Measuring the Effect of COVID-19 on U.S. Small Businesses: The Small Business Pulse Survey

by

Catherine Buffington
US Census Bureau

Carrie Dennis
US Census Bureau

Emin Dinlersoz
US Census Bureau

Lucia Foster
US Census Bureau

Shawn Klimek
US Census Bureau

Abstract

In response to the novel coronavirus (COVID-19) pandemic, the Census Bureau developed and fielded an entirely new survey intended to measure the effect on small businesses. The Small Business Pulse Survey (SBPS) will run weekly from April 26 to June 27, 2020. Results from the SBPS will be published weekly through a visualization tool with downloadable data. We describe the motivation for SBPS, summarize how the content for the survey was developed, and discuss some of the initial results from the survey. We also describe future plans for the SBPS collections and for our research using the SBPS data. Estimates from the first week of the SBPS indicate large to moderate negative effects of COVID-19 on small businesses, and yet the majority expect to return to usual level of operations within the next six months. Reflecting the Census Bureau's commitment to scientific inquiry and transparency, the micro data from the SBPS will be available to qualified researchers on approved projects in the Federal Statistical Research Data Center network.

1. Introduction

Within seven weeks after the declaration of a national emergency due to the COVID-19 pandemic, the Census Bureau started fielding a brand-new survey, the Small Business Pulse Survey (SBPS),[2] intended to provide information about the economic effect on this vital group.[3] As part of its mission to provide quality data about our nation's people and economy, the Census Bureau developed both a household and business survey to better understand the effect of COVID-19. This paper focuses on the business survey.[4] In this paper, we provide context for the SBPS, describe the process by which its content was developed, provide some preliminary results, and outline how the SBPS information will be used. The SBPS represents an example of how the Census Bureau relies upon its ability to produce "experimental" data products in order to provide an agile response to changes in data user needs.

The COVID-19 pandemic has a wide-reaching effect over almost all aspects of the U.S. economy. As with any need for new information, the first step is to determine the best approach to collecting that information. This collection can be through a survey, but the Census Bureau also produces public-use data products using administrative data and third party data. Indeed, one of the first new data products released by the Census Bureau to address the need for more timely information in the earlier stages of the pandemic is the weekly version of the Census Bureau's existing experimental product, Business Formation Statistics (BFS), that are sourced from administrative data (see Butler et al. 2020).[5] Data users have also relied on other existing data products based on administrative data; for example, using LEHD Origin-Destination Employment Statistics (LODES) information for tracing people who live in COVID-19 hotspots to where they commute to for work or conversely for tracing people who work in COVID-19

---

hotspots to where they live.[6]   For assessing the effect of COVID-19, it was determined that survey data could also provide timely and new information that would not be captured through these administrative data sources.

Given the importance of timely information in the face of a quickly evolving economic crisis, it became clear that the survey would need to be at a higher frequency than other Census Bureau business surveys (which are monthly, quarterly, annual, and quinquennial). Similar to the case of the BFS, it was determined that the goal was to produce a weekly data product. In order to do this, it was necessary to run the entire survey online, deviating from our normal strategy of initiating respondent contact with an official letter that includes the invitation to participate and login credentials. Instead, businesses were contacted by email only. This new contact strategy meant relying upon the email addresses stored in the Census Bureau's Business Register (BR). This approach implied an upper-bound for the sample size, as the BR contains validated e-mail addresses for only a subset of all businesses, most of which were captured as part of the collection of the 2017 Economic Census. In addition, the restriction of the sample to businesses with e-mail addresses comes with a selection issue, as businesses that have or provided an email address can be different from the rest of the businesses. Furthermore, complexity around having multi-location businesses or third party reporters (e.g., accountants) using the same email address when reporting on behalf of more than one business and our inability to provide confidential, identifying information in the body of the email (e.g., EIN, business or contact name) led us to further restrict our survey to single location businesses.[7]

The need to restrict our survey to single location businesses led to further consultation concerning choosing a sample that would be most informative[8]. One important consideration

---

[6] As an example of the latter, LODES data is used to identify the next potential COVID-19 hotspot in South Dakota, by roughly identifying where workers in the Smithfield plant lived. See https://medium.com/@topos_ai/a-look-at-the-covid-19-hotspot-in-south-dakota-26f774f5435c.

[7] The complexity of having multiple single location businesses mapped to the same email address was discovered after the first set of email invitations were delivered.   Subsequently, the set of email addresses considered for mailing was limited to those that mapped to two or fewer single location businesses.   These "doubles" were reallocated evenly across weeks 2-9 of the survey, and weights for weeks 2-9 of the survey were adjusted accordingly. For those emails that received multiple invitations in week 1 and responded more than once, the last response was retained and tabulated.

[8] It should be noted that while these businesses appear to be single location firms in the Business Register, we know that establishment "births" for small firms that happen between the 2017 and 2022 will be observed for the first time in the 2022 Economic Census. The Census Bureau's Longitudinal Business Database and Business Dynamic

was the federal assistance programs being discussed at the time to aid small businesses. These federal assistance programs from the Small Business Administration (SBA) include the Paycheck Protection Program (PPP), Economic Injury Disaster Loans (EIDL), and SBA Loan Forgiveness. Many of these programs are restricted only to "small businesses" defined as having 500 employees or fewer.[9] It was thus decided to use the restriction that the businesses have receipts greater than or equal to $1,000 but 500 employees or fewer.

Given the potentially varying effects by geographic location and industry, it was important that this collection support providing information on disparate effects of the emergency across states/MSAs. Sector (2-digit NAICS) detail will provide information on the disparate effects of the emergency across sectors; more detailed subsector data (3-digit NAICS) will be produced when possible given response rates and disclosure avoidance restrictions. In addition, the timing of the effect of COVID-19 and related policies varies across states and industries, and so it was important to collect information over a span of weeks rather than through just one snapshot. This will enable us to trace out the effect of COVID-19 through shelter-in-place and shutdown orders and possibly through some reopening. All of the constraints and sample restrictions listed so far also imply that the SBPS sample is not necessarily representative of the entire population of small businesses in the U.S. Moreover, as discussed below, there may be self-selection in who responds to the survey.

Overall, then, the survey targets small businesses; specifically non-farm, single-location small (with receipts greater than or equal to $1,000 but 500 employees or fewer) employer businesses in industries that responded to the Economic Census and in the fifty states, DC and Puerto Rico. The Business Register contains 940,588 businesses that belong to this target population that also provided email addresses for contact. The question then became how to use this target population in a manner that would minimize respondent burden, allow for collection

---

Statistics models the birth year of all new establishments owned by firms with multiple locations to adjust for this processing cycle.

[9] PPP applicants are any small business concern that meets SBA's size standards (either the industry based sized standard or the alternative size standard); any business, 501(c)(3) non-profit organization, 501(c)(19) veterans organization, or Tribal business concern (sec. 31(b)(2)(C) of the Small Business Act) with the greater of: 500 employees, or that meets the SBA industry size standard if more than 500; any business with a NAICS Code that begins with 72 (Accommodations and Food Services) that has more than one physical location and employs less than 500 per location; sole proprietors, independent contractors, and self-employed persons.

to span multiple weeks, and to provide detailed industry and sub-national information (state and select MSA).

In order to accomplish these goals, the sample is systematically divided into nine disjoint sub-samples of approximately 100,000 businesses. To establish sub-samples of similar size and industry and geography distributions, businesses in the full sample were sorted by MSA and 2018 annual payroll within each state by 3-digit NAICS, and then systematically assigned to one of the nine sub-samples. Within each sub-sample, the initial weight for a unit was set to the count of the total number units (both with and without email addresses) in the same state by 3-digit NAICS divided by the number of units with an e-mail address in the same grouping. Using this weighting scheme, each weekly sub-sample represents the entire in-scope population of businesses.[10]

Each week businesses receive an email with a survey link one week out of the nine-week data collection period. Each week prior to estimation, these weights are adjusted for survey non-response to maintain representativeness. Within each 2-digit NAICS, nonresponse adjustment factors were calculated for businesses by three employment size classes, to account for potential differential response by business size: four or fewer employees; between 5 and 19 employees; and 20 or more employees. To compute the values of the nonresponse adjustment factor, the sum of the sampling weights of all businesses in the weekly sub-sample was divided by the sum of the sampling weights of all responding businesses in the weekly collection period. The resulting factor was used to adjust the sampling weight for all respondents in the given adjustment cell.

To minimize respondent burden, which is always an important consideration but especially so given that the survey is being fielded at a time of stress for businesses, the survey was designed to be short (taking less than 10 minutes to complete) and simple, relying almost exclusively on checkboxes rather than requiring numerical responses.

To preview the results, the first week of the SBPS revealed the following patterns based on our estimates for the population. Almost all businesses experienced a negative effect of COVID-19 but a majority expected a return to normality within six months. In terms of adjustments that businesses made over the last week, the margins of adjustment were in order of prevalence: hours, location, and employment. Within the employment margin of adjustment,

---

[10] For further details on the methodology and how the data are collected, see
https://portal.census.gov/pulse/data/#methodology.

there was large variation over sector in downward adjustment from lows of 5.9% Utilities and 8.7% in Finance, Insurance and Real Estate (FIRE) to a high of 47.2% in Food and Accommodations. Supply chain issues were not widespread, but concentrated in Retail Trade (65.8%) and Health Care and Social Assistance (61.4%). Adjusting product mix was not as important as shifting mode of delivery (which was especially important in Accommodation and Food Services (42.2%) and Retail Trade (31.8%)). Missing loan and other payments is most common in Accommodation and Food Services, so it is not surprising to see the highest rate of request for PPP (84.5%) in that sector.

The rest of the paper is organized as follows. Section 2 provides context for the SBPS, Section 3 describes how the content was developed, results from the *first* week of collection are presented in Section 4, and Section 5 concludes with a discussion of future research.

2. Related Measurement Efforts

In this section, we place the SBPS in broader context starting with other efforts within the Census Bureau and then describing efforts in other statistical agencies (U.S. and international), industry, and academia. It is beyond the scope of this paper to capture the enormous amount of research related to the socio-economic effect of COVID-19; instead we focus on a broad overview of surveys similar to the SBPS. Since this research is rapidly evolving, this overview provides only a snapshot.

As noted in the Introduction, the Census Bureau is undertaking complementary efforts to measure the COVID-19 effect on businesses. The Census Bureau produces thirteen principal federal economic indicators. During periods of great economic change, these indicators become even more critical. Thus, a high priority for the Census Bureau was to maintain the collection of the principal economic indicators; to this end, two questions were added at the end of five of these surveys to gauge respondents' hardships in responding to the surveys.[11] The Census Bureau is also examining its many annual and supplemental surveys to see whether content related to COVID-19 would provide beneficial information. Finally, the Census Bureau continues to partner with other agencies in providing information to help with the federal, state,

---

[11]As described in https://www.govinfo.gov/content/pkg/FR-2020-04-28/pdf/2020-08935.pdf

and local government response to the pandemic. To better disseminate information to stakeholders, the Census Bureau developed a webpage devoted to COVID-19 measures and relevant products.[12] The Census Bureau also provided custom tabulations (demographic and economic) for Health and Human Services (HHS) and the Federal Reserve Board.

The Census Bureau is just one of thirteen principal statistical agencies, and as noted above, the Census Bureau worked with some of these agencies in developing both the small business and household pulse surveys. Since we cannot summarize the work of all of these other agencies, we focus on one that is relevant in terms of complementing the SBPS.[13] A module concerning COVID-19 has been added to the May 2020 CPS by the Bureau of Labor Statistics (BLS) and will continue for an indefinite period. The module contains four questions concerning the labor market and two questions concerning access to health care (proposed by NCHS). Focusing on the labor market questions, all four have YES/NO responses and they focus on telework, shutdowns, payment even when not working, and job search.

Many statistical systems aim to measure the effect of the COVID-19 on national economies. It is beyond the scope of this paper to describe all of the efforts, so here we just provide one country's examples of related efforts. Freeman (2020) notes that the U.K.'s Office of National Statistics (ONS) created two new surveys, added questions to existing surveys, and accelerated the release of data (in reports that they refer to as "flash"). As is the case for Census pulse surveys, one of the new surveys is for businesses (the Business Impact of Coronavirus Survey (BICS)) and the other is for households (Labour Market Survey (LMS)). The BICS is an online bi-weekly survey of businesses that includes questions on financial performance, workforce (including working remotely and layoffs), and access to financial resources.[14] The LMS is also an online survey and Freeman (2020) notes it "collects key labour market information as well as some specific questions around the impact of COVID-19." The ONS

---

[12] See https://covid19.census.gov/.

[13] Examples of new data products relying on third party data include work at the Bureau of Economic Analysis to estimate higher frequency consumer spending using daily credit card transaction data (see Dunn et al (2020) and the Weekly Economic Index from New York Federal Reserve Bank (Lewis et al. (2020) and see https://www.newyorkfed.org/research/policy/weekly-economic-index).

[14] See https://www.ons.gov.uk/surveys/informationforbusinesses/businesssurveys/thequestionsonthebusinessimpactofcoronaviruscovid19survey#operational-performance-of-your-business.

added questions to their Labour Force Survey (LFS) concerning the impact of COVID-19 on the workforce including changes in hours.[15]

Turning to Industry surveys, we note the surveys conducted by the National Federation of Independent Business (NFIB). The National Federation of Independent Business (NFIB) produces monthly Small Business Economic Trends from their Small Business Economic Trends Survey whose approximately one thousand survey respondents are drawn randomly from NFIB membership. At the start of the pandemic, the NFIB started adding questions specific to COVID-19 in separate surveys that appear to have been fielded every ten days for a period of time.[16] For example, the March 30 version of the survey asked ten questions directly related to the pandemic including: impact on the business, if negatively impacted why (checkboxes include supply chain, slower demand, sick employees, and other), and other related items.

Lastly, academic researchers are conducting surveys to measure the impact of COVID-19. One that is especially relevant for the SBPS is the small business survey described in Bartik et al. (2020) which was jointly conducted by researchers at the Harvard Business School and University of Chicago's Booth School of Business in conjunction with Alignable (a network of 4.6 million small businesses). The survey was conducted through a link in an email to Alignable members mailed March 26, 2020. The survey has 43 questions about financial status, temporary closures, layoffs, expectations, and decisions about seeking CARES Act funding. Their sample consists of approximately 5,800 small businesses whose firm owners are located in the U.S.

3. Developing Content

With our goals and constraints in mind, we started developing content by gathering ideas from critical stakeholders including the Bureau of Economic Analysis (BEA), the Bureau of Labor Statistics (BLS), the Federal Reserve Board (FRB), Small Business Administration (SBA), the International Trade Administration (ITA), and the Minority Business Development Administration (MBDA). In developing content, we were mindful of the rapidly developing

---

[15] See https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/coronavirusandtheeffectsonuklabourmarketstatistics/2020-05-06#measuring-the-labour-market.

[16] See https://www.nfib.com/content/press-release/economy/covid-19-impact-on-small-business-part-3/.

federal programs targeting small businesses. We attempted to focus on gathering content concepts that would be useful to those stakeholders and the businesses and policymakers that they serve. Given the many competing concepts of interest and the constraint of a short, simple survey, it was very important to prioritize the concepts. The final version of the survey ended up having 16 questions.

Starting with the other economic statistics statistical agencies, we received feedback from both BEA and BLS. Comments from BEA centered on the usefulness of collecting information on businesses requesting financial assistance, including the Paycheck Protection Program, by industry as potentially extremely helpful in allocating subsidies to industries and accurately measuring value added in the national accounts. Questions on supply chain disruptions, cash on hand, loan defaults and assistance, and return to normal operations also provide insights to the national accounts. Not surprisingly, comments from BLS focused on adjustments in labor including changes in employment and hours. Specifically, questions on hours worked by paid employees will benefit BLS's productivity program, as this new data source will help BLS assess and adjust hours worked versus hours paid.

Economists at the FRB provided much helpful feedback concerning the importance of gathering information on the financial health of small businesses. Their feedback contained useful information concerning topics such as the amount of cash on hand and the importance of understanding the prevalence of missed loan payments and other payments. This feedback was echoed by academic researchers who partner with the Census Bureau on measures of finance and business dynamism, including Steve Davis of the University of Chicago and John Haltiwanger of the University of Maryland.

Moving on to our more programmatic stakeholders, reflecting its mission and role in some of the forms of assistance, the SBA was interested in where business owners are turning to for assistance, financial and otherwise. Further, the SBA noted that knowing about businesses plans to reopen would be useful. Aligned with their mission, the ITA focused on the importance

of supply chains and trade. Finally, the MBDA suggested change in revenue and change in employment.[17]

The Census Bureau brought all of these suggestions for concepts together and looked for common areas of interest and complementary questions. Again, we were constrained to keep the survey short and simple. From these many concepts, we developed a draft of the survey instrument. Under our usual protocol, the next step would have been multiple rounds of cognitive testing. However, this was not possible due to time constraints and so smaller-scale cognitive testing was conducted just prior to and during the initial week of collection. The changes recommended by cognitive testing were implemented in the fourth week of data collection in a manner to minimize disruptions to comparability of the results over time.

We now turn to the concepts that appear in the first nine weeks of collection of the SBPS. Broadly speaking, the content in the SBPS falls into four categories: Operations, Challenges, Finance, and Expectations. The Appendix provides a copy of the questionnaire that businesses received in the first week of the survey. The survey starts with a question intended to allow the respondent to provide a holistic view of the effect of COVID-19 on their business by asking the respondent for their overall assessment. This is an unusual question since it is open-ended as to the criteria for judgement. This was deliberate since the effect of COVID-19 is unprecedented in terms of scope and speed and this was intended to provide some insight into whether any key concepts were overlooked in the rest of the survey. The remarks section in the survey also will help to provide this information. In addition, we plan to compare the responses to this first question and other questions in the survey to assess whether the subjective assessment of overall effect was in general consistent with the less subjective, specific dimensions of effect that are the focus of the other questions described below.

Questions 2-6 focus on the operations of the business. These ask about changes in employment and hours, changes in operating status and operating revenues; all serve to provide an indication of how well small businesses performed in the prior week. Questions 2-3 concern revenues. Q2 asks about changes in revenue (increased, decreased, or no change are possible

---

[17] The MBDA has received supplemental funding under CARES Act: "Congress has authorized $10 million in supplemental funding for the current MBDA business centers and minority chambers of commerce for education, training, and advising small and minority business enterprises in their recovery from the effects of the COVID-19 crisis." See https://www.mbda.gov/page/mbda-and-cares-act-funding.

answers). Q3 asks about the level of revenues, which is the only quantitative measure on the survey, and provides insight into the scale of the business. The question asks the respondent to select one bin to provide a "best estimate". This approach, which differs from our standard surveys that emphasize the use of write-in boxes and requires a more precise response based on firm records, was intended to reduce burden on the respondent. The responses to this question also serve an operational purpose supporting our existing indicator program and planned research into a new retail trade measure leveraging detailed commercial transactions data. Data tabulations based on Q3 are not published, since the question does not aim to assess any change in business' operations due the effect of COVID-19.

Questions 4-6 aim to provide critical measures of the margins by which small businesses are adjusting their labor use (by temporary closures, employment, or hours). The choice of margin(s) has profound implications for the U.S. workforce. By asking these questions weekly about the experience of the business in the prior week, the SBPS will provide a high frequency measure of small business performance. Policy-makers would also be interested in businesses' ability to retain workers by adjusting hours. The federal Unemployment Insurance system has programs intended to encourage businesses to retain workers by adjusting labor by hours rather than number of workers.

Questions 7-9 focus on challenges that small businesses may face including supply chain problems, the need to modify products or services to existing conditions, and the need to modify mode of delivery. Asked weekly, these questions will provide high frequency information on the types of challenges businesses face. Q7 asks businesses about supply-chain disruptions, which can affect their current and future performance. Disruptions in the supply-chain are also indicative of challenges that other businesses are facing and help us to understand how these disruptions are propagated throughout the economy. Businesses that are able react to challenges to their current operating procedures by pivoting to producing new goods or services or altering the mix of their existing products may not need to reduce their labor input or may not need to request assistance from federal government programs. Q8 and Q9 may be particularly useful and relevant to understanding changes in revenues, employment, and survival of small businesses in retail and food services. The responses to these questions may also indicate the (in-)ability of

businesses to adapt to the crisis, noting that for some businesses the only way to operate would be to shift completely to one type of provision.

Questions 10-14 center on finance issues for small business including liquidity, loan and other defaults, and applications for and receipt of financial assistance). Q10 asks about the current availability of cash on hand of the business. The seven checkboxes for responses concern how long the cash on hand will cover and range from "No cash available for business operations" to covering "3 or more months of business operations." The amount of cash on hand may signal time-to-failure for small businesses in the absence of financial assistance and may be of interest to policymakers.

The next two finance questions ask about the experience of the business in meeting loan payments (Q11) and other scheduled payments (Q12) since the onset of the pandemic, providing a cumulative view of these concepts each week. These questions may also be used to design a financial stress index to assess the overall financial stress/need a business faces. Loan defaults may signal time-to-failure for small businesses in the absence of financial assistance and may be of interest to policymakers. The FRB produces statistics on loan defaults and specifically suggested this content for small businesses.[18] Payment defaults may signal time-to-failure for small businesses in the absence of financial assistance and may be of interest to policymakers.

The last two questions related to finance concern financial assistance for the small business. Q13 asks whether the respondent has requested assistance from federal, state, and local government programs; banks; self; family or friends; and other. The responses for federal government program is broken out to provide separate checkboxes for each of three main federal programs designed to for small businesses: Paycheck Protection Program (PPP), Economic Injury Disaster Loans (EIDL), and SBA Loan Forgiveness.[19] Application rate by geography and sector will be of interest to policymakers including the SBA, FRB, and state governments as well as industry trade groups. Understanding how federal program applications are supplemented with other types of assistance may also be important to policymakers. Q14 focuses on these federal programs and asks whether the business has received financial assistance from these three main programs (with separate checkboxes for each) or "Other Federal Programs." Receipt

---

[18] See https://www.federalreserve.gov/releases/chargeoff/delallsa.htm.
[19] See https://www.coronavirus.gov/smallbusiness/.

of assistance by geography and sector is of interest to policymakers including the SBA and FRB. Used in conjunction with responses to Q13, this question will also shed light on the likelihood that a loan type is actually received, conditional on requesting. Having these as separate responses will enable us to compare these results to published tabulations of disbursements by state.[20]

The survey ends with a forward-looking question intended to elicit the respondents' subjective business expectations (of recovery). Similar to the more holistic approach in Q1, this question is more general. Specifically it asks "In your opinion, how much time do you think will pass before this business returns to its usual level of operations?" The responses range from the business is already at its usual level of operations to 1 month or less; 2-3 months; 4-6 months; more than 6 months; and never a return to usual level of operations. Given the difficulties in forecasting a future event in the face of so much uncertainty, the question starts with "In your opinion" in order to let the respondent know that their forecast is subject to circumstances that may be beyond their control, but may also be specific to their particular situation. It does not require the respondent to anchor this assessment of recovery to a particular variable (such as employment or revenue), since the pandemic shock is unprecedented in both size and scope and we are hoping to capture a more-encompassing measure.

A similar forward-looking approach is used when the Census Bureau collects subjective business expectations through the Management and Organizational Practices Survey supplement to the Annual Survey of Manufactures. In this case, respondents are asked to anchor their expectation to four concepts (shipments, employment, materials, and investment). Research conducted on these expectations and their realizations has found that these expectations provide important information about the future plans of businesses.[21] We believe that the SBPS questions concerning subjective business expectations will also be of interest to the FRB and BEA. The Atlanta Federal Reserve Bank collects subjective business expectations through its monthly

---

[20] Estimates of the share of small businesses applying for or receiving assistance may not equal calculations based on the administrative records of those programs due to differences in the definition of small business or other possible non-sampling error. See https://content.sba.gov/sites/default/files/2020-04/PPP Report SBA 4.14.20-Read-Only.pdf.

[21] The Census Bureau and the Bureau of Economic Analysis (BEA) collected information about subjective business expectations for decades as part of the Plant and Equipment Survey whose results were published as a principal economic indicator.

Survey of Business Uncertainty (SBU). The BICS from ONS also includes questions concerning business expectations. Businesses will also find it useful in making their decisions to understand the expectations of other businesses; for example, the NFIB survey also asks for business expectations.

4. Results

We start by providing basic summary statistics for the SBPS. As of the writing of this paper, collections for weeks 1-3 have been conducted and week 4 is underway. The response rate for all three weeks consistently has been above 20 percent. Operationally, we see upticks in response on the Monday after the initial email was sent and on the Wednesday after the reminder is sent. While an in-depth analysis of motivation is beyond the scope of this paper, we note that the remarks section and cognitive testing responses suggest the importance of being able to "tell your story" and seeking federal assistance. The short, simple structure of the survey also appears to have attenuated the incidence of item non-response for those who respond.[22]

As always, it is important to keep in mind the characteristics of the sample when analyzing the results of the survey. As the SBPS website notes, there are important limitations to the survey.[23] First, some of the businesses surveyed chose not to respond and some may have already closed, and thus the SBPS may be subject to non-response bias. The estimates below have been re-weighted to adjust for non-response by operating businesses based on prior employment size, but not for recent business closure. Second, if businesses that provide email addresses are systematically different from those that do not provide them (or have them), then the results may be biased. Some work was done to examine if the sampled firms differed by firm size and age. Overall, the businesses sampled do tend to be larger than the average small business, but do not appear to differ substantially in terms of firm age[24]. Third, if businesses willing to participate in an email-based survey are systematically different from businesses not

---

[22] All items with the exception of Remarks have a response rate of higher than 99%; the response rate for EIN is less than the remaining items, but those non-responses count for less than 7/10ths of a percent.

[23] In particular, see the description of the methodology at https://portal.census.gov/pulse/data/#methodology.

[24] We used the current Business Register to evaluate the firm size distribution and the 2017 Longitudinal Business Database to evaluate the firm age distribution.

willing to do so, then the results may be biased as well. Fourth, the survey considers only single-location businesses, which may respond to the crisis differently compared with multi-location businesses. The latter may have more margins of adjustment and can better smooth out demand shocks across locations. Fifth, it may be the case that businesses that sought federal assistance are more willing to respond to an email survey from a federal agency. Sixth, those businesses that respond to the survey may be ones more adversely affected (especially since it is a voluntary survey), and the types of respondents may change from week to week as the negative effect is mitigated over time. Seventh, the survey sample does not necessarily capture information on newly born or very young (0-2 years of age) businesses. With these caveats in mind, we turn to a discussion of the results from the *first* week of the survey.[25] All of these are drawn from the user-friendly graphical format and are available online.[26] It is important to note that the figures and percentages we mention in the results are estimates for the target population, arrived at by using sample weights and non-response adjustments as described above.

Estimates from the survey show that 89.9% of small businesses experienced a negative effect on operations due to the COVID-19. This breaks down into 51.4% seeing a large negative effect and 38.5% a moderate negative effect. The large negative effect is especially pronounced in the Accommodation and Food Services industry where 83.5% of businesses experience a large negative effect. In terms of geography, Michigan has the highest percent of large negative effect (64.5%) and Iowa has the lowest percent (32.6%) of the 50 states. On the other side of the distribution, the industry with the highest share of large positive effect is Retail Trade with 2.0%. The NFIB survey for March finds "92% of small employers are negatively impacted by the outbreak and about half of small employers said they can survive for more than two months under the current business conditions."[27] Interestingly, the percent of small businesses noting a negative impact in NFIB surveys climbs from 23% on March 10, to 76% on March 20, and to 92% on March 30.[28]

Close to three-quarters of businesses had a decline in operating revenues in the last week. This experience of declining revenues is relatively evenly spread across industries (excluding

---

[25] Note that "last week" in the following discussion refers to the week prior to the first week of the survey.

[26] In addition, all tabulations, including those for which visualizations are not created, are downloadable so that users may create their own reports or visualizations. See https://portal.census.gov/pulse/data/#downloads.

[27] See https://www.nfib.com/surveys/small-business-economic-trends/.

[28] See https://www.nfib.com/content/press-release/economy/covid-19-impact-on-small-business-part-3/.

Utilities, the difference between the lowest and highest percentage is 20 percentage points). As noted in the Introduction, the margins of adjustment, in order of prevalence, are: hours (51.2% decreased hours), locations (41.4% closed one location for at least a day), and employment (27.5% decreased employment). By comparison, Bartik et al. (2020) find that 43% of the small businesses in their sample had temporarily closed. In contrast to revenue, the experience of declining employment shows large variation across industries (excluding Utilities, the difference between the lowest and the highest percentage is close to 40 percentage points -- FIRE reports 8.7% and Accommodation and Food Services reports 47.2%). There is less variation by geography in estimated declines in employment; the spread is about 23 percentage points as 12.2% of businesses in North Dakota show declines in employment compared to 35.6% in Pennsylvania.

In terms of the supply chain estimates, overall 44.9% of business experienced disruptions. However, supply chain issues are not widespread over industries, but are concentrated in Retail Trade (65.8% reporting disruptions) and Health Care and Social Assistance (61.4% reporting disruptions). Not surprisingly, less effected are FIRE and Management of Companies and Enterprises. There have been many anecdotes concerning businesses pivoting to produce goods and services in high demand (such as switching from producing shoes to protective masks[29]); the SBPS shows 6.8% of businesses adjusted output to the production of others goods and services in the last week. As with the other measures that focus on the last week, it could be that the switch had already occurred so this measure could undercount the prevalence. Adjusting the mode of delivery is more common, with 15.2% adopting pickup/carry-out/delivery as their only means of providing goods and services to their customers. This is especially important in Accommodation and Food Services (42.2%) and Retail Trade (31.8%).

In terms of cash on hand, the largest category is 1-2 months of operations, with about one-quarter of businesses falling into this time category. Recall that respondents to the NFIB survey note that they expected that they could only last about two more months under the current conditions.[30] Bartik et al. (2020) report the median business in their sample has less than one

---

[29] See https://www.wsj.com/articles/american-companies-innovate-to-fight-the-coronavirus-in-echo-of-world-war-ii-11587045652.

[30] See https://www.nfib.com/surveys/small-business-economic-trends/.

month of cash on hand and three-quarters only have enough cash on hand to cover two or fewer months of expenses. The JPMC Institute finds that 50% of small businesses have fewer than 15 days of cash on hand.[31]

Missing loan payments does not appear to be an issue for most of the businesses, but it is important to keep in mind that the 88.5% of businesses that had not missed loan payments may include some businesses who have already received assistance. Interestingly, missing other scheduled payments has a slightly higher prevalence (23.6% missed these as compared to 11.5% for loan payments). Missing loan and other payments is most common in Accommodation and Food Services (29.5% for loans and 51.0% for other payments). Turning to requests for financial assistance, it is perhaps not surprising to see highest percent of requests for PPP (84.5%) from businesses in Accommodation and Food Services. Overall, 74.9% of businesses applied for PPP. In terms of receiving assistance, 38.1% received assistance from the PPP program. Again, it is important to keep in mind that there could be some unobserved characteristics correlated with responding to the survey and applying for assistance (for example, trust in the federal government).

The last question concerns the respondent's forecast for when their business will return to "its usual level of operations." The highest fraction of businesses falls into the category of more than 6 months (31.4%), followed by 4-6 months (27.7%), 2-3 months (24.1%), currently at usual (6.7%), never (6.2%), and 1 month or less (3.9%). The sector with the highest fraction of "never" is Accommodation and Food Services (12.0%). Overall this is consistent with the finance issues noted by businesses in this sector (Questions 13 and 14), and their negative assessment of the overall effect of the pandemic on their business (Q1). This is also the sector that has attempted to pivot to new delivery methods (Q9). These responses are consistent with those found by the most recent NFIB survey that found that its small business respondents expected the economy to improve over the next six months.[32] The SBU provides not only a monthly measure of expectations but also a measure of the uncertainty surrounding these expectations. The April SBU showed declining expectations for year-ahead sales growth and rising uncertainty about

---

[31] See https://institute.jpmorganchase.com/institute/research/small-business/quick-liquidity-to-small-businesses-could-mitigate-impacts-from-coronavirus.
[32] See https://www.nfib.com/content/press-release/economy/small-business-optimism-continues-two-month-slide/.

year-ahead sales growth. In fact, they find that this "uncertainty has more than doubled since the beginning of the year."[33]

While these question-by-question analyses are useful, we are also developing indices to combine concepts to further aid the assessment of the effect of COVID-19 on small businesses. The proposes topical indices are Overall Sentiment Index (based on Q1), Operational Challenges Index (based on Q2 and Questions 4-7), Adaptability Index (based on Questions 8 and 9), Financial Stress Index (based on Questions 10-13), and Expected Recovery Index (based on Q15). The index values are designed to generally reflect the severity of the impact. These indices will provide an alternative way of summarizing the large amount of information contained in the responses to 16 questions in the survey. In addition, the values of Overall Sentiment Index can be compared with those of other indices to assess consistency between the subjective measure of effect and the less subjective, more direct measures of effect on various aspects of businesses.

5. Conclusion and Future Research

The SBPS provides important, almost real-time information on the status of small businesses, the challenges they are facing, and the decisions they are making in light of these challenges in the wake of COVID-19 pandemic. The response rates from the first few weeks of the SBPS are promising, and if they continue, the SBPS will be able to continue to provide detailed information at the state-sector level. The first week of the SBPS shows that a negative overall effect on the small businesses is almost universal. While not quite as universal, a large percentage of the small businesses filed for PPP assistance. Moreover, some of the small businesses adapted to the pandemic by decreasing hours, fewer adapted by decreasing employment, fewer still adapted by changing the goods and services they produce.

We will continue to monitor and analyze the results in the weeks that follow. Following the first three waves of the SBPS, edits to the questions on the instrument were made in response to recommendations from cognitive testing. In addition, the Census Bureau is examining whether

---

[33] See Alting et al. (2020) at https://www.frbatlanta.org/blogs/macroblog/2020/05/04/us-firms-foresee-intensifying-coronavirus-impact.

it would be possible to run a second phase of the SBPS beyond the initially planned 9-week horizon, possibly with revised questions.

In future drafts of this paper, we hope to link census, survey and/or administrative records data to SBPS sample to more fully understand and provide context for the SBPS data, and to better document observable dimensions of selection in SBPS. As a starting point, we are linking the SBPS to the Annual Business Survey, which includes detailed information about the gender, race, and veteran status of business owners, and will allow the Census Bureau to examine data on any differential effects by these characteristics. We will also link to other datasets including the Longitudinal Business Database. By linking to these datasets with quantitative information about business operations, we will be able to look at important business outcomes including employment, productivity, growth, and survival. Linking the SBPS to our data infrastructure will allow us to control for business size, age, access to credit before the pandemic, and myriad other characteristics of businesses and their owners in order to better isolate the effect of the pandemic on businesses.

Other avenues for research using the SBPS would be to exploit its geographic variation and combine this other economic outcomes (such as weekly Business Formation statistics on business applications and economic variables from the Household Pulse Survey) with state-level weekly measures of COVID-19 cases. Rojas et al. (2020) find that most of the variation in labor markets (as measured by initial UI claims at the state level) is due to national and international shocks rather than local health conditions (as measured by state-level confirmed COVID-19 cases per capita) and policies (as measured by school closings).

In addition to these research questions and others, SBPS data linked to other Census Bureau data could support program evaluation research in the future. For example, it would be useful to understand whether a business applied for but did not receive federal assistance is a significant predictor of that business's future recovery or survival. In all of these endeavors, the SBPS will provide critical information to help improve our understanding of the effect of COVID-19 on small businesses.

References

Akcigit, Ufuk, Dinlersoz, Emin, Greenwood, Jeremy and Veronika Penciakova. 2019. "Synergizing Ventures", NBER Working Paper No. 26196.

Altig, David, Jose Maria Barrero, Nick Bloom, Steven J. Davis, Brent Meyer, Emil Mihatlov, and Nick Parker. 2020. "U.S. Firms Foresee Intensifying Coronavirus Impact," May 4, 2020. https://www.frbatlanta.org/blogs/macroblog/2020/05/04/us-firms-foresee-intensifying-coronavirus-impact

Bartik, Alexander W. Marianne Bertrand, Zoë B. Cullen, Edward L. Glaeser, Michael Luca, Christopher T. Stanton. 2020. "How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey," NBER Working Paper No. 26989, April 2020.

Butler, Rachel, Emin Dinlersoz, John Haltiwanger, Rebecca Hutchinson and Jeffrey McHugh. 2020. "The Weekly Business Formation Statistics: Production of High-Frequency Data in the Wake of COVID-19." Work in progress.

Dunn, Abe, Kyle Hood and Alexander Driessen. 2020. "An Early Read of the Effects of the COVID-19 Pandemic on the U.S. Economy using Card Transaction Data," Bureau of Economic Analysis Working Paper 2020-05.

Freeman, David. 2020. "Measuring the Labour Market During Coronavirus," ONS blog, April 20, 2020. https://blog.ons.gov.uk/2020/04/20/measuring-the-labour-market-during-coronavirus/

Haltiwanger, John, Ron Jarmin, and Javier Miranda. 2013. "Who Creates Jobs? Small versus Large versus Young." Review of Economics and Statistics, 95(2):327-361.

Lewis, Daniel, Karel Mertens, James H. Stock. 2020. "U.S. Economic Activity During the Early Weeks of the SARS-COV-2 Outbreak"

Rojas, Felipe Lozano, Xuan Jiang, Laura Montenovo, Kosali I. Simon, Bruce A. Weinberg, and Coady Wing. 2020. "Is the Cure Worse than the Problem Itself? Immediate Labor Market Effects of COVID-19 Case Rates and School Closures in the U.S.", NBER Working Paper No. 27127, May 2020.

Small Business Pulse Survey

Welcome to the Small Business Pulse Survey

The U.S. Census Bureau is requesting your assistance in understanding the impact of the COVID-19 (coronavirus) outbreak on your business. Your response is especially important right now as it helps policy makers, government officials, and businesses like yours understand the impacts of the Coronavirus. Please complete this short 16 question survey; it will take approximately 5 minutes.

This survey asks about the experience of your business over the last week, but also about the experience of your business since the start of the COVID-19 pandemic. The White House declared a national emergency because of the COVID-19 pandemic on March 13, 2020.

Login ID:

C. Electronic Census Bureau Surveys or Censuses

Under federal law, we protect the confidentiality of the data we collect. When you respond to a survey or census via the Internet, you may have to provide us personally identifiable information (PII) or business identifiable information (BII). For each survey and census, we provide an explanation to respondents about the confidentiality of the data and the laws that protect the data (e.g., Title 13, United States Code Section 9 (a)) protect against unauthorized disclosure under penalty of $250,000 and up to 5 years in prison, or both.

When you respond to surveys or censuses over the Internet that collect identifiable information, Tier 2 technology is used. Personally identifiable information or business identifiable information collected in the course of a survey or census is not used to customize your online experience.

Once you access an online survey or census, we automatically collect information about how long it took you to complete the survey or census, which questions you answered, and how many times you logged into the survey or census. In addition, we collect data on navigation of the survey or census, which includes mouse clicks and any data entered onto the survey or census, whether or not the survey or census is completed and submitted. These data are used in aggregate to assess the usability of the survey or census, or for other authorized statistical purposes. They are protected under the same confidentiality procedures as response data.

All web data submissions are encrypted to strengthen further the protection of the information we collect online. Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the systems that transmit your data.

Questions concerning this policy may be addressed to: ask.census.gov, attn: Policy Coordination Office.

Overall, how has this business been affected by the COVID-19 pandemic?

Select only one:

○ Large negative effect

○ Moderate negative effect

○ Little or no effect

○ Moderate positive effect

○ Large positive effect

In the last week, did this business experience a change in operating revenues?

Select only one:

○ Yes, increased

○ Yes, decreased

○ No

In the last week, what was the total operating revenue for this business?

Select only one:
- ○ $0 - $500
- ○ $501 - $2,500
- ○ $2,501 - $5,000
- ○ $5,001 - $15,000
- ○ $15,001 - $50,000
- ○ $50,001 - $125,000
- ○ $125,001 - $200,000
- ○ $200,001 - $500,000
- ○ $500,001 or more
- ○ Don't know

In the last week, did this business temporarily close any of its locations for at least one day?

Select only one:
- ○ Yes
- ○ No

In the last week, did this business have a change in the number of paid employees?

Select only one:
- ○ Yes, increased
- ○ Yes, decreased
- ○ No

In the last week, did this business have a change in the total number of hours worked by paid employees?

Select only one:
- ○ Yes, increased
- ○ Yes, decreased
- ○ No

In the last week, did this business have disruptions in its supply chain?

Select only one:

○ Yes

○ No

In the last week, did this business shift to the production of other goods or services?

Select only one:

○ Yes

○ No

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?

Select only one:

○ Yes

○ No

How would you describe the current availability of cash on hand for this business? Currently, cash on hand will cover:

Select only one:

○ 1-7 days of business operations

○ 1-2 weeks of business operations

○ 3-4 weeks of business operations

○ 1-2 months of business operations

○ 3 or more months of business operations

○ No cash available for business operations

○ Don't know

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?

Select only one:

○ Yes

○ No

Since March 13, 2020, has this business missed any other scheduled payments, <u>not</u> including loans? Examples of other scheduled payments include rent, utilities, and payroll.

Select only one:

○ Yes

○ No

Since March 13, 2020, has this business <u>requested</u> financial assistance from any of the following sources?

Select all that apply:

☐ Paycheck Protection Program (PPP)

☐ Economic Injury Disaster Loans (EIDL)

☐ SBA Loan Forgiveness

☐ Other Federal Programs

☐ State or Local Government

☐ Banks

☐ Self

☐ Family or Friends

☐ Other

☐ This business has not sought financial assistance from any source

Since March 13, 2020, has this business <u>received</u> financial assistance from any of these programs from the federal government?

Select all that apply:

☐ Paycheck Protection Program (PPP)

☐ Economic Injury Disaster Loans (EIDL)

☐ SBA Loan Forgiveness

☐ Other Federal Programs

☐ This business has not received financial assistance from any Federal Program.

In your opinion, how much time do you think will pass before this business returns to its usual level of operations?

Select only one:

○ 1 month or less

○ 2-3 months

○ 4-6 months

○ More than 6 months

○ I do not believe this business will return to its usual level of operations.

○ There has been little or no effect on this business's usual level of operations.

What is this establishment's 9-digit Employer Identification number (EIN) used on its latest Internal Revenue Service 941 Employer's Federal Quarterly Tax Return?

Text box for 9 digit numeric EIN