

Special Survey:

The Impact of COVID-19 on Businesses in the Eighth Federal Reserve District

April 2020

Authors

Kathryn Bokun, Research Associate, Federal Reserve Bank of St. Louis

Charles Gascon*, Regional Economist, Federal Reserve Bank of St. Louis

Olivia Wilkinson, Research Associate, Federal Reserve Bank of St. Louis

Disclaimer

This document summarizes comments received from contacts outside the Federal Reserve Bank of St. Louis. The views expressed are those of the authors and do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis or Federal Reserve officials.

*Corresponding author charles.s.gascon@stls.frb.org. For media inquiries contact mediainquiries@stls.frb.org. The authors would like to thank all of the survey participants, regional chambers of commerce, and other organizations that assisted collecting and generating the information contained in this report.

Overview

About the survey

In partnership with numerous chambers of commerce and regional organizations, the Federal Reserve Bank of St. Louis has conducted a confidential survey of business leaders in the seven-state region of the Eighth Federal Reserve District. Respondents were invited by email to participate in an online survey. The information was collected online between April 8 and April 17, 2020, and resulted in 948 responses.

This report offers findings of this survey. The questions were designed to capture changes in overall business activity since the first week in March; firms' decisions to continue to operation or shutdown; the extent firms are relying on remote workers and the impact on workers; firms' degree of financial stress; and use of and access to government assistance programs.

As a voluntary survey, the distribution of responses was not expected to match the true distribution of establishments within the District. Respondent answers are weighted by sector and establishment size in order to account for some of this sampling bias. There are other sources of sampling bias. For example, firms with a higher degree of financial distress may be more likely to complete the survey with the hope it leads to a favorable policy outcome. The authors compared results of this survey with those of other surveys across the Federal Reserve System that rely on recurring panels and believe the results are not subject to this type of bias.

Survey findings

Overall, the survey finds:

- The direct effect from COVID-19 and social distancing is concentrated in a few sectors. Specifically, leisure and hospitality, retail trade, and health and education.
- The indirect effect through spillovers are significant and impacting manufacturing, wholesale trade, and other service sector firms.
- About one-third of firms are laying off workers, and the layoffs are severe, averaging about 14% since the first week in March. Additional layoffs are expected to slow but could remain at record levels.
- Approximately one-third of the workforce is working remotely. Firms with a high share of remote workers report lower rates of layoff, as well as lower reductions in hours and wages of remaining employees.
- Overall firms are very concerned about the possibility of significant financial distress over the next 10 weeks. Larger firms appear significantly better positioned to remain in business during this period.
- Government assistance programs are the preferred source of additional funds for all firms. Program utilization by larger and less-distressed firms is likely driving the overwhelming demand for these programs.

What has changed since we have conducted the survey

Overall business conditions have changed since the survey was conducted in mid-April. Some of these developments may affect how the results should be interpreted. For example:

- The food supply chain has been disrupted due to temporary closures at meat processing facilities. This may affect the share of firms reporting supply chain shortages or higher costs.
- About 15% of respondents reported “possibly” temporarily shutting down operations, some of these temporarily shutdowns may have occurred.
- Some areas have extended (or rescinded) stay-at-home orders since the survey was conducted. Survey questions typically ask respondents about financial stress assuming operating conditions have remained unchanged.
- At the time, the survey respondents were applying for financial assistance through special COVID-10 programs. The receipt of these funds (or lack thereof) likely affected their degree of financial distress.

It is our intention conduct a subsequent survey in the coming weeks to gain insight on these and many other changes in the economy

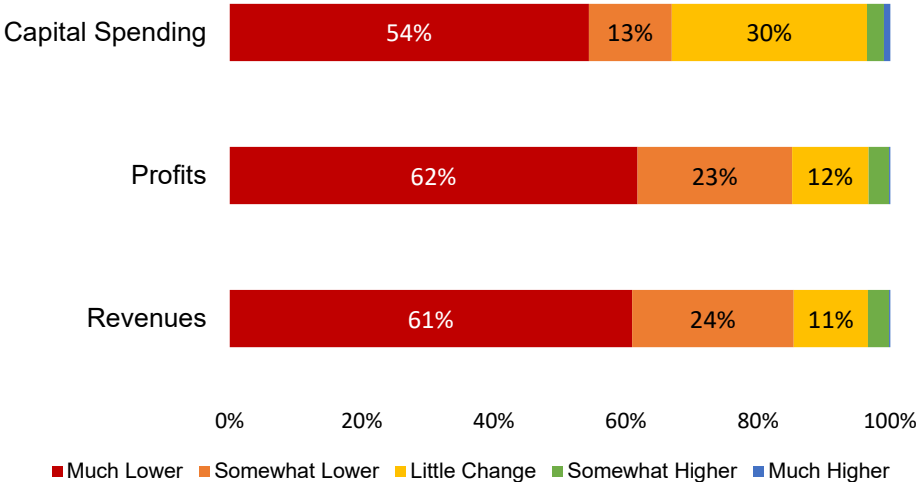
Changes in overall activity since the first week of March

Respondents report sharp decline in demand

Based on the survey results, we estimate that most firms in the District experienced a significant drop in revenues and profits since the first week of March.ⁱ Almost two-thirds of firms experienced much lower revenues and profits (61% and 62%, respectively). Approximately an additional one-quarter of firms had somewhat lower revenues and profits (25% and 23%, respectively). Around 97% of leisure and hospitality respondents, 77% of healthcare respondents, and 75% of retail respondents cited “much lower” revenues and profits. While still negatively affected, fewer firms in the banking and finance and agriculture sectors experienced declines at the time of the survey.

Based on survey responses, about half of firms in the District (53%) have had much lower capital expenditures since the first week of March. Most of the decline in capital expenditures appears to be related to cash preservation to maintain liquidity based on respondent comments. Banking and finance, other services, agriculture, and real estate sectors experienced notably smaller declines in capital expenditures, while leisure and retail industries experienced significantly larger declines.

Figure 1: Changes to revenues, profits, and capital expenditures

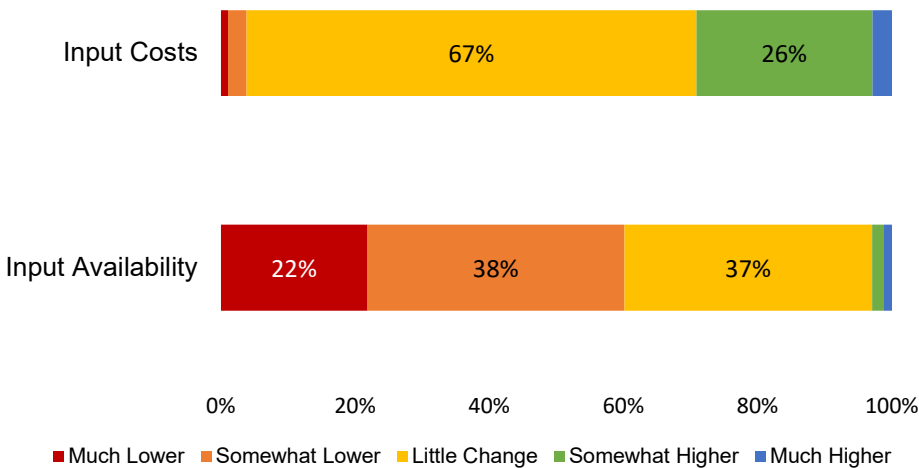


Notes: Values represent percentage of respondents.

Shortages of supplies, higher costs reported among some contacts

Nearly one-quarter (22%) of firms in the District reported lower availability of input goods, and more than one-third experienced somewhat lower availability (38%) or little change (37%). Retail and healthcare respondents experienced the greatest shortage of inputs, while construction and wholesale industries also had shortages.

Figure 2: Changes to input availability and costs



Notes: Values represent percentage of respondents

Input costs were modestly higher: Two-thirds (67%) of firms experienced little change in non-labor input costs. The agriculture and real estate sectors had the smallest share reporting higher input costs. Among the 26% indicating somewhat higher costs, firms were concentrated in the wholesale and healthcare sectors.

Business decisions to shut down

Majority of respondents do not expect permanent shutdowns

Based on survey responses, we estimate that up to 3% of respondents have already permanently shut down operations or will definitely intend on partial permanent closure of operations. Around 12% to 15% may possibly implement a permanent closure, but the majority do not intend to shut down their operations permanently.

Half of respondent firms have implemented partial temporary shutdowns

Based on survey responses, many firms in the District (47%) have already implemented a partial temporary shutdown. Moreover, a large portion (16%) will possibly close partially and temporarily. However, one-third (33%) indicated that they would not temporarily shut down a part of operations.

Total shutdowns of operations appear uncommon at the time of the survey but remain possible. The majority of firms (63%) will not implement a temporarily closure all operations. Although, about one-fifth of firms (20%) have already implemented a total temporary shutdown and 15% will possibly do so.

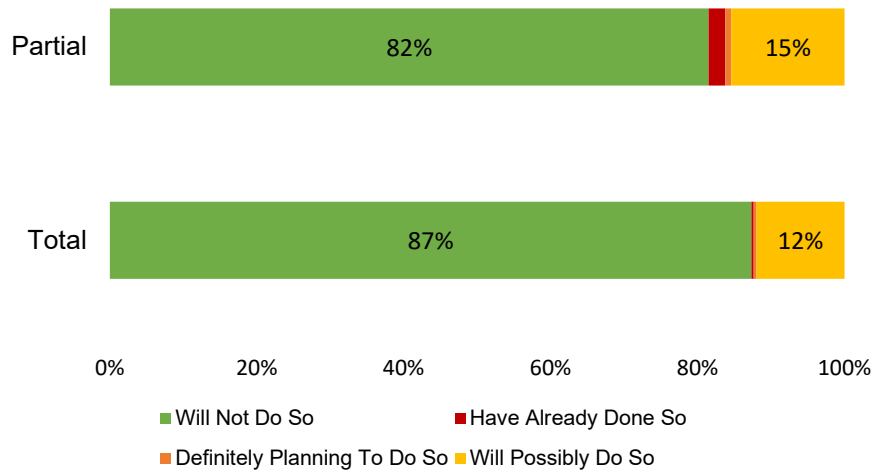
Small firms in the leisure, construction, and other services industries are most vulnerable to permanent closures

Firms that reported a total permanent shutdown or are definitely planning a permanent shutdown generally have 10 or fewer employees. These firms are spread across the leisure and hospitality, construction, and other services sectors. Firms that are permanently shutting down parts of their operations are scattered across all firm sizes and sectors, although the leisure and hospitality sector

remains most common.

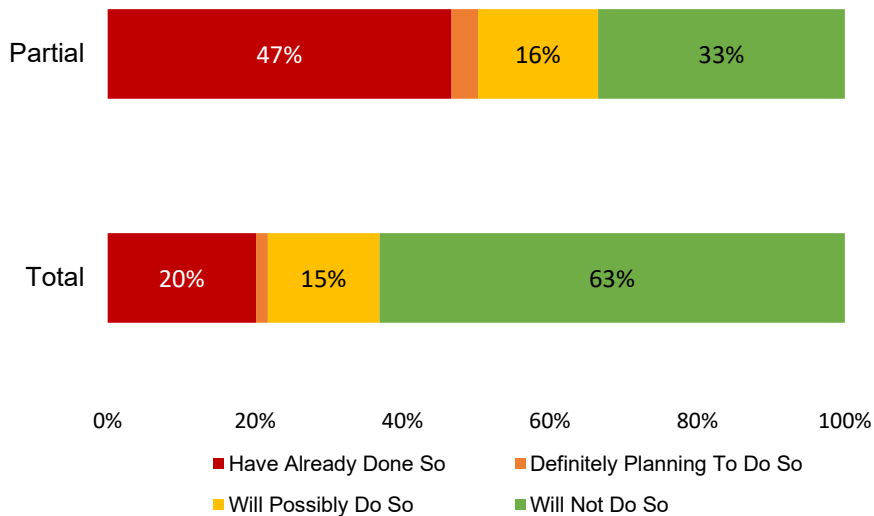
The bulk of total temporary shutdowns are in the retail sector and are establishments with 10 or fewer employees. Small establishments in the other services and retail sectors make up the majority of firms that are temporarily shutting down parts of operations.

Figure 3: Expected permanent shutdowns



Notes: Values represent percentage of respondents.

Figure 4: Expected temporary shutdowns



Notes: Values represent percentage of respondents.

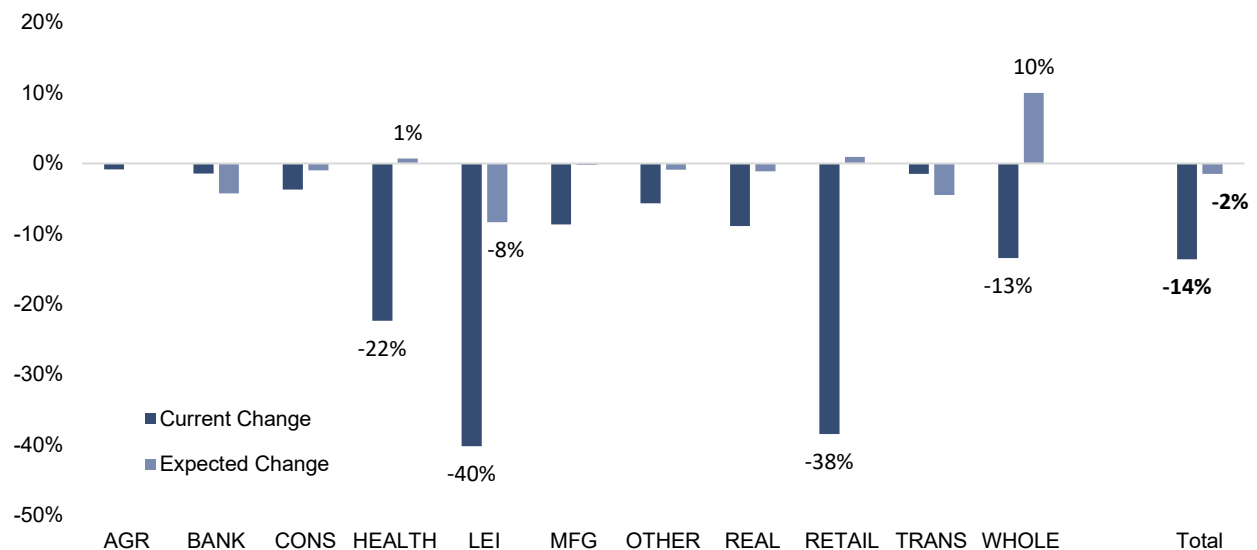
Labor market conditions

A third of respondents report reductions in employment

About one-third (35%) of respondents reported reducing employment since the first week in March. The remaining contacts generally reported no change in employment. Only 1% reported increasing employment. While every sector experienced declining employment on net, losses were heavily concentrated in the leisure, retail, real estate, healthcare, and manufacturing sectors.

Based on respondents' establishment size and reported declines, we estimate District employment declined by about 14% between the first week in March and the survey period. Figure 5 shows the magnitude of the declines by sector. The dark blue bars indicate the reported change in employment since the first week in March. The light blue bars indicate respondents' expected change in employment over the next 30 days.

Figure 5: Estimated net employment change by industry



Notes: Current is defined as the percentage change in total employment since the first week in March. Expected is defined as the percent change total employment in the 30 days after the survey response. Estimates are produced by weighting respondents using CBP (2017) firm distributions to reflect the true composition of industries in the District.

A slightly smaller share (21%) of firms expect to reduce employment over the next 30 days after the close of the survey (April 17). Net losses are concentrated in the leisure and hospitality sector (see Figure 5). Respondents in most other sectors report less-severe net declines in employment.ⁱⁱ The wholesaleⁱⁱⁱ, healthcare, and retail respondents expect modest rebounds in employment in the 30 days after the survey period. Based on the distribution of the respondent establishment sizes and industries, we estimate total employment will decline by approximately 2% over the 30 days following the close of the survey.

Most respondents report no changes to employee wages

Approximately one-fifth (18%) of respondents reported reducing the wages of remaining employees; only 2% of firms report increasing wages of remaining employees, while the remaining 80% reported no change in wages. All industries experienced net declines in wages of remaining employees, but healthcare, leisure, and retail experienced the largest net losses in wages of remaining employees.

Based on the respondents' industries and establishment sizes, we estimate District wages, not including total wage loss from layoffs, have declined 7% since the first week in March (see Table 1).

About 17% of respondents plan to reduce wages of remaining employees in the next 30 days. All industries are expected to have net declines in wages. Most industries should experience smaller net decreases in wages in the next 30 days compared with current net declines. However, banking, construction, and transportation are expecting larger declines in the next 30 days than between the first week of March and the end of the survey. Accounting for the industry and establishment size of the respondents' firms, we estimate that District wages will decline a further 1%.

Half of respondents report reductions in payroll hours

Almost half (44%) of respondents reported reductions in hours of payroll staff since the first week in March through the end of the survey period. Only 2% reported increasing hours of payroll staff during this period, and the remaining respondents (54%) reported no change in hours. While all industries experienced net declines in payroll hours worked, declines were concentrated in the healthcare, leisure, and retail sectors. Based on industry and establishment size characteristics, we estimate total hours will decline by approximately 16%.

Looking toward the next 30 days, 29% of respondents expect to decrease hours of payroll staff, while only 3% expect to increase hours of payroll staff. The majority of respondents (67%) expect no changes to the hours of existing payroll staff. The leisure and retail sectors should experience the largest net declines in hours of existing payroll staff. All other sectors are expected to experience net declines of smaller magnitudes. We estimate that District hours of payroll staff will decline about 6%.

Table 1: Changes in labor market indicators: Total and selected sectors

	Employment		Wages		Hours	
	Current	Expected	Current	Expected	Current	Expected
Total	-14%	-2%	7%	-1%	-15%	-6%
LEI	-40%	-8%	-20%	-1%	-37%	-16%
RETAIL	-38%	1%	-22%	-3%	-52%	-25%
HEALTH	-22%	1%	-11%	0%	-27%	-3%
MFG	-9%	0%	-2%	-1%	-5%	-1%

Note: Values represent percent changes in the respective indicator. Current is defined as the change since the first week in March. Expected is defined as the percent change in the 30 days after the survey response.

One-third of respondents report reducing contract worker employment and hours

About one-third (32%) of respondents report reducing contract worker employment since the first week in March. A small percentage of respondents (2%) report increasing contract worker employment, and the remainder (66%) report no change to contract worker employment. Based on firm size and industry distributions, we estimate the District experienced net employment losses of approximately 9% for contract workers. In the next 30 days, about a quarter (24%) of respondents expect to reduce contract worker employment, 74% expect no changes in contract worker employment, and the remaining 2% of respondents expect to increase employment of contract workers.

After accounting for contract worker layoffs, about one-third (34%) of respondents have reduced the

payroll hours of remaining contract workers since the beginning of March. A further 1% of respondents have increased the hours of contract workers, and the remainder (65%) of respondents reported no change in hours of contract workers. We estimate that payroll hours of contract workers for the District experienced a net decline of 2.9%. Looking forward, one-fourth (25%) of respondents plan to reduce the hours of contract workers, while the majority (74%) expect to make no changes to the hours of contract workers. The remaining 2% of respondents plan to increase the hours of contract workers.

A quarter of respondents have expanded employee benefits such as paid sick leave

A little over one-third (37%) of survey respondents report already having paid sick leave in place before the first week of March. A tenth of respondents implemented paid sick leave for some staff, while 14% reported implementing paid sick leave for all staff. The remainder (39%) reported no plan to implement paid sick leave. We estimate that the above translates to about one-quarter (27%) of firms in the District already having paid sick leave in place prior to March 1, 10% now implementing it for all staff, 8% implementing it for some staff, and 55% choosing not to implement paid sick leave.

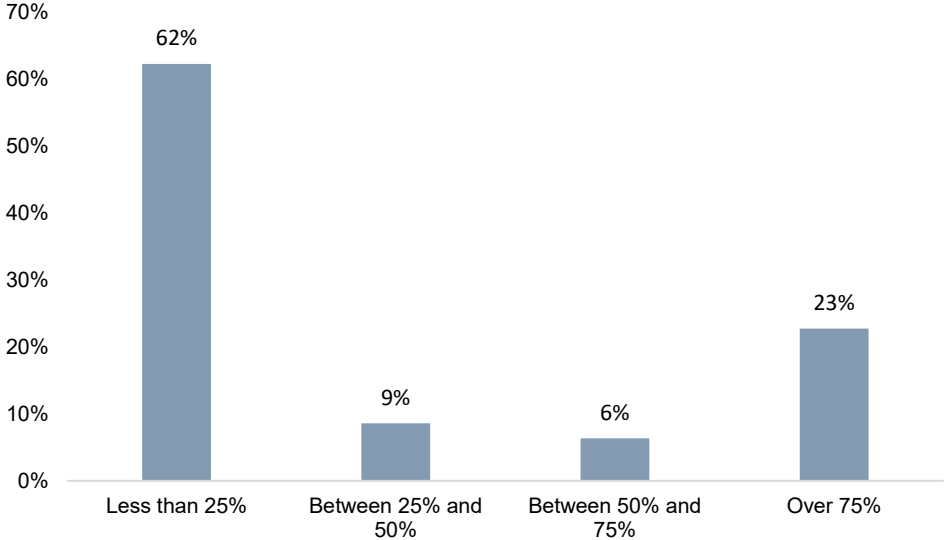
Again, a little over one-third (37%) of respondents report already having unpaid sick leave policies in place prior to the beginning of March. A tenth (10%) of respondents report now implementing unpaid sick leave for all staff, 8% report implementing unpaid sick leave for some staff, and the remaining 45% of respondents have no plans to implement unpaid sick leave. We estimate these numbers translate to the following for the District: 28% of firms already had unpaid sick leave policies in place; 8% of firms have implemented unpaid sick leave for all staff, 6% have implemented unpaid sick leave for some staff, and 58% of firms have no plans to implement unpaid sick leave.

Remote workers

One-quarter of respondents have over 75% of staff working remotely

At the majority of firms (62%) less than 25% of employees are working remotely. However, almost one-quarter (23%) of firms continue to operate with more than 75% of staff working remotely. Accounting for differences in total employment across respondents, we estimate that about 40% employees are working remotely.^{iv}

Figure 6: Remote workforce: distribution of responses



Note: Values represent the share of respondents reporting the respective share of their workforce is working remotely.

The other professional services sector has the largest share of remote workers. The banking, real estate, and agriculture sectors also have a significant share of remote workers. Almost all firms in retail and transportation have less than 25% of their workforce working remotely. However, we estimate that a few healthcare (16%) and leisure (16%) firms have more than 75% of staff working remotely.

Firms with fewer remote workers report higher layoffs, wage and hours reductions

Job losses are lower at firms with a larger share of remote workers. Firms with more than 75% of remote employees average layoffs of 5%, while firms with less than 25% of remote employees reduced their workforce by more than 20% on average. A similar trend prevails with changes to hours and wages.

Table 2: Labor market conditions by remote work capabilities

	Less than 25%	25% to 50%	50% to 75%	Over 75%
Employment	-21%	-7%	-9%	-5%
Wages	-11%	-3%	-4%	-3%
Hours	-24%	-8%	-15%	-6%

Note: Values represent average change in the respective indicator based on the respondents' share of remote workers.

Financial concerns over next 30 days

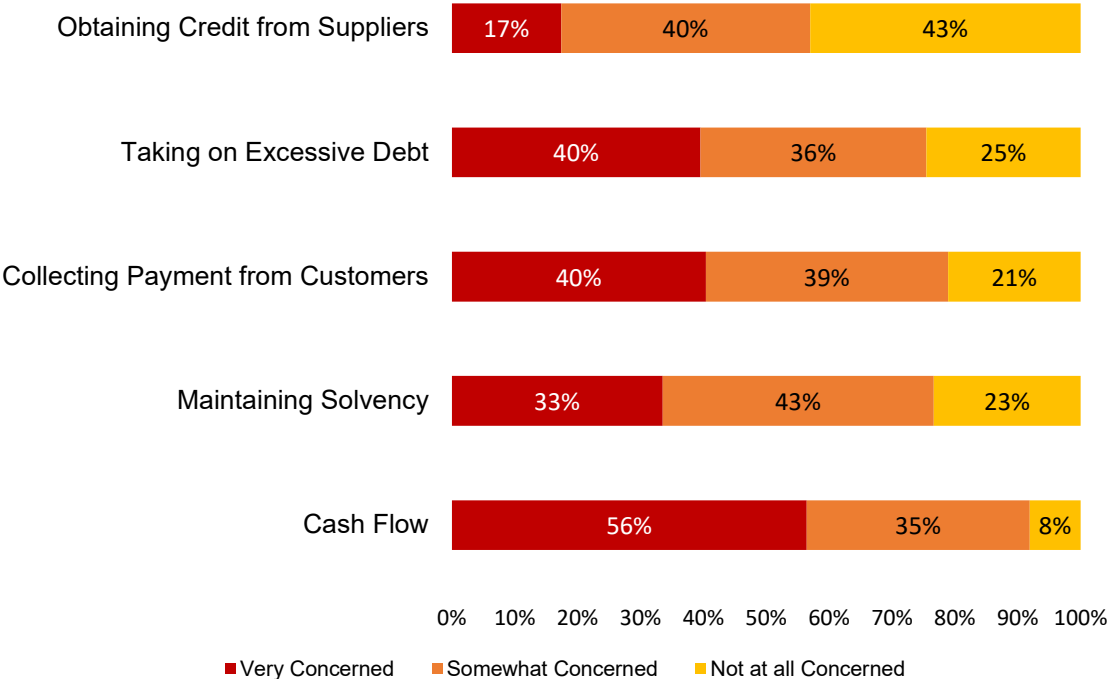
Respondents primarily concerned about cash flow

Based on the survey responses, we estimate that more than half (57%) of firms are very concerned about maintaining adequate cash flow over the next 30 days. An additional one-third (35%) are somewhat concerned, and only 8% are not concerned about maintaining their cash flow. Regarding solvency, roughly one-third (34%) of firms in the District are very concerned. Almost one-fourth (23%) of firms are not concerned at all about maintaining solvency over the next 30 days. Responses indicate that many (43%) firms in the District are somewhat concerned.

Collecting payments is a large concern for surveyed business. We estimate that many firms (40%) in the District are very concerned about collecting payments. An additional 38% are somewhat concerned about their ability to collect payments.

Firms are more concerned about the risk of excessive debt relative to obtaining supplier credit. We estimate that about 40% of firms are very concerned about incurring excessive debt, while 17% are very concerned about the ability to obtain adequate credit from suppliers. Many (40%) are somewhat concerned about acquiring supplier credit. However, a large share (43%) are not at all concerned.

Figure 7: Relative concerns of respondents



Notes: Values represent percentage of respondents.

Primary financial concerns vary across sectors and firm sizes

Leisure and retail were among the most concerned industries regarding cash flow, solvency, and excessive debt. The agriculture, leisure, and manufacturing industries were the most concerned about obtaining credit from suppliers. The wholesale and other professional services industries were the most concerned about collecting payments. Generally, the banking, real estate, and transportation industries were not as concerned financially.

In addition to industry, concerns appear to diverge significantly based on size of the firm. The opinions of small (less than 50 employees) and large (more than 500 employees) firms converge on payment collection and excessive debt. However, relative to large firms, small firms are much more concerned about maintaining cash flow and solvency and taking on excessive debt.

Table 3: Percentage of firms “very concerned” by establishment size

	Less than 50 employees	Over 500 employees
Maintaining Solvency	32%	10%
Obtaining Credit from Suppliers	18%	15%
Collecting Payment from Customers	41%	39%
Taking on Excessive Debt	38%	17%
Cash Flow	55%	29%

Note: Values represent percentage of respondents indicating they are “very concerned” about each metric grouped by size of the establishment.

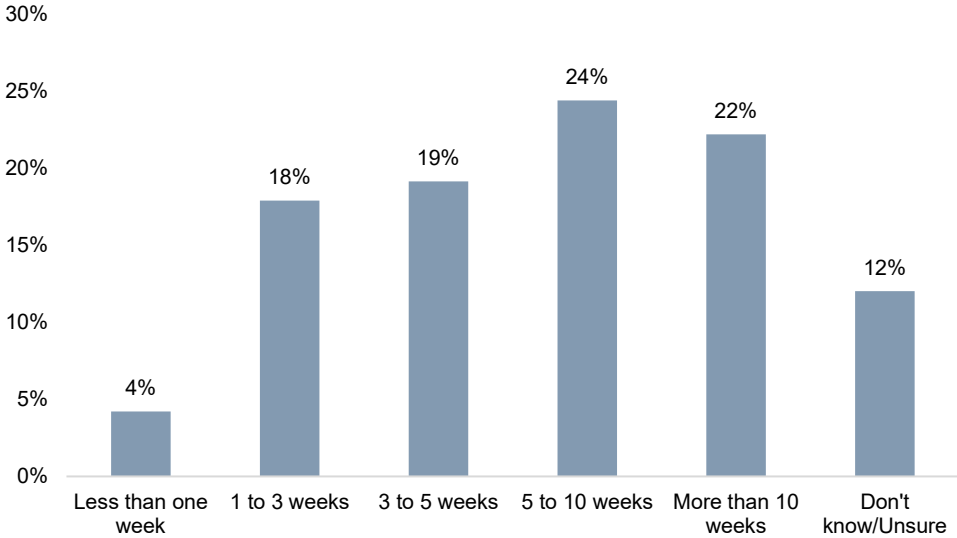
Degree of financial distress

About half of firms can operate for more than 5 weeks without financial distress

Respondents were asked how many weeks their firm could operate in the current environment before exhibiting signs of financial distress, such as a low cash balance, additional credit required, or lack of materials/supplies. A portion of weighted firms (12%) responded they were unsure about the time until they would experience financial distress.

Based on the survey responses, we estimate one-fourth of businesses indicated they could continue operations over longer term (more than 10 weeks) without financial distress. Roughly another one-fourth (28%) could continue operating without distress for 5 to 10 weeks. Nearly one-half of businesses could not continue operating for more than 5 weeks without financial distress. By the time of publication, nearly 6 weeks will have lapsed since March 21, 2020, when most states in the Eighth District implemented mandatory stay-at-home ordinances.

Figure 8: Financial distress timeline: distribution of responses

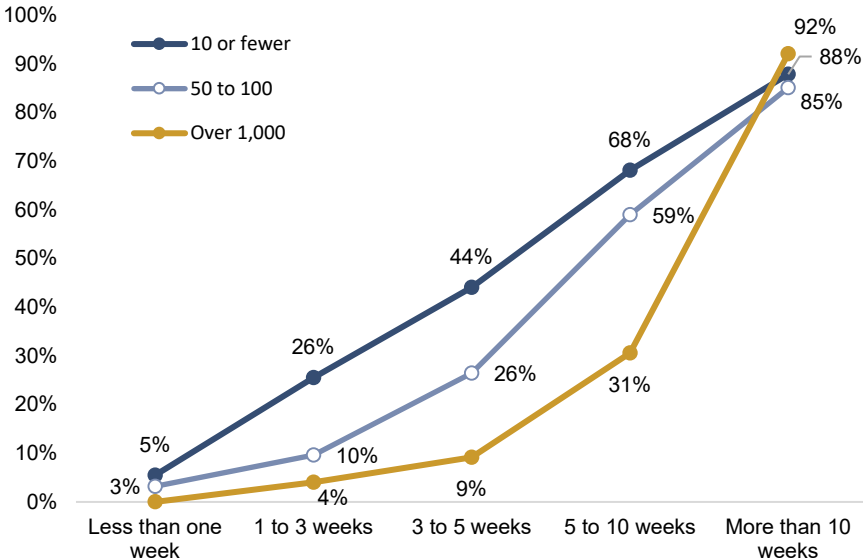


Notes: Values represent percentage of respondents.

Smaller firms are likely to become financially distressed sooner than their larger counterparts

Smaller firms have much less ability to continue to operate before exhibiting financial distress. Among establishments with 10 or fewer employees, roughly one-quarter expect to be able to operate less than 3 weeks before exhibiting financial distress and requiring assistance (see Figure 9). In total, 68% of these very small establishments believe they would exhibit financial distress sometime in the next 10 weeks. For medium-sized establishments with 50 to 100 employees, only 10% believe they would exhibit financial distress within 3 weeks; 59% believe they would exhibit financial distress within 10 weeks. Among the largest establishments with over 1000 employees, only 31% believe they would exhibit financial distress in less than 10 weeks.

Figure 9: Expected time before exhibiting financial distress by establishment size



Notes: Values represent cumulative percentage of respondents. The totals equal 100% because the category “don’t know/unsure” is not reported in the figure.

Leisure, retail, and healthcare sectors are most vulnerable to experiencing financial distress in less than 5 weeks

We expect approximately 63% of leisure and hospitality firms, 54% of retail firms, and 52% of healthcare and education firms to experience financial distress in less than 5 weeks. Agriculture, mining and utilities, banking, and other services are least likely to experience financial distress in less than 5 weeks.

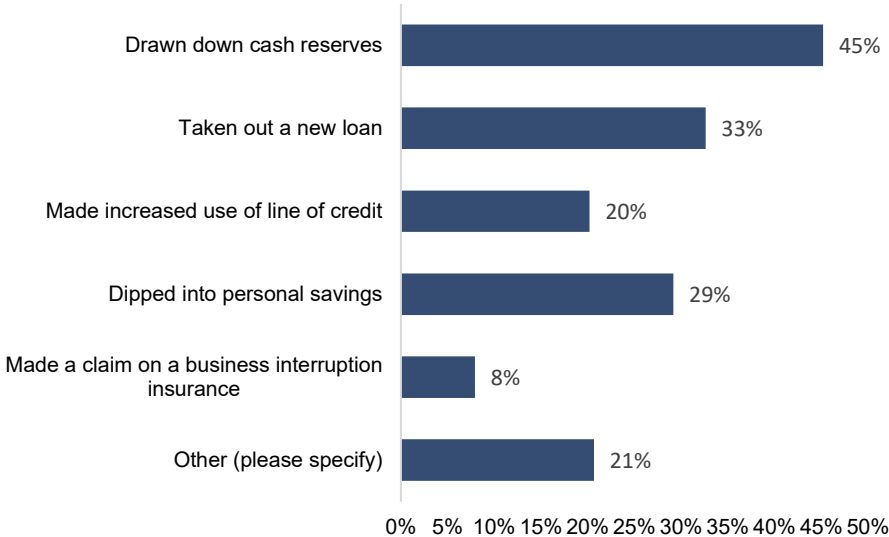
Agriculture, banking, wholesale, real estate, and other services are most likely to go more than 10 weeks without financial distress. On the other hand, less than 5% of leisure firms and 10% of retail firms are able to go more than 10 weeks without financial distress.

Actions taken to cover shortfalls

Drawing down cash reserves is the most common action

Based on survey responses, we estimate that almost half (45%) of firms in the District have drawn down cash reserves to cover shortfalls as a result of the coronavirus outbreak. Other popular methods of covering shortfalls are taking out new loans (33%), dipping into personal savings (29%), and increasing use of lines of credit (20%). About one-fifth (21%) of firms have taken other actions, such as applying for a Payroll Protection Program (PPP) loan under the CARES Act.^v We estimate that around 8% of firms in the District have made a claim on business interruption insurance.

Figure 10: Actions already taken as a result of coronavirus outbreak



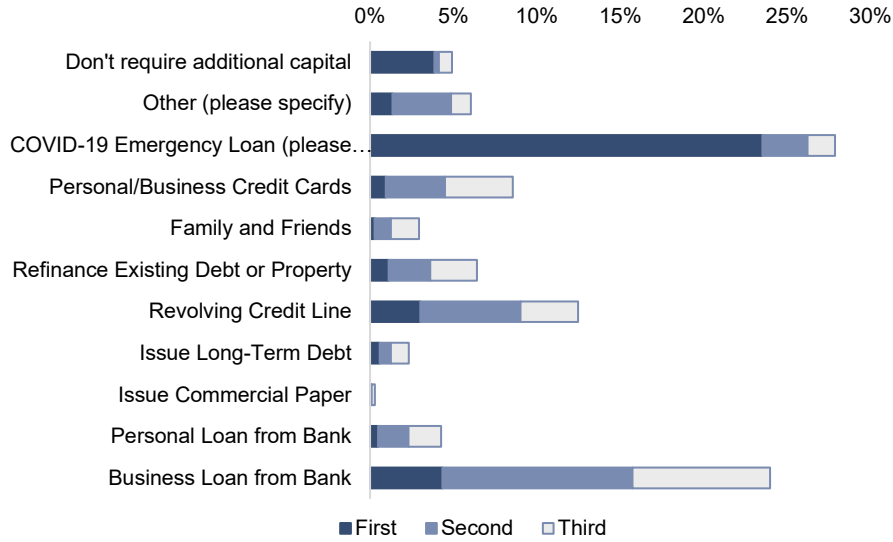
Notes: Values represent percentage of respondents. Respondents could select every option they had used.

Most firms prefer to use a COVID-19 emergency fund to source funds

Based on survey responses, we estimate that District firms in need of additional capital overwhelmingly prefer to source funds from a COVID-19 emergency program. About one-quarter of respondents selected these emergency programs as their first choice. A popular second choice was a business loan from a bank.

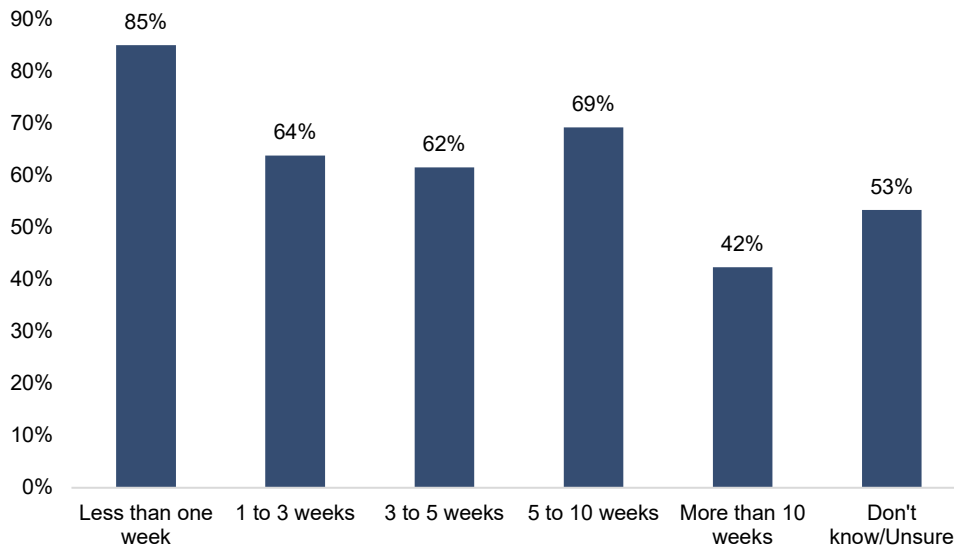
The preference among respondents for utilizing COVID-19 emergency lending programs varies by degree of financial distress. Figure 12 shows respondents prefer to utilize these emergency programs relative to their other sources of funding based on their degree of financial distress. Among respondents who believe they can operate less than 1 week, 85% would first choose a COVID-19 emergency loan. This share of respondents generally declines as respondents believe they have more time to operate. However, even among respondents believing they can operate more than 10 weeks, just under half (42%) prefer COVID-19 emergency loans relative to other sources of funding.

Figure 11: Ranking sourcing of funds



Notes: Values represent percentage of respondents.

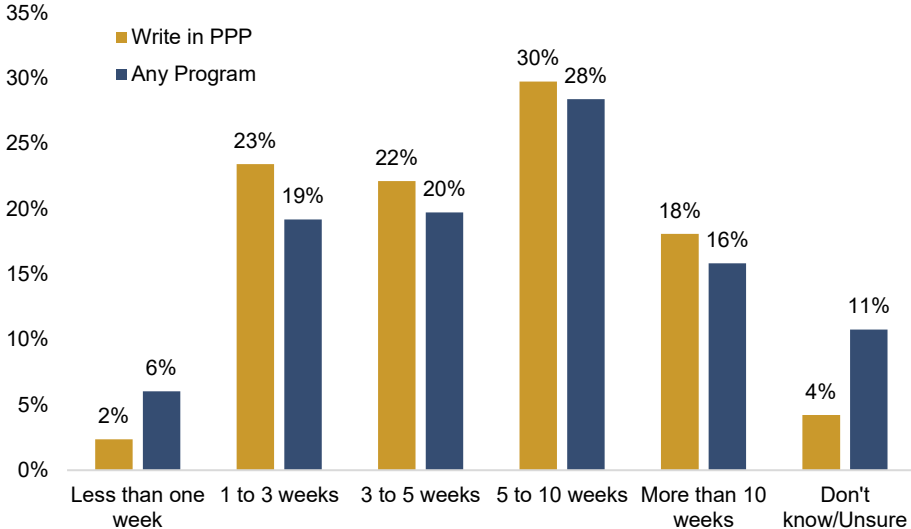
Figure 12: Share of respondents preferring emergency COVID-19 lending by financial distress



Notes: Values represent percentage of respondents. Any program represents firms that selected a preference for a COVID-19 assistance program.

Due to these preferences, utilizing COVID-19-related aid programs many have experienced an overwhelming demand. Most notably is the PPP, which exhausted initial funding. Figure 13 combines the information reported in Figures 8 and 12 to get a better sense where the demand for these programs is coming from, specifically by the degree of financial distress of firms. Respondents had the option of identifying the lending program they preferred to source funds, and around one-quarter identified the PPP. Because a relatively small fraction of respondents (4%) could operate less than 1 week, they comprise a very small fraction of the demand for government assistance programs (between 2% and 6%). Overall, about half of the demand for these programs is generated from firms concerned about financial distress in less than 5 weeks. In fact, there is only slightly less demand for these programs from firms able to operate more than 10 weeks (16% or 18%) than firms able to operate between 1 and 3 weeks (19% or 23%).

Figure 13: Distribution of respondent demand for emergency lending by urgency of financial distress



Notes: Values represent percentage of respondents. The sum across bars of a given color equals 100%.

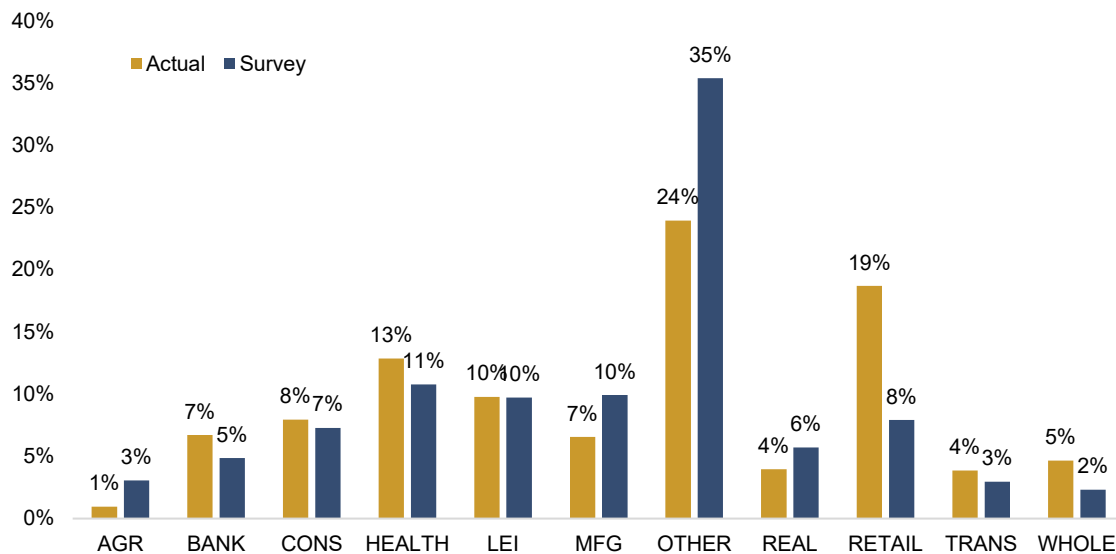
Sample characteristics

Industry mix

Because this was a voluntary survey, the distribution of responses by industry was not expected to match the true distribution of establishments within the District. About 14% of survey respondents identified “other” and wrote in an industry description. These responses were manually recoded by the authors based on the respondent’s description along with other information provided. Figure 15 presents the overall distribution of responses compared with the distribution of Eighth District establishments according the Census Bureau County Business Patterns database for 2017. The survey under-sampled retail establishments and over-sampled other service sector establishments. This sampling discrepancy was accounted for by weighting respondents using the distribution from the County Business Patterns database.

Sectors are defined as the following (abbreviations and NACIS Codes): natural resources, utilities, and agriculture (AGR, 11, 21, 22); banking, finance, and insurance (BANK, 52); construction (CONS, 23); healthcare and education (HEALTH, 61, 62); leisure and hospitality (LEI, 71, 72); manufacturing (MFG, 31, 32, 33); other services (OTHER, 54, 51, 56, 81); real estate (REAL, 53); retail trade services (RETAIL, 44, 45); transportation and warehousing (TRANS, 48, 49); wholesale trade services (WHOLE, 42)

Figure 14: Industry distribution: actual and survey respondents

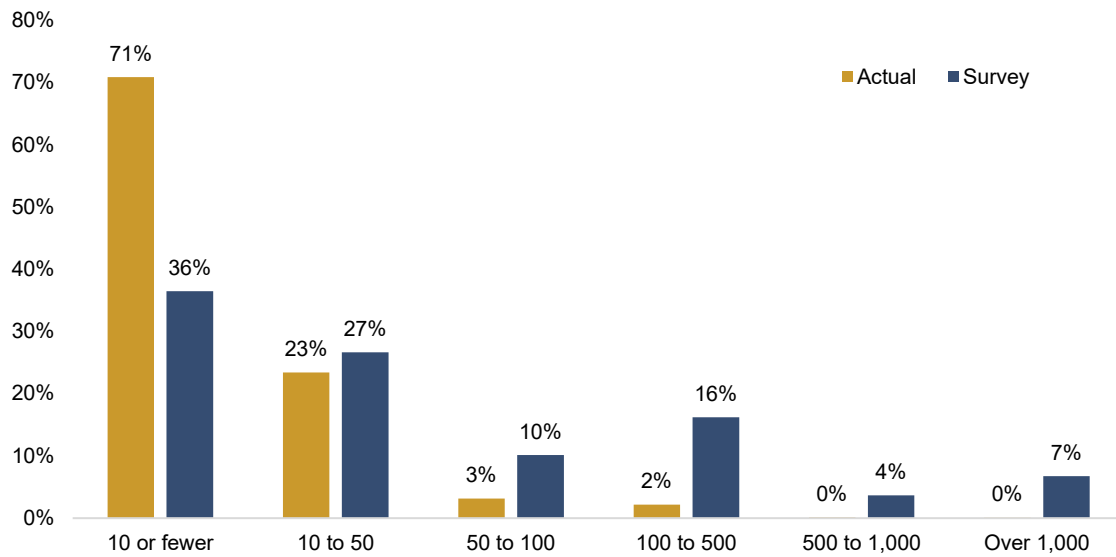


Notes: Values represent share of establishments by industry; actual distribution is from the County Business Patterns database, 2017.

Establishment size

Because this was a voluntary survey, the distribution of responses was not expected to match the true distribution of establishment sizes within the District. Figure 16 presents the overall distribution of responses compared with the distribution of Eighth District establishments according the Census Bureau County Business Patterns database. The survey under-sampled very small establishments with 10 or fewer employees and over-sampled very large establishments. This sampling discrepancy was accounted for by weighting respondents using the distribution from the County Business Patterns database.

Figure 15: Establishment employment distribution: actual and survey respondents

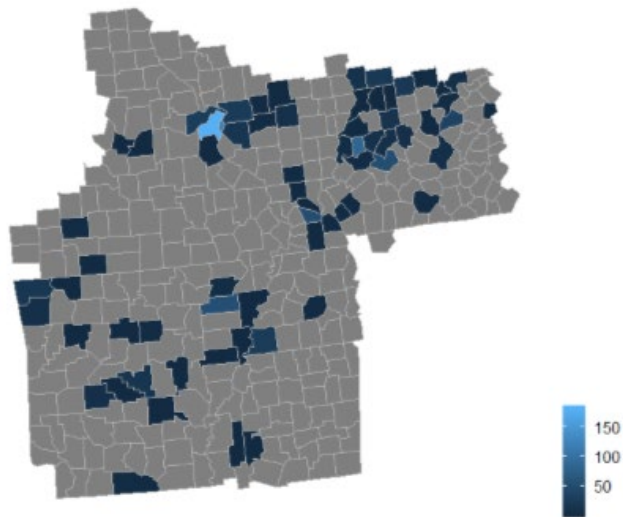


Notes: Values represent share of establishments by employment; actual distribution is from the County Business Patterns database, 2017.

Location

Because this was a voluntary survey, the distribution of responses was not expected to cover all locations in the District. The map below summarizes survey respondents' principal location of their establishment by county. While not all counties appear to be covered by survey respondents, information in the survey indicates that many respondents conduct business outside of their principal state and county.

Figure 16: Distribution of survey responses by county



Note: Shading represents the number of responses in a county, as reported by the respondent. Gray areas indicate no reported responses.

The majority of the survey responses (80%) were from firms with a principal location within a core-based statistical area:

- 327 responses were from firms with their principal location within the St. Louis, MO-IL, metropolitan statistical area.
- 105 responses were from firms with their principal location within Evansville, IN-KY metropolitan statistical area.
- 6 other metropolitan statistical areas had responses between 60 and 20 responses.

Where available, the authors have looked for regional differences in respondents' answers. While it is likely that the geographic location of a firm will impact business decisions, as there are differences in state and local policies related to COVID-19, there is little evidence to support this hypothesis. As a result, aggregate results are weighted by respondent industry and establishment size.

Supplement: Estimates of job losses by region using survey results

Survey respondents reported the percentage change in total payroll employment over two periods in the survey (see survey Q3 and Q4). We use the information from this survey with comparable statistics from the County Business Patterns database to estimate the number of jobs that may be lost (many of which are temporary) due to COVID-19. As with all model-based estimates, these numbers should be interpreted with caution.^{vi} However, the estimates provide useful information in understanding the labor market dynamics we may expect to see in the coming months. The estimates also serve as a guide for understanding the varying degrees in which county and metropolitan area labor markets have been affected.

As previously reported, total employment of survey respondents is expected to have declined by 14% since the first week of March and respondents anticipate an additional 2% decline during the month following the survey. The model-based estimates indicate a similar trend in the District: a 17% decline since the first week in March and an additional 4% decline during the month following the survey.

Methodology

We estimate a regression to predict the percentage decline in an establishment's employment based on characteristics of the firm, specifically its employment size class and industry.^{vii} As we find in our survey, the impact of COVID-19 on employment is widespread, but the greatest effect is concentrated in four sectors: LEI, RETAIL, HEALTH, and MFG. For model simplicity, we assume job losses in other sectors are uniform and only a function of establishment size. In these other sectors, the smallest establishments experience employment declines of around 8%, while large establishments experience declines of around 4% since the first week in March.

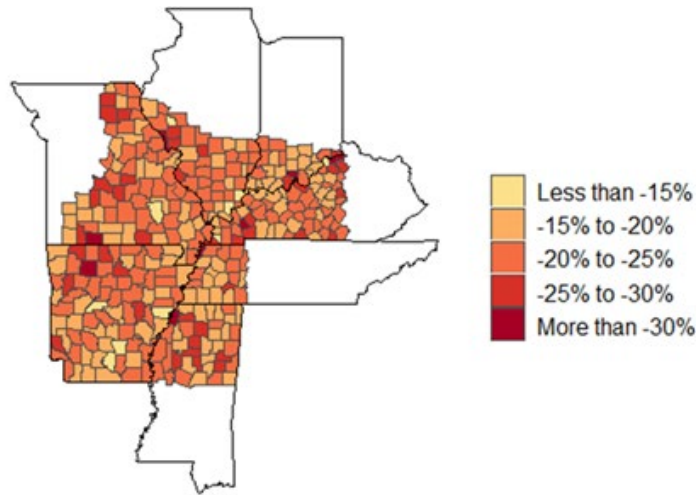
To compute county-level changes in private employment, we use the parameters estimated from the survey data in conjunction with the establishment-level data from the County Business Patterns database. We assume that the number of employees in each firm class is equal to the median employment of the range reported in the County Business Patterns.^{viii} With this assumption, and the county-level distribution of establishments by employment class and industry, we can estimate job losses for each county for the two periods.

Estimated job losses since first week in March through survey period

The model-based estimates indicate private sector employment in the District has declined 17% since the first week in March. The bulk of these job losses are concentrated in the LEI, RETAIL, HEALTH, and MFG sectors. The map below displays the regional variation in job losses across the District. Those areas with a higher concentration of employment in the most-affected sectors have the greatest declines. Tunica County, MS (part of the Memphis, TN-MS-AR metropolitan statistical area), and Taney County, MO (which includes Branson, MO), are estimated to have experienced the steepest rate in job losses at over 30%. On the other hand, Reynolds County, in southeastern Missouri, is estimated to have job losses of around 10%. While much lower, this magnitude is still unprecedented.

Estimated job losses for the metropolitan statistical areas in the District are reported in Table 4. Estimated losses range from around 17% (Memphis, TN-MS-AR) to 24% (Terre Haute, IN). Declines of this magnitude are unprecedented in District metro areas but have been seen before. For example, nonfarm payroll employment in New Orleans-Metairie, LA, declined by 22% between August and September 2005 due to Hurricane Katrina.^{ix}

Figure 17: Model-based estimated rate of job loss by county

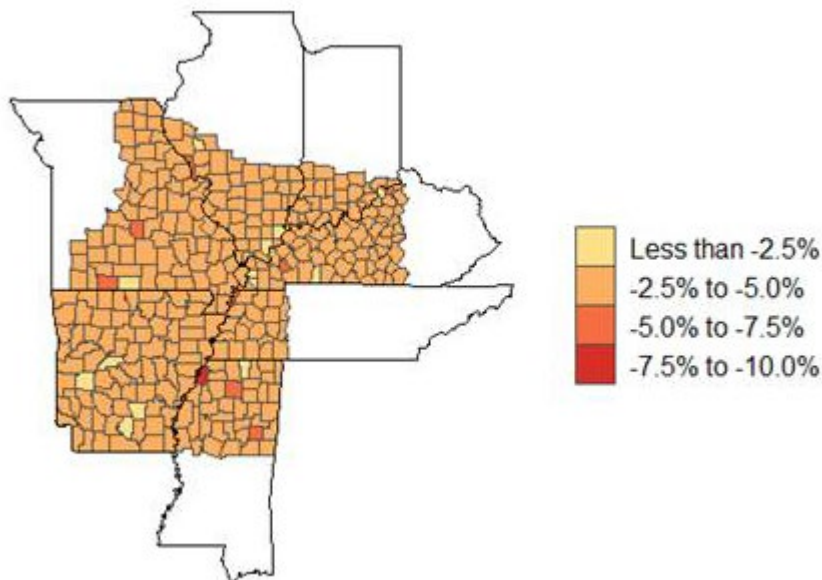


Note: The map displays the estimated percent decline in employment since the first week in March through the survey reference period.

Estimated job losses during 30 days after survey

The model-based estimates indicate private sector employment in the District are expected to decline an additional 4% during the 30 days after the survey period. While this is a notable improvement from the period prior to the survey, a 4% decline in monthly employment is severe. The map below displays the estimated regional variation job losses during 30 days after the survey period.

Figure 18: Model-based estimated rate of job loss by county



Note: The map displays the estimated percent decline in employment in the 30 days after the survey period.

For a comparison, the second month decline in employment after Hurricane Katrina in New Orleans was 10%. Tunica County, MS, is estimated to have the highest rate of job loss at just under 9% during this period, again followed by Taney County, MO, at around 6%. All counties are estimated to continue to

experience declines in employment, with the lowest rates around 2% in a handful of counties. Estimated job losses across District metropolitan statistical areas range from 3.5% (Clarksville, TN-KY) to 4.8% (Paducah, KY-IL).

Table 4: Model-based estimated rate of job loss by metropolitan statistical area

	Since first week in March through survey period	30 days after survey period
Bowling Green, KY	-19.8	-4.4
Cape Girardeau-Jackson, MO-IL	-20.5	-4.6
Clarksville, TN-KY	-18.0	-3.5
Elizabethtown, KY	-21.4	-4.4
Evansville, IN-KY	-18.5	-4.2
Fayetteville-Springdale-Rogers, AR-MO	-18.9	-4.2
Hot Springs, AR	-22.2	-4.6
Jackson, TN	-18.5	-4.3
Jefferson City, MO	-19.0	-4.1
Jonesboro, AR	-20.7	-4.5
Little Rock-North Little Rock-Conway, AR	-18.2	-4.3
Louisville/Jefferson County, KY-IN	-17.1	-4.1
Memphis, TN-MS-AR	-16.9	-4.2
Owensboro, KY	-18.9	-4.2
Paducah, KY-IL	-21.8	-4.8
Pine Bluff, AR	-21.6	-4.1
Springfield, MO	-18.3	-4.1
St. Louis, MO-IL	-17.8	-4.2
Terre Haute, IN	-23.9	-3.9

Note: All values are reported as percentage point declines.

Survey questionnaire

Preface

With so many changes occurring so rapidly as a result of the coronavirus outbreak, it is more important than ever that we continue to hear about how your business is being affected in real time. This information is critically important to the Federal Reserve as it assesses the economic impacts and determines appropriate policy responses. To that end, we would very much appreciate it if you could respond to the following brief supplemental survey. Thank you for your time and assistance.

Q1. How have each of the following changed since the first week in March?

	Much Lower	Somewhat Lower	Little Change	Somewhat Higher	Much Higher
Availability of materials/inputs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost of materials/supplies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Revenues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Profits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investments in plant, property or equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q2. Are you planning or have you implemented a partial or total shutdown of your business until health conditions improve?

	Have Already Done So	Definitely Planning to Do So	Will Possibly Do So	Will Not Do So
Partial Temporary Shutdown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Temporary Shutdown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partial Permanent Shutdown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Permanent Shutdown	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q3. Have you changed any of the following as a result of the impact of the coronavirus outbreak on your business?

	Direction			Magnitude
	Reduced	No Change	Increased	By %
Number of payroll staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hours of existing payroll staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wages/salaries of existing payroll staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Number of temp/contract workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hours of temp/contract workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Q4. Do you plan to make any of the following changes to your workforce in the month ahead as a result of the impact of the coronavirus outbreak on your business?

	Direction			Magnitude
	Reduced	No Change	Increased	By %
Number of payroll staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hours of existing payroll staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wages/salaries of existing payroll staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Number of temp/contract workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hours of temp/contract workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Q5. Have you implemented or expanded any of the following workforce policies since the first week of March as a result of the coronavirus outbreak?

	No	For Some Staff	For All Staff	Already in Place
Provide paid sick/family leave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide unpaid sick/family leave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telecommuting for your workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q6. What percent of your workforce is currently telecommuting?

- Less than 25%
- Between 25% and 50%
- Between 50% and 75%
- Over 75%

Q7. How concerned are you about the ability to deal with each of the following over the next 30 days?

	Not at all concerned	Somewhat Concerned	Very Concerned
Maintaining adequate cash flow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incurring excessive debt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collecting payment from customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting adequate credit from suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintaining solvency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q8. How many weeks could your firm operate in the current environment before exhibiting financial distress (i.e., low cash balance, additional credit required, lack of materials/supplies)?

- Less than one week
- 1 to 3 weeks
- 3 to 5 weeks
- 5 to 10 weeks
- More than 10 weeks
- Don't know/Unsure

Q9. Have you taken any of the measures listed below to cover shortfalls in revenues experienced as a result of the coronavirus outbreak? Check all that apply.

- Made a claim on a business interruption insurance
- Taken out a new loan
- Made increased use of line of credit
- Drawn down cash reserves
- Dipped into personal savings
- Other (please specify) _____
- None of the above

Q10. If you require additional capital, what is your preferred method to source your funds? (rank up to three choices)

- _____ Business Loan from Bank
- _____ Personal Loan from Bank
- _____ Issue Commercial Paper
- _____ Issue Long-Term Debt
- _____ Revolving Credit Line
- _____ Refinance Existing Debt or Property
- _____ Family and Friends
- _____ Personal/Business Credit Cards
- _____ COVID-19 Emergency Loan (please specify)
- _____ Other (please specify)
- _____ Don't require additional capital

Q11 Which statement best describes your firm's ability to access the following government services

	Less Difficult	Typical/Same	More difficult	Prohibitive	N/A
Federal business assistance programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unemployment claims for employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guidance on restrictions to business activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utilizing workforce recruitment training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q12. What kind of additional federal government or state and local (e.g., local chambers) support would be most helpful in meeting your business needs through the coronavirus outbreak?

Q13. What is your firm's primary industry? (Select one only)

- Agriculture
- Banking and Finance
- Construction
- Education
- Healthcare
- Manufacturing
- Nonprofit or community organization
- Real Estate - Commercial
- Real Estate - Residential
- Restaurant
- Retail - Auto Dealer
- Retail - General
- Retail - Specialty
- Professional Services
- Technology
- Tourism and/or Recreation
- Transportation / Logistics
- Wholesale
- Other (Please Describe) _____

Q14. How many employees (full-time equivalent) worked at your establishment as of March 1?

- 10 or fewer
- 10 to 50
- 50 to 100
- 100 to 500
- 500 to 1,000
- Over 1,000

Q15. What was your firm's annual revenue last year?

- Less than \$10 million
- Between \$10 million and \$50 million
- \$50 million to \$250 million
- \$250 million to \$500 million
- \$500 million to \$1 billion
- Over \$1 billion

Q16. Which statement best describes your title/position at your firm?

- Owner
 - President/CEO
 - Senior Officer/Director (CFO, COO)
 - Vice President/Senior Management
 - Other (please describe) _____
-

Q17. Please enter the location of your establishment

State Abbreviation (MO) _____

Zip code _____

Q18. If you are willing to be contacted by an economist from the Federal Reserve Bank of St. Louis to discuss current business conditions or participate in future surveys, please enter your contact information below.

- Name _____
- Email _____
- Phone _____

Q19. Comments: Please comment on any business-related issues

Endnotes

ⁱ Unless specified otherwise, survey results have been weighted to reflect the true composition of firms in the District. Respondent weights are calculated using the true distribution of firm sizes and industries for each county in the District.

ⁱⁱ Some respondents reported 100% reductions in employment for the period before and after the survey. We interpreted this to mean employment would remain at zero and adjusted the response to no change in employment. These 100% declines in employment also affected the interpretation of the responses for hours of remaining employees and wages for remaining employees. The data are corrected to account for this error.

ⁱⁱⁱ The estimate for expected net employment change for the wholesale industry is inflated due to a high weight of a small wholesale establishment that plans on rehiring previously laid off employees.

^{iv} This estimate is calculated assuming the respondent's employment equals the midpoint of their reported employment class.

^v This statistic is calculated based on optional write-in answers. The survey did force respondents to identify a specific program.

^{vi} Estimation is subject to sampling error, as well as model estimation error. For simplicity of interpretation, we have not reported confidence intervals around the point estimates. These intervals are, in layman's terms, very wide.

^{vii} More specifically, we use a negative binomial regression model due to the relatively large share of firms reporting zero change in employment. The series is converted to job losses, as the model requires positive values and the very few respondents reporting increasing in employment are omitted. Other models including the few positive values produce quantitatively similar results for the District.

^{viii} For example, establishments in the size class 10 to 50 employees are assumed to have 30 employees. We assume establishments with over 1,000 employees have 1,500 employees. Our results are not impacted by increasing the upper estimate to 5,000, as larger firms reported relatively fewer layoffs.

^{ix} Data on nonfarm payroll employment in New Orleans-Metairie, LA, is available using the FRED series id NEWO322NA) <https://fred.stlouisfed.org/graph/?g=qQRJ>.