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Business Formation during the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic has led to widespread disruptions in the U.S. economy, especially in labor markets. In addition to the widely reported rise in unemployment and job losses, there is timely and high-frequency data that shows a significant disruption in early-stage business formation. Using the Census Bureau's Business Formation Statistics (BFS), which tracks applications for Employer Identification Numbers (EINs) at the weekly frequency, this report explores the link between labor market fluctuations and early stage business formation. We find that changes in employment and labor force participation rates play a fairly limited role in accounting for business formation in "normal" times. Both the employment and labor force participation rates change very slowly and virtually all growth in applications per capita is accounted for by a rise in applications *per worker*.

During the COVID-19 pandemic, however, labor market disruptions of a truly unprecedented magnitude play a far more prominent role in explaining the collapse of business formation in the US. Typically, changes in the employment and labor force participation rate account for half or more of the observed decline in applications per capita. While there are signs of a recovery in the number of business applications in the second half of May, it is too early to connect these developments to state-level labor market data.

One of our concerns is that a prolonged decline in the labor force participation rate may have a scarring effect on business formation. While this effect is not specific to Wisconsin, it would exacerbate the state's previously documented lack of business dynamism and the Center is therefore monitoring future labor market and business formation developments closely.

1 Introduction

The secular decline in U.S. business dynamism has garnered considerable attention lately and the labor market disruptions associated with the social distancing measures during the COVID-19 pandemic further raised this issue. Publications like *The Economist* magazine, the *New York Times*, and others have written extensively on entrepreneurship and start-up activity in these unusual times.[1]

There is a broad consensus that a lack of dynamism and start-up activity undermines one of the long-term engines of economic growth, Schumpeter's famous "creative destruction." Pugsley et al. (2020) argue that high-growth firms, "gazelles", are crucial for economic prosperity. Based on detailed longitudinal data they find that both the birth rate and growth potential of these gazelles has declined and argue that this has entailed substantial losses. A corollary of this decline in startup and entry rates is a maturing of firms in terms of age and, thanks to the positive correlation between age and firm size, a rise in *concentration*. Using Herfindahl indices Gutiérrez and Philippon (2017) find that the concentration among Compustat firms has been rising since the mid-1990s and that turnover rates have been dropping at the same time. De Loecker et al. (2020) find indirect evidence to support this rise in concentration in the form of increasing *markups* since the 1980s and argue that this reflects a rise in market power and hence a drop in competition.

How, then, has the COVID-19 affected start-up activity in the U.S. and in Wisconsin? And should we expect any long-term consequences in terms of economic growth from an entrepreneurial lull during the pandemic?

While there is no real-time data to answer these questions definitively, we can use the U.S. Census' Bureau's weekly release of *Business Formation Statistics* (BFS) to track the number of *Employer Identification Number* (EIN) applications in a timely manner. To be clear, EIN applications are not the same as start-up activity, but they are in most instances the first step on the way to firm entry. Not surprisingly, the imposition of social distancing orders is associated with a sharp drop in applications, in line with the broader decline in the number of employees and the rise in the number of unemployed workers.

Compared to the same Census week one year earlier, the total number of business applications dropped by 24 percent in the week starting March 15, which coincides with the imposition of social distancing measures in most states. There is some heterogeneity across states in terms of the exact timing and magnitude, but the decline is near universal. There are signs of a recovery in the second half of April and by the end of May the national numbers are 20 percent above those from the same week in 2019 (unweighted average across states).

Business applications in Wisconsin in Figure 1 broadly follow the national trend.[2] A sharp drop between mid-March and mid-April compared to the same four weeks in 2019, followed by a gradual recovery. Wisconsin also shows signs of a "catch-up effect". In the weeks ending on May 23 and 30, the number of applications is 16 and 30 percent above the levels one year earlier. There was another

[1] The Economist's "Creative destruction in times of covid" was published in the May 16th 2020 edition. The New York Times' "Is a Pandemic the Right Time to Start a Business? It Just Might Be" was published on May 20, 2020 and is available at https://www.nytimes.com/2020/05/20/business/coronavirus-small-business-startup.html.

[2] The number of applications is normalized to the second week of 2017, state-by-state.

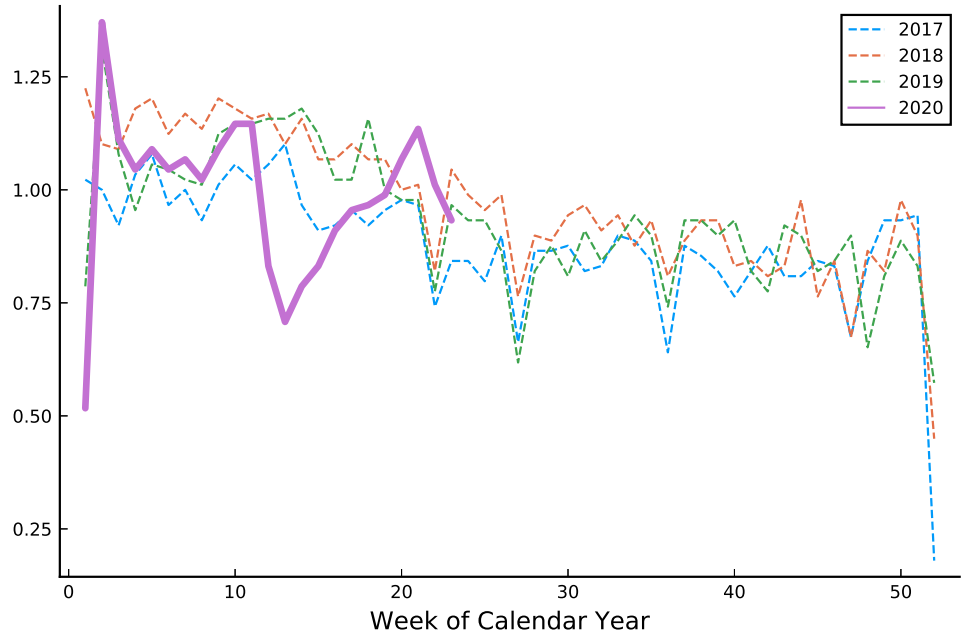


Figure 1: Applications in Wisconsin

uptick in applications in the first week of June, although this appears to be a seasonal effect more so than a reversion to trend. While many states exhibit some form of overshooting, the effect is not universal.

In terms of total applications, Illinois, Indiana, Michigan, and Minnesota have trajectories that are similar to Wisconsin's whereas the recovery is incomplete in Iowa (see figures in the Appendix).

While the total number of weekly applications has recovered, the picture for the the subset of applications that are classified as "high propensity" by the Census Bureau is more mixed. These applications have characteristics revealed on the IRS Form SS-4 that are associated with a high rate of business formation.[3] At the end of May, high-propensity applications nationwide were a few percentage points higher compared to the same week one year ago, on average (unweighted across states). There is, however, significant heterogeneity across states and the standard deviation is 23 percentage points.[4]

The recovery of high-propensity applications in Wisconsin has been fairly robust by national standards (see Figure 2). In the final two weeks of May, the number of applications was 17 and 12 percent higher than the corresponding weeks (21 and 22) in 2019. Regionally, Indiana and Wisconsin had the strongest rebound whereas Iowa, Illinois, and Minnesota have yet to reach their one-year-ago levels. Michigan sits midfield in this respect.

[3] According to the Census Bureau, high-propensity applications include applications: (a) from a corporate entity, (b) that indicate they are hiring employees, purchasing a business or changing organizational type, (c) that provide a first wages-paid date (planned wages); or (d) that have a NAICS industry code in manufacturing (31-33), retail stores (44), health care (62), or restaurants/food service (72).

[4] Recall that the number of applications is normalized to 1 in the second week of 2017.

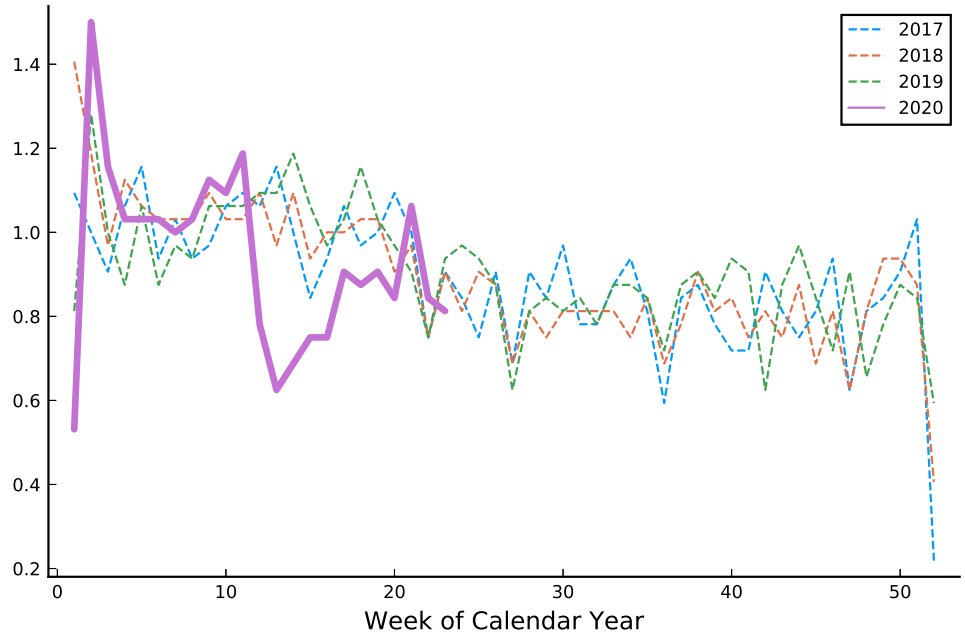


Figure 2: High-Propensity Applications in Wisconsin

2 Data

In an earlier report, the Center for Research on the Wisconsin Economy discussed start-up activity and highlighted potential explanations for Wisconsin's lack of business dynamism.[5] This earlier report (Alder, 2019) made extensive use of the Census Bureau's *Business Dynamics Statistics* (BDS), which contain information on firm entry, exit, and employment at various levels of disaggregation such as industry or state (but not industry *and* state). Unfortunately, the release lag of the BDS is significant (the 2017 data is scheduled for release in the fall of 2020) and the data is at the annual frequency. In terms of gauging the effect of the ongoing COVID-19 pandemic on business dynamism, the BDS dataset is of no use.

Fortunately, the Census Bureau has recently begun a weekly release of its *Business Formation Statistics* (BFS), which tracks business applications. The release lag is minimal and the dataset enables researchers to analyze business dynamics in close to real time. What the BFS lacks in detail it makes up for in timeliness and, fortunately, we can use some of the growth and development accounting tools from the Center's earlier work on business dynamism.

In particular, we are merging weekly business applications with local labor market information. Since the labor force data is released monthly, we are aggregating the weekly applications to monthly numbers. This enables us to decompose the evolution of business applications into the most likely sources of change and to quantify them using conventional growth and development accounting methods.

[5]The "Business Dynamism in the U.S. and in Wisconsin" report is available at https://crowe.wisc.edu/wp-content/uploads/sites/313/2019/03/Dynamism.pdf.

Before we proceed, it is worth discussing a couple of data limitations.

To begin with, the number of weekly EIN applications is reported in increments of ten. For smaller states in particular, this introduces some coarseness into the raw data as well as the corresponding growth rates. To the best of our knowledge, this doesn't introduce a systematic bias into our results, but there is some inevitable noise. With this in mind, the reader should interpret our results with the proper grain of salt.[6]

Second, business applications are an imperfect proxy for business dynamism. Many EIN applications never evolve into a new business. This being said, business applications are the only real-time proxy for start-up activity and further research will have to corroborate our conclusions about the effect of the COVID-19 pandemic on business dynamism.

3 Accounting for Business Applications

In order to understand some of the underlying trends in business dynamism, we divide the number of business applications by the civilian working-age population and then expand this ratio into several components. The resulting expression is an equality as a matter of pure accounting:

$$\underbrace{\frac{A_{i,t}}{CNIP_{i,t}}}_{\text{applications per person}} \equiv \underbrace{\frac{A_{i,t}}{EMP_{i,t}}}_{\text{applications per worker}} \times \underbrace{\frac{EMP_{i,t}}{CLF_{i,t}}}_{=\text{ER}} \times \underbrace{\frac{CLF_{i,t}}{CNIP_{i,t}}}_{=\text{LFPR}}, \tag{1}$$

where $A_{i,t}$ is the number of applications in location i and time t, $CNIP_{i,t}$ is the civilian non-institutionalized population age 16 and older (or civilian working-age population), $EMP_{i,t}$ is the number of employed workers, and $CLF_{i,t}$ is the civilian labor force (i.e. employed plus unemployed workers). The BLS reports the number of applications for various categories of applications. Our analysis here is limited to (1) the total number of applications and (2) so-called "high-propensity" applications, which are more likely to ultimately yield a business entry.

The accounting identity in equation (1) allows us to decompose the number of applications per person into contributions from (1) applications per worker, (2) the employment rate (ER), and (3) the labor force participation rate (LFPR).

All business applications exhibit strong seasonal effects. Figure 3 illustrates the spike in the first quarter of each year followed by a decline over the next three quarters. Incidentally, this seasonality effect is also apparent in the weekly applications for Wisconsin, shown in Figures 1 and 2. We take this effect into account by computing *year-on-year* changes at all frequencies (i.e. quarterly, monthly, and weekly) in the national as well as state-level data.

[6] For readers who are familiar with the methods of growth accounting, it is worth highlighting that this sort of coarseness is associated with a rise in the number of instances where the calculated growth rate equals 0%, which can complicate the decomposition exercise we are carrying out later in this report.

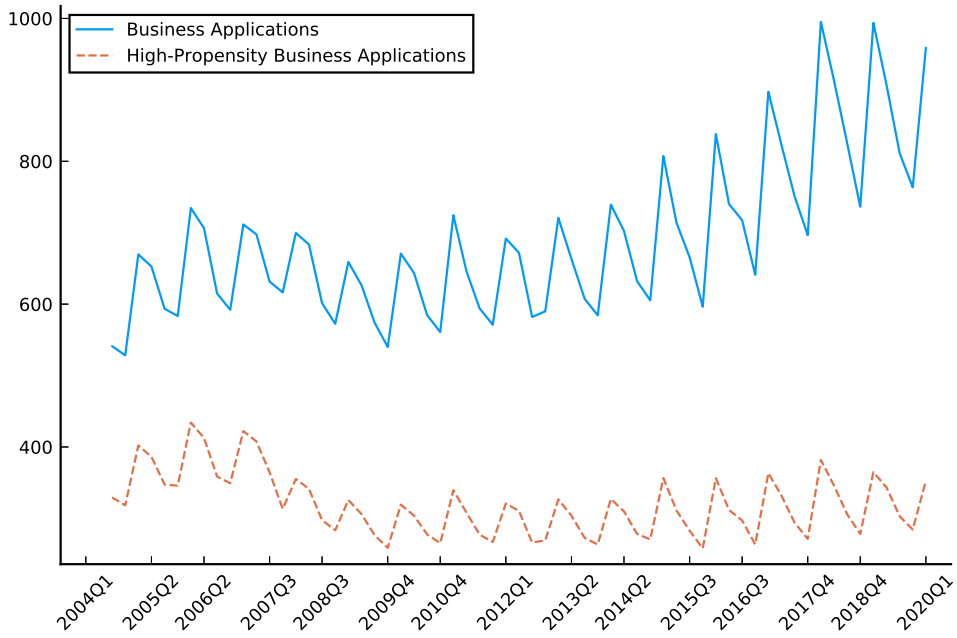


Figure 3: U.S. Applications (thousands), Quarterly

3.1 Growth Accounting: The Long Run (2004-2020)

To begin with, we estimate the average growth for each term in equation (1) for the U.S. and for select Midwestern states between 2004Q3 and 2020Q1. We do so by running the following ordinary least squares regression:

$$\ln(x_t) = \alpha_0 + \alpha_1 \cdot t + \epsilon_t, \tag{2}$$

where x_t is one of the four terms in equation (1). By construction, the growth rate of $\frac{A_{i,t}}{CNIP_{i,t}}$ equals the sum of the growth rates of the three terms on the right hand side of the equation. Due to rounding in Table 1, rows 2-4 may not add up to row 1 and similarly for rows 6-8 and row 5.

These long-term trends show quite clearly that the growth rate of applications per worker accounts for the bulk of the growth in applications per capita. Broader labor market dynamics, be they the employment rate or the labor force participation rate, play a somewhat limited role.

This being said, the gap between applications per person and applications per worker is driven mostly by changes in the labor force participation rate. The demographic transition associated with the aging of the population and hence the projected gradual decline in the labor force participation rate (as a fraction of the civilian non-institutionalized population age 16 and older) will continue to put downward pressure on the number of business applications per capita.

	U.S.	WI	IL	MN	IA	IN	MI
(a) Business Applications							
Applications per person	1.2%	0.3%	0.5%	-0.1%	1.2%	1.0%	0.7%
Applications per worker	1.4%	0.5%	0.8%	0.1%	1.3%	1.1%	0.8%
ER	0.1%	0.2%	0.1%	0.2%	0.2%	0.2%	0.4%
LFPR	-0.4%	-0.4%	-0.4%	-0.3%	-0.4%	-0.3%	-0.5%
(b) High-Propensity Business Applications							
High-propensity applications per person	-2.0%	-2.3%	-1.5%	-3.4%	-2.7%	-2.6%	-2.6%
High-propensity applications per worker	-1.7%	-2.1%	-1.2%	-3.2%	-2.5%	-2.5%	-2.5%
ER	0.1%	0.2%	0.1%	0.2%	0.2%	0.2%	0.4%
LFPR	-0.4%	-0.4%	-0.4%	-0.3%	-0.4%	-0.3%	-0.5%

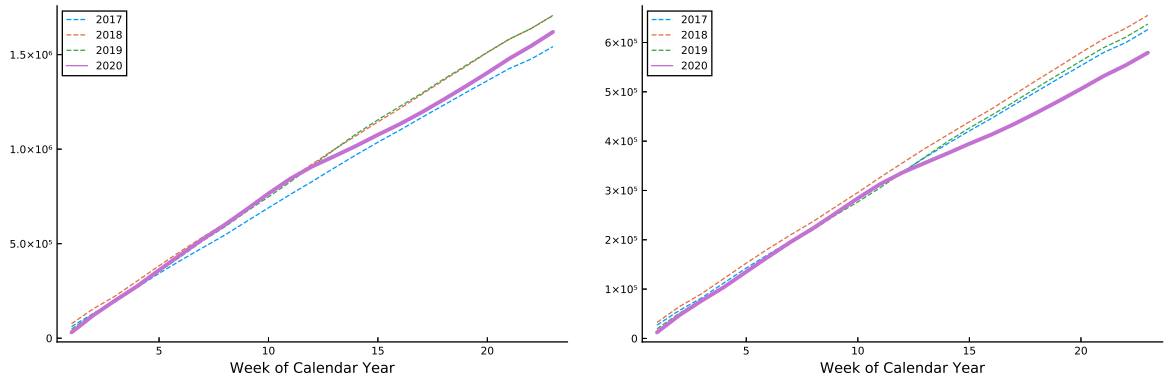
Table 1: Compound Annual Growth Rates (2004Q3-2020Q1)

	WI	IL	MN	IA	IN	MI
(a) Business Applications						
Applications per person	-20.3%	-24.2%	-20.3%	-20.5%	-15.8%	-24.3%
Applications per worker	-6.9%	-4.8%	-12.6%	-10.4%	5.1%	5.9%
ER	-12.6%	-14.8%	-5.9%	-8.8%	-15.9%	-23.4%
LFPR	-0.8%	-4.6%	-1.9%	-1.3%	-5.1%	-6.7%
Applications per worker	-3.3%	-1.1%	-9.2%	-7.0%	8.8%	9.9%
ER	-16.1%	-18.5%	-9.2%	-12.2%	-19.5%	-27.5%
LFPR	-0.8%	-4.6%	-1.9%	-1.3%	-5.1%	-6.7%
(b) High-Propensity Business Applications						
High-propensity applications per person	-29.5%	-43.1%	-22.3%	-24.9%	-22.8%	-37.8%
High-propensity applications per worker	-16.1%	-23.7%	-14.6%	-14.8%	-1.9%	-7.6%
ER	-12.6%	-14.8%	-5.9%	-8.8%	-15.9%	-23.4%
LFPR	-0.8%	-4.6%	-1.9%	-1.3%	-5.1%	-6.7%
High-propensity applications per worker	-12.5%	-20.0%	-11.3%	-11.4%	1.8%	-3.6%
ER	-16.1%	-18.5%	-9.2%	-12.2%	-19.5%	-27.5%
LFPR	-0.8%	-4.6%	-1.9%	-1.3%	-5.1%	-6.7%

Table 2: 12-Month Log Differences (April 2019 - April 2020)

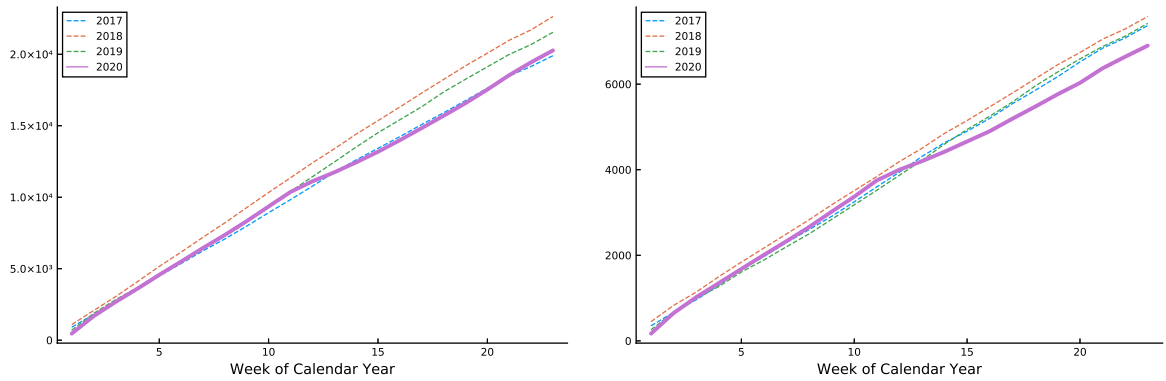
3.2 Growth Accounting: The COVID-19 Pandemic

One important question in light of Figures 1 and 2 (and the corresponding figures for other states in the appendix) is whether we can expect the application shortfall between mid-March and mid-May to be compensated for later in the year. Despite the recovery in the second half of May, the cumulative number of applications up to and including June 6 lags behind last year's 23-week total.



(a) Total Applications (b) High-Propensity Applications

Figure 4: U.S.: Cumulative Applications Weeks 1-22



(a) Total Applications (b) High-Propensity Applications

Figure 5: Wisconsin: Cumulative Applications Weeks 1-22

In Figures 4 and 5 we are plotting cumulative applications for the first 23 weeks in past 4 calendar years for the U.S. (Figure 4) and for Wisconsin (Figure 5). Compared to the first 23 weeks in 2019, this year's nationwide applications are 5.2 percent lower for all applications and 9.6 percent lower for high-propensity applications. The corresponding gaps for Wisconsin are -6.1 percent (all applications) and -7.3 (high-propensity applications). While the weekly "flow" of applications has roughly regained last year's levels, the cumulative number still lags behind significantly and the upcoming weeks will tell us whether we can reasonably expect a complete catch-up by the end of the year.

An alternative way to answer this question is to use the same growth accounting tools in order to check

if the nature of the drop is somehow distinct from the long-term evolution of business applications.

Since labor market data is reported monthly and the state-level information is released with a delay compared to the national data, the most recent available data point is for April 2020. The business application data is reported weekly and we construct monthly flows by pro-rating weekly numbers at the beginning and end of the month, where necessary.[7]

A few aspects are worth discussing before we attempt to interpret the decomposition in Table 2. The numbers for the month of April don't show any signs of a recovery in business applications yet. The more recent weekly data for May suggests that the recovery is quite strong, but we cannot match these numbers to labor market data at the state level until the next release of state employment and unemployment data by the Bureau of Labor Statistics on June 19, 2020.

Second, the employment (and unemployment numbers, for that matter) should be taken with a grain of salt. Some workers were classified as as employed but "absent" from work for "other reasons" (because of jury duty or to take care of a dependent or relative, for instance) rather than "temporarily unemployed." In terms of Table 2, this would reallocate some of the decline in applications per person from applications per worker (which would drop less or rise more, depending on the state) to changes in the employment rate (which would drop more). According to the BLS, the Current Population Survey (CPS) underestimates the unemployment rate by 3 percentage points in May and slightly more in April. Consequently, the survey *overestimates* the employment rate by the same margin. This isn't a mere technicality if the effect on business formation driven by the employment and labor force participation rates is more inertial than the applications per worker.[8]

Third, the April-to-April drop in the size of the civilian labor force was approximately 1 log (percentage) point in Wisconsin, Minnesota, and Iowa. The labor force shrank by roughly 4.5 log points in Illinois and Indiana, and by 6.5 log points in Michigan. Nationally, the decline was 4.4 log points. Recent work by Coibion et al. (2020) based on the so-called Nielsen Home Scan suggest a more substantive drop in the civilian labor force and a corresponding 7.4 percentage point decline in the labor force participation rate. They argue that a significant share of this drop can be attributed to early retirement. Again, this is not a purely technical issue and may very well end up shaping the course of business formation and ultimately startup activity as we emerge from this recession.

The log difference in the labor force participation rate in rows 4 and 8 of Table 2 is the change in the civilian labor force net of the change in the working age population. Not surprisingly, the drop in the labor force participation rate is driven by the drop in the labor force, not by any meaningful rise in the working age population.

With these caveats in mind, we can distinguish the sources of the short-term fluctuations in Table 2 from the longer-term evolution of business applications in Table 1.

In the long run, the combined effect of the employment and labor force participation rate is small

[7] To the extent that there are weekday effects, which one cannot ascertain in the raw data, this allocation of application flows to calendar months is somewhat imperfect. We have no reason to believe that it qualitatively affects our calculations and conclusions.

[8] See https://www.bls.gov/news.release/empsit.nr0.htm and www.bls.gov/cps/employment-situation-covid19-faq-may-2020.pdf for additional information.

compared to the contribution from applications per *worker*. Similarly, 80 percent or more of the decline in high-propensity applications per capita can be accounted for by a decline in applications submitted by workers who are firmly attached to the labor force.

Moreover, there is some heterogeneity across states. In Wisconsin's case, the number of business applications mirrors the lackluster business dynamism discussed in the our previous CROWE report on startup activity. The picture is somewhat more nuanced with respect to high-propensity applications. While the state is less dynamic in terms of high-propensity applications than the nation as a whole, it compares somewhat more favorably with its Midwestern peers, with the exception of Illinois.

This limited role of labor market fluctuations in "normal" times stands in contrast to the COVID-19 pandemic. The contribution from labor market disruptions dominates the effect of the change in applications per worker. Put differently, a more significant share of the drop in applications is accounted for by changes in the employment and labor force participation rates compared to the long-run dynamics in Table 1. The employment rate drops sharply, which is typical during a recession. The magnitude of this drop during the COVID-19 pandemic, however, is unprecedented and mirrors the sharp rise in the unemployment rate, which has been discussed widely.

As mentioned earlier, the BLS's estimates of the labor market fluctuations err on the conservative side. The reported change in the employment rate in Table 2 *underestimates* the drop by approximately three percentage points, which implies that an even larger share of the drop in business applications can be attributed to labor market disruptions. The last three rows in each panel (in gray font) in Table 2 report the results of the growth accounting exercise if we adjust the unemployment and employment rates by the 3 percentage point error. In this robustness exercise, the labor market disruptions account for an even larger share of the drop in business applications. In fact, the change in applications (high-propensity applications) per worker end up accounting for less than 50 percent of the observed drop in applications per *person*.

If, in addition, we allow for the possibility that the labor force participation rate dropped by more than the reported 3.2 percentage points between February and April of this year, then the vast bulk of the decline in business applications would be associated with labor market disruptions.[9]

How does this decomposition compare to the Great Recession of 2007-2009? During that time, applications fell at annual rates of 8.4 (total applications) and 10.8 (high-propensity applications) percent. The entire the decline was accounted for by a drop in applications per worker (roughly one half) and the drop in the employment rate (roughly one half, again). The change in the labor force participation rate played virtually not part. Clearly, this time is different! The bulk of the decline can be accounted for by changes in the employment and labor force participation rates. In relative terms, the latter also plays a more import role during the COVID-19 pandemic than during the Great Recession.

It's important to emphasize that growth accounting is a pure, well, *accounting* exercise and we cannot draw any causal conclusions from it. It does, however, point to the possibility that the unprecedented labor market disruptions may have a lasting impact on business formation and ultimately start-up

[9] It is worth remembering that it took more than five years for the labor force participation rate to decline by 3.2 percent during the Great Recession.

activity.

4 Conclusion

The coming weeks and months will tell whether early signs of entrepreneurial activity by way of business applications and, particularly, high-propensity business applications follow a V-shaped recovery. While the most recent weekly application numbers are somewhat encouraging in this respect, the concern at the *Center for Research on the Wisconsin Economy* is that a sluggish labor market recovery will have scarring effects on business applications and start-up activity, unless incumbent workers and those looking for work engage in business formation more aggressively (i.e. the number of applications per worker increases). At this point, we don't have the data to answer this question and the Center will continue to monitor upcoming data releases for early clues.

One area that the Center believes deserves particular attention is the link between the age distribution of the working-age population at the state level and the evolution of the labor force participation rate. Coibion et al. (2020) found evidence for a rise in early retirements in the Nielsen Home Scan data, which has yet to be corroborated in the state employment and unemployment statistics. Given Wisconsin's slightly older-than-average population, this may be a channel worth monitoring over the coming weeks and months.

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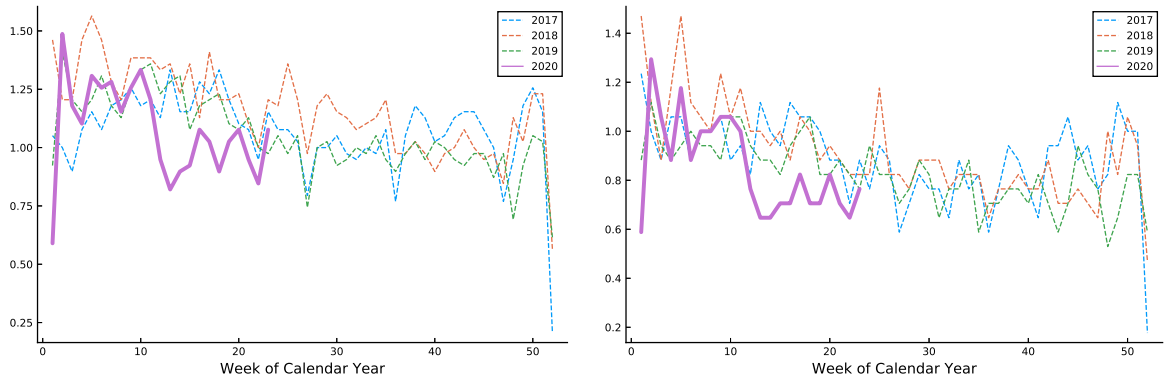
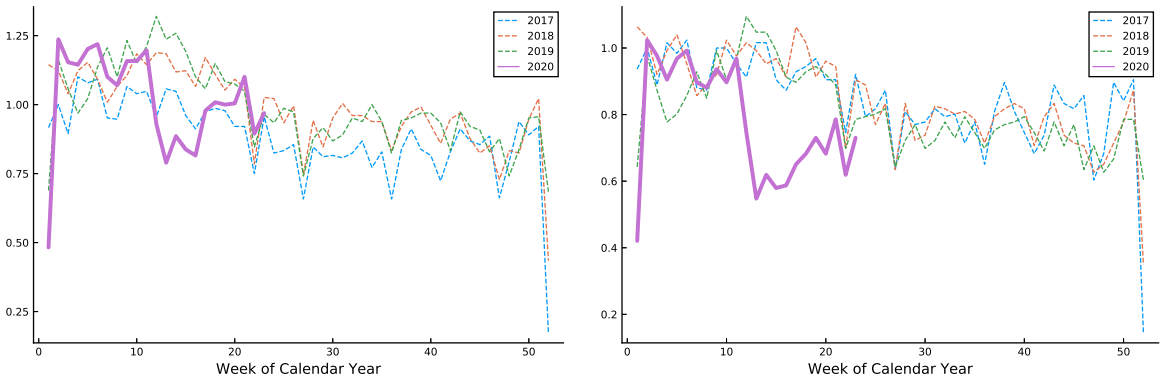
5 Appendix: Weekly Business Applications in Six Midwestern States



(a) Total Applications

(b) High-Propensity Applications

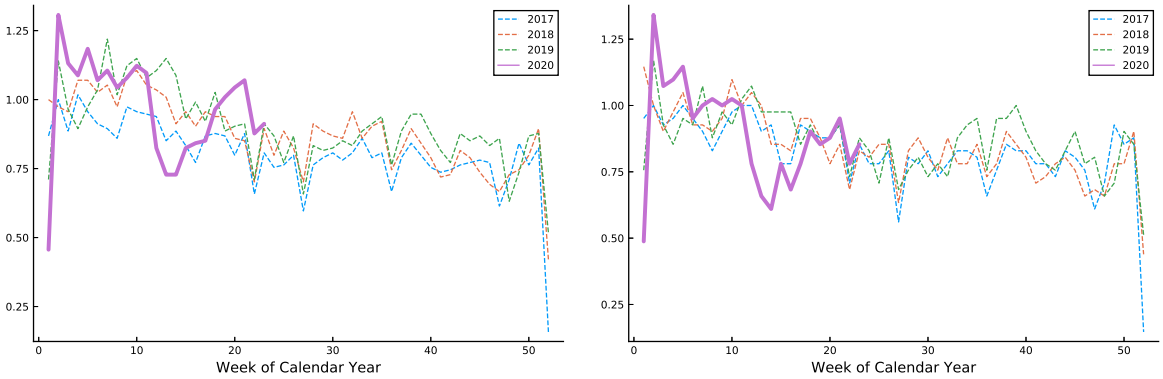
Figure 6: Iowa



(a) Total Applications

(b) High-Propensity Applications

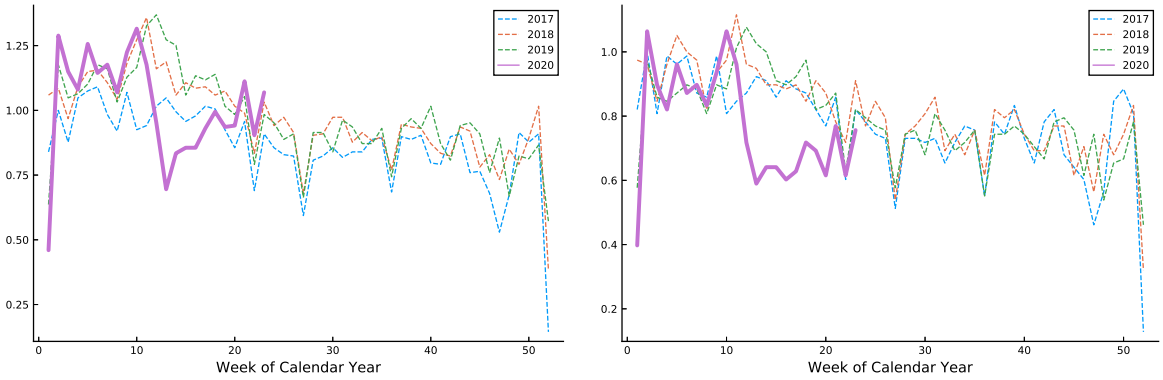
Figure 7: Illinois



(a) Total Applications

(b) High-Propensity Applications

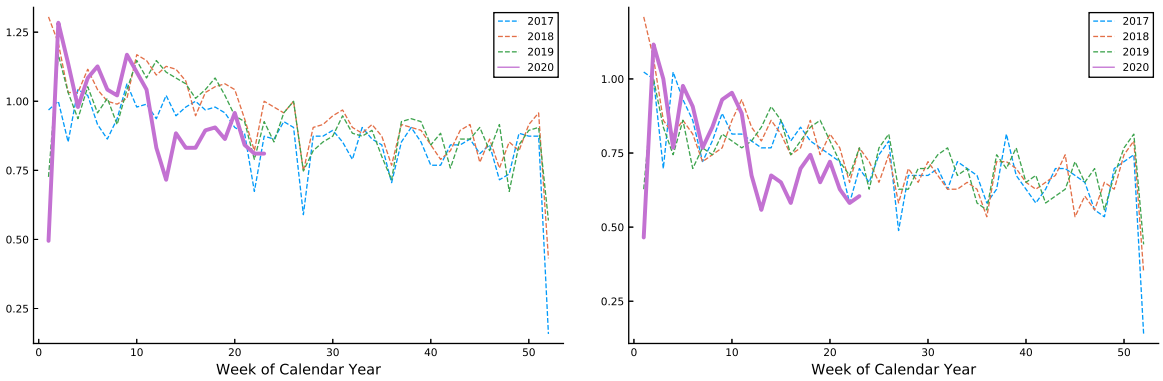
Figure 8: Indiana



(a) Total Applications

(b) High-Propensity Applications

Figure 9: Michigan



(a) Total Applications

(b) High-Propensity Applications

Figure 10: Minnesota