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Abstract

An analysis of data from the Workers' Compensation Board of Ontario reveals evidence of a "Monday effect"—more workers' compensation claims on Mondays than on other days, especially for back injuries and sprains/strains—similar in magnitude to that found in U.S. studies. Because Canadians, unlike most Americans, have universal health care, this similarity across the studies' core results disfavors the hypothesis that workers post-date weekend injuries in order to obtain medical care via workers' compensation insurance. A second moral hazard explanation that is not ruled out, however, is that some workers represent non-work-related injuries as work-related in order to exploit the earnings loss indemnification provided by workers' compensation. Finally, the results are not inconsistent with the strictly physiology-based hypothesis that time off during weekends and holidays simply makes workers more susceptible to injuries of all types, but especially back injuries and sprains and strains.

KEYWORDS: Monday effect, workers' compensation

FURTHER EVIDENCE ON THE "MONDAY EFFECT" IN WORKERS' COMPENSATION

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An analysis of data from the Workers' Compensation Board of Ontario reveals evidence of a "Monday effect"—more workers' compensation claims on Mondays than on other days, especially for back injuries and sprains/strains—similar in magnitude to that found in U.S. studies. Because Canadians, unlike most Americans, have universal health care, this similarity across the studies' core results disfavors the hypothesis that workers post-date weekend injuries in order to obtain medical care via workers' compensation insurance. A second moral hazard explanation that is not ruled out, however, is that some workers represent non-work-related injuries as work-related in order to exploit the earnings loss indemnification provided by workers' compensation. Finally, the results are not inconsistent with the strictly physiology-based hypothesis that time off during weekends and holidays simply makes workers more susceptible to injuries of all types, but especially back injuries and sprains and strains.

An observation that has intrigued researchers interested in the incentive effects of disability insurance is that workers' compensation claims are more likely on Mondays than on other days of the week. Several hypotheses have been advanced to explain this empirical regularity. The first is a physiological explanation—following rest on the weekend, workers become more susceptible to injuries when they resume work on Monday.

The second and third possible explanations are related to the problem of moral hazard. Workers' compensation coverage for most workers in the United States is mandated by state law. In brief, workers' compensation insurance pays for the cost of medical treatment and at least partial income replacement for lost wages as a result of a work-related injury (or disease). Consequently, the second hypothetical explanation for Monday claims is that some workers who injure themselves on the weekend while not at work may submit the claim

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on Monday so as to collect indemnity benefits. Since workers' compensation benefits are payable only to workers who suffer injuries occasioned by or in the course of employment, those workers who are injured during off-work hours may not otherwise be indemnified for lost wages.

The third hypothesis is that some workers who are injured on the weekend report the injuries as work-related because they lack insurance to cover the cost of medical aid. Mandatory workers' compensation insurance provides for medical attention to work-related injuries; hence, to the extent that medical treatment for a weekend injury can be delayed, the worker whose firm does not provide health insurance and who also is without personal medical insurance has an incentive to claim a work injury on Monday.

Card and McCall (1996) considered the latter explanation for the Monday effect and found that the absence of health insurance did not explain the relative frequency of Monday claims. A potential limitation of their study, however, was that their data set of workers' compensation claimants contained no information on whether the worker had (non–workers' compensation) health care coverage. To address this deficiency in their key explanatory variable, they used two-sample techniques (Murphy and Topel 1985).

In this paper, we examine the incidence and duration of Monday claims in Ontario, and compare them with the results of past studies based on U.S. data. As in the United States, in Canada most workers are covered by workers' compensation. In contrast to the U.S. citizens, however, Canadians are entitled to universal government-provided medical insurance. Therefore, while Canadian workers may get as "flabby" as American workers over the course of the weekend, and may not have indemnity benefits for wage losses arising from weekend injuries, virtually all Canadian workers can access medical care for weekend injuries at no (direct) cost. If the "Monday effect" is driven by differences in health insurance coverage, than we would expect it to be less prominent in Canada than in the United States (at least in states without universal state medical coverage).

Empirical Investigations of the "Monday Effect"

As sketched above, there are three primary possible explanations for the existence of the "Monday effect." First, physiological factors could be responsible: absences from work may make workers more prone to injuries on the first day back at work. Second, workers without health insurance coverage may post-date non–work-related injuries to the first day of the work week in order to get healthcare from workers' compensation systems. Third, workers may post-date weekend injuries in order to claim indemnity benefits from workers' compensation systems.

Smith (1990) examined the "Monday effect" by looking at injury distributions across different days of the week using data from several U.S. states. He distinguished three categories of injuries: those that are not easy to conceal and would require immediate medical attention, such as cuts and lacerations; those that are easy to conceal, such as sprains and strains; and intermediate cases. Smith's hypothesis was that there should be more reports of the easy-to-conceal injuries on Mondays. He compared the incidence rates of each of the three types of conditions and found that there was a statistically significant increase in the reports of the easy-to-conceal injuries—specifically, sprains and strains—on Mondays, particularly early in the work shift. He also found some evidence of excess Monday reports of fractures, which he classified in his indeterminate group rather than in the hard-to-conceal injury group.

Card and McCall (1996) followed up on Smith's seminal work by examining whether there were differences in health insurance coverage across injuries reported on Mondays, using a two-sample procedure (because their data set of workers' compensation claimants did not include information on whether workers had non–workers' compensation health care insurance). They found that differences in health insurance

Table 1. Mean Claims Characteristics by Day of the Week of Injury.
(standard deviations in parentheses)

Independent Variable	*Full Sample*	*Monday Claims*	*Non-Monday Claims*
Day of the Week			
Monday	0.247 (0.431)		
Tuesday	0.197 (0.398)		
Wednesday	0.202 (0.402)		
Thursday	0.197 (0.398)		
Friday	0.157 (0.363)		
Days Absent from Work	52.647 (99.962)	51.544 (97.286)	53.010 (100.830)
Part of Body Injured			
Back	0.333 (0.471)	0.353 (0.478)	0.327 (0.469)
Nature of Injury			
Strains and Sprains	0.494 (0.500)	0.516 (0.500)	0.486 (0.500)
Contusions	0.132 (0.338)	0.128 (0.334)	0.133 (0.340)
Cuts and Lacerations	0.094 (0.292)	0.084 (0.277)	0.098 (0.297)
Fractures	0.058 (0.234)	0.056 (0.230)	0.059 (0.236)
Burns	0.016 (0.126)	0.013 (0.113)	0.017 (0.131)
Dislocations	0.005 (0.068)	0.005 (0.073)	0.004 (0.066)
Other	0.201 (0.401)	0.202 (0.402)	0.199 (0.399)
Weekly Gross Earnings	$555.83 (245.68)	$561.69 (237.87)	$553.90 ($48.18)
Weekly Gross Benefits	$368.41 (125.47)	$372.04 (123.55)	$367.22 (126.08)
Demographic Characteristics			
Age	36.698 (11.629)	36.410 (11.328)	36.792 (11.724)
Male	0.711 (0.453)	0.724 (0.447)	0.707 (0.455)
Weather			
Snowed During Weekend	0.027 (0.161)		
Rained During Weekend	0.103 (0.303)		
Temperature above 72° F. During Weekend	0.011 (0.104)		
Number of Observations	10,702	2,644	8,058

coverage had no effect on the reports of Monday injuries. In other words, Card and McCall found that workers who were not covered by health insurance were no more likely to report Monday injuries than were workers with health insurance coverage. They concluded that the Monday effect might instead arise because of physiological factors.

We investigate the existence and nature of a Monday effect with data from Ontario, Canada. Unlike the United States, where there are large numbers of persons without health insurance coverage, in Canada health insurance is universally available to permanent residents. As a result, there are no differences in access to medical care. A Monday effect in Canada therefore would not represent reports of non–work-related injuries in order to claim in-kind health insurance benefits from workers' compensation systems.

Data

Our data are drawn from the administrative records of the Workers' Compensation Board of Ontario in 1992.[1] These data represent a 10% random sample of lost-time claims from that year. The administrative data from the Board contain the worker's age at the time of the accident; gender; injury (nature of injury and part of body injured); industry of employment; occupation; pre-injury gross earnings; and temporary disability benefits received. The date of the worker's injury and total number of days for which the worker received workers' compensation indemnity benefits are also provided.

Our sample contains injuries from all seven days of the week. Following Card and McCall (1996), we exclude weekend injuries, that is, work injuries that occurred on either Saturday or Sunday, from our sample when we estimate our regressions. However, including injuries on those two days does not alter our basic findings.

[1]This year is not too distant from the 1985 to 1989 period studied by Card and McCall (1996).

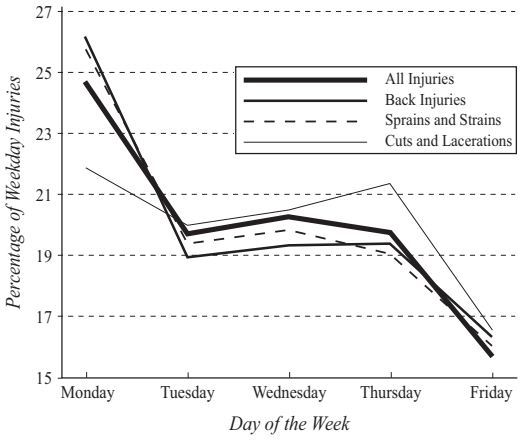
Table 1 shows the means and standard deviations for our entire sample, and for the sample broken out by Monday injuries and injuries that occurred on other days of the week. Some 24.7% of workers' compensation claims were made on Monday, compared with 19.7% on Tuesday, 20.2% on Wednesday, 19.7% on Thursday, and 15.7% on Friday. Workers who made claims for injuries on Mondays were absent from work an average of 51.5 days, compared to 53 days for those claiming injuries on Tuesdays through Fridays.

One-third of the workers in the sample suffered back injuries. Just over 35% of injuries reported on Monday were back-related, compared with just under 33% of injuries reported on the other days of the week. The most commonly reported injury type was "sprains and strains," which constituted 49.4% of all claims, 51.6% of Monday claims, and 48.6% of claims on the other weekdays.

Weekly gross earnings, and consequently weekly gross benefits (which are based on earnings), were modestly higher for Monday claims than for claims on other days. The demographic (age/gender) composition of Monday claimants differed little from that of claimants on other days.

We also explore some hypotheses related to the weather on the weekend and its potential effect on the Monday claims. Inactivity during the weekend because of rain might, for example, lead to more Monday injuries. This would be consistent with physiological factors driving the Monday effect. On the other hand, a finding that more Monday injuries were reported following weekends with above-average levels of physical activity (which might be associated with snow or "nice weather," for example) might be interpreted as support for a moral hazard explanation of the Monday effect phenomenon. We collected the weather data from Environment Canada's Climate Data Archive and matched it to the census division in which the worker lived. We have data on snowfall, rain, and temperature from the weather station in the cen-

Figure 1. Distribution of Injuries by Day of the Work Week.



sus region.[2] We used this information to create dummies indicating whether the weekend saw (1) snow, (2) rain, or (3) "nice" weather, defined as periods without rain and with a high temperature of 72 degrees Fahrenheit (20 degrees Celsius) or better.[3]

Empirical Results

Card and McCall (1996) and Smith (1990) argued that back injuries and strain and sprain injuries may be easier to conceal than other types of injuries.[4] Card and McCall (1996) also argued that if the distribution of hours is spread evenly over the week, then there should be a 20% chance of an injury occurring on any particular day. In Figure 1, we plot the distribution of several types of injuries by days of the workweek. Figure 1 shows, consistent with the corresponding figure in Card and McCall (1996), that relative to all injuries, back injuries and sprains/strains were more frequently reported on Mondays than on the other days of the week. There also appears to have been a large drop in the proportion of injuries reported on Friday.[5]

If work hours are evenly spread over the week, one test of the "Monday effect" is to determine whether the proportion of injuries reported on Mondays is greater than 20% or, in other words, whether the excess fraction of Monday injuries is positive. We present t-tests of this hypothesis in Table 2. We find that an excess proportion of all injuries was reported on Mondays ($t = 11.297$). Injuries to the back were reported in excess proportion on Mondays ($t = 8.391$), as were sprain and strain injuries ($t = 9.633$). Card and McCall (1995) also found an excess proportion of all injuries on Monday ($t = 10.77$; see the last three columns in Table 2). The injury distributions found in the Ontario and Minnesota data were fairly similar. Although the proportion of Monday injuries in Ontario tended to be larger than that in Minnesota for all injury types, the results from the tests on the excess fraction of Monday injuries are generally consistent, with the exception of dislocations and fractures, across the two samples.

The magnitudes of the differences in the excess reports in Ontario are similar to those reported in Card and McCall (1996). For example, Card and McCall found that the excess fraction of back injuries reported on Mondays was about 5%, compared to our estimate of about 6%. We also found positive and statistically significant excess fractions for both contusions and fractures, although the sizes of the excess fractions

[2]We chose data provided by the weather station in the census region's most populated area.

[3]Summer 1992 was one of the coldest and wettest summers in several decades.

[4]Musculoskeletal and soft-tissue conditions are known to present diagnostic and therapeutic challenges to health care providers (Agency for Health Care Policy and Research 1994; Quebec Task Force on Spinal Disorders 1987). Specifically, clinical evaluations of back pain are based on patient self-reports of pain and on the performance of physical functions that make it relatively easy for patients to overstate the extent of their limitations.

[5]We should acknowledge that the distribution of absenteeism at work is not likely to be evenly distributed across the days of the week. This uneven distribution may explain the large drop in injuries on Friday that is observed in our data.

Table 2. Tests of Excess Fraction of Monday Injuries.

	Ontario Data Used in This Paper			*Minnesota Data Used in Card and McCall*		
Type of Injury	*Observations*	*Mean*	*Test Statistic*	*Observations*	*Mean*	*Test Statistic*
All	10,702	0.247	11.297	21,314	0.230	10.77
Back	3,564	0.262	8.391	—	—	—
Sprains and Strains	5,282	0.258	9.633	9,560	0.237	9.12
Cuts and Lacerations	1,008	0.219	1.473	2,375	0.212	1.44
Dislocations	49	0.286	1.314	602	0.248	2.91
Burns	174	0.195	–0.153	443	0.192	0.43
Contusions	1,411	0.240	3.475	1,453	0.233	3.17
Fractures	623	0.238	2.204	1,274	0.199	0.12

Notes: The estimation tests whether the proportion of Monday injuries exceeds 20% in a one-tailed test. Estimates from Card and McCall are taken from Table A1 in Card and McCall (1995). There were no figures in Card and McCall for back injuries.

for these injuries are smaller than those for sprains and strains and back injuries (which are the conditions that may be easier to conceal). Injuries involving cuts and lacerations, dislocations, and burns were not disproportionately reported on Mondays.

To determine whether the Monday effect persists when other factors are taken into account, we estimate a series of OLS linear probability regressions of the form

$$(1) \qquad \text{INJURY}_i^j = \alpha + \gamma \text{MONDAY}_i + \mathbf{X}_i'\beta + u_i,$$

where INJURY_i^j is a dummy variable indicating whether individual i reported injury j (which includes Back Injuries, Sprains and Strains, Contusions, Cuts and Lacerations, Burns, and Dislocations), MONDAY is a dummy variable indicating whether the individual's accident date was on a Monday or the first day back from a statutory holiday, X is a vector of controls for individual characteristics as well as industry and occupation dummies, and u is the residual. If workers reported non-work injuries on the first day back at work, then the estimate on γ should be positive and statistically significant. The estimates of γ indicate whether there was differential reporting of a particular type of injury on a Monday, relative to the rest of the days of the week. To adjust the standard errors for coefficient estimates from the estimates of equation (1) for heteroskedasticity, we used the White correction.

Table 3 shows the estimated coefficients on the Monday dummy variable for a number of alternative model specifications. When we included no controls for individual characteristics or industry and occupation (column 1), we found that back injuries (row 1) were a statistically significant 2.6 percentage points more likely to be reported on Mondays than on other days. Similarly, in the absence of other independent variables, sprains and strains (row 2) were 2.9 percentage points more likely to be reported on Mondays than on other days.[6] Both estimates were statistically different from zero at the 5% level of significance or better. As shown in columns (2)–(4), these estimates were insensitive to the inclusion of controls for individual characteristics, industry, and occupation—all of the coefficients on the Monday dummy variable were identical to three decimal places. Thus, consistent with pre-

[6]In the model with no controls for observable characteristics, for injury type j the estimate of γ is equal to the proportion of type j injuries reported on Monday minus the proportion of type j injuries that occurred on the other days of the work week, that is, $\hat{\gamma} = \overline{\text{INJURY}}^j_{i,\text{MONDAY}} - \overline{\text{INJURY}}^j_{i,\text{OTHERDAYSOFWORKWEEK}}$.

Table 3. OLS Estimates of the "Monday Effect" from Linear Probability Models for Various Types of Injuries.

Injury Type	*(1)*	*(2)*	*(3)*	*(4)*
Back Injuries	0.026**	0.026**	0.026**	0.027**
	(2.47)	(2.43)	(2.46)	(2.54)
Sprains and Strains	0.029***	0.029**	0.029***	0.030***
	(2.60)	(2.54)	(2.60)	(2.70)
Contusions	–0.005	–0.006	–0.005	–0.005
	(–0.71)	(–0.73)	(–0.68)	(–0.64)
Cuts and Lacerations	–0.014**	–0.014**	–0.014**	–0.015**
	(–2.23)	(–2.25)	(–2.27)	(–2.39)
Fractures	–0.003	–0.003	–0.004	–0.004
	(–0.57)	(–0.59)	(–0.69)	(–0.69)
Burns	–0.005*	–0.004	–0.004	–0.004
	(–1.72)	(–1.63)	(–1.51)	(–1.57)
Dislocations	0.001	0.001	0.001	0.001
	(0.60)	(0.57)	(0.53)	(0.58)
Controls for Observable Characteristics	No	Yes	Yes	Yes
Industry Dummies	No	No	Yes	Yes
Occupation Dummies	No	No	No	Yes
Number of Observations	10,702	10,668	10,668	10,668

Notes: The dependent variable in each regression is a dummy variable for the type of injury. The table reports coefficient estimates for the Monday/first day back from statutory holiday dummy variable from a number of different linear probability regressions that estimate the incidence of each type of injury. T-statistics are in parentheses. Standard errors are computed using White's adjustment. Controls for observable characteristics include gender (male = 1), age at time of accident, weekly gross earnings, and weekly benefits. Industry dummies included construction, manufacturing, trade, transportation, finance, service, public administration, and unknown industry, with the excluded reference group including agriculture, mining, fishing, and forestry. Occupation dummies included management and administration; natural sciences, engineering, and mathematics; social sciences; teaching; health professions; arts and culture; clerical occupations; sales; service; farming; fishing; forestry; processing; machining; product fabrication and assembling; construction; materials handling; other; and unknown.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level.

vious estimates using data from the United States, our analysis of Ontario data shows that back injuries and strain and sprain injuries were more likely to be reported on Mondays. Moreover, we find for the other types of injuries we examine in Table 3 that there was no significant increase in the reports of these types of injuries on Monday.[7]

In Table 4 we present the estimates on the interaction term between the Monday dummy and dummies controlling for the weather during the weekend. Panel A shows the estimates for the interaction term between the Monday dummy and the dummy controlling for whether it snowed the previous weekend. None of the interaction terms are statistically significant. In fact, all of the estimates have t-statistics less than one. Panel B presents the estimates for the interaction term between the Monday dummy and the dummy indicating whether it rained the previous weekend. The coefficients on this variable are also not statistically significant for the most part. The only

[7]We also estimated the regressions in Table 3 excluding the observations from Friday. These estimates produce the same patterns that are observed in Table 3. The magnitudes of the estimates are also similar to those presented in Table 3, although the estimates of the Monday effect for back and sprain/strain injuries are slightly larger than those in Table 3.

exception is for the estimates from the burns regressions, which are negative and statistically significant at the 10% level, and are slightly less than 1 percentage point in magnitude. Panel C of Table 4 contains the estimates on the interaction term between the Monday dummy and a dummy indicating nice weather during the weekend, where "nice" is defined as 72° Fahrenheit (20° Celsius) or higher. None of these interaction terms has a statistically significant estimate.

We also conducted a number of analyses to determine if the "Monday" effect is associated with individual characteristics such as age and gender, as well as whether it is more likely for some occupations than others. If these relationships are found, they could suggest a cause for the "Monday" effect. These factors were examined by including an interaction term between the Monday dummy variable and dummy variables controlling for some of the characteristics of interest. We discuss these estimates in the next few paragraphs. To conserve space, we do not present the full tabular results, but they are available upon request.

We first consider specifications testing for gender effects. None of the interaction terms for back injuries or sprains and strains are statistically significant in these estimates. Moreover, other than the estimate on the interaction for burn injuries, which is positive and statistically significant at the 10% level, none of the interaction terms between the Monday and male dummies is statistically significant.

We also estimated the models with a set of interaction terms between age dummies (25–34, 35–44, 45–54, 55–64, and older than 65, with 15–24 as the excluded reference group) and the Monday dummy. None of the interaction terms between the age dummies and the Monday dummy are statistically significant for back injuries. For sprains and strains, the interaction term between the Monday dummy and the dummy for the 25–34 age group is negative and statistically significant. None of the other age–Monday interaction terms are statistically significant for sprains and strains. The estimates for these interaction terms do not reveal any relationships between age and Monday reporting for the types of injuries that are easier to conceal.

The results for the harder to conceal injury types are also mixed. The interactions terms between the Monday and age dummies for contusions are positive and statistically significant for the 25–34, 45–54, and 55–64 age groups at the 5% level or better, and at the 10% level for the 35–44 age group. These estimates suggest that Monday reports of contusions were more prevalent for older workers than for younger workers. A few of the interaction terms in the fracture injuries are negative and statistically significant at the 5% level for the 45–54 and 55–64 age groups. It is difficult to interpret these estimates, but perhaps older and more experienced workers are better able to avoid these sorts of injuries on the first day back at work. None of the interaction terms for the remaining injury types are statistically significant.

We further examined the effects of age and gender on the Monday effect using regressions that include the full set of control variables and an interaction term between gender and the Monday dummy. We estimated these regressions for a number of different age groups (15–24, 25–34, 35–44, 45–54, 55–64, and 65 and older). For back injuries the interaction term is positive and statistically significant when we restrict the sample to those aged 25–34, but not for the other age groups. The estimates of the interaction term do not appear to reveal any pattern that would suggest a plausible explanation for the Monday effect. Nor are the interaction terms for the other types of injuries statistically significant, except in two estimates: cuts and lacerations for those aged 25–34, and burns for the 15–24 age group.

We also considered whether the Monday effect differed across occupations. For example, were workers in physically demanding blue-collar jobs more likely than other workers to report injuries on Mondays? We grouped the occupations as follows: white-collar jobs (management professions, science and engineering, religion, teaching, health professions, arts and culture); ser-

Table 4. OLS Estimates of the Interaction Term between the Monday Dummy and Dummies for Whether the Weekend Was Rainy, Snowy, or "Nice," from Linear Probability Models for Various Types of Injuries.

	A. Snow				*B. Rain*				*C. "Nice" Weather (72° F./20° C.)*			
Type of Injury	*(1)*	*(2)*	*(3)*	*(4)*	*(1)*	*(2)*	*(3)*	*(4)*	*(1)*	*(2)*	*(3)*	*(4)*
Back Injuries	0.002	0.001	–0.003	–0.006	–0.006	–0.006	–0.004	–0.006	0.021	–0.005	–0.003	0.004
	(0.06)	(0.02)	(–0.10)	(–0.20)	(–0.34)	(–0.33)	(–0.24)	(–0.30)	(1.07)	(–0.11)	(–0.07)	(0.08)
Sprains and Strains	0.000	–0.002	–0.006	–0.010	0.021	0.023	0.024	0.023	–0.043	–0.043	–0.039	–0.035
	(0.01)	(–0.06)	(–0.18)	(–0.34)	(1.07)	(1.18)	(1.22)	(1.19)	(–0.91)	(–0.91)	(–0.82)	(–0.74)
Contusions	–0.017	–0.017	–0.017	–0.017	–0.003	0.037	–0.003	–0.003	0.035	0.037	0.038	0.039
	(–0.87)	(–0.88)	(–0.87)	(–0.87)	(–0.26)	(1.06)	(–0.21)	(–0.24)	(1.01)	(1.06)	(1.10)	(1.14)
Cuts and Lacerations	–0.015	–0.013	–0.012	–0.009	0.005	0.004	0.003	0.004	–0.025	–0.018	–0.020	–0.022
	(–0.93)	(–0.82)	(–0.75)	(–0.55)	(0.47)	(0.40)	(0.31)	(0.36)	(–1.13)	(–0.81)	(–0.87)	(–0.95)
Fractures	0.004	–0.001	0.005	0.005	0.001	–0.014	0.000	0.000	0.005	–0.014	–0.017	–0.018
	(0.28)	(–0.08)	(0.37)	(0.33)	(0.10)	(–0.73)	(0.05)	(0.01)	(–0.26)	(–0.73)	(–0.89)	(0.90)
Burns	0.001	0.001	0.000	0.002	–0.008*	–0.008*	–0.008*	–0.008*	–0.005	–0.003	–0.003	0.002
	(0.002)	(0.15)	(0.07)	(0.28)	(–1.89)	(–1.86)	(1.88)	(–1.84)	(–0.53)	(–0.39)	(–0.41)	(0.28)
Dislocations	0.002	0.004	0.002	0.002	–0.001	0.004	–0.001	–0.001	0.003	–0.001	0.003	0.003
	(0.37)	(0.41)	(0.39)	(0.38)	(–0.45)	(0.41)	(–0.43)	(–0.42)	(0.39)	(–0.45)	(0.36)	(0.34)
Controls for Observable Characteristics	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry Dummies	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Occupation Dummies	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Number of Observations	10,702	10,668	10,668	10,668	10,702	10,668	10,668	10,668	10,702	10,668	10,668	10,668

Notes: The dependent variable in each regression is a dummy variable for the type of injury. The table reports coefficient estimates for the interaction term between the Monday/first day back from statutory holiday dummy variable and dummy for whether it snowed (Panel A), rained (Panel B), or was "nice" (with highs of at least 72° F., or 20° C.; Panel C) during the weekend or statutory holiday from a number of different linear probability regressions that estimate the incidence of each type of injury. T-statistics are in parentheses. Standard errors are computed using White's adjustment. Controls for observable characteristics are like those listed in the notes to Table 2.

*Statistically significant at the .10 level; **at the .05 level; ***at the .01 level.

vice/clerical/sales jobs; blue-collar jobs (farming, fishing, forestry, mining, raw materials processing, machining, factory work, construction, transportation, material handling); and unknown/other occupations, which is the excluded reference group in the regressions. We added an interaction term between the occupation dummies and the Monday dummy to our empirical model. Like the other supplementary estimates, these estimates fail to help isolate the potential source of the Monday reporting phenomena. We obtain no statistically significant results for any of the interaction terms for the back and strain injuries, cuts and lacerations, fractures, or dislocations. However, a statistically significant and positive coefficient is found for the interaction term for contusions among blue-collar workers. The interaction term estimate for service/clerical/sales workers suffering burns is negative and statistically significant.

Overall, the coefficient estimates from almost all of the interaction terms we examined in the supplementary analyses lacked statistical significance and showed no consistent pattern in the direction of the effects. Because these estimates do not help us isolate the factors that may create or contribute to the "Monday" reporting effect, they do not allow us to rule out any of the competing explanations of the Monday effect or determine whether the effect is more prevalent in certain demographic groups or occupations than in others.

We also examined whether there were differences by day of the week in the duration of claims, which we measure as total time on temporary disability benefits. In particular, we estimated the regression

$$(2) \qquad \log(\text{DURATION}_i) = \delta + \lambda \text{MONDAY}_i + \mathbf{X}_i'\phi + v_i,$$

where DURATION is the total number of days on temporary disability benefits, MONDAY and X are as defined above, and v is a residual. We estimate the log duration regressions because we observe the total time the individual spends on temporary disability benefits in the administrative data and we therefore have no censored spells. If the injuries reported on the first day back at work were more severe (as measured by the duration of absence from work) than those reported on other days, then a positive and statistically significant coefficient on the Monday dummy variable would be expected. The estimate of λ indicates whether Monday claims differ in duration from claims made on other days of the week.

The results from the log duration regressions are presented in Table 5. These regressions were estimated for all injuries (the first row) as well as for the specific injuries considered in Table 3. Each regression restricts the sample to the individuals who reported a particular condition. For example, the log duration regression for back injuries restricts the sample to the 3,546 individuals who reported back injuries. For all types of injuries, we find that a Monday injury was associated with a 2.4% increase in the duration of temporary disability benefits, but this effect is not statistically significant at conventional levels. Similarly, the estimates for back injuries are not statistically significant at conventional levels, although they suggest a 2.6–4.1% decline in the duration of the claims. The regressions for strain and sprain injuries also did not indicate any statistically significant effects of Monday reporting on claim duration.

Like the estimates for back and strain/sprain injuries, the estimates for burns and dislocations did not reveal any statistically significant effects of Monday reporting on claim duration. However, we found that Monday reporting was associated with a 20.5–22.2% increase in the duration of temporary disability claims for workers with cuts and lacerations. Similarly, we found that Monday reporting was associated with a 17.9–19.6% increase in duration for workers with contusions, although these estimates were only significant at the 10% level. We also found that Monday reporting of fractures was associated with a statistically significant 30.6% reduction in claim duration when we did not include any controls for individual characteristics or industry and occupation. However, the magnitude

Table 5. OLS Estimates of the "Monday Effect" from Log Duration Regressions for Various Types of Injuries.

Type of Injury	*(1)*	*(2)*	*(3)*	*(4)*
All Injuries	0.0243	0.0338	0.0242	0.0230
	(0.62)	(0.87)	(0.63)	(0.60)
Back Injuries	–0.0303	–0.0264	–0.0390	–0.0449
	(–0.46)	(–0.41)	(0.61)	(0.70)
Sprains and Strains	–0.0321	–0.0218	–0.0349	–0.0314
	(–0.59)	(–0.41)	(0.66)	(0.59)
Contusions	0.1964*	0.1786*	0.1891*	0.1792*
	(1.95)	(1.81)	(1.95)	(1.83)
Cuts and Lacerations	0.2218**	0.2045**	0.2072**	0.2120**
	(2.13)	(1.97)	(2.01)	(2.03)
Fractures	–0.3059**	–0.2007	–0.2066	–0.1810
	(–2.24)	(1.48)	(1.54)	(1.33)
Burns	0.0185	–0.1855	–0.1700	–0.1454
	(0.07)	(–0.071)	(0.65)	(0.55)
Dislocations	0.1324	–0.1337	0.1303	–0.2703
	(0.27)	(0.27)	(0.24)	(0.37)
Controls for Observable Characteristics	No	Yes	Yes	Yes
Industry Dummies	No	No	Yes	Yes
Occupation Dummies	No	No	No	Yes

Notes: The dependent variable in each regression is total time on temporary disability benefits for each type of injury. The table reports coefficient estimates for the Monday/first day back from statutory holiday dummy variable from a number of different log duration regressions for total time on temporary disability benefits. T-statistics are in parentheses. Controls for observable characteristics include gender (male = 1), age at time of accident, weekly gross earnings, and weekly benefits. Industry dummies include construction, manufacturing, trade, transportation, finance, service, public administration, and unknown industry, with the excluded reference group including agriculture, mining, fishing, and forestry. Occupation dummies are management and administrative; natural sciences, engineering, and mathematics; social sciences; teaching; health professions; art and culture; clerical; sales; service; farming; fishing; forestry; processing; machining; product fabrication and assembling; construction; materials handling; other; and unknown.

*Statistically significant at the .10 level; **at the .05 level.

of this effect fell by 50% as we added more controls to our empirical specifications, and these estimates were also no longer statistically significant.

We also estimated a number of specifications with an interaction term between the Monday dummy and weekly benefits. These specifications test whether there is *ex post* duration moral hazard (Fortin and Lanoie 2000), which would provide an incentive to lengthen the duration of a workers' compensation claim as benefits increase. We did not obtain any statistically significant estimates on the interaction term for sprain/strain or back injuries. This finding suggests that there is no *ex post* duration moral hazard associated with the day of the week effect for injuries of those kinds.

To summarize, our estimates from the claim duration regressions suggest that although there may be excess reports of back and strain/sprain injuries on the first day back at work, there are no statistically significant differences in the duration of those claims. If claim duration is a proxy for the severity of the injuries, then this suggests that there are no statistically significant differences in the severity of the injuries by the day of the week for the easy-to-conceal injuries. Moreover, our estimates also provide no evidence that *ex post* duration moral

hazard is associated with these sorts of injuries.

Discussion and Concluding Remarks

Our estimates for the incidence of easier-to-conceal injuries, such as back injuries and sprains and strains, suggest that there is a Monday effect in Ontario. In addition, our estimates seem to be similar in magnitude to those found by U.S. researchers. However, unlike estimates based on data from the United States, the Monday effect we find appears unlikely to represent post-dating of injuries to obtain medical care via workers' compensation insurance, because in Ontario there are no differences in health insurance coverage among workers. The Ontario data further support Card and McCall's (1996) finding that the absence of health insurance coverage does not appear to induce Monday workers' compensation claims.

Since access to medical care does not seem to be the factor driving the Monday effect in workers' compensation, this phenomenon may instead be the result of one or both of two other factors. First, because workers may not have insurance to indemnify them for the loss of earnings associated with injuries that occur outside of work, the excess reports of Monday injuries may represent *ex ante* moral hazard. That is, workers may attempt to represent non-work-related injuries as work-related in order to mitigate earnings losses (Fortin and Lanoie 2000). If *ex ante* moral hazard were at play, then we would expect claims for all types of injuries to be higher, but particularly claims for those conditions, such as sprains and strains and back injuries, that are relatively easy to conceal. We found that these easier-to-conceal claims were more likely on Mondays, even after we controlled for other factors, but other sorts of injuries were not more likely on Mondays.

Also, consistent with Card and McCall's results, we find no evidence that claims for easier-to-conceal injuries filed on Mondays differed in duration from similar claims filed on other weekdays. Putting it another way, injuries reported on Mondays do not appear to have been any more or less severe than injuries reported on other days of the week.

While our evidence and that of Card and McCall cannot rule out *ex ante* moral hazard as a contributor to the Monday effect, there is reason to believe that any such effect is relatively small. We note that workers' compensation benefits in Ontario were more generous than those in Minnesota (the source of Card and McCall's data).[8] However, despite benefits being (arguably) more generous in Ontario, the "Monday effect" in Ontario is within the range observed in Minnesota by Card and McCall. If indemnity benefits were a factor, particularly in light of Card and McCall's finding of no relationship between health insurance coverage and Monday claims, then we would have expected a noticeable difference between Ontario and Minnesota in the magnitude of the Monday effect. In addition, Card and McCall found that Monday claims were no more likely to be denied than were claims made on other weekdays. This result is not what one would expect if a substantial number of Monday claims were illegitimate, that is, filed for injuries that were not work-related. Moreover, these arguments run against the moral hazard explanation and provide support for a physiological explanation. However, this is highly speculative, and cannot be taken as an argument conclusively ruling out the *ex ante* moral hazard explanation of the "Monday" effect. Only further empirical work can definitively reject that explanation.

The physiological explanation Card and McCall highlighted is that time off during weekends and statutory holidays might increase workers' susceptibility to injuries of all types, but especially back injuries and sprains and strains. Indeed, Choi et al.

[8]Ontario claimants would have received 90% of their net weekly wages, which could have been as much as 175% of the average industry wage, and with no waiting periods. Minnesota claimants received two-thirds of their weekly wages to a maximum of 105% of the state average weekly wage, with a three-day waiting period.

(1996) found that in Ontario, workers' compensation claims involving sprains and strains were more likely to arise earlier in the week (consistent with our results and those of Card and McCall). But Choi also found that these sorts of claims were more likely earlier in the year, and earlier in the day.[9] It is conceivable that the "Monday effect," which has long incited suspicion of employee fraud, may in the end prove to be largely a more general "return-to-work-after-periods-of-rest" effect.

[9]The increased reporting of injuries earlier in the day is also consistent with Smith (1990). Also note that Choi et al. (1996) did not provide hypotheses to explain their findings but only conducted an extensive data examination of injury-reporting behavior. Consequently, it is difficult to interpret their estimates as evidence in favor of either one of the competing explanations of the "Monday" effect.

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