RESEARCH BRIEF

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Adverse Weather and Workers Compensation Claims

KEY FINDINGS

- Both hot and cold daily temperatures are associated with more workers compensation claims than days with mild temperatures, with *up to* 10% higher claim frequency
  - Frequency impacts of heat increase with daily high temperature
  - Frequency impacts from cold are largest for temperatures around freezing
- Temperature can be especially impactful for certain injuries and jobs
  - Frequency effects of hot days are largest in outdoor sectors, especially construction
  - Cold and wet days have many more slip-and-fall injuries, as well as motor vehicle accidents
- Frequency increases due to temperatures at the upper and lower end of the range are large and statistically significant throughout our sample period, but were slightly smaller in the 2010s and 2020s than in the 2000s
  - Since the COVID-19 pandemic, injury frequency on very cold days is lower, perhaps due to an increase in hybrid and remote work
- An increased number of hot days relative to each city's own standards is likely to result in a similar-sized effect on workers compensation claims in both warmer and cooler cities
- An increase in winter precipitation is likely to affect workers compensation claims primarily in colder cities, which have more days with temperatures near freezing

Introduction and Background

Adverse weather conditions may make everyday tasks more difficult. Researchers have found that both motor and cognitive performance decrease in uncomfortably hot or cold conditions.[1] Studies have also found that negative effects of poor outdoor weather extend to indoor tasks.[2]

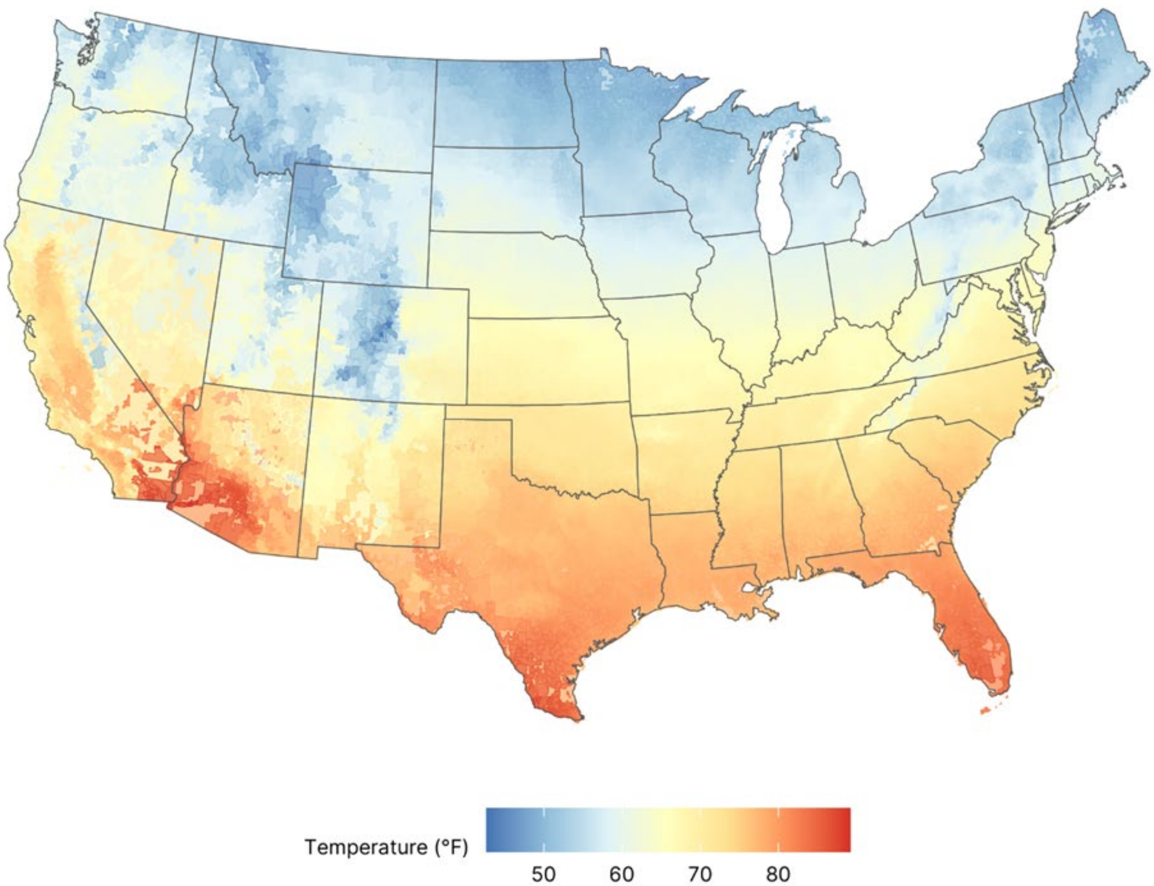
Our research question follows naturally from these general findings: How do adverse weather conditions affect work injuries and therefore workers compensation claims? Prior studies on this subject focus primarily on heat using data from Texas (Dillender (2021)), California (Park et al. (2021)), a collection of US states (Fomenko et al., 2024), or even Australia (Ireland et al. (2023)). All find moderate increases in work injuries on hot days, with the largest effects for outdoor sectors. Evidence for cold weather is mixed or excluded.

We expand on prior analyses by studying impacts of cold and precipitation as well as heat. We use NCCI's proprietary data sources, which allow us to incorporate data on payroll and premium exposure, directly measuring frequency rather than number of claims. We are also able to examine a longer history and wider geographic variation than previous studies—35 states and 22 years, respectively.

[1] For example, Ramsey (1995) and Pilcher et al. (2002) each review numerous prior studies.
[2] Two recent examples are Park et al. (2020), which finds that schoolchildren perform worse on standardized tests on hot days, especially when lacking adequate air conditioning, and Cook and Heyes (2020), which finds an association between outdoor cold and indoor cognitive performance for adults.

The figure below shows the average daily high temperature across the contiguous United States from 2001–2022, the period we studied. Average temperature varies by over 30 degrees across regions, highlighting the value of having a wide range of geographic variation.

Figure 1 – Average Maximum Daily Temperature
22-year average, 2001-2022



Source: PRISM Climate Group, NCCI

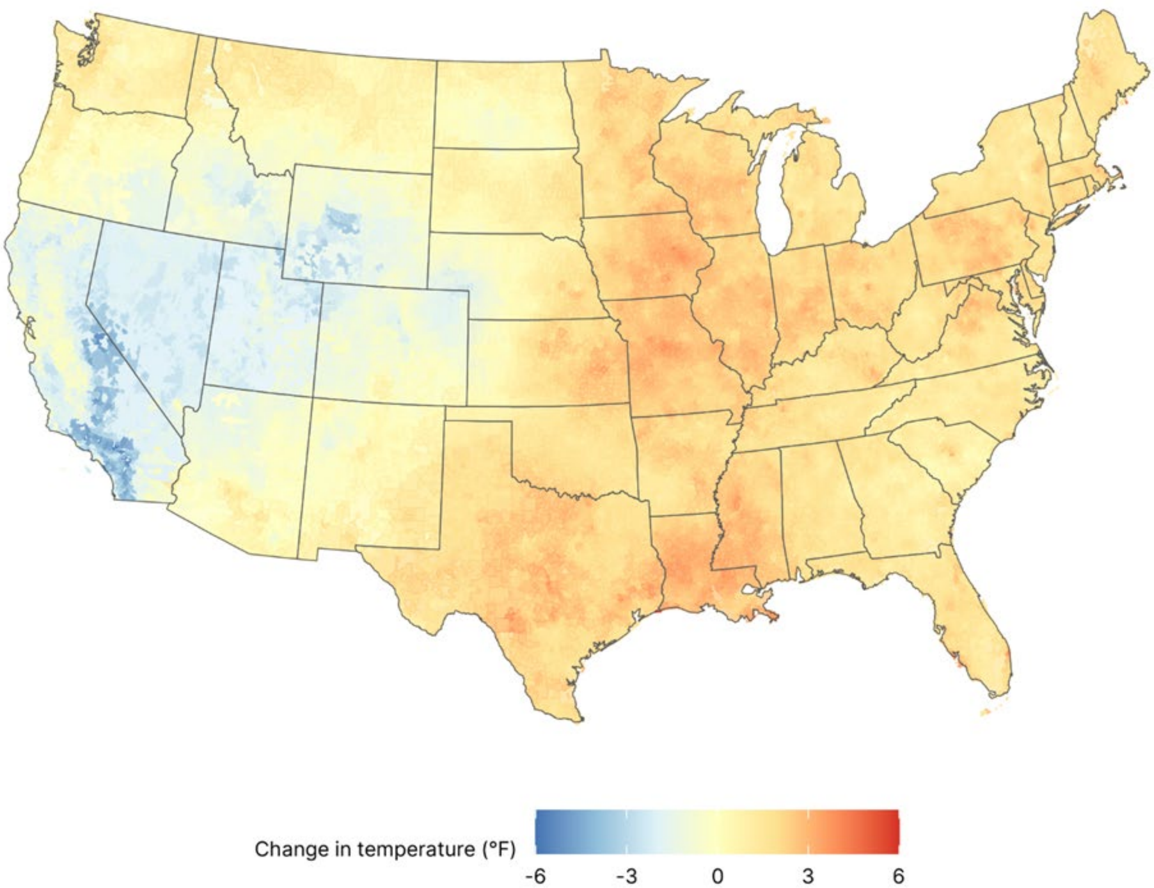
We note that our research may be insightful to stakeholders in workers compensation for two reasons in particular. First, research we reviewed notes that recent years have experienced an above-average amount of adverse weather. 2023 was measured by several organizations as the warmest year on record globally,[3] and 2024 is on a similar pace. The National Oceanic and Atmospheric Administration (NOAA) reported that the first half of 2024 was the second

[3] As measured by several organizations, including the US NOAA (www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far).

warmest on record in the contiguous United States.[4] At the same time, 2021 and 2022 were costly winter storm seasons for insurance.[5]

To illustrate how 2023 differed from usual temperatures, the map below shows the difference in 2023 average temperature from the average of the period showed above. While the effect is not constant across the whole country, 2023 was considered a warm year in most of the country, including both areas with hot and cold average temperatures.

Figure 2 – Change in Average Maximum Daily Temperature
2023 vs. average from 2001-2022



Source: PRISM Climate Group, NCCI

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[4] See www.ncei.noaa.gov/news/national-climate-202406.
[5] See, for example, this facts page from the Insurance Information Institute (www.iii.org/fact-statistic/facts-statistics-winter-storms).

Second, it appears there may be early signs of movement toward providing added clarity of employer requirements related to workplace weather exposure. For example, in July 2024, new heat-related standards for workplaces were proposed by the United States Department of Labor.[6] The Occupational Safety and Health Administration (OSHA) also cites five states that have recently instituted state-specific additional standards for heat exposure not addressed by federal OSHA standards.[7] With hints of potentially evolving interest regarding impacts of adverse weather in the workplace, workers compensation stakeholders may be interested in research about how adverse weather may have historically affected work-related injuries and workers compensation claims.

DATA AND MODELING STRATEGY

Data Sources and Definitions

Our goal is to measure the frequency impact of weather conditions on work injuries, separating out any other factors. Our estimations use data reported in NCCI's Unit Statistical Data and NCCI's Policy Data. Using insured location information reported in NCCI's Policy Data, we identified policies with exposure within a single metropolitan area. Such policies were then used to pull exposure and first report claim counts from NCCI's Unit Statistical Data. The final dataset used includes exposure and claim information between Accident Year 2001 and 2022 from these jurisdictions: AL, AR, AZ, CO, CT, FL, GA, IA, ID, IL, IN, KS, KY, LA, MD, ME, MO, MS, MT, NC, NE, NH, NM, NV, OK, OR, RI, SC, SD, TN, TX, UT, VA, VT, and WV.

The strengths of this data are that we have detailed information on date of injury, and can plausibly identify location of injury from the business address data. We also can construct exposure measures from the data and can use a long time series. The drawback is that many policies are written for multiple business locations within a state, so for some policies we are unable to identify injury locations with precision.

We tested the suitability of this data sample by performing auxiliary regression analysis using NCCI's Medical Data Call, which has detailed claim information and information on treatment location. The drawbacks of the medical data are that we do not have a measure of exposure (premium or payroll) and that in some cases, the reported ZIP Code may represent a billing or provider headquarters location rather than the actual site of injury.

In either case, we match NCCI data to daily minimum, mean, and maximum temperatures and precipitation for each ZIP Code Tabulation Area (ZCTA) from PRISM (Parameter-elevation Regressions on Independent Slopes Model) Climate Group at Oregon State University.[8]

We then aggregate our location measures to map each ZIP Code and ZCTA to a "pseudo-MSA," a modification of the Metropolitan Statistical Area (MSA) and Micropolitan Statistical Area definitions generated by the US Census Bureau. In most cases, our pseudo-MSAs align with Metropolitan or Micropolitan Statistical Areas, with these exceptions.

- If an MSA is divided into Metropolitan Divisions, we use Metropolitan Divisions instead for additional granularity (e.g., Miami-Fort Lauderdale-West Palm Beach is one MSA but three Metropolitan Divisions).
- If an MSA crosses state borders, we consider the part in each state to be a separate MSA (e.g., we divide the Kansas City MSA into Kansas City, KS, and Kansas City, MO). We do this to account for different workers compensation laws and regulations in each state.
- For non-MSA regions, we consider each three-digit ZIP Code to be a pseudo-MSA.

For simplicity, we will refer to pseudo-MSAs as "cities" hereafter in this report. We generate claim counts, exposure, and temperature and precipitation variables at the city level. In our claim and exposure variables, we restrict attention to those policies whose business addresses are limited to a single city. Our final dataset consists of 412 cities across thirty-five states, with one observation for each weekday in the period 2001-2022 (2006-2022 for West

[6] See www.dol.gov/newsroom/releases/osha/osha20240702.

[7] See www.osha.gov/heat-exposure/standards. Only two of these five (CO and OR) are NCCI states, and Colorado's safeguards are made under Agricultural Labor Conditions Rules. Thus, most of any potential effect of these additional standards are outside the scope of the present study.[8] These were obtained at a ZCTA level using R code provided by Dr. Aaron Smith and Dr. Seunghyun Lee from the University of California, Davis Department of Agricultural and Resource Economics.

[8] These were obtained at a ZCTA level using R code provided by Dr. Aaron Smith and Dr. Seunghyun Lee from the University of California, Davis Department of Agricultural and Resource Economics.

Virginia). Thus, our primary regressions use a sample of 2,340,485 observations, each representing one day in one city.

Modeling Strategy

Our modeling approach is to relate the number of workers compensation injuries that result in a claim in each city on each day to the high temperature in that location on that day, after adjusting for other relevant factors. To measure the frequency impact of temperature, we break days into five-degree bins by daily maximum temperature. To account for differences in claim patterns over time or across seasons in a year (such as additional construction activity in the summer months), we also include fixed effects for each calendar month-city pair, and for each calendar year. We also account for the exposure base, so that our dependent variable is frequency, i.e., claims divided by exposure. For these purposes, "claims" means all claims, not just those directly attributable to weather conditions.

Our basic estimating equation thus takes the form:

$$\ln(Claims_{cdmy} / Exp_{cdmy}) = \sum_{k=1}^{K} \beta^k Temp_{cdmy} + \eta_{cm} + \gamma_y + \epsilon_{cdmy} \quad (1)$$

Here, the subscripts denote city *c* and day *d* in month *m* of year *y*. The coefficients of interest are the βs associated with each temperature bin. The fixed effects for calendar month-city and month-year are denoted by η and γ, respectively, and there is a random error ϵ. Since we are interested in the effect of precipitation, we sometimes interact the temperature with an indicator for whether a day is wet or dry:

$$\ln(Claims_{cdmy} / Exp_{cdmy}) = \sum_{k=1}^{K} \beta^k Temp_{cdmy} * Dry_{cdmy} + \sum_{k=1}^{K} \beta^k Temp_{cdmy} * Wet_{cdmy} + \eta_{cm} + \gamma_y + \epsilon_{cdmy} \quad (2)$$

Our main specifications are Poisson regressions. We tested the sensitivity of our main results to several dimensions of these modeling choices, including using month-year fixed effects, different cutoffs of the amount of precipitation needed to define a wet versus dry day, using payroll or premium as the exposure base, and using inverse hyperbolic sine or negative binomial regressions rather than Poisson regressions, and across each of these sensitivity tests we find the main results are little changed.

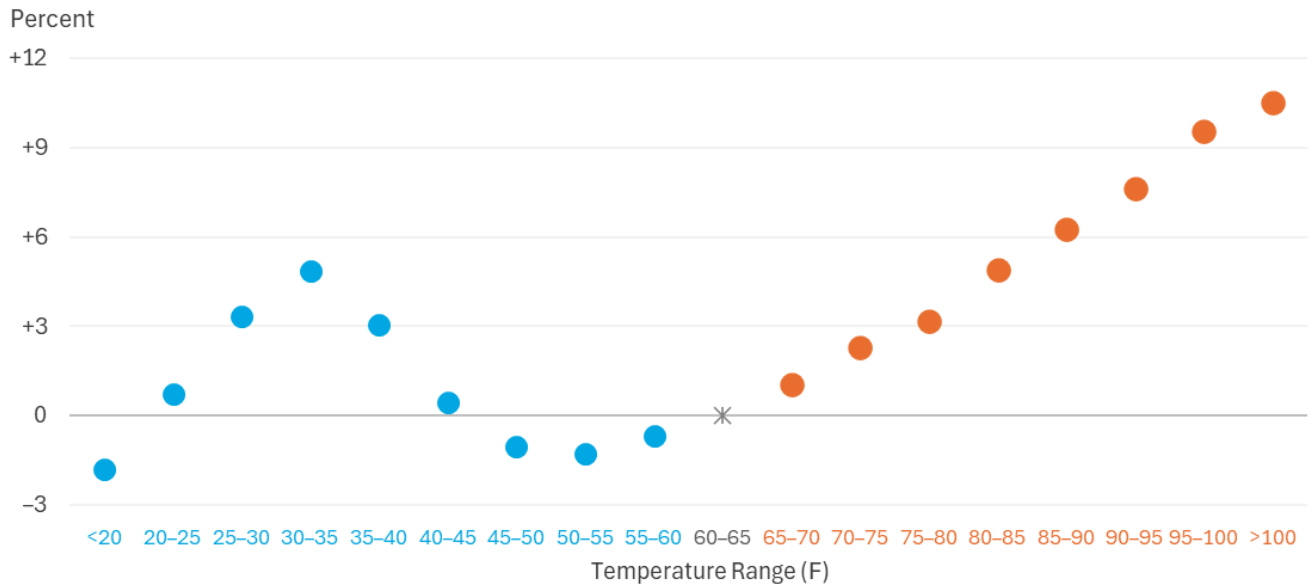
Model Results and Discussion

Daily High Temperature

We find that weather may have impacts on the frequency of workers compensation claims in a variety of contexts.

First, we estimate our baseline model for temperature, using all years, all industries, and all causes of injury. We find that injury frequency increases modestly but consistently with daily high temperatures all the way from about 50 degrees to 100 or more degrees Fahrenheit, with approximately a 1% increase in injuries for every five degrees of temperature. All else equal, there are also more injury claims on days with high temperatures around freezing. Frequency is lowest on the coldest days and days between 40–60°F.

Figure 3 — Impact of Temperature on the Frequency of Workers Compensation Claims
All Claims, 2001–2022



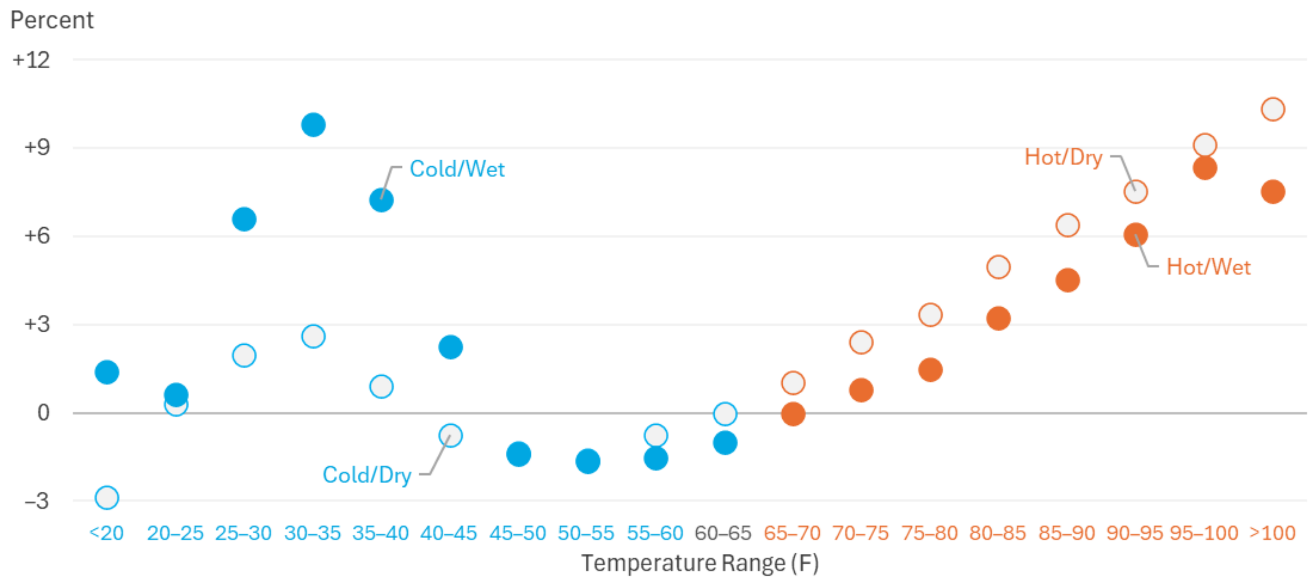
Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

Interaction of Daily High Temperature and Precipitation

Next, we interact the effect of precipitation and temperature. We find that precipitation leads to particularly high claim frequency on freezing days but lessens the frequency increase on warm or hot days. On wet days when the high temperature is between 25 and 40°F, there are 7–10% more injuries than the baseline of 60–65°F dry days, holding all else equal. On dry days at the same temperature, the same comparison is only about 1–3%. In short, workers compensation claims rise much more on days that are cold and wet than on days that are cold and dry.

For both dry and wet days, frequency rises as daily high temperature increases. However, we estimate slightly larger effects on dry days. This can be seen in the figure below. Even at the baseline of 60–65°F, we estimate about one percent fewer injuries on a wet day than a dry day. For the hottest days in our sample, we estimate a 10% increase in injuries on dry days compared to baseline, but only about 7.5% compared to baseline on wet days.

Figure 4 — Impact of Temperature on the Frequency of Workers Compensation Claims
Overall by Precipitation, 2001–2022



Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

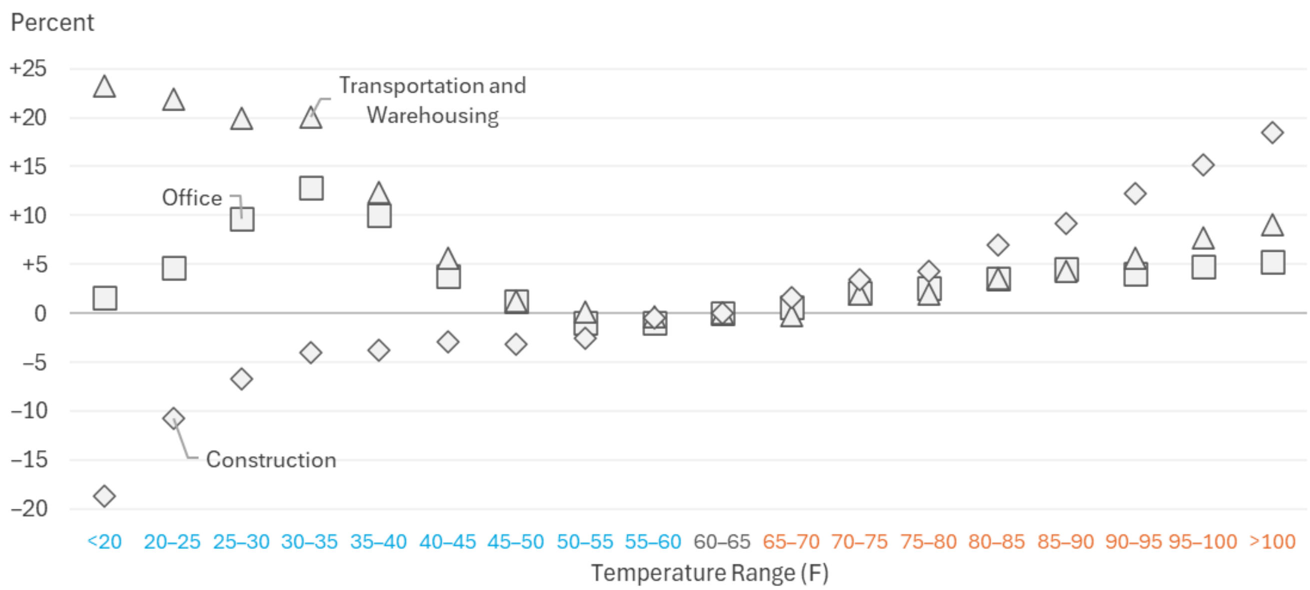
Economic Sector

We next examine results for individual sectors. Here, we define nine sectors based on class codes.[9] Compared to the 60–65°F baseline, heat is associated with more claims in every sector. These effects are largest for Construction, Natural Resources, and Upkeep and Maintenance (which includes landscaping)—all outdoor sectors. Effects are smallest for Office and Health Care class codes, which are mostly indoor jobs in climate-controlled environments.

[9] See Appendix B for a brief description of our classification structure.

For cold days, effects are largest for Transportation and Warehousing. In bad weather—especially wet weather—delivery drivers can be affected by both road conditions and increased risk of slip and falls. Office, Health Care, and Upkeep also experience increased claim rates on cold days. For Construction, Natural Resources, and Manufacturing, injury frequency is lower on cold days than the mild-weather baseline. This may reflect that outdoor work is less likely to be performed on days with particularly harsh weather. In such a case, measured exposure would remain the same on such days, but workers would not be doing as much hazardous work.

Figure 5 — Impact of Temperature on the Frequency of Workers Compensation Claims
Overall by Sector, 2001–2022



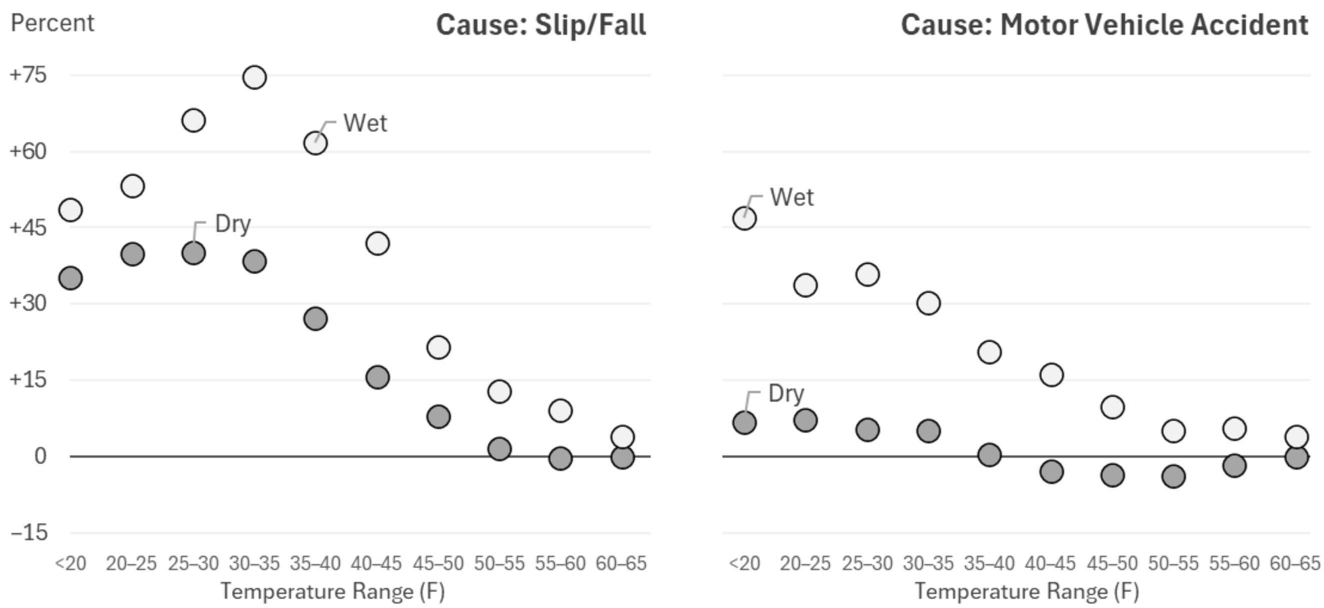
Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

Cause of Injury

We also estimate claim effects by cause of injury. As for sectors, claim frequency for all causes increase with heat. Among major categories, the relative increase in frequency compared to the 60-65°F baseline is largest for contact injuries, a grouping which includes “caught on,” “cut by,” “struck by,” and “rubbed against” injuries. The relative increase is smaller for slip and falls and for strains. The relative increase in frequency is even larger for “All other” injuries than for contact injuries. This leftover category has a small share of injuries but includes burns and direct heat exposure injuries.

On cold days, frequency is lower for contact, strain, and "all other" injuries than at the 60–65°F baseline. The higher overall frequency observed for 25–40°F days is primarily due to large increase in slip and falls, and secondarily by an increase in motor vehicle accidents. Both claim types are especially prevalent on cold and wet days. On cold and dry days, the impact on motor vehicle accidents is small. Frequency increases for slip and falls even on cold and dry days but is especially large on cold and wet days.

Figure 6 — Impact of Temperature on the Frequency of Workers Compensation Claims
Precipitation and Cause, 2001–2022



Source: : NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

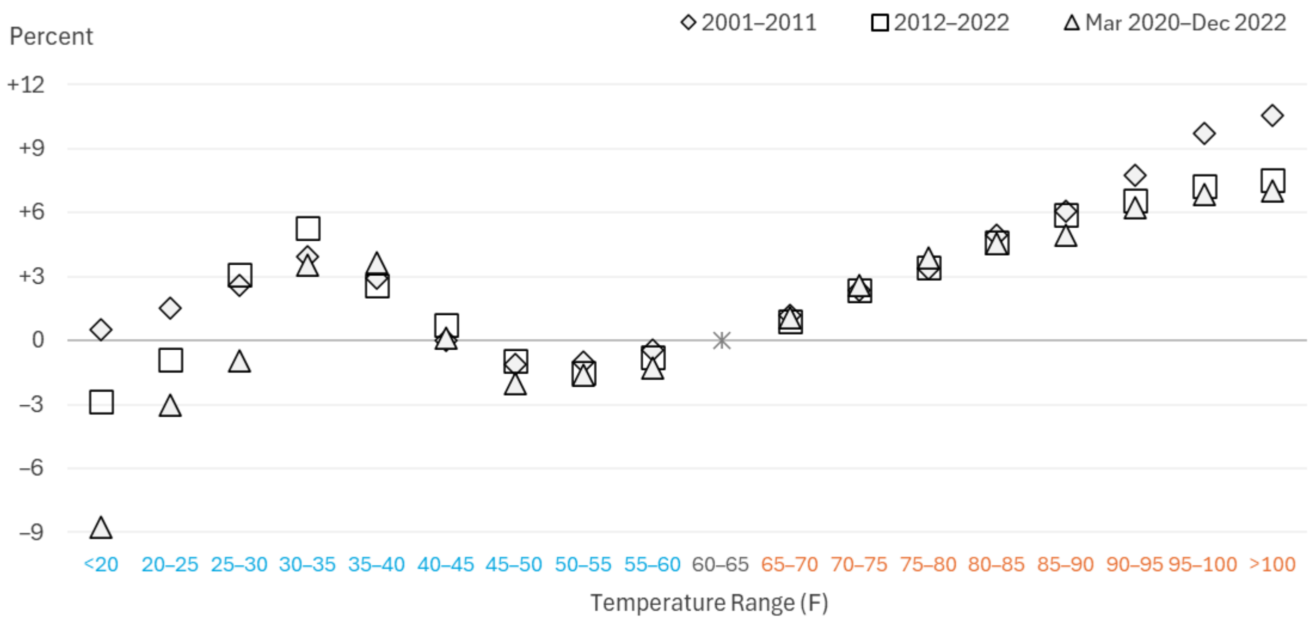
For days warmer than the 60–65°F baseline, claims increase with heat on dry days for all injury types. At the baseline temperature, there are more slip and falls and motor vehicle accidents on wet days than on dry days, but for the other injury types, there are more claims on dry days.

Time Period

Our sample period contains over 20 years of data. Overall injury frequency has declined greatly during this time period for all types of workers. This may relate, in part, to automation, safety technology, and loss prevention. There was also a big shift in remote work due to the pandemic. With these changes in mind, we investigated whether the impacts of hot or cold weather on frequency differ in recent years versus the beginning of our sample period. We find, however, only modest evidence that the relative risk on adverse weather days compared to our 60–65°F baseline has changed over time.

First, we split our sample into early and late periods—2001–2011 and 2012–2022. At most temperatures, the estimated coefficients are not significantly different, but we see some difference at the extremes. The estimated effects of heat are somewhat smaller for 2012–2022 than 2001–2011—about 6–8% compared to the mild-weather baseline rather than 8–10%. We also see that frequency is relatively lower on the coldest days in 2012-2022.

Figure 7 — Impact of Temperature on the Frequency of Workers Compensation Claims
Overall by Time Period, 2001–2022



Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

The attenuation of the impact of very hot days is primarily due to lower estimated frequency effects of heat for each sector in recent years rather than due to any changes in the mix of business. For example, we estimate statistically significant differences between the 2001–2011 and 2012–2022 periods at 90°F and above when restricting the sample to construction claims only. By our definition, construction made up 31% of premium in 2001–2011 and 29% in 2012–2022. The shift in premium mix by sector, holding estimates of frequency impact for each sector constant, would have resulted in changes of less than half a percentage point to our overall estimates of relative frequency by temperature at all temperature ranges.

The decreased claim frequency on the very coldest days is most notable in recent years. When cutting our sample to claims in March 2020 and later—the pandemic and post-pandemic part of our dataset—we see virtually identical frequency impacts to the full 2012–2022 period except on days when the high temperature is below 25 degrees. This may relate to the rise of remote and hybrid work. Workers in remote-friendly jobs may be less likely to come to the office in particularly poor weather, and therefore have fewer claims on such days.

SCENARIO ANALYSIS: TWO EXAMPLES

In the preceding section, we estimated the impact of variations in daily temperature and precipitation on the frequency of workers compensation claims. But the overall impact of weather on workers compensation does not depend on a single day, but rather on patterns that persist over a season or year. In this section, we show how weather variations over a period of time can affect claims.

We address two main questions.

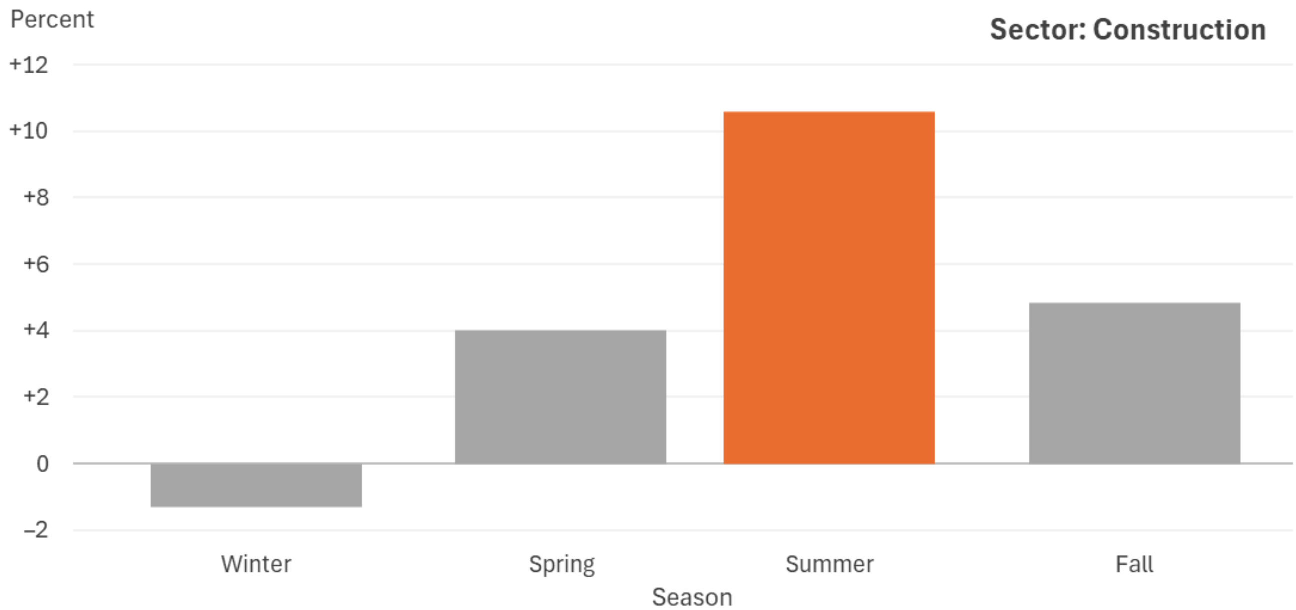
First, how much impact does weather generally have on claims? For instance, how much are construction workers in a warm-weather city affected over the course of a summer? Or how much does winter weather affect slip and falls in a cold-weather city?

Second, how much extra impact is there from an increase in severe weather? Recent years have experienced record levels of heat. Will additional hot days have the most impact in places that are already the hottest? Or does an increase in hot days have similar marginal effects in both warmer and cooler areas? And what are the analogous findings for cold (or cold and wet) days?

To address these questions, we explore two examples: the impact of heat on construction, and the impact of winter weather on slip and falls.

In the first scenario, we use our model results to estimate the additional number of claims in construction class codes in each season due to the frequency impact of heat, compared to our 60–65°F baseline. The chart below shows the overall estimated impact across all cities in our data. Of course, heat has the greatest impact in the summer, leading to over a 10% increase in construction injuries versus baseline.

Figure 8 — Impact of Temperature on the Number of Workers Compensation Claims
Construction Sector by Season, 2001–2022

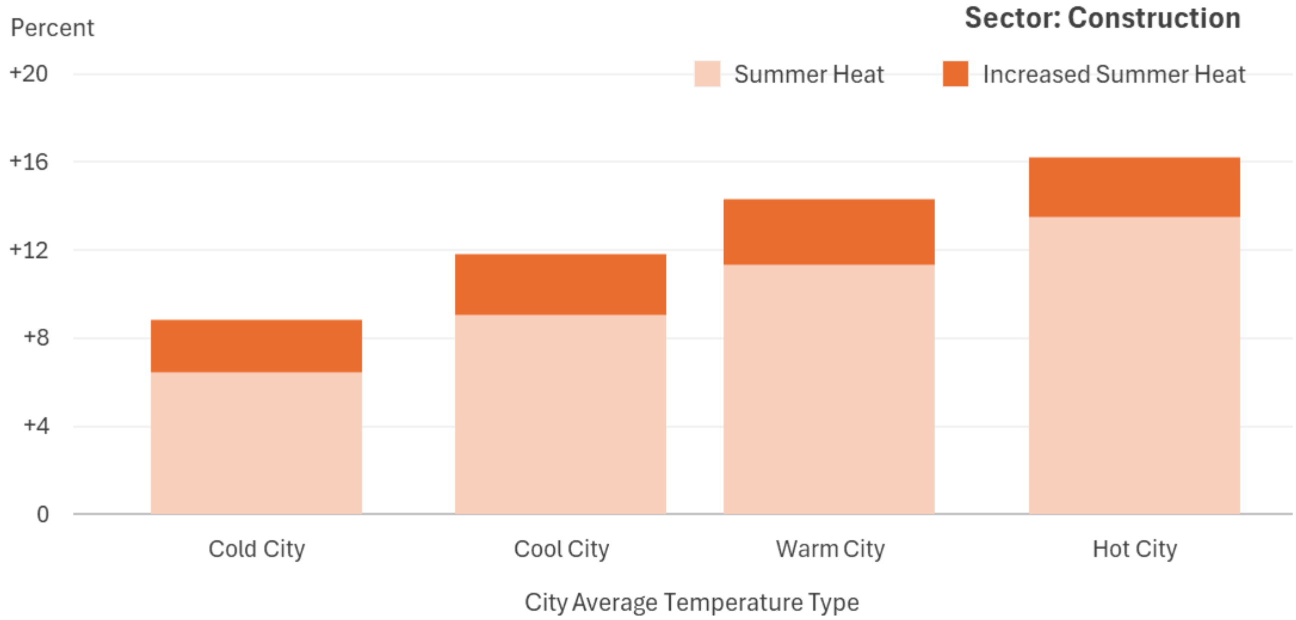


Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

Next, we estimate the impact of summer heat by city average temperature. We find that the estimated impact of heat on additional construction claims is larger in the hottest cities, about twice as large compared to baseline. The chart below shows the additional impact of a five degree increase in temperature every day on each city type.[10]

Figure 9 — Impact of Temperature on the Number of Workers Compensation Claims

Construction Sector by City Type for Summer, 2001–2022



Increased Summer Heat is the estimated injury Increase in Construction-related injuries in Summer from a 5 degree (F) increase in temperature.
Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

This effect is easily estimated from our modeling specification—each day moves one temperature bin to the right in the charts shown in the prior section.[11] This is a reasonable magnitude to consider for practical reasons. For most cities, 2023 was less than five degrees warmer than the average summer in our dataset, but in virtually every city, 2023 was more than five degrees warmer than the coolest summer in our dataset.

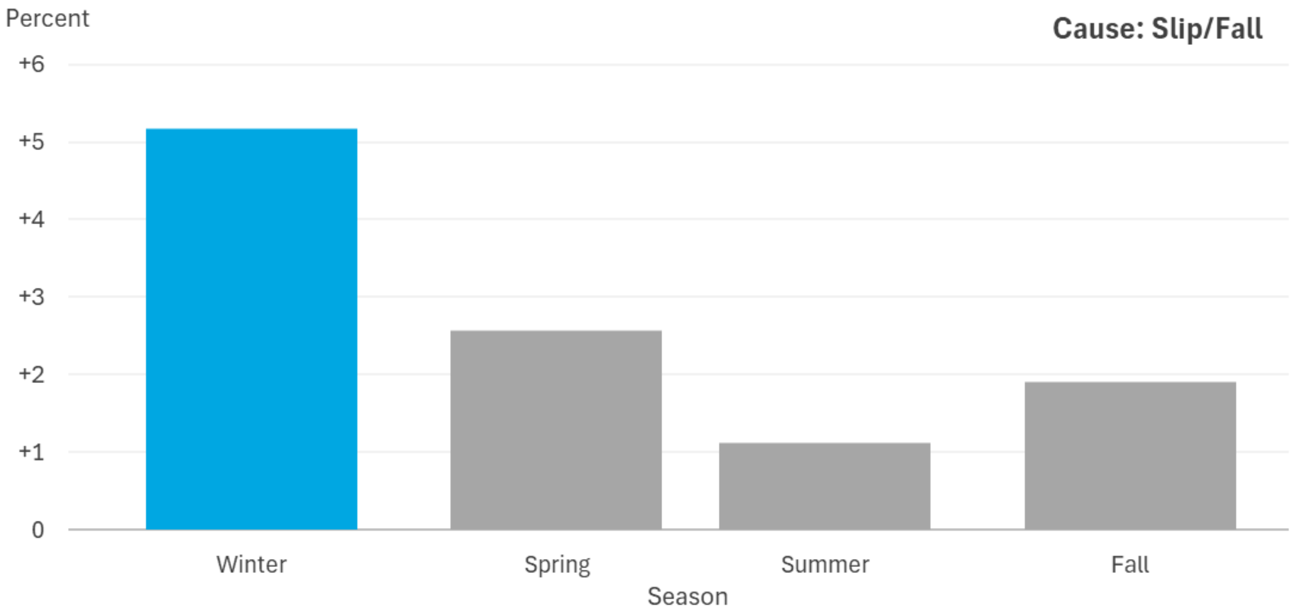
In this scenario, we find a 2–3 percentage point increase in injuries for cities at all temperatures. This follows from our initial finding: increased temperature leads to more claims monotonically from about 50 degrees and up. Hot cities face more days with particularly hazardous temperatures, but an increase from 70 to 75 degrees has about the same marginal impact as an increase from 80 to 85 degrees or from 90 to 95 degrees. In other words, when a city experiences more hot days compared to whatever workers in that city are used to, we estimate similar impacts on workers compensation claims.

[10] Here, we use the average high temperature across all seasons for each city: cities with overall average high temperatures in the 50s, 60s, 70s, and 80s are denoted as cold, cool, warm, and hot, respectively.

[11] We make an additional adjustment for 100°F days. We group all days above 100°F together in our main specifications simply because of data limitations, but given our findings, it is reasonable to believe that 105°F days are more hazardous than 100°F days. In the absence of such an adjustment, our scenarios would likely underestimate the frequency effect experienced by the hottest cities.

The second scenario focuses on the impact of precipitation on slip and falls. Here, we hold temperature constant, but we vary the number of wet days. The chart below shows the estimated impact of precipitation on slip and fall injuries, compared to a baseline with no wet days at all.

Figure 10 — Impact of Precipitation on the Number of Workers Compensation Claims
Slip/Fall Cause by Season, 2001–2022

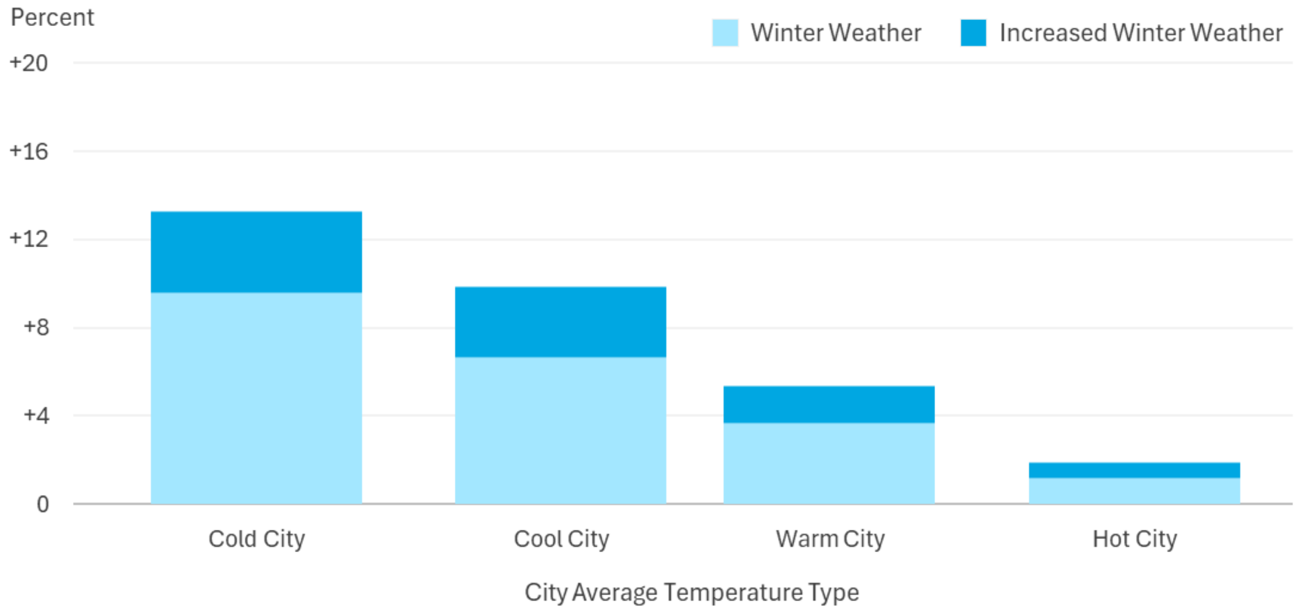


Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

We saw earlier that the largest impacts of precipitation are on days at or below freezing, so it should be no surprise that the most acute impacts are in the winter. In the model, an average amount of winter precipitation leads to about 5% more slip and fall injuries than a completely dry but equally cold winter would have. The impact is smaller in warmer seasons.

Figure 11 — Impact of Precipitation on the Number of Workers Compensation Claims

Slip/Fall Cause by City Type for Winter, 2001–2022



Increased Winter Weather is the estimated Excess Slip/Fall injuries due to wet days in Winter compared to the dry days baseline.
Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

Just as for summer in construction, the winter impact differs by city average temperature, in that the coldest cities have the biggest effects. In warm cities, winter temperatures are relatively mild. Recall that the main impact of slip and falls are for days around freezing. Warm and rainy days lead to only a small increase on slip and falls.

These dynamics mean that more winter precipitation has different implications than more summer heat. In summer, we estimated bigger overall effects for hot cities, but similar impacts of increased heat on hot and cold cities. But winter precipitation has bigger overall effects on cold cities (light blue) and bigger effects of additional precipitation (dark blue) in the cold and cool cities. Again, this is because precipitation matters mostly when it is freezing, and those days mostly occur in colder regions.

Findings and Conclusions

In this report, we use NCCI data on workers compensation claims to show a relationship between injury frequency and weather, particularly temperature and precipitation. After controlling for exposure, city, month, and year, there are more claims on hot days and on cold and wet days than on mild-weather days. In general, impacts of weather on claims have not changed much over the last two decades, although we find some evidence that impacts are somewhat smaller in the last decade for the hottest days and that claims have declined on very cold days since the onset of the COVID-19 pandemic.

These effects are not uniform across types of claims and workers. Outdoor workers, including those in construction, have larger increases in frequency on hot days than indoor workers. Slip and falls account for most of the frequency increase on cold and wet days, with motor vehicle accidents a secondary contributor.

Our research expands on prior work in part because our data allows us to use a long time period, consider many states across all regions of the United States, and account for exposure base, thus allowing us to directly interpret our results as frequency changes. Even so, the magnitude of our results for heat are similar to estimates from previous research. Our findings related to cold and wet days provide more detailed insights and help workers compensation stakeholders get a more complete picture of how adverse weather affects frequency.

We then use these estimates to provide some context about how adverse weather may affect total claims over the course of a season or year. Adverse weather can lead to noticeably more claims, especially in areas with particularly hot summers or icy winters. This suggests that improved mitigation of hazards related to adverse weather has room to make an impact for employers and workers, especially for outdoor workers in the heat and for slip and fall injuries on cold and wet days

There is another, more subtle, implication of our results. Increased heat, such as that seen in much of the United States during in the summers of 2023 and 2024, is likely to have a similar marginal impact on both warm and cool regions. This is because we find that more heat is associated with higher frequency both for hot and for relatively mild summer temperatures. Additional risk is not limited to the most extreme days. On the other side, the impact from additional winter precipitation is concentrated in cold-weather cities, since the major frequency increases that we document occur on days where temperatures are near freezing.

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APPENDIX—SECTOR AND CAUSE OF INJURY DEFINITIONS AND TABLES

The following tables represent full Poisson regression coefficients by temperature bin for sector and cause of injury, along with cause of injury crossed with a precipitation indicator. For simplicity, only select sector and cause results were included in the main text.

The nine economic sectors presented in this report are defined by mapping NCCI class codes at the individual claim level into groupings similar to North American Industry Classification System (NAICS) supersectors, with some modifications to make these groupings more relevant to workers compensation data. The groupings are chosen to ensure that each sector is aligned with the established class code descriptions and contains a sufficient amount of data. The nine sectors are as follows:

- The Natural Resources, Construction and Utilities, Manufacturing, Health Care, and Leisure and Hospitality economic sectors are closely analogous to the NAICS sectors or supersectors of the same name, noting that we combine the Construction and Utilities NAICS sectors.
- The Trade economic sector aligns with the Retail and Wholesale Trade NAICS sectors, along with some Other Services businesses that provide in-person services to customers.
- The Transportation economic sector aligns with the Transportation and Warehousing NAICS sector, which includes trucking operations and warehousing and storage for goods.
- The Office economic sector includes office-based businesses in the Information, Financial Activities, and Professional and Business Services NAICS supersectors, as well as the Educational Services sector.
- The Upkeep economic sector aligns with businesses in the Real Estate and Rental and Leasing, Administrative and Support, Waste Management and Remediation Services, and Other Services NAICS sectors that are related to property management, building cleaning and maintenance services, landscaping, and repair and maintenance of machinery and equipment.

Note this mapping and description are the same as used in NCCI's research report on The Influence of Wage on Temporary Disability Duration – A Modeled View.[12]

[12] This report can be found on NCCI.com insights at www.ncci.com/Articles/Pages/Insights_Influence_Wage_Temp_Disab_Duration.aspx.

Table 1 — Impact of Temperature on the Number of Workers Compensation Claims
Coefficients of Variation from Baseline (60–65 Fahrenheit) by Economic Sector

Temperature Range (F)	All Sectors	Construction	Natural Resources	Manufacturing	Upkeep	Leisure and Hospitality	Transportation and Warehousing	Trade	Office	Health Care
<20	**–0.018**	**–0.187**	**–0.073**	**–0.062**	**0.061**	–0.013	**0.232**	0.007	0.016	–0.011
20–25	0.007	**–0.107**	–0.019	**–0.045**	**0.071**	–0.007	**0.219**	0.019	**0.046**	**0.029**
25–30	**0.033**	**–0.066**	–0.014	**–0.020**	**0.096**	0.022	**0.199**	**0.037**	**0.097**	**0.063**
30–35	**0.049**	**–0.039**	–0.005	–0.009	**0.109**	**0.024**	**0.201**	**0.038**	**0.129**	**0.084**
35–40	**0.031**	**–0.037**	**–0.040**	**–0.010**	**0.060**	0.016	**0.124**	**0.028**	**0.100**	**0.073**
40–45	**0.005**	**–0.028**	**–0.033**	**–0.022**	**0.025**	0.005	**0.056**	0.000	**0.038**	**0.031**
45–50	**–0.010**	**–0.031**	**–0.042**	**–0.021**	–0.012	–0.006	0.012	–0.011	**0.013**	0.007
50–55	**–0.013**	**–0.025**	**–0.031**	**–0.016**	–0.010	–0.010	0.001	**–0.020**	–0.009	0.002
55–60	**–0.007**	–0.005	**–0.020**	**–0.010**	–0.006	–0.004	–0.003	–0.006	–0.009	–0.004
60–65	0	0	0	0	0	0	0	0	0	0
65–70	**0.010**	**0.016**	**0.025**	**0.012**	**0.018**	0.011	–0.002	0.008	0.007	0.000
70–75	**0.023**	**0.034**	**0.027**	**0.017**	**0.023**	**0.029**	**0.020**	**0.020**	**0.021**	**0.017**
75–80	**0.032**	**0.043**	**0.052**	**0.029**	**0.041**	**0.042**	**0.020**	**0.028**	**0.026**	0.011
80–85	**0.049**	**0.070**	**0.064**	**0.044**	**0.064**	**0.060**	**0.036**	**0.046**	**0.036**	**0.023**
85–90	**0.063**	**0.092**	**0.084**	**0.053**	**0.080**	**0.078**	**0.043**	**0.055**	**0.045**	**0.031**
90–95	**0.076**	**0.122**	**0.126**	**0.069**	**0.096**	**0.088**	**0.056**	**0.061**	**0.041**	**0.035**
95–100	**0.095**	**0.151**	**0.149**	**0.100**	**0.116**	**0.100**	**0.078**	**0.079**	**0.048**	**0.042**
>100	**0.105**	**0.185**	**0.167**	**0.116**	**0.108**	**0.098**	**0.091**	**0.084**	**0.053**	**0.046**

Bold text represents statistical significance at the 1% level
Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

Table 2 — Impact of Temperature on the Number of Workers Compensation Claims
Coefficients of Variation from Baseline (60–65 Fahrenheit) by Cause of Injury

Temperature Range (F)	Slips/Falls	Motor Vehicle Accidents	Contact Injury	Strains	All Other Causes
<20	**0.362**	**0.136**	**–0.178**	**–0.135**	**–0.082**
20–25	**0.410**	**0.121**	**–0.159**	**–0.105**	**–0.083**
25–30	**0.446**	**0.118**	**–0.128**	**–0.089**	**–0.054**
30–35	**0.473**	**0.112**	**–0.108**	**–0.076**	**–0.066**
35–40	**0.363**	**0.055**	**–0.089**	**–0.048**	**–0.050**
40–45	**0.219**	0.019	**–0.067**	**–0.038**	**–0.044**
45–50	**0.102**	–0.003	**–0.046**	**–0.030**	**–0.029**
50–55	**0.032**	–0.021	**–0.028**	**–0.016**	**–0.020**
55–60	0.006	–0.005	**–0.013**	**–0.007**	–0.005
60–65	0	0	0	0	0
65–70	0.006	**0.028**	0.017	**0.003**	0.009
70–75	**0.014**	**0.028**	**0.034**	**0.010**	**0.025**
75–80	**0.021**	**0.032**	**0.045**	**0.011**	**0.045**
80–85	**0.034**	**0.055**	**0.067**	**0.020**	**0.069**
85–90	**0.038**	**0.066**	**0.083**	**0.024**	**0.106**
90–95	**0.037**	**0.078**	**0.100**	**0.026**	**0.148**
95–100	**0.043**	**0.085**	**0.117**	**0.035**	**0.204**
>100	**0.029**	**0.106**	**0.131**	**0.034**	**0.245**

Bold text represents statistical significance at the 1% level
Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022

Table 3 — Impact of Temperature on the Number of Workers Compensation Claims

Coefficients of Variation from Baseline (60–65 Fahrenheit) by Cause of Injury and Precipitation

Temperature Range (F)	Slips/Falls		Motor Vehicle Accidents		Contact Injury		Strains		All Other Causes	
	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
<20	**0.353**	**0.485**	**0.069**	**0.469**	**–0.182**	**–0.213**	**–0.143**	**–0.130**	**–0.085**	**–0.119**
20–25	**0.398**	**0.534**	**0.072**	**0.338**	**–0.151**	**–0.248**	**–0.103**	**–0.147**	**–0.080**	**–0.144**
25–30	**0.401**	**0.663**	**0.053**	**0.360**	**–0.115**	**–0.228**	**–0.090**	**–0.117**	**–0.056**	**–0.089**
30–35	**0.384**	**0.748**	**0.051**	**0.303**	**–0.095**	**–0.188**	**–0.071**	**–0.119**	**–0.057**	**–0.130**
35–40	**0.273**	**0.618**	0.004	**0.206**	**–0.080**	**–0.149**	**–0.044**	**–0.080**	**–0.046**	**–0.096**
40–45	**0.156**	**0.420**	–0.030	**0.161**	**–0.061**	**–0.118**	**–0.031**	**–0.078**	**–0.040**	**–0.086**
45–50	**0.079**	**0.216**	**–0.035**	**0.098**	**–0.042**	**–0.087**	**–0.025**	**–0.063**	**–0.026**	**–0.066**
50–55	**0.017**	**0.130**	**–0.038**	**0.051**	**–0.028**	**–0.062**	**–0.013**	**–0.042**	**–0.021**	**–0.050**
55–60	–0.002	**0.091**	–0.017	**0.057**	**–0.011**	**–0.049**	–0.005	**–0.034**	–0.004	**–0.039**
60–65	0	**0.072**	0	**0.040**	0	**–0.034**	0	**–0.023**	0	**–0.033**
65–70	0.010	**0.074**	**0.028**	**0.069**	**0.015**	**–0.017**	0.003	**–0.022**	0.007	**–0.022**
70–75	**0.023**	**0.078**	**0.031**	**0.064**	**0.033**	**–0.003**	**0.011**	**–0.019**	**0.024**	–0.012
75–80	**0.036**	**0.075**	**0.044**	**0.053**	**0.042**	**0.010**	**0.011**	**–0.018**	**0.044**	0.006
80–85	**0.051**	**0.087**	**0.065**	**0.078**	**0.063**	**0.034**	**0.019**	**–0.012**	**0.065**	**0.035**
85–90	**0.056**	**0.086**	**0.079**	**0.084**	**0.079**	**0.048**	**0.022**	–0.004	**0.103**	**0.068**
90–95	**0.061**	**0.081**	**0.090**	**0.098**	**0.092**	**0.067**	**0.019**	0.005	**0.141**	**0.111**
95–100	**0.068**	**0.089**	**0.109**	**0.081**	**0.103**	**0.094**	**0.025**	**0.018**	**0.196**	**0.163**
>100	**0.058**	**0.067**	**0.119**	**0.147**	**0.120**	**0.084**	**0.026**	–0.001	**0.238**	**0.181**

Bold text represents statistical significance at the 1% level

Sources: NCCI Policy Data; NCCI Statistical Plan Data; PRISM Climate Data; 2001–2022