

High Frequency Business Dynamics in the United States During the COVID-19 Pandemic

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Abstract

Existing small businesses experienced very sharp declines in activity, business sentiment, and expectations early in the pandemic. While there has been some recovery since the early days of the pandemic, small businesses continued to exhibit indicators of negative growth, business sentiment, and expectations through the first week of January 2021. These findings are from a unique high frequency, real time survey of small employer businesses, the Census Bureau's Small Business Pulse Survey (SBPS). Findings from the SBPS show substantial variation across sectors in the outcomes for small businesses. Small businesses in Accommodation and Food Services have been hit especially hard relative to those Finance and Insurance. However, even in Finance and Insurance small businesses exhibit indicators of negative growth, business sentiment, and expectations for all weeks from late April 2020 through the first week of 2021. While existing small businesses have fared poorly, after an initial decline, there has been a surge in new business applications based on the high frequency, real time Business Formation Statistics (BFS). Most of these applications are for likely nonemployers that are out of scope for the SBPS. However, there has also been a surge in new applications for likely employers. The surge in applications has been especially apparent in Retail Trade (and especially Non-store Retailers). We compare and contrast the patterns from these two new high frequency data products that provide novel insights into the distinct patterns of dynamics for existing small businesses relative to new business formations.

* Any opinions and conclusions expressed herein are those of the authors and do not represent the views of the U.S. Census Bureau. All results in this paper use publicly available data from Census Bureau websites. The Census Bureau has reviewed the public domain products for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied to this release (Approval ID: CBDRB-FY20-259, CBDRB-FY-20-357, CBDRB-FY-20-214, CBDRB-FY21-094). We thank John Eltinge, Scott Ohlmacher, and Nick Orsini for helpful comments.

1. Introduction

In the early stages of the COVID-19 pandemic in the United States, the Census Bureau introduced new data products designed to capture its impacts on the American economy and population (see Buffington et al. (2021)). These data products were designed to provide geographically granular, timely, and high frequency information about the impact of the COVID-19 pandemic on businesses and households. We describe the results from two new *business* data products: the Small Business Pulse Survey (SBPS) and the weekly and monthly Business Formation Statistics (BFS).²

We report results from the first three phases of the SBPS (April-June, August-October, and November-January) and there are distinct patterns in each of the three phases. The SBPS shows that existing small businesses experienced very sharp declines in activity, business sentiment, and expectations early in the pandemic. While the indicators of net growth, business sentiment, and expectations have become less negative since the early weeks of the pandemic, the indicators are still in a substantially negative range by the first week of January 2021. This improvement has not been monotonic: conditions improve in the Summer of 2020 but worsen at the end of 2020.³ The patterns for new business formations from the BFS are in sharp contrast to those for existing small businesses. After an initial decline, there has been a strong surge in new business applications for both likely employers and nonemployers. For overall applications, 2020 is the highest year on record for new business formations with most of this surge occurring in the second half of 2020.

Both the SBPS and BFS show substantial sectoral variation. Existing small businesses in some service sectors have been especially hard hit. The SBPS provides insights into changes in revenue, employment, and hours in these sectors. In order to illuminate these differences, we focus on two extremes of the sectoral experience in the SBPS section of the paper: Finance and Insurance and Accommodation and Food Services. We show differences in the changes in revenue and employment as well as differences in their future needs and expectations of a return to normal level of operations. Existing small businesses in Accommodation and Food Services

² The SBPS public-use data are available at <https://census.gov/businesspulsedata>. The BFS public-use data are available at <https://www.census.gov/econ/bfs/data.html>. Related recent research using the BFS can be found in Dinlersoz et. al. (2021) and Haltiwanger (2021).

³ Section 2.1 discusses improvements in business sentiment and revenues; section 2.2 discusses improvements in employment and hours.

have been hit much harder than those in Finance and Insurance. This sectoral difference is consistent with revenue published by the Census Bureau as part of the Monthly Retail Trade Survey (MRTS) and Quarterly Survey of Services (QSS): by the end of 2020, Finance and Insurance is close to pre-pandemic levels, but Accommodation and Food Services remain below pre-pandemic levels.⁴ This difference is also consistent with heterogeneity in key national indicators published by Bureau of Labor Statistics: Finance and Insurance grew by about 50,000 jobs over 2020 while Accommodation and Food Services shrank by about 3 million jobs.⁵ However, existing small businesses in Finance and Insurance show no indicators of positive net growth, business sentiment, and expectations. Apparently, even in the sectors that show recovery for all types of businesses there has not yet been a recovery for existing small businesses in those sectors.

The SBPS offers a rich range of indicators for the impact on small businesses. We find that the adverse impact on revenue is greater than the impact on employment. Partly this is accounted for by a decrease in hours rather than in employment, but the patterns suggest that jobs have been less adversely impacted than revenue for existing small businesses. The differential impact by sector and geography is also reflected in how existing small businesses change their way of doing business. There has been a large increase in remote work activity, but this varies by sectors (for example, businesses in Accommodation and Food Services exhibit the smallest increase in remote work). Some small businesses pivoted to producing new goods and services early in the pandemic (especially in Educational Services; Accommodation and Food Services; and Information) and even more pivoted to new modes of delivery. Cash on hand is limited, highlighting the precarious nature of small business operations. This is echoed in the percentage of businesses noting the need to obtain financial assistance or additional capital in the next six months. Federal assistance is an important source of support with about 74% of small businesses in the SBPS receiving PPP loans. Reflecting these concerns and challenges, business expectations for their return to their normal level of operations increasingly focus on the longer horizon.

⁴ Finance and Insurance revenues in 2020:Q4 are 1,226,517 almost at the same levels as in 2019:Q4 at 1,227,080. Food Services and Drinking Places (NAICS 722) revenues in December 2020 are 51,346 as compared to 65,085 in December 2019. Revenue in Accommodation (NAICS 721) is 38,681 in 2020:Q4 as compared to 68,574 in 2019:Q4. (All in millions of dollars and not seasonally adjusted.)

⁵ BLS January 2021 Employment Situation.

Turning to business applications, there has been an enormous increase in applications in the Retail Trade sector, particularly in Non-store Retail Trade, which includes e-commerce business activity.⁶ The patterns of sectoral changes differ for business applications that are likely to lead to a business with employees (“employers”) and business applications that are likely to lead to a business without employees (“nonemployers”). New applications in the Retail Trade and Professional, Scientific, and Technical sectors have surged for both types of applications. In the SBPS, existing small businesses in Retail Trade have been hit about as hard as those in Accommodation and Food Services. The dispersion in response at the sectoral level, as well as evidence that sectors hit hard for existing small businesses are seeing a surge in applications for new businesses, suggest that the pandemic may lead to lasting structural changes in the economy.

The pandemic has differential impacts on existing small businesses and new business formations in terms of geography. For existing small businesses, the differential impact across states diminishes over time. Moreover, there is less persistence in state rankings of business sentiment than we see in sectoral rankings. The initial decline in business application activity is concentrated in the Northeast and the West, but business application recovery early is particularly emphasized in the South and the Midwest. The recovery was very uneven across states, with the disparity in year-over-year business application growth rates becoming more dispersed during the recovery.

The paper proceeds as follows. We provide results on small business using the SBPS in Section 2. We provide results on business applications and potential new employer business startups in 2020 using the BFS in Section 3. We conclude with some discussion of future research areas.

2. Small Business Pulse Survey

The SBPS complements existing Census Bureau surveys conducted at higher frequencies that are also intended to measure the impact of the pandemic on businesses. As its name suggests, the SBPS focuses on small businesses. As context, there are about 5.3 million employer firms in the U.S. in 2018 consisting of 7.1 million establishments and 130 million workers.

⁶ See [North American Industry Classification System \(NAICS\) U.S. Census Bureau](#).

While the number of “small” businesses (defined here as less than 500 employees) dominates the total number of establishments and firms (81% and more than 99%, respectively), the share of workers at “small” firms so defined is about 47%.⁷ Thus, the target pool of businesses is an important part of the economy. Moreover, many COVID-19 relief policies targeted businesses of this size.

The SBPS sample is drawn from the 2017 Economic Census for all single-location businesses with 1-499 employees and \$1000+ revenue that report an email address.⁸ The survey divides the sample equally across the nine weeks of each phase of the survey. Thus, each week of the survey, about 100,000 emails are sent out to businesses asking them to participate in the survey. Each of the nine subsamples is used only once each phase but are reused across phases (thus some businesses may have responded three times, once in each phase). With a response rate of about 25%, there are approximately 25,000 businesses responding each week. The survey is designed to be representative and the results are re-weighted to be nationally representative.⁹

The focus on single-location businesses allows the Census Bureau to publish detailed geographic (at state and selected MSA levels) information. The focus on small single-locations businesses makes it more likely that the business is operating in one sector which facilitates publishing detailed sectoral (at 2-digit NAICS and selected 3-digit NAICS) information. It is important to provide granular information to accurately capture the heterogenous impact of the pandemic on businesses.

As noted above, the sample of the SBPS complements other existing Census Bureau surveys conducted at higher frequencies. This is also true for its content. The trade-off is that the SBPS is higher frequency and more timely, but less comprehensive in terms of coverage than the Monthly Retail Trade Survey (which is not as frequent or timely). Many of the questions in the SBPS have checkbox responses that capture only whether a business is impacted and not the size of the impact. The survey has an internal narrative structure that leads the respondent through the questions; the substantive section of the survey starts by asking about the overall effect of the

⁷ From 2018 Business Dynamics Statistics. There are also about 26 million non-employer businesses in 2018 (Nonemployer Statistics). County Business Patterns reports the following for 2018: 7.9 million establishments and 131 million employees. The BDS counts of establishments are lower due to the BDS’ use of longitudinal information to handle potential double-counting.

⁸ As noted in Buffington et al. (2020) the reliance on email was due to the operational constraints due to the pandemic.

⁹ See Buffington et al. (2020) and the SBPS website [Small Business Pulse Survey Data \(census.gov\)](https://www.census.gov/data/tables/2020/sbp/) for a more complete discussion of the methodology.

pandemic on the business, then asks more detailed questions about operations, challenges, finances (including requests for and receipts of federal assistance), and closes with a question about the future analogous to the opening question.

The survey content was developed in partnership with eight other agencies and interested stakeholders.¹⁰ Their subject matter expertise was especially helpful in developing content useful for policymakers as they develop programs intended to assist small businesses. The content of the survey varies over Phase 1 and Phases 2-3, but there are about 20 questions on the survey (as shown in Table 1). A guiding principle is to maintain consistency across phases where possible to allow for longitudinal analysis. However, questions are edited, added, or dropped as analysis of results and changing conditions warrants (these are discussed more below).

One critical feature of the SBPS is that it requests confirmation of the respondent's Employer Identification Number (EIN,) the last four digits of which are pre-printed in the invitation to respond. If the provided EIN does not match that for the company, the respondent is asked to provide the correct EIN. The EIN enables the use of existing Census Bureau information on sector and geography, allowing survey information to be released by sector and geography while minimizing respondent burden. This also means that the SBPS survey results can be linked to other Census Bureau collections at the micro-level (which may allow us, for example, to provide information concerning owner demographics collected on other surveys).

Another important feature of the SBPS is the time frame of the questions. Many of the questions are designed to capture changes in behavior over the weeks of the pandemic and thus ask about changes "in the last week." For example, questions concerning changes in hours, employment, and revenue use this time frame. This time frame allows us to capture flows of changes, but it means that we will miss changes that precede the week in question. The survey started in late April 2020, so some of the businesses' changes in response to the pandemic may have already taken place.¹¹ Other questions are designed to capture changes in behavior since the start of the pandemic and thus ask about concepts "Since March 13, 2020." Questions related to

¹⁰ The Small Business Administration, the Federal Reserve Board of Governors, International Trade Administration, Minority Business Development Agency, Bureau of Transportation Statistics, National Telecommunications and Information Administration, Office of Tax Analysis of the Treasury Department, and the Bureau of Labor Statistics. See Buffington et al. (2020) for more information.

¹¹ Bartik et al. (2020a) conducted a survey of about 5,800 small businesses March 28-April 4 and report 43% of businesses had temporarily closed (and most were due to COVID-19) and on average businesses reported having reduced their employment by 40% since January.

federal programs (requests for and receipt of federal assistance) use this time frame. Finally, the two more holistic questions that bookend the survey have more open-ended time frames.

A number of other surveys have been conducted during the COVID-19 pandemic to capture some of these same concepts. We highlight just a few here and cite to relevant results throughout the empirical sections below. First, BLS conducted one phase of the Business Response Survey (BRS) from July-September 2020 asking businesses about the impact of the pandemic and their responses through seven questions over three areas: “1) business experiences and payroll decisions, 2) worker benefits and their ability to telework, and 3) whether a business received a loan or a grant from the government tied to the payroll.”¹² Second, Bartik et al. (2020) conducted a survey early in the pandemic of about 5,800 small businesses through Alignable asking about impact, actions, and expectations. Third, the National Federation of Independent Businesses (NFIB) has conducted fifteen waves of COVID-19 related surveys from a random sample of their 300,000 small business members (usually with less than 1000 responses). In addition to conducting surveys, other research relies upon novel uses of administrative, commercial, and sensor data to track the impact of COVID-19 as we note in some examples.

As noted above, many of the empirical exercises focus on two sectors, Finance and Insurance and Accommodation and Food Services, as exemplifying the differential impact of the pandemic. As background, the latest available figures from County Business Patterns (for 2019) show that there are about 476,000 establishments in Finance and Insurance employing 6.6 million people (see Table 2). There are about 741,000 establishments in Accommodation and Food Services employing 14.5 million people. Since our sample is for small single-location businesses, the table also provides some summary statistics for businesses with fewer than 500 employees (for 2018). More than 99% of establishments in either sector are small businesses; 69% of employees in Finance and Insurance work in small businesses and 95% in Accommodation and Food Services do as well. More recent data from BLS shows that pre-pandemic (January 2020), there were 6.5 million people working in Finance and Insurance and 13.9 million working in Accommodation and Food Services. As noted in the Introduction, the number of workers in January 2021 increased by about 50,000 in Finance and Insurance and decreased by about 3 million in Accommodation and Food Services.

¹² See BLS’ website on the BRS: <https://www.bls.gov/brs/methods/technical-notes.htm>.

Before turning to the results, we first discuss caveats, some of which are general issues with survey data and some of which are specific to the way the SBPS is conducted. Buffington et al. (2020) discuss seven important considerations when analyzing the results of the SBPS. Briefly these are: (1) non-response bias for business closures; (2) reliance on businesses that have (and are willing to share) email addresses; (3) willingness of businesses to participate through email invitation; (4) sample reliance on single-location businesses that might respond differently than multi-locations businesses; (5) willingness of businesses that sought federal assistance to respond to a survey from a federal source; (6) greater likelihood of responses from businesses adversely impacted by the pandemic; and (7) representation of young businesses in the sample. In the sectoral comparisons that follow we drop the Agriculture; Mining, Quarrying, and Oil and Gas Extraction; Utilities; and Management of Companies and Enterprises sectors due to the prevalence of suppressed cells.

We now turn to highlighting some results from the first three phases of the SBPS. For ease of exposition, the discussion roughly follows the order in which the questions appear on the survey. We focus on temporal and sectoral variation for a detailed analysis of the results in subsections 2.1-2.6 before providing an analysis of results by geographic variation in subsection 2.7.¹³

2.1 Business Sentiment and Revenues

The opening question asks the respondent, “Overall, how has this business been affected by the Coronavirus pandemic?” The five checkboxes for responses range from large negative, negative, no effect, positive, to large positive. The phrasing of the question is intended to capture a holistic assessment of the impact and the time frame is open-ended. These responses are summarized in the Overall Sentiment Index (OSI) with values ranging from -1 (most negative impact) to +1 (most positive impact).¹⁴ Figure 1 shows the OSI over all three phases of the SBPS for the national average (panel A) and selected sectors (panel B). Starting with the national

¹³ A section in the appendix discusses the results on business closures in the SBPS. The results exhibit interesting patterns over time and across sectors. However, analysis of non-response bias being especially important for businesses that cease operations either temporarily or permanently is a concern that requires further research. It is difficult to re-weight the data to correct for this type of non-response bias.

¹⁴ The five questions are assigned the following numerical values: large negative effect (-1), moderate negative effect (-0.5), little or no effect (0), moderate positive effect (0.5), and large positive effect (1). See [Index-construction-for-the-Small-Business-Pulse-Survey.pdf \(census.gov\)](https://www.census.gov/construction-for-the-small-business-pulse-survey.pdf).

results, the OSI is everywhere negative reflecting the fact that while some businesses have seen a positive impact (about 6.4% by the last week of Phase 3), these are in the minority. This negativity decreases over time: the OSI index rises steadily over Phase 1, rises slightly less over Phase 2, and flattens in Phase 3. Even by the first week of January 2021, the OSI remains strongly in the negative range.

Turning to sectoral differences, panel B plots the OSI by sector. As with the national numbers, these are everywhere negative but decreasing in negativity over time (especially in Phases 1 and 2). Sectoral differences grow over time with the lines getting more spread out: the average max-min difference rises from 0.35 in Phase 1 to 0.42 in Phase 3. The ranking of the sectors is also relatively stable over time.¹⁵ Finance and Insurance, Construction, and Retail Trade are consistently at the top of the distribution over all three phases; Arts, Entertainment, and Recreation; Educational Services; and Accommodation and Food Services are consistently at the bottom. A common characteristic for the sectors at the bottom of the distribution is the importance of in-person contact for their operations. We use Finance and Insurance (heavy black line) and Accommodation and Food Services (heavy gray line) as examples of two sectoral extremes in exercises that follow. For a sense of how these two sectors differ at the end of Phase 3, 64.9% of businesses in Accommodation and Food Services have a large negative effect as compared to 13.7% of business in Finance and Insurance.¹⁶

Another indicator of the status of businesses is changes in revenue. The SBPS asks “In the last week, did this business have a change in operating revenues/sales/receipts, not including any financial assistance or loans?” and has three checkbox responses “Yes, increased,” “Yes, decreased,” and “No.”¹⁷ Figure 2 shows national and sectoral results over time. Starting with national in Panel A, the figure shows the percent of businesses with increases in revenue (“Up”) and decreases in revenue (“Down”) in the previous week (“no change” is the residual of the sum of the two lines). In the first week of Phase 1, 74.0% of businesses saw a decrease in their revenue as compared to 5.9% who saw an increase. Over the rest of Phase 1, the share of businesses with decreases falls and the share of increases rises, leading to the pincer-shape in

¹⁵ A notable exception is Real Estate and Rental and Leasing which moves up over time relative to other sectors.

¹⁶ These differences are significant at the 90%.

¹⁷ Another question asks, “In the last month, what were the total operating revenue/sales/receipts for this business, not including any financial assistance or loans?” and provides ten checkbox responses. In Phase 1 weeks 1-3, the question was phrased differently and referred to the prior week.

Phase 1. In the last week of Phase 1, 42.6% of businesses saw a decrease in their revenue and 19.7% saw an increase. In Phase 2, the shares level off with the share of businesses with decreases exceeding those with increases. Finally, in Phase 3 there is a general worsening mostly driven by increasing shares of businesses with declines.¹⁸

As shown in Panel B, this pattern of a pincer movement, followed by flattening, and then worsening over the three phases is repeated in Finance and Insurance and Accommodation and Food Services sectors.¹⁹ In the first week of Phase 1, 74.6% of businesses in Accommodation and Food Services have decreases in revenue and 8.4% have increases. By contrast 67.8% of businesses in Finance and Insurance have decreases in revenue and 3.2% have increases. In the last week of Phase 3, Accommodation and Food Services is the sector with the highest percentage of businesses with a decrease in revenues (56.1%) and 7.7% of businesses have an increase in revenue. Finance and Insurance has one of the lowest percentages of businesses with decreases (22.1%) and a smaller percentage of increases than does Accommodation and Food Services (4.1%).²⁰ That is, more businesses in Finance and Insurance have no change in revenues (73.8%) than is the case in Accommodation and Food Services (36.3%).

Finally, to put these two sectors in greater context of all sectors in our analysis, we plot the percentage of businesses with declining revenue in Panel C. Again, the sectors follow the same general pattern of a decline in Phase 1, flattening in Phase 2, and worsening in Phase 3. Comparing the results from the Overall Sentiment Index for the two sectors, Finance and Insurance (heavy black line) is consistently near the bottom of the distribution for revenue declines (analogous to it being near the top for OSI). However, Accommodation and Food Services (heavy gray line) starts off in the middle of the distribution in Phase 1 before moving to the top in Phases 2 and 3. Notice also that the distribution becomes more disperse over Phase 2 and then Phase 3 (the average difference between the maximum and the minimum rises from 20

¹⁸ The BRS finds that 56% of establishments had decreases in demand for their goods or services (and 19% experienced a government-mandated shutdown) but that 13% of establishments had increases in demand for their goods or services.

¹⁹ The differences between Finance and Insurance and Accommodation and Food Services are significant over all weeks over all questions except for the following: weeks 5 and 8 for decreasing revenue and weeks 20-23 for increasing revenue.

²⁰ Sectors with the least amount of businesses with decrease in revenues in the last week for the last week of Phase 3 are Management of Companies and Enterprises (16.6%) and Utilities (20.1%). As noted earlier, these sectors are not included in the analyses in this paper.

percentage points in Phase 1 to 38 percentage points in Phase 3). It is worth noting that other sectors with above average declining revenue include Retail Trade, Arts and Entertainment and Other Services.

2.2 Changes in Employment and Hours

Now we turn to the margins of adjustment of hours and employment. In all three phases, the survey collects the percentage of businesses that change employment and hours (and captures whether the changes were increases or decreases). In Phases 2-3, questions were added about rehiring furloughed workers and changes in hours of telework of paid employees.

Figure 3 shows temporal and sectoral variation in employment changes. To facilitate the comparison with revenue changes, the figures repeat those from Figure 2 and add employment changes (as dotted lines). Starting with the national results in panel A, in the first week of Phase 1, most businesses did not change employment (68.2%), 27.5% of businesses saw a decrease in employment, and 4.2% saw an increase in employment. The percent of businesses with decreases in employment falls over Phase 1 while the percent of businesses with increases rises slightly. The percentages of businesses increasing and decreasing employment become more similar in Phase 2 before dispersing in Phase 3. By the last week of Phase 3, 84.1% of businesses did not change employment, 12.4% decreased and 3.4% increased employment.²¹

Comparing revenue changes to employment changes (the solid lines to the dotted lines), reveals that the average gap between the percentage of businesses with revenue increases and employment increases falls over time from 6.4 percentage points in Phase 1 to 2.4 in Phase 2 to 1.9 in Phase 3. By contrast the average gap for businesses with revenue decreases and employment decreases starts at 39.1 percentage points in Phase 1, falls to 20.7 in Phase 2, before rising to 26.7 in Phase 3. These patterns are suggestive of labor hoarding at least in terms of jobs but recall that we do not know the relative sizes of these decreases in revenue and employment.

Panel B of Figure 3 repeats the exercise for our two focus sectors: Finance and Insurance and Accommodation and Food Services. While 89.6% of Finance and Insurance businesses have no change in employment in the first week of Phase 1, only 45.4% of Accommodation and Food

²¹ The BRS found that 52% of establishments told employees not to work at some point during the reference period but that slightly more than half of these continued to pay some or all of their employees while they were not working.

Services business report no change.²² The larger percentage of businesses reporting changes in Accommodation and Food Services are both on the negative side (47.2% have decreasing as compared to 8.7% in Finance and Insurance) and the positive side (7.4% versus 1.7%).²³ By the last week of Phase 3, 26.7% of businesses in Accommodation and Food Services have declining employment as compared to 5.5% of businesses in Finance and Insurance. Recall, Accommodation and Food Services lost about 3 million employees while Finance and Insurance gained about 50,000 employees over the last year (January 2020 to January 2021).²⁴

The overall picture is one in which businesses in Accommodation and Food Services show more employment adjustments (and mostly on the decreasing margin) than do businesses in Finance and Insurance.²⁵ We analyze these relationships further in Figure 4 which shows scatterplots of revenue and employment declines by sector for Phase 1 (panel A) and Phases 2-3 (panel B). We have highlighted the two sectors with larger dots (Finance and Insurance in black and Accommodation and Food Services in gray). In all three phases, the points are always above a 45-degree line. The points are more clustered in Phases 2-3 than in Phase 1. In all three phases, Finance and Insurance points are left-most (lower percentage of businesses reporting employment changes) and Accommodation and Food Services are right-most. Table 3 shows the pairwise correlations from these and confirms the differences between the phases. The correlations are higher in Phase 1 than in Phases 2-3 for all sectors. Focusing on the two sectors, the correlation for Finance and Insurance drops from 0.92 in Phase 1 to 0.23 in Phases 2-3. By contrast, the correlation for Accommodation and Food Services hardly changes at all: dropping from 0.98 in Phase 1 to 0.96 in Phases 2-3. A striking feature of Figure 4 is that all sectors in all phases are above the 45-degree line implying that employment declines are smaller than revenue declines.

²² Differences between the two sectors are significant except for increasing employment for most weeks in Phase 3.

²³ There are some weeks in Phase 1 where Accommodation and Food Services has a larger percentage of businesses with employment increases than employment decreases.

²⁴ BLS reports that the number of employees in Accommodation and Food Services dropped from 13.9 million in January 2020 to 11.0 million in January 2021. In contrast the number of employees in Finance and Insurance rose slightly from 6.48 million in January 2020 to 6.53 million in January 2021 (not seasonally adjusted, from January Employment Situation).

²⁵ Using data from late March-early April, Bartik et al. (2020a) find a similar sectoral pattern. They note as especially impacted: “retail, arts and entertainment, personal services, food services, and hospitality businesses all reporting employment declines exceeding 50 percent. Finance, professional services, and real estate related businesses have seen less disruption (p.4).”

Turning now to hours adjustments, Figure 5 shows the analogous plots for national (panel A) and the two sectors (panel B). For ease of comparison, we repeat Figure 3 and now add in hours changes (dotted lines). We see the same general patterns for hours that we saw for revenue and employment (a pincer shape in Phase 1, flattening in Phase 2, and worsening in Phase 3) with the percentage of businesses with changes in hours lying between the percentage of businesses with changes in revenue and employment.²⁶ The sectoral results shown in Panel B also follow this same general pattern. At the start of Phase 1, 31.2% of businesses in Finance and Insurance have decreasing hours as compared to 57.6% in Accommodation and Food Services. By the last week of Phase 3, 7.3% of business in Finance and Insurance have a decline in hours as compared to 39.4% of businesses in Accommodation and Food Services (all differences across sectors are significant except for increases in hours in weeks 21 and 23).

Adding up the indicators of employment adjustments and hours adjustment, the share of small businesses that indicated they reduced employment or hours is 79 percent in the last week of April which is slightly more than those that indicated a decline in revenue (74 percent). Appropriate caution is needed in interpreting adding up these two statistics since many small businesses likely reduced both employment and hours. Still this helps make the case that the overall patterns of labor adjustments (hours or employment adjustments) echo those for revenue (all three are copied in together in figure 1A in Appendix). For all three concepts and all three samples, Phase 1 shows a rising share of businesses with increases in revenue, hours, employment and falling share of businesses with decreases in these concepts in Phase 1 (yielding the pincer shape). In Phase 2, the shares level off with the share of businesses with decreases exceeding those with increases (the exception is employment in Finance). Finally, in Phase 3 there is a general worsening mostly driven by increasing shares of businesses with declines. While the patterns are similar, the magnitudes are larger and Phase 3 deterioration is more pronounced for businesses in Accommodation and Food Services. Importantly while there are clear improvements on all of these margins relative to late April 2020, for all weeks through the first week of 2021 there are more small businesses indicating declines than increases on each of these margins.

²⁶ The BRS finds that 30% of establishments reduced employee hours but that 5% of establishments increased employee hours.

Furloughs and Rehires

Two questions added in Phase 2 focus on other ways in which businesses could adjust their labor. The first question regards rehires, asking “In this last week, did this business re-hire any paid employees who had been furloughed or laid off after March 13, 2020?” In addition to yes and no responses, there is an option for businesses that did not lay off or furlough employees. Consistently over Phases 2-3, businesses that did not furlough employees dominates the other two responses (with about 55% for the national average). However, of those businesses that did furlough employees, most did not rehire furloughed employees and the share that did rehire fell over time (from 12.8% to 5.8%).²⁷ Figure 6 panel A shows all response categories for national over time.

As shown in panel B of Figure 6, there is sectoral variation in the share of businesses who furloughed workers (shown for the last week of Phase 3). However, these shares did not change much over the time of the questions from early August to early January. No sector exceeds 20% of businesses who have rehired furloughed workers in either time period. The two sectors of our focus provide the largest percentage of businesses who furloughed employees (Accommodation and Food Services with 72.3%) and the smallest percentages of businesses who furloughed employees (Finance and Insurance with 21.6%).

Remote Work

The second question added in Phase 2 regards working from home, asking “In this last week, did this business have a change in the total number of hours paid employees worked from home?” Concerning working from home, the percentage of businesses with remote workers is consistently below 50% for Phases 2-3 (starts at 46.8% and ends at 47.6%). Of those businesses with remote work, most did not see a change in hours of remote work (in week 1 of Phase 2 86.3% did not have a change and 85.7% did not have a change in the last week of Phase 3).²⁸ For those businesses that did change telework hours, there are roughly equal percentages of businesses that increase and decrease telework hours in most weeks (for example, these are both

²⁷ The raw numbers are: 5.7% and 2.6% reported rehiring and these are normalized to the population that was furloughed (which is =100-population not furloughed).

²⁸ The raw numbers are: 40.4% and 40.8% reported no changes in telework hours and these are normalized to the population that have telework (which is =100-population no telework).

3.4% in the last week of Phase 3).²⁹ Figure 7 panel A shows all response categories for national over time.

In terms of sectoral differences, panel B of Figure 7 plots the percentage of businesses with remote work by sector for the last week of Phase 3. The sector with the largest percentage of remote work in the last period of the survey is Information (79.6%) and Accommodation and Food Services is the sector with the smallest percentage (21.7%).³⁰ The shares are relatively stable over Phases 2-3 the exceptions are an increase in the percentage of businesses *decreasing* telework in sectors Accommodation and Food Services and Other Services (from 10.3% and 8.8% to 17.5% and 12.4% respectively). The sector with the largest percentage of remote work *increasing* in the final week of Phase 3 is Finance and Insurance (8.8%). The sector with the largest percentage of remote work *decreasing* in the final week of Phase 3 is Accommodation and Food Services with 17.5%.³¹ Perhaps this latter result reflects the overall decrease in employment in this sector at this time; recall that 26.7% of businesses have decreases in their employment. These sectoral patterns are consistent with those found in the BRS.³²

2.3 Pivoting Goods/Services or Processes

As mentioned above, one way in which businesses could adapt to the pandemic is to pivot to producing new goods and services. A number of stories in the popular press provided examples, such as True Value retooling factory production of paint to produce hand sanitizers (Ip, Wall Street Journal, April 16, 2020). Phase 1 includes a question intended to capture this phenomenon: “In the last week, did this business shift to the production of other goods or services?” The national percentage of businesses with shifts in production of goods or services falls steadily from 6.8% in the first week of Phase 1 to 4.8% in the last week. A related question about changes in the mode of delivery also appears only in Phase 1. The national percentage of

²⁹ The BRS reports that 52% of establishments did not offer telework but that during the pandemic 31% of businesses increased telework.

³⁰ Dingell and Neiman (2020) use the detailed occupation data and O-Net data and estimate 76% of jobs in Finance and Insurance and 4% of jobs in Accommodation and Food Services can be done at home. They estimate 72% of jobs in Information can be done at home.

³¹ These percentages are recalculated to be conditional on having remote work.

³² According to the BRS, Accommodation and Food Services is the sector with the least provision of telework (91% of establishments). On the flip side, Finance and Insurance is one of the top sectors in terms of increasing telework (58%).

businesses changing the mode of delivery is 15.2% in the first week of Phase 1 and this falls to 6.6% by the last week in Phase 1.

We combine responses from both questions in Figure 8 to show the results by sector for the first week of Phase 1 (“Early”) and the last week of Phase 1 (“Late”). Changes to mode of delivery dominate changes to goods/services, except in the Educational Services sector. Sectors with the largest percentage of businesses with goods/services shifts in the first week of Phase 1 (and their percentages) are: Educational Services (19.7%), Accommodation and Food Services (10.8%), and Information (10.1%). In terms of delivery changes, sectors with the largest percentages of businesses are Accommodation and Food Services (42.2%) and Retail Trade (31.8%). Comparing the Early and Late graphs, there are a smaller percentage of these businesses making these changes late in Phase 1.

A related question concerns the changing use of online platforms. The question asks, “Since March 13, 2020, has there been an increase in this business’s use of online platforms to offer goods or services?” Similar to the remote work question, responses include “yes,” “no,” and “this business does not use online platforms to offer goods or services.” Slightly more than half of the businesses use online platforms to offer goods and services, and this share was relatively flat over the survey (54.3% of businesses use online platforms to offer goods or services in the first week of Phase 2 and 54.5% do in the last week of the Phase 3). However, in both weeks, a large percentage of businesses who do use online platforms increased the *intensity* of their use. In both the first week of Phase 2 and the last week of Phase 3, almost half of all businesses that used online platforms increased their use (45.5% in both weeks). As we discuss in the section on business applications, many new business applications are for online activity. These patterns are consistent with both existing businesses pivoting and new businesses entering.

Turning to sectors, panel A of Figure 9 shows the percentage of businesses that use online platforms for the first week of Phase 2 and the last week of Phase 3. Not surprisingly, this varies by sectors from a low of 36.9% in Construction (23) to a high of 80.7% in Educational Services (61) in the last week of Phase 3. Similar to the national results, the percentage of businesses using online platforms is relatively flat over time. However, businesses *intensity* of use of online platforms did increase in many sectors as shown in panel B of Figure 10. The sector with the largest percentage of businesses increase their intensity of use of online platforms

is Educational Services (61) with more than three-quarters of businesses reporting an increase in both time periods (76.4% and 81.2%).

The last question in this section concerns supply chain, production, delivery issues and asks, “In the last week, did this business have any of following?” There are seven possible responses: domestic supplier delays, foreign supplies delays, difficulty locating alternate domestic suppliers, difficulty locating alternate foreign suppliers, production delays at this business, delays in delivery/shipping to customers, and none of the above (and businesses can select all that apply). About two-thirds of businesses have none of the above over both Phases 2 and 3 (an alternative version of this question was asked in Phase 1). Of those businesses with a problem, domestic suppliers delays are the dominant response with 26.7% of businesses identifying this as a concern in the last week of Phase 3.

Figure 10 shows the sectoral differences for the last week of Phase 3. Here we focus on any problems (derived from 100-none of the above) and domestic supplier issues. In terms of sectoral differences, Retail Trade is the sector with the largest percentage (48.0%) of businesses with domestic supplier issues, while Finance and Insurance is the sector with the smallest percentage (5.0%). While a comparable question is not available for Phase 1, in that phase Retail Trade was also the sector with the largest percentage responding to the more general question about disruptions in the supply chain (65.8%).

2.4 Operating Capacity and Challenges

We now focus on questions that measure the business’s current operating capacity relative to one year ago (these questions appear in Phases 2-3). In the last week of Phase 3, about half of all businesses note a decrease in capacity relative to one year ago: 33.4% report capacity decreased by less than 50% and 17.1% report capacity decreased by more than 50%. 42.9% of businesses note that there had been no change in operating capacity relative to a year earlier. The remaining 6.6% of businesses report an increase in capacity (5.5% have a capacity increase less than 50% and 1.1% have a capacity increase more than 50%).

The survey attempts to capture the reasons for changes in operating capacity with eight possible responses: ability to hire (or re-hire) employees, availability of employees, ability of employees to remote work, physical distancing of employees, physical distancing (or restrictions on the number) of customers, availability of Personal Protective Equipment (PPE), availability of

other inputs used to provide goods or services, and none of the above. The category none of the above dominates over Phases 2-3 at about 60% ending with 64% of businesses in the last week of Phase 3. The response with the next largest percent of businesses is physical distancing of customers or clients and/or limits on the number of concurrent customers or clients with 17.6%. This was also the biggest capacity constraint at the start of Phase 2 (21%). While they shift their rankings, the next most important challenges over Phases 2 and 3 are the availability of supplies and availability of workers.³³

The changes in operating capacity for selected sectors for the last week of Phase 3 are shown in Figure 11 panel A. In addition to our two example sectors, we include Retail Trade, Educational Services, and Health Services. In this group, businesses in Retail Trade and Finance and Insurance had the largest percent of businesses whose operating capacity has not changed (45.4% and 66.2% respectively). Recall from Figure 10, however, that Retail Trade had relatively large percentages of businesses reporting supply chain and delivery challenges (relative to Finance and Insurance and Accommodation and Food Services). All three of the sectors who perform services have the responses dominated by decreases (Educational Services with 36.8% and Health Services with 54.2%) or large decreases (Food and Accommodation Services with 45.0%). Overall, more than three-quarters of Food and Accommodation Services business report a decline in operating capacity.

Factors impacting operating capacity for these five sectors for the last week of Phase 3 are shown in Figure 11 panel B. All five sectors also have the largest percentage of businesses with “none of the above” (ranging from 47.4% for Health Services to 79.9% for Finance and Insurance). Of the responses for specific issues, physical distancing of customers is particularly important for all three services (Health, Educational, and Food and Accommodation) with about one-third of businesses experiencing these issues in each of these sectors. Not surprisingly, availability of PPE is especially important for Health Services (16.8%) while availability of supplies is especially important for Retail Trade (17.7%). In contrast, Finance and Insurance has

³³ Concerning the availability of workers, the Household Pulse Survey collects the “Main Reason for Not Working” for adults not working when the survey is collected. Reasons include some directly related to COVID-19 (such as “I was caring for someone with coronavirus symptoms” and “My employer closed temporarily due to the coronavirus pandemic”) and some more general reasons (for example, “I am retired”). In the week January 6-18, 2021, the top three reasons are: retired (36%), some “other reason” (16%), and “I was laid off due to coronavirus pandemic” (8%). Top reasons more closely related to availability during the pandemic are “I was caring for children not in school or daycare” (6%), “I was sick with coronavirus symptoms” (5%), and “I was concerned about getting or spreading the coronavirus” (5%). See Employment Table 3.

the smallest percentage of businesses for all categories except availability of telework (and that is 3.6%).

2.6 Finance

The finance questions on the SBPS include questions about cash on hand, missed loan payments, missed other payments, requested assistance, and received assistance. The question concerning cash on hand is, “How would you describe the current availability of cash on hand for this business, including any financial assistance of loans?” There are seven checkbox responses starting with no cash on hand, one week, 1-2 weeks, and so on to 3 or more months of business operations (and don’t know). Figure 12 panel A returns to our two example sectors to show the percentage of businesses cash on hand that would cover three or more months for Finance and Insurance and Accommodation and Food Services. Both sectors show a rise in Phase 1, flatten in Phase 2, and then a decline in Phase 3. Over all three phases, there is about a 20-percentage point difference between Finance and Insurance (around 40%) and Accommodation and Food Services (around 20%).

A number of federal programs were developed to help small businesses during the pandemic. Two related questions on the SBPS ask about requests for and receipts of financial assistance from a variety of sources including some of these federal programs. Of the seven federal programs listed, three have uptake rates greater than 10% at the national level by the last week of Phase 3. These are the Paycheck Protection Program (PPP), Economic Injury Disaster Loans (EIDL), and SBA Loan Forgiveness. Of these, the PPP has a much larger percentage of businesses (73.6%) as compared to EIDL (23.4%) and SBA Loan Forgiveness (11.8%). All three show a similar pattern that the receipt of financial assistance grew over Phase 1 and then held mostly steady thereafter.³⁴

Figure 12 panel B shows the receipt of federal assistance for these three federal programs by sector for the last week of Phase 3. The percentage of businesses receiving federal assistance through the PPP program is larger than for the other two programs over all sectors. The top three sectors in terms of percentages of businesses receiving PPP assistance are: Health Care and Social Assistance (85.5%), Accommodation and Food Services (84.5%), and Manufacturing

³⁴ Bartik et al. (2020b) find that receipt from the first tranche of PPP funding increases survival of small businesses and has a positive but imprecise effect on employment based on analyses of surveys conducted in late April 2020. Chetty et al. (2020) find PPP increased employment by 2% using private sector data.

(81.2%). Two of these sectors, Health Care and Social Assistance and Accommodation and Food Services, are also on the upper end of percentages of businesses receiving EIDL and SBA Loan Forgiveness assistance. Manufacturing is also on the upper end of percentages of business receiving SBA Loan Forgiveness but is around the middle for EIDL assistance. By contrast, Finance and Insurance is at the lowest end for all three types of assistance.

2.7 Forward-Looking Needs and Expectations

In this section we highlight results from questions that concern forward-looking behaviors or expectations. The first question concerns future needs of the business, the second question concerns business expectations. These provide an interesting complement to the business formation series where future needs and /or expectations are inferred from administrative data that may capture the intent to start a business.

Future Needs

The previous section highlighted federal financial assistance programs. Interestingly, the need for financial assistance increased over Phases 2-3 of the survey. Phases 2-3 of the survey include a question on future needs over the next 6 months. Respondents can select all that apply from eight responses: obtain financial assistance or additional capital, identify new supply chain options, develop online sales or websites, increase marketing or sales, learn how to better provide for the safety of customers and employees, identify and hire new employees, permanently close this business, and none of the above. Panel A of Figure 13 shows the percentage of businesses for each response for the first and last weeks of both Phase 2 and Phase 3. While some categories are relatively constant over time, financial assistance gained in importance (from 26.8% in first week of Phase 2 to 33.5% in the last week of Phase 3) while providing for safety became relatively less important (from 19.3% in the first week of Phase 2 to 13.3% in the last week of Phase 3).

Figure 13 panel B shows the future needs for Finance and Insurance and Accommodation and Food Services for the last week of Phase 3. Given the challenges and outcomes highlighted above, it is not surprising that the percentage of businesses citing one of the seven future needs is dominated by Accommodation and Food Services while none of the above is dominated by

Finance and Insurance. Interestingly, the future needs mostly closely aligned across the two sectors are: “marketing or sales” and “online sales” where the differences between the two sectors is less than 5 percentage points. In contrast, there is an almost 40 percentage point difference between the two sectors for financial assistance (55.7% of businesses in Accommodation and Food Services cite this as a future need).

Expectations

The final question on SBPS concerns expectations, asking: “In your opinion, how much time do you think will pass before this business returns to its normal level of operations relative to one year ago?” The responses include little/no effect, already back to normal, to varying durations (1 month or less up to more than 6 months), to never and closed. Care must be taken when comparing over all three phases because of changes introduced into the question and responses over time. In the fourth week of Phase 1, the question is amended to add the phrase “relative to one year ago” and the word “usual” was replaced with “normal.” At the start of Phase 2, the categories “This business has returned to its normal level of operations” and “This business has permanently closed” are added as responses.

Figure 14 panel A plots business expectations at the national level over all the weeks of collection. To help distinguish the responses we have grouped them by short term (little or no effect, already back to normal), medium term (2-3 months and 4-6 months), and long term (more than 6 months, never, closed). The percent of businesses who see medium-term time periods until a return to normal has fallen (from 51.8% in the first week of Phase 1 to 18.6% in the last week of Phase 3). This reflects greater percentage of businesses with expectations in the short-term and the long-term. The increases in percentage of businesses with short-term expectations rises in Phases 1-2 before falling slightly in Phase 3; these changes are driven mostly by no impact and already back to normal (solid lines). The percentage with long-term expectations rises in Phases 1 and 3 (and holds flat in Phase 2); these changes are driven mostly by the rise in 6 months or more (dashed line).³⁵

³⁵ In terms of expectations prior to the start of the SBPS, Bartik et al. (2020a) find that early in the pandemic (late March-early April), 50% of their sample of small businesses expected that the crises would last until at least the middle of June. Their survey asks respondents for “the most likely date” when the crisis would be over and also captures of measure of their uncertainty. Another interesting dimension is differences over size and employer status. Using their Stanford_Stripe sample, Bloom et al. (2021) find that in the fall of 2020, businesses with 20 or more

We show a similar grouping for sectoral differences in expectations in panel B. Here we stack the responses from more positive (little/no effect, already back to normal), to varying durations (1 month or less up to 6+ months), to never and closed. Finance and Insurance has relatively more light part of its bar; they were either not impacted, little impact, or already back to normal. Compare this to Educational Services, Arts and Entertainment, and Accommodation and Food Services which have relatively lower percentages of businesses who had little/no effect or are already back to normal. Health Services also has low little/no effect but has more robust already back to normal.

In Panel C we narrow our focus to our two example sectors and examine changes over time for first week of Phase 1 and the last week of Phase 3. The lighter bars are for the first week of the survey and the darker bars are for the last week of the survey. For both sectors, the darker bars are shorter for medium term. In a K-shaped recovery some groups are already moving on an upward path in recovery; but others are on a downward or stalled path. Focusing on the last week, 40.4% of businesses in Finance and Insurance expect a return to normal level of operations over the shorter horizon, as compared to 7.3% of businesses in Accommodation and Food Services. At the other extreme, 43.8% of businesses in Finance and Insurance expect a return to normal to take place over the longer horizon, as compared to 76.8% of businesses in Accommodation and Food Services. This suggests an expectation of a K-shaped recovery *across* sectors. There is also likely a K-shaped recovery *within* sectors implied by the finding that for all sectors in the SBPS that even through January 2021 there are indicators of negative growth, business sentiment and expectations for existing small businesses. This persistent negativity holds even in sectors where indicators of all business activity including large businesses have shown a recovery.³⁶

We connect the responses for business sentiment and expectations in Figure 15 where we plot Overall Sentiment Index against the Expected Recovery Index by sector for each of the three

employees were expecting a return to normal level of sales by 2021:Q2; smaller businesses expected a longer time period until a return to normal and non-employer businesses had the most pessimistic expectations (see their Figure A7). Another look at the long tail of expectations is provided by NFIB. The NFIB survey conducted in December 2020 finds that 4% of businesses are back to normal, 47% anticipate a return to normal in 2021 and 36% expect a return to normal in 2022.

³⁶ A *Wall Street Journal* article concerning restaurants notes “The coronavirus is splitting the restaurant industry in two. Big, well capitalized chains like Chipotle Mexican Grill Inc. and Domino’s Pizza Inc. are gaining customers and adding stores while tens of thousands of local eateries go bust.” October 12, 2020.

phases. The Expected Recovery Index captures the checkbox responses and converts them into an index with values from -1 to +1. Business sentiment and expectations are positively related as shown by the positive sloping lines. Over time, there are some shifts in the lines, but the lines shift almost entirely in a parallel fashion. The change in the general level of business sentiment (OSI) drives the shift down from the first week to the last week of Phase 1. The jump in the fourth week of Phase 1 is likely due to the change in the expectations question; however, the positive relationship between OSI and ERI is the same across weeks, that is, the slope does not change.

2.8 Results by Geography

In examining results by geography, it is important to keep in mind that the pandemic impacted local areas in differing intensities and at different times and that different state and local policies also may impact business activity. It is beyond the scope of this paper to examine the causes for these patterns. Goolsbee and Syverson (2020) find that fear of infection rather than shutdown policies drives much of the economic slowdown for *customer visits* during the pandemic. They find that these policies do lead to reallocation across businesses away from nonessential businesses towards essential businesses and specifically cite as an example from restaurants and bars towards grocery stores.³⁷ This suggests that we may expect to see changes across states that evolve in a cadence more closely related to pandemic outbreaks than to state policies.³⁸ On a more operational note, we also need to keep in mind that nonresponse adjustments may not capture state differences in response.³⁹

As we did with the sectoral analysis, we start by examining the patterns in overall sentiment and changes in revenue. We examine these in comparison with sectoral results. Two

³⁷ Goolsbee and Syverson (2020) use data from SafeGraph which concerns customer visits only and hence does not include activities, such as online sales, that do not require a visit to a physical location. Also, they only examine industries for which consumer visits are a meaningful measure of economic activity. They examine policies at sub-state levels.

³⁸ Future research could look within states to see evidence of the type of reallocation that Goolsbee and Syverson (2020) describe.

³⁹ The SBPS initially weights businesses based on the number of eligible businesses within each state-subsector (by state by 3-digit NAICS). Businesses are assigned into one of nine week groups by first sorting businesses using MSA and 2018 annual payroll and then assigning them systematically across the nine week groups. The initial weights are adjusted weekly for survey nonresponse to generate representative estimates at the national, sectoral, and employment size class levels. Weights are not adjusted to state totals and therefore care should be taken in interpreting state results.

things immediately stand out: differences in dispersion and persistence. We plot the Overall Sentiment Index for the ten largest states (by population) in Figure 16 panel A. For these ten states, New York (heavy black line) remains at the bottom over all three phases of the survey while North Carolina (heavy dotted black line) remains relatively close to the top. Panel B of Figure 16 shows the percentage of businesses with declining revenues by state over all three phases of the pulse. We highlight two states of interest based on their relative position at the start of the survey: New York (heavy black line) and South Dakota (heavy black dotted line). While New York remains in the upper part of the distribution and South Dakota in the lower part, there are many states that surpass them.

This evidence suggests there are differences in both dispersion and persistence between sectors and states (compare to Figures 1B and 2C). We directly compare dispersion in states and sectors in Figure 16 (OSI) and Table 4 (revenues). Figure 17 panel A presents box plots for OSI over all three phases of the SBPS for sectors and states (excluding sectors 11, 21, 22, and 55 and Puerto Rico). Comparing the two figures, the interquartile range for OSI is larger for sectors than it is for states. Panel B shows the coefficient of variation for sectors and states and shows the larger coefficient of variation for sectors (that increases over time).

Table 4 measures dispersion in the percentage of businesses with *declining* revenues through the difference between the maximum and minimum sectoral values and coefficient of variation (each of these are averaged for each phase). The max-min gap for sectors and states are relatively close to each other in Phase 1 (about 20 percentage points for sectors and about 25 percentage points for states), but this gap widens for sectors (to 38 percentage points) and narrows for states (to 23 percentage points) in Phase 3. Measuring dispersion using the coefficient of variation tells basically the same story of dispersion being similar for states and sectors in Phase 1 (0.10) but different in Phase 3 (0.27 for sectors and 0.13 for states).

We are also interested in whether there is persistence in the position of a sector or state in the overall distribution of business sentiment. That is, we can see from the earlier plots that Accommodation and Food Services and New York tend to be at the bottom of the OSI distribution and Finance and Insurance and South Dakota tend to be at the top of the OSI distribution. We look at persistence in a number of ways. First, we plot the first week of Phase 1 OSI against the last week of Phase 3 OSI for both sectors (panel A) and states (panel B) in

Figure 18. The sectors show a clear linear trend and the correlation between the two weeks is 0.90. There is less of a linear trend for states and the correlation between the two weeks is 0.54. Another way to look at this is to group each of the weeks into quintiles and consider the transition paths of sectors and states. We find that 60% of the sectors remain in the same quintile as their starting place (for example, Finance and Insurance remains in the highest quintile in the first and last weeks). By contrast, 27% of the states remain in the same quintile as their starting place (for example, New York remains in the lowest quintile in the first and last weeks). Even so, there is some stickiness for states, no state transitions from one extreme to the other extreme.

3. Business Formation Statistics

While existing small businesses have experienced persistent negative outcomes over the course of pandemic through January 2021, the COVID-19 recession has also altered the landscape for potential entrepreneurs in 2020, and into the foreseeable future as the economy continues to adjust to potentially a new normal. While the amount of economic uncertainty and restrictions introduced by the pandemic were apparently detrimental for new business applications during March and April 2020, there has been an unprecedented surge in business applications starting in May 2020. The time-series patterns for business applications have also exhibited strong geographic and sectoral disparities.

What has made it possible to make timely statements about business formation activity during 2020? Business formations can now be tracked on a high frequency, timely basis using the Census Bureau's Business Formation Statistics (BFS) program. The BFS offers accurate and timely information on new business applications as well as actual and projected employer business startups. The BFS was originally released as an experimental data product in 2018 as a quarterly dataset for public use (see Bayard et. al (2018) for details about the development of the BFS). The BFS uses applications for Employer Identification Numbers (EINs) obtained from the Internal Revenue Service (IRS) to construct nationwide, industry-level and state-level time series for applications made for new businesses, as well as actual and projected employer business formations originating from these applications. Importantly the application process for new EINs is largely online and automated so that even when IRS offices are not open new applications can be processed almost immediately.

The BFS was released continuously at a quarterly frequency between 2018 and 2020, with the earliest data pertaining to 2004q3. Up until 2020, the BFS time series included data on only one recession: the Great Recession that started in 2007q4. As economic conditions rapidly deteriorated with the onset of the pandemic, the demand by policymakers for near real-time data sources for measuring economic activity once again surged. This demand presented a unique opportunity for BFS to monitor business formation activity at a higher frequency. Recognizing its potential as an early indicator of fast-evolving economic conditions during the COVID-19 recession, the Census Bureau started releasing the BFS at a weekly frequency on April 8, 2020.

Weekly frequency is the highest frequency with which the underlying administrative data for the BFS is received by the Census Bureau. In many ways, the BFS was already prepared to handle such high frequency, as the basic building blocks of the quarterly BFS data were weekly batches of applications received on a timely, flow basis. Therefore, transition to a weekly release did not require a lengthy setup phase, although it demanded substantial resources to carry out a tight weekly production cycle that started with the ingest of new application data every Monday and a public release of processed data every Thursday. The BFS has also initiated a monthly release starting in January 2021. The monthly BFS builds on the same infrastructure and is released within ten days of the end of the reference month. Taken together, the weekly and monthly BFS offer unique high frequency, timely information on new business formations.

Analysis of the weekly and monthly data reveals several striking patterns, some of which are summarized in this section. First, as emphasized by Dinlersoz et. al. (2021), the COVID-19 recession has been very different from the Great Recession in terms of the short-run dynamics of business applications and projected formations. Second, there has been large variation across states and sectors in the patterns of business applications. Third, the surge in new business applications has been especially large for likely new nonemployer businesses but is also present for likely new employer businesses.

3.1. Business Applications and Formations during the COVID-19 Recession

Leveraging the weekly BFS, Dinlersoz et al. (2021) investigate the weekly progression of business applications and projected business formations from these applications during the COVID-19 recession and compare it with that during the Great Recession. They show that both the business applications and formations exhibit a slow and protracted decline during the Great

Recession (see their Figure 1). In contrast, they find that the drop in applications and projected formations is very sharp but short-lived during the COVID-19 Recession. Applications and projected formations both rebound very quickly, with the overall trajectory for the two series exhibiting a V-shaped recovery.

While the transition rate from applications to employer businesses relative to the reference period also fell during the Great Recession initially, it recovered rapidly. As shown in the left panel of Figure 2 of Dinlersoz et al. (2021), after about 30 weeks of the onset of the recession, the cumulative transition rate went back up to its level in the reference period and exceeded that level thereafter. The projected transition rates for the COVID-19 Recession, on the other hand, had not recovered around the same time mark from the recession. As discussed in Dinlersov et. al. (2021), the decline in the transition rate in the COVID-19 recession largely reflects a shift in the composition of applications towards those that are more likely to be new nonemployer businesses than new employer businesses. By construction, applications for likely nonemployers will have a low transition rate to becoming employers.

These patterns are illustrated in Figure 19 which uses the monthly BFS. Overall applications are decomposed into likely employers (High-Propensity Business Applications) and likely nonemployers (the difference between overall applications and High-Propensity Business Applications or $NHBA=BA-HBA$). High- Propensity Business Applications (HBA) are defined using information provided on the EIN application including indicating hiring employees; providing a date for first-wages paid or planned; providing a NAICS code in the Manufacturing, a portion of Retail Trade, Health Care, or Accommodation and Food Services sectors.⁴⁰ Bayard et. al. (2018) show that more than one-third of HBA transition to a new employer business but only 3 percent of the nonemployer applications transit to a new employer business. Haltiwanger (2021) provides evidence that variation in HBA closely tracks employer startups (which is evident in Figure 19) and variation in NHBA closely tracks variation in nonemployers.

Overall applications and likely nonemployer applications are at the highest for the entire series in 2020 with the surge occurring in the second half of 2020. Interestingly, the surge continues into January 2021. For likely employers, there has also been a surge in 2020 but it is more muted. Still applications for likely employers have had their highest year since 2006. This

⁴⁰ See <https://www.census.gov/econ/bfs/definitions.html>. Also, applications for corporations are classified as HBA. The component of Retail Trade classified in HBA is that dominated by bricks and mortar stores.

surge in applications for likely employers is important given the disproportionate role that new employer businesses play in job creation, innovation and productivity growth (see, Decker et. al. (2014)). The surge in applications for likely nonemployers is potentially an acceleration of the shift towards the gig economy in the last decade or so as emphasized in Abraham et. al (2021).

3.2. Sectoral Differences in Applications during the COVID-19 Recession

The COVID-19 Recession has also been accompanied by large shifts in sector-level application activity. Initially, nearly all sectors experienced a sharp decline in business applications in the early phases of the recession (see Figure 20). However, many sectors rebounded relatively quickly in application volumes, with a particularly large rise in retail (NAICS 44-45). A major component of that rebound in retail was accounted by non-store retailers (NAICS 454), which includes mainly internet-based retail (part of e-commerce) activity, as shown in Figure 21. By mid-2020, the number of applications in this sub-sector exhibited an increase of more than 200% from its low in early 2020, before subsiding in the later part of the year. The surge of applications in this sub-sector far exceeded the other sub-sectors in retail (Figure 21).

The surge in non-store retailer applications is consistent with the push towards remote interactions between businesses and consumers in the pandemic. It is also broadly consistent with the pre-pandemic trend of increasing e-commerce. In this respect, this shift towards new businesses in the non-store retailer sector in the pandemic may reflect an acceleration of pre-pandemic trends. An open question is how many of these new non-store retailer businesses will be employers or nonemployers. Most of the businesses in non-store retail sub-sector have historically been non-employers - in 2018 over 90% of non-store retailers were non-employer businesses, based on combined Nonemployer Statistics (NES) and County Business Patterns (CBP) data. The public domain BFS includes the decomposition of BA into HBA and NHBA at the 2-digit NAICS level.⁴¹ Further research (and time) is needed to understand the outcomes for the surge in applications for new non-store retailers.

⁴¹Another open question is the extent to which some of the surge in EINs are existing businesses adding a new line of business. It might be for example that existing businesses add a new online line of business and apply for a new EIN for this activity. However, there is no requirement that adding a new line of businesses requires a new EIN for an existing business. Moreover, Decker et. al. (2016) find that multiple EIN firms are the exception and not the rule

The monthly data provide insights into the sectoral patterns decomposed for applications for likely nonemployers and likely employers. Haltiwanger (2021) shows there has been a surge in Retail Trade and Professional, Scientific and Technical Services in both types of applications. Existing small businesses in both sectors have had substantial declining revenue during the pandemic (see Figure 2). The differing patterns for existing small versus new businesses suggest that the pandemic has induced considerable restructuring of business activity. An open question is how persistent these changes will turn out to be and whether any resulting businesses will have differing characteristics, such as scale, from those started during non-pandemic times.

3.3. Geographic Disparity in Application Activity during the COVID-19 Recession

The weekly BFS has been released for each state and Census Region, in addition to nationwide. The week-to-week evolution of business applications exhibits substantial heterogeneity across the geography. Figure 22 looks at the year-over-year percentage growth in weekly application series by region for 2020. All regions experience a sharp decline in the earlier part of 2020 as the COVID-19 crisis hits. The decline is most pronounced in the Northeast, where, as of week 13, applications fell by as much as 50% compared to the same week in 2019. Starting in week 14, however, there is a steady increase in the growth rates for all regions, with the South leading the way, followed by the Midwest. A peak in growth rates occurs in week 27 for all regions. This peak is notably pronounced for the Midwest and the South. Observe also that the Northeast gradually catches up with the Midwest between week 13 and 27, even though it experienced the sharpest decline in growth rates initially. All regions experience a decline in application growth rate following week 27. The South and the Midwest maintain high growth rates for the rest of the year. The Northeast also does relatively well in this period, exhibiting higher weekly year-over-year growth rates than the Midwest.

and are concentrated among large, mature firms that operate in multiple states. Large, mature firms that operate in many locations account for a substantial share of employment and revenue but a very small share of firms. Viewed from that perspective, it is very unlikely that the share of multiple EIN firms has surged to the degree needed to account for surge in new EIN applications. It is also possible that the surge in new EINS reflects in part existing businesses undergoing a change in ownership. An interesting area for future research is to explore the impact of the pandemic on ownership change of existing businesses.

The heterogeneity across states is even more pronounced. Figure 23 shows the path of weekly year-over-year growth rates for business applications for selected states in 2020. New York, which experienced an early outbreak during the pandemic, exhibits a large decline in growth rate of applications heading into week 13. California, Texas, Illinois and Florida also went through declines initially, though less severe than in the case of New York. Georgia experienced much milder decline, a pattern that generally holds for other southern states. The recovery in applications was quite uneven. Illinois and Georgia had skyrocketing application growth, whereas the other states had more muted rebounds. Even New York, which experienced the largest decline initially, went from a 50% deficit in applications in week 13 to a nearly 75% surplus in week 27, relative to the same weeks in 2019. As in the case of the regions, application growth generally recedes for all states featured in Figure 23 after week 27. Nevertheless, Georgia and Illinois maintained high rates of growth compared to the other states in Figure 23.

Figure 24 offers more insight to the variation across states in weekly year-over-year growth rates. It plots the weekly dispersion in growth rates across all 50 states and District of Columbia included in BFS. The dispersion across states is quantified using three different measures: standard deviation (SD), interquartile range (IQR), and the difference between 90th and 10th percentiles (90-10). All three measures exhibit similar trends over the weeks in 2020. Before week 13, the dispersion measures exhibit little trend, except for some decline heading into week 13 as all states experience a sharp drop in growth rates nearly simultaneously. However, starting with week 13, the dispersion measures start to increase, culminating in a peak in dispersion in week 27 that coincides with the peak in application volumes for states in general. All three measures indicate that there was an increasingly large divergence in growth rates between week 13 and 27. While all dispersion measures subside after week 27, the dispersion remains high compared to the initial part of 2020, hinting at potentially long-lasting differences in business application growth brought about by the individual experiences of states during the pandemic. It is perhaps no surprise that states followed diverging paths, given the heterogeneous nature and timing of state-level measures taken to abate the impact of the COVID-19 crisis.

3.4. Did the PPP contribute to the surge in new business applications?

Given the importance of the PPP for existing small businesses, a natural question to ask is whether the PPP contributed to the surge in new business applications in the BFS starting in May

2020 and continuing through January 2021. This is a complex question that requires more research in part because the PPP and other fiscal stimulative programs may have impacted new business formation indirectly via the impact on the overall economic outlook. Haltiwanger (2021) has an extensive discussion of this issue presenting evidence that the direct impact of the PPP program on the surge in new business applications was likely modest.

The core reason for the likely modest direct impact of the PPP on new business applications is that the PPP program is designed to provide financial support to existing businesses. Specifically, rules for obtaining a PPP loan require the business be in operation in February 2020. For existing employer businesses that received a PPP loan such businesses already had an EIN in February 2020 well before the surge in new business applications. Even for existing nonemployers that received a PPP loan, many also likely had an EIN. The primary group that may have been impacted are sole proprietor, nonemployers that did not have an EIN prior to applying for a PPP loan. Using SBA data on all loans, about 600K of the 5.2 million PPP loans by August 2020 went to sole proprietor, nonemployers.⁴² This can be interpreted (see Haltiwanger (2021) for more discussion) as an upper bound on PPP loan recipients that applied for an EIN directly as part of participation in the PPP program.⁴³ This upper bound is relatively small compared to almost 4 million new business applications from May 2020 to January 2021. It is also worth emphasizing that the surge in new business applications is not just in overall applications but also in applications for likely new employers (HBA and WBA). New employer businesses that began operations after February 2020 are not eligible for PPP loans.

4. Conclusion and Future Work

The COVID-19 pandemic highlights the need for timely, high frequency, and geographically and sectorally granular socio-economic data. We focused on two economic data products introduced by the Census Bureau during the pandemic. The Small Business Pulse

⁴² For SBA data on all loans see <https://www.sba.gov/funding-programs/loans/coronavirus-relief-options/paycheck-protection-program/ppp-data#section-header-2>.

⁴³ It would also be interesting to obtain data on loan applications by employer and nonemployer status. As discussed in Haltiwanger (2021) there was no incentive for existing nonemployer, sole proprietors as of February 2020 to apply for an EIN in order to apply for a PPP loan (especially in the first round in 2020). It is more likely that some of the nonemployer, sole proprietors that obtained loans applied for an EIN after receiving the loan. A business bank account facilitates the reporting requirements of a PPP loan and an EIN is needed for a business bank account.

Survey provides information about an important part of the economy which was especially impacted by COVID-19: small businesses. The weekly and monthly Business Formation Statistics provide forward-looking information about an important driver of economic growth: employer business startups, which contribute to jobs and productivity. These two products capture temporal, sectoral, and spatial variation in the impact of the pandemic on the U.S. economy.

One important area missing from these new data products that still needs better measurement is business deaths. The SBPS is not well designed to capture business deaths since survey nonresponse is likely greater for closed businesses. Existing research suggests that, similar to business births, business death may be best captured as a process resulting eventually in the event of death. There may be extended periods in which a business is dormant but then becomes active again. Crane et al. (2020) highlight many different approaches to measuring business deaths including the use of credit card data, clock-in/out tracking data, mobile device location data, online platform rating data, energy use data, vacancy rates, survey data (such as the SBPS), and business administrative data. To this, we would also add administrative data on workers (such as LEHD data).

The empirical exercises in this paper could be extended to consider more relationships between concepts captured in the SBPS. For example, exercises could focus on relationships between revenue changes and the ability to pivot to new goods and services or new ways of delivering these goods and services. It may also be possible to disentangle some of the sectoral and geographic impacts. For example, to look at state differences in customer shifts away from businesses in Accommodation and Food Services towards businesses in Retail Trade (that is, from restaurants to grocery stores). The SBPS website provides data for state by sector which could be used for this type of analysis. Another area of exploration would be to use the size class information provided by the SBPS to examine any differential patterns based on size. The size class information is based on the number of employees and there are three classes: 1-4, 5-19, and 20 or more.

Finally, as of the writing of this paper, the SBPS is now in Phase 4 of collection. Phase 4 retains the core concepts of overall sentiment; changes in revenue, employment, and hours; and expectations. Content was reviewed for continued relevance and new concepts were added to capture the changing nature of the pandemic. New content added includes business requirements

for COVID-19 testing or vaccinations for onsite employees, changes in the physical footprint, capital expenditures, business travel, and updates to the federal assistance programs. With new content added, less relevant concepts were removed to maintain the overall response burden.

Moving beyond the publicly available data to the underlying micro level data, future research could more deeply explore the patterns that we illuminate. It is likely that there are rich and complex dynamics at play over time, geography, and sector that can only be captured using the micro data. The underlying micro data for these two products will be available to qualified researchers on approved projects in the Federal Statistical Research Data Center network. We hope this paper inspires others to use these rich sources of information.

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Table 1: Overview of SBPS Questions		
Concept	Question	
	Phase 1	Phases 2-3
Subjective well being	Overall, how has this business been affected by the COVID-19 pandemic? [5-bins]	Unchanged
Operating revenue	In the last week, did this business experience a change in operating revenues? [3 checkboxes]	Added “revenue/sales/receipts, not including any financial assistance or loans?”
Operating revenue	In the last week, what was the total operating revenue for this business? [10 bins]	Added “revenue/sales/receipts, not including any financial assistance or loans?”
Operating status	In the last week, did this business temporarily close any of its locations for at least one day? [2 checkboxes]	In the last week, did this business do any of the following? [4 checkboxes]
Number of employees	In the last week, did this business have a change in the number of paid employees? [3 checkboxes]	Unchanged
Re-hire employees		In the last week, did this business re-hire any paid employees who had been furloughed or laid off after March 13, 2020? [3 checkboxes]
Number of hours worked	In the last week, did this business have a change in the total number of hours worked by paid employees? [3 checkboxes]	Unchanged
Work from home		In the last week, did this business have a change in the total number of hours paid employees worked from home? [4checkboxes]
Supply chain	In the last week, did this business have disruptions in its supply chain? [2 checkboxes]	In the last week, did this business have any of the following? [7 checkboxes]
Product/service offerings	In the last week, did this business shift to the production of other goods or services? [2 checkboxes]	
Mode of product/service delivery	In the last week, did any of this business’s locations adopt pickup/carry-out/delivery as their only means of providing goods and services to their customers? [2 checkboxes]	
Factors that affect capacity		In the last week, was this business's operating capacity affected by any of the following? [8 checkboxes]
Capacity change		How would you describe this business's current operating capacity relative to one year ago? [5 bins]

Cash flow	How would you describe the current availability of cash on hand for this business? [7 checkboxes]	Added “including any financial assistance or loans?”
Loan defaults	The White House declared a national emergency because of the COVID-19 pandemic on March 13, 2020. Since then, has this business missed any loan payments? [2 checkboxes]	Unchanged
Other payment defaults	Since March 13, 2020, has this business missed any other scheduled payments, not including loans? [2 checkboxes]	Unchanged
Application for financial assistance	Since March 13, 2020, has this business <u>requested</u> financial assistance from any of the following sources? [10 checkboxes]	Unchanged but now with [14 checkboxes]
Receipt of financial assistance	Since March 13, 2020, has this business <u>received</u> financial assistance from any of these programs from the federal government? [5 checkboxes]	Unchanged but now with [9 checkboxes]
Online platforms		Since March 13, 2020, has there been an increase in this business's use of online platforms to offer goods or services? [3 checkboxes]
Future plans		In the next 6 months, do you think this business will need to do any of the following? [8 checkboxes]
Subjective return to normal operations	In your opinion, how much time do you think will pass before this business returns to its usual level of operations? [6 checkboxes]. In week 4 of Phase 1, this was changed to: In your opinion, how much time do you think will pass before this business returns to its normal level of operations relative to a year ago?	Unchanged but now with [8 checkboxes]

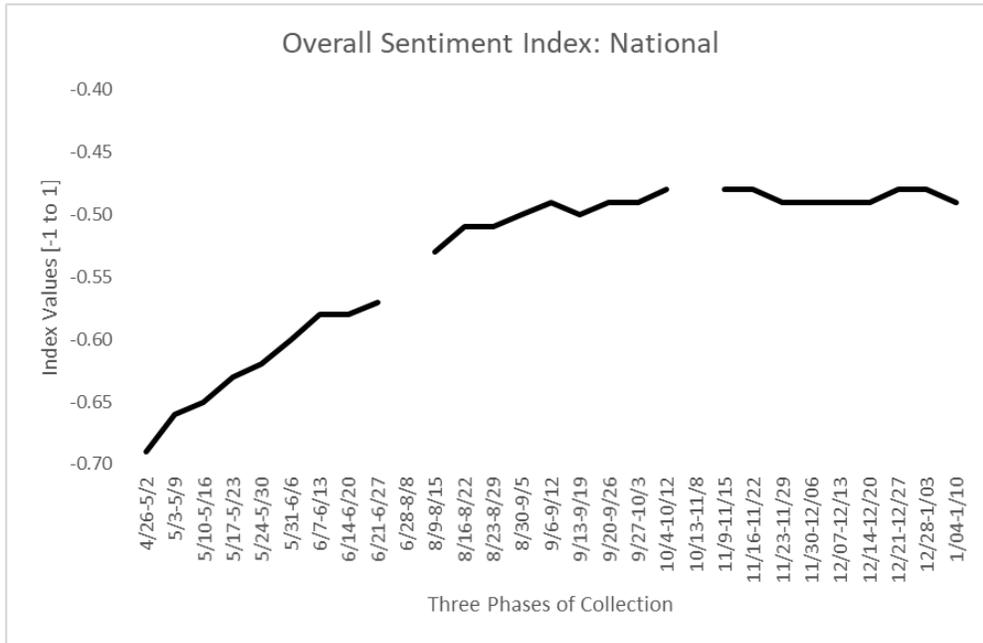
Table 2: Finance and Insurance and Accommodation and Food Services		
Panel A: Establishments and Employment		
Sector	Number of Establishments	Number of Employees
2019 total		
Finance and Insurance	476,369	6,554,437
Accommodation and Food Services	741,351	14,502,449
2018 total		
Finance and Insurance	477,562	6,499,208
Accommodation and Food Services	733,134	14,345,140
2018 small (less than 500)		
Finance and Insurance	475,861	4,467,617
Accommodation and Food Services	732,415	13,571,550
Panel B: Employment		
	January 2020	January 2021
Finance and Insurance	6,476.3	6,525.0
Accommodation and Food Services	13,871.5	10,967.8
Sources: Panel A: County Business Patterns Panel B: Table B1 of Employment Situation, February 5, 2021 (NSA)		

Table 3: Correlation between Declines in Revenue and Employment by Sector		
Sector	Phase 1	Phases 2-3
Construction	0.91	0.82
Manufacturing	0.87	0.10
Wholesale Trade	0.94	0.11
Retail Trade	0.98	0.21
Transportation and Warehousing	0.81	0.59
Information	0.92	0.34
Finance and Insurance	0.92	0.23
Real Estate	0.79	0.13
Professional, Scientific, Technical	0.90	0.35
Administrative	0.89	0.78
Educational Services	0.94	0.25
Health Care and Social Assistance	0.98	-0.03
Arts, Entertainment, and Recreation	0.96	0.72
Accommodation and Food Services	0.98	0.96
Other Services	0.98	0.62
Source: Authors' calculations.		

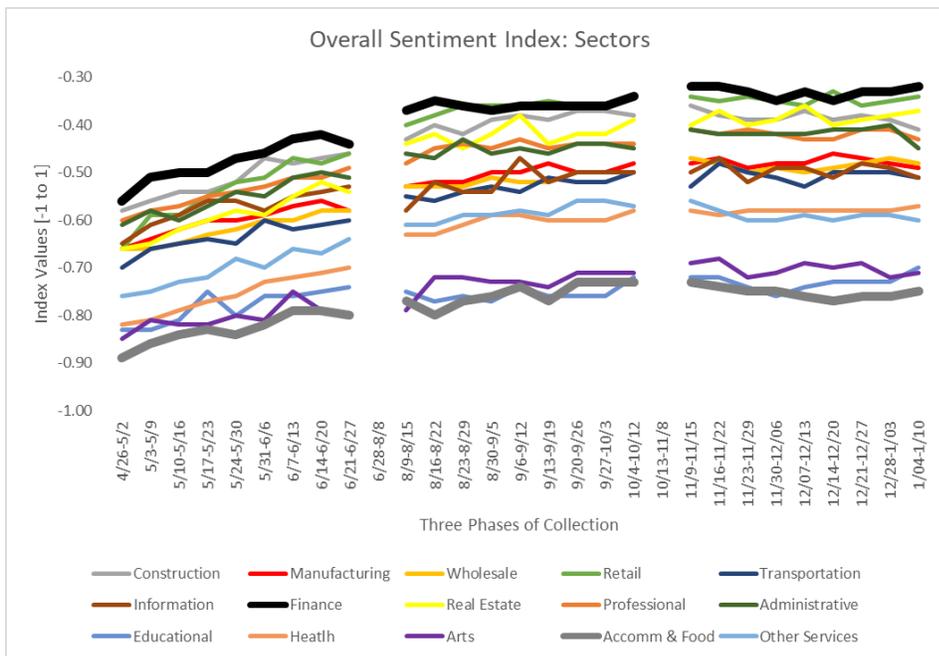
Table 4: Sectoral and Geographic Dispersion for Percentage of Businesses with Declining Revenues			
	Phase1	Phase2	Phase3
Max-Min			
Sectors	19.9	20.5	38.0
States	25.1	25.6	22.5
Coefficient of Variation			
Sectors	0.10	0.20	0.27
States	0.10	0.16	0.13
<p>Notes: Sectors excludes sectors 11, 21, 22, and 55. States excludes Puerto Rico. Average of the Max-Min and Coefficient of Variation for each phase. Source: Authors' calculations from Small Business Pulse Survey.</p>			

Figure 1: Business Overall Sentiment

Panel A: National



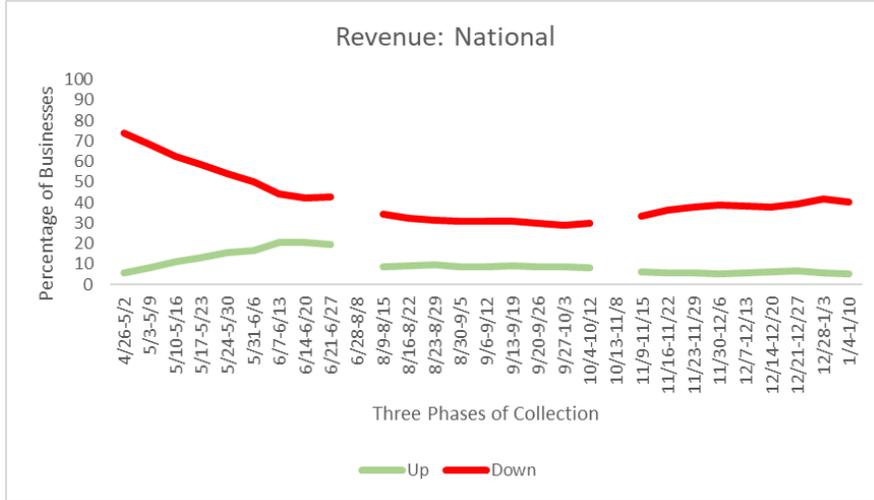
Panel B: Sectoral



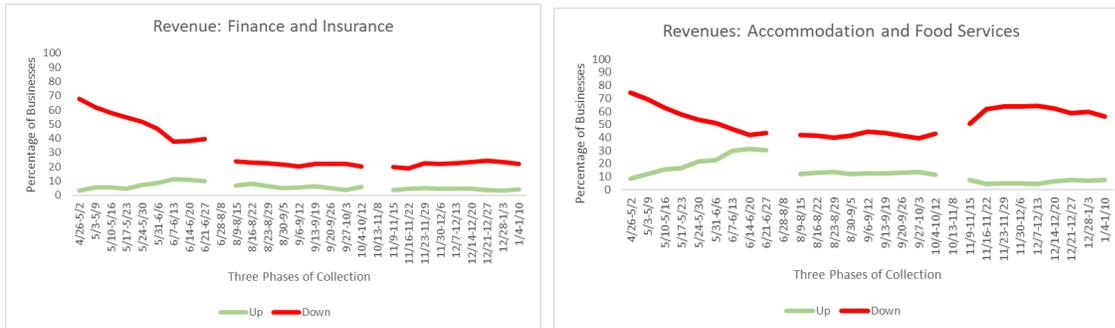
Source: Authors' calculations from Small Business Pulse Survey.

Figure 2: Revenue Changes

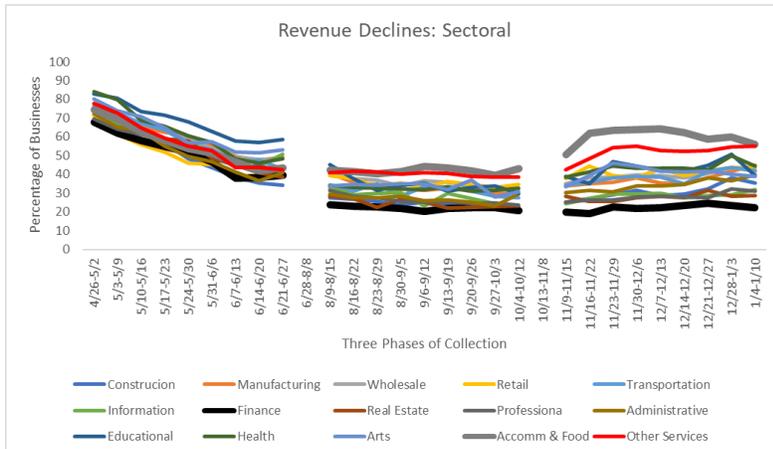
Panel A: National



Panel B: Two Sectors



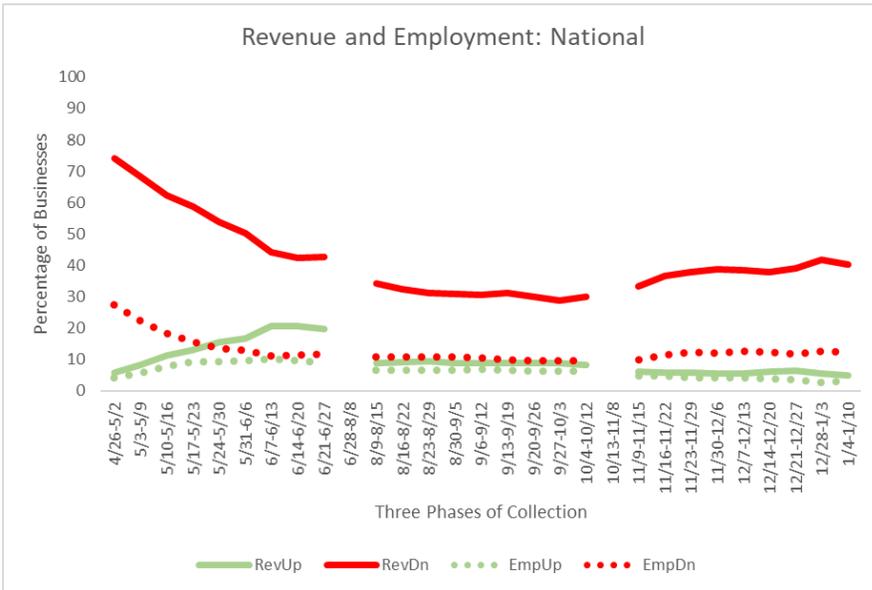
Panel C: All Sectors (Declining Only)



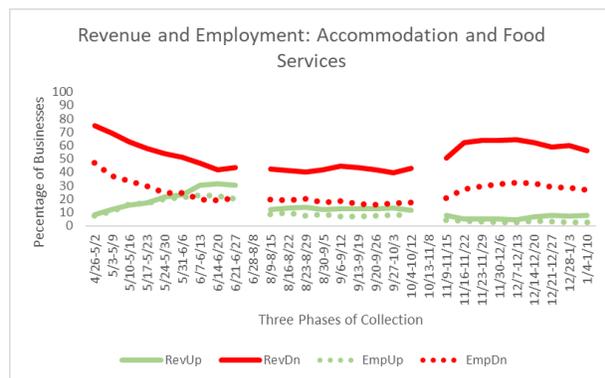
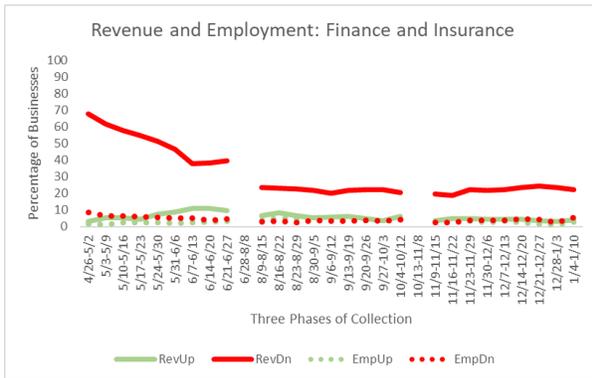
Source: Authors' calculations from Small Business Pulse Survey.

Figure 3: Employment (and Revenue) Changes

Panel A: National



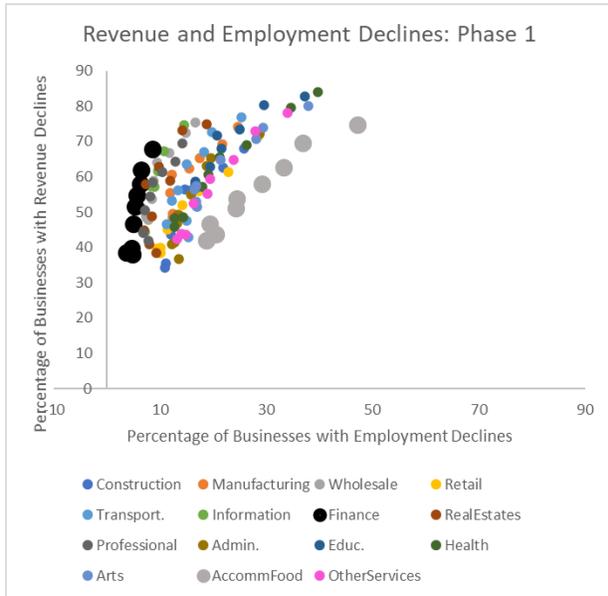
Panel B: Two Sectors



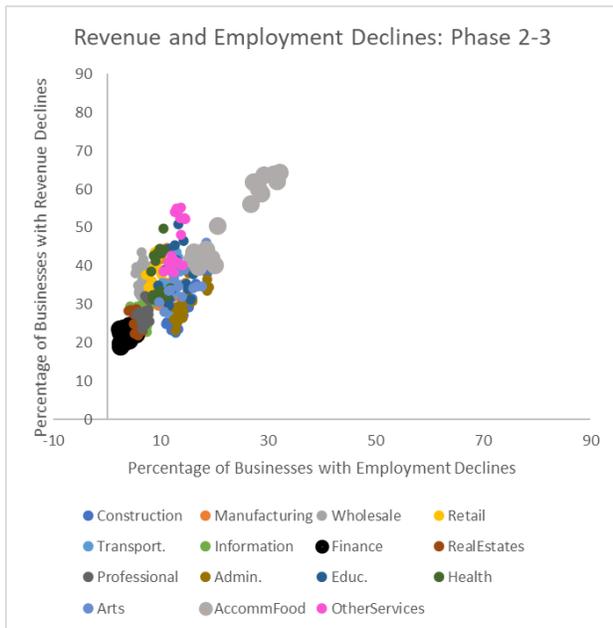
Source: Authors' calculations from Small Business Pulse Survey.

Figure 4: Declines in Revenue and Employment

Panel A: Phase 1



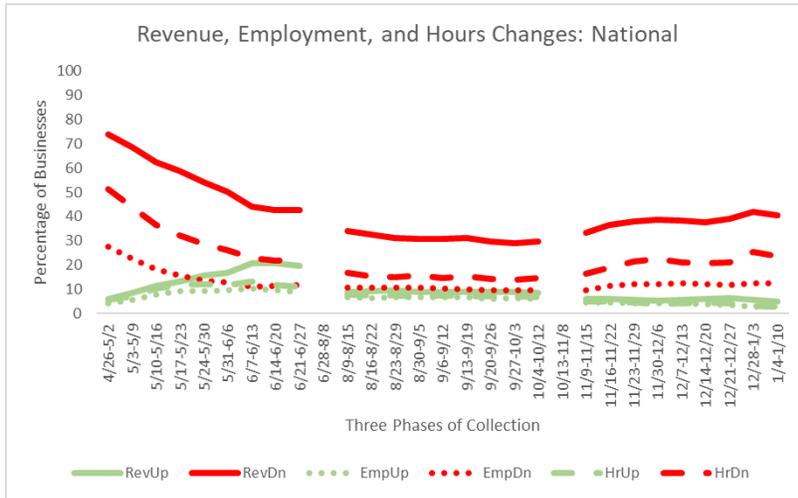
Panel B: Phases 2 and 3



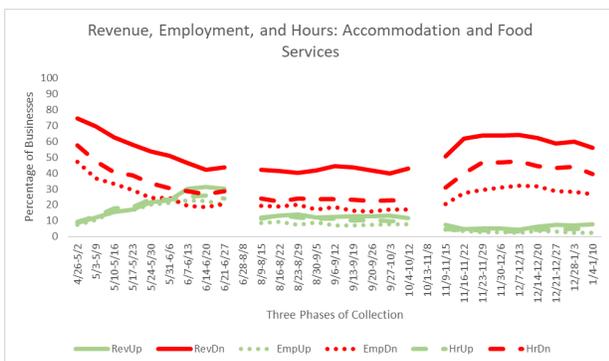
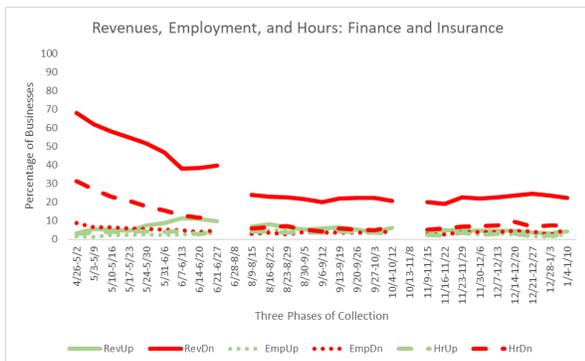
Source: Authors' calculations from Small Business Pulse Survey.

Figure 5: Hours Changes

Panel A: National



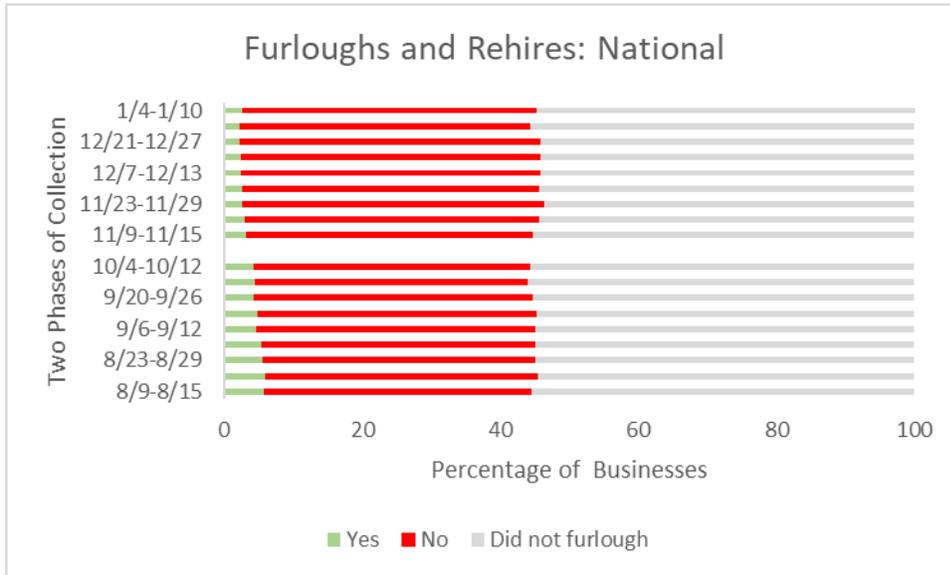
Panel B: Two Sectors



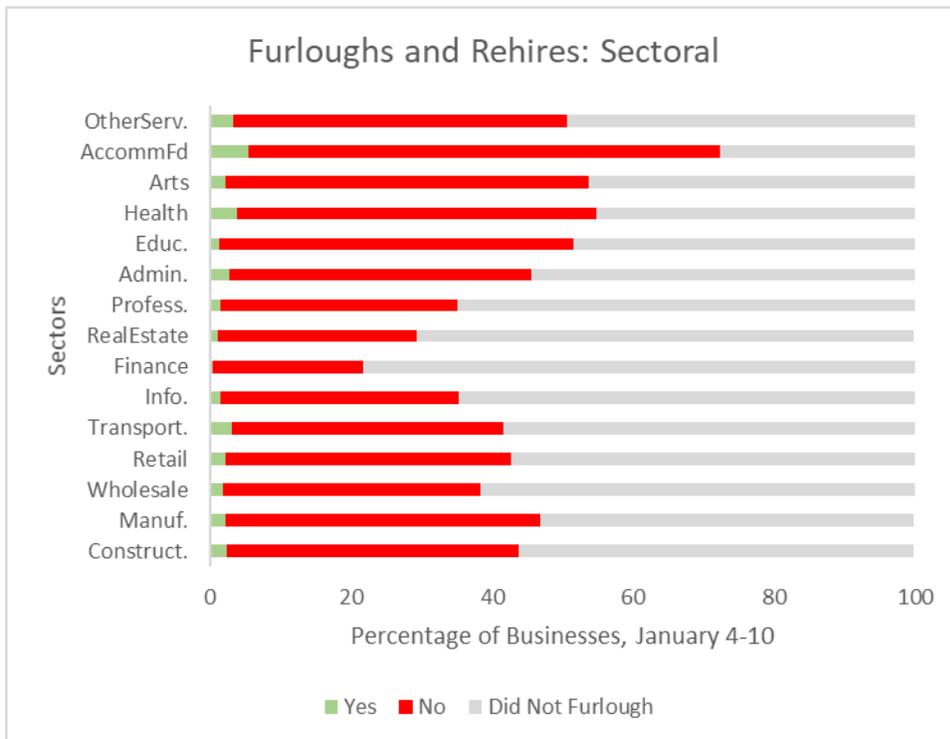
Source: Authors' calculations from Small Business Pulse Survey.

Figure 6: Furloughs and Rehires

Panel A: National



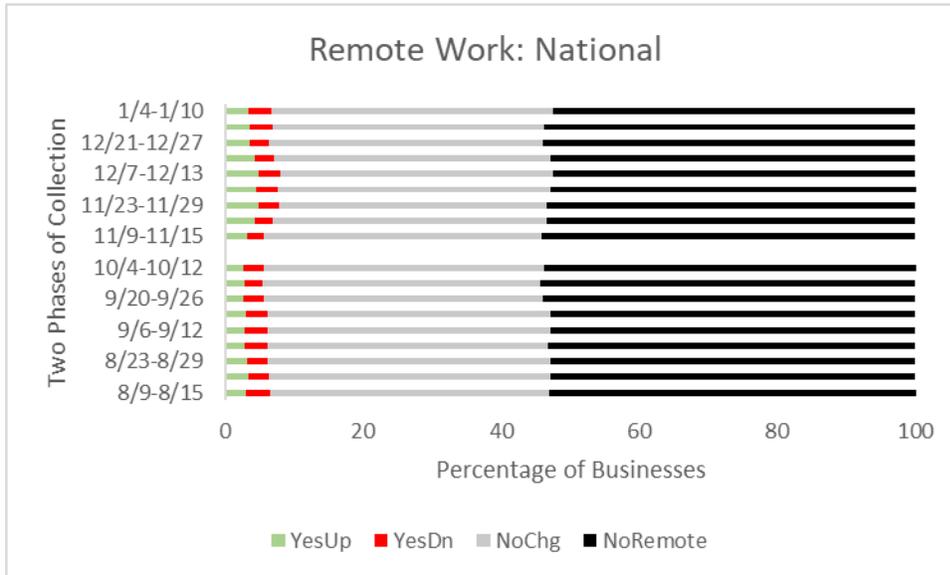
Panel B: Sectors



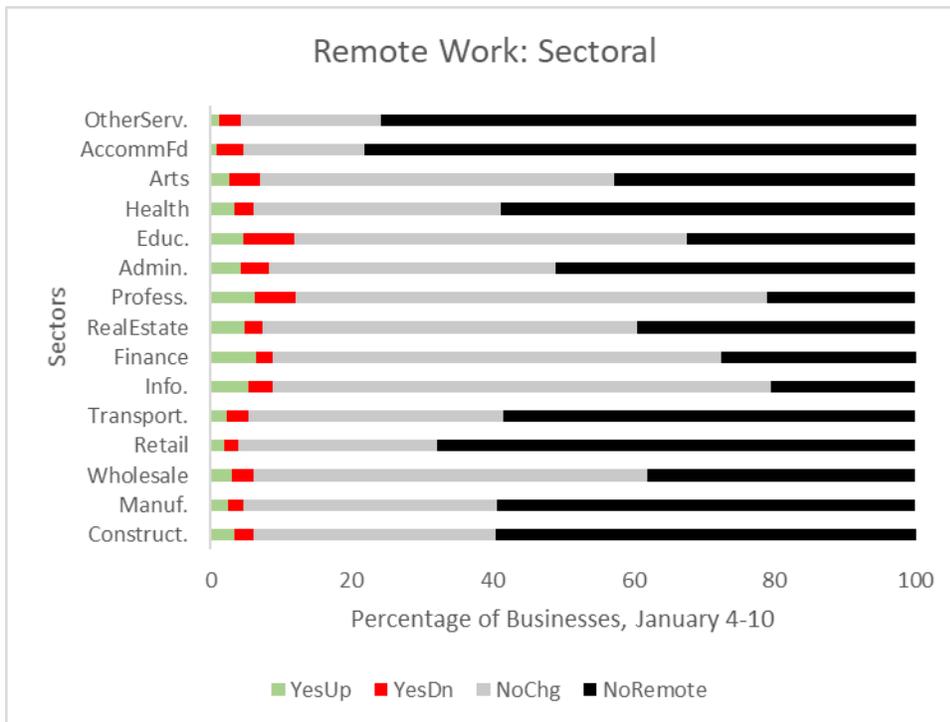
Source: Authors' calculations from Small Business Pulse Survey.

Figure 7: Remote Work

Panel A: National

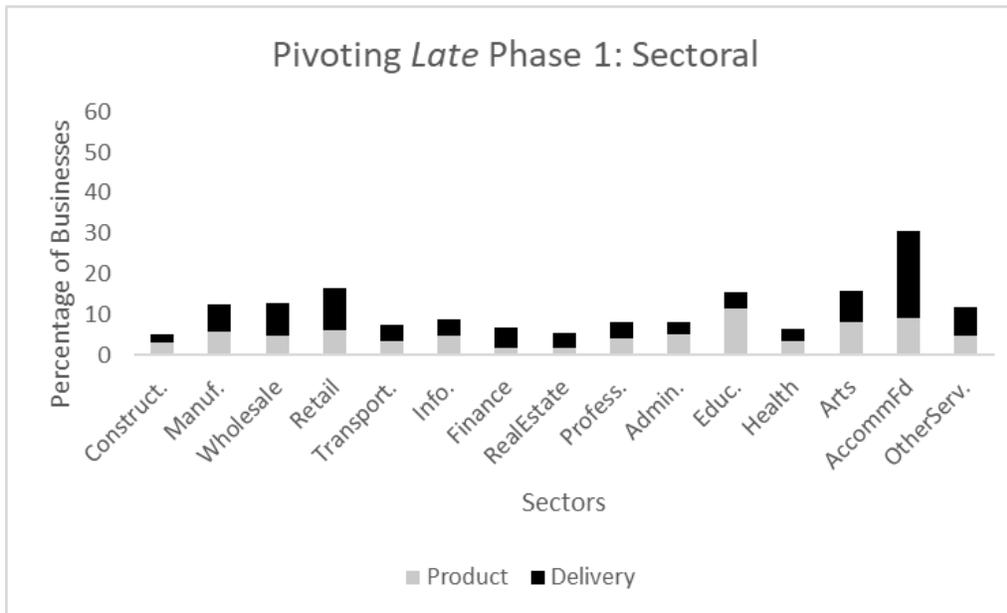
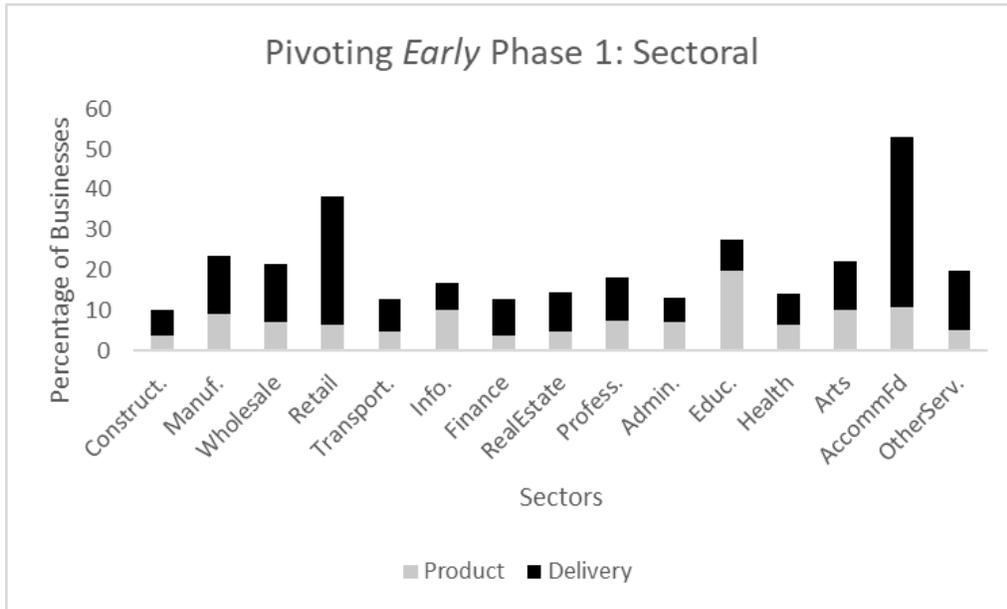


Panel B: Sectors



Source: Authors' calculations from Small Business Pulse Survey.

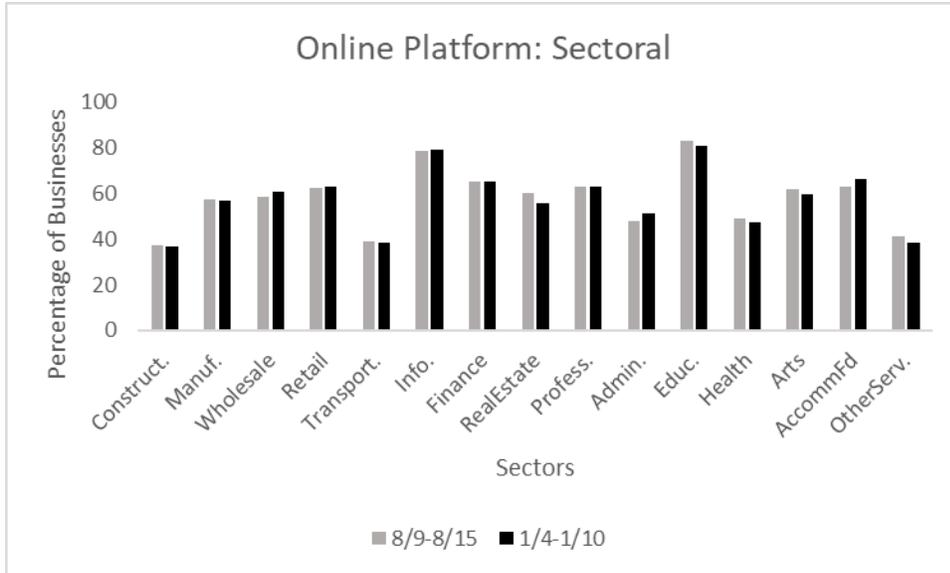
Figure 8: Pivoting to New Goods/Services and Delivery Mechanisms



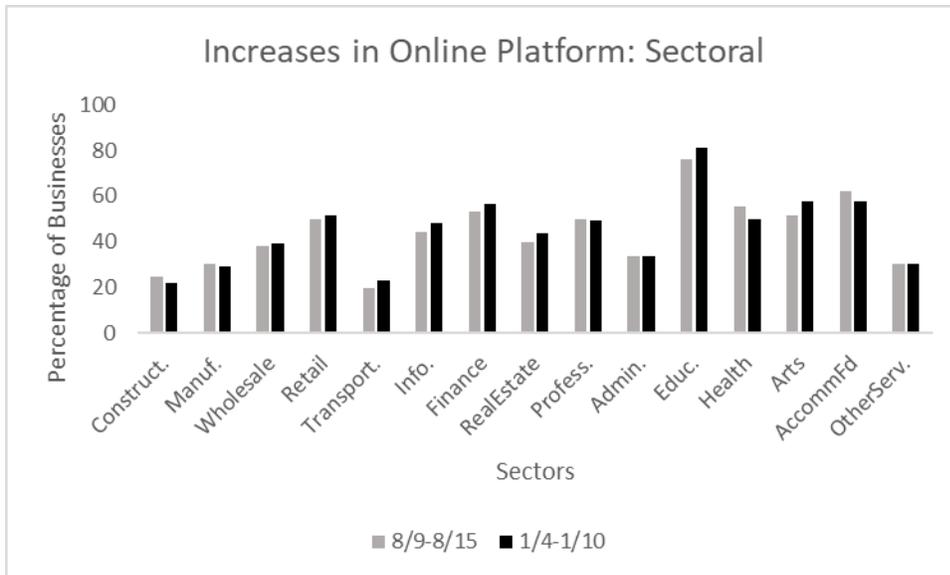
Source: Authors' calculations from Small Business Pulse Survey.

Figure 9: Online Platforms and Changes in Online Platforms

Panel A: Online Platforms by Sector



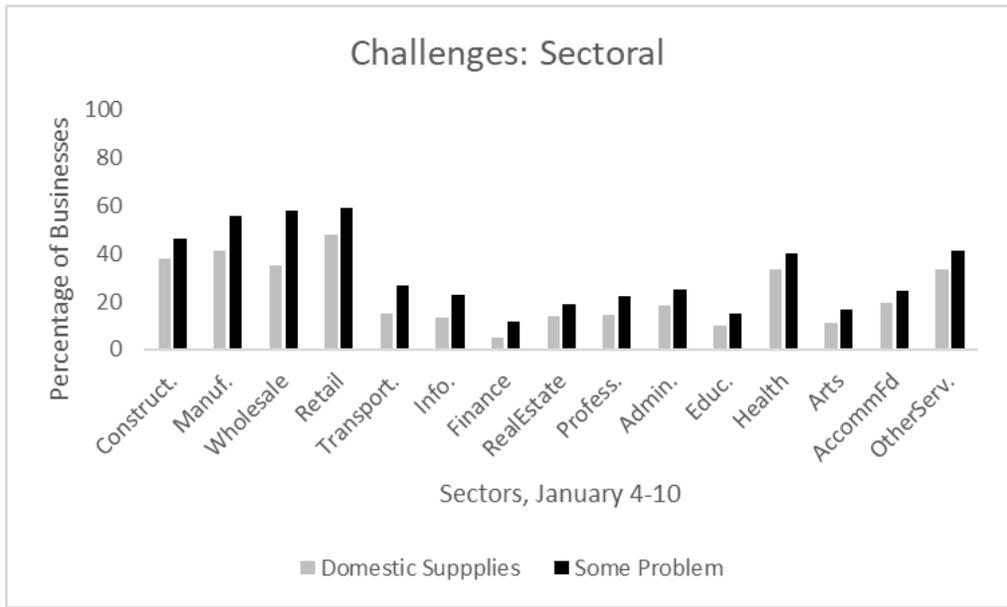
Panel B: Changes in Online Platforms by Sector



Notes: Panel B is percentage of businesses conditional on being in Panel A.

Source: Authors' calculations from Small Business Pulse Survey.

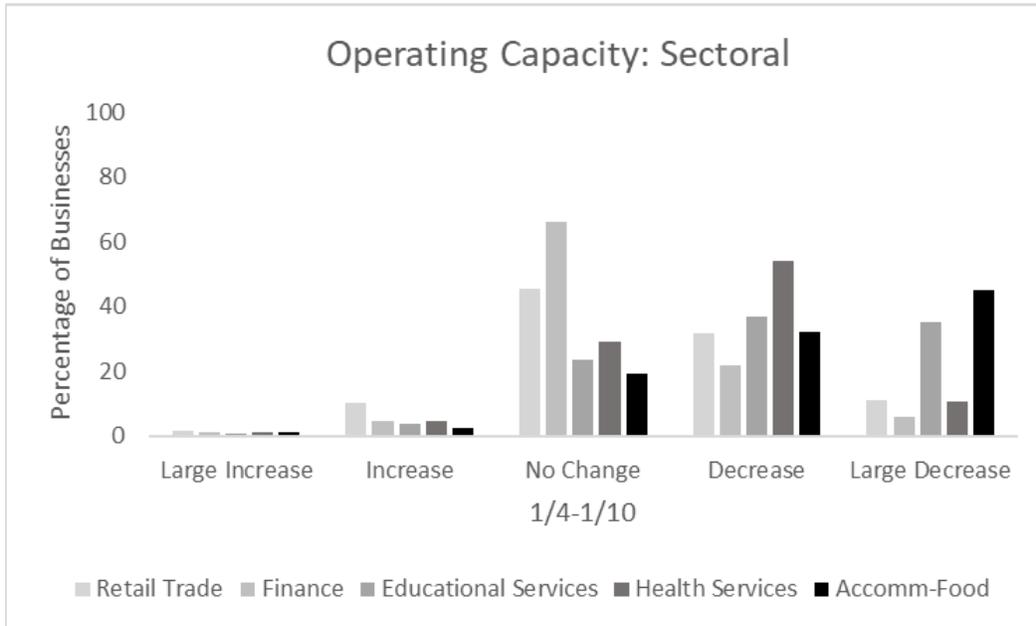
Figure 10: Production, Supply Chain, and Delivery Problems



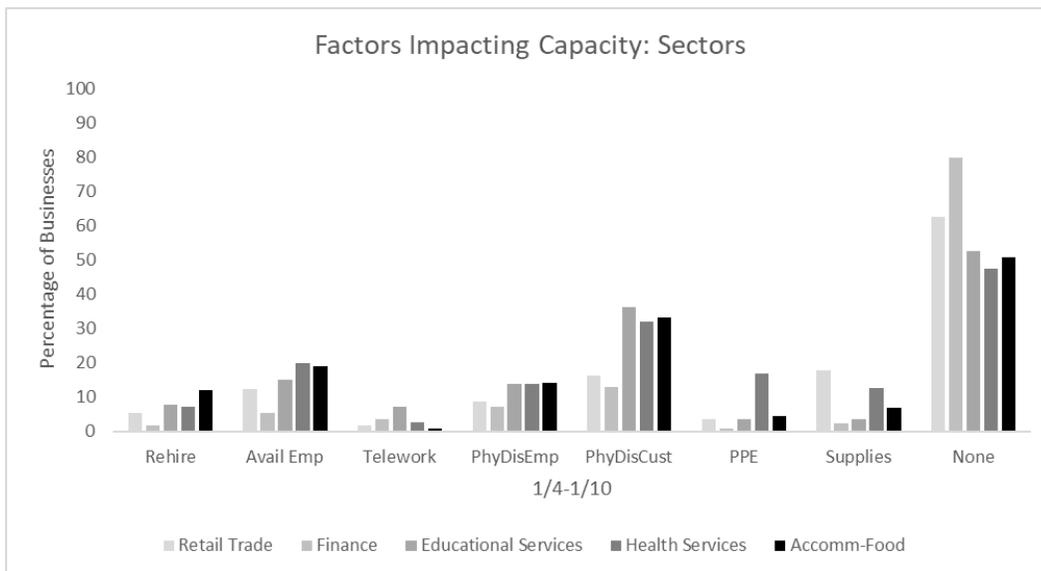
Source: Authors' calculations from Small Business Pulse Survey.

Figure 11: Operating Capacity and Factors Impacting Capacity

Panel A: Change by Sector



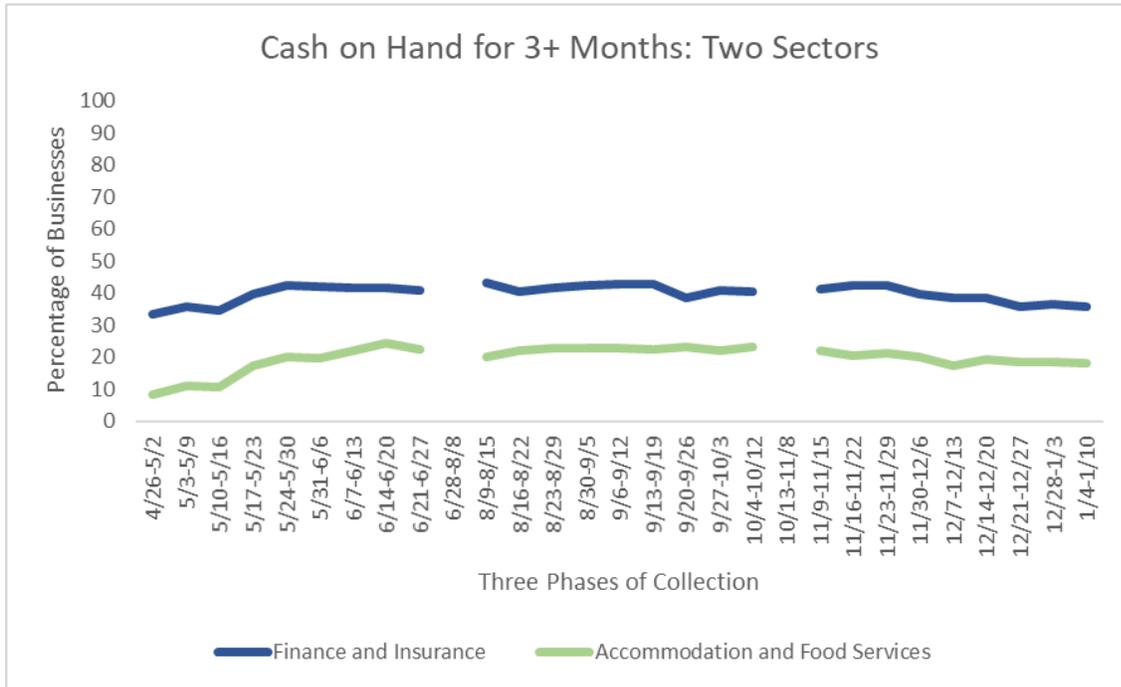
Panel B: Factors by Sector



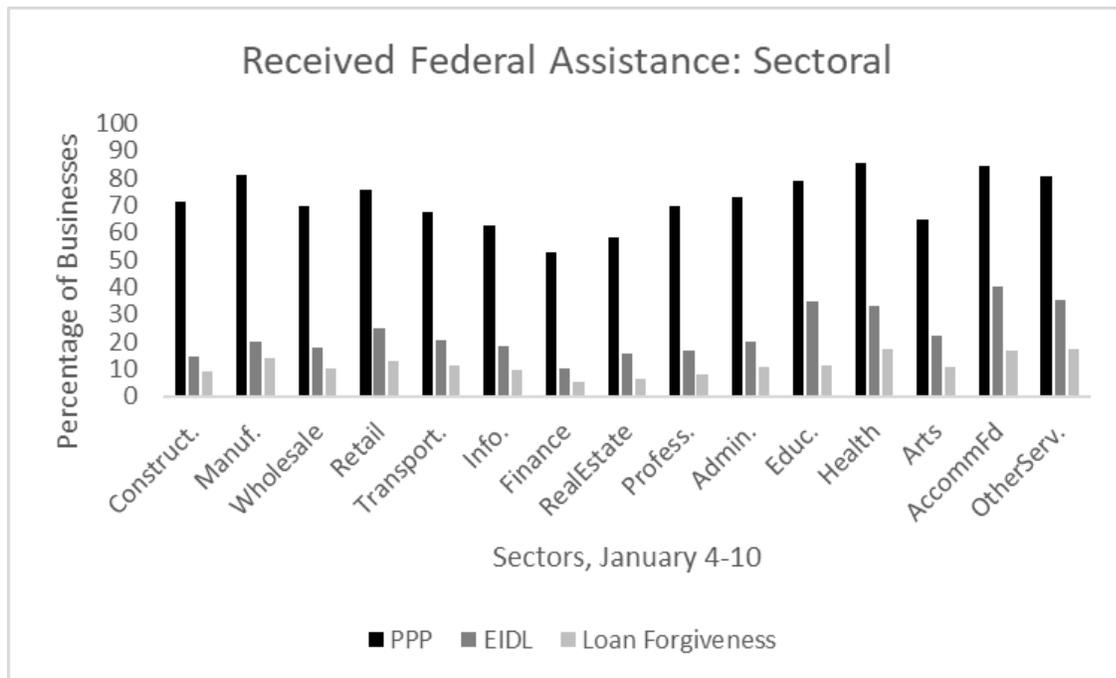
Source: Authors' calculations from Small Business Pulse Survey.

Figure 12: Financial

Panel A: Cash on Hand: Two Sectors



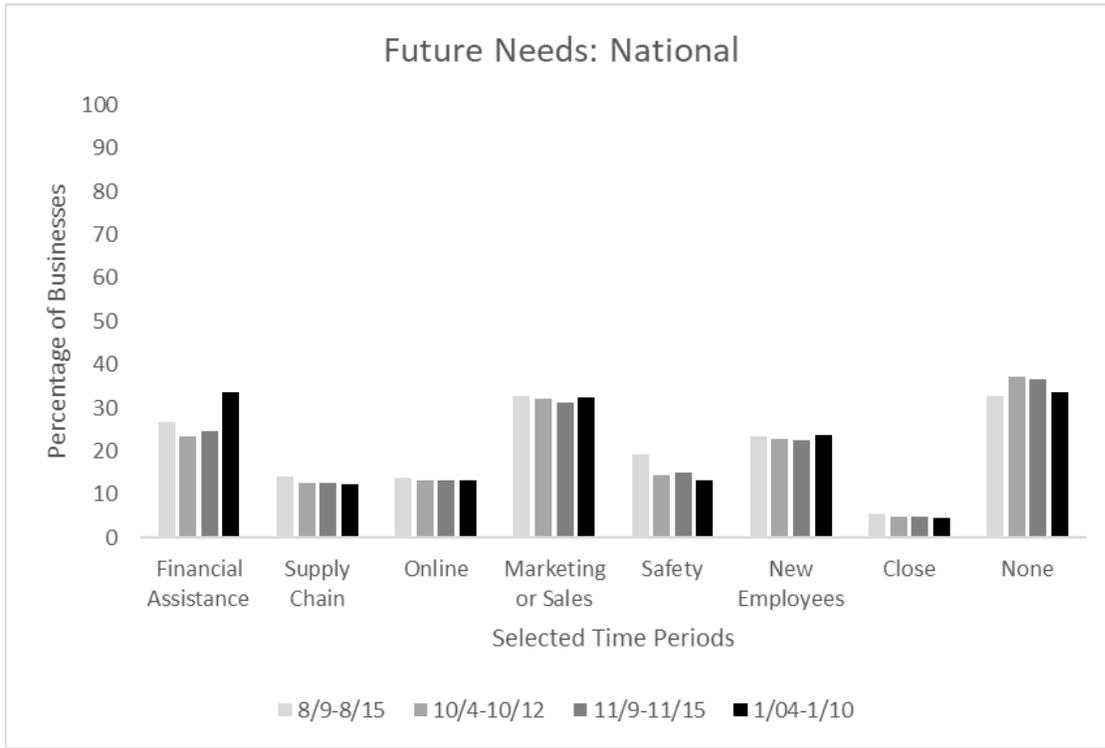
Panel B: Received Assistance from Three Federal Programs by Sector



Source: Authors' calculations from Small Business Pulse Survey.

Figure 13: Future Needs

Panel A. National



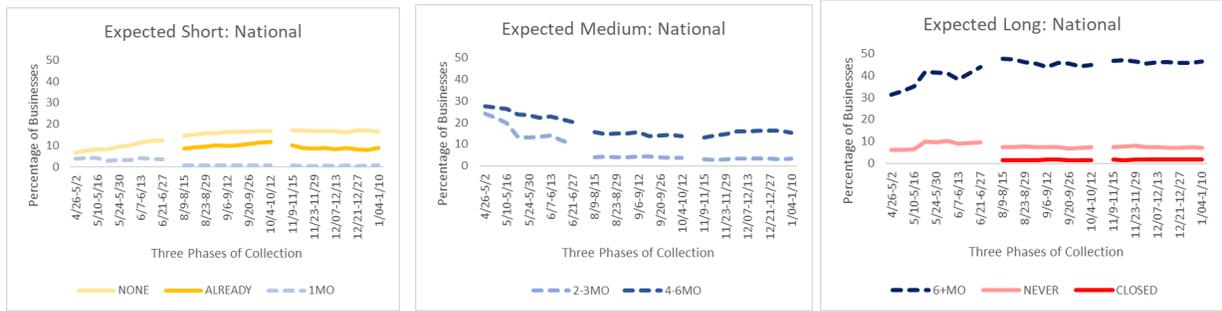
Panel B. Two Sectors



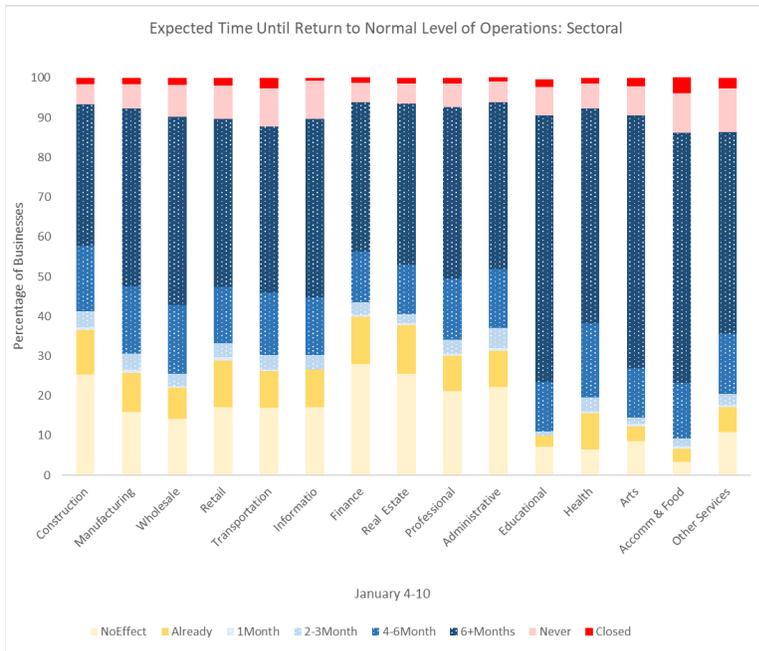
Source: Authors' calculations from Small Business Pulse Survey.

Figure 14: Expectations

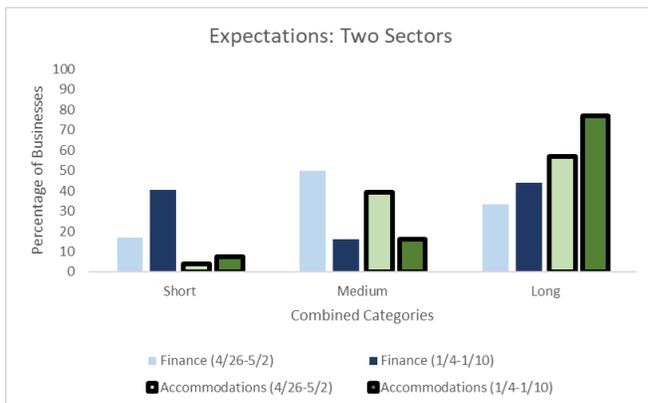
Panel A: National



Panel B: Sectoral

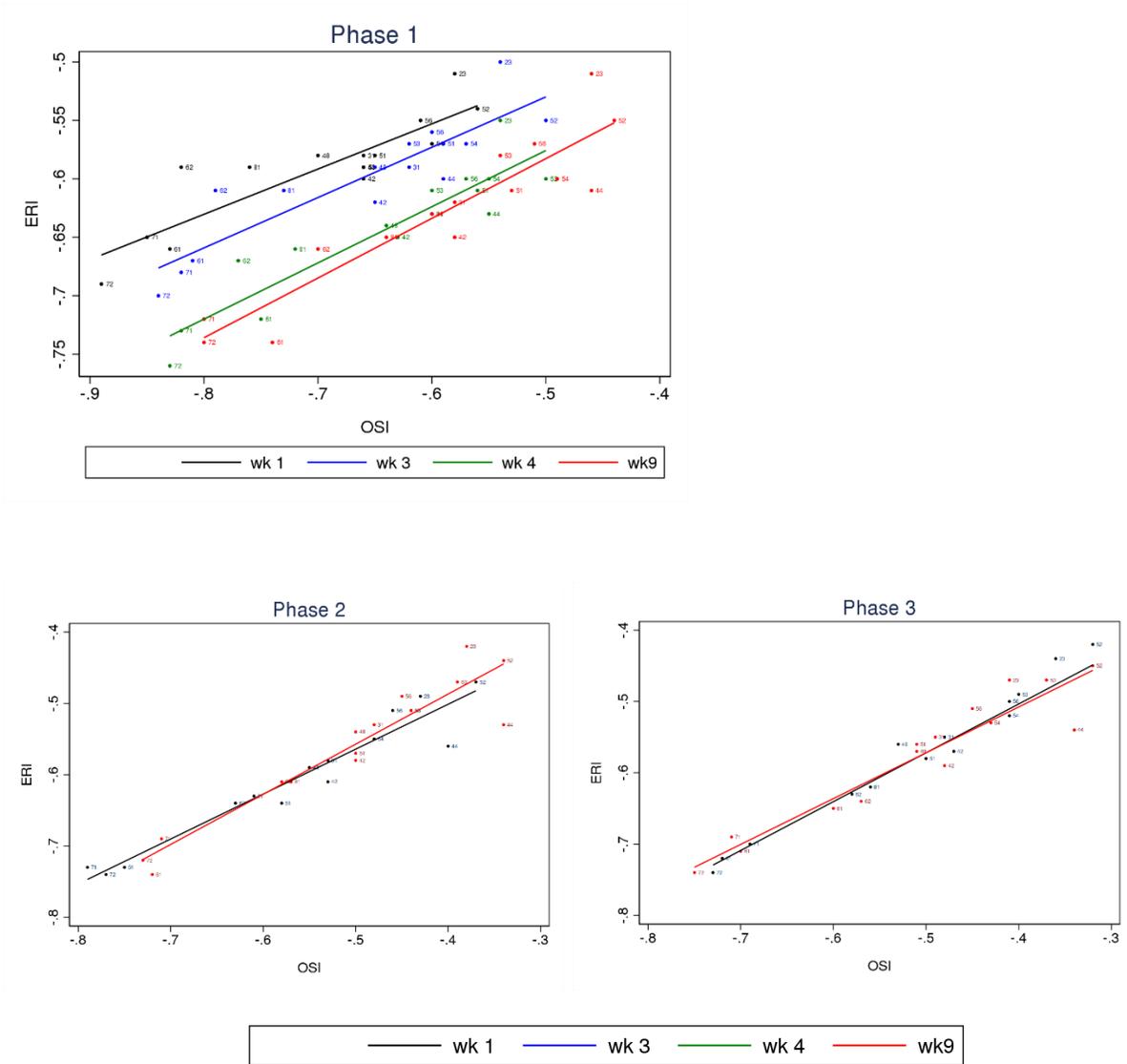


Panel C: Two Sectors



Source: Authors' calculations from Small Business Pulse Survey.

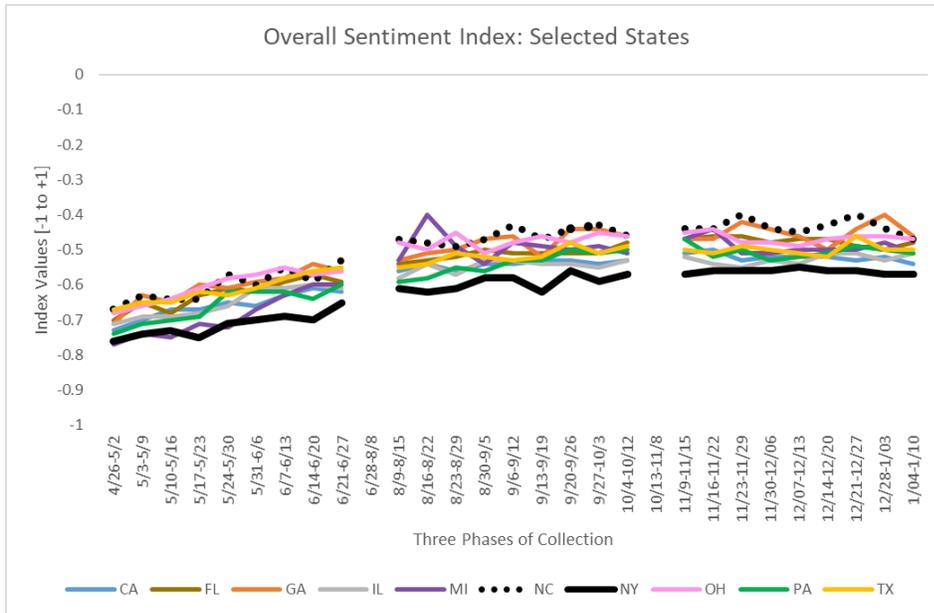
Figure 15: Business Overall Sentiment and Expectations



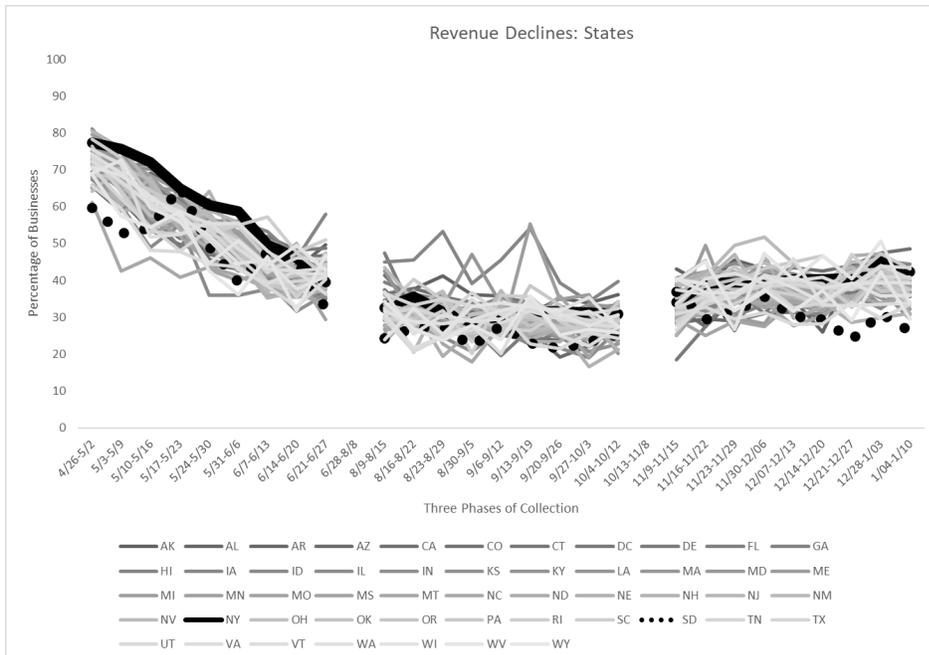
Source: Authors' calculations from Small Business Pulse Survey.

Figure 16: Business Sentiment and Revenue by State

Panel A: Overall Sentiment Index (Ten Largest States by Population)



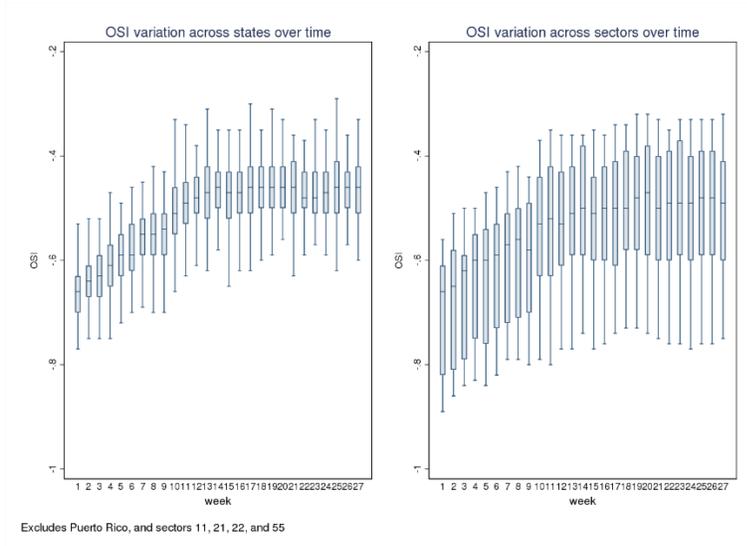
Panel B: Revenue Changes (Declining Only)



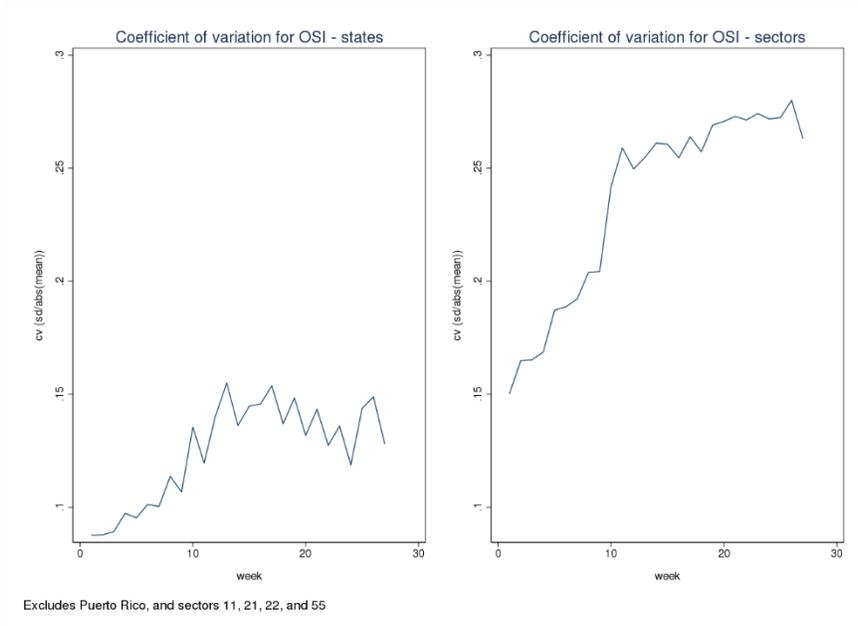
Source: Authors' calculations from Small Business Pulse Survey.

Figure 17: Dispersion by Sector and State in Overall Business Sentiment

Panel A: Box Plots



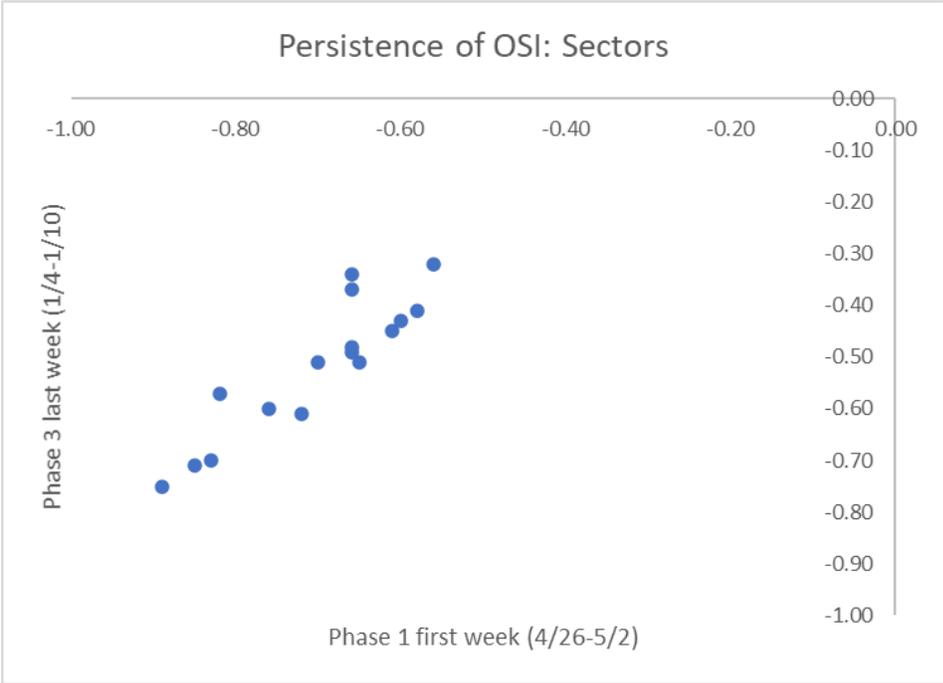
Panel B: Coefficient of Variation



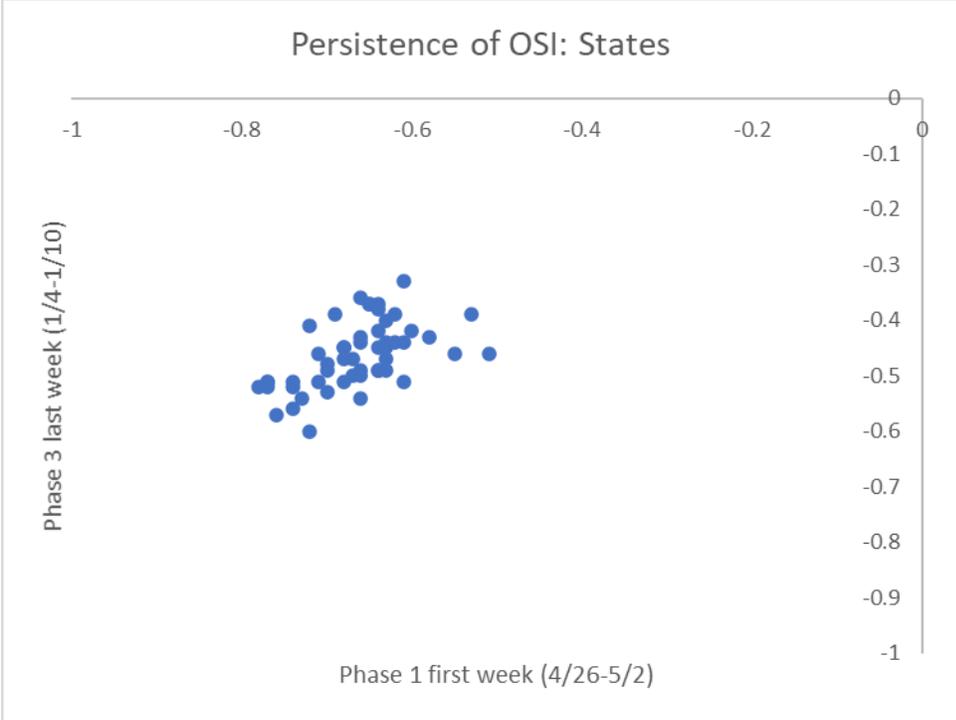
Source: Authors' calculations from Small Business Pulse Survey.

Figure 18: Persistence by Sector and State in Overall Business Sentiment

Panel A: Sectors

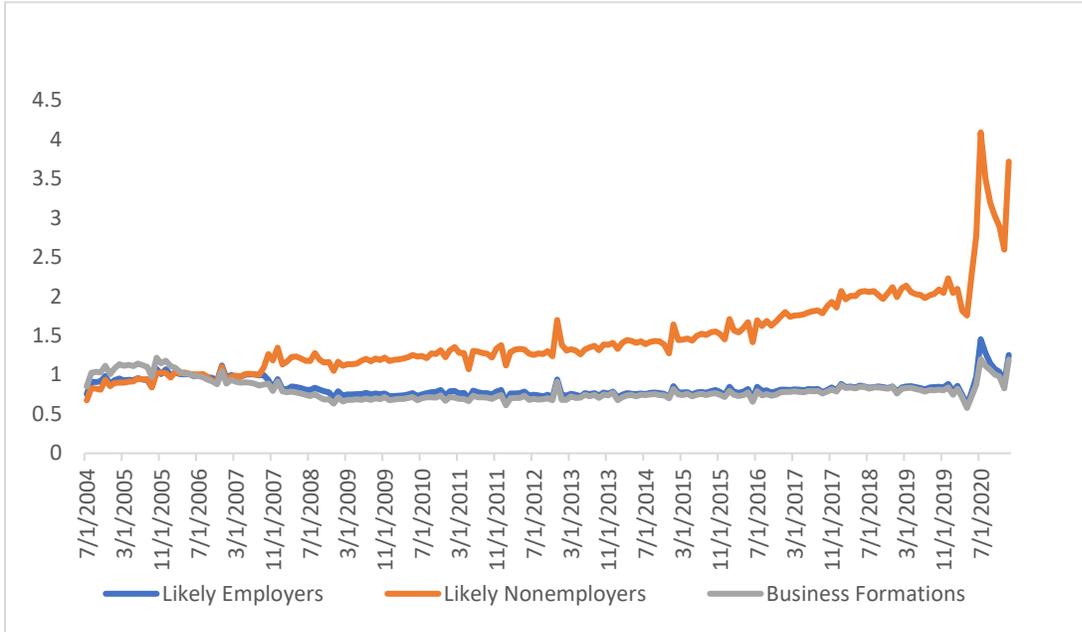


Panel B: States



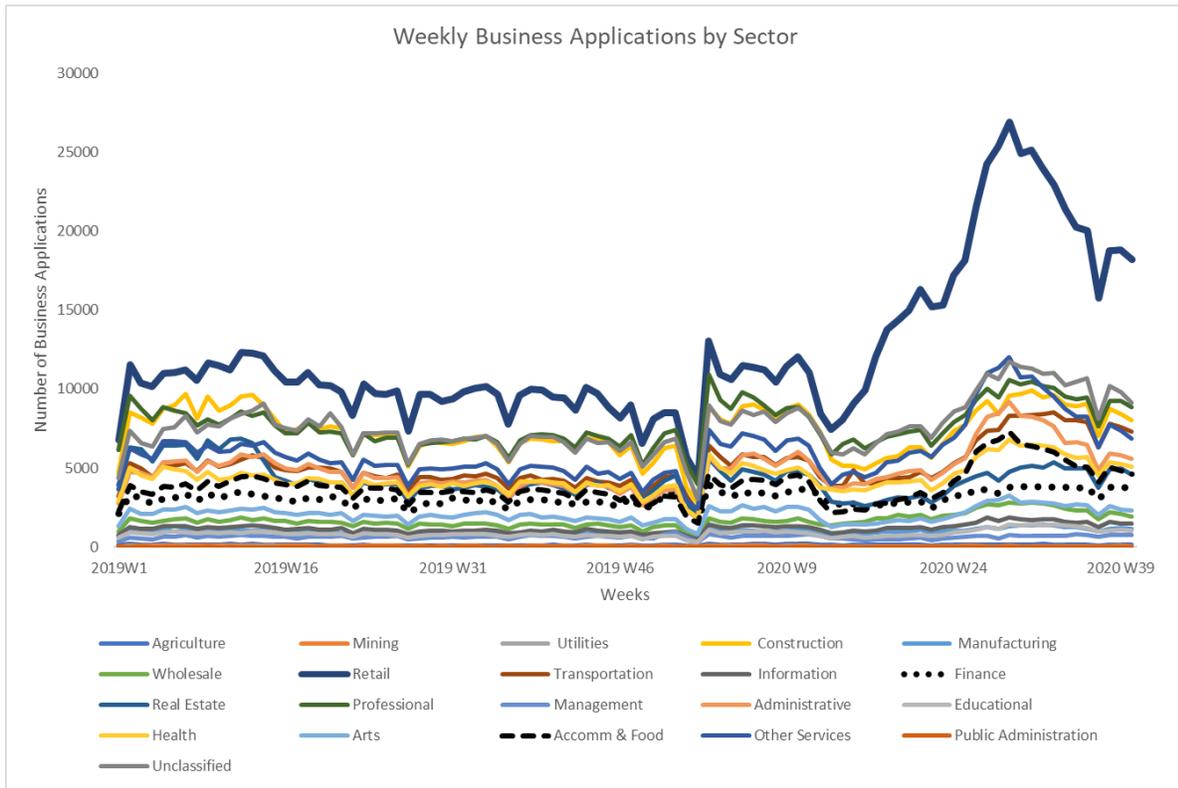
Source: Authors' calculations from Small Business Pulse Survey.

Figure 19: Monthly New Business Applications and (employer) Business Formations (indices=1 in 2006)



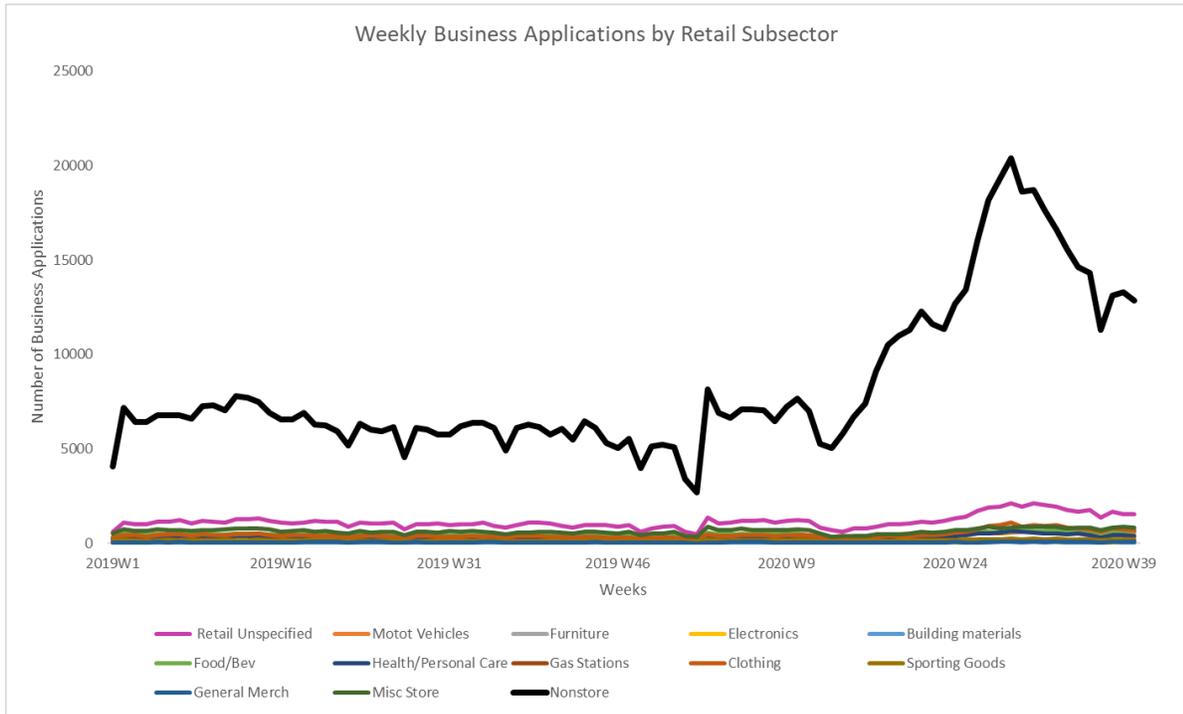
Source: Monthly BFS. Notes: Indices are relative to average in 2006 of each series. Likely employers = HBA, Likely nonemployers=BA-HBA, Business Formations is the spliced actual and projected series over the next eight quarters.

Figure 20. Business Applications by Sector, Weekly, 2019:w1 to 2020:w40



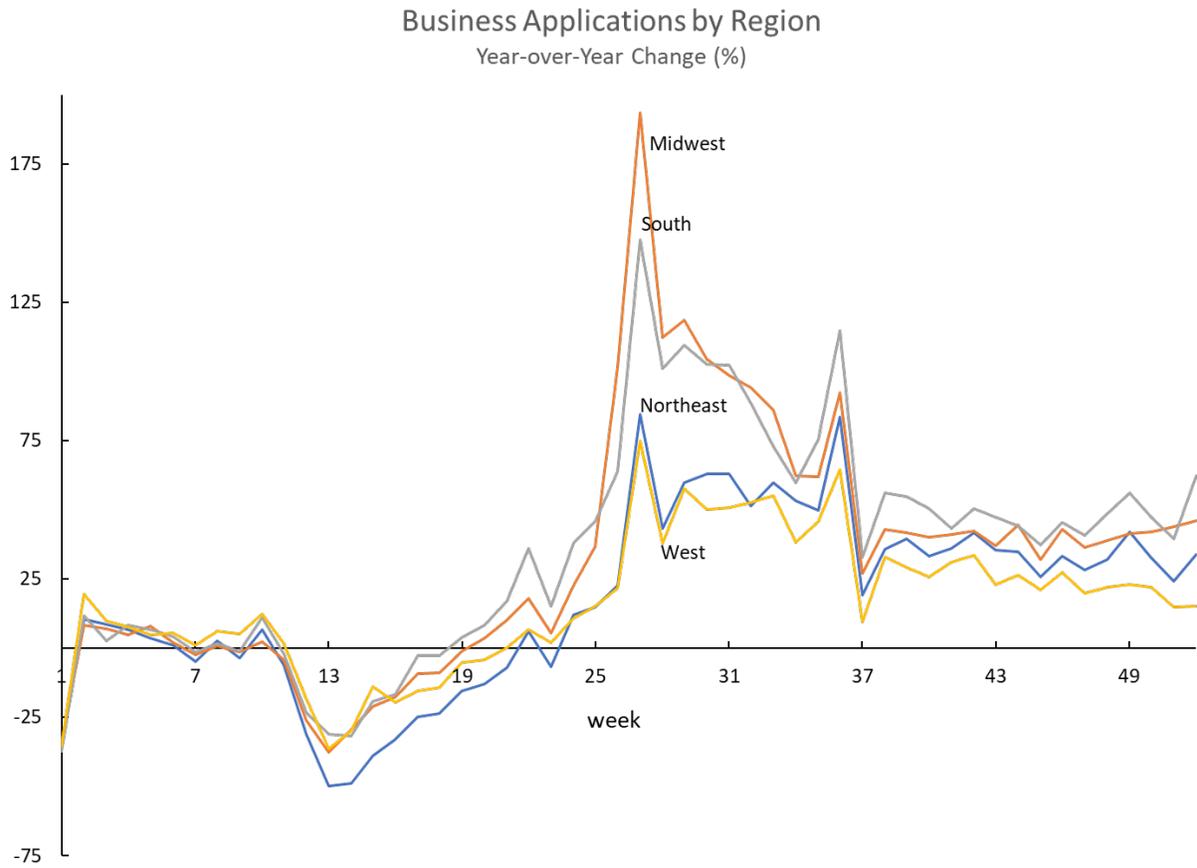
Source: Special Projects, Business Formation Statistics (<https://www.census.gov/econ/bfs/projects.html>)

Figure 21. Business Applications by Retail Sub-sector, 2019:w1-2020:w30



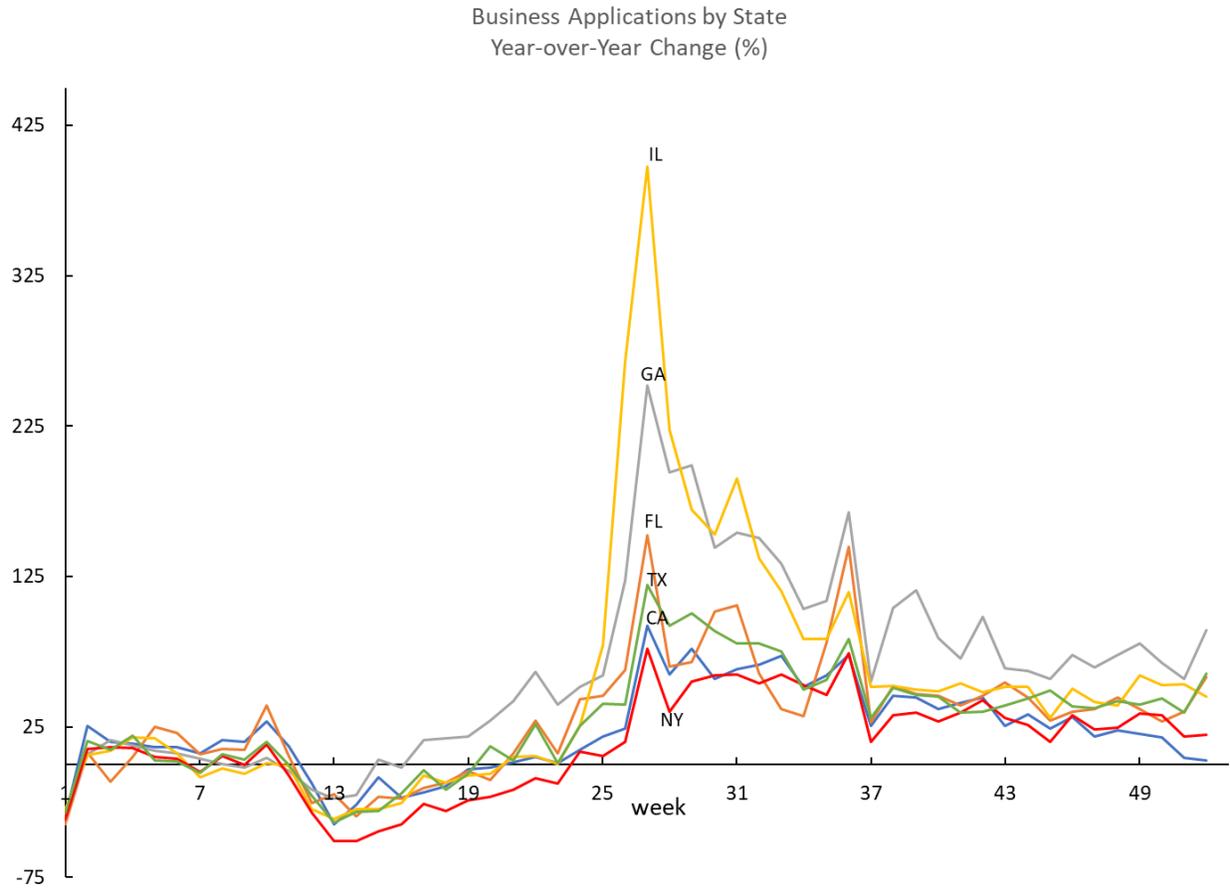
Source: Special Projects, Business Formation Statistics (<https://www.census.gov/econ/bfs/projects.html>)

Figure 22. Weekly Business Applications by Region, Year-over-Year Growth Rates (%), 2020



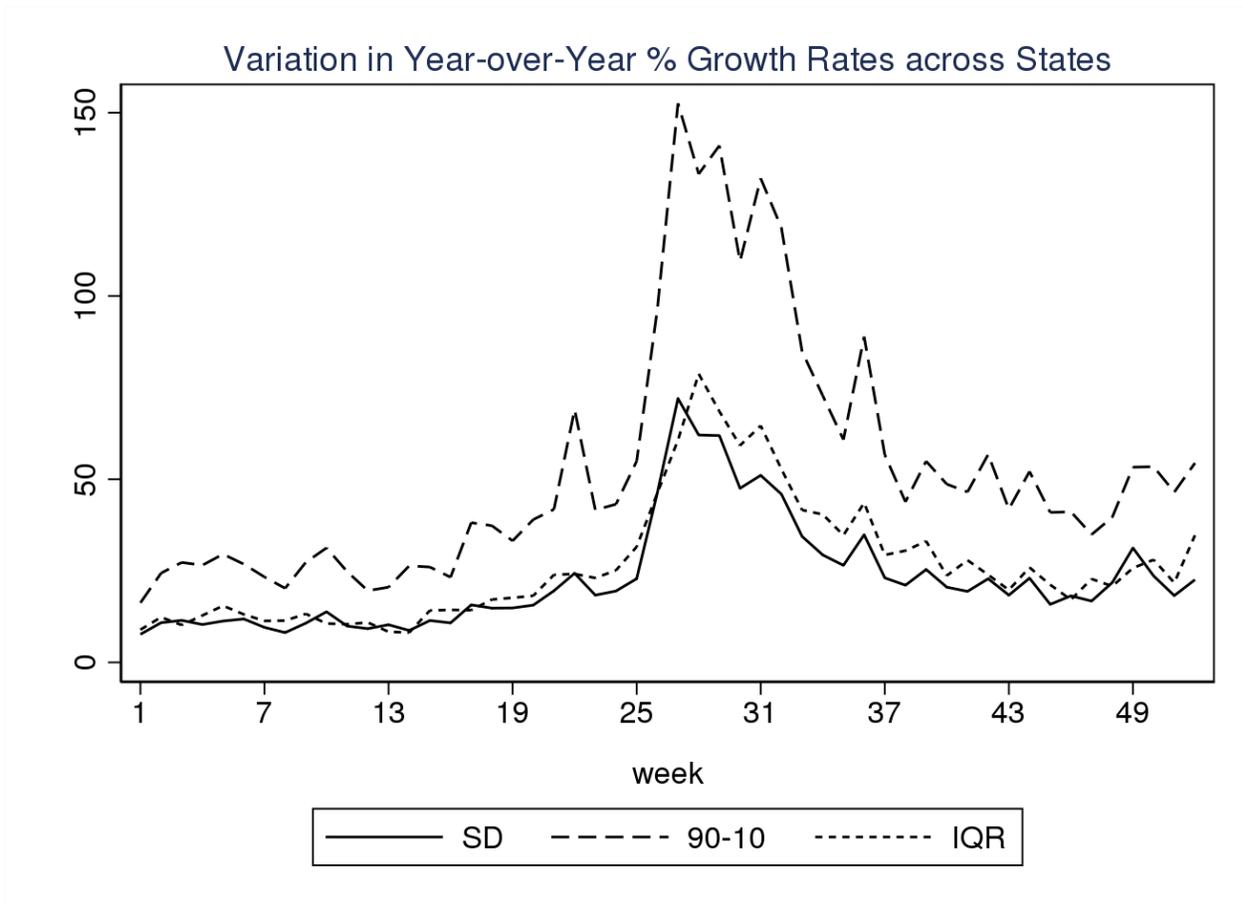
Source: Business Formation Statistics Public Data

Figure 23. Weekly Business Applications by State, Year-over-Year Growth Rates (%), 2020



Source: Business Formation Statistics Public Data

Figure 24. Weekly Dispersion in Year-over-Year Growth Rates across States, 2020

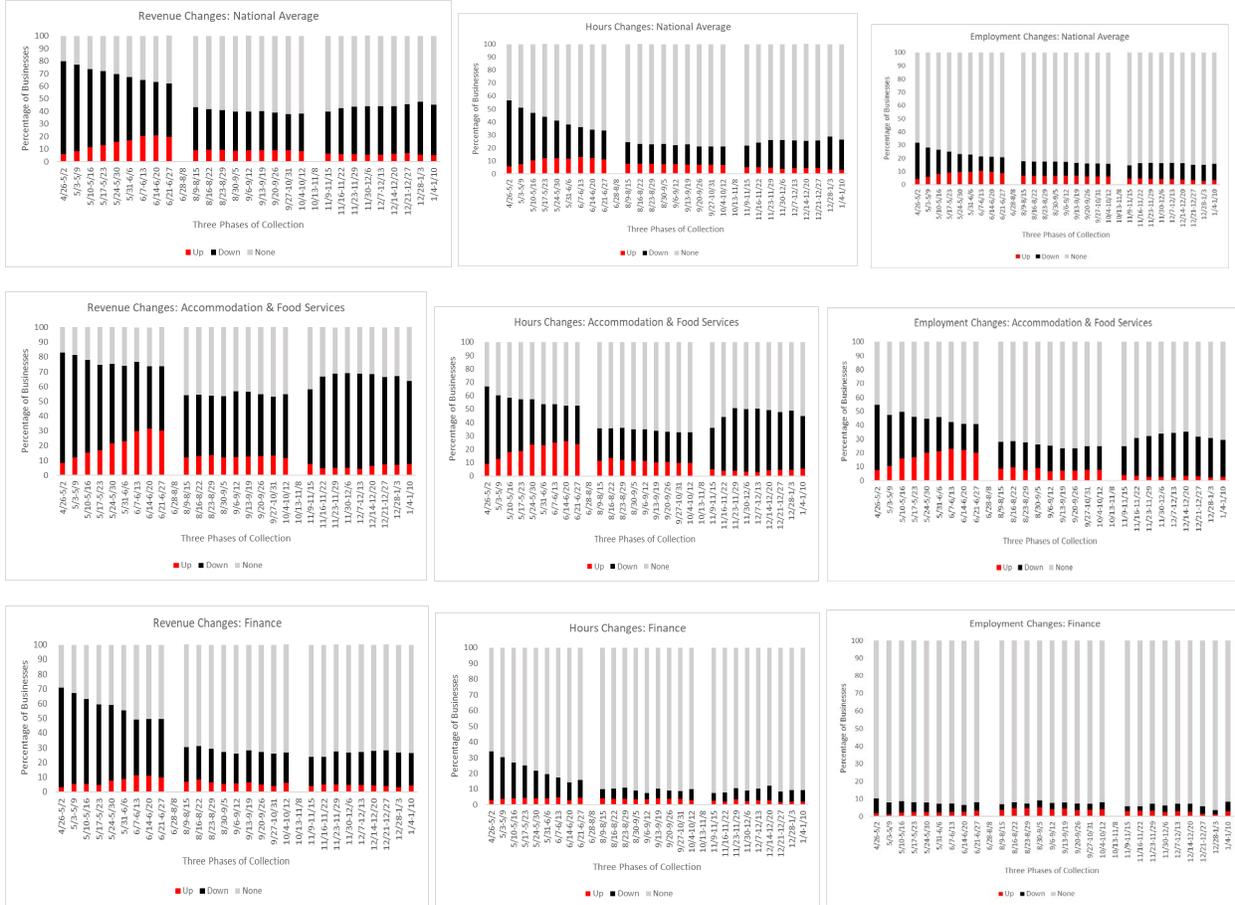


Source: Business Formation Statistics Public Data

Notes: SD, 90-10, IQR refer to standard deviation, difference between 90th and 10th percentiles, and interquartile range, respectively.

Appendix A: Additional Figure

Figure A1: Revenue, Hours, and Employment Adjustments over Time



Appendix B: Location and Business Closures

We see evidence of adjustments at the extensive margin especially in the early weeks of the survey collection period. Recall that the survey targets single location businesses so that questions concerning closing a location may be closely related to closing the business.⁴⁴ The survey actually collects both pieces of information. The survey asks about locations closures in all three phases but with some important differences. In Phase 1, the question is “In the last week, did this business temporarily close any of its locations for at least one day?” with yes or no as possible responses. The question is expanded for Phases 2-3 to allow for reopening and permanent closures of a location, but the response for temporarily closing a location is retained. The survey collects information on permanent *business* closures in Phases 2-3 as part of the response to the question about expectations. In contrast to the location closure question, the time frame here is open-ended. Finally, the survey also collects information on *expected* permanent business closures in Phases 2-3 as part of the response to the question about future needs over the next six months.

Figure B.1 plots the time series patterns of location and business closures. Panel A shows national results for location closures (left) and business closures (right). Starting with the location closures, 41.4% of businesses *temporarily* closed a location in the first week of the survey (late April). The percentage of businesses drops steadily over Phase 1 (ending at 17.9%) and Phase 2 (ending at 1.8%) before rising slightly Phase 3 (ending at 3.8%). A response category for *permanent* location closures was added in Phase 2; the national percentage of permanent location closures hovers between 1.1-1.5% over both phases. To provide some context for these figures, the establishment exit rates for firms smaller than 500 employees from the Business Dynamics Statistics (BDS) are 9% in 2018 (the latest year available) and 12% in 2008 during the Great Recession.

The percentage of businesses responding to question about permanent *business* closure are slightly higher than those responding to permanent *location* closure; nevertheless, the difference between the two never exceeds 1 percentage point. (The figure with these is scaled 0-

⁴⁴ The question asks about “locations” rather than “location” to allow for the possibility that even though our target sample is small single-location businesses, a respondent may be answering for a business with multiple locations. For example, the business may have added a location in the intervening time between our administrative data and the survey outreach.

10 to accommodate the small magnitudes.) In the final week of Phase 3, 1.8% percent of businesses have permanently closed. The annual firm closure rate for firms less than 500 employees is 8.2% in 2018 according to the BDS. Thus, the closure rate from SBPS is low relative to BDS. The BDS relies on administrative records while the SBPS depends on closed businesses responding to the survey. The *expected* permanent business closure measure does not depend upon closed business responding to the survey. The expected permanent business closures move between 4.5-5.5% over both Phases of the survey starting at 5.5% in the first week of Phase 2 and ending at 4.5% in the last week of Phase 3. Crane et al. (2020) discuss these expectations results and note “In aggregate, this pace of business closure [5% for 9/20-9/26 week] may not be markedly elevated relative to historical patterns, the annual exit rate for firms with fewer than 500 employees averaged about 7.8 percent during 2015-2018 (p.21).”

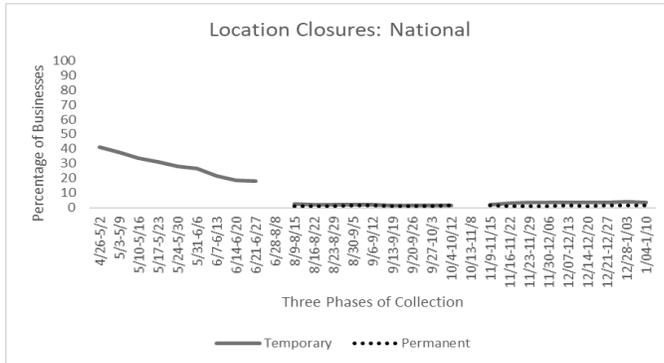
Panel B repeats these exercises for the two sectors Finance and Insurance (blue) and Accommodation and Food Services (green). Starting again with location closures, temporary location closures (solid lines) start off at 54.6% for businesses in Accommodation and Food Services and 31.1% for business in Finance and Insurance. These fall over Phase 2 before rising very slightly in Phase 3, but the percentage for Accommodation and Food Services is always higher than that for Finance and Insurance (and always significantly). By the end of Phase 3 in early January, the percentage of businesses with temporary location closures in the last week are 9.4% for Accommodation and Food Services and 1.7% in Finance and Insurance.

The percentage of businesses with *permanent* location closures (dotted lines) are much smaller and the differences between the two sectors are rarely significant. Again, the figure for business closures is scaled 0-10 to accommodate small magnitudes. The percentage of businesses that closed is about 1% for Finance and Insurance over Phases 2-3. This compares to about 3-4% for businesses in Accommodation and Food Services (and these differences are significant in every week except 9/13-9/19). In the final week of Phase 3, 4.0% of businesses Accommodation and Food Services are permanently closed and 1.3% in Finance and Insurance. In terms of the *expected* permanent business closures, over Phases 2-3, about 2-3% of businesses in Finance and Insurance expect to permanently close in the next six months as compared to 10-11% in Accommodation and Food Services. To put these numbers in context in 2018, the annual establishment exit rates for firms smaller than 500 were: Finance and Insurance (8.9%) and

Accommodation and Food Services (9.5%). Crane et al. (2020) provide a sectoral comparison of historical exit rates and expected exit rates. Their Figure 11 shows that Finance and Insurance is below historical average, while Accommodation and Food Services is above.

Figure B.1: Location and Business Closures

A. National



B. Two Sectors

