# Did COVID Close the Start-Up Deficit in Black Neighborhoods?

# Evidence from the Startup Cartography Project

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## Abstract

Leveraging data from ten U.S. states from the Startup Cartography Project, this paper considers the changing nature and geography of entrepreneurship, examining whether COVID closed the longstanding deficit in the rate of start-up formation within Black neighborhoods. Focusing on 2011 through 2023, we explore the relative change in the rate of start-ups in Black neighborhoods versus others over time. We first document a sizeable deficit during the first four years of this period, followed by a steady but incremental narrowing of the Black neighborhood start-up deficit. We then observe, in the wake of the onset of COVID, a sizeable and immediate jump in the overall rate of new firm formation, and find this unprecedented boom is particularly concentrated in Black neighborhoods. While the Black neighborhood entrepreneurship rate remains elevated through the end of 2021, there is a convergence towards the population incidence by the end of 2023. We examine a range of potential explanations and confounders to explain this changing geography of entrepreneurship. There are no sizeable policy changes (e.g., tax incentives or the details of COVID relief packages) that would particularly favor business formation in Black neighborhoods, nor do contemporaneous changes (e.g., in gentrification by income or race) account for the phenomena. We do, however, note that the initial surge in entrepreneurship was coincident with increased support for Black-owned businesses in connection with the Black Lives Matter Movement, and explore, in a preliminary fashion, whether the names of registered businesses reflect a perception of increased entrepreneurial opportunity by Black founders to pursue ventures in the emerging "Passion Economy."



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## I. Introduction

While entrepreneurship is widely seen as a catalyst for economic growth and social advancement (Decker et al., 2014), the rate of entrepreneurship varies significantly across different demographic groups and regions. Notably, in the United States, Black individuals have historically had lower rates of entrepreneurship compared to other groups (Fairlie, 1999; Fairlie and Robb, 2010; Fairlie, et al, 2022). This reduced incidence is not due to a single cause but has been attributed to a range of structural and systemic barriers—such as limited access to financial capital, discriminatory lending practices, and biases in supply chains and consumer markets—that disproportionately hinder potential Black entrepreneurs (Fairlie and Robb, 2010). Moreover, as emphasized by Bostic and Lampani (1999) and further supported by Atkins (2020), a significant element in lower rates of Black entrepreneurship may be that the barriers for establishing a business may be higher in disproportionately Black neighborhoods. This combination leads to the potential for a significant "start-up deficit" in Black neighborhoods: the lower rate of entrepreneurship among Black individuals in these areas results in fewer new businesses being formed, which in turn limits economic development and opportunity within these communities.

The onset of the pandemic, however, coincided with a striking pattern of new business formation in the United States. While many analysts were concerned that the pandemic would dramatically lower rates of entrepreneurship, early analysis from various data sources—including the Census Business Formation Statistics (BFS), Business Dynamic Statistics (BDS), Current Population Survey (CPS), and the Startup Cartography Project (SCP)—identified a steep decline in new business formation only within the first few weeks of the pandemic (Fairlie, 2020; Buffington, et al, 2020; Bartik et al, 2020; Haltiwanger, 2021, Fazio, et al, 2020). Starting in late April, 2020, there was not only a rapid recovery but actually a significant and sustained boom in the rate of new business formation (Buffington, et al, 2020; Dinlersoz, et al, 2021; Haltiwanger, 2021, Fazio, et al, 2021).[1] Importantly, this change in the rate seems to have been driven by a highly uneven surge in entrepreneurial activity across geographies. Notably, Fazio et al (2021)

[1] For example, the increase from 2019 to 2020 in new firms founded exceeds 20 percent was double the rate of improvement of any prior recorded year (Haltiwanger, 2021). Recent evidence points to the sustained rise in entrepreneursip: Decker and Haltiwanger (2023) estimate that new firm formation in 2023 exceeds the 2019 rate by 30%. See also Council of Economic Advisors ( 2024).

document that, relative to a 2019 baseline, higher-income Black neighborhoods experienced a disproportionate increase in new business formations compared to other areas. This surge within Black neighborhood suggests that it is possible that the social and economic dynamics that accompanied the pandemic not only altered the overall rate of entrepreneurship but also shifted its geographic concentration. Specifically, the striking rise in Black neighborhoods in a period that also experienced significant Black civil activism – suggests that the broader social movements during this period may have been significant factors contributing to the rise of entrepreneurship in Black neighborhoods.

The purpose of this paper is is to assess whether COVID changed the geography and nature of entrepreneurship and, in particular, whether COVID closed the longstanding deficit in the rate of start-up formation experienced by Black neighborhoods. Our approach builds on the methodology and extends the dataset of the Startup Cartography Project (SCP; Andrews, et al, 2020). Based on Guzman and Stern (2015, 2017), the SCP combines state-level business registration records and a predictive analytics approach to provide measures of both the quantity and quality (i.e., potential for growth) of entrepreneurship over time and at an arbitrary level of geographic granularity. Specifically, while Andrews, et al (2020) report SCP results covering 49 states and Washington D.C. from 1988-2014, and 46 states through 2016, this paper applies the methodology introduced in Fazio, et al. (2021) and draws on new data of the entire population of new business registration records from 2017 through 2023 for ten U.S. states comprising over 45% of GDP. Relative to the BFS (which relies on administrative data created in the context of applying for a Federal Tax Identification Number (or EIN)), state-level business registration is the administrative procedure in which a new organization is formed as a legal entity, providing protection from liability for the founders as well as the ability to divide equity and develop a corporate governance structure. Importantly, for each business registrant, we are able to observe the name of the business, its precise street address, and the business registration type (e.g., partnership, LLC, or corporation).

We begin by charting the rate of new business formation across our ten-state sample. In the pre-COVID era, we observe a small but steady relative rise in the rate of start-up formation, followed, with the onset of COVID, with a single-month decline and then a sharp increase in the overall level: there is more than a 20% upward shift in new business registrations in 2020

compared to 2019, and a small (though statistically insignificant) increase in the trend rate of growth. Consistent with other aggregate evidence, the rate of new business formation by 2023 was more than 40% higher than it had been in 2019.

Building on the preliminary analysis in Fazio, et al (2021), we then focus on the specific dynamics of entrepreneurship within Black neighborhoods. We first document that, in the early portion of our sample period (2011-2015), controlling for other demographic and geographic factors including population, income, and density, neighborhoods with higher Black populations registered a much lower level of entrepreneurship than comparable neighborhoods (even when contrasting among different neighborhoods within the same geographic area). We then examine the dynamics of entrepreneurship over time, showing a slow improvement in the start-up deficit in the second half of the 2010s. We then document that, even relative to this positive trend, there is a sharp uptick in the relative rate of entrepreneurship starting in 2020; whereas Black neighborhoods were associated with a lower rate of new business formation through 2019, Black neighborhoods register a significant and sizeable premium in start-up rates in 2020 and 2021 followed by a convergence towards the population mean in 2022 and 2023. This striking pattern is most apparent in "Main Street" businesses, as indicated by their business registration status (as LLCs rather than corporations).

We then turn to consider a range of potential explanations and potential confounders that might illuminate the drivers of these phenomena. First, while the onset of COVID was accompanied by the single largest emergency economic measures in history, these spending and policy changes (e.g., tax incentives or the details of COVID relief packages) were not designed in way that would particularly favor business formation in Black neighborhoods. As well, we consider whether this change in the rate of entrepreneurship is driven by contemporaneous demographic dynamics, including changing patterns of gentrification (e.g., changes in income or racial composition within these neighborhoods). For each of these tests, we find no evidence for a meaningful change in the overall pattern we initially document.

Finally, to further investigate the mechanisms underlying the observed surge in entrepreneurship within Black neighborhoods, we examine, in a preliminary way, the characteristics of the newly registered businesses, particularly focusing on the language used in

their names. We find striking evidence that, relative to earlier periods and compared to predominantly White neighborhoods, businesses in Black neighborhoods during 2020-2021 incorporate expressions of "positive emotion" in their business names. This trend suggests an alignment with the "passion economy" (Davidson, 202), where entrepreneurial ventures are closely tied to personal passions and communal identities. This shift may reflect the influence of heightened civil activism and a renewed sense of empowerment within Black communities during this period. Though exploratory, we believe that the study of business names offers a new lens (beyond traditional industry codes, etc) to observe changes in the motives for start-up founding.

This assessment of the geography and nature of entrepreneurship in Black Neighborhoods provides an opportunity to gain sharper insight into changing drivers of the choice to establish a new business, the potential ways that entrepreneurship may serve as a source of dynamism, and how policy might be targeted to best support the survival and growth of new enterprises. Research has long documented the higher barriers faced by minority owned firms to securing the financial and human capital needed to survive and grow (e.g., Chatterji et al, 2011). Targeting support to these communities may be key to converting the potential of the entrepreneurship that has taken root there into sustained business dynamism.

## II. Entrepreneurship and the Start-Up Deficit in Black Neighborhoods[2]

There is evidence that significant structural and systemic barriers obstruct both the founding and the growing of new businesses by people of color and those from disadvantaged backgrounds. As summarized with careful detail and in a comprehensive literature review by Bates (2011), minority-led businesses confront barriers to growth well beyond those faced by their white counterparts. Most notably, potential Black entrepreneurs face less access to bank finance (Bostic and Lampani, 1999; Fairlie and Robb, 2007; Bates, 2011, 2018; Fairlie et al, 2020), and so found businesses with less initial capital, with more personal debt, and at a scale that limits their potential for growth and profitability. "Banking conventionally is more difficult in richer minority neighborhoods than higher-poverty white ones." (Small et al., 2021). Moreover, racial discrimination in other markets (such as the housing collateral market) can

[2] Language in this section is drawn from our NBER working Paper, How is Covid Changing the Geography of Entrepreneurship, Fazio et al. 2021).

amplify any patterns of discrimination in entrepreneurial finance (Atkins, 2020). In addition, suppliers often charge higher prices from black entrepreneurs and white customers usually avoid doing business transactions with Blacks (Basu et al. 2024, Kopkin, 2017).

Fairlie et al (2023), using a new Comprehensive Startup Panel dataset tracks job creation and survival of every business startup in the US economy from initial startup year through seven follow up years (from 1995-2018), and finds Black founders to be underrepresented, "owning 7 percent of startups but representing 12 percent of the total labor force" (Fairlie et al. 2023 at 145). Their results suggest that Black-owned businesses also start with smaller capital, stay smaller, and experience lower survival rates (Fairlie and Robb 1007b, 2008).

The rate of start-up formation in Black neighborhoods has been dampened by the barriers to entry and growth faced by Minority-owned firms. An expansive literature dating back to the 1980s examines the connection between racial differences and entrepreneurship and finds with remarkable regularity that Black Americans exhibit lower levels of self-employment and business ownership relative to other groups. (Kollinger and Minniti, 2006, citing Bates (2000), Borjas and Bronars (1989), Fairlie (1999; 2004), Fairlie and Meyer (1996), Hout and Rosen (2000), Light and Rosenstein (1995), and Meyer (1990)). Constraints and the expected return to entrepreneurial activity, not preferences, are behind these differences. (*See*, *e.g.,* Kollinger and Minniti, 2006 and Basu et al., 2024).

While patterns of discrimination against minority entrepreneurs are significant and troubling in their own right, they have an important impact on the establishment and growth of entrepreneurship in terms of local economic development. Specifically, since entrepreneurship is a channel for economic opportunity, discrimination aginst minority entrepreneurs has the consequence of preventing communities with large minority populations from benefitting from the potential promise of entrepreneur-led economic development. Put another way, because discrimination against minority entrepreneurship lowers the returns to minority entrepreneurship, the impact of that discrimination includes not only the private loss to the entrepreneur but also the loss of social return to the community in which that entrepreneur lives.

Yet, in sharp contrast to the long existing constraints obstructing startup formation and scaling by Black entrepreneurs, 2020 was a period of robust social action to support Black

business owners and their communities. Precipitated by episodes of police brutality, the broad social movement of Black Lives Matter was an affirmation to the social and economic presence of Black communities across the United States, and created a social impetus where consumers and services directly focused —at least performatively—on providing access and support for Black entrepreneurs. Individuals sought to support Black owned businesses, and banks and other financial institutions emphasized their commitment to them and their communities. (*See, e.g.,* Agrawal et al. 2023).

Recent studies indicate that consumer and industry response to racial protests and the BLM movement may have improved both the objective conditions for and perception of entrepreneurial opportunity by Black founders. For example, Agrawal et al. (2023) and Aneja et al. (2023) identify contexts where consumer demand for products and services from Black owned businesses increased and performance of Black-owned firms improved. Garcia and Ortega (2023) and Koh et al. (2023) find that access to some forms of financing for Black entrepreneurs may likewise have increased. (*But see* Marx et al., 2024, showing reversion of upswell in venture capital deals to prepandemic levels). At an individual level, the social affirmation from this movement could have resulted in increased self-determination, higher locus of control, and willingness to undertake risk within these communities.[3]

This shift in social affirmation may also align with what some journalists have termed the "Passion Economy" (Davidson, 2020). They note that the twenty-first century economy has evolved to offer a new paradigm for the creation and capture of value: niche ventures grounded in shared passions as opposed to scale. "The passion economy presents a new way to capitalize on creativity by connecting creators with genuine, engaged communities who share their passions." (Vaughan, 2020). In contrast to the development of the modern corporation, where many signals push employees and businesses to conform to external metrics in search of scale and profits, the passion economy offers the prospect of being rewarded based on unique interests,

[3] 2020 also included the $2.3 trillion Coronavirus Aid, Relief and Economic Security (CARES) Act and the $900 billion Relief Supplemental Appropriations Act of 2021 (Supplemental). While neither the CARES Act nor the Supplemental Act were specifically aimed at encouraging new business formation, both provided broad-based economic relief across demographic and geographic lines that were independent of historical inequities in access to entrepreneurial capital. All of these mechanisms and potentially others may be working against the persistent racial inequalities in entrepreneurship, changing the incidence and overall trend of Black entrepreneurship during the COVID recovery. See Fazio, et al. NBER working paper 2021).

and specifically those things that make your products and services different and authentic. (Jachimowicz, 2020, interviewing Adam Davidson)

The confluence of the COVID-19 pandemic, social action, evolving sense of opportunity highlights the importance of understanding not only how the rate of startup formation changed in aggregate, but also how it may have impacted longstanding disparities in the rate of entrepreneurship within Black communities.

## III. Data[4]

We combine data from three primary data sources: the Startup Cartography Project (SCP), the American Community Survey (ACS), and measures of language analytics calculated using Linguistic Inquiry and Word Count (LIWC-22).

*The Startup Cartography Project*

The core data for this paper extend the SCP dataset, which leverages state-level business registration records and predictive analytics to develop consistent metrics for the quantity, quality, and quantity-adjusted quality of entrepreneurship covering 49 states and Washington D.C. from 1988-2014, and 46 states through 2016, and made available at multiple levels of aggregation (see Andrews, et al, 2020). One advantage of the use of state-level business registration records is that these public records are created endogenously when an individual registers a new business as a corporation, LLC, or partnership. While it is possible to found a new business without business registration (e.g., a sole proprietorship), the benefits of registration are substantial, and include limited liability, various tax benefits, the ability to issue and trade ownership shares, and credibility with potential customers. All corporations, partnerships, and limited liability companies must register with a Secretary of State (or Secretary of the Commonwealth) in order to take advantage of these benefits: the act of *registering* the firm triggers the legal creation of the company. As such, these records reflect the population of businesses for which an individual seeks to establish a formal organization separate from themselves in order to pursue some form of economic opportunity. Concretely, our analysis draws on the complete population of firms satisfying one of the following conditions: (a) a for-

[4] Some language in this section draws on Andrews, et al (2020) (which itself draws on Guzman and Stern (2015, 2017). Please see Andrews, et al (2020) for a complete discussion (and more complete references) concerning the use of state-level business registration records, and the ability to link these records with other datasets, including firm-level growth outcomes.

profit firm in the local jurisdiction or (b) a for-profit firm whose jurisdiction is in Delaware but whose principal office address is in the local state. In other words, our analysis excludes non-profit organizations as well as companies whose primary location is not in the state (e.g., companies that are founded in one state but then register in a second state as part of an expansion into that state-level market).

We gather data from ten U.S. states that make these business registration records available on a timely and cost-effective basis. Our dataset includes all registrations through December 2023 for Alaska, California, Colorado, Connecticut, Florida, Georgia, Kentucky, New York, Tennessee, and Texas. Each record includes the name of the company, the date of filing, the legal address for that company, the form of corporate governance, and in some states (or for particiular forms of organization) the names of the principal owners of the organization. The current analysis specifically leverages three elements of these data: the date of incorporation, the precise street address (including ZIP Code), and the form of corporate governance. It is useful to note the distinction between the three forms of corporate governance. On the one hand, LLC/Partnerships are the most straightforward form of corporate governance providing limited liability protection (in the case of an LLC) and tax advantages with a minimal level of ongoing administrative paperwork burden. Corporations on the other hand impose a more onerous administrative burden (and less tax flexibility). Finally, Local Delaware Corporations involve significant additional upfront expenses (requiring a separate registration in Delaware) but enable companies to take advantage of a more consistent body of corporate law governing Delaware corporations that is often preferred by external investors such as venture capitalists or investors in public stock offerings. We limit our core analysis to business registrations from 2011 to 2023 across these ten states.

*ZIP Code (ZCTA) Measures and Summary Statistics*

The core of our analysis focuses on the changing geography of entrepreneurship in the years between 2011 and 2023. To detect the geography of entrepreneurship in a granular fashion that nonetheless allows us to capture differences across locations in a consistent way, we focus our

geographic analysis at the ZIP Code (ZCTA) level.[5] The summary statistics are reported in Table 1.

Our dataset includes 51,220 ZIP code-year observations, with a mean number of 337 new business registrations (*Number of Firms*), 255 new LLC registrations, 82 local corporation registrations and 2 Delaware Corporation registrations per ZIP Code year. On average, 75% of these firms are limited liability companies or partnerships registered under local jurisdiction (*Local LLC or Partnership*), 24%% of firms are corporations registered under local jurisdiction (*Local Corporations*), 0.5%% of firms are local corporations registered under Delaware jurisdiction (*Delaware Corporations*).

Building on Davis, et al (1996), we also examine a measure of the growth over time in these measures, the *DHS Growth Raio,* which is simply the level of entrepreneurship within a given ZCTA in a given year compared to the average level of entrepreneurship in that region across that year and the year prior. For example, for a comparison between 2020 and 2021, we use the following formula:

$$StartupGrowthRatio = \left(\frac{\#Ventures2020}{\frac{1}{2}(\#Ventures2019 + \#Ventures2020)} - 1\right) * 100 \quad (1)$$

This measure captures the relative increase in the number of new business registrations in a given ZCTA in a given year relative to the previous year.

We also include a set of ZCTA characteristics, drawn from the 2011 American Community Survey (ACS), which calculates 5-year look-back estimates of various locational characteristics of these ZCTA. These measures include various measures of population of density (*Total Population, Persons per square mile, Population Density*), racial demographics *(Percent Black* and *Percent Hispanic,* ) and socioeconomic measures (*Median Income*, *Average Home Value*,

[5] Zip Code Tabulation Areas (ZCTA) are generalized area representations of USPS Zip Code service areas (United States Census, https://www.census.gov/programs-surveys/geography/guidance/geo-areas/zctas.html). While standard ZIP Codes represent geographic areas with well-defined geographical boundaries, ZIP Code boundaries potentially changed over time, and also there are ZIP Codes for PO Boxes, military, and large customers. To fix ZIP Code boundaries over time, we rely on the 2015 Zip Code to ZCTA crosswalk by the HRSA UDS mapper (https://www.udsmapper.org), which contains 41251 unique ZIP Codes, the correspondent ZCTAs, the type of ZIP Code, city and State. All but two ZIP Codes in the SCP were matched using the cross walk (which were then assigned manually).

*Percent with a Mortgage*, *Percent Employed, Percent Work from Home*). For our core specifications including the ACS measures, we observe 47280 ZIP Code-year.

Means and standard deviations for each of these measures are reported in Table 1. We observe ample variation across ZIP Codes in these measures throughout our ten states. For example, the average proportion of non-Hispanic Black in our ZIP Codes is 12.3% (close to the national average), but the standard deviation of our measure is close to 17 percentage points. Similar patterns are observable, amongst others, for the proportion of Hispanics, with a mean of 23% and a standard deviation of 21.3%, and the median income with a mean of roughly $30,000, and a Standard Deviation of roughly $18,370, and percent working from home, with a mean of 4.4% and a standard deviation of 3.4%. We see meaningful, but more limited variation in the percent employed, with a mean of 70% and a standard deviation of 7%.

Finally, to analyze differences (over time and geography) in the motivations and choices of entrepreneurs, we undertake a preliminary analysis of the names of the newly registered entities. We utiloize the Linguistic Inquiry and Word Count (LIWC-22) software package (Pennebaker et al., 2022). LIWC is a text analysis tool widely used in psychological and social science research to quantify the presence of various linguistic categories within textual data. Using a pre-defined expert "dictionary," the software calculates word frequency and categorizes words reflecting different emotions, cognitive processes, and social concerns. By applying LIWC to the names of newly registered businesses, we can measure the extent to which positive emotion words and other linguistic markers are present. This approach allows us to compare the emotional and expressive characteristics of business names across different neighborhoods and time periods, providing insights into how social movements may be influencing entrepreneurial expression. We construct two core measures. At the firm level, we measure *Positive Emotion,* which has a mean of 0.002 (most firm names do not have any words that connote positive emotion), which, when summed up over all firm names within a given zip-year, yields *Positive Emotion Sum,* with a mean of 0.583. We defer discussion of the underlying construct behind these measures until our discussion of this final part of the analysis.

## IV. Resutlts

*Overall Trends*

Our analysis begins with Figure 1, where we simply document the number of new business registrations per month in our 10-state sample from January, 2011, through December, 2023 (denoting the March 20 onset of the pandemic). We include a simple red fitted line for the period from January, 2011 – February 2020, and a second trend line for March 2020 – December 2023. We observe that new business registrations follow a well-defined annual cycle, and exhibit a modest upward trajectory in the first phase (increasing at a rate of ~ 5% per year). We then observe a one-month decline in March 2020, followed by a "level shift" towards a higher rate (averaging more than 180000 registrations per month during 2020). This higher level is maintained through the end of 2023, and exhibits a modestly higher slope than the previous period (growing at ~ 6.5% per year).

These data, drawn from state-level business registration records, are consistent with the broad patterns documented in the BFS, even though the BFS is itself calculated from a separate source of administrative data (i.e., Federal tax identification number applications rather than business registrations). Findings by Decker and Haltiwanger (2023) and Van Nostrand (2024), for example, leverage Business Formation Statistics and find that total EIN applications averaged 40% higher in 2023 and 50% higher than the 2019 pace in 2023 and 2024, respectively. Moreover, the fact that the sustained upward shift following the COVID schism is comprised larges of new businesses organized as partnerships and LLCs (and not corporations) suggests that this broad-based improvement in entrepreneurship is being led by “Main Street” businesses rather than firms with more national or global ambitions from the outset.

*The Impact of COVID on Entrepreneurship in Black Neighborhoods*

We then dive into the core of our analysis, examining the changing dynamics of entrepreneurship within Black neighborhoods. To do so, we draw on the ZCTA-level dataset including the rate of new business formation for 3940 ZIP Codes from 2011 through 2023. We begin our analysis in Table 2 by documenting how the historical rate of entrepreneurship varies by the percentage of Black residents in that neighborhood. We do so by considering a panel dataset from 2011-2015 (thus avoiding any distortions that may have arisen from the aftermath

of the 2008 financial crisis and subsequent Great Recession. We implement a set of regressions that simultaneously include ACS measures for log(median income), log(population) and population density, state and year fixed effects, and a full set of leading three-digit or leading four-digit ZCTA fixed effects. In other words, in the four-digit ZCTA fixed effect specifications, we are only leveraging variation within the nine adjacent ZIP Codes that share the same first four digits (e.g., 1178 would include ZIP Codes 11780 through 11789, all of which are in western Suffolk County, New York).

The results are presented in Table 2. The first column reports the regression coefficient for our specification, including only state and year fixed effects. The coefficient for percentage of Non-Hispanic Black is negative and not significant. When we control for three-digit and four-digit ZCTA fixed effects (columns 2 and 3), however, this coefficient becomes large and significant. As the proportion of Black residents in a neighborhood goes from 0 to 100 percent, the expected number of new business registrations falls by 224-260 relative to the mean across our sample. Put another way, a one standard deviation shift in Black percentage (0.166) is associated with a 0.09 of a standard deviation shift in the expected number of firms in that zip code (the standard deviation for firm registrations is 423). We obtain similar results (both in magnitude and significance as we add additional controls, including four-digit ZCTA and year fixed effects, as well as (logged) median income, population and population density. As well, and not surprisingly, increases in median income and population are associated with higher rates of startup formation. Our final column (6) provides coefficients in percentage terms and similarly finds large and statistically significant results. Shifting the proportion of Black residents from 0 to 1 is associated with a 36% decline in the relative rate of startup formation.

We then turn in Table 3 to an equivalent set of regressions but focusing on the 2020 and 2021 period. The results are striking. The coefficients for Percent Non-Hispanic Black are now positive, larger in absolute magnitude and significant. Whereas from 2011-2015, greater proportions of Black residents in a given ZIP code/year predict lower rates of startup formation, the opposite is true in 2020 and 2021. In each of those years, increasing the share of Black residents from 0 to 1 is associated with an average annual increase of 300-350 new business registrations above the mean, after accounting for median income and population and controlling

for year and regional variation. In sharp contrast to earlier years, shifting the fraction of Black residents from 0 to 1 increases the proportion of Black residents by 62% increase (column 6).

We put these analyses of two distinct "eras" together in Table 4, where we focus on a specification that examines the interaction between percentage Non-Hispanic Black and year for each year between 2011 and 2023, and including controls for ZIP4 fixed effects, year effects, and ACS 2011 measures of income, population and density. In the first two columns, we consider the absolute and logged number of firms, followed by the number of LLCs, corporations, and Delaware corporations. The results align with the earlier findings. Coefficients for the interacted year and percent Black variables are (with a handful of exceptions) negative, large, and significant from 2011 through 2018, although the trend in magnitude decreases over time. Coefficients in 2019 are, for the most part, not significant. The coefficient then registers as positive in 2020, 2021 and 2022, and converges back to an insignificant result for 2023. The results are driven by LLCs (as indicated in column 3), with smaller and noisy patterns for Corporations and Delaware registrants.

Figure 2 represents these results graphically, showing the annual coefficients of the interaction between year effects and the percent of residents in a ZIP code that are Black in 2011, and including 95% confidence intervals clustered at the four-digit ZCTA level. When presented in this fashion, the changing geography of entrepreneurship in the wake of COVID becomes clear. Relative to the baseline rate of startup formation predicted across all states and ZIP codes in our sample, neighborhoods with a higher proportion of Black residents experienced depressed rates of startup formation prior to the pandemic and sharply accelerated rates thereafter. That said, the rate of startup formation in Black neighborhoods may be reverting to the mean. While the surge in entrepreneurship following the pandemic appears to reflect an upward shift in the "supply" of new business registrations, the rate of startup formation in Black neighborhoods is falling in 2022 and 2023. and may not "settle" above prepandemic levels over the long term.

We then undertake a more granular analysis of the precise "growth" trajectory occurring just before and then during the pandemic in Table 5, where we regress the DHS Growth measure on Percent Non-Hispanic Black, Log(Median Income), Log(Population) Population Density, along with year and ZIP4 fixed effects. Our core finding is presented in columns 1 and 2, where we compare growth rates between 2020 and 2019, and 2021 and 2019, respectively. The coefficient

for *Percent Non-Hispanic Black* is positive and significant for each of the 2020 vs 2019 and 2021 vs 2019 DHS Growth Ratios. We then examine the dynamics of growth on an annual basis for 2021 and 2022, documenting that the rate of growth in startup formation in Black neighborhoods flattens in 2021 relative to 2020 and then declines in 2022 relative to 2021. These results highlight the importance of the presence of a Black population in predicting regional entrepreneurship response at a microgeographic level following the onset of the pandemic. They also potentially raise a cause for concern that the potential gains in business dynamism observed in Black communities are receding and pre-pandemic disparities may resurface over time.

We then consider a set of potential explanations and confounders for these core findings. It is possible that, rather than being associated with Black neighborhoods per se, there are other time-varying demographic measures which are driving the striking increase in entrepreneurship in historically Black neighborhoods. We first consider whether various measures of income, either as a level in 2011, or in terms of lagged changes in income (representing for example changing income dynamics within neighborhoods) are driving these relationships. Specifically, in Table 6, we compare our core regression findings (column 1), with interactions between year and the level of median income in 2011, or with interactions between year and lagged changes in income in that zip code. Across both of these tests, the findings related to Black neighborhoods remains similar (or the coefficients on the 2020 and 2021 period actually increase in size). Similarly, n Table 7, we apply the same methodology to consider whether the observed correlation of Percent Non-Hispanic Black to the rate of startup formation attenuates due to population density. We find it does not. When controlling for Population Density and the change in population density, our results are effectively identical to the baseline relationship observed. Table 8 considers several additional alternatives, including Percent living in the same house one year ago, Percent employed, Jobs worked from home, Total households, and Total commute time. With the possible exception of total commute time, the coefficients are largely consistent in magnitude and directionality with those reported in Tables 3 and 4. While there is some reduction in statistical significance in certain years, the joint significance of each results (in terms of whether there is a positive "boost" in 2020 and 2021 relative to the pre-2020 annual interaction effects) remain strongly significant. Together, our results document that, across a wide range of specifications and control structures, ZIP Codes including a higher proportion of Black residents, higher median incomes, and higher median income Black neighborhoods are

associated with higher growth in startup formation rates from 2020 through 2023, although the rate of growth in startup formation is decreasing over time.

*The Changing Nature of Entrepreneurship in Black Neighborhoods*

Given the striking nature of our results, we undertook a more descriptive and preliminary analysis of whether there is a shift in the "nature" of entrepreneurship within Black neighborhoods. Specifically, our analysies was motivated by the observation that the onset of the pandemic (essentially) coincided with a much higher level of civil activism within the Black community, particularly in the wake of the murder of George Floyd in May, 2020.

We begin with a simple but descriptive exercise where we considered a set of two zip codes drawn from a state, Georgia, that has been historically associated with a high level of Black civil activism, and where there are significant variation across zip codes in the population of Black residents. Specifically, we consider Kirkwood (30316, 57% Black) and Richmond Hill (31324, 11% Black), which have roughly the same income, population and density but vary in terms of their racial composition. In Table 9 we simply list 20 business registration names from these two zip codes in 2011 and 2021. Two key qualitative patterns stand out. First, in 2011, the names from the two zip codes (though varied) are similar to each other (e.g., MRS.T'S BAKED GOODS&CATERING in Richmond Hill versus LOTTIE'S HOME INVESTMENTS in Kirkwood). In 2021, however, the names of businesses in Kirkwood are far more "active" (relative to 2021 Richmond Hill and both lists from 2011). For example, the 2021 Kirkland cohort includes POWER THREADS and MONEY MISSION MUSIC, among others.

While visual inspection of name lists is not persuasive on its own, this exercise nonetheless motivates our more systematic analysis, where we measure the "positive emotional" content for each name in our dataset utliizing LIWC-22 (Pennebaker et al., 2022). LIWC-22 is a validated text analysis tool that quantifies the emotional and cognitive attributes present in textual data by scanning for words across various psychological categories. By applying LIWC-22 to the names of newly registered businesses, we measured the presence of positive emotion words—such as "joy," "hope," and "unity"—which can serve as proxies for the underlying motivations and sentiments of the entrepreneurs. Table 10 provides a comparison of names that are associated with a 0 versus > 0 Positive Emotion score.

Finally, we examine, in a preliminary way, the correlation between *Positive Emotion* (summed across all businesses in a zip-code year), and the interaction between percentage Black residents interacted with time variables. Our key result is in Figure 3, which demonstrates a strikingly similar pattern to our earlier findings for the overall shift in the geography of entrepreneurship towards Black neighborhoods in 2020-2022.

In other words, these results suggest the overall increase in entrepreneurial activity in Black neighborhoods during the pandemic tracks with an uptick in "positive emotion" within business names. This correlation suggests that the same social and economic dynamics driving the rise in start-up rates—such as increased civil activism, community empowerment, and the embrace of the passion economy—may also be influencing the way entrepreneurs choose to represent their businesses. The heightened use of positive emotion words could reflect a deliberate effort to convey optimism, resilience, and a strong connection to community values.

## V. Conclusions

As a leading economic indicator, new firm formation rates can signal recession, stagnation or growth. Changes in the rate and geography of startup formation during times of crisis and recovery can also surface priorities for policy. This paper leverages our unique dataset of business registration records to further investigate the upward supply shift in new busienss registrations observed following the onset of COVID and to add a new layer of granularity to the wave of recent scholarship around this important phenomenon.

We confirm the sustained upward shift in new firm formation observed in other data sources and contribute to the literature around this phenomenon by observing that the step up in new firm formation appears to be centered on “Main Street.” The sustained expansion in startup formation is being led by new businesses formed as LLCs and partnerships –new businesses that generally rely on debt financing (as opposed to venture capital) to grow. Federal programs making low-interest loans available for fledgling firms is likely to be fundamental in converting this potential source of business dynamism into economy-wide growth.

The microgeography of the step up in startup formation likewise yields important insights. Increases in the level of new firm formation as well as the growth rate have not been associated

with traditional hubs of business dynamism in regions across the country, but instead are centered in areas with a higher Black population. Moreover, the changing geography of entrepreneurship following COVID highlights the importance of MBE growth in economic recovery. Indeed, initiatives like BE NYC (Black Entrepreneurs NYC) launched in 2019 are aimed at increasing Black entrepreneurship by bringing access to capital, business background, reliable resources, customers, affordable workspaces and networking to Black-owned businesses.[6] The knowledge, networking and market access that such initiatives can bring to fledgling firms may complement more blunt federal policies by increasing access to capital.

[6] https://www1.nyc.gov/site/sbs/businesses/black-entrepreneurs-nyc.page

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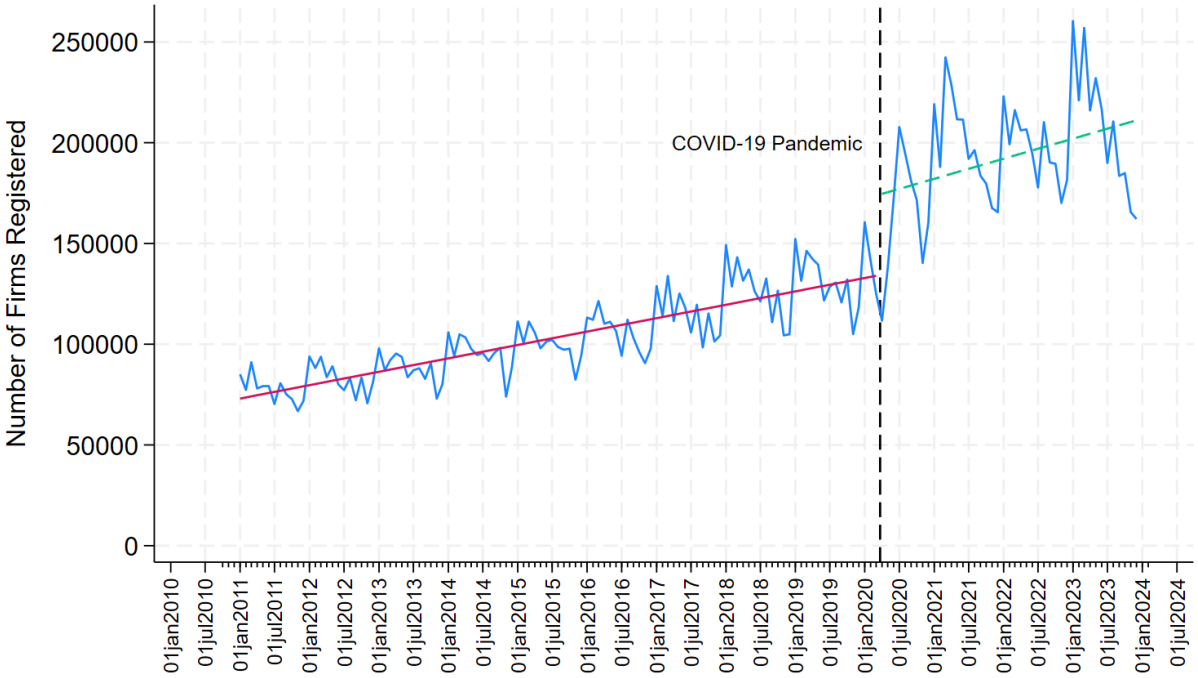
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**Table 1. Summary Statistics**

| | N | Mean | Std. Dev. |
|---|---|---|---|
| **Startup Data** | | | |
| Number of Firms | 51220 | 337.033 | 423.463 |
| Number of LLCs | 51220 | 254.890 | 352.780 |
| Number of Corporations | 51220 | 82.143 | 124.944 |
| Number of Delaware Corporations | 51220 | 2.023 | 8.522 |
| | | | |
| **Neighborhood Demographic Data** | | | |
| Log(Number of Firms) | 51220 | 5.388 | 0.911 |
| Population Density (ppl / m2) | 47280 | 0.002 | 0.004 |
| Percent with a Mortgage | 47239 | 0.650 | 0.122 |
| Average Home Value | 47088 | 3.98e+05 | 3.67e+05 |
| Percent Black | 47280 | 0.123 | 0.166 |
| Percent Hispanic | 47280 | 0.231 | 0.213 |
| Percent Work from Home | 47280 | 0.044 | 0.034 |
| Percent Employed | 47280 | 0.698 | 0.070 |
| Total Population | 47280 | 30005.731 | 18369.733 |
| Median Income | 46344 | 34131.905 | 14010.659 |
| Log(Total Population) | 47280 | 10.101 | 0.705 |
| Log(Median Income Contemporaneous) | 46344 | 10.366 | 0.373 |
| | | | |
| **Emotional Content of Firm Names** | | | |
| Positive Emotion (Sum) | 46112 | .583 | 1.097 |
| Mean Positive Emotion | 46112 | .002 | 0.007 |

Note: Data is at the ZIP Code level, for 10 states from 2011 to 2023. Counts of startups are from Startup Cartography Project. Neighborhood characteristics from the American Community Survey.

**Figure 1. Monthly Entrepreneurship Rates Before and After COVID**




Note: This figure reports the total number of firms created in ten states each month, with a fitted line for the period before and a fitted line for the period after March of 2020, which we consider as the start of COVID in the United States.

**Table 2. Enterpreneurship in Black Neighborhoods, 2011 to 2015**

| | Obs | Obs | Obs | Obs | Obs | Log(Obs) | Obs6 |
|---|---|---|---|---|---|---|---|
| Perc. Non-Hispanic Black [2011] | -34.92 | -224.16*** | -260.73*** | -161.45*** | -260.73*** | -0.36*** | |
| | (25.71) | (32.91) | (42.32) | (41.89) | (42.32) | (0.09) | |
| Log(Median Income) [2011] | | | | 176.02*** | | 0.77*** | |
| | | | | (18.02) | | (0.06) | |
| Log(Population) [2011] | | | | 130.69*** | | 0.60*** | |
| | | | | (8.46) | | (0.03) | |
| Population Density [2011] | | | | 695.64 | | 1.69 | |
| | | | | (2950.79) | | (7.09) | |
| Perc. Non-Hispanic Black [2011] | | | | | | | 0.00 |
| | | | | | | | (0.00) |
| Log(Median Income) [2011] | | | | | | | 0.00 |
| | | | | | | | (0.00) |
| Log(Population) [2011] | | | | | | | 0.00 |
| | | | | | | | (0.00) |
| Population Density [2011] | | | | | | | 0.00 |
| | | | | | | | (0.00) |
| Intercept | 231.97*** | 255.04*** | 259.50*** | -2873.06*** | 271.67*** | -8.80*** | 5.03*** |
| | (7.90) | (5.95) | (5.16) | (231.26) | (5.38) | (0.80) | (0.00) |
| Year F.E. | Yes | Yes | Yes | Yes | | Yes | Yes |
| State F.E. | Yes | Yes | Yes | Yes | Yes | Yes | |
| ZIP3 F.E. | | Yes | | | | | |
| ZIP4 F.E. | | | Yes | Yes | | Yes | |
| ZIP by Year F.E. | | | | | Yes | | |
| ZIP Code F.E. | | | | | | | Yes |
| N | 19705 | 19705 | 19705 | 19705 | 17890 | 19705 | 19705 |
| R2 | 0.10 | 0.46 | 0.60 | 0.68 | 0.59 | 0.78 | 0.98 |

Note: Sample is all zip codes in our data, with five observations each from 2011 to 2015. All independent variables retrieved from the American Community Survey 5-year 2011 estimates. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zip codes. Standard errors clustered at the ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Table 3. Enterpreneurship in Black Neighborhoods After COVID-19, 2020 and 2021**

| | Obs | Obs | Obs | Obs | Obs | Obs6 | Log(Obs) |
|---|---|---|---|---|---|---|---|
| Perc. Non-Hispanic Black [2011] | 474.95*** | 138.23 | 353.66*** | 308.55*** | 308.55*** | | 0.62*** |
| | (71.77) | (126.27) | (64.20) | (83.36) | (83.38) | | (0.08) |
| Log(Median Income) [2011] | | | 326.06*** | 325.72*** | 325.72*** | | 0.62*** |
| | | | (27.02) | (31.73) | (31.73) | | (0.05) |
| Log(Population) [2011] | | | 287.46*** | 296.73*** | 296.73*** | | 0.66*** |
| | | | (15.07) | (17.78) | (17.79) | | (0.03) |
| Population Density [2011] | | | 687.23 | -300.77 | -300.77 | | 0.13 |
| | | | (3670.14) | (3182.94) | (3183.57) | | (6.08) |
| Perc. Non-Hispanic Black [2011] | | | | | | 0.00 | |
| | | | | | | (0.00) | |
| Log(Median Income) [2011] | | | | | | 0.00 | |
| | | | | | | (0.00) | |
| Log(Population) [2011] | | | | | | 0.00 | |
| | | | | | | (0.00) | |
| Population Density [2011] | | | | | | 0.00 | |
| | | | | | | (0.00) | |
| Intercept | 412.33*** | 453.38*** | -5807.56*** | -5889.70*** | -5874.20*** | 470.23*** | -7.33*** |
| | (13.34) | (15.39) | (367.94) | (425.14) | (425.68) | (0.00) | (0.67) |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| ZIP3 F.E. | | | Yes | | | | |
| ZIP4 F.E. | | Yes | | Yes | | | Yes |
| N | 7882 | 7882 | 7882 | 7882 | 7156 | 7882 | 7882 |
| R2 | 0.14 | 0.52 | 0.52 | 0.61 | 0.60 | 0.97 | 0.81 |

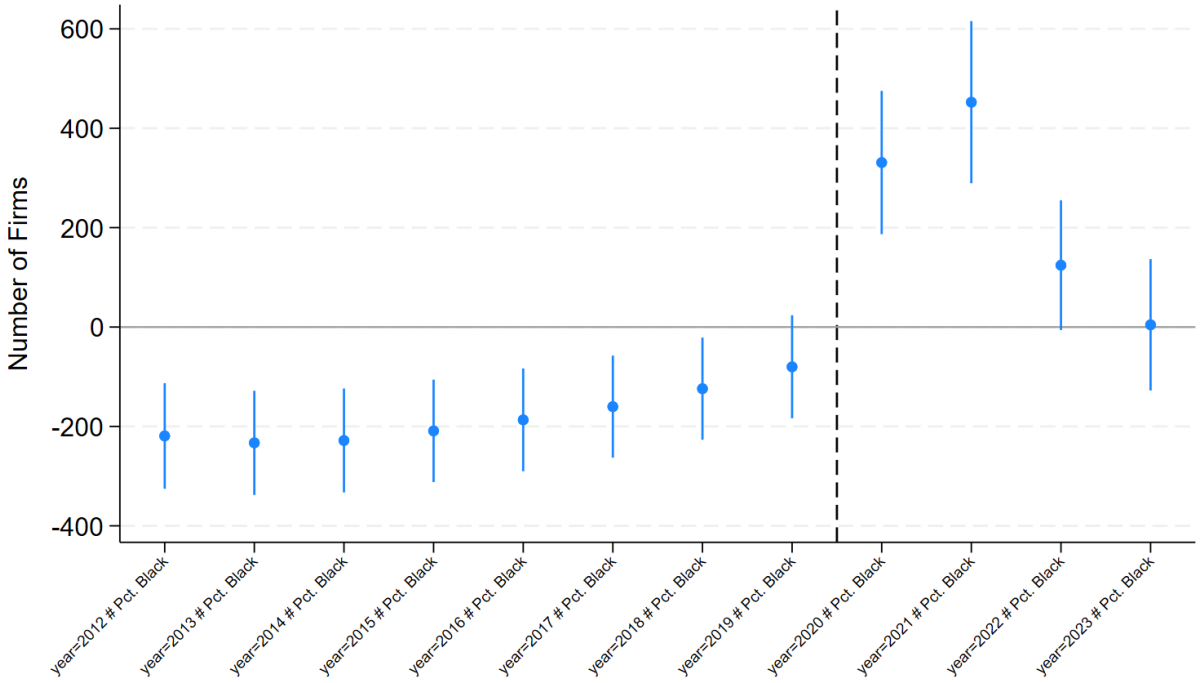
Note: Sample is all zip codes in our data, with two observations each, one in 2020 and one in 2021. All independent variables retrieved from the American Community Survey 5-year 2011 estimates. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Table 4. Enterpreneurship in Black Neighborhoods by Year, 2011-2023 by Type of Firm.**

| | Num. Firms | Log(Num. Firms) | Num. LLC | Num. Corporations | Num. Delaware Corporations |
|---|---|---|---|---|---|
| year # Perc. Non-Hispanic Black [2011] | | | | | |
| 2011 | -215.69*** | -0.39*** | -154.12*** | -61.58* | 0.61 |
| | (54.50) | (0.09) | (36.79) | (24.71) | (0.52) |
| 2012 | -219.15*** | -0.38*** | -152.98*** | -66.17** | 0.21 |
| | (54.13) | (0.09) | (35.97) | (24.59) | (0.49) |
| 2013 | -233.04*** | -0.46*** | -162.48*** | -70.57** | 0.09 |
| | (53.44) | (0.08) | (35.40) | (24.52) | (0.48) |
| 2014 | -228.22*** | -0.41*** | -156.18*** | -72.04** | -0.45 |
| | (53.29) | (0.08) | (34.90) | (24.69) | (0.45) |
| 2015 | -208.90*** | -0.33*** | -139.36*** | -69.54** | -0.70 |
| | (52.51) | (0.08) | (34.43) | (23.89) | (0.47) |
| 2016 | -186.75*** | -0.27*** | -118.56*** | -68.19** | -0.27 |
| | (52.67) | (0.08) | (33.89) | (24.26) | (0.47) |
| 2017 | -160.17** | -0.20* | -94.63** | -65.54** | -0.28 |
| | (52.32) | (0.08) | (33.63) | (24.10) | (0.50) |
| 2018 | -124.00* | -0.13 | -53.82 | -70.17** | -0.52 |
| | (52.39) | (0.08) | (33.59) | (24.33) | (0.56) |
| 2019 | -80.04 | 0.00 | -10.20 | -69.84** | -0.76 |
| | (52.79) | (0.08) | (34.61) | (24.36) | (0.70) |
| 2020 | 330.98*** | 0.69*** | 378.28*** | -47.30 | -0.41 |
| | (73.47) | (0.09) | (59.45) | (24.33) | (0.69) |
| 2021 | 452.44*** | 0.77*** | 510.09*** | -57.65* | -0.18 |
| | (83.14) | (0.09) | (69.61) | (24.44) | (0.77) |
| 2022 | 124.41 | 0.34*** | 210.21*** | -85.80*** | -0.19 |
| | (66.52) | (0.09) | (50.66) | (25.21) | (0.78) |
| 2023 | 4.48 | 0.13 | 101.62* | -97.13*** | -0.20 |
| | (67.32) | (0.09) | (51.77) | (26.10) | (0.76) |
| Log(Median Income) [2011] | 231.51*** | 0.68*** | 220.27*** | 11.24 | 2.96*** |
| | (24.20) | (0.06) | (18.52) | (8.59) | (0.56) |
| Log(Population) [2011] | 203.57*** | 0.63*** | 157.01*** | 46.56*** | 0.37* |
| | (12.04) | (0.03) | (9.46) | (3.58) | (0.16) |
| Population Density [2011] | 255.11 | 0.50 | -865.78 | 1120.89 | -54.37 |
| | (2914.72) | (6.41) | (1830.39) | (1449.35) | (165.12) |
| Intercept | 336.99*** | 5.39*** | 254.87*** | 82.13*** | 2.02*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Year F.E. | Yes | Yes | Yes | Yes | Yes |
| State F.E. | Yes | Yes | Yes | Yes | Yes |
| ZIP3 F.E. | Yes | Yes | Yes | Yes | Yes |
| ZIP4 F.E. | 51233 | 51233 | 51233 | 51233 | 51233 |
| N | 0.51 | 0.80 | 0.47 | 0.58 | 0.36 |

Note: OLS regression. Sample is all zip codes in our data, with 13 observations each, one per year from 2011 to 2023. All independent variables retrieved from the American Community Survey 5-year 2011 estimates. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Startup data from the Startup Cartography Project. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Figure 2. Annual Relationship of ZIP Code Entrepreneurship to the Percent Non-Hispanic Black in 2011**




Note: This figure reports the coefficients of the interaction between year effects and the percent of residents in a zip code that are Black in 2011, to zip code level entrepreneurship by year. 95 percent confidence intervals clustered at the ZIP4 level are included. Additional controls are not reported. The full regression is reported in Table 4, column 1.

**Table 5. Enterpreneurship in Black Neighborhoods Before COVID-19**

| | DHS Growth: 2020 vs 2019 | DHS Growth: 2021 vs 2019 | DHS Growth: 2021 vs 2020 | DHS Growth: 2022 vs 2021 |
|---|---|---|---|---|
| Perc. Non-Hispanic Black [2011] | 0.57*** | 0.54*** | -0.00 | -0.39*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Log(Median Income) [2011] | -0.01 | -0.09*** | -0.08*** | -0.07*** |
| | (0.01) | (0.02) | (0.01) | (0.01) |
| Log(Population) [2011] | 0.03*** | 0.03*** | 0.01 | 0.01 |
| | (0.01) | (0.01) | (0.00) | (0.01) |
| Population Density [2011] | 2.55 | 0.37 | -2.30 | -2.62 |
| | (1.66) | (1.63) | (1.57) | (1.52) |
| Intercept | -0.05 | 0.88*** | 0.96*** | 0.69*** |
| | (0.14) | (0.17) | (0.12) | (0.13) |
| Year F.E. | Yes | Yes | Yes | Yes |
| State F.E. | Yes | Yes | Yes | Yes |
| ZIP4 F.E. | Yes | Yes | Yes | Yes |
| N | 3578 | 3578 | 3578 | 3578 |
| R2 | 0.65 | 0.70 | 0.46 | 0.50 |

Note: OLS regression. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Startup data from the Startup Cartography Project. For each zip code, we estimate the Davis-Hatiwanger-Shu growth estimate between entrepreneurship in a year and entrepreneurship in a previous year (for example, column 1 reports growth from 2019 to 2020). The DHS growth estimate for a variable x between years 1 and 2 is computed as (x_2-x_1)/(.5*(x_2+x_1)) Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Table 6. Does the Relationship of Percent Black to Entrepreneurship Attenuate Due to Neighborhood Income?**

| | Main Values | Median Income Controls | Δ Median Income Controls |
|---|---|---|---|
| year # Perc. Non-Hispanic Black [2011] | | | |
| 2016 | -349.43*** | -233.69*** | -349.42*** |
| | (58.98) | (61.31) | (59.33) |
| 2017 | -322.87*** | -202.69** | -324.05*** |
| | (58.87) | (61.50) | (59.25) |
| 2018 | -286.72*** | -157.98* | -288.35*** |
| | (59.28) | (61.86) | (59.53) |
| 2019 | -242.78*** | -116.97 | -244.39*** |
| | (60.09) | (62.98) | (60.22) |
| 2020 | 168.22* | 303.53*** | 168.64* |
| | (79.41) | (85.30) | (78.71) |
| 2021 | 289.62** | 423.27*** | 288.45*** |
| | (88.18) | (96.53) | (87.32) |
| 2022 | -38.46 | 63.17 | -37.16 |
| | (72.08) | (79.85) | (71.64) |
| Log(Median Income Contemporaneous) | | 146.18*** | |
| | | (24.76) | |
| year # Log(Median Income Contemporaneous) | | | |
| 2016 | | 0.00 | |
| | | (0.00) | |
| 2017 | | 6.72* | |
| | | (2.77) | |
| 2018 | | 19.79*** | |
| | | (5.62) | |
| 2019 | | 16.66 | |
| | | (9.12) | |
| 2020 | | 32.34* | |
| | | (15.82) | |
| 2021 | | 27.86 | |
| | | (22.71) | |
| 2022 | | -12.84 | |
| | | (24.82) | |
| Δ Log(Median Income Contemporaneous) | | | 70.19 |
| | | | (47.93) |
| year # Δ Log(Median Income Contemporaneous) | | | |
| 2016 | | | 0.00 |
| | | | (0.00) |
| 2017 | | | -62.05*** |
| | | | (14.95) |
| 2018 | | | -84.56*** |
| | | | (23.07) |
| 2019 | | | -124.18*** |
| | | | (28.17) |
| 2020 | | | -278.61*** |
| | | | (42.52) |
| 2021 | | | -328.62*** |
| | | | (60.68) |
| 2022 | | | -260.27*** |
| | | | (60.43) |
| Intercept | 398.51*** | 372.86*** | 415.19*** |
| | (7.82) | (9.52) | (9.21) |
| Year F.E. | Yes | Yes | Yes |
| State F.E. | Yes | Yes | Yes |
| ZIP4 F.E. | Yes | Yes | Yes |
| N | 27580 | 27573 | 27573 |
| R2 | 0.49 | 0.49 | 0.49 |

Note: OLS regression. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Startup data from the Startup Cartography Project. The measure for percent Black is as of 2011 in each neighborhood. We allow median income to move each year based on newly published estimates in the ACS. Column 2 controls for the value of median income in each neighborhood. Column 3 for the change in median income since 2011. We do not include 2023 as there is no ACS data released for 2023 as if this writing. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Table 7. Does the Relationship of Percent Black to Entrepreneurship Attenuate Due to Population Density?**

| | Baseline Relationship | Population Density Controls | Δ Population Density Controls |
|---|---|---|---|
| year # Percent Black | | | |
| 2016 | -329.19*** | -326.94*** | -326.94*** |
| | (62.52) | (62.51) | (62.51) |
| 2017 | -300.24*** | -298.77*** | -298.77*** |
| | (63.26) | (63.29) | (63.29) |
| 2018 | -261.47*** | -262.30*** | -262.30*** |
| | (63.84) | (63.92) | (63.92) |
| 2019 | -211.32** | -213.73** | -213.73** |
| | (65.33) | (65.55) | (65.55) |
| 2020 | 248.90** | 248.47** | 248.47** |
| | (85.51) | (85.42) | (85.42) |
| 2021 | 411.35*** | 407.99*** | 407.99*** |
| | (95.38) | (95.60) | (95.60) |
| 2022 | 45.26 | 41.44 | 41.44 |
| | (79.52) | (79.85) | (79.85) |
| Population Density (ppl / m2) | | 10024.55 | |
| | | (14778.27) | |
| year # Population Density (ppl / m2) | | | |
| 2016 | | 0.00 | |
| | | (0.00) | |
| 2017 | | 1226.33 | |
| | | (2429.26) | |
| 2018 | | 15303.06 | |
| | | (14180.28) | |
| 2019 | | 26248.05 | |
| | | (23133.24) | |
| 2020 | | 18077.41 | |
| | | (20615.69) | |
| 2021 | | 14668.12 | |
| | | (22071.12) | |
| 2022 | | 15548.22 | |
| | | (21424.66) | |
| Δ Population Density (ppl / m2) | | | 10024.55 |
| | | | (14778.27) |
| year # Δ Population Density (ppl / m2) | | | |
| 2016 | | | 0.00 |
| | | | (0.00) |
| 2017 | | | 1226.33 |
| | | | (2429.26) |
| 2018 | | | 15303.06 |
| | | | (14180.28) |
| 2019 | | | 26248.05 |
| | | | (23133.24) |
| 2020 | | | 18077.41 |
| | | | (20615.69) |
| 2021 | | | 14668.12 |
| | | | (22071.12) |
| 2022 | | | 15548.22 |
| | | | (21424.66) |
| Intercept | 391.95*** | 389.06*** | 391.17*** |
| | (8.53) | (8.75) | (8.53) |
| Year F.E. | Yes | Yes | Yes |
| State F.E. | Yes | Yes | Yes |
| ZIP4 F.E. | Yes | Yes | Yes |
| N | 27580 | 27580 | 27580 |
| R2 | 0.49 | 0.49 | 0.49 |

Note: OLS regression. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Startup data from the Startup Cartography Project. The measure for percent Black is as of 2011 in each neighborhood. We allow population density to move each year based on newly published estimates in the ACS. Column 2 controls for the value of population density in each neighborhood. Column 3 for the change in population density since 2011. We do not include 2023 as there is no ACS data released for 2023 as if this writing. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Table 8. Determinants of Neighborhood Entrepreneurship, Percent Black vs Other Possible Controls**

| | Controlling For Growth In: | | | | |
|---|---|---|---|---|---|
| | Percent of Residents Living in Same House 1 Year Ago | Percent Employed | Number of People Who Work from Home | Total Households | Average Commute Time |
| year # Perc. Non-Hispanic Black [2011] | | | | | |
| 2016 | -356.53*** | -306.70*** | -149.16** | -350.93*** | -364.80*** |
| | (60.37) | (60.61) | (49.45) | (50.94) | (51.96) |
| 2017 | -331.50*** | -280.18*** | -115.24* | -331.21*** | -346.89*** |
| | (60.23) | (60.12) | (50.03) | (50.41) | (51.59) |
| 2018 | -298.08*** | -242.87*** | -64.97 | -305.09*** | -319.65*** |
| | (60.66) | (60.22) | (50.95) | (50.45) | (51.59) |
| 2019 | -253.64*** | -204.40*** | -21.10 | -268.02*** | -283.63*** |
| | (61.52) | (60.96) | (51.90) | (51.04) | (51.98) |
| 2020 | 157.48 | 203.32* | 409.86*** | 114.79 | 103.97 |
| | (81.27) | (80.44) | (75.94) | (66.90) | (67.42) |
| 2021 | 269.37** | 319.56*** | 550.02*** | 209.57** | 185.02* |
| | (89.95) | (89.00) | (85.44) | (74.42) | (75.85) |
| 2022 | -58.77 | -4.51 | 207.66** | -116.90 | -148.01* |
| | (74.25) | (72.02) | (66.55) | (61.63) | (61.73) |
| Year F.E. | Yes | Yes | Yes | Yes | Yes |
| State F.E. | Yes | Yes | Yes | Yes | Yes |
| ZIP4 F.E. | Yes | Yes | Yes | Yes | Yes |
| N | 27580 | 27580 | 27580 | 27580 | 27580 |
| R2 | 0.49 | 0.49 | 0.60 | 0.62 | 0.60 |

Note: OLS regression. All measures are directly from the American Community Survey. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Startup data from the Startup Cartography Project. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Table 9. A Sample of Firm Names in Two Georgia Neighborhoods.**

| Richmond Hill (31324, 11% Black) | Year | Kirkwood (30316, 30317, 50% Black) | Year |
|---|---|---|---|
| LEG/MEG 270 DEAN FOREST, LLC | 2011 | LADY MAKE UP INC. | 2011 |
| LEG/MEG HALF HIGH BLUFF, LLC | 2011 | ANSWER THE BELL "LLC" | 2011 |
| SAVANNAH PROPERTIES & INVESTMENTS, LLC | 2011 | SINGH & DEYS INTERNATIONAL, INC | 2011 |
| MATT HOWARD ENTERPRISES, LLC | 2011 | LOVE MONSTERS, LLC | 2011 |
| DFF, LLC | 2011 | K. WRIGHT REALTY INC. | 2011 |
| CMILLS VIRTUAL SERVICES, LLC | 2011 | FOR THE PEOPLE IMMGRATION SERVICES LLC | 2011 |
| MRS.T'S BAKED GOODS&CATERING LLC | 2011 | LOTTIE'S HOME INVESTMENTS, LLC | 2011 |
| LOCAL MANAGEMENT GROUP , L.L.C. | 2011 | LUKE VISUAL, INC | 2011 |
| SAINATH TRADING, INC. | 2011 | TEN27 CLOTHING STORE INCORPORATED | 2011 |
| REJOICE HOUSE, LLC | 2011 | LONGSTREET SOLUTIONS INC. | 2011 |
| CROSS CUSTOM & COLLISION, LLC | 2011 | GRIND FORCE RECORDS INCORPORATED | 2011 |
| WILLIAM NORWOOD, LLC | 2011 | THEILLEGITIMATE LLC | 2011 |
| NUSYSTEM DRAFT SERVICE LLC | 2011 | SUPER SWEET 2, LLC | 2011 |
| VILLAGE ON THE HILL LEARNING CENTER, INC. | 2011 | LULU STRETCH, LLC | 2011 |
| DELNOSTRO MARKETING CONCEPTS LIMITED LIABILITY COMPANY | 2011 | WILLIAMS & WILLIAMS HAULING LLC | 2011 |
| BC CARLTON ENTERPRISES, INC. | 2011 | NOOLOGY CONSULTING LLC | 2011 |
| FROZEN YOGURT OF GEORGIA, LLC | 2011 | ANDINO CHIROPRACTIC SPECIALIST LLC | 2011 |
| DWC-J, LLC | 2011 | BARSHA 102, INC. | 2011 |
| FSM PROPERTIES, LLC | 2011 | AN ELEGANT EXPERIENCE LLC | 2011 |
| GLOBAL GOLD INC. | 2011 | 696 MIGRALU, LLC | 2011 |

| Richmond Hill (31324, 11% Black) | Year | Kirkwood (30316, 30317, 50% Black) | Year |
|---|---|---|---|
| BETHANY HOME SOLUTIONS, INC | 2021 | VISION 2021 INC | 2021 |
| STRATHY RENTALS II LLC | 2021 | FARVIEW MANAGEMENT, LLC | 2021 |
| CATHERINE V. UPSHAW, LCSW, LLC | 2021 | VISIONS UNITED LLC. | 2021 |
| GRACE'D BLADES LAWN SERVICE LLC | 2021 | MONEY MISSION MUSIC LLC | 2021 |
| SHELLAXIN BY ANGELEA LLC | 2021 | CROCHET REAL ESTATE THREE, LLC | 2021 |
| RED OAK CONSTRUCTION, LLC | 2021 | TPF DESIGNS LLC | 2021 |
| COMET AEROSPACE INC | 2021 | NATHANIEL F. WALLACE PHOTOGRAPHY LLC | 2021 |
| LOW TIDE LAWN CARE LLC | 2021 | THE DARDEN SCHOOL L.L.C. | 2021 |
| PUPPY PARADE LLC | 2021 | IDYLL REALTY COMPANY LLC | 2021 |
| LETTERS ON MY LAWN, LLC. | 2021 | SOUTHERN CULINARY & CREATIVE LLC | 2021 |
| VINTAGE BARBERS 912, LLC | 2021 | RENTERS POST, LLC | 2021 |
| SNEAK FREAKS LLC. | 2021 | BGP ATLANTA I PROPCO LLC | 2021 |
| KELLY DUNCAN REALTY LLC | 2021 | BEAVER BEND, LLC | 2021 |
| THE REAL BROWNSTONE EXPERIENCE INC | 2021 | LASH SLAY W/KAY INC | 2021 |
| ELSA'S MAGIC AND CRAFTS , LLC | 2021 | MUSHY PEOPLE LLC | 2021 |
| GINCHY GOODS LTD. CO | 2021 | 2400 CAMPBELLTON RD B1 LLC | 2021 |
| GRAHAM & SONS HAULING, LLC | 2021 | SIVERA LLC | 2021 |
| JOLYN HOMES, LLC | 2021 | MOTHERGROUND LLC | 2021 |
| SAVANNAH TRAILER RENTALS, LLC | 2021 | POWER THREADS LLC | 2021 |
| ARRCO, LLC | 2021 | GG'S CLEANING SERVICES LLC | 2021 |

Note: This table provides a sample of firms one predominantly white neighborhood (Richmond Hill, in Savannah, GA) and one predominantly Black neighborhood (Kirkwood, in Atlanta, GA).

**Table 10. High and Low Emotion Firm Names**

| Low Emotion Firm Name | Emotion Score | High Emotion Firm Name | Emotion Score |
|---|---|---|---|
| K Nicole Solutions LLC | 0 | Rated G Entertainment Inc. | .1429 |
| Loc Real Estate LLC | 0 | OUR HOPE HOUSE L.L.C. | .1111 |
| ROCKSTREET HOLDINGS LLC | 0 | Lazer Gang Entertainment LLC | .1429 |
| DUBLINSEALEY LLC | 0 | GRINDIN ENTERTAINMENT LLC. | .1667 |
| 2319 GODBY LLC | 0 | Mower Love Landscaping LLC | .1429 |
| NEX-US OF WEALTH BUILDERS LLC | 0 | The Baker's Man Delights LLC | .125 |
| Massava Rose LLC | 0 | Camille's Joy Box LLC | .1429 |
| Together Never Apart LLC | 0 | GOOD VIBES PAINTING LLC | .1429 |
| Chari Amour L.L.C. | 0 | GAATL101 GOOD 1550 ROADHAVEN DRIVE LLC | .1111 |
| Cleanopatras Cleaning More LLC. | 0 | Love My Tone LLC | .1429 |
| Photo Shoot Cuts LLC | 0 | Creative Smiles and Accessories Incorporated | .125 |
| Chiyah's Wardrobe LLC | 0 | Urban Mafia Queenz Entertainment LLC | .125 |
| WATTS LOGISTICS SOULUTIONS L.L.C. | 0 | Good Idea Fox LLC | .1429 |
| The Day Staycation LLC | 0 | Good Credit Great Life LLC | .125 |
| Molero CH LLC | 0 | AMillie Locs n Love LLC | .125 |
| C.J. Legacy Investment Properties LLC | 0 | Rich Dreamz Entertainment LLC | .1429 |
| Red Dot Technology LLC | 0 | VIVID SMILES 2U LLC | .1429 |
| KIMABOSS AHLEXIS BUNDLES AND LASHES LLC | 0 | Love Exquisite LLC. | .1667 |
| Fangoria Studios LLC | 0 | Luna Love Apothecary LLC | .1429 |
| Dunkin Development LLC | 0 | Sweet Southern Delight Scent Company LLC | .1111 |

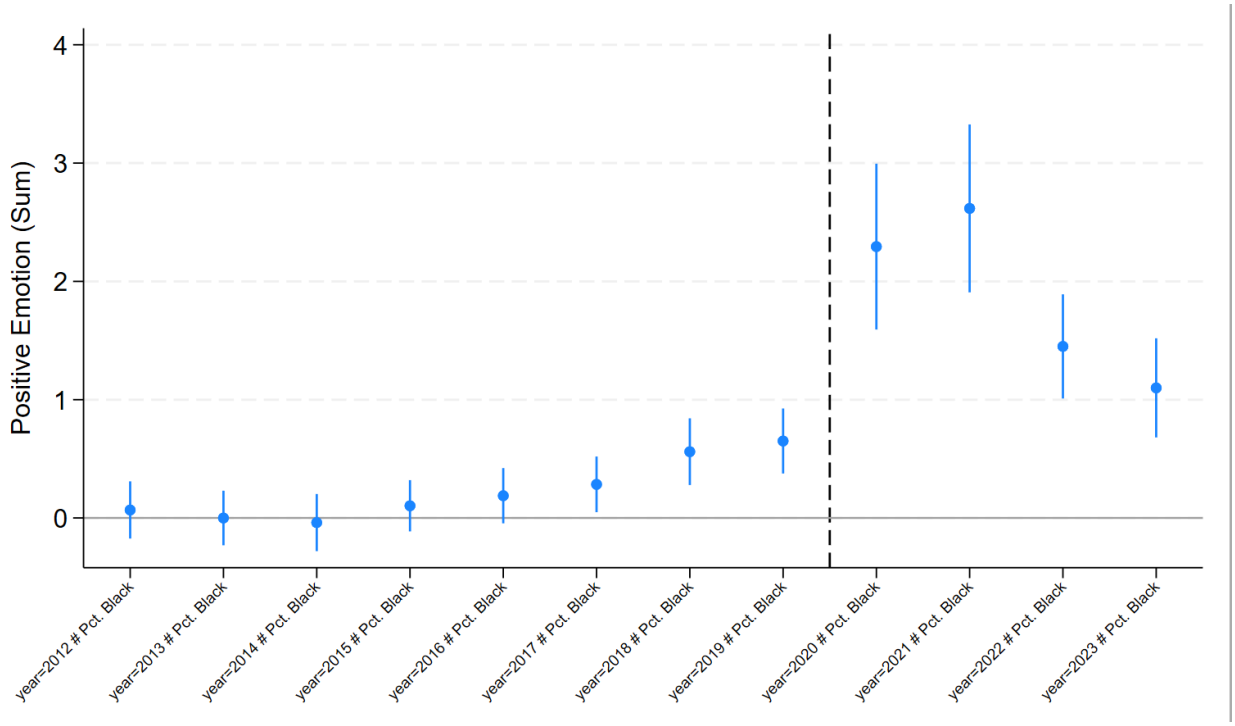
Note: This table provides a sample of firms that score high and low on positive emotion in the LIWC algorithm.

**Table 11. Positive Emotion Firms in Black Neighborhoods, 2020 and 2021**

| | Total Positive Emotion | Log(Average Positive Emotion) |
|---|---|---|
| Perc. Non-Hispanic Black [2011] | 1.99*** | 0.77*** |
| | (0.35) | (0.06) |
| Log(Median Income) [2011] | 0.64*** | 0.00 |
| | (0.10) | (0.04) |
| Log(Population) [2011] | 0.56*** | 0.03 |
| | (0.05) | (0.02) |
| Population Density [2011] | -5.87 | 23.84** |
| | (7.86) | (8.20) |
| Intercept | -11.55*** | -6.45*** |
| | (1.37) | (0.47) |
| | Yes | Yes |
| | Yes | Yes |
| | 7005 | 4107 |
| | 0.67 | 0.38 |

Note: Sample is all zip codes in our data, with two observations each, one in 2020 and one in 2021. Emotion is measured through the LIWC algorithm and represents the share of words in a firm name that relate to positive emotions. All independent variables retrieved from the American Community Survey 5-year 2011 estimates. ZIP4 reflects a measure that is equal to the first four digits of a zip code, making the variation stem simply from differences in 10 nearby zipcodes. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.

**Figure 3. Annual Relationship of ZIP Code Positive Emotion to the Percent Non-Hispanic Black in 2011**




Note: .

**Table A1. Enterpreneurship in Black Neighborhoods 2016 to 2019**

| | (1) | (2) | (3) | (4) | Log(Obs) |
|---|---|---|---|---|---|
| Perc. Non-Hispanic Black [2011] | 32.37 | -230.68*** | -81.49* | -108.30* | -0.10 |
| | (34.70) | (50.78) | (37.75) | (49.34) | (0.08) |
| Log(Median Income) [2011] | | | 219.56*** | 224.22*** | 0.70*** |
| | | | (18.75) | (22.36) | (0.06) |
| Log(Population) [2011] | | | 180.04*** | 183.67*** | 0.62*** |
| | | | (9.28) | (10.79) | (0.03) |
| Population Density [2011] | | | 905.99 | 71.54 | 0.93 |
| | | | (3294.27) | (2964.24) | (6.48) |
| Intercept | 305.62*** | 337.68*** | -3743.71*** | -3823.14*** | -8.08*** |
| | (9.39) | (6.19) | (241.54) | (288.56) | (0.73) |
| | Yes | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes | Yes |
| | | | Yes | | |
| | | Yes | | Yes | Yes |
| | 15764 | 15764 | 15764 | 15764 | 15764 |
| | 0.11 | 0.58 | 0.57 | 0.67 | 0.79 |

Note:

**Table A2. Enterpreneurship in Black Neighborhoods by Year, 2011-2023 by Type of Firm with ZIP Code Fixed Effects.**

| | Num. Firms | Log(Num. Firms) | Num. LLC | Num. Corporations |
|---|---|---|---|---|
| year # Perc. Non-Hispanic Black [2011] | | | | |
| 2011 | -220.18*** | -0.52*** | -255.73*** | 35.56*** |
| | (51.34) | (0.06) | (51.04) | (10.41) |
| 2012 | -223.63*** | -0.51*** | -254.59*** | 30.96** |
| | (50.93) | (0.05) | (49.95) | (10.04) |
| 2013 | -237.53*** | -0.58*** | -264.09*** | 26.57** |
| | (50.98) | (0.05) | (49.72) | (10.00) |
| 2014 | -232.70*** | -0.54*** | -257.79*** | 25.09** |
| | (49.97) | (0.05) | (48.50) | (9.70) |
| 2015 | -213.38*** | -0.46*** | -240.97*** | 27.59** |
| | (48.33) | (0.05) | (46.92) | (9.75) |
| 2016 | -191.23*** | -0.40*** | -220.18*** | 28.94** |
| | (45.89) | (0.04) | (44.31) | (9.43) |
| 2017 | -164.65*** | -0.33*** | -196.25*** | 31.60*** |
| | (42.42) | (0.04) | (40.94) | (9.39) |
| 2018 | -128.48*** | -0.26*** | -155.44*** | 26.96** |
| | (38.59) | (0.04) | (37.27) | (9.16) |
| 2019 | -84.52* | -0.13*** | -111.81** | 27.29** |
| | (36.72) | (0.03) | (34.68) | (8.93) |
| 2020 | 326.50*** | 0.56*** | 276.66*** | 49.84*** |
| | (40.55) | (0.03) | (38.01) | (9.36) |
| 2021 | 447.96*** | 0.64*** | 408.48*** | 39.48*** |
| | (43.89) | (0.03) | (40.95) | (9.06) |
| 2022 | 119.93*** | 0.21*** | 108.60*** | 11.34* |
| | (18.01) | (0.01) | (16.14) | (5.10) |
| 2023 | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Log(Median Income) [2011] | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Log(Population) [2011] | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Population Density [2011] | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Intercept | 336.99*** | 5.39*** | 254.87*** | 82.13*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| ZIP Code F.E. | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes |
| | 51233 | 51233 | 51233 | 51233 |
| | 0.74 | 0.96 | 0.68 | 0.82 |

Note: OLS regression. Sample is all zip codes in our data, with 13 observations each, one per year from 2011 to 2023. All independent variables retrieved from the American Community Survey 5-year 2011 estimates. All regressions include zipcode and year fixed effects. Startup data from the Startup Cartography Project. Standard errors clustered at ZIP4 level. Standard errors in parenthesis. Significance noted as * $p < 0.05$, ** $p < .01$, *** $p < .001$.