

The Impacts of COVID-19 on Racial Disparities in Small Business Earnings

by

Robert W. Fairlie, Ph.D.
Economic Consulting
Santa Cruz, CA 95060

for

Office of Advocacy
U.S. Small Business Administration
under contract number 73351021R0008
Release Date: August 16, 2022



This report was developed under a contract with the Small Business Administration, Office of Advocacy, and contains information and analysis that were reviewed by officials of the Office of Advocacy. However, the final conclusions of the report do not necessarily reflect the views of the Office of Advocacy.

Executive Summary

The pandemic has been difficult for small businesses in the United States. Many small businesses have closed, lost revenues, or downsized as a response to the major health, consumer, and social-distancing disruptions caused by COVID-19. Economic losses in the pandemic may have been disproportionately felt by small businesses owned by people of color. Were business earnings losses larger among Black, Latinx, and Asian owned businesses in the pandemic contributing further to overall income and wealth inequality? This report explores the impacts of COVID-19 on annual earnings of business owners by race and ethnicity. The study provides new evidence on whether the earnings of minority business owners were disproportionately affected by COVID-19 using nationally-representative Current Population Survey (CPS) microdata. The report also explores potential explanations for differential impacts of the pandemic across racial groups. The study provides new evidence on whether differential impacts are due to racial differences in owner, business, or geographical characteristics, and which of these characteristics contribute the most to differential impacts.

To conduct the analyses, microdata are compiled from several years of the CPS including calendar year 2020, which was mostly affected by the pandemic. The CPS provides a measure of business ownership that captures all business owners including those who own incorporated or unincorporated businesses, and those who are employers or non-employers. Business ownership in the CPS predominately captures ownership of small businesses. Information is available in the CPS on the race and ethnicity of owners and geography but sample sizes are not large enough to examine patterns at the state or MSA level.

The key findings from the analysis are:

- Average business earnings dropped by 5 percent in 2020 from pre-pandemic levels in 2019.
- COVID-19 induced losses to business earnings were disproportionately felt by minority business owners.
- Average business earnings dropped by 11 percent for Black business owners, 15 percent for Asian business owners, 7 percent for Latinx business owners, and 2 percent for white business owners.

- Accounting for the natural growth in dollar variables over time by using log scales of business earnings changes, losses were even greater and more disproportionate than the average figures. Losses of business earnings were 17 percent for all business owners, 28 percent for Black business owners, 21 percent for Asian business owners, 19 percent for Latinx business owners, and 15 percent for white business owners.
- These estimated losses to business earnings are based on calendar year 2020, which only capture effects of the pandemic starting in March or April of 2020.
- Estimates from preferred regression models that control for pre-pandemic time trends and owner, business, and geographical characteristics indicate that COVID-19 had large negative impacts on business earnings (16-19 percent).
- Regression estimates indicate that Black business owners experienced disproportionate negative impacts from COVID-19 on business earnings of 12-14 percent relative to white business owners.
- Regression estimates for Latinx and Asian business owners reveal negative point estimates suggesting disproportionate negative impacts on business earnings, but the estimates are not statistically significant.
- The types of businesses, owners, and geographical locations that experienced the largest losses in business earnings in the pandemic were in Leisure and Hospitality, Wholesale and Retail Trade, the West, the South, central cities areas, and those owners with some college education but no Bachelor's Degree.
- Black and Latinx business owners tend to be less educated and Asian business owners tend to be more educated than the national average. All groups have different industry, regional, and central city status distributions.
- Lower levels of education and industry concentrations among Black business owners contribute to disparities in business earnings in 2020.
- Lower levels of education are the predominant reason for disparities for Latinx business earnings but industry concentrations also contribute in 2020.
- Industry concentrations reduce Asian business earnings, whereas higher levels of education represent an advantaged characteristic increasing business earnings in 2020.

- Industry concentrations of Black, Latinx, and Asian business owners placed each of these groups at a higher risk of experiencing disproportionate business earnings losses in the pandemic.
- Regional and central city/rural area concentrations also placed each of these groups at a higher risk of business earnings losses in the pandemic although to a lesser extent than industry concentrations.
- Higher education levels among Asian business owners helped insulate from larger losses from COVID-19.

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1. Introduction

The mandated closings of non-essential businesses to slow the spread of COVID-19 and the disruption to consumer demand due to health concerns had widespread effects on small businesses in spring 2020. The number of active business owners in the United States dropped from 15.0 million in February 2020 to 11.7 million in April 2020 and only partially rebounded to 13.8 million by June (Fairlie 2020). Losses to small business revenues and sales in the early stages of the pandemic ranged from 30 to 50 percent (Farrell, Wheat, and Mac 2020; Kim, Parker, and Schoar 2020; Bloom, Fletcher, and Yeh 2021; Fairlie and Fossen 2021).

Although these losses to small businesses were unprecedented, a pressing concern is whether they were felt disproportionately by people of color. Because of data limitations, however, we know very little about whether small businesses owned by minorities were more negatively impacted furthering racial inequality, and if so, why. Providing early evidence on this question, Fairlie (2020) finds that the number of active African-American business owners dropped by 41 percent in April 2020 compared with a 17 percent drop for whites. Latinx and Asian business owner activity fell by 32 and 26 percent, respectively. Wilmoth (2020) finds a year-over-year drop in July 2020 of 18 percent for Blacks compared with only 6 percent for whites.

COVID-19's large negative impacts on the work activity of business owners indicate a high level of temporary closures and at least some permanent closures. These closures are worrisome because of their effects on business earnings losses among minorities and resulting impacts on overall income and wealth inequality. Some evidence on potential earnings losses is provided by Bloom, Fletcher, and Yeh (2021) who partnered with a large payments technology company to collect survey data from 2,500 small businesses and find an average loss of 29 percent in sales in 2020 Q2. They find an 8 percent larger drop for Black businesses, but their estimates are not statistically significant. Farrell, Wheat, and Mac (2020) examine data from the transactions of financial accounts at JP Morgan Chase (JPMC) for a few states and find that by the end of March 2020, Black firms had cash balances that were 26 percent lower compared with a 12 percent decrease for all firms. However, longer-term losses in business earnings are unknown. A month or two of zero percent business activity or sales has a large impact on the owner's earnings, but even a reduction of 20 to 30 percent business activity over a few months could have a large impact on annual earnings.

This report explores the impacts of COVID-19 on annual earnings of business owners by race and ethnicity. The study is the first to examine whether the earnings of minority business owners were disproportionately affected by COVID-19 using nationally-representative Current Population Survey (CPS) microdata. By turning the focus from work activity in the monthly CPS to annual business earnings in the Annual Social and Economic Supplement (ASEC) files, the report will explore whether the impacts of COVID-19 on small businesses further contributed to overall earnings inequality in the United States.¹ The analysis will also provide the first estimates of total business owner earnings losses from 2019 to 2020. The World Health Organization (WHO) declared the novel coronavirus or COVID-19 a pandemic on March 11, 2020, and California was the first state to impose social distancing restrictions on March 19, 2020, quickly followed by most other states. Thus, calendar year 2020, except for a couple of months, is the first year of data affected by the pandemic.

This report also explores potential explanations for differential impacts of the pandemic across racial groups. The study provides the first test of whether any differential impacts by race are due to owner, business, or geographical characteristics such as industries, owner's education level, or region of the country. This study is the first to use any dataset documenting heterogeneity in post-pandemic small business earnings losses and analyzing the potential causes of these differences.

The report also addresses broader issues around racial inequality in business earnings. Large and persistent racial disparities in business ownership and outcomes have existed for some time in the United States and are well known, but their causes are not well understood. The lack of research attention is surprising, given the magnitude of these racial differences and the importance of business ownership as a way to make a living for many Americans. More than 1 in 10 workers, or 15 million people, in the United States are self-employed business owners. These 15 million business owners hold an amazing 40 percent of total U.S. wealth (Bucks, Kennickell, and Moore 2006). Yet only 5 percent of Blacks and 8 percent of Latinx own businesses compared with more than 10 percent of non-Latinx whites. Similarly troubling is that Black- and Latinx-owned businesses

¹ The ASEC files are the only surveys in the CPS that include information on annual business earnings. As noted below, the American Community Survey (ACS) which also includes information on annual business earnings will only be released as a limited experimental version.

have lower average sales and hire fewer employees than white-owned businesses (e.g., Fairlie and Robb 2008; U.S. Census Bureau 2015; Headd 2021).

Improving the performance of minority-owned businesses in the United States is a major concern for reducing overall economic inequality. One of the goals of fostering minority business development is to reduce earnings and wealth inequality (Bradford 2003, 2014; Kroeger and Wright 2021). Another concern, which is often overlooked, is the loss in economic efficiency resulting from blocked opportunities for minorities to start and grow businesses (Fairlie and Robb 2008). Business formation has been associated with the creation of new industries, innovation, job creation, improvement in sector productivity, and economic growth (Reynolds 2005). If minority entrepreneurs face liquidity constraints, discrimination, or other barriers to creating new business or expanding current businesses, there will be efficiency losses in the economy. Any barriers to entry and expansion that minority-owned businesses face are potentially costly to U.S. productivity, especially as minorities represent an increasing share of the total population. Constraints to business growth may be especially damaging for job creation in low-income and disadvantaged neighborhoods (Boston 1999, 2006; Stoll, Holzer, and Raphael 2001).

The report examines broader questions about why Black and Latinx business earnings are relatively low. The focus is on the impacts of COVID-19, but the barriers faced by Blacks and Latinx in creating, running, and growing businesses prior to the pandemic are also explored. An important question is whether the barriers created by owner, business, and geographic characteristics changed in the pandemic.

Several key questions will be addressed in the study:

- What impact did the pandemic have on business earnings?
- Were COVID-19 induced losses to business earnings disproportionately felt by minority business owners?
- What types of businesses, business owners, and geographical locations experienced the largest losses in business earnings in the pandemic?
- Why were there disproportionate business earnings losses for minority groups in the pandemic?

- Are there owner, business, and geographic characteristics that demonstrate large differences by race and that might explain why some groups experienced larger COVID-induced business earnings losses?
- How much did racial differences in each owner, business, and geographical characteristic contribute to racial gaps in business earnings prior to the start of the pandemic and just after the start of the pandemic?
- Did characteristics such as the owner's education level, business industry, and region of the country place minority business owners at a higher risk of experiencing disproportionate business earnings losses in the pandemic?

2. Literature Review

There are only a few previous studies that explore the impacts of COVID-19 on minority businesses. In contrast, there is a much larger literature exploring the broader barriers that limit minority business ownership and performance. A review of this literature might identify some of the potential conflating factors hurting minority businesses in the pandemic and restricting a faster recovery from the pandemic. This section provides only a partial review of this expansive literature focusing on several broad categories of potential constraints.² Not all constraints discussed here can be tested in the empirical section because of data limitations. Although there are many more constraints, the focus here is on wealth disparities, access to financial capital, discrimination in lending, other types of discrimination, human capital, family business background, social capital, and access to technology. After discussing the previous literature on these constraints, I discuss the limited previous research on the impacts of COVID-19 on minority-owned businesses. These constraints might exacerbate effects of COVID on minority businesses. Disparities in wealth and capital access, for example, might limit the ability of minority businesses to survive through the pandemic.

2.1 Wealth Differences

The importance of personal wealth as a determinant of entrepreneurship has been the focus of an extensive body of literature. Most studies find that asset levels (e.g., net worth) measured in one year increase the probability of starting a business by the following year.³ The finding has generally been interpreted as providing evidence that entrepreneurs face liquidity constraints. This is also consistent with observations that owner's wealth can be invested directly in the business or used as collateral to obtain business loans. Furthermore, investors frequently require a substantial level of owner's investment of his/her own capital as an incentive (i.e., "skin in the game").

Do inequalities in personal wealth then translate into disparities in business creation and ownership? Wealth inequality is alarming high. Half of all Black families have less than \$9,211 in wealth, and half of all

² For additional discussions and reviews of this literature, see Fairlie and Robb (2008); Bates (2011); Davila and Mora (2013); Parker (2018) for example.

³ For example, see Evans and Jovanovic (1989), Evans and Leighton (1989), Meyer (1990), Holtz-Eakin, Joulfaian, and Rosen (1994), Blanchflower and Oswald (1998), Dunn and Holtz-Eakin (2000), Fairlie (1999), Holtz-Eakin and Rosen (2005), and Fairlie and Krashinsky (2012).

Latino families have less than \$12,460. Wealth levels among whites are 11 to 14 times higher (U.S. Census Bureau 2017). Racial differences in home equity may be especially important in providing access to startup capital. Only 42 percent of Blacks and 45 percent of Latinos own their own home compared with 72 percent of whites (US. Census Bureau 2017). Furthermore, for both Blacks and whites who own homes, the median equity in their homes is much lower than for whites. Homes provide collateral and home equity loans provide relatively low-cost financing. Without being able to tap into this equity, many minorities will not be able to start businesses (Fairlie and Robb 2008).

These findings from the previous literature suggest relatively low levels of wealth among Blacks and Latinx. The existence of liquidity constraints may create a substantial barrier to entry for minority entrepreneurs. Recent research provides evidence supporting this hypothesis. Using matched CPS Annual Demographic Files (ADF) data from 1998 to 2003, Fairlie (2006) finds that the largest single factor explaining racial disparities in business creation rates are differences in asset levels. Lower levels of assets among Blacks account for 15.5 percent of the difference between the rates of business creation among whites and blacks. This finding is consistent with the presence of liquidity constraints and low levels of assets, limiting opportunities for Blacks to start businesses. The finding is very similar to estimates reported in Fairlie (1999) for men using the Panel Study of Income Dynamics (PSID). Estimates from the PSID indicate that 13.9 to 15.2 percent of the Black/white gap in business start rates can be explained by differences in assets.

Fairlie and Woodruff (2010) examine the causes of low rates of business formation among Mexican-Americans. One of the most important factors in explaining the gaps between Mexican-Americans and non-Latino whites in rates of business creation is also assets. Relatively low levels of assets explain roughly one quarter of the business entry rate gap for Mexican-Americans. Lofstrom and Wang (2009), using SIPP data, also find that low levels of wealth for Mexican-Americans and other Latinos work to lower self-employment entry rates. More recently, Davila and Mora (2013) find barriers faced by Hispanic entrepreneurs in gaining access to financial capital. Low levels of personal wealth limit opportunities for Mexican-Americans and other Latinos to start businesses.

Focusing on housing wealth, Atkins (2021) explores whether disparities in housing wealth can explain racial differences in firm starts. Racial differences in average levels of home equity are found to account for

approximately 13 percent of the Black-white gap in firm starts among homeowners. Examining panel data from 2003 through 2013, which covers a housing boom and subsequent bust, she finds that conditional on owning a home, an increase in home equity is positively related to the probability of starting a business for whites but not for Blacks. This suggests that Blacks who do own homes are less able to access their housing collateral than similar whites who own homes.

2.2 Financial Capital

Previous research provides evidence that is consistent with low levels of personal wealth resulting in lower rates of business creation among minorities. However, very little research has focused on the related question of whether low levels of personal wealth and liquidity constraints also limit the ability of minority entrepreneurs to raise startup capital, resulting in undercapitalized businesses. The consequence is that these undercapitalized businesses will likely have lower sales, profits, and employment and will be more likely to fail than businesses receiving the optimal amount of startup capital. Evidence on the link between startup capital and owner's wealth is provided by examining the relationship between business loans and personal commitments, such as using personal assets for collateral for business liabilities and guarantees that make owners personally liable for business debts. Using data from the SSBF and Survey of Consumer Finances (SCF), Avery, Bostic, and Samolyk (1998) find that most small business loans have personal commitments. The common use of personal commitments to obtain business loans suggests that wealthier entrepreneurs may be able to negotiate better credit terms and obtain larger loans for their new businesses, possibly leading to more successful firms.⁴ Cavalluzzo and Wolken (2005) find that personal wealth, primarily through home ownership, decreases the probability of loan denials among existing business owners. If personal wealth is important for existing business owners in acquiring business loans, then it may be even more important for entrepreneurs in acquiring startup loans.

Estimates from Survey of Business Owners (SBO) and earlier Characteristics of Business Owners (CBO) data indicate that Black and Latino-owned businesses have very low levels of startup capital relative to

⁴ Astebro and Berhardt (2003) finds a positive relationship between business survival and having a bank loan at startup after controlling for owner and business characteristics.

white-owned businesses (U.S. Census Bureau 1997, 2016; Fairlie and Robb 2008). Estimates from the 2012 SBO indicate that 2.2 percent of Black firms start with \$100,000 or more of capital compared with 8.5 percent of white, non-Hispanic firms. Only 3.5 percent of Latino firms start with \$100,000 or more in capital. Even after imposing minimum work hours for business owners in the 1992 CBO microdata, Fairlie and Robb (2008) find large racial differences. For example, they find that less than 2 percent of Black firms start with \$100,000 or more of capital and 6.5 percent have between \$25,000 and \$100,000 in startup capital. Black-owned firms are also found to have lower levels of startup capital across all major industries. Davila and Mora (2013) present evidence from the 2007 SBO showing lower levels of startup capital among Latino businesses than non-Latino businesses.

Focusing on startups, Fairlie, Robb, and Robinson (2022) find that Black-owned startups have less initial financial capital and continue to invest less in the early years of existence. They use confidential and restricted-access data from the Kauffman Firm Survey and matched administrative data on credit scores to explore racial disparities in access to capital for new business ventures. Black start-ups face more difficulty in raising external capital, especially external debt. Disparities in credit scores constrain Black entrepreneurs, but perceptions of treatment by banks also hold them back. Black entrepreneurs apply for loans less often than white entrepreneurs largely because they expect to be denied credit, even when they have a good credit history and in settings where strong local banks favor new business development.

What are the consequences of these racial disparities in startup capital? Previous research indicates that the level of startup capital is a strong predictor of business success (see for example Bates 1997 and Fairlie and Robb 2008). In turn, low levels of startup capital are found to be a major cause of worse outcomes among Black-owned businesses. Using earlier CBO data, Bates (1997) finds evidence that racial differences in business outcomes are associated with disparities in startup capital. More recent estimates indicate that lower levels of startup capital among Black firms are the most important explanation for why Black-owned businesses have lower survivor rates, profits, employment, and sales than white-owned businesses (Fairlie and Robb 2008). Asian firms are found to have higher startup capital levels and resulting business outcomes.

Minority and non-minority entrepreneurs differ in the types of financing they use for their businesses. Previous research indicates, for example, that Black entrepreneurs rely less on banks than whites for startup

capital. Only 6.6 percent of Black firms received business loans from banking or commercial lending institutions (U.S. Census Bureau 1997). Nearly twice that percentage of white firms received bank loans for startup capital. Blacks are also less likely to use a home equity line for startup capital than are whites, which may be partly due to the lower rates of home ownership reported above. On the other hand, Black business owners are more likely to rely on credit cards for startup funds than are white business owners. In a few studies using the 1987 CBO, Bates (1997, 2005) finds large differences between Black and white firms in their use of startup capital. Black firms are found to be more likely to start with no capital, less likely to borrow startup capital, and more likely to rely solely on equity capital than white firms. Bates (2005) also finds that loans received by Black firms borrowing startup capital are significantly smaller than those received by white firms even after controlling for equity capital and owner and business characteristics such as education and industry.

Previous research also indicates that minority-owned businesses are more likely to use credit cards and less likely to use bank loans to start their businesses than non-minority owned businesses (U.S. Department of Commerce 2008). Davila and Mora (2013), using the 2002 SSBF, find that Latino businesses were less likely to get approved for business loans, were more likely to not apply for loans because of fear of rejection, have smaller loan amounts, and pay higher interest rates on loans on average.

Minority firms also have trouble securing funds from venture capitalists and angel investors. Private equity funds targeting minority markets are very small relative to the total, which is problematic because these funds appear to be important for success (Yago and Pankrat 2000).⁵ The disparity in access does not appear to be driven by performance differences. Bates and Bradford (2008) examine the performance of investments made by venture capital funds specializing in minority firms and find that these funds produce large returns. Venture capital funds focusing on investing in minority firms provide returns that are comparable to mainstream venture capital firms. Funds investing in minority businesses may provide attractive returns because the market is underserved.

⁵ Minority angels comprise 3.6 percent of the all angel investors, and MBEs comprise 3.7 percent of firms presenting their business ideas to potential angel investors (Sohl 2008).

2.3 Lending Discrimination

A factor that may pose a barrier to obtaining financial capital for minority-owned businesses is lending discrimination. Much of the recent research on the issue of discrimination in business lending uses data from various years of the Survey of Small Business Finances (SSBF). The main finding from this literature is that Minority Business Enterprises (MBE) experience higher loan denial probabilities and pay higher interest rates than white-owned businesses even after controlling for differences in credit-worthiness, and other factors (Blanchard, Yinger, and Zhao 2004, Blanchflower, Levine, and Zimmerman 2003, Cavalluzzo, Cavalluzzo, and Wolken 2002, Cavalluzzo, and Wolken 2005, Coleman 2002, 2003, Mitchell and Pearce 2004, 2011; Bates and Robb 2016).

Cavalluzzo and Wolken (2005) found that while greater personal wealth is associated with a lower probability of denial, even after controlling for personal wealth, there remained a large difference in denial rates across demographic groups. They also found that denial rates for Blacks increased with lender market concentration, a finding consistent with Becker's (1957) classic theories of discrimination. Using the 1993 National Survey of Small Business Finances (NSSBF), Cavalluzzo, Cavalluzzo, and Wolken (2002) found that all minority groups were more likely than whites to have unmet credit needs. Blacks were more likely to have been denied credit, even after controlling for many factors related to creditworthiness. In fact, denial rates and unmet credit needs for Blacks widened with an increase in lender market concentration. The concern of denial or "giving up" often prevented some individuals from applying for a loan, even when they had credit needs. Blacks and Hispanics most notably had these fears. Bostic and Lampani (1999) include additional geographic controls and continue to find a statistically significant difference in approval rates between Blacks and whites.

Blanchflower, Levine, and Zimmerman (2003) conducted a similar analysis with similar results. They found that minority-owned businesses were more likely to have a loan application denied, even after controlling for differences in creditworthiness, and that Blacks paid a higher interest rate on loans obtained. They also found that concerns over whether a loan application would be denied prevented some prospective borrowers from applying for a loan in the first place. Owners often report not applying for loans because they feared rejection. After statistically controlling for differences in credit risks posed by firms needing but not applying for credit,

Blanchflower, Levine, and Zimmerman (2003) found gaps of 26 percentage points between Blacks and whites and 15 percentage points between Latinos and whites.

More recently, Bates and Robb (2015) used data from the Kauffman Firm Survey (KFS) covering the period from 2008 to 2011 to examine the extent of unmet credit needs and outcomes of their applications among minority-owned businesses. Even after controlling for credit-risk factors, Black-owned firms and Latino-owned firms were more likely to be discouraged borrowers and more likely to have their applications denied by banks than were white-owned firms, thus confirming the findings from earlier studies.

2.4 Other Barriers to Minority Business Success

Discrimination against minority businesses may occur before businesses are even created. Previous research indicates that minorities have limited opportunities to penetrate networks, such as those in construction (Bates 1993, Feagin, and Imani 1994, Bates and Howell 1997). If minorities cannot acquire valuable work experience in these industries, then it will limit their ability to start and operate successful businesses. There is also evidence in the literature indicating consumer discrimination against minority-owned firms. Minority firms may have difficulty selling certain products and services to non-minority customers, limiting the size of their markets and resulting success. Using microdata from the 1980 Census, Borjas and Bronars (1989) find that African Americans negatively select into self-employment, with the most able African Americans remaining in the wage/salary sector, whereas whites positively select into self-employment and negatively select into wage/salary work. These findings are consistent with discrimination by white consumers. Kawaguchi (2005) found that among African-Americans, low earners are the most likely to enter into business ownership, whereas both low and higher earning whites are the most likely to enter self-employment. He notes that this finding is consistent with the theoretical predictions of consumer and credit market discrimination against African-Americans/Blacks.

More generally, Black -owned firms may face limited market access for the goods and services that they produce (Bates 1997). This may be partly due to consumer discrimination by customers, other firms and/or the government, and redlining. But, it may also be due to the types, scale, and locations of African American firms. Published estimates from the CBO indicate that African American-owned businesses serve smaller geographical

areas than white-owned businesses on average (U.S. Census Bureau 1997). African American firms are more likely than white firms to report that their neighborhood is the geographic area that best describes where the business's goods and services are sold. African American owners are less likely to report larger geographical areas as markets for their goods and services. Furthermore, they are much more likely to sell to a minority clientele than are white businesses, which may reflect more limited market access. As expected, market access or penetration is both a cause and consequence of success in business, making it difficult to interpret racial differences in these measures. More successful African American firms are likely to expand to larger market areas. Although the research is much more limited on this topic for Latino-owned businesses, they might face similar discriminatory barriers.

2.5 Human Capital Barriers

Education has also been found in the literature to be a determinant of business ownership.⁶ Low levels of education obtained by Blacks and Latinos are partly responsible for their lower business ownership rates.⁷ Using CPS data, Fairlie (2006) finds that 6.0 percent of the Black/white gap in self-employment entry rates is explained by racial differences in education levels. Similar estimates from the PSID are reported in Fairlie (1999). Mexican-Americans have even lower levels of education than Blacks, which translate into a limiting factor for business creation. Estimates from the CPS indicate that education differences account for 32.8 to 37.9 percent of the entry rate gap for Mexican-Americans (Fairlie and Woodruff 2010). Lofstrom and Wang (2009) find that education is important in explaining differences in business creation rates between Mexican-Americans and whites, as well as the types of businesses entrepreneurs are likely to pursue. The high rate of business ownership by Asians is in part due to their relatively high levels of education (Fairlie 2018).

Previous research indicates a much stronger relationship between the education level of the owner and business performance. Businesses with highly educated owners have higher sales, profits, survival rates, and hire more employees than businesses with less-educated owners (Bates 1997, Buckley 2002, Astebro and

⁶ See van der Sluis, van Praag, and Vijverberg (2005), Parker (2004) and Moutray (2007) for recent reviews of this extensive literature.

⁷ Minority business owners are less likely to use technology which may be related to lower levels of human capital (Buckley 2002).

Berhardt 2003, van der Sluis, van Praag, and Vijverberg 2004). The general and specific knowledge and skills acquired through formal education may be useful for running a successful business and the owner's level of education may also serve as a proxy for their overall ability or as a positive signal to potential customers, lenders, or other businesses.

Recent research focusing on non-employer microbusinesses finds a much weaker relationship between owner's education and business performance. Using data from the 2007 SBO, Insight Center (2013) finds small differences in sales levels among non-employer microbusinesses based on the owner having a college degree or not. Education may be more important in determining business performance for all businesses than among small non-employer businesses.

Although Blacks have made substantial gains in education, racial disparities remain among business owners. Roughly one-third of white business owners are college educated whereas only one quarter of Black business owners have the same level of education. These lower levels of education among Black business owners translate into disparities in business performance (Fairlie and Robb 2008).

Relatively low levels of education contribute even more to why Latino businesses are less successful. Fairlie and Woodruff (2010) find that Mexican-American business owners have lower incomes than non-Latino white business owners, and that most of the difference is due to low levels of education among Mexican-American owners. Mexican-American business owners, especially immigrants, have substantially lower levels of education. The single largest factor in explaining why Mexican immigrants and U.S. born Mexican-Americans have lower business income than whites is education. Lower levels of education account for more than half of the gaps in business income.

Another measure of human capital relevant for Latinos is language ability. Limited English language ability may make it difficult to communicate with potential customers and suppliers and learn about regulations. Fairlie and Woodruff (2010) find that one of the most important factors explaining low business incomes among Mexican-American businesses is language ability. For Mexican immigrant men, limited ability speaking English explains roughly one third of the gap in business income.

Davila and Mora (2013) find that having a college education is important for the success of businesses, which holds for Latino and non-Latino businesses. Lower levels of education among Latino business owners are also found to limit the success of Latino businesses relative to non-Latino businesses.

2.6 Family Business Background and Social Capital

Research also indicates that the probability of self-employment is substantially higher among the children of the self-employed (see Lentz and Laband 1990, Fairlie 1999, Dunn and Holtz-Eakin 2000, and Hout and Rosen 2000). These studies generally find that an individual who had a self-employed parent is roughly two to three times as likely to be self-employed as someone who did not have a self-employed parent. There is evidence that this strong intergenerational link in business ownership is detrimental to disadvantaged minorities. Hout and Rosen (2000) note a "triple disadvantage" faced by Black men in terms of business ownership. They are less likely than white men to have self-employed fathers, to become self-employed if their fathers were not self-employed, and to follow their father in self-employment. Fairlie (1999) provides evidence from the PSID that current racial patterns of self-employment are in part determined by racial patterns of self-employment in the previous generation.

Recent research indicates that family business backgrounds are also extremely important for the success of businesses (Fairlie and Robb 2007, 2008). More than half of all business owners had a self-employed family member prior to starting their business with many of these business owners working in those family businesses. Working in a family business leads to more successful businesses. Business outcomes are 15 to 27 percent better if the owner worked in a family business prior to starting his or her own business even after controlling for other factors. Black business owners have a relatively disadvantaged family business background compared with white business owners. Black business owners are much less likely than white business owners to have had a self-employed family member prior to starting their businesses and are less likely to have worked in that family member's business. Only 12.6 percent of Black business owners had prior work experience in a family member's business compared with 23.3 percent of white business owners. This lack of prior work experience in family businesses among future Black business owners, perhaps by restricting their acquisition of general and specific business human capital, limits the successfulness of their businesses relative to whites. This creates a cycle of

low rates of business ownership and relatively worse business outcomes being passed from one generation of Blacks to the next (Fairlie and Robb 2008).

In contrast, Robles (2012) notes the importance of family involvement among Latina-owned businesses. Survey results from the 2000 National Foundation for Women Business Owners indicate that three-fourths of Latinas report that family members help run their businesses, which was higher than for white women and substantially higher than for African-American women. Robles (2012) notes that family support for Latina entrepreneurs includes financial, managerial, growth, and other general business advice.

Related to the family business background constraint, previous research also indicates that the size and composition of social networks are associated with self-employment (see Allen 2000 for example). If minority firms have limited access to business, social, or family networks or have smaller networks then they may be less likely to enter business and create successful businesses. These networks may be especially important in providing financing, customers, technical assistance, role models, and contracts, but it is difficult to identify their contributions to racial differences in business performance. Limited networks manifest themselves in many of the factors listed below such as financial capital, discrimination, and human capital. For example, minority businesses are known to have limited networks in the investment community resulting in lower levels of capital use (MBDA 2004). Given these interactions and the inherent difficulty of measuring networks, it is difficult to identify their effects of business performance.

2.7 Disproportionate Impacts of COVID-19

Only a few previous studies have examined how COVID-19 has differentially affected minority-owned businesses. Fairlie (2020) uses monthly CPS microdata to examine racial disparities in impacts of COVID-19 on business owner activity in the first three months of the pandemic (April to June 2020).⁸ African-American business owners were hit the hardest by COVID-19, with a 41 percent drop in business activity from pre-pandemic levels (measured as relative to February 2020). Black business owners were also disproportionately negatively affected in May and June relative to national levels with declines in business activity of 26 percent

⁸ Also using the CPS, Couch, Fairlie and Xu (2021) find large disproportionate impacts of COVID-19 on minority unemployment rates.

and 19 percent, respectively. Simulations indicate that the industry distribution of Black business owners was partly responsible, placing Black business owners at greater risk of losses in business activity due to the pandemic. Latinx businesses were also hit hard by COVID-19, losing 32 percent of active business owners in April, 19 percent in May, and 10 percent in June. Asian business owners experienced a 26 percent decline in business activity over the critical two-month window, and continued losses of activity of 21 percent in May and 10 percent in June. Simulation estimates also point to an unfavorable industry distribution for Latinx business owners, but the evidence is less clear for Asian business owners. All of these losses for minority groups in business activity were large relative to losses for non-Latinx whites at 17 percent in April, 11 percent in May, and 5 percent in June.

Using CPS data but focusing on year-over-year (YOY) changes, Wilmoth (2020) finds that the total number of people who were self-employed and working declined by 20.2 percent between April 2019 and April 2020. Blacks experienced the largest YOY decline at 37.6 percent, with Asians experiencing only a slightly smaller decline at 37.1 percent. The decline for Latinx business owners was smaller (26.0 percent) but also larger than the national average.

Evidence on sales losses by race is provided by Bloom, Fletcher, and Yeh (2021) who partnered with a large payments technology company to collect survey data from 2,500 small businesses and find an average loss of 29 percent in sales in 2020 Q2. They find an 8 percent larger drop for Black businesses, but estimates are not statistically significant. Farrell, Wheat, and Mac (2020) examine data from the transactions of financial accounts at JP Morgan Chase (JPMC) for a few states and find that by the end of March 2020, Black firms had cash balances that were 26 percent lower compared with a 12 percent decrease for all firms. Also, the Stanford Latino Entrepreneurship Initiative (2020) surveyed 224 high-revenue Latinx-owned businesses and found that 86 percent of respondents reported immediate negative effects such as delayed projects and closure from the pandemic.

Another strand of literature focuses on whether financial assistance through the Paycheck Protection Program (PPP) was allocated proportionately during the pandemic to minority-owned businesses and communities. The PPP was designed to provide loans to small businesses to keep them afloat and retain their employees. Loan amounts were intended to equal 2.5 months of average payroll costs and could be forgiven if

the business retained its employees on the payroll. The first round of the PPP provided \$342 billion through 1.7 million loans with disproportionately less going to minority communities (Grotto et al. 2020; Fairlie and Fossen 2021). Lederer et al. (2020) conducted matched-pair audit testing of financial institutions in Washington, D.C. for PPP loans and found disparities between Black and white testers in encouragement in applying for a loan, products offered, and information provided by the bank representative.

Congress appropriated additional funds for the PPP (\$189 billion dispersed through 2.6 million loans). In this second round of PPP funding fintech lenders were more involved in making loans, and disbursement to minority businesses and communities improved (Grotto et al. 2020; Fairlie and Fossen 2021; Fei and Yang 2021).⁹ Erel and Liebersohn (2020) find that FinTech is disproportionately used to disburse PPP funds in high minority share ZIP codes. After a sharp rise in COVID cases, the PPP restarted in January 2021. It strongly emphasized helping eligible borrowers in underserved and disadvantaged communities through expanded Community Development Financial Institutions (CDFI) involvement, an exclusivity application period for businesses with fewer than 20 employees, second loan draws, and emphasized helping self-employed business owners with no employees. A total of \$278 billion through 6.7 million loans was provided. Fairlie and Fossen (2022) analyze how PPP funds were disbursed to minority communities in this third and final round of the program and find a strong positive relationship between PPP flows, as measured by the number of loans per employer business or loan amounts per employee, and the minority share of the population or businesses. They find a stronger positive relationship between minority share and loan numbers or amounts to employer businesses for first draw loans than second draw loans in 2021. The patterns are similar for loan numbers and amounts to nonemployer businesses but with a similarly strong positive relationship with minority share for both first draw and second draw loans.

Information on the race, ethnicity, gender, and veteran status of the owner are incomplete in the PPP loan microdata. Roughly 70 percent of loans do not provide race or ethnicity information, and those that have information are heavily concentrated among a few banks indicating that missingness is likely to be non-random.

⁹ Fairlie and Fossen (2021) also analyze the disbursement of Economic Injury Disaster Loan Program (EIDL) funds to minority communities. The EIDL program is designed to provide either loans or advances to small businesses that are losing revenues and sales due to COVID-19. The EIDL program, both in numbers per business and amounts per employee, was distributed positively to minority communities in 2020.

Noting these concerns, Atkins, Cook, and Seamans (2021) use different comparison groups with and without missing race information and find that Black-owned businesses received loans that were approximately 50 percent lower than white-owned businesses after controlling for other factors. Recently, a couple of alternative approaches have been taken to identify the race of the business owner on the loan. Howell et al. (2021), for example, predict a business owner's race and ethnicity using information such as the owner's name and location. Owner names are obtained from business registrations in collaboration with a data analytics firm. A random forest model trained by using the subset of PPP loans with owner's race information is used to improve prediction accuracy. They note that the assigned race should be viewed as being highly correlated with self-reported race and that it contains important socioeconomic content, consistent with previous research showing discrimination against job applicants with "African American-sounding" names. Fei and Yang (2021) focus on PPP recipients in the Food Services and Drinking Places sector for which they can find a Yelp listing. They proxy for minority-owned businesses based on the food type from yelp.com. The findings from these studies that use proxies for business owner race and ethnicity are mostly consistent with those analyzing loan receipt by minority share of communities.

3. Data

Although research on small businesses and entrepreneurship is growing rapidly, only a few national datasets provide information on the demographic characteristics of business owners. I use microdata from the Current Population Surveys (CPS) to measure self-employed business ownership and earnings at the individual owner level and explore patterns by race and ethnicity.

3.1 Current Population Survey (CPS)

The CPS is conducted monthly by the U.S. Bureau of the Census and the U.S. Bureau of Labor Statistics. It is the underlying source of official government statistics on employment and unemployment. The data cover all persons in the civilian noninstitutionalized population of the United States living in households.

Although the main purpose of the CPS is to collect monthly information on the employment situation, a secondary purpose is to collect information on the demographics of the population. Once a year in March, information on calendar year earnings is conducted in the Annual Social and Economic (ASEC) Supplement to the CPS.

3.2 Measures of Business Ownership and Earnings

To estimate business ownership and earnings in the ASEC CPS data, I identify all individuals who report owning a business as their main job over the previous calendar year (based on the class of worker question). The main job is defined as the one with the most hours worked during the year. Thus, individuals who start side businesses will not be counted if they are working more hours on a wage and salary job.

The measure of business ownership in the CPS captures all business owners including those who own incorporated or unincorporated businesses and those who are employers or non-employers. Although some business owners own large businesses, most own small businesses. I interpret the data as predominately covering small business owners. The main outcome studied here is the business earnings of the owner and not firm revenues or employment which would be heavily weighted towards large publicly-held companies.

I calculate business earnings from survey questions about earnings sources. The question asks for net earnings from the business or farm after expenses during the calendar year. Most business owners report business

earnings, but incorporated business owners report their earnings from the business as wage and salary earnings. The question is asked for earnings from the employer before deductions in the calendar year. The ASEC file combines these sources into one measure of earnings from the longest job held during the calendar year. The questions refer to annual earnings and capture the previous calendar year. Thus, the 2021 ASEC file asks about earnings in the 2020 calendar year.

In addition to providing information on business ownership and earnings, the CPS data include information on detailed demographic information including gender, race, and ethnicity of the owner. The education level and geographical location of the owner are also measured. The data also include information on the industry of the business. The CPS data have been used in previous research to study self-employment, business ownership, and entrepreneurship (e.g., see Hipple and Hammond 2010; Chatterji et al. 2014; Fairlie and Chatterji 2013; Levine and Rubenstein 2016; Wang 2019; Fairlie and Fossen 2019; Wilmoth 2021).

Measures of business ownership and outcomes are available from only a handful of other large, nationally representative government datasets such as the Annual Survey of Entrepreneurs (ASE), the Survey of Business Owners (SBO), and the American Community Survey (ACS). Measures of business ownership based on these data, however, cannot capture recent patterns because there is often a one to two year delay in release. The CPS data are released very quickly after collection. Another complication is that the 2020 ACS microdata, which also has annual business earnings, is only being released through “experimental” estimates with a limited number of data tables and geographies due to the impact of the COVID-19 pandemic on data collection (U.S. Census Bureau 2021). In contrast, the BLS has gone to great lengths to make sure that CPS response rates were high even in the early months of the pandemic, and 2020 calendar year earnings are measured from the 2021 March survey when most social restrictions were lifted throughout the country.

3.3 Survey Timing and Social Distancing Restrictions

The basic monthly CPS survey reference period is generally the calendar week that contains the 12th day of the month. Given that shelter-in-place restrictions started after this reference week, the April 2020 release is the first CPS survey fully covering the early-stage impacts of COVID-19. On March 16, 2020, the San Francisco Bay Area imposed shelter-in-place restrictions followed by the State of California on March 19. New York State

followed the next day. By early April most states imposed social distancing restrictions. Previous studies have generally excluded March as either pre-pandemic or post-pandemic (e.g., Fairlie 2020). On March 11, the World Health Organization (WHO) declared COVID-19 a pandemic, which might have resulted in early demand shifts over health concerns predating shelter-in-place restriction policies.

The ASEC provides information on the previous calendar year. For example, the 2021 ASEC covers calendar year 2020. The months of January and February 2020 were likely unaffected by the pandemic. March 2020 is less clear. GDP growth in 2020 Q1 which captures March 2020 shows a large drop. Even if only January and February 2020 are unaffected in calendar year 2020 the estimated impacts will be smaller than if measured over the entire calendar year. There is no way to remove earnings in these two months from the person's reported earnings for the calendar year. Using this approach, 2019 is the last pre-pandemic year. Estimates of post-COVID effects will focus on comparisons to this calendar year (i.e., comparing 2020 to 2019).

4. Methods

To more formally test whether COVID had disproportionate impacts on minority business owners earnings, I estimate regressions in which log business earnings is the dependent variable. The use of log earnings is standard in the literature to approximate percentage differences, remove the influence of large value outliers, and because log earnings generally fit the data better than actual earnings. The regressions control for trends prior to COVID and differences in business, owner, and geographical characteristics. Controlling for prior trends in business earnings or racial gaps in business earnings might be especially important for identifying the effects of COVID. To start, I estimate the following base equation:

$$(4.1) Y_{it} = \alpha + \gamma^B Black_i + \gamma^L Latinx_i + \gamma^A Asian_i + COVID_t + \delta^B Black_i * COVID_t + \delta^L Latinx_i * COVID_t + \delta^A Asian_i * COVID_t + \beta' X_{it} + \lambda_t + Black_i * \lambda_t + Latinx_i * \lambda_t + Asian_i * \lambda_t + \varepsilon_{it}$$

where Y_{it} is annual log business earnings for owner i in calendar year t , $COVID_t$ is a dummy variable for each post-COVID year, X_{it} includes owner, business, and geographical characteristics, λ_t is a linear time trend, and ε_{it} is the error term.¹⁰ The analysis sample covers six years with five pre-COVID years (2015-19) and one post-COVID year (2020). As noted above, 2020 captures the months of January and February which were prior to social distancing restrictions and March only partly captures those restrictions, but the 2020 calendar year is mostly capturing the effects of the pandemic on business earnings. Estimates of *annual* losses in the pandemic will be downward biased because of this limitation.

The parameters of interest are the δ^j , which capture the estimates of COVID-19 effects on business earnings for each minority group, j , relative to the left-out group, non-Latinx white business owners. The regressions control for business (industry), owner (education/skill level, age, gender), and geographic (region, central city status) characteristics. The main specification includes a linear time trend and linear time trends interacted with each minority group. All specifications will be estimated with OLS using CPS sample weights.

¹⁰ The linear time trend is set to zero in 2019. Thus, prior years are -1 for 2018 and -4 for 2015, for example, and 2020 is +1.

Equation (4.1) provides a “difference-in-difference” estimate of the impact of COVID on racial gaps in business earnings. For the Black/white gap for example, the first “difference” is white business earnings minus Black business earnings, and the second “difference” is post-pandemic business earnings minus pre-pandemic business earnings. Unlike most difference-in-difference applications, however, I am not evaluating the impact of a specific policy but am estimating whether there are disparate impacts of COVID-19 relative to pre-pandemic levels and trends.

Equation (4.1) implicitly calculates the second or post-pre difference from a comparison of 2020 business earnings to mean business earnings from 2015 to 2019 (de-trended). Although this approach provides more precise estimates because of a longer pre-COVID time period, it has the disadvantage of including years that are farther away from the beginning of the pandemic in the calculation of COVID effects. One method of addressing this issue is to focus the pre-pandemic period comparison to 2019 only. The simplest way to do this is to include a dummy variable that equals 1 for the entire 2015 to 2018 time period and include its interactions with the race dummies. $Pre2019$ is a dummy variable equal to one if the year is in 2015 to 2018 and zero otherwise.

Another approach is to include a full set of year dummies and their interactions with race instead of combining all pre-COVID years prior to the base year, 2019. This “event-study” style regression is specified as follows:

$$(4.3) Y_{it} = \alpha + \sum_{s=-5}^1 \delta_s^B Black_i + \sum_{s=-5}^1 \delta_s^L Latinx_i + \sum_{s=-5}^1 \delta_s^A Asian_i + \beta' X_{it} + \lambda_t + \varepsilon_{it}$$

where the reference year is $s=0$ (2019), and λ_t are year fixed effects. This event-study regression estimates racial disparities in the pre-COVID years to directly examine whether there were racial differences in any years prior the pandemic (i.e., test the common trends assumption). There might be differential trends business earnings, but examining years prior to 2019 should not reveal big jumps in earnings at least not at the level created by COVID-19 in 2020.

5. Business Earnings Losses in the Pandemic

The pandemic created an unprecedented disruption to the U.S. economy. GDP growth plummeted in early 2020 but then rebounded strongly later in the year. Figure 1 displays quarterly gross domestic product (GDP) growth from 1947Q2 to 2020Q3.¹¹ Over the numerous recessions in the second half of the 20th Century and the first two decades of the 21st Century there has never been such a large quarter-to-quarter change in GDP as in the first full quarter in the pandemic, 2020Q2. GDP fell by 31.2 percent in 2020Q2. Figure 2 focuses on the period from 2015Q1 to 2020Q3. GDP also fell by 5.1 percent in 2020Q1. The next largest drops in GDP were by -10.0 percent in 1958Q1, -8.5 percent in 2008Q3 (Great Recession), and -8.0 percent in 1980Q2. Furthermore, only three additional quarters over this time period experienced larger drops than in 2020Q1. The pandemic created an extremely severe but short recession. GDP reversed course quickly and grew by 33.8 percent in 2020Q3. The NBER officially dates the pandemic-induced recession as occurring from February 2020 (peak) to April 2020 (trough). As shown in Figures 1 and 2 both 2020Q1 and 2020Q2 were affected severely by the beginning of the pandemic. Having established that COVID-19 disrupted the overall U.S. economy, I turn to examining business earnings before and after the start of the pandemic.

¹¹ The Bureau of Economic Analysis first reports quarterly GDP growth rates in 1947Q2.

Figure 1: Quarterly Gross Domestic Product Growth Rate, 1947Q2 - 2020Q3

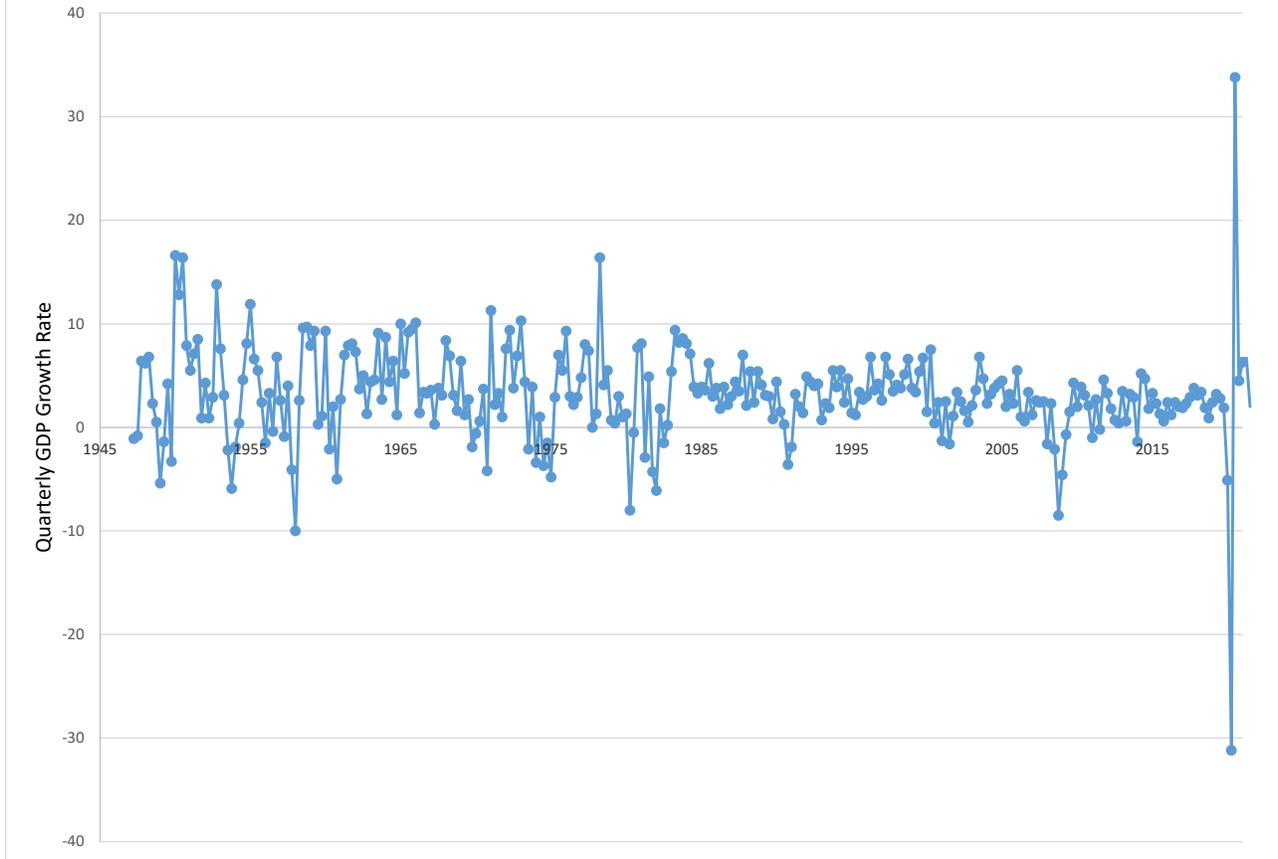
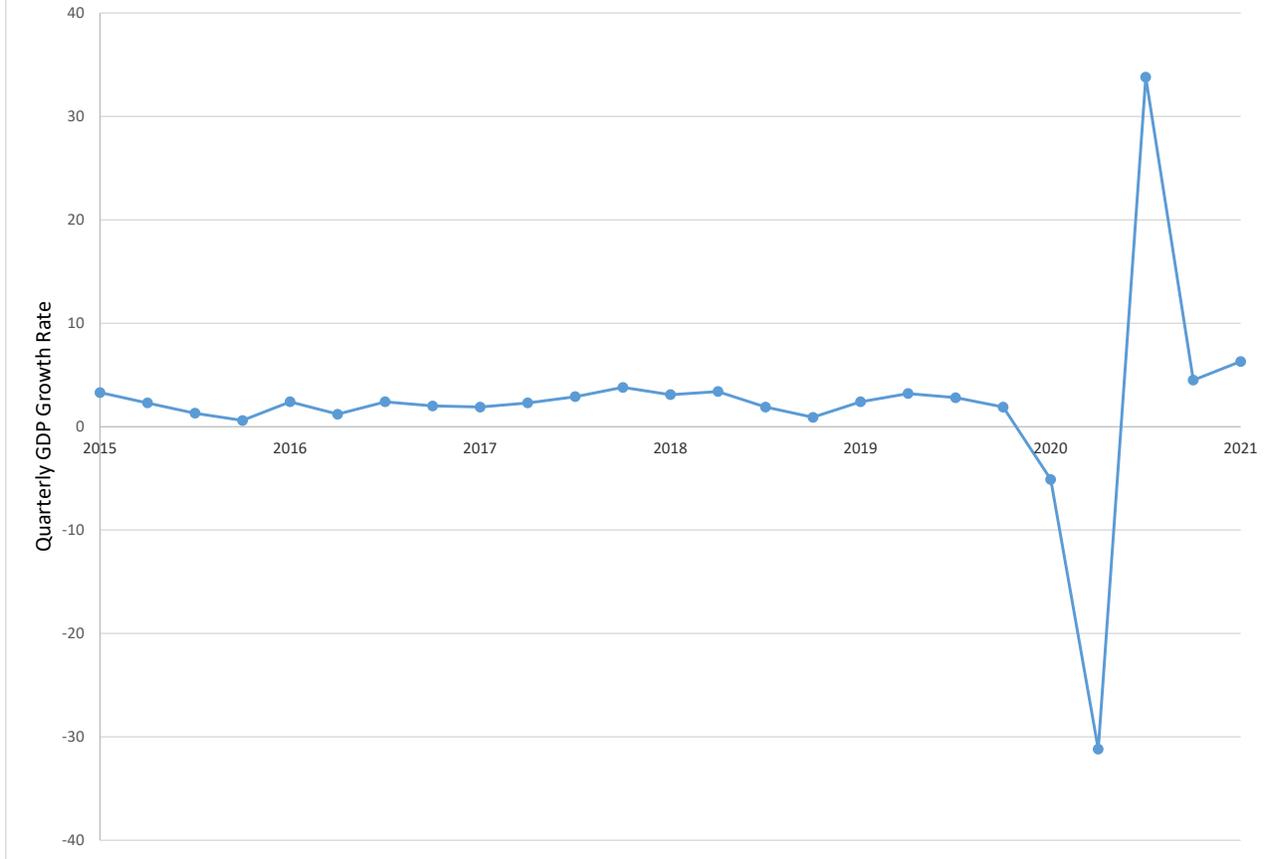
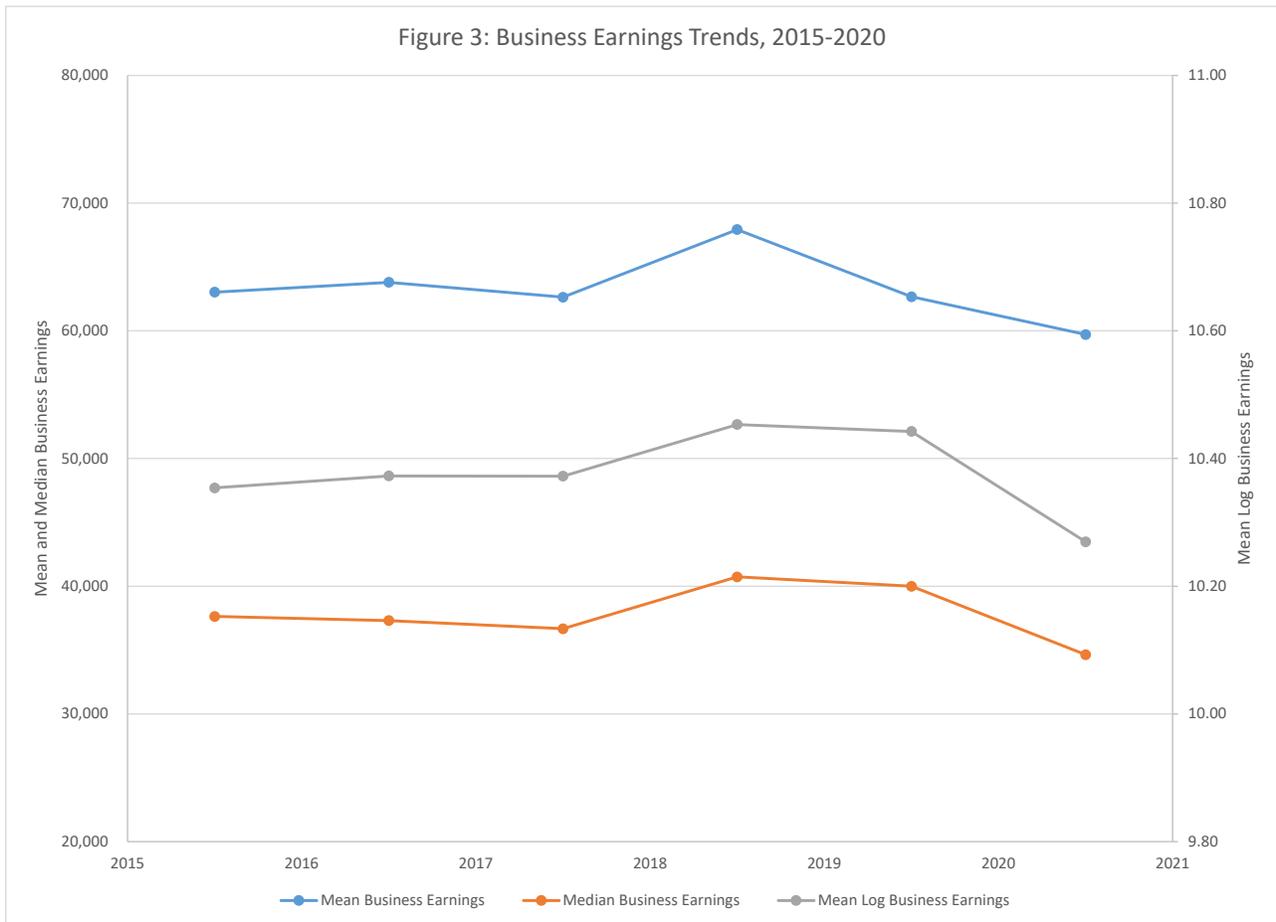


Figure 2: Quarterly Gross Domestic Product Growth Rate, 2015Q1 - 2020Q3



5.1 Business Earnings Trends

Figure 3 displays trends in business earnings by calendar year from 2015 to 2020. Mean, median and mean log business earnings are shown. All estimates are adjusted for inflation and represent 2019 dollars. Mean business earnings dropped from \$62,675 in calendar year 2019 to \$59,715 in calendar year 2020 for a loss of 5 percent. The pre-pandemic trend in mean business earnings was relatively flat from 2015 to 2017, then rose from 2017 to 2018 (8 percent), and dropped from 2018 to 2019 (-8 percent).



Measuring trends in business earnings using means can be misleading because a small number of large outliers can have a disproportionate effect on the estimates. Figure 3 also displays trends in median business earnings to provide another measure of pandemic effects. Median business earnings dropped from \$40,000 in

2019 to \$34,637 in 2020, representing a drop of 13 percent.¹² The loss in business earnings is larger when measured by median business earnings than mean business earnings. In addition, median business earnings are much lower than mean business earnings in all years. Mean business earnings average roughly \$64,000 compared with \$38,500 for median business earnings.

One troublesome complication with examining trends in median business earnings is that there is lumpiness in reported values. Many business owners report round numbers (e.g., 35,000 or 40,000) instead of more precise numbers for annual business earnings. Thus, when examining trends over time in median earnings large jumps can occur because of discontinuous changes from one grouping of values to another. For example, without the CPI adjustment for the trend in median business earnings displayed in Figure 3 the values would be \$35,000 in calendar years 2015, 2016, 2017, and 2020, and \$40,000 in calendar years 2018 and 2019. These estimated year-to-year jumps in median reported business earnings can be misleading regarding underlying trends in median actual business earnings. The sample sizes are much smaller for individual racial and ethnic groups, and thus trends in median business earnings are not calculated for each group.

The third measure of business earnings displayed in Figure 3 is mean log business earnings. Most previous research on earnings uses logs to remove the influence of outliers and because the transformation often fits the data better when estimating regressions. Another advantage of taking logs is that the difference between two years can be interpreted approximately as a percent change in business earnings. A disadvantage, however, is that business owners can have zero or negative earnings, and taking logs is not possible. To address this concern, all business earnings values less than \$1,000 are set to \$1,000 (i.e., censored) before taking logs.¹³ Mean log business earnings dropped by 17 log points from 2019 to 2020, which represents approximately a 17 percent drop in business earnings. The COVID induced loss in business earnings is the largest when measured in logs which reduce the influence of large outliers represented by very successful business owners and instead

¹² The median in 2020 but reported in unadjusted dollars is \$35,000.

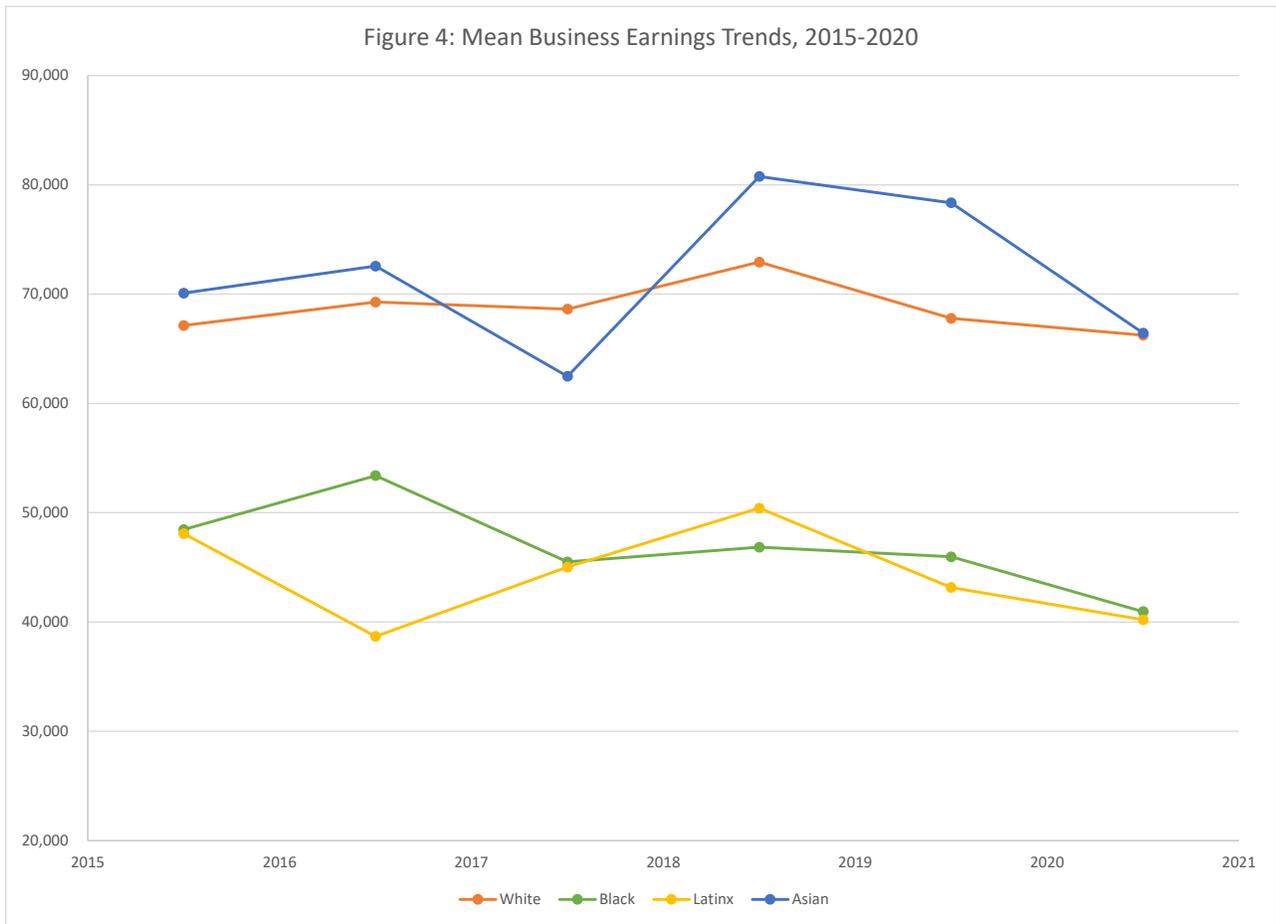
¹³ The implicit assumption is that earning any amount less than \$1,000 per year from a business is the same as earning \$0 per year from a business. Taking this approach removes the problem that a loss from \$100 to \$50 per year in business earnings would be similar in log terms as a loss from \$100,000 to \$50,000 per year in business earnings.

focuses more on losses in all other parts of the earnings distribution.¹⁴ This is the preferred measure used in the report.

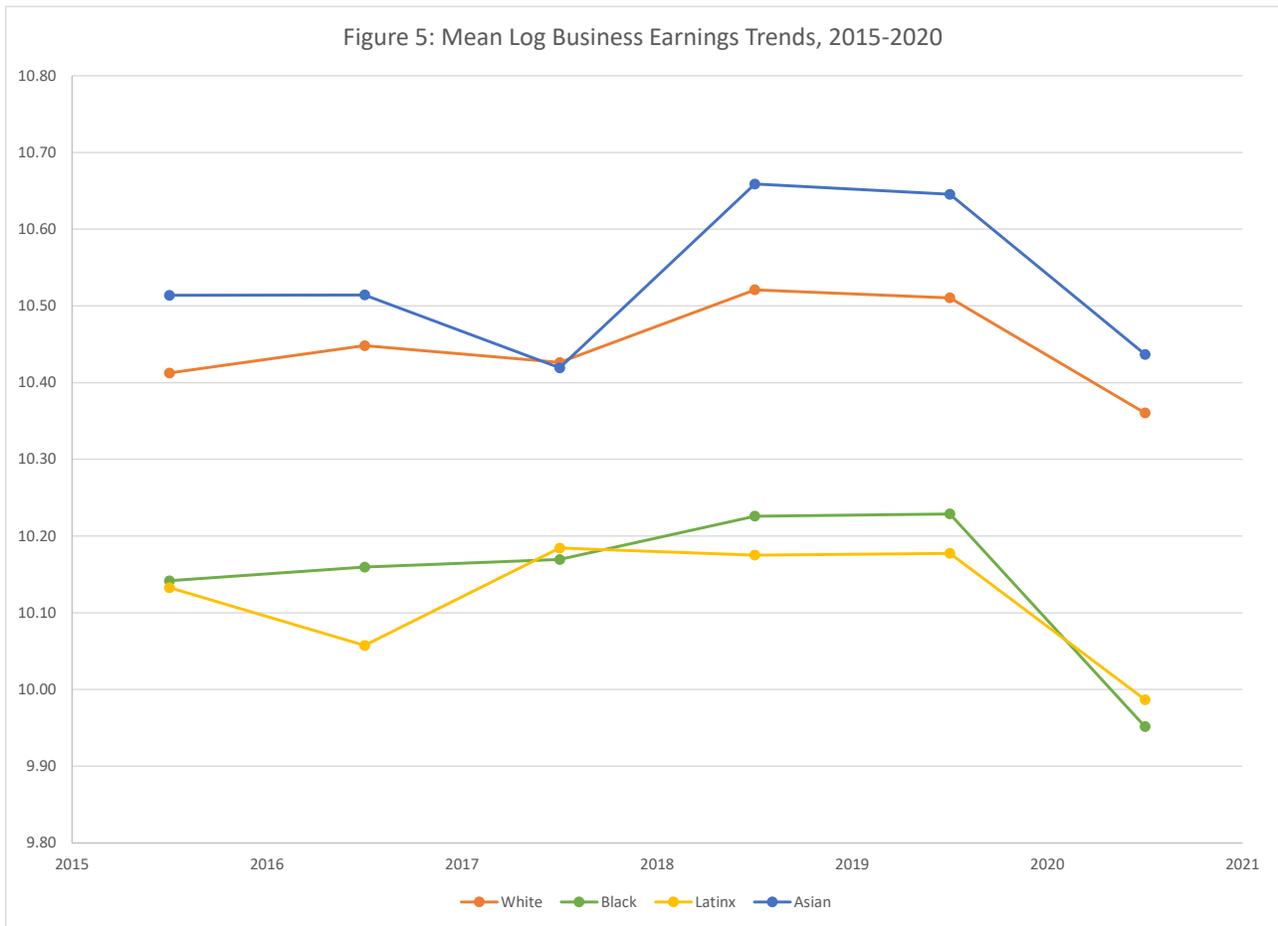
5.2 Racial Disparities in Business Earnings Trends

All racial and ethnic groups experienced business earnings losses from 2019 to 2020. Figure 4 displays trends in mean business earnings from 2015 to 2020 by race and ethnicity. Mean business earnings dropped by 11 percent for Black business owners. Asian business owners lost 15 percent in 2020, and Latinx business owners lost 7 percent in the pandemic. Finally, white business owners experienced smaller business earnings losses of 2 percent.

¹⁴ Another possible measure of business earnings losses is to create panel data from the CPS ASEC microdata and examine changes specific to the same business owner. For business owners who are active in both 2019 and 2020, I find an average loss in business earnings of 9 percent. A major problem with this approach, however, is the loss in sample size from matching across years of data. The sample size is 18 percent of the annual sample size in 2020. The reduction in sample sizes precludes any analysis by race and ethnicity.



Estimated business earnings losses are larger when measured in logs. Figure 5 displays trends in mean log business earnings by race and ethnicity. Using logs, business earnings dropped by 28 percent for Black business owners which was considerably higher than the loss of 15 percent for white business owners. Asian business owners lost 21 percent and Latinx business owners lost 19 percent in the pandemic.



Examining business earnings trends by group there is much more variation year-to-year likely due to smaller sample sizes.¹⁵ Tables 1 and 2 report annual business earnings estimates and average sample sizes. Although there is more fluctuation year-to-year, both mean and log mean business earnings show large losses from 2019 to 2020. Business earnings losses appear to be the largest for Black business owners and Asian business owners. Business earnings losses in the pandemic appear to be the smallest for white business owners. Prior to the pandemic there appears to be either a flat or slightly increasing upward trend in business earnings for all groups. The fluctuations from year to year make it difficult, however, to see a clear pattern.

¹⁵ Unfortunately, the relatively small sample sizes do not allow for separate analyses by gender within racial and ethnic groups. Examining total patterns in business earnings for women and men reveals larger losses from 2019 to 2020 for female business owners (5 percent in means and 19 percent in logs) than for male business owners (3 percent in means and 14 percent in logs) but the differences are not as large as for race and ethnicity. The regression and decomposition analyses below control for gender but do not analyze different patterns within race and ethnicity.

Table 1: Mean Business Earnings Trends by Race and Ethnicity, 2015-2020

	Total	Black	Latinx	Asian	White
Mean Business Earnings					
2015	63,029	48,461	48,076	70,093	67,131
2016	63,797	53,393	38,679	72,565	69,267
2017	62,636	45,494	45,022	62,482	68,627
2018	67,934	46,845	50,419	80,763	72,932
2019	62,675	45,961	43,152	78,350	67,777
2020	59,715	40,947	40,209	66,434	66,235
Growth Rates					
2015-16	1%	10%	-20%	4%	3%
2016-17	-2%	-15%	16%	-14%	-1%
2017-18	8%	3%	12%	29%	6%
2018-19	-8%	-2%	-14%	-3%	-7%
2019-20	-5%	-11%	-7%	-15%	-2%
Avrg. Annual N	6,769	473	1,169	462	4,673

Notes: Author's calculations from Current Population Survey (CPS) microdata, 2019-20. All estimates use CPS provided sample weights. Sample includes only individuals with longest-job held work activity as self-employed business owner in calendar year.

Table 2: Mean Log Business Earnings Trends by Race and Ethnicity, 2015-2020

	Total	Black	Latinx	Asian	White
Mean Log Business Earnings					
2015	10.35	10.14	10.13	10.51	10.41
2016	10.37	10.16	10.06	10.51	10.45
2017	10.37	10.17	10.18	10.42	10.43
2018	10.45	10.23	10.18	10.66	10.52
2019	10.44	10.23	10.18	10.65	10.51
2020	10.27	9.95	9.99	10.44	10.36
Growth Rates					
2015-16	2%	2%	-8%	0%	4%
2016-17	0%	1%	13%	-10%	-2%
2017-18	8%	6%	-1%	24%	9%
2018-19	-1%	0%	0%	-1%	-1%
2019-20	-17%	-28%	-19%	-21%	-15%
Avg. Annual N	6,769	473	1,169	462	4,673

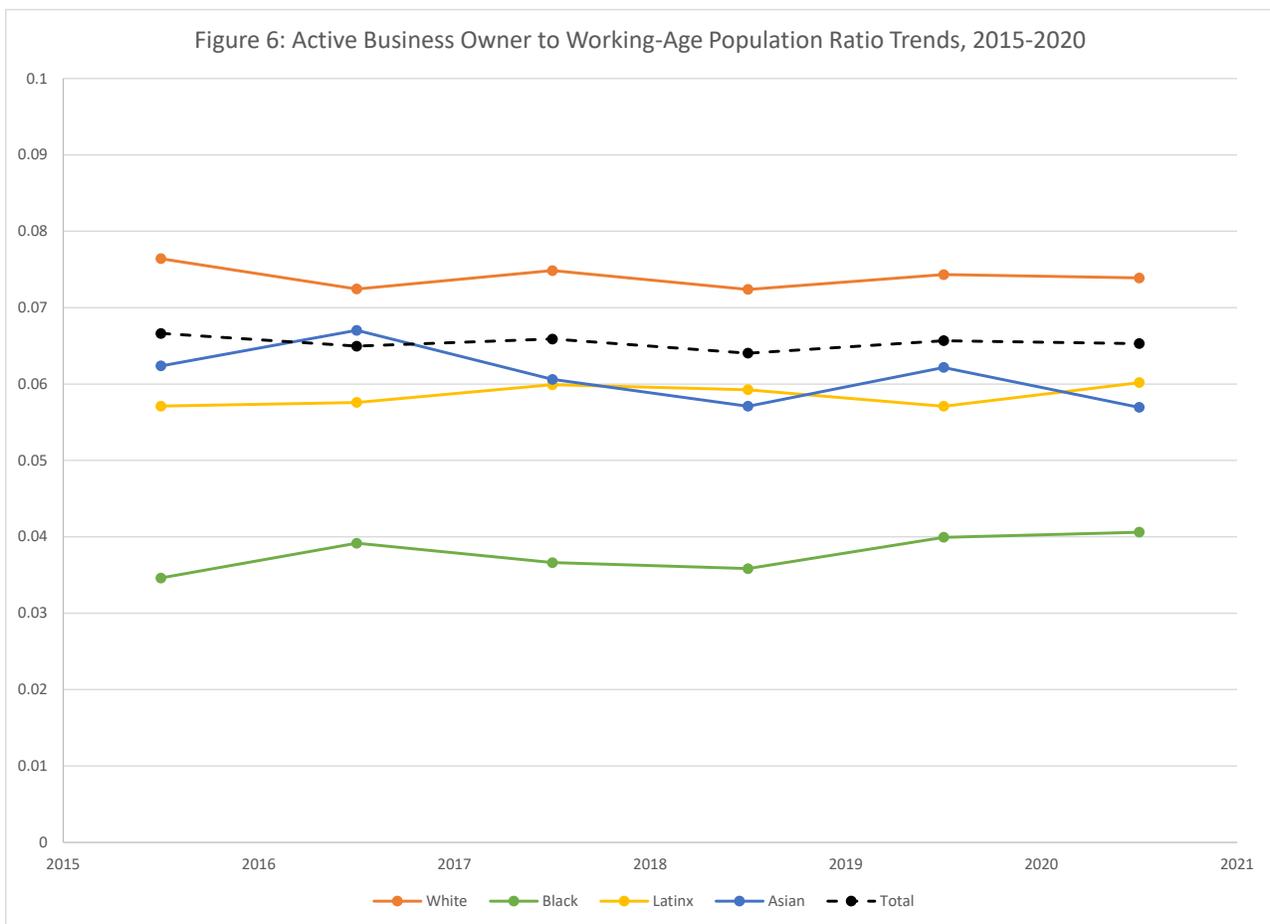
Notes: Author's calculations from Current Population Survey (CPS) microdata, 2019-20. All estimates use CPS provided sample weights. Sample includes only individuals with longest-job held work activity as self-employed business owner in calendar year.

Another important finding from the analysis of business earnings is that consistent across the two measures of business earnings is that there is an unambiguous pattern of relative business earnings across groups.¹⁶ Asian business owners and white business owners have higher business earnings in all years than Black business owners and Latinx business owners. Mean business earnings prior to the pandemic were roughly \$73,000 for Asian business owners, \$69,000 for white business owners compared with \$48,000 for Black business owners, and \$45,000 for Latinx business owners. Mean log business earnings were 9 log points higher for Asian business owners, 28 log points lower for Black business owners, and 32 log points lower for Latinx business owners than for white business owners. As noted in Section 2 these patterns in business performance across racial and ethnic groups have been documented using a wide range of data sources and time periods.

¹⁶ Grouping all pre-pandemic years, median business earnings were roughly \$44,000 for Asian business owners, \$42,000 for white business owners, \$30,000 for black business owners, and \$28,000 for Latinx business owners.

5.3 Business Owner Activity

There might have been shifts in the percentage of the working-age population who was working as a business owner in 2020 relative to 2019. Figure 6 displays trends from 2015 to 2020 in the percentage who were active business owners at any time during the calendar year by race and ethnicity and the total. For the total, the active business owner to working-age population ratio did not change from 2019 to 2020. There was not a decrease or increase in the percentage of the population actively owning a business from calendar year 2019 to calendar year 2020. Black business ownership and white business ownership ratios also did not change in the pandemic. The Latinx business ownership to population ratio increased only slightly, from 0.057 in 2019 to 0.060 in 2020. The Asian business ownership to population ratio decreased slightly from 0.062 in 2019 to 0.057 in 2020.



Business work activity at any time during the calendar year is the basis for being included in the business earnings sample. These findings for the active business ownership percentage suggest that the findings

for large business earnings losses in the pandemic are not being overly influenced by a large increase in the percentage of the working-age population drawn into business ownership in the pandemic (which might draw in many low business earners) or a large decrease in the percentage of the working-age population in business ownership in the pandemic (which might shake out less successful and lower business earners). The share of the working-age population owning businesses is relatively stable over time and through the pandemic when measured over calendar years.

5.4 Disproportionate COVID-19 Impacts by Race and Ethnicity

To more formally test whether COVID had disproportionate impacts among business owners of color, I estimate Equation (4.1) for log business earnings. The regressions build on the underlying patterns displayed in the figures by controlling for pre-COVID trends and owner, business, and geographical characteristics. For example, if there were converging trends in business earnings between two races the regression equation can simulate where these trends would have likely led to in 2020 if COVID had not happened (and trends continued). When COVID disrupts these patterns there are two possible comparisons. One comparison is to what existed in 2019 and the other comparison is to what likely would have happened in 2020. The regressions thus estimate the impacts of COVID on relative patterns in business earnings using both comparisons.

Table 3 reports estimates from Equations (4.1) and (4.2). Specification 1 starts with a stripped-down model that includes no additional variables except the race indicators and their interactions with 2020 (i.e., the “Post-COVID” by race interactions). The estimates indicate that Black business owners disproportionately experienced losses in earnings in 2020 relative to pre-pandemic years. The Black coefficient estimate of -0.12 implies that Black business owner earnings dropped by 12 log points or approximately 12 percent more than white business owner earnings. The point estimate for the COVID effect on Latinx business earnings is 5 log points (or roughly a 5 percent relative business earnings loss) but the coefficient is not statistically significant. The estimated effect of COVID-19 on Asian business earnings relative to white business earnings is essentially zero. The loss in business earnings for all groups in 2020 is captured by the “Post-COVID” coefficient, which was roughly -10 percent.

Table 3: Regressions for Log Business Earnings, Current Population Survey, 2015-2020

Explanatory Variables	(1)	(2)	(3)	(4)
Black	-0.251 (0.026)	-0.181 (0.041)	-0.169 (0.052)	-0.169 (0.052)
Latinx	-0.301 (0.019)	-0.144 (0.032)	-0.154 (0.040)	-0.155 (0.040)
Asian	0.097 (0.028)	0.073 (0.045)	0.098 (0.058)	0.098 (0.058)
Post-COVID	-0.102 (0.020)	-0.165 (0.025)	-0.165 (0.026)	-0.138 (0.025)
Post-COVID Black	-0.119 (0.060)	-0.134 (0.075)	-0.139 (0.076)	-0.144 (0.072)
Post-COVID Latinx	-0.047 (0.045)	-0.030 (0.057)	-0.024 (0.058)	-0.027 (0.055)
Post-COVID Asian	0.001 (0.070)	-0.073 (0.085)	-0.084 (0.087)	-0.094 (0.083)
Main controls	No	Yes	Yes	Yes
Industry controls	No	Yes	Yes	Yes
Time trend	No	Yes	Yes	Yes
Pre 2019 interactions	No	No	Yes	No
Full 2015-19 interactions	No	No	No	Yes
Sample years	2015-20	2015-20	2015-20	2015-20
Sample size	40,611	40,611	40,611	40,611

Notes: (1) The sample consists of business owners (ages 20-64) who worked in their business in the calendar year. (2) Coefficient estimates and their standard errors are reported. (3) Main controls include female, age, education, region, and central city status indicator variables.

Specification 2 reports estimates from Equation (4.1). The regression equation includes a time trend, and controls for owner, business, and geographical characteristics. The inclusion of the time trend and controls results in Black business earnings dropping by 13 percent more than white business earnings in the pandemic. The coefficient on the COVID effect on Latinx business earning remains roughly similar in magnitude and not statistically significant. The COVID Asian business earnings loss increases in magnitude to 7 log points but remains statistically insignificant. The overall “Post-COVID” coefficient indicates that all groups experienced losses of roughly 17 percent from prediction of where business earnings should in 2020 based on prior trends absent the pandemic.¹⁷

¹⁷ There is a positive and statistically significant pre-pandemic time trend but no differential pre-pandemic trends by race/ethnicity.

Specification 3 reports estimates from the slight variation of Equation (4.1) noted above. In this model, I add an indicator variable that captures years 2015 to 2018 as “Pre2019 interactions” in Table 3. The addition of this set of indicator variables focuses the estimation of COVID effects on using 2019 as the comparison year instead of the average, de-trended level over 2015 to 2018. The coefficients from this specification are similar to the previous specification. They indicate, for example, a similarly large relative drop for Black business earnings of roughly 14 percent. The point estimates for the Latinx vs white business earnings effect and Asian vs white business earnings effect are similar to the ones in the previous specification but remain statistically insignificant. Altering the comparison year also results in a similar estimate of the COVID effect for all groups of a 17 percent loss in business earnings.

Specification 4 of Table 3 reports estimates of Equation (4.2) which is an “event-study” regression. In this specification, a full set of race indicator interactions with each pre-COVID year (2015 to 2019) are included.¹⁸ The coefficient estimate for the COVID Black vs white effect is 14 percent. The point estimates for the Latinx and Asian relative COVID effects are similar but remain statistically insignificant. The overall COVID effect on all groups is estimated at 14 percent in 2020.

Overall, the robustness of estimates is impressive and reassuring that prior-trends, choice of comparison pre-COVID time period, or inclusion of baseline controls for individual and business characteristics do not affect the results.¹⁹ Black business earnings dropped disproportionately due to COVID. Latinx and Asian business earnings might have also disproportionately dropped due to COVID, but the imprecision of coefficient estimates rules out making strong conclusions regarding these findings.

It is important to note that the emphasis here is on testing for disproportionate effects of COVID-19 on business earnings among owners of color but that all groups, including white business owners, experienced earnings losses. The total pandemic induced earnings losses for whites are estimated by the regressions to be from 10 to 17 percent depending on the specification. As noted above, Black business owners lost an additional amount in business earnings which added to these base effects totaled from 22 to 30 percent. Latinx business

¹⁸ None of the pre-pandemic year dummy variables interacted with race/ethnicity are statistically significant.

¹⁹ Estimating a similar set of regression equations using active business ownership as the dependent variable I find no effects of COVID and no disproportionate effects of COVID by race and ethnicity.

owners lost a total of 15 to 20 percent in business earnings, and Asian business owners lost a total of 10 to 25 percent in business earnings. When the COVID interactions with race and ethnicity are removed and the regressions are re-estimated I find a total effect of COVID on business earnings of between 16 and 19 percent.

6. Business Earnings Losses by Business, Owner and Geographical Characteristics

This section explores which business, owner, and geographical characteristics are associated with the largest and smallest losses in business earnings in the pandemic. The question is also of broader interest than just its value in exploring potential explanations for racial differences in business earnings losses. For example, it is important to better understand which industries experienced the largest business earnings losses in the pandemic. Table 4 reports mean business earnings by the education/skill level of the owner, major industry, region, central city status, and other characteristics. Mean business earnings are reported for 2019 and 2020, and the percent change between the two years. There is a clear positive relationship between education and mean business earnings. For example, in 2019 college graduate business owners had average earnings of \$86,000 compared with \$46,000 for high school graduate owners (who did not obtain any higher level of education). Interestingly, however, there is not a strong negative relationship between business earnings losses from 2019 to 2020 and education level. The largest business earnings losses occurred for owners with some college, which is defined as those who have some college credits but did not graduate with a bachelor's degree. This group most notably includes owners with 2-year associate's degrees and vocational degrees.

Table 4: Business Earnings Losses by Owner and Business Characteristics, 2019-2020

Characteristic	Mean Business Earnings			Avrg. N
	2019	2020	Change	
High School Dropout	\$36,671	\$35,788	-2%	525
High School Graduate	\$45,992	\$43,587	-5%	1606
Some College	\$51,776	\$45,108	-13%	1691
College Graduate	\$85,824	\$84,670	-1%	2413
Agriculture	\$42,262	\$64,556	53%	376
Construction	\$50,512	\$54,384	8%	1136
Manufacturing	\$70,465	\$57,092	-19%	215
Wholesale and Retail Trade	\$66,539	\$49,211	-26%	590
Transportation	\$51,185	\$42,537	-17%	340
Information	\$49,958	\$70,624	41%	99
Financial Activities	\$98,315	\$87,787	-11%	478
Prof. and Bus. Services	\$73,437	\$76,025	4%	1285
Educ. And Health Services	\$71,215	\$72,453	2%	679
Leisure and Hospitality	\$60,032	\$33,934	-43%	435
Other Services	\$40,154	\$31,476	-22%	605
Northeast	\$61,529	\$63,003	2%	929
Midwest	\$60,806	\$64,972	7%	1180
South	\$63,181	\$57,274	-9%	2109
West	\$64,112	\$57,533	-10%	2018
Central City	\$61,788	\$56,276	-9%	1544
Suburbs	\$70,098	\$65,889	-6%	2468
Rural	\$46,891	\$50,303	7%	1213
Not Identified Geog.	\$55,510	\$55,062	-1%	1011
Female	\$45,750	\$43,245	-5%	2369
Male	\$72,480	\$70,084	-3%	3866
Below Median Age	\$57,708	\$56,449	-2%	3506
Above Median Age	\$68,738	\$63,579	-8%	2729

Notes: Author's calculations from Current Population Survey (CPS) microdata, 2019-20. All estimates use CPS provided sample weights. Sample includes only individuals with longest-job held work activity as self-employed business owner in calendar year.

There is wide variation in mean business earnings across major industry groups. In 2019, mean business earnings range from \$40,000 in Other Services to \$98,000 in Financial Activities. In the pandemic, some sectors experienced large losses: Wholesale and Retail Trade and Other Services each suffered losses over 20 percent, and Leisure and Hospitality lost a startling 43 percent in average earnings. Agriculture and Information (which include technology) both experienced large positive gains in business earnings in the pandemic.

Across regions, the South and West experienced business earnings losses whereas the Northeast experienced essentially no change and the Midwest experienced gains. Within metropolitan statuses, central cities experienced the largest losses in average business earnings. Suburban areas also experienced losses in the pandemic. Rural areas experienced some gains in average business earnings from 2019 to 2020. By gender, male and female business owners experienced similar mean earnings losses in the pandemic.

7. Explanations for Disproportionate Impacts

This section explores the underlying causes of why Black, Latinx, and Asian business owners experienced disproportionate losses in the pandemic. The goal is to analyze how business, owner, and geographical characteristics interact with race to identify the underlying causes. I take a three-step approach. The first step is to examine racial differences in business, owner, and geographic characteristics. Are there any characteristics that differ enough by race to potentially explain why some groups experienced larger COVID-induced business earnings losses? For example, are Black businesses concentrated in industries in which small businesses were hit the hardest in 2020? If Black businesses, on the other hand, have roughly similar industry distributions as white businesses then industry exposure cannot be a major cause of disproportionate earnings losses among Black businesses in the pandemic.

The second step is to explore this question more carefully using statistical techniques. Specifically, I run a statistical decomposition technique to calculate how much racial differences in each business, owner, and geographical characteristic contribute to the racial gaps in business earnings prior to COVID-19 and after COVID-19. The decomposition technique provides a direct estimate, for example, of how much the racial difference in industry concentrations contributes to the white-Black gap in business earnings. By estimating contributions for each characteristic, the decomposition technique allows one to identify which characteristics are the most important. Comparing estimates from just prior to the pandemic (2019) to just after the pandemic (2020) provides suggestive evidence on how the pandemic altered the relative importance of racial differences in each characteristic.

The third step is to drill down further on the interaction between pre-pandemic business, owner, and geographical characteristics and pandemic-induced business earnings losses. Using an additional statistical decomposition technique, I estimate direct contributions from racial differences in pre-pandemic characteristics to the change in the racial business earnings gap from 2019 to 2020. The technique directly answers the question, for example, of how much of the disproportionate loss in Black business earnings (relative to whites) is due to Black businesses being concentrated in the hardest hit industries in the pandemic.

7.1 Racial Distributions in Owner, Business and Geographical Characteristics

Step 1 is to examine racial differences in owner, business, and geographical characteristics. Table 5 reports estimates of group distributions for each racial and ethnic group prior to the pandemic. Among business owners, there are major differences across racial and ethnic groups in owner, business, and geographical characteristics. Starting with owner's education, Latinx are the least educated group. Only 21 percent of Latinx have a college degree, whereas 43 percent of whites have a college degree. The percentage of high school dropouts among Latinx is 28 percent which is considerably higher than for whites (4 percent). Blacks also have lower levels of education with 8 percent high school drop-outs and 33 percent with a college degree. Asians have the highest levels of higher education degrees with 62 percent having a college degree. Racial differences in education levels are large and might have placed less educated groups at a higher risk of business earnings losses in the pandemic.

Table 5: Business, Owner and Geographical Characteristics by Race and Ethnicity, 2019-2020

Characteristic	Percentage of Business Owners with Characteristic			
	Black	Latinx	Asian	White
High School Dropout	7.7%	28.3%	6.0%	4.3%
High School Graduate	26.7%	30.6%	17.8%	24.5%
Some College	32.4%	20.4%	14.4%	28.2%
College Graduate	33.3%	20.7%	61.8%	43.0%
Agriculture	1.5%	1.4%	0.3%	6.6%
Construction	10.8%	28.7%	7.8%	17.3%
Manufacturing	1.7%	3.7%	2.0%	3.7%
Wholesale and Retail Trade	8.3%	7.8%	12.8%	9.4%
Transportation	12.0%	7.5%	5.9%	4.6%
Information	2.3%	1.7%	1.4%	2.1%
Financial Activities	6.3%	4.6%	8.3%	8.4%
Prof. and Bus. Services	21.3%	22.7%	20.1%	21.8%
Educ. And Health Services	12.3%	7.2%	12.7%	10.2%
Leisure and Hospitality	9.9%	6.6%	11.9%	6.9%
Other Services	13.7%	8.2%	16.9%	8.9%
Northeast	18.6%	11.4%	21.9%	17.7%
Midwest	14.4%	6.4%	10.2%	25.0%
South	53.5%	44.1%	28.7%	33.0%
West	13.5%	38.0%	39.2%	24.4%
Central City	41.5%	41.4%	39.9%	22.4%
Suburbs	41.8%	47.3%	52.2%	44.7%
Rural	6.7%	4.3%	2.1%	17.8%
Not Identified Geog.	10.0%	7.0%	5.8%	15.0%
Female	39.9%	33.5%	43.7%	36.6%
Male	60.1%	66.5%	56.3%	63.4%
Age	43.95	43.36	45.46	47.00
Sample Size	438	1041	444	4270

Notes: Author's calculations from Current Population Survey (CPS) microdata, 2019-20. All estimates use CPS provided sample weights. Sample includes only individuals with longest-job held work activity as self-employed business owner in calendar year.

Industry distributions differ across racial and ethnic groups. Table 5 reports industry distributions for business owners. Latino business owners are more concentrated in Construction (29 percent) than white business owners (17 percent). Black business owners are less concentrated in Construction but more concentrated in Transportation (12 percent) and Other Services (14 percent).²⁰ Asian business owners have the

²⁰ Other Services includes, for example, auto repair, barber shops, beauty salons, dry cleaning, and private households.

most dissimilar industry distribution with much higher concentrations in Wholesale and Retail Trade (13 percent), Leisure and Hospitality (12 percent), and Other Services (17 percent), and a much lower concentration in construction (5.1 percent). All minority groups have fewer business owners in Agriculture than whites.

Another major difference across racial and ethnic groups is their geographical concentrations across the country. More than one-half of Black owners and 44 percent of Latinx owners live in the South whereas only one-third of white owners live in the South. Roughly 40 percent of Asian and Latinx owners live in the West. The Midwest captures one quarter of the white population, which is the highest of all groups. Turning to central city status, Black, Latinx, and Asian owners are more concentrated in central cities but less concentrated in rural areas than are white owners.

Among white owners, 37 percent are female. Black owners are more likely to be female (40 percent) and similarly Asian owners are more likely to be female (44 percent). Latinx owners have the lowest share of female business ownership (34 percent). Black and Latinx owners are younger on average than white owners.

Previous research indicates that many of these characteristics are important in determining business ownership and outcomes.²¹ The results reported in Table 4 above demonstrate that many of these characteristics are also associated with business earnings losses in the pandemic. I next turn to estimating how much racial differences in each of these characteristics contribute to white-Minority group gaps in business earnings.

7.2 Pre- and Post-Pandemic Decompositions

An important question is how much racial differences in industry distributions contribute to racial differences in business earnings. Another important question is whether their contribution changed from before the pandemic to after the pandemic. To explore these questions, I use a statistical decomposition technique to estimate the separate contributions from group differences in owner, business, and geographical characteristics to racial gaps in business earnings. Specifically, I decompose inter-group differences in the dependent variable, log business earnings, into the portions due to different observable characteristics across groups (sometimes called the “endowment effect”) and to different coefficients across groups (sometime called the “coefficient

²¹ See Hundley (2000), Zissimopoulos and Karoly (2007), van der Sluis, van Praag, and Vijverberg (2005), Moutray (2007) for a few examples, and Parker (2018) for an overall review of the literature.

effect”). The Blinder-Oaxaca decomposition of the white-minority gap in the average value of the dependent variable, Y , can be expressed as:

$$(7.1) \bar{Y}^W - \bar{Y}^M = [(\bar{X}^W - \bar{X}^M)\hat{\beta}^W] + [\bar{X}^M(\hat{\beta}^W - \hat{\beta}^M)],$$

where $\hat{\beta}^j$ is a vector of regression coefficients for owner, business, and geographical characteristics including only group j in the estimation sample, and \bar{X}^j is a vector of average characteristics for group j . I focus on estimating the first component of the decomposition that captures contributions from differences in observable characteristics or endowments.

Given the common focus on the “endowment effect” an increasingly popular approach is to rewrite the first component as:

$$(7.2) [(\bar{X}^W - \bar{X}^M)\hat{\beta}^*],$$

where $\hat{\beta}^*$ is a vector of regression coefficients for owner, business, and geographical characteristics including all racial and ethnic groups in the estimation sample.²² The use of all racial and ethnic groups in the estimation sample better captures the complete market instead of the coefficient estimates based on only one group.

The linearity of Equation (7.2) makes it easy to calculate the separate endowment effects for each characteristic. For example, the method can be used to estimate how much racial differences in industry concentrations contribute to the racial gap in log business earnings, and separately how much racial differences in education levels contribute to the racial gap in log business earnings. These contributions can be estimated for each specific group comparison (e.g., Black/white separate from Latinx/white).

Table 6 reports estimates from the decomposition procedure before and after the start of the pandemic for each racial and ethnic group. Columns 1 and 2 report estimates for factors contributing to the difference in

²² In the underlying regression used in the decomposition, indicator variables are included for all racial and ethnic groups.

log business earnings between Blacks and whites in 2019 and 2020, respectively. The underlying measures of education, industry, region, central city status, and other variables used in the decompositions are reported in Table 5. In 2019 when the Black-white log business earnings gap was 28.1 log points (or roughly 28 percent), the decomposition estimates reveal that having lower skills as measured by education contributes 5.0 log points to the racial log business earnings gap. Black concentrations by industry and region do not contribute notably to why Black business earnings is lower in 2019. Interestingly, the contribution estimate for central city status is negative, implying that Blacks are favorably distributed across central city, suburb, and rural areas (at least in terms of higher business earnings). Racial differences in age, however, contribute to the racial gap in business earnings. Black business owners tend to be younger than white business owners. And, younger business owners faced larger business earnings losses in the pandemic. Finally, a higher percentage of female business owners among Blacks contributes 2.1 log points to the gap.

Table 6: Decompositions of Log Business Earnings Gaps

	White-Black Gap		White-Latinx Gap		White-Asian Gap	
	2019	2020	2019	2020	2019	2020
White log business income	10.510	10.361	10.510	10.361	10.510	10.361
Minority log business income	10.229	9.952	10.177	9.987	10.645	10.437
White-minority group gap	0.281	0.409	0.333	0.374	-0.135	-0.076
Contributions from racial differences in:						
Education	0.050	0.047	0.169	0.185	-0.071	-0.074
Industry	0.005	0.059	0.000	0.028	-0.006	0.054
Region	-0.005	0.004	-0.001	0.009	0.005	0.014
Central City Status	-0.016	-0.006	-0.026	-0.007	-0.033	-0.019
Age	0.024	0.020	0.029	0.019	0.012	0.003
Female	0.021	0.005	-0.019	-0.046	0.045	-0.004
All included variables	0.080	0.128	0.153	0.188	-0.048	-0.026

Notes: (1) All decomposition specifications use pooled coefficient estimates from the full sample of all races (and include a full set of race dummies in the regressions). (2) Sampling weights are used in all specifications. (3) Standard errors are reported in parantheses below contribution estimates.

These were the contributing factors to the Black/white gap in business earnings prior to the start of the pandemic. Did the contributions change after the start of the pandemic? Yes, racial differences in industry

distributions became more important in contributing to the racial gap in business earnings. The concentration of Black business owners in industries now contributes to 5.9 log points to gap in log business earnings which is the largest factor. Thus, industry concentrations partly explain why Black business owners were hit harder in the pandemic. The similar contribution estimates from education differences suggests that lower levels of education did not contribute to why Black business owners were hit harder in the pandemic. In the next subsection, I examine this question more directly.

Columns 1 and 2 of Table 6 report estimates for factors contributing to the difference in log business earnings between Latinx and whites in 2019 and 2020, respectively. The white-Latinx gap in log business earnings is 33.3 log points in 2019. The main contributing factor to this gap was education. Latinx business owners have substantially lower education levels, on average, than white owners and the difference contributes 16.9 log points to the gap in business earnings. No other characteristic was particularly important in 2019 in contributing to the business earnings gap. In the pandemic, however, the unfavorable industry distribution of Latinx business owners contributed to the gap in business earnings by 2.8 log points. Education differences contributed slightly more to the business earnings gap in 2020 than prior to the pandemic.

Asian business earnings is higher than White business earnings. The white-Asian gap is -13.5 log points, implying that Asian business earnings are roughly 13.5 percent higher. The pandemic, however, reduced this advantage leading to a -7.6 log point difference. The main change from before the pandemic to after the pandemic was that industry contributed to the gap in the pandemic. The large negative decomposition estimates for education in both 2019 and 2020 imply that Asian business owners have higher education levels than white owners working as an advantage for business earnings.

7.3 Pandemic Interaction Decompositions

The next and final step is to perform a statistical decomposition that examines the pre-pandemic owner, business, and geographical characteristic distributions and post-pandemic effects. The analysis focuses on the change from 2019 to 2020, and estimates contributions from each characteristic and for each minority group. The difference between these decompositions and the previous ones is that these focus on the 2019 to 2020 change in business earnings. The estimates provide a direct answer to the question, for example, of how much

the Black industry distribution relative to the white industry distribution contributed to larger Black business earnings losses in the pandemic. Black businesses might have been concentrated in industries that were hit the hardest in the pandemic such as those facing social distancing closures.

The following equation is estimated:

$$(7.3) \left[(\bar{X}_{2019}^W - \bar{X}_{2019}^M)(\hat{\beta}_{2020}^* - \hat{\beta}_{2019}^*) \right],$$

where 2019 or 2020 are used in the estimation sample for the regression coefficients or to calculate average characteristics.

In their application of the decomposition technique to study long-term trends in the Black-white gap in the unemployment rate from 1880 to 1990, Fairlie and Sundstrom (1997) define this term as the “coefficient-race interaction” and note that it can be interpreted as the disproportionate effects of a demand shift over time.²³ In this case, we use the same component to estimate the disproportionate effects from the pandemic which capture all of the effects of COVID-19 on business earnings such as demand shifts, mandated closures, and social distancing restrictions.

Table 7 reports estimates for each business, owner, and geographical characteristic and each racial and ethnic group. The disproportionate business earnings loss from 2019 to 2020 among Black owners was -12.7 log points. The largest contributing factor to this disproportionate loss was pre-pandemic industry differences. In other words, the industry concentrations of Black business owners relative to the industry concentrations of White business owners placed them at a higher risk of business earnings losses in the pandemic. This factor alone contributed -6.3 log points to the disproportionate loss, which was roughly half of the total. Disproportionate business earnings losses among Black business owners were also partly due to pre-pandemic geographical differences. The relative distribution by central city status contributes -1.1 log points to the

²³ In their decomposition of long-term trends in the Black-white unemployment rate gap they were interested in how migration (e.g., the Great Migration) over the decades affected the unemployment gap. In this case, I am comparing 2019 to 2020 and thus there are unlikely to be major changes over time in business, owner, or geographical characteristics. Two parts of the decomposition expression include these terms.

disproportionate loss in business earnings. The regional distribution of Black business owners also placed at that higher risk of business earnings losses contributing an additional -0.9 log points. Black business owners were located in regions of the country that experienced the largest business earnings losses.

Table 7: Decompositions of Changes in Log Business Earnings Gaps

	Black-White	Latinx-White	Asian-White
Minority log bus. income 2020	9.952	9.987	10.437
Minority log bus. income 2019	10.229	10.177	10.645
Minority loss	-0.277	-0.191	-0.209
White log bus. income 2020	10.361	10.361	10.361
White log bus. income 2019	10.510	10.510	10.510
White loss	-0.150	-0.150	-0.150
Minority Disproportionate Loss	-0.127	-0.041	-0.059
Contributions to disproportionate losses from 2019 racial differences in:			
Education	-0.005	0.003	0.018
Industry	-0.063	-0.021	-0.065
Region	-0.009	-0.011	-0.013
Central City Status	-0.011	-0.013	-0.013
Age	0.008	0.008	0.004
Female	-0.001	0.001	-0.003
All included variables	-0.082	-0.033	-0.071

Notes: (1) All decomposition specifications use pooled coefficient estimates from the full sample of all races (and include a full set of race dummies in the regressions). (2) Sampling weights are used in all specifications. (3) Approximate standard errors are reported in parentheses below contribution estimates.

Latinx owners experienced a disproportionate business earnings loss of -4.1 log points due to the pandemic. The largest contributing factor to this disproportionate loss was pre-pandemic industry differences. The industry concentrations of Latinx business owners contributed -2.1 log points to the disproportionate business earnings losses. Central city status and regional differences between Latinx owners and White owners also contributed to the disproportionate business earnings losses among Latinx owners. The contributions were -1.3 for central city status and -1.1 for regions.

The disproportionate business earnings loss among Asian owners from 2019 to 2020 was -5.9 log points. Again, the largest contributing factor to this disproportionate loss was pre-pandemic industry differences. The industry concentrations of Asian business owners contributed -6.5 log points to the disproportionate business earnings losses. Interestingly, higher education levels among Asian owners relative to White owners shielded them for larger disproportionate business earnings losses. The contribution estimate of a positive 1.8 log points implies that all else equal, Asian business earnings would have increased relative to Whites from 2019 to 2020 if only education mattered. Similar to the explanations for disproportionate business earnings losses among Black and Latinx owners, disproportionate losses among Asian owners were partly due to central city status and regional distributions, placing them at a higher risk of business earnings losses.

8. Conclusions

Although it is well known that COVID-19 led to a massive shutdown of businesses in the early stages of the pandemic, surprisingly little is known about racial inequality in business ownership, closures, and especially earnings. Compiling and analyzing microdata from the ASEC files of the CPS, this report provides new evidence from nationally representative data on differential small business earnings losses in the pandemic by race and ethnicity. For the entire country, average business earnings losses were 5 percent in 2020 relative to the pre-pandemic levels of 2019. After adjusting for outliers by using log measures business earnings losses were larger in 2020 at 17 percent. Estimates from the preferred regression models that control for pre-pandemic time trends and owner, business, and geographical characteristics indicate that COVID-19 had large negative impacts on business earnings (16-19 percent). The types of businesses, owners, and geographical locations that experienced the largest losses in business earnings in the pandemic were in Leisure and Hospitality, Wholesale and Retail Trade, the West, the South, central cities areas, and those owners with some college education but no Bachelor's degree.

COVID-19 induced losses to business earnings were disproportionately felt by business owners of color. The largest losses were experienced by Black business owners. Using log measures, business earnings dropped by 28 percent from 2019 to 2020 for Black business owners. Regression estimates that control for pre-pandemic trends indicate that Black business owners experienced disproportionate negative impacts from COVID-19: business earnings dropped by 12 to 14 percent relative to white business owners. Black business owners tend to be less educated than the national average, which contributes to lower business earnings in general. In the pandemic, however, it was the industry concentration of Black business owners that placed them at a higher risk of experiencing disproportionate business earnings losses. Regional and central city/rural area concentrations also placed Black business owners at a higher risk of business earnings losses in the pandemic but to a lesser extent than did industry concentrations.

Latinx business owners also experienced large earnings losses in the pandemic. From 2019 to 2020, business earnings dropped by 19 percent for Latinx business owners using log measures. Regression estimates for Latinx business owners reveal negative point estimates suggesting disproportionate negative impacts on

business earnings, but the estimates are not statistically significant. Latinx business owners tend to be less educated than the national average, which contributes to lower business earnings in general. Similar to Black business owners, the industry concentration of Latinx business owners, however, placed that them at a higher risk of experiencing disproportionate business earnings losses in the pandemic. Although to a lesser extent than industry concentrations, regional and central city/rural area concentrations also placed Latinx business owners at a higher risk of business earnings losses in the pandemic.

Asian business owners also experienced disproportionate earnings losses in the pandemic. From 2019 to 2020, business earnings dropped by 21 percent for Asian business owners using log measures. Regression estimates for Asian business owners reveal negative point estimates suggesting disproportionate negative impacts on business earnings, but the estimates are not statistically significant. Asian business owners tend to be more educated than the national average, which contributes to higher business earnings in general. Focusing on the pandemic, industry concentrations of Asian business owners placed them at a higher risk of experiencing disproportionate business earnings losses in the pandemic. Regional and central city/rural area concentrations also placed Asian business owners at a higher risk of business earnings losses in the pandemic although to a lesser extent than industry concentrations. Higher education levels among Asian business owners helped insulate them from larger losses from COVID-19.

All these estimates are based on business earnings in calendar year 2020. Given that COVID-19 was not declared a pandemic until March 11 by the World Health Organization (WHO) and social distancing restrictions were not imposed until late March, calendar year 2020 is only partially capturing pandemic effects. Estimates of total business earnings losses might be too low and estimates of disproportionate losses might also be affected but the direction is less clear. Only two or three months of the calendar year, however, are not captured in measuring impacts.

The disproportionate business earnings losses among Black, Latinx, and Asian business owners in the pandemic widened overall earnings inequality. Mean business earnings losses were 11 percent for Black business owners compared with a 2 percent loss for white business owners. Total earnings losses from all jobs were the same at 3 percent for both Blacks and whites. Total earnings losses from all jobs includes business owners, wage and salary workers, and those not working during the calendar year. Latinx business owners lost 7

percent on average in business earnings whereas total earnings losses from all jobs among Latinx were 5 percent. Mean business earnings dropped by 15 percent for Asian business owners but only 3 percent for total earnings from all jobs among Asians.

The large earnings losses among small businesses in general and those owned by people of color are worrisome for the longer-term survival of small, local, and diverse businesses throughout the country. Although larger stores and chains with a strong online presence may survive, many small businesses might not have the resources to weather new rounds of closures and restrictions, continued reduced demand from health concerns, and a prolonged recovery. Just prior to the pandemic when small business owners were asked what actions they would take if faced with a two-month revenue loss, 17 percent said they would close or sell the business (Mills et al. 2020). Early estimates from the weekly U.S. Census Small Business Pulse Survey indicated that only 15-20 percent of businesses have enough cash on hand to cover 3 months of operations (U.S. Census Bureau 2020; Bohn, Mejia, and Lafortune 2020). An important question will be whether the continuing shift in consumer behavior towards online shopping, supply-chain problems, and recent increases in COVID cases because of new variants lead to even more small business closures and will these longer-term setbacks from the pandemic disproportionately affect minority-owned businesses.

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