-0.036*	-0.023*	-0.030*	-0.035*	-0.033*	-0.030*
Other causes	-0.030*	-0.028*	-0.023*	-0.024*	-0.030*	-0.027*	-0.025*	-0.010*	-0.008*	-0.008*	-0.007*	-0.008*	-0.008*	-0.007*
Occupational Illness	0.042*	0.078*	0.001	0.072*	0.043*	0.050*	0.068*	0.017*	0.028*	-0.002	0.027*	0.019*	0.020*	0.025*
Mean Dependent Variable	0.095	0.119	0.042	0.106	0.117	0.100	0.110	0.036	0.049	0.019	0.041	0.045	0.042	0.041
R <sup>2</sup>	0.048	0.050	0.025	0.047	0.054	0.049	0.049	0.014	0.020	0.014	0.018	0.018	0.022	0.014
<b>Number of Claims</b>	452,855	347,936	39,009	576,288	177,702	349,321	451,470	452,855	347,936	39,009	576,288	177,702	349,321	451,470

Source: FECA Administrative Data, available at <http://www.dol.gov/asp/evaluation/AllStudies.htm>.

Note: Numbers are coefficients from ordinary least squares estimations of equation (1) except where noted. \* indicates a significant ( $p \leq 0.05$ ) coefficient. See Table 4 for omitted categories. Location variables were also included in the estimations as controls, but coefficients are not reported here. Full results are available from the authors.

**Table 6. Characteristics and Disability by Employment Characteristics (Occupation): Multivariate Analysis**

	Any Disability						Long-Term Disability					
	Office and Administrative Support	Protective Service	Healthcare	Installation, Maintenance, and Repair	Business and Financial	Other	Office and Administrative Support	Protective Service	Healthcare	Installation, Maintenance, and Repair	Business and Financial	Other
<b>Demographic Characteristics</b>												
Female	0.029*	0.018*	0.013*	0.012*	0.013*	-0.001	0.018*	0.012*	0.006*	0.008*	0.008*	0.002
Age												
14–24	-0.044*	-0.016*	-0.038*	-0.033*	-0.048*	-0.027*	-0.018*	-0.011*	-0.019*	-0.011*	-0.019*	-0.008*
55+	0.007*	0.016*	0.008*	0.009*	0.014*	0.006*	0.005*	0.010*	0.004	-0.000	0.004	0.004*
Has Dependents	0.013*	0.009*	0.011*	0.004	0.015*	0.014*	0.005*	0.002	0.007*	0.000	0.004	0.005*
<b>Employment Characteristics</b>												
Department												
Defense	-0.056*	-0.050	-0.104*	-0.025*	-0.081*	-0.043*	-0.026*	0.023	-0.055*	0.000	-0.057*	-0.022*
Homeland Security	-0.047*	-0.063	-0.046	-0.012	-0.053	-0.037*	-0.017*	0.014	-0.003	0.002	-0.051*	-0.019*
Veterans Affairs	-0.095*	-0.062	-0.119*	-0.045*	-0.104*	-0.062*	-0.038*	0.009	-0.063*	-0.004	-0.064*	-0.025*
Other departments	-0.061*	-0.047	-0.109*	-0.018*	-0.048	-0.062*	-0.026*	0.023	-0.063*	0.006	-0.041*	-0.023*
<b>Injury Characteristics</b>												
Nature of Injury												
Wound	-0.047*	-0.043*	-0.055*	-0.047*	-0.047*	-0.052*	-0.014*	-0.008*	-0.022*	-0.011*	-0.015*	-0.015*
Back	0.006	0.014*	0.013*	-0.007	0.017*	0.003	0.014*	0.010*	0.014*	0.012*	0.020*	0.013*
Pain	0.012*	-0.009*	-0.005	-0.008	-0.011	-0.010*	0.007*	-0.001	-0.002	-0.006	-0.005	-0.002
Other natures	0.022*	0.007*	0.002	0.019*	0.014*	0.004	0.010*	0.005*	-0.000	0.009*	0.003	0.003*
Area of Injury												
Knee	0.062*	0.108*	0.052*	0.086*	0.062*	0.076*	0.007*	0.008*	0.002	0.006	0.016*	0.012*
Arm	0.023*	0.013*	0.009	-0.006	0.009	0.020*	-0.007*	-0.009*	-0.005	-0.004	0.001	-0.000
Shoulder	0.103*	0.095*	0.057*	0.122*	0.087*	0.102*	0.025*	0.011*	0.013*	0.025*	0.022*	0.019*
Head, external	-0.014*	-0.018*	-0.004	-0.049*	-0.024*	-0.024*	-0.006*	-0.012*	0.000	-0.016*	-0.002	-0.008*
Leg	0.005	0.017*	0.002	-0.006	0.011	0.001	-0.008*	-0.010*	-0.004	-0.010	0.006	-0.003
Head, internal	-0.087*	-0.037*	-0.050*	-0.099*	-0.073*	-0.056*	-0.034*	-0.018*	-0.021*	-0.034*	-0.016*	-0.017*
Hand	0.007	-0.011	-0.010	-0.018*	0.000	0.002	-0.011*	-0.014*	-0.015*	-0.011*	0.004	-0.005
Other areas	-0.006*	0.003	-0.009	-0.021*	-0.003	-0.003	-0.012*	-0.008*	-0.010*	-0.009*	0.004	-0.005*
Cause of Injury												
Handling mail	-0.012*	-0.005	-0.022*	-0.027*	-0.019*	-0.013*	-0.003	-0.006	-0.018*	-0.018*	-0.016*	-0.007*
Handling equipment	-0.025*	-0.019*	-0.017*	-0.036*	0.004	-0.016*	-0.010*	-0.008*	-0.007	-0.018*	0.003	-0.010*
Slip	-0.017*	-0.008	0.011	-0.034*	0.001	-0.014*	-0.004*	-0.006	0.002	-0.016*	-0.008	-0.010*
Animal or insect	-0.093*	-0.059*	-0.065*	-0.122*	-0.091*	-0.080*	-0.029*	-0.017*	-0.018	-0.038*	-0.035*	-0.029*
Other causes	-0.034*	-0.026*	-0.020*	-0.042*	-0.022*	-0.025*	-0.007*	-0.011*	-0.005	-0.015*	-0.012*	-0.009*
Occupational illness	0.094*	-0.011	-0.009	0.027*	0.041*	0.020*	0.036*	0.001	-0.006	0.006	0.018*	0.006*
Mean Dependent Variable	0.135	0.085	0.101	0.089	0.101	0.086	0.053	0.030	0.051	0.031	0.037	0.033
R <sup>2</sup>	0.031	0.028	0.053	0.058	0.039	0.038	0.013	0.021	0.013	0.026	0.009	0.010
<b>Number of Claims</b>	243,554	60,244	52,272	41,443	33,097	140,968	243,554	60,244	52,272	41,443	33,097	140,968

Source: FECA Administrative Data, available at <http://www.dol.gov/asp/evaluation/AllStudies.htm>.

Note: Numbers are coefficients from ordinary least squares estimations of equation (1) except where noted. \* indicates a significant ( $p \leq 0.05$ ) coefficient. See Table 4 for omitted categories. Location variables were also included in the estimations as controls, but coefficients are not reported here. Full results are available from the authors.

**Table 7. Characteristics and Disability by Employment Characteristics (Department): Multivariate Analysis**

	Any Disability					Long-Term Disability				
	U.S. Postal Service	Defense	Homeland Security	Veterans Affairs	Other	U.S. Postal Service	Defense	Homeland Security	Veterans Affairs	Other
<b>Demographic Characteristics</b>										
Female	0.032*	-0.001	0.012*	0.006*	0.002	0.020*	0.002	0.007*	0.002	0.003*
Age										
14–24	-0.054*	-0.037*	-0.031*	-0.039*	-0.019*	-0.019*	-0.011*	-0.015*	-0.014*	-0.007*
55+	0.009*	0.006*	0.022*	0.003	0.010*	0.005*	0.003*	0.011*	0.000	0.005*
Has Dependents	0.016*	0.009*	0.007*	0.012*	0.015*	0.006*	0.003*	0.004*	0.003*	0.006*
<b>Employment Characteristics</b>										
Occupation										
Protective service	-0.016	-0.003	-0.016*	0.006	0.004	-0.046	0.003	-0.014*	-0.009	0.001
Healthcare	0.035	-0.002	0.045*	0.006	-0.001	0.025	0.003	0.044*	0.002	-0.002
Installation, maintenance, and repair	-0.003	0.005	0.010	0.013*	0.016*	-0.015*	0.001	-0.006	0.001	0.007*
Business and financial	-0.009	-0.012*	0.004	-0.010	0.023*	0.017	-0.003	-0.007	-0.003	0.013*
Other occupations	0.003	0.009*	0.010	0.007*	-0.012*	0.002	0.002	-0.003	0.001	-0.002
<b>Injury Characteristics</b>										
Nature of Injury										
Wound	-0.048*	-0.049*	-0.051*	-0.046*	-0.029*	-0.016*	-0.012*	-0.016*	-0.017*	-0.009*
Back	-0.001	0.004	0.016*	0.004	0.023*	0.010*	0.011*	0.017*	0.010*	0.015*
Pain	0.014*	-0.021*	-0.013*	-0.004	0.010*	0.010*	-0.013*	-0.000	-0.003	0.004
Other natures	0.024*	0.011*	0.004	0.002	0.020*	0.009*	0.005*	0.003	-0.004	0.011*
Area of Injury										
Knee	0.064*	0.078*	0.082*	0.053*	0.065*	0.006*	0.010*	0.006	0.011*	0.007*
Arm	0.017*	0.025*	-0.003	0.018*	0.023*	-0.008*	0.001	-0.008*	0.002	-0.001
Shoulder	0.102*	0.112*	0.079*	0.078*	0.076*	0.025*	0.022*	0.013*	0.016*	0.012*
Head, external	-0.017*	-0.026*	-0.021*	-0.004	-0.017*	-0.005*	-0.011*	-0.010*	0.004	-0.009*
Leg	0.002	0.003	0.013*	0.010*	0.013*	-0.006*	-0.009*	-0.000	-0.000	-0.000
Head, internal	-0.098*	-0.078*	-0.062*	-0.033*	-0.037*	-0.035*	-0.030*	-0.024*	-0.006	-0.013*
Hand	0.006	0.007	-0.020*	0.006	0.010*	-0.012*	-0.005	-0.016*	-0.004	-0.003
Other areas	-0.012*	-0.002	-0.004	-0.005	-0.003	-0.012*	-0.006*	-0.006*	-0.002	-0.006*
Cause of Injury										
Handling mail	-0.013*	-0.018*	-0.018*	-0.004	-0.004	-0.003*	-0.007*	-0.014*	-0.003	-0.001
Handling equipment	-0.022*	-0.015*	-0.019*	-0.011*	-0.012*	-0.008*	-0.009*	-0.008*	-0.005*	-0.008*
Slip	-0.017*	-0.016*	-0.002	-0.002	-0.007*	-0.007*	-0.009*	-0.004	-0.004	-0.007*
Animal or insect	-0.087*	-0.093*	-0.052*	-0.070*	-0.068*	-0.027*	-0.028*	-0.012*	-0.025*	-0.029*
Other causes	-0.034*	-0.027*	-0.020*	-0.019*	-0.023*	-0.006*	-0.010*	-0.008*	-0.007*	-0.010*
Occupational illness	0.102*	0.033*	0.007	-0.010*	0.021*	0.040*	0.011*	-0.000	-0.003	0.006*
Mean Dependent Variable	0.139	0.083	0.098	0.081	0.075	0.053	0.030	0.040	0.033	0.032
R <sup>2</sup>	0.059	0.041	0.034	0.020	0.031	0.025	0.011	0.020	0.007	0.010
<b>Number of Claims</b>	<b>327,051</b>	<b>133,347</b>	<b>93,146</b>	<b>78,781</b>	<b>168,466</b>	<b>327,051</b>	<b>133,347</b>	<b>93,146</b>	<b>78,781</b>	<b>168,466</b>

Source: FECA Administrative Data, available at <http://www.dol.gov/asp/evaluation/AllStudies.htm>.

Note: Numbers are coefficients from ordinary least squares estimations of equation (1) except where noted. \* indicates a significant ( $p \leq 0.05$ ) coefficient See Table 4 for omitted categories. Location variables were also included in the estimations as controls, but coefficients are not reported here. Full results are available from the authors.

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## Appendix

Variable	Variable Construction	Number Missing
<b>Outcomes</b>		
Any Disability	An indicator variable equal to 1 if the claimant had any days not working and 0 if no days of not working one year after the injury was reported; claimants are considered not working if they receive disability compensation or are in the Disability Management System and not working in a full-time job	0
Long-Term Disability	An indicator variable equal to 1 if the claimant is receiving disability compensation or is in the Disability Management System and not at a full-time job one year after the injury was reported and 0 otherwise	0
<b>Demographic Characteristics</b>		
Female	An indicator variable equal to 1 if the claimant is female and 0 otherwise	85
Age	The number of days from the report date and the claimant's birth date, divided by 365.25, and rounded to the nearest number; claims with values outside the 99th percentile of the age distribution (that is, an age younger than 14 or older than 68) are coded as missing	7,792
Has Dependents	An indicator variable equal to 1 if the claimant has dependents and 0 otherwise	0
<b>Employment Characteristics</b>		
<p><b>Occupation.</b> Occupations are coded using a cross-walk from the Occupational Safety and Health Administration-coded occupations in the database to the 2000 Standard Occupation Classification system. The six occupations included represent at least 5 percent of injuries with nonmissing occupation codes.</p>		
Business and financial	An indicator variable equal to 1 if the two-digit occupation code is business and financial operations occupations and 0 otherwise	229,213
Healthcare	An indicator variable equal to 1 if the two-digit occupation code is health care practitioners and technical occupations and 0 otherwise	229,213
Installation, maintenance, and repair	An indicator variable equal to 1 if the two-digit occupation code is installation, maintenance, and repair occupations and 0 otherwise	229,213
Office and administrative support	An indicator variable equal to 1 if the two-digit occupation code is office and administrative support occupations and 0 otherwise	229,213
Postal service workers	An indicator variable equal to 1 if the five-digit occupation code is postal service workers and 0 otherwise	229,213
Protective service	An indicator variable equal to 1 if the two-digit occupation code is protective service worker and 0 otherwise	229,213
Other occupations	An indicator variable equal to 1 if the two-digit occupation code is not listed above and 0 otherwise	229,213
<p><b>Employing Department.</b> Options include the U.S. Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Justice, Labor, State, Interior, Transportation, Treasury, Veterans Affairs, Environmental Protection Agency, Executive Office of the President, Government Printing Office, National Aeronautics and Space Administration, Peace Corps, Social Security Administration, Tennessee Valley Authority, or the U.S. Postal Service. The four departments identified represent at least 5 percent of all injuries.</p>		
Defense	An indicator variable equal to 1 if the employing department is the Department of Defense and 0 otherwise	0
Homeland Security	An indicator variable equal to 1 if the employing department is the Department of Homeland Security and 0 otherwise	0
Veterans affairs	An indicator variable equal to 1 if the employing department is the Department of Veterans Affairs and 0 otherwise	0

<b>Variable</b>	<b>Variable Construction</b>	<b>Number Missing</b>
U.S. postal service	An indicator variable equal to 1 if the employing department is the U.S. Postal Service and 0 otherwise	0
Other departments	An indicator variable equal to 1 if the employing department is listed above and 0 otherwise	0
<b>Injury Characteristics</b>		
Nature of Injury	The four natures identified represent at least 5 percent of all injuries with nonmissing natures of injury	
Back	An indicator variable equal to 1 if the nature of the injury is back sprain/strain, back pain, subluxation or back sprain/strain, back pain, or subluxation or vertebral disc disorder and 0 otherwise	123,758
Pain	An indicator variable equal to 1 if the nature of the injury is pain/swelling/stiffness/redness in joint or pain/swelling/stiffness/redness not in joint and 0 otherwise	123,758
Sprain	An indicator variable equal to 1 if the nature of the injury is sprain/strain of ligament, muscle, tendon, or not back and 0 otherwise	123,758
Wound	An indicator variable equal to 1 if the nature of the injury is contusion, laceration, superficial wounds, or puncture wound and 0 otherwise	123,758
Other natures	An indicator variable equal to 1 if the nature of the injury is not listed above and 0 otherwise	123,758
Area of Injury	The eight areas identified represent at least 5 percent of all injuries with nonmissing areas of injury	
Arm	An indicator variable equal to 1 if the area of the injury is the arm and 0 otherwise	2,008
External (trunk area)	An indicator variable equal to 1 if the area of the injury is external and in the trunk area and 0 otherwise	2,008
Hand	An indicator variable equal to 1 if the area of the injury is the hand and 0 otherwise	2,008
Head, external	An indicator variable equal to 1 if the area of the injury is external to the head and 0 otherwise	2,008
Head, internal	An indicator variable equal to 1 if the area of the injury is internal to the head and 0 otherwise	2,008
Knee	An indicator variable equal to 1 if the area of the injury is the knee and 0 otherwise	2,008
Leg	An indicator variable equal to 1 if the area of the injury is the leg and 0 otherwise	2,008
Shoulder	An indicator variable equal to 1 if the area of the injury is the shoulder and 0 otherwise	2,008
Other areas	An indicator variable equal to 1 if the area of the injury is not listed above and 0 otherwise	2,008
Cause of Injury	The causes identified represent at least 5 percent of all injuries with nonmissing causes of injury	
Animal or insect	An indicator variable equal to 1 if the cause of the injury is animals/insects or dog bite and 0 otherwise	238,787
Fall	An indicator variable equal to 1 if the cause of the injury is fall on floor/work surface/aisle, fall on stairway or steps, fall on walkways/curbs/porches, fall from scaffold or platform, fall from ladder, fall from chair/stool/rest bar, fall from desk/table/workbench, fall into hole/hatch/chute, fall on deck, fall on road/highway/street, fall from stacked cargo, fall on hill or slope, fall from ramp/runway/gangplank, fall off dock; fall from machinery, fall from stopped vehicle, fall getting on/off elevator, fall inside moving vehicle, or fall and 0 otherwise	238,787

<b>Variable</b>	<b>Variable Construction</b>	<b>Number Missing</b>
Handling mail	An indicator variable equal to 1 if the cause of the injury is handling packaged material, weight stated; handling packaged material, weight not stated; handling mail containers; or handling magazines or papers and 0 otherwise	238,787
Handling equipment	An indicator variable equal to 1 if the cause of the injury is handling manual equipment and 0 otherwise	238,787
Slip	An indicator variable equal to 1 if the cause of the injury is slip—not falling or slip/twist/trip—not falling and 0 otherwise	238,787
Other causes	An indicator variable equal to 1 if the cause of the injury is not listed above and 0 otherwise	238,787
<b>Injury Type</b>		
Traumatic injury	An indicator variable equal to 1 if the claimant has a traumatic injury and 0 otherwise	0
Occupational illness	An indicator variable equal to 1 if the claimant has an occupational illness and 0 otherwise	0
<b>Services</b>		
Compensation	Total amount of compensation for lost wages paid to claimant in the first year after the injury (in January 2005 dollars)	0
Medical Payments	Total payments to physicians, hospitals, and pharmacies for covered medical services in the first year after the injury (in January 2005 dollars)	0
<b>Suppressed in Tables</b>		
Location	Twelve indicator variables with each variable equal to 1 to designator an office processing the claim and 0 otherwise. Indicator variables include Boston (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), Chicago (Illinois, Minnesota, Wisconsin), Cleveland (Indiana, Michigan, Ohio), Dallas (Louisiana, Oklahoma, and Texas), Denver (Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, and Wyoming), Jacksonville (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee), Kansas City (Arkansas, Iowa, Kansas, Missouri, and Nebraska; all employees of the Department of Labor, except Job Corps enrollees, and their relatives), New York (New Jersey, New York, Puerto Rico, and the Virgin Islands), Philadelphia (Delaware, Pennsylvania, and West Virginia; Maryland if the zip code of the claimant's residence begins 21), San Francisco (Arizona, California, Hawaii, and Nevada), Seattle (Alaska, Idaho, Oregon, and Washington), and Washington, DC (District of Columbia, Virginia; Maryland when the zip code of the claimant's residence is other than 21)	0

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