Wisconsin Pandemic and Recovery Quarterly Report

A report tracking the onset and impact of the COVID-19 pandemic upon employment in Wisconsin from pre-crisis through the first full year of crisis.

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The Business Dynamics Research Consortium (BDRC), a part of the Institute for Business & Entrepreneurship at the University of Wisconsin System

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Executive Summary

COVID-19 caused an unprecedented level of disruption of global and national economies, with impacts extending to state, regional, and local levels throughout the US. The rapid economic slowdown and the lingering malaise since has resulted in widespread business closures and a wave of displaced workers.

The Business Dynamics Research Consortium (BDRC) presents this report evaluating the impact of the COVID-19 pandemic on employment and establishments within Wisconsin[1]. The time period examined begins just prior to the economic downturn caused by the pandemic (i.e., the first quarter of 2020) as a benchmark, and then covers the subsequent full year (i.e., through the first quarter of 2021).

This study focuses upon identifying and analyzing changes in employment and establishments over time. Establishments, and their associated employment, are evaluated by size and industry, as well as by the region within Wisconsin where they reside. It also considers employer births and deaths, expansions and contractions, as well as inbound and outbound relocations.

Our first look at the data series covered the pre-pandemic period as well as the first full year of the on-going crisis. These are some of our key insights:

- Wisconsin shed 8.5% of its employment and 13% of its establishments over the first four quarters of the pandemic. These losses were of similar magnitude to the losses in the US economy as a whole.

- Wisconsin lost more than 38,000 establishments (net) over the first four months of the pandemic. Job destruction tracked very closely with the loss of establishments, while net expansions (contractions) and migration were negligible in comparison.

- The loss of establishments had two components: the sudden death of nearly 40,000 establishments in the first quarter of the crisis, accompanied by a steep decline in establishment births that has continued during subsequent quarters.

- Establishment size is the strongest common trait of establishment deaths, far more than industry or location. Some two-thirds of establishments lost in Wisconsin over the four pandemic quarters were in the smallest size category of 1-to-4 employees.

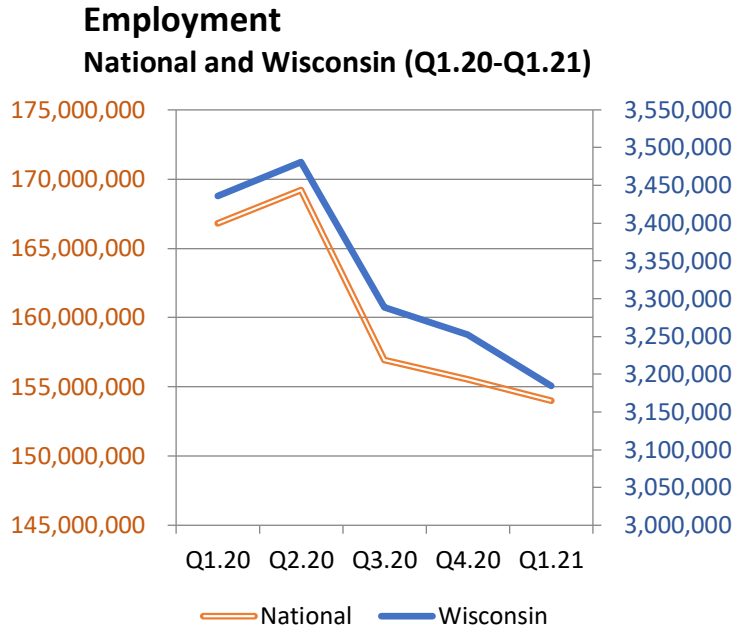
- While Retail and Accommodations industries were hardest hit by the total the number of establishment deaths and employment losses, their percentages of loss were not the highest. There was considerable variability across industries in terms of both absolute and relative loss. Healthcare, for example, suffered huge losses in numbers but because of the tremendous size of the industry its percentage of loss was relatively moderate. Losses in Manufacturing were average compared to all other industries.

BDRC will begin a quarterly series that analyzes employment and establishment changes within Wisconsin as new data becomes available.

[1] Establishments are individual places of business, including for-profits, non-profits, and governmental. Employees, including self-employed, are resident within establishments and are tied to a specific address and other demographic and operational characteristics related to each establishment.

Employment and Establishments

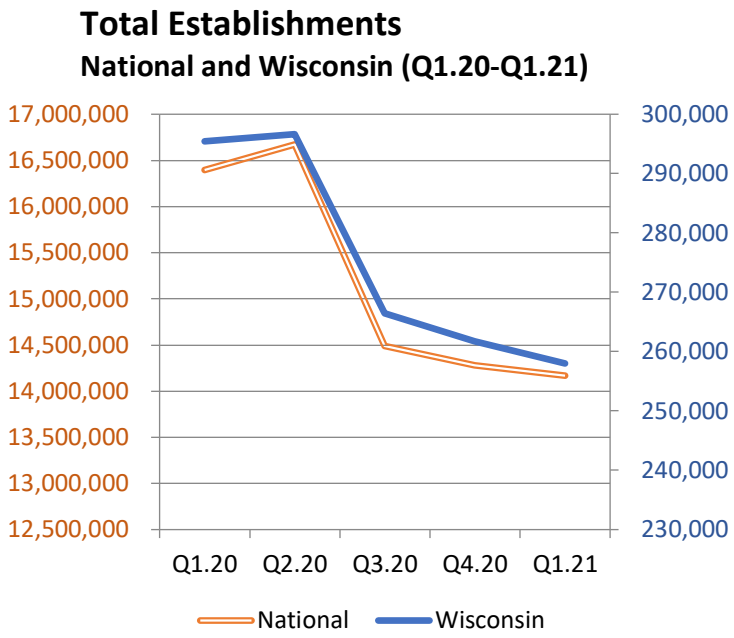
The US economy continued to expand into the second quarter of 2020 (Q2), extending the growth trend from the previous year. National employment grew by 1.4% and Wisconsin expanded similarly by 1.3% from Q1.20 to Q2.20[2]. However, from Q2.20 through Q1.21 national employment fell dramatically by 9%, while Wisconsin's dropped 8.5%. This represents a loss of 296,387 jobs in Wisconsin over the most recent four quarters. Across all five quarters, employment levels in Wisconsin moved nearly in lockstep with national employment[3].



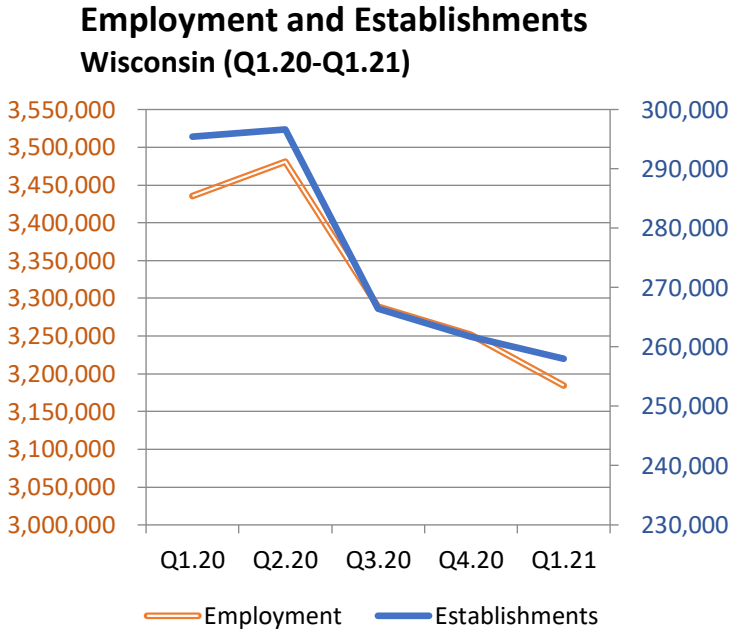
A similar picture emerges when we examine changes in the number of establishments and compare Wisconsin with the nation. From Q1 to Q2 of 2020 the US economy added 277,768 new establishments (+1.7%) while Wisconsin gained 1,230 (+0.4%).

[2] The data clearly shows aggregate employment and establishment growth into the second quarter, despite early indications during that quarter that the COVID-19 pandemic was rapidly creating economic uncertainty. We believe this continued growth, despite emerging warnings, is due to inertia in business planning and execution. For example, it commonly takes months if not years to plan a business creation, expansion, or relocation which can involve significant investments of monetary and reputational capital. Thus, it may take weeks or months of new contradictory information to cancel or reverse such plans.

[3] Correlation = 0.988. Correlations explain the degree to which two series of numbers move in tandem over time. A '1.0' means they perfectly mirror each other while a '0.0' means their movements are entirely unrelated.



Of course, the economic situation radically changed over the following four quarters (Q2.20 to Q1.21) due to pandemic-related lockdowns and severe contractions in supply and demand across the economy. During this time the national economy lost 2.5 million establishments (-15%) while Wisconsin lost 38,639 establishments (-13%). The change in number of establishments in Wisconsin mirrored changes at the national level[4]. Naturally, the precipitous declines in establishments and employment are highly related as massive losses of employers cause an almost immediate loss of employees[5].



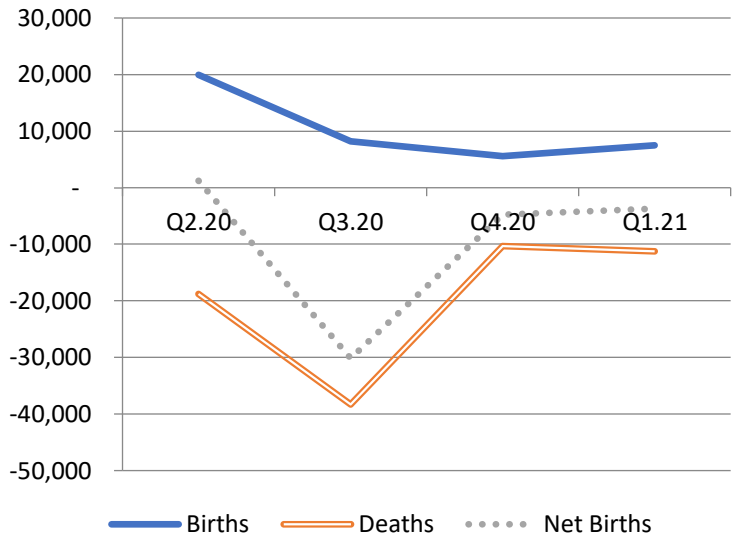
[4] Correlation = 0.996.
[5] Correlation = 0.983.

Births and Deaths

Changes in total employment, regardless of economic conditions, are attributable to six sources: establishment births and deaths, expansions and contractions, and migration into and away from a region. While each of these contribute to changes in total employment, the birth and death of establishments have, by far, the strongest impact[6].

In the second quarter of 2020 births slightly exceeded deaths for a net gain of 1,230 new establishments, but from Q2.20 onwards the number of establishment births declined by 62% (which includes a slight up-tick in the first quarter of 2021). Following the shock of Q3.20, the number of deaths per quarter reversed markedly with deaths being lower in Q4.20 and Q1.21 than before the crisis in Q2.20[7]. Nevertheless, in all quarters after Q2.20 the number of deaths significantly exceeded births[8].

Establishment Births, Deaths, and Net Births
Wisconsin (Q2.20-Q1.21)



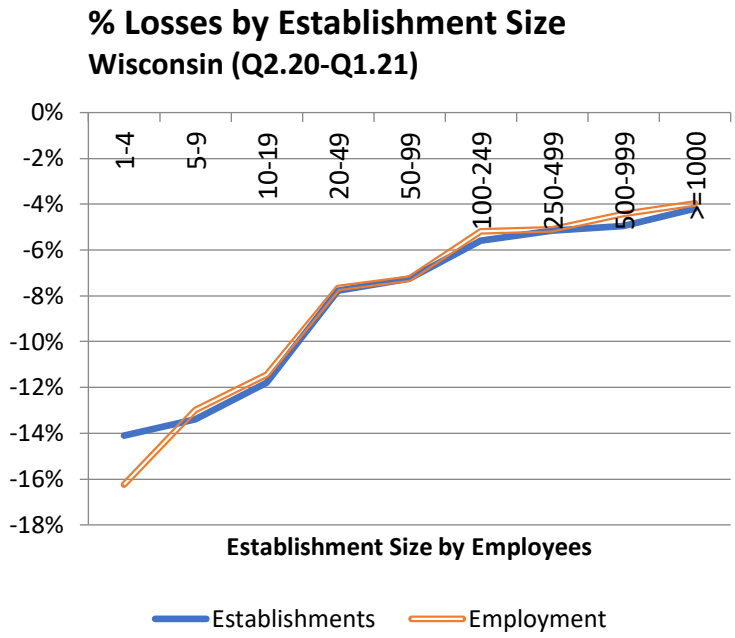
[6] Approximately 98% of establishment report no employment change between any two consecutive quarters. Employers tend to consider a temporarily open position as being part of their total employment if they expect that position to be soon filled. This significantly dilutes average quarter-to-quarter net growth of all existing establishments, which ranged from a low of 0.1% in Q2.20 to a high of 0.7% in Q4.20 for Wisconsin (and it is common for net expansions to be positive even in economic downturns). The migration of establishments has an even weaker impact on overall employment change. For example, in Q2.20 only 115 establishments relocated into Wisconsin from outside the state - which was mostly offset by 105 moving out of state - and both inbound and outbound migration declined in subsequent quarters.

[7] This effect may be due to the death of relatively weaker establishments in Q3.20 (for example those with insufficient cash reserves), effectively purging much of the economy and leaving relatively stronger establishments still in operation.

[8] Net births were -30,155 (Q3.20), -4,7739 (Q4.20), -3,745 (Q1.21).

Establishment Sizes

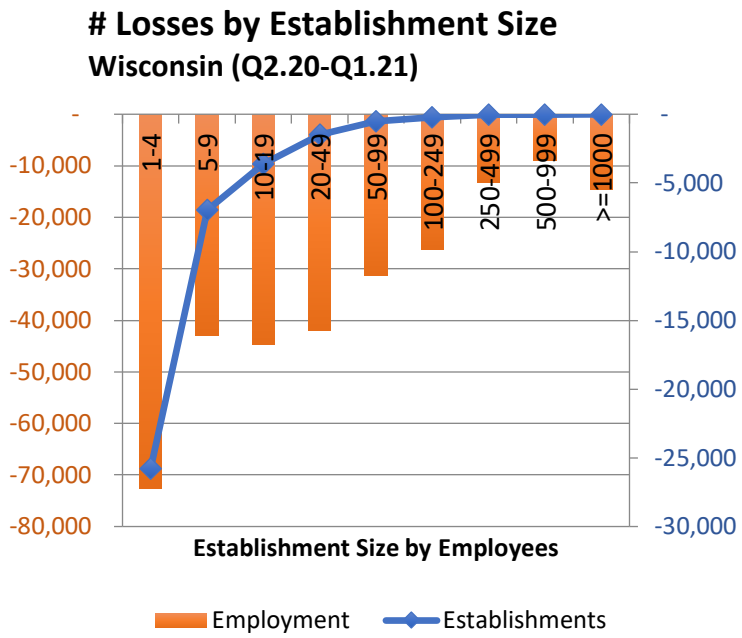
Establishments are grouped together into nine size categories corresponding to their number of employees. The percentage of employment loss tightly corresponded with the percentage of establishment loss across size categories[9]. Furthermore, the percentage of losses in both categories declines nearly linearly as size increases: from extreme among the smallest establishments to modest among the largest establishments. This is consistent with our understanding that change in employment level is primarily driven by change in the number of establishments, and it also indicates that larger organizations have been far more resilient during the crisis[10].



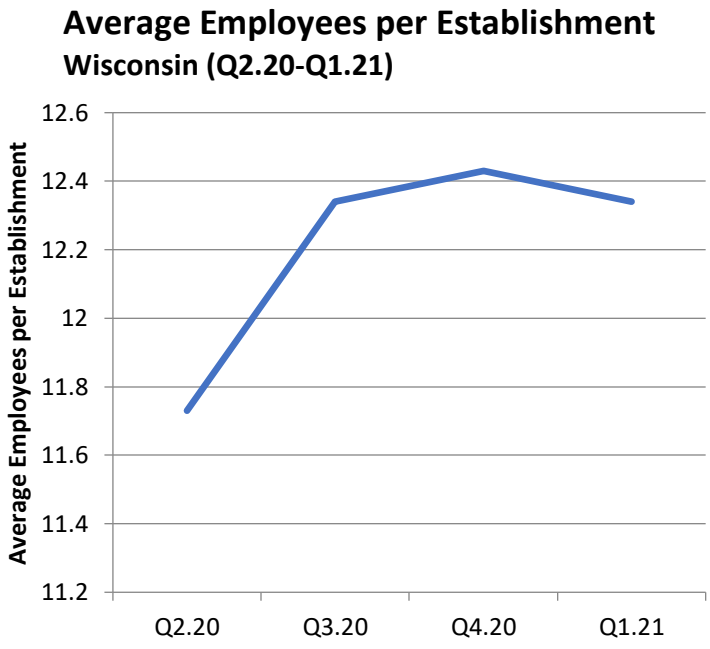
The relationship between absolute establishment and employment loss is more nuanced, simply because the loss of one large establishment has a greater impact on employment than the loss of one small establishment. When the actual number of establishments and employment are counted in each size group, the smallest size group (1-to-4) did suffer the greatest loss of both establishments and employment. Yet, while larger size groups lost far fewer establishments, the employment impact per lost establishment is considerably higher.

Two-thirds (67%) of all establishments lost in Wisconsin during the four months following the start of the pandemic were in the smallest size category (1-4 employees), totaling 72,594 lost jobs. While less than 1% of all lost establishments had 100 employees or more, together they shed 62,997 jobs.

[9] Correlation = 0.987.
[10] Perhaps generally due to stronger financial resources.



Monumental losses of establishments and employment among smaller organizations caused the average size of all existing establishments to rise sharply over the first three months of the crisis. This eased in the first quarter of 2021 as the rate of establishment deaths sharply declined while births strengthened from their lows as shown earlier[11].

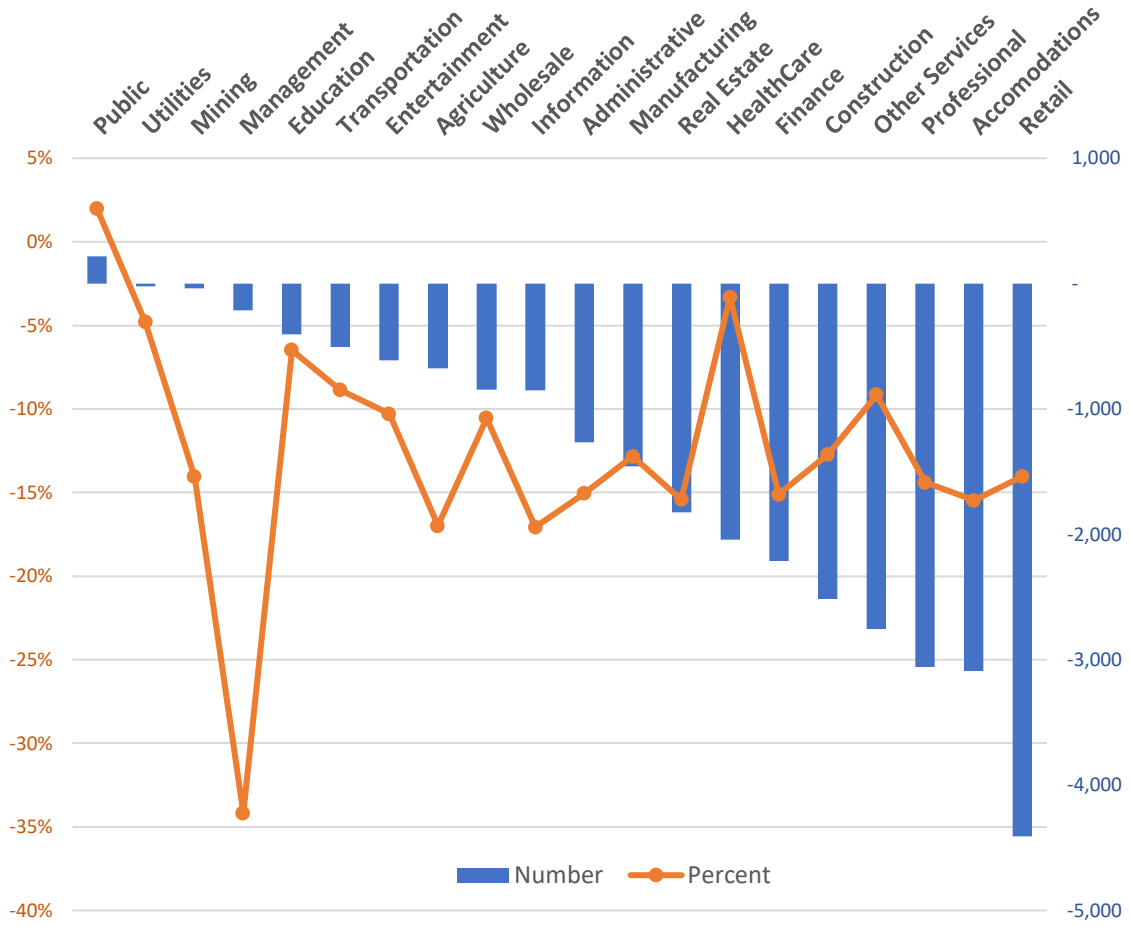


[11] The rise in average size may be counter intuitive. We might expect the average size of establishments to have fallen due to staff reductions and, indeed, many businesses did cut back their workforce. Yet the scale of loss among small establishments swamped that downsizing effect, driving average size among all surviving establishments upwards rather than downwards.

Industries

The economic decline in the four quarters following the pandemic's onset proved to have varying levels of severity across industries. Layman and economists alike witnessed widespread closures of restaurants and retail stores. Yet, while Wisconsin's Retail and Accommodation industries were indeed hardest hit in absolute business failures (-4,409 and -3,089 respectively), the percentage of declines in some other industries were proportionally worse. For example, compare Retail (-14% establishments lost) and Accommodations (-15%) with Management Services (-34%), Information Services (-17%), and Agriculture (-17%). Public Services was the only industry that gained establishments during this period (+2% for 215 new establishments).

Establishment Change by Industry
Wisconsin (Q2.20-Q1.21)

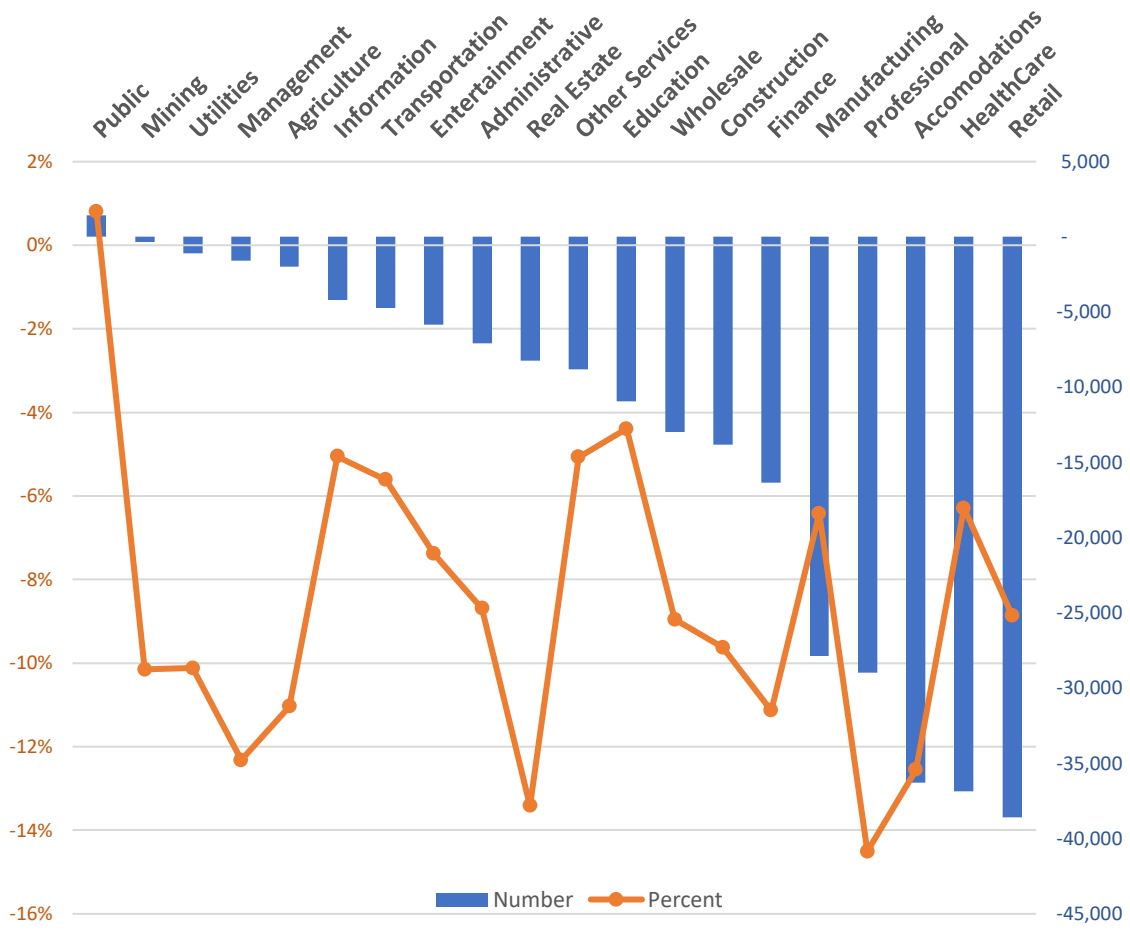


Understandably, Healthcare has its own story. Prior to the start of the pandemic there were already twice as many establishments in Healthcare than in any other industry (62,206). Despite losing 2,044 establishments over the four quarters, the proportion of those lost only represented 3.3%: the *lowest percentage* of any industry other than Public Services. In other words, Healthcare absorbed a huge loss of establishments, yet the percentage of loss was low because of the immense size of the industry.

Impacts on Manufacturing could be considered 'middle of the road' when compared with other industries. Some 1,457 establishments were lost, representing 12.8% of the industry, but this approximated the average loss among all 20 industries[12].

Destruction of employment roughly reflects that of establishments[13]. Retail and Accommodations were among the industries suffering the highest absolute job loss (-38,603 and -36,272 jobs respectively), but some other industries suffered equal or greater percentage of employment loss, such as Professional Services and Real Estate. Again, Public Services was the only industry that gained employment.

Employment Change by Industry
Wisconsin (Q2.20-Q1.21)



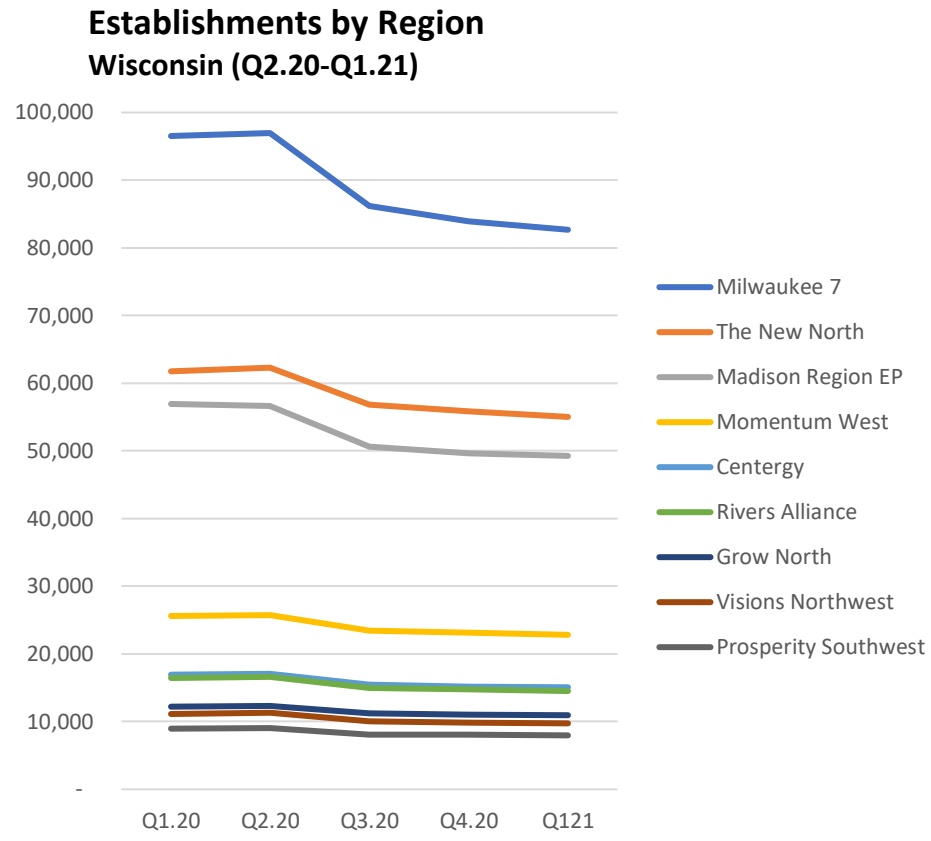
Prior to the pandemic Healthcare modestly employed more workers than any other industry (584,347), and during the crisis Healthcare lost the second most jobs (-36,835). Yet, due to the size of the industry, these job losses represented just 6.3% of all Healthcare workers, which was notably lower than the average among all industries (-8.5%). Again, the size of the industry before the pandemic allowed it to absorb high absolute job losses but at a lower loss rate.

[12] Mean of all industries = 1,429 establishments and -12.5% loss rate.
[13] Correlation = 0.804.

Manufacturing went into the crises ranking second, based on number of jobs, of any industry (424,359) and subsequently lost 27,844 jobs or 6.4% of its workforce. That was a bit more than twice the average of absolute job loss across industries (-13,250) although, like Healthcare, at a lower loss rate than average due to the size of the industry.

Regions

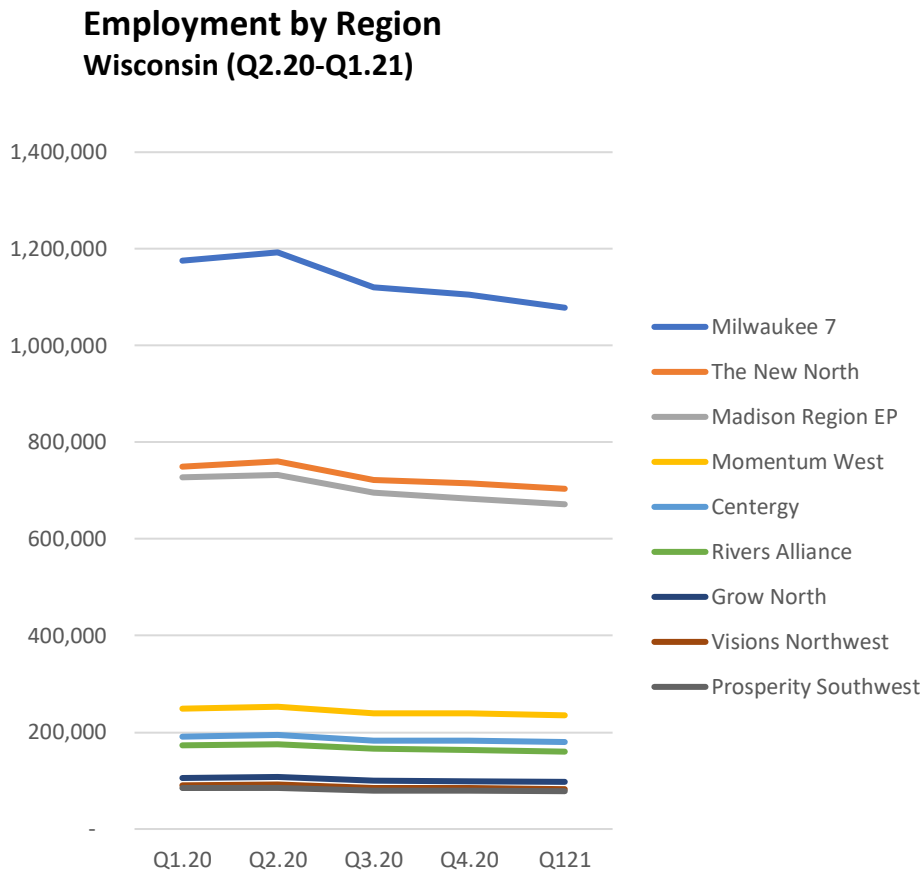
While all regions of Wisconsin suffered during the pandemic, losses across regions were generally proportionate to the economic size and concentration of each region prior to the crisis[14]. As such, regions with larger economies tended to lose both more establishments and employment than smaller regions in absolute terms. For example, from Q2.20 to Q1.21 the Milwaukee 7 region lost the most establishments (-14,286) followed by Madison Regional Economic Partnership (-7,360) and The New North (-7,276). Prosperity Southwest lost the least (-1,081).



Establishment losses in percentage terms varied in a remarkably narrow range across regions. The average rate of establishment loss was -12%, and seven-of-nine regions were within one percent of that mean. These ranged from a high rate of loss of -15% in Milwaukee 7 to a low rate of -11% in Momentum West.

As we witnessed earlier at the state level, the magnitude and timing of employment losses at the regional level closely mirrors the loss of establishments. And like establishment losses, absolute employment losses reflect the relative size of regional economies. Milwaukee 7 lost the most employment (-114,487 jobs) followed by Madison Regional Economic Partnership (-60,688) and The New North (-56,715). Prosperity Southwest lost the fewest jobs (-6,698).

[14] Regions defined by WEDC (Wisconsin Economic Development Corporation).



Employment losses in percentage terms, like establishment losses, varied across a narrow range. The average employment loss over the four quarters of the pandemic was -8%, and seven-of-nine regions were within one percent of the mean. These ranged from a high rate of loss of -11% in Visions Northwest to lows of -7% in The New North and in Momentum West.

About The Data

The YTS Quarterly Data Series is a unique private sector tool that allows tracking and measurement of establishment-level changes, and associated employment, for approximately 16 million places of work. Unlike any other resource, it provides insights into establishment births, deaths, expansions, contractions, in-bound, and outbound migrations; subdivided into countless combinations according to establishment size, industry, and location – all on a quarterly basis.

The YTS Quarterly Data Series is the only private sector tool with full national coverage that tracks economic change at each of the nation's 16 million establishments[15]. It includes more than a million businesses not reported in government statistics such as soloists and the agricultural sector. The dataset's unique variables allow researchers to pinpoint and group together establishments that fit multiple criteria – such as employers of a certain size, operating in a certain industry, and located in a certain geography – in order to compare their characteristics and performance. Simply put, this capability exists no place else.

The BDRC's YTS Quarterly Data Series provides superior insights when compared to other sources, both federal and academic. For example, BLS does not cover the Agricultural sector nor does it report on self-employed workers. In contrast, because YTS Quarterly Data Series tracks all establishments rather than just employers (considered as two or more employees including owner), BDRC includes data on both sectors due to their importance to the Wisconsin and national economies. Harvard University's 'Opportunity Insights Economic Tracker', the only comparable private sector data source, provides only highly aggregated categories such as only four industry segments and two establishment size categories ('small businesses' and 'others'), while it misses coverage of ownership demographics such as minority- and women-owned businesses, which BDRC's dataset does cover.

BDRC looks forward to continuing to support policy makers and economic development practitioners by issuing quarterly updates in the future. We welcome suggestions for how we can make the YTS Quarterly Data Series and our reporting of more value to you.

[15] For more information regarding the dataset please see the Methodology section at the end of this report.

Methodology

Data Axle (formerly Infogroup) has granted exclusive use of its historical dataset on a quarterly basis to BDRC in support of this project. Data Axle's dataset contains interview and survey data from more than 71 million establishments dating back to 1997, including the approximately 16 million verified establishments currently active in the economy. Each quarter Data Axle updates approximately 6 million of these records. BDRC has developed sophisticated algorithms to translate this 'sample' of 6 million records into estimations of the activities and employment changes of the approximately 10 million establishments not contacted by Data Axle during the quarter. BDRC then consolidates all quarterly and annual records from each and every establishment in the economy to create the master dataset that powers the dashboard and enables tailored research services.

Building an accurate estimation model at the establishment level is a highly complex undertaking, involving more than a thousand hours of design and testing[16]. This challenge was compounded by the massive shutdown of normal business operations across the country during the second and third quarters of 2020, significantly hampering contact and collection efforts. Likewise, Data Axle curtailing survey efforts and data processing, due to their own slowdown, resulted in changes in their data collection and reporting methodology. Similarly, the US Bureau of Labor Statistics (BLS) reported the same challenge over these quarters. The estimation models created by BDRC are now able to accommodate this severe disruption of survey activity and then to reset the calculations for normal levels of activity in subsequent quarters.

[16] The estimation model is built using a combination of linear regression and multiple imputation techniques. Estimations are closely compared with original sample data at numerous steps in the process to ensure accuracy. For more information regarding data source, data preparation, or the estimation model please contact Gregg Cole at gregg.cole@business.wisconsin.edu.