

The Changing Nature of Entrepreneurship in the U.S.:

Evidence from Shopify

Lisa Abraham*[†] Gabriel Hassler* Benjamin Master*[†] Brian Phillips*
RAND Corporation RAND Corporation RAND Corporation RAND Corporation

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Abstract

This paper provides insight into the growing space of entrepreneurs leveraging online platforms in the United States. Shopify is one of these major online platforms, representing approximately 10% of the U.S. e-commerce market. Using rich administrative and survey data from businesses using Shopify’s platform, we examine the business and demographic characteristics of these entrepreneurs and how they differ from traditional entrepreneurs recorded in publicly available data. We find that traditionally underrepresented entrepreneurs, specifically Black and female entrepreneurs, are overrepresented in the Shopify sample relative to publicly available data, highlighting the role that online platforms may have played in reducing barriers to entrepreneurship. We use these data to explore the financial and operational characteristics of these businesses, as well as the background and prior work experience of these business owners, and how these patterns differ for different demographic subgroups. In general, a sizeable share of Shopify businesses in our data, approximately 50%, experience positive revenue growth between their first and second years on the platform, while a much smaller proportion, roughly 4%, exit the platform. Minority business owners report significantly higher value from supports and tools used to grow their Shopify business relative to their non-minority counterparts, though they face more challenges, in line with the broader, pre-existing challenges faced by these demographic groups, particularly in terms of financing. These findings highlight the role that online platforms can play in enabling entrepreneurial success for all types of business owners, particularly those who have been historically underrepresented, and provide insights regarding how best to support this new class of entrepreneurs.

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[†]Corresponding authors: Abraham: labraham@rand.org; Master: bmaster@rand.org

1 Introduction

Entrepreneurship is a pillar of American culture. However, even though the U.S. has historically been thought of as a beacon of innovation, recent decades have seen a significant decline in rates of entrepreneurship and small business creation relative to U.S. competitors. For example, recent OECD data show that the number of self-employed individuals in the U.S. is at an all-time low relative to other OECD countries (OECD 2022). Even within the U.S. context, the share of young entrepreneurial firms and their share of jobs created and employment have been on the decline over the long term (Decker et al. 2014), and these indicators align with other evidence of declining business dynamism in the U.S. (Akcigit & Ates 2019; Akcigit & Ates 2021). These trends raise important questions about the viability of entrepreneurship in the U.S., and whether conditions are conducive to the creation of new businesses, including factors such as the age of the population, immigration, urbanicity, and structural and government supports relevant to sustaining a healthy entrepreneurial ecosystem (Bloom, Van Reenen & Williams 2019; Azoulay et al. 2022; Liang, Wang & Lazear 2019; Harper-Anderson, O’Halloren & Gates 2023; Kerr & Kerr 2016; Glaesar, Kerr & Kerr 2015; Chodavadia, Kerr, Kerr & Maiden 2024).

An important related question is whether entrepreneurship is an opportunity that exists for all types of individuals, including those from underrepresented groups. In particular, median wealth is significantly lower for Black and Hispanic individuals relative to their non-minority counterparts, which means fewer resources to start new businesses; similar gaps also exist for never married women versus never married men (Federal Reserve Bank of St. Louis, 2021, 2024). These financial challenges are further compounded by inequities in financing, whereby Black and Hispanic applicants are less likely to receive financing relative to their non-minority peers, and women are also less likely to receive financing relative to men (Federal Small Business Credit Surveys, 2016, 2021).

These historical challenges have coincided with changes due to the COVID-19 pandemic. Recent studies indicate that minority business owners in the U.S. struggled more in the immediate wake of the pandemic, with Black and Hispanic business owners curtailing activity by significantly more than their white counterparts (Fairlie 2024). Additionally,

funds from the Paycheck Protection Program, intended to provide support for struggling businesses due to the pandemic, were initially not distributed proportionately to minority business owners, though this was reversed in later rounds. In general, business earnings during the pandemic were significantly reduced for Black business owners relative to their white counterparts (Fairlie 2024).

Despite the overwhelming challenges faced by business owners during the pandemic, particularly by minority and underrepresented owners, there are bright spots in the U.S. economic data that tell a potentially different story: the number of high-propensity business applications tallied by the U.S. Census Bureau, a measure of businesses that are likely to have payroll, showed a significant uptick in the wake of the pandemic, starting in July 2020, and has remained at elevated levels, around 140K-150K, over the last four years (U.S. Census Bureau, Business Formation Statistics, 2024). While prior research suggests that most entrepreneurs are “opportunity” versus “necessity” entrepreneurs (Fairlie & Fossen 2019), press reports at the moment of the initial uptick speculated that the increase might reflect “necessity” versus “opportunity” entrepreneurs, i.e., less successful entrepreneurs forced to start businesses out of necessity during the pandemic (*The Economist*, 2020).

This paper examines one likely source of this uptick in business creation, stemming from the creation of new technology and platforms which have enabled entrepreneurs to reach new markets and customers. E-commerce has seen an increase in the wake of the COVID-19 pandemic; data from the January 2024 U.S. Census Bureau’s Annual Retail Trade Survey show that e-commerce retail sales stood at approximately \$1 trillion in 2023, with a nearly 40% increase between 2020 and 2023 (U.S. Census Bureau 2024); in 2023, e-commerce retail sales were 15% of total retail sales. E-commerce presents new opportunities, as individuals are able to grow and scale in ways typically not permitted through standard brick-and-mortar businesses. However, with greater access to customers and markets, it is important to understand how e-commerce platforms facilitate entry into and success in entrepreneurship, as well as the extent to which e-commerce magnifies or mitigates existing racial, ethnic, and gender disparities.

In this paper we examine data from a leading global commerce company, Shopify. Shopify was established in 2006, and has since grown into one of the largest e-commerce

companies in the world, representing approximately 10% of the U.S. e-commerce market and a growing presence around the world, powering millions of businesses in more than 175 countries.¹ Shopify’s platform lowers barriers to entry by providing its customers with easy access to online tools that enable them to start an e-commerce business, including creating a customized storefront website, managing inventory, payment processing, shipping, and marketing, among other business functions (Appendix Figure 1a shows the Shopify homepage and Appendix Figure 1b shows an example of online storefront “themes” that a prospective business owner can choose from). Importantly, though it is often described as a “platform”, customers are not selling their goods or services on a single website; rather, Shopify’s platform serves as the interface for accessing the aforementioned tools and apps, as well numerous third-party tools and apps that aid with business functions. Shopify’s own business model operates by having different subscriber “plans” where each plan features different services, shown in Appendix Figure 3. The different plans have enabled Shopify to cater to a continuum of business types, ranging from microbusinesses to well-established, well-known businesses (e.g., Magnolia & Ruggable). The ease of the platform has been cited as one reason for significant growth in usage in recent years. Given the way that Shopify’s platform is used, all businesses who use its services are considered “online” businesses (which may or may not also have a physical storefront presence).

This study uses detailed administrative data from Shopify’s platform over the 2017-2022 time period to provide an in-depth examination of e-commerce in the United States. Our analyses include over 300,000 U.S. businesses using Shopify’s platform during this time period. We characterize their geographic locations and the primary industries they operate in, allowing for comparisons to publicly available data about small businesses and entrepreneurs. We find that, in general, Shopify businesses are concentrated in areas that, on average, have a greater presence of Black non-Hispanic residents, are more highly educated, and have a higher median household income, which suggests that Shopify businesses are being started by a diverse range of entrepreneurs, and not solely those starting businesses out of necessity.² Our survey data confirms the overrepresentation of black business owners and

¹ Source: Shopify market share shown based on Shopify’s 2022 US GMV (excluding merchant sales made through offline).

² Analyses which examine the impact of locational characteristics on the growth of Shopify businesses

female business owners relative to the same characteristics measured in publicly available business owner surveys.

Additionally, in contrast to publicly available data that does not contain detailed longitudinal information on the financials of each business, our access to Shopify administrative data also allows us to open up the black box of these businesses and examine the revenue they have earned each year on the platform along with business owner demographics.³ We find that a significant share of Shopify businesses experience positive growth between year 1 and year 2 on the platform (50% with higher inflation-adjusted sales from one year to the next); for those with positive growth, the median increase in revenue was 116% and the average increase in revenue was approximately 600%. This highlights that a sizeable share of Shopify businesses are achieving positive growth while using the platform over the near term (between year 1 and year 2).

We pair administrative data for these Shopify businesses with rich information from a representative survey conducted in June 2023, which collected data from 4,000 Shopify merchants.⁴ The survey asked specific questions about business characteristics, owner demographic characteristics, and information on the experiences, supports, and challenges of Shopify merchants. The survey data reveal that Shopify businesses are relatively small (based on the fraction of those who hire a W-2 worker and the median number of workers) as well as young. The majority (roughly 73%) also operate solely online. Furthermore, Shopify business owners include more Black, women, and younger individuals relative to traditional businesses recorded in Census data.⁵

Moreover, the survey data identified key supports that they are most reliant on to be successful. The most important supports were the platforms that enable them to reach customers and manage their business, their personal and professional networks, and their prior experiences related to entrepreneurship. In general, minority business owners find supports

(e.g., broadband access) are reserved for a forthcoming paper.

³ The Census Annual Business Survey collects information on sales and receipts of businesses but does not provide a longitudinal time series of business earnings. The Longitudinal Business Database does contain information on revenue of establishments over time, but does not contain information on business owner characteristics.

⁴ Shopify refers to business owners with stores on the platform as merchants. Throughout this paper, we use the term business owner and merchant interchangeably.

⁵ Census data includes both online and brick-and-mortar businesses.

to be significantly more valuable than their non-minority counterparts, which highlights the value in precisely targeting supports to those who need it most. We also ask about the challenges that business owners face; they report their most significant challenges as those related to attracting customers, the unpredictability of business conditions (e.g. cost, competition), and securing capital. As with the supports, minority business owners report experiencing significantly greater challenges in running their business, in line with broader evidence that minority business owners face more challenges than their counterparts.

In exploring a heretofore unexamined sample of online merchants, this paper extends our knowledge about the demographic profiles of a significant share of entrepreneurs who will be an increasingly important group to study as e-commerce continues to grow and scale, amplified by increased technological advancements. While Shopify represents particular data from one platform, it represents a meaningful sample of online entrepreneurs who are entering this space and deciding to pursue their business goals, and thus can provide insights for policymakers about the opportunities and challenges merchants face when operating online.

Our paper builds on a long-standing and rich literature on trends in entrepreneurship and small business in the United States. These papers typically use publicly available sources of data, such as survey data from the Annual Business Survey, Annual Survey of Entrepreneurs, and Survey of Business Owners, and administrative data from the Longitudinal Business Database. Studies document the importance of young versus small businesses to economic growth and measures of research and development (Haltiwanger, Jarmin & Miranda 2013; Acemoglu et al. 2018). They also examine how the rate of new business creation has declined in the U.S. over the last 10 years, both in terms of the share of young firms and the share of job creation from young firms (Decker et al. 2014). Other papers explore factors which are supportive of new business creation (e.g., Bloom, Van Reenen & Williams 2019; Azoulay et al. 2022; Liang, Wang & Lazear 2019; Ardagna & Lusardi 2010; Harper-Anderson, O'Halloren & Gates 2023). More recently, this literature has examined how entrepreneurship has been impacted in the wake of the COVID-19 pandemic (i.e., Fairlie 2020, 2024). Our paper adds to this literature by providing a new lens to understand entrepreneurs leveraging e-commerce markets and how they have fared since the COVID-19 pandemic.

This study also complements concurrent, novel work using new sources of data regarding small businesses. Evidence from GoDaddy, a provider of domain names and business website services, documents new patterns on the location of microbusinesses and identifies local factors – such as access to broadband, a skilled labor force, training, and access to capital – which might be conducive to microbusiness formation and growth (UCLA-GoDaddy 2023). Bloom, Fletcher & Yeh (2023) use data from Stripe, an online payments platform, to characterize how an opt-in sample of 2,500 businesses fared during the COVID-19 pandemic as well as differences by demographic group. Chetty et al. (2023) use data from Womply, which provides information on total revenues of small businesses at the county-sector level on a weekly basis for approximately 500K small businesses; they use these data to examine how the COVID-19 pandemic impacted small business revenues across geographic locations. Our research, leveraging Shopify’s platform, complements this work by providing business-level, longitudinal data that allows us to examine business performance over time. We are also able to learn more about the demographic profile of businesses owners and their experiences via our RAND-Shopify survey.

This study also adds to the literature examining demographic differences in wealth, access to capital, and other valuable resources among entrepreneurs. These papers find persistent gaps in the challenges experienced by minority business owners despite government, private-sector, and philanthropic support. These challenges include disparities in financing and access to capital (e.g., Guzman & Kacperczyk 2019; Fairlie, Robb & Robinson 2022; Fairlie 2018; Federal Reserve Small Business Credit Survey 2016, 2021), discrepancies in underlying wealth which impacts startup capital (Federal Reserve Bank of St. Louis, 2021, 2024), and differences in exposure to entrepreneurship (Fairlie & Robb 2007) and networking (Abraham 2020). More recently, research has documented how the COVID-19 pandemic impacted minority business owners (Misera 2020, Fairlie 2024).

Finally, this paper contributes to the literature examining the growth of gig or non-traditional work. This body of research highlights the tremendous structural change that has occurred in the labor market due to the rise of gig work, difficulties with measuring the gig economy, interactions between gig work and the social safety net, and demographic disparities in gig work (Abraham et al. 2019; Lim et al. 2019; Jackson 2019; Bracha & Burke

2023; Pew Research Center 2021). Research has also examined how the gig economy could potentially support entrepreneurial efforts (Barrios, Hochberg & Yi 2022). Our paper builds on these studies by highlighting the use of online platforms, which represents an additional pathway for these individuals to scale from gig work into small businesses.

The rest of the paper proceeds as follows. Section 2 describes the data and methodology used in the paper, including Shopify’s administrative data, the merchant survey, and comparisons to publicly available data. Section 3 presents the empirical results. Section 4 concludes.

2 Shopify Data

Our data leverages a subset of Shopify data, examining merchants over the 2017-2022 time period.

2.1 Shopify Administrative Data

Our first data source consists of Shopify’s administrative data over the January 2017 to December 2022 time period. Shopify businesses can have more than one “store”, which refers to each distinct geographic location identified by the business⁶; however, the vast majority of businesses in our data have only one store (99%). Note that the geographic location identifies where the business officially records its transactions, but does not necessarily imply that the business has a physical store in that location. We restrict the sample to stores with locations in the United States, and stores with over \$1,000 in annualized revenue, so as to capture the most “active” Shopify stores.⁷

We then analyze the data at the store level. In addition to location, each store has information on the industry (or industries) that it operates in,⁸ and information on revenue accrued through usage of the Shopify platform (i.e., recorded by the platform).⁹ We also

⁶ This data is self-reported by the business.

⁷ The analysis in Figure 2 does not impose this restriction because we first aim to characterize where all stores are located, irrespective of size.

⁸ This data is self-reported by the business; approximately 30% of the sample are missing industry information.

⁹ Revenue data are directly collected by the platform.

connect the data at the zip-code tabulation area (ZCTA) to be able to analyze zip-code-level characteristics (e.g., percent of Black Non-Hispanic residents, median household income) of where Shopify stores are located. Because the vast majority of our sample reflect businesses with one store, we use the terms “store” and “business” interchangeably in the rest of the paper.

2.2 Survey of Shopify Merchants conducted by RAND

The second data source that we leverage comes from a survey of 4,000 Shopify merchants that RAND executed in collaboration with Shopify. The survey was sent out in June 2023 and data were collected through the platform Confirmit. See Appendix Document 2 for the full survey instrument.¹⁰ Respondents were paid \$20 each for participation in the survey, which took approximately 15-20 minutes to complete. The survey sampling, discussed in Appendix Document 1, ensured that the surveyed sample was broadly representative of Shopify’s administrative data for those with annual earnings above \$1,000 in 2022 (97% of our surveyed sample had annualized revenue above this level) and businesses who had joined Shopify’s platform in 2017 or later.¹¹ We targeted businesses above this revenue threshold in order to focus our insights on owners making robust use of the platform (prior Shopify surveys also found higher response rates from merchants with revenue above this threshold). We chose to target merchants who had opened in 2017 or later since data on merchants’ historical revenues prior to 2017 was not available for use in our study, so ex-post comparisons of revenue in early years on the platform would not have been possible. We fielded our survey over a single business day in June 2023, with responses accepted only until we reached our target sample of 4,000 merchants.

We compare our respondent sample to our surveyed sample and find no major differences across a host of variables when we apply the appropriate weighting (see Appendix Table 1a Appendix Document 1 for a discussion of the weighting procedure). This suggests

¹⁰ Respondents who had more than one Shopify business were asked to report their answers for their primary Shopify business, defined as the largest in terms of revenue.

¹¹ We annualized revenue for the first year businesses were open on the Shopify platform by multiplying the data we received for the business’ revenues during that calendar year by the inverse of the portion of the year the business was open. For example, for a business opening when half the year remained, we multiply revenues by two.

that our respondent sample for the survey is comparable to the broader Shopify pool of merchants for those with approximately \$1,000 or more in annual revenue. We also compare our respondent sample to our full administrative sample (discussed above) and find minimal differences across a host of variables when we apply the appropriate weighting (see Appendix Table 1b); the exception to this is business age, which reflects the fact that our completed respondents are newer businesses, since we restricted the surveyed sample to be businesses which had opened in 2017 or later.

2.3 Publicly Available Data

There are several sources of data that we leverage from the publicly available U.S. Census Bureau data which allow us to make comparisons with our Shopify data: the Annual Business Survey (ABS) (from 2019); Non-Employer Statistics-Demographics Data (NES-D) (from 2019); and County Business Patterns data (from 2021). The ABS uses data from survey respondents and administrative records to examine demographic characteristics of business owners as well as characteristics of the business, such as sales and receipts and industry of operation; the ABS survey began in 2017 (replacing other Census survey products) and has surveyed approximately 300,000 businesses annually. The NES uses administrative data including tax records from the Internal Revenue Service, and reflects information on U.S. businesses with no paid employees; these data include the total number of nonemployer businesses by industry along with the demographic characteristics of their owners. Together, the ABS and NES-D data allow us to make comparisons with our Shopify survey about business owner demographics. Finally, the County Business Patterns data facilitate comparisons to the distribution of establishments overall and by industry and establishment size (e.g., establishments with <5, 10, 20, or 50 employees).

3 Empirical Results

This section presents our results on the Shopify administrative and survey data, and relevant comparisons as necessary to the publicly available data described above. Throughout these analyses, where relevant we present the results using the weights described in Appendix

Document 1; this is to ensure that the respondent sample better represents the surveyed sample.

3.1 Characteristics of Businesses

We begin with an analysis of the geographic location of these businesses, Figure 1 plots the number of Shopify stores per 1,000 individuals in 2017 (top) and in 2022 (bottom) for stores with over \$100 in total revenue in each respective year. As shown in the figure, there is a significant increase in the number of Shopify stores over time, with increased penetration across every region, though there is variation across states. Additionally, Shopify businesses are present in relatively more rural states (i.e., Shopify’s platform is used in both rural and urban markets).

To better understand these businesses, we turn to an examination of the administrative data, shown in Table 1. The sample for these summary statistics represents all Shopify businesses (e.g., establishments) in existence from any point in time with over \$1,000 in annualized revenue in 2022, restricting to businesses that opened prior to September 2022 to obtain stable estimates when annualizing revenue¹²; we make this restriction in order to focus on the most active businesses on the platform, who are above a certain revenue threshold.

As shown in the table, median 2022 revenue is approximately \$14K, while mean 2022 revenue is much higher, at \$320K. On average, Shopify merchants have been on the platform for approximately 3 years. The vast majority operate in the clothing, shoes, and/or accessories area (approximately 55%); the next biggest shares are in the home & garden and health & beauty industries, representing approximately 19% and 13% of all stores on the platform, respectively.¹³ A greater concentration of merchants are located in the West and South, relative to the Northeast and Midwest. There are relatively more Shopify merchants in West and fewer in the Midwest as compared to the population.¹⁴ These data paint a

¹² We also remove businesses with no orders, those with negative revenue over all the years, those which belong to a zip code tabulation area that does not match a zip code, and those with missing zip-code level population data.

¹³ Note that these industries are not mutually exclusive.

¹⁴ In 2022, the percentage of the population in each region was: 17% in the Northeast; 21% in the Midwest; 24% in the West, and 39% in the South.

picture of micro-businesses concentrated in specific sectors and geographically distributed across the country, and supports the narrative that Shopify has enabled small businesses to tap into online marketplaces through the use of its platform.

We also examine these administrative patterns over time, shown in Appendix Figure 2. As in Table 1, we restrict the sample to active merchants by requiring it to have over \$1,000 in annualized revenue in the given year; we further remove merchants which opened between September and December in order to generate more stable measures of annualized revenues (the results are unchanged when we include the September to December openers). The first panel shows that the cumulative number of businesses has increased over time, which aligns with the patterns shown in the maps in Figure 1. Mean revenue trended upward between 2017 and 2020, and has remained above \$300K since 2020 (in 2022 \$USD). Conversely, median revenue has decreased over time. This is not due to declining revenue but rather compositional changes: new entrants in a given year have lower median revenue than the new entrants in the prior year, suggesting that Shopify’s platform has increasingly drawn in microbusinesses over time by lowering barriers to entry.

To better understand the correlates of Shopify store locations in 2022, we compare the zip-code characteristics of where Shopify stores are located to the same zip-code characteristics of where people and businesses are located.¹⁵ To do this, we stack the zip-code observations with Shopify on top of the zip-code observations from the comparison dataset. Specifically, we run a regression of the form:

$$Characteristic_{zcta} = \alpha + \beta ShopifyBusiness_{zcta} + \varepsilon_{zcta} [weighted\ by\ N\ in\ cell] \quad (1)$$

where $Characteristic_{zcta}$ is the ZCTA characteristic of interest (e.g., percent Black Non-Hispanic) from the 5-year estimates from the 2019 American Community Survey (ACS). $ShopifyBusiness_{zcta}$ is a dummy variable equal to 1 if the zip code is in the Shopify dataset and a 0 if the zip code is in the population (or establishment) comparison dataset. The

¹⁵ We use the same sample as above, where we restrict to businesses with over \$1,000 in annualized revenue in 2022, restricting to businesses that opened prior to September 2022 to obtain stable estimates when annualizing revenue.

data are further weighted by the number of Shopify businesses when $ShopifyBusiness_{zcta}$ is equal to 1 and the population (or number of establishments) when $ShopifyBusiness_{zcta}$ is equal to 0; weighting effectively takes into account the intensity of the Shopify’s presence in a given ZCTA (or the size of the population or number of establishments for the comparison group). The main coefficient of interest is β , which represents how being a Shopify business is correlated with the given ZCTA characteristic relative to the relevant comparison group. We focus on the ZCTA characteristics where we see meaningful (significant) differences, specifically the percent of Black Non-Hispanic individuals, the share of the population with a bachelor’s degree or higher, and median household income (in 2019 inflation-adjusted dollars).¹⁶

This is shown in Table 2, where the first three columns compare the location characteristics of Shopify businesses to (a) the population (from the ACS); the next three columns compare the location characteristics of Shopify business to (b) establishments from County Business Patterns data from 2021; and the last three columns compare the location characteristics of Shopify businesses to (c) establishments in the retail and wholesale trade sector (from County Business Patterns data from 2021) with fewer than 5 employees.¹⁷

As shown in the table, Shopify businesses are more likely to be located in areas with a greater share of Black Non-Hispanic individuals (on the order of 0.8 to 1.5 percentage points more). They are also more likely to be located in areas with a greater share of college educated individuals, defined as having a bachelor’s degree or higher (on the order of 1.2 to 3.9 percentage points more). Relative to the population, Shopify businesses are located in areas with lower median household income; however, compared to publicly available records of business establishments and further restricting to those with more than 5 employees in the retail and wholesale trade sector, Shopify businesses are in areas with higher median household income. These statistics suggest that these new entrepreneurs are not just oper-

¹⁶ We control for racial characteristics of the zip code, education characteristics of the zip code, median household income of the zip code, measures of broadband speed and access, and census district fixed effects in all specifications where appropriate (i.e., for example, we omit racial controls when black non-hispanic is the dependent variable but include the other aforementioned variables).

¹⁷ We remove from the sample businesses that are located in zip codes that do not match to a ZCTA from both the Shopify data and the County Business Patterns data; the population data are already at the ZCTA level. In practice, these dropped locations reflect areas without a significant population, and so is less relevant to our research question.

ating out of necessity given that they are, on average, from higher-educated zip codes, and relative to other establishments, come from higher-income areas. Moreover, the overrepresentation of Shopify businesses in communities with more Black individuals suggests that Shopify is drawing from communities which have traditionally not had as easy access to the entrepreneurial ecosystem.

We complement these analyses with our survey data on merchants to better understand the characteristics of the businesses they operate. The survey sample, as noted above, reflects the 4,000 respondents to our RAND-Shopify survey, fielded in June 2023; throughout the rest of the paper, the “RAND-Shopify survey” will refer to these 4,000 survey respondents. Table 3 presents these results. The first column presents the statistics for the full sample.¹⁸ Most merchants tend to be single-owned businesses (74%), and are relatively small businesses; only 28 percent hire a W-2 employee and, of these businesses, the median number of workers is 3. These businesses are also young, with the mean age at 4.1 years.¹⁹ Roughly 22% sought professional advice about how to startup their business from a financial or legal advisor. There is interesting variation in how these businesses are structured: most are structured as LLCs (limited liability corporation, which are more costly to establish but offer legal protection in the case of business losses) and the next largest share is structured as sole proprietorships (26%).²⁰ About 73% of these businesses operate solely online, which is also reflected in the sales channels, with most of their business revenue accruing from online channels.

We are also able to examine how these businesses differ by demographic subgroups, also shown in Table 3. In general, relative to female and black business owners, male and white business owners tend to operate larger firms and are more established: they are more likely to hire W-2 employees, those with W-2 employees have a higher median number of workers, and they exhibit a higher average (and median) age of the business. Male and

¹⁸ Demographic data is collected from the self-reported survey data.

¹⁹ Note that this is reflective of time since business inception, i.e., not just the time using Shopify’s platform.

²⁰ This could reflect many different factors, including differences in the type/nature of the businesses started or anticipated growth, the costs/benefits to different business structures in different states, past experiences with entrepreneurship, advice received or not received when first forming the business, or average age of businesses. Additionally, the implications of choosing one structure or another is dependent on many different factors.

white business owners were more likely to seek professional advice regarding how to setup their business relative to their female and Black business owners. There is also variation in business structure, with Black business owners being more likely to be LLCs versus sole proprietorships. Additionally, Black business owners have a significantly greater online versus physical presence than white business owners which is also reflected in their sales channels (this pattern holds even after controlling for business size and business age). This could be due to many different factors, such as the relative ease of doing business online versus in physical stores (e.g., having a physical presence has a high startup cost since it requires expenditures related to the physical store). These patterns demonstrate that Shopify draws in a particular type of minority business, specifically businesses that, relative to their non-minority counterparts, are newer, smaller, and more reliant on online sales / markets.²¹

3.2 Characteristics of Business Owners

To more directly examine the characteristics of business owners, we explore the demographic profile of the survey respondents, from whom we collected detailed, self-reported demographic data.²² Table 4 presents the results of this analysis. The first column shows the characteristic in the given row for the Shopify survey of business owners, and the subsequent columns show data on the same statistic for business owners drawn from the ABS and NES-D (pooling across employer and nonemployer businesses).

Overall, we see a greater share of young business owners (defined as < 35) relative to publicly available data from the ABS and NES-D. We also see a greater share of female and black business owners relative to the ABS and NES-D.²³ These results suggest that Shopify is enabling a new class of entrepreneurs drawing from traditionally underrepresented demographic groups, particularly in comparison to the demographic distribution of employer firms.

We further examine differences in age, income, and educational characteristics by gender and race/ethnicity, shown in Appendix Table 2. We find that female, Black, Asian,

²¹ Mean differences noted here are statistically significant at the 1% level.

²² See Appendix Document 2 for see the specific questions we used to identify race, ethnicity, and gender.

²³ The fraction of Black, female, and younger owners in the Shopify data are significantly different when compared to either the NES or ABS data.

and Hispanic business owners tend to be younger ($< \text{age } 35$) relative to their non-minority counterparts, and female, Black, and Hispanic business owners have lower median household income relative to their non-minority counterparts.²⁴ Interestingly, while more male and white business owners tend to have a bachelor’s degree or higher than female and Black business owners, there are slightly more female and Black business owners who report having *greater* than a bachelor’s degree (though the latter is not statistically different at the 5% level).

The survey also allowed us to ask questions regarding the business owner’s engagement with their business (e.g., is it their primary employment or their primary source of health-care). We explore these work-related characteristics in Table 5. The top panel shows that business owners spend, on average, approximately 46.3 hours per week working (across all jobs); on average, 59% of that time working is spent on their Shopify business. This corresponds to 53% who work fewer than 30 hours on their Shopify business (47% of the sample working 30 or more hours). The survey also asked a question about the health insurance of business owners (which is traditionally an important factor when deciding when to start a business). The two largest sources of health insurance are from their full-time job (not related to the Shopify business) (21%), or from their partner/spouse (22%).

There are interesting differences in hours worked and health insurance by demographic group. In particular, Black business owners are more likely to rely on Shopify as a supplementary job, given that a lower share of their working hours are spent on the Shopify business relative to white business owners (54% to 60%), and 34% of Black business owners report obtaining their health insurance from another full-time job relative to 19% of white business owners. Females, conversely, appear to rely more heavily on their Shopify business relative to other work, comprising nearly 61% of their working time (relative to 56% for males) and relying on their spouse/partner for health insurance more so than other sources of health insurance relative to men.²⁵

²⁴ Mean differences in fraction $< \text{age } 35$ are statistically significant at the 5% level. In general, white, Black, Hispanic, and Asian business owners in the RAND-Shopify survey data have higher household income than in the population at large, and exhibit a roughly similar age composition relative to the same demographic groups in the population at large, though Hispanics in the population tend to be slightly younger (U.S. Census Bureau).

²⁵ The differences noted here are statistically significant at the 1% level.

Table 6 highlights the professional characteristics of business owners prior to owning their current Shopify business, asked in the survey. (Note that respondents were asked to select all that apply, so values do not add to 100%.) Interestingly, only roughly 25% of the sample owned another business prior to starting their Shopify business; this is less so the case for females, Blacks, and Hispanic business owners (relative to their non-minority counterparts).²⁶ These patterns suggest that Shopify’s platform has lowered barriers to entry for those without any prior experience, including traditionally underrepresented groups. Furthermore, relative to prior work examining the share of necessity versus opportunity entrepreneurs, a smaller share of respondents were unemployed or receiving disability insurance prior to starting their Shopify business, roughly 5% (e.g., “necessity entrepreneurs”); recent evidence finds the share of necessity entrepreneurs in the United States to be higher than this figure, at approximately 20% (Fairlie & Fossen, 2019). Roughly 7% came from non-employment (indicating they chose not to work or “other”).

3.3 Financial Characteristics

A novel aspect of our data is that we can actually examine financial characteristics of the business, analyze their business performance, and connect these data to demographic characteristics. We explore these questions using the survey sample, shown in Table 7. Median total annual revenue of the business reported by the business owner – which represents the sum of revenue earned through the Shopify platform and outside the platform – is approximately \$30,000 across all businesses in the survey sample, with less than 10% of this revenue coming from outside the U.S. When we compare this to our administrative data on median revenue from the Shopify platform for the same sample of business owners in our survey, it is lower, approximately \$11,000.²⁷ There could be different mechanisms for this; one potential explanation is that some businesses are using the Shopify platform as a complement to other sales channels. However, female, Black and Hispanic business owners are more reliant on Shopify in terms of revenue when compared with their male and white counterparts. In terms

²⁶ Differences in owning a prior businesses are statistically significant at the 1% level when we compare females to males, Blacks to whites, and Hispanics to non-Hispanics.

²⁷ This number is lower than the median reported revenue in Table 1 since Table 1 includes Shopify businesses which were not included in the surveyed sample, including those in operation before 2017.

of their financial performance, nearly 50% of these businesses report operating at a profit, though a greater percentage expect higher future revenues (nearly 70%). Female, Black, and Hispanic business owners operate firms with lower revenue relative to their non-minority (e.g., male, white) counterparts, and the same patterns hold in terms of the share reporting that their business operates at a profit. However, both Black and Hispanic business owners are more likely to state that they expect higher revenues in the future.

An important aspect of financial performance is the resources available to these business owners. The last row of Table 7 shows that roughly 20% of all survey respondents reported having a loan application rejected related to their current business, with a significantly higher fraction (36%) of Black business owners reporting a loan rejection relative to white business owners (16%). Black business owners having a loan rejection rate of two times that of their white counterparts closely aligns with prior data on loan rejection rates between minority and non-minority business owners (Fairlie & Robb, 2010; Federal Reserve, 2017). Importantly, these results are robust when controlling for a variety of other factors such as characteristics of the business and household income of the respondent (see Appendix Table 4).

These patterns are also consistent with our survey data on the median startup capital amount, shown in Figure 3. The median startup capital amount is less than \$5K, which indicates the low barriers to entry to engaging in online business creation in our sample. Here as well, the race gap in financing emerges, with relatively more Black business owners having <\$5K in startup capital relative to their white counterparts. We also see a comparable gender gap, with relatively more female business owners having <\$5K in startup capital relative to their male counterparts. These patterns are robust to controls (shown in Appendix Table 4). Similar patterns are also seen in terms of debt, shown in Appendix Figure 3.

The vast majority obtain their startup capital from personal savings and the next greatest share comes from personal or business credit cards (shown in Appendix Table 3). Black and Asian business owners are more likely to rely more on personal or business credit cards than their white counterparts (significant at the 5% level). The reliance on personal or business credit cards over government loans across all demographic groups and particularly for Black and Asian business owners highlights one potential area for future research; this trend mirrors existing evidence that credit card borrowing from small businesses is up since

2019 (Bank of America, 2024). More research should examine why this disparity exists and if there are any policy changes to government loan application processes that could prove helpful for extending credit to qualified borrowers. These patterns are also consistent with prior research findings that the most prominent source of startup capital is personal savings (Federal Reserve Small Business Credit Survey, 2023; Ewing Marion Kauffman Annual Survey of Entrepreneurs Data Briefing Series, 2016).

Given these underlying differences in access to capital and initial startup capital, it is interesting to examine the credit or liquidity constraints faced by each business. To measure this, our survey asked respondents how much money for use in their business they would need to be offered to encourage them to wait a year to receive the money versus receiving \$1000 today in an iterative willingness-to-accept framework, which determines the interest rate they must be paid in order to be willing to wait to receive the money a year from now (the implied interest rate). Respondents who are willing to accept the \$1000 up front even when they could receive much more in the future are revealing that they are more in need of immediate credit (respondent answers could also be reflective of differences in financial literacy).

Figure 4 presents the results for different demographic groups. In particular, a significantly higher share of Black owners demand an interest rate of over 100% in order to be persuaded to wait a year for the money instead of taking \$1000 today, suggesting high and more time sensitive demand for business financing in this group relative to their white counterparts. The Black-white results are robust to examining this in a regression framework which includes a variety of other controls (see Appendix Table 4). These results align with recent research highlighting that Black business owners have a smaller cash buffer than their white counterparts, which induces greater liquidity challenges (JPMorgan Chase Institute, 2020).

3.4 Business Performance

We can also examine the performance of these businesses. We first utilize the administrative data, which permits longitudinal analyses with a broad sample of businesses. The sample further restricts in several ways: we (1) limit to those who opened between 2017

and 2022 and (2) those with more than \$1K in annualized revenues their first year on the platform, to obtain less volatile earnings typically exhibited by smaller-revenue businesses; we further remove businesses who opened between September and December in their first year on the platform so as to obtain less volatility in our annualization of first year revenue. Then we examine each businesses' revenue growth between year 1 and year 2 on the platform, to abstract from difficulties with categorizing multiple years. Figure 5 highlights that, of the 160,634 businesses across all years included in the sample, 50% of businesses grew during this period, defined as having higher sales a year later, 46% stayed the same or had lower sales in terms of total inflation-adjusted revenue earned through the platform, and 4% stopped using the platform.²⁸ Among businesses that grew during this period, the median business more than doubled its revenue (median growth rate of 116%), while average growth was approximately 600%. Median sales in year 1 are shown as a reference point for each of the categories.

This analysis highlights that a significant share of businesses on the Shopify platform experienced positive growth at rates that are generally higher than seen in prior research, with the caveat that prior analyses are not necessarily perfectly comparable to the method we use (Haltiwanger et al., 2017). Conversely, exit rates from the platform are lower than is typical of general business exit rates described in prior research and current publicly available data (Decker et. al, 2014; Bureau of Labor Statistics, 2024). This could be due to both the types of entrepreneurs using Shopify (i.e., differences in the sample, such as the smaller size and younger age of these businesses), as well as the impact of using the platform, and without further research, it is difficult to disentangle these factors. Identifying specific factors which strongly correlate with growth, such as the ability to sell to a wider geographic market and/or the use of specific support/tools could offer valuable insights for policymakers seeking to support small businesses.

We also examine growth trajectories in a regression framework, shown in Table 8. The sample for this analysis draws on the survey data given that the survey sample allows us to control for a richer set of demographic characteristics; we further restrict to stores which

²⁸ The results are similar when we change the threshold to those with \$100 or more in their first year of revenue on the platform; the share of firms in each category is 48%, 43%, and 9%.

had positive revenues in both 2021 and 2022.²⁹ Then, the natural log of revenue in 2022 is regressed on the natural log of revenue in 2021. We trim both 2022 and 2021 revenues to drop those below the 5th percentile and above the 95th percentile, and 2021 revenue is annualized if 2021 is the business’s first year on the platform (we do not include businesses who opened in the last four months of 2021 to generate more stable annualization estimates). We also control for a variety of variables. These include individual controls for age, race, ethnicity, gender, education, household income; business startup characteristics such as the year and month the business started and whether the business had 0 revenues in its first year of operations; business location controls such as the headquarter state; and business characteristics, such as self-reported industry, business structure (e.g., sole proprietorship, LLC or other), and the startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25k). Specifically, we run a regression of the form:

$$\begin{aligned} \ln(\text{Revenue in 2022})_i = & \\ & \beta_1 \ln(\text{Revenue2021})_i + \beta_2 \text{IndividualControls}_i + \beta_3 \text{BusinessStartupControls}_i + \\ & \beta_4 \text{BusinessLocationControls}_i + \beta_5 \text{BusinessCharacteristicControls}_i + \epsilon_i \end{aligned}$$

As shown in Table 8, we find that there are significant differences in 2021-2022 revenue growth between different demographic groups. The coefficient on Black of approximately -0.33 indicates that Black business owners earn 33% less than white business owners’ 2022 revenues, conditional on 2021 revenues; thus every dollar of white business owners’ 2022 revenues translates into 67 cents for Black business owners conditional on 2021 revenues. Similarly, female business owners earn approximately 88% male business owners’ 2022 revenues (also shown in column 3) conditional on 2021 revenues. This highlights that trajectories are different for these businesses in a manner correlated with their background, even after controlling for a host of other relevant factors. This speaks to the need for direct policies targeting specific minority groups in an effort to help their businesses experience growth comparable to their non-minority counterparts. For example, specific supports such as additional financial capital, access to valuable mentors, or additional information on the tools and supports that are most correlated with growth could be valuable for helping businesses

²⁹ The surveyed sample largely reflects those with \$1K or more in annualized revenue.

grow and scale. However, it is important to note that the gender gap in earnings for U.S. business owners in the Shopify sample is smaller compared to other recent estimates which find that women business owners earn 30% to 40% less than men (JPM Chase Institute Data, 2019; Biz2Credit Annual Women-Owned Business Study, 2024; OECD U.S. Data, 2020); this could be due to the particular sample of women that Shopify attracts, and/or the particular types of supports that women business owners are able to utilize through Shopify’s online platform.

3.5 Experiences of Business Owners: Reasons for Being an Entrepreneur

Next, we examine the experiences of business owners. Understanding the perspectives of these business owners is critical to determining their motivations for starting their businesses, the supports and resources which they report as most valuable to them, and the challenges they face.

The first question relates to business owners’ reasons for starting their Shopify business. Figure 6 presents these patterns, where each bar indicates a different reason, and each bar is split into three groups, where “3” indicates that it is a very important reason, and “1” indicates that it is not an important reason. Overall, top reasons for starting their Shopify business include wanting to be one’s own boss, believing that their business is the best avenue for promoting their ideas/good/services, building greater wealth/earning higher income, and wanting to have flexible hours/the ability to work from home/better balance work and family.

We can further examine how these patterns differ by important demographic subgroups. These patterns are shown in Table 9. Each column reflects a regression of the form given below:

$$Reason_i = \alpha + \beta X_i + \varepsilon_i \tag{2}$$

where $Reason_i$ is a dummy variable equal to 1 for respondents who listed the reason as “very important ” (3) and 0 if they listed the reasons as somewhat (2) or not important (1), or said it was not applicable, and X_i represents a vector of individual characteristics and business characteristics, such as being young (age under 35), race (white is the omitted category),

ethnicity, gender, having a bachelor’s degree or higher, headquarter state, business age, annualized revenue in 2022, industry, business structure (e.g., LLC), and startup financing. The results highlight that Black business owners report all of the reasons as “very important” more often than white business owners, but particularly for earning higher income/wanting to build wealth (column 4), having an impact on their society/community (column 9), and carrying on the family business (column 2). Hispanic business owners, relative to non-Hispanic owners, indicate a higher share with “very important” for the following reasons: carrying on the family business (column 2), having an impact on their society/community (column 9), and being dissatisfied with their last job (column 7). Female business owners, relative to male business owners, indicate a higher share with “very important” for the following reasons: wanting to have flexible hours / flexible schedule (column 3), having an impact on their society/community (column 9), and experiencing discrimination in their last job (column 8).³⁰ These results suggest that minority business owners are partly motivated to start their businesses for reasons that pertain to their family and community, and partly for reasons that pertain to their working conditions (e.g., desire to make more income, have a flexible schedule, experience less discrimination, etc.).

3.6 Experiences of Business Owners: Resources and Supports

The next set of questions correspond to the resources and supports that these entrepreneurs indicate are most valuable to them. This is crucial to understand to develop policies that are useful for business owners and for understanding which specific supports are valuable for particular demographic groups.

The results of this analysis are displayed in Figure 7. Overall, the resources/supports with the greatest share of respondents indicating it is “very important” include: having an effective platform for reaching customers and managing their business, having professional/personal networks, and having prior entrepreneurial experience. This highlights that the supports provided by platforms, networks, and prior knowledge are impactful to business owners.

³⁰ The results are broadly similar when we code the dependent variable as a 1 if the respondent scored the reason as a 2 or 3 versus just a 3, shown in Appendix Table 5.

We can also examine demographic differences, following the same methodology as above (where the dependent variable is a dummy variable equaling 1 when the respondent indicated the given resource/support was very important). Table 10 presents the results of this analysis. The most significant differences in responses between Black and white business owners are access to low-cost loans (column 3) and personal or family wealth or income (column 2); Black business owners are 25-30% more likely to note these as significant supports relative to their white counterparts. For Hispanic business owners, the differences are smaller relative to non-Hispanic business owner responses, though they do appear to rely more on government and professional resources (columns 4 and 5). Female versus male business owners report personal or family income (column 2), professional or personal networks (column 7), and using the platform for reaching customers (column 9) as valuable supports.³¹ These results are in line with prior research which show that Black versus white business owners face greater hurdles when accessing credit/loans and have lower personal wealth (Guzman & Kacperczyk 2019; Fairlie, Robb & Robinson 2022; Fairlie 2018; Federal Small Business Credit Surveys, 2016, 2021; Federal Reserve Bank of St. Louis, 2021, 2024), and females report greater struggles than males in terms of leveraging networks (Abraham 2020). This highlights that supports in terms of accessible financing, professional and personal networks, and reaching customers are critical to enabling minority businesses to grow and succeed, and understanding how best to target these supports could be a fruitful direction for additional research.

3.7 Experiences of Business Owners: Challenges

Finally, we conduct a deep dive into the challenges that business owners experience. Figure 8 presents the results of this analysis. Similar to Figure 6, each bar indicates a different challenge, and each bar is split into 6 groups, where “5” indicates that it is very challenging, “1” indicates that it not challenging, and ”NA” indicates that the challenge is not applicable. The top challenges are attracting domestic customers, dealing with the unpredictability of business conditions, and securing financial capital.

³¹ The results are broadly similar when we code the dependent variable as a 1 if the respondent scored the resource/support as a 4 or 5 versus just a 5, shown in Appendix Table 6.

As above, we can further examine how these patterns differ by important demographic subgroups, shown in Table 11. Each column reflects a regression of the form given below:

$$Challenge_i = \alpha + \beta X_i + \varepsilon_i \quad (3)$$

where $Challenge_i$ is a dummy variable equal to 1 for respondents who listed the reason as “very challenging ” and 0 if they listed any other level, or said it was not applicable, and X_i represents a vector of individual characteristics and business characteristics (noted above in equation (2)).

These results indicate that, across the board, Black business owners report greater challenges than white business owners, and particularly for securing financing (column 3) and being worried about losing access to other sources of income (column 1) (Hispanics also report greater challenges than non-Hispanic business owners, but for a smaller subset of challenges). Female business owners relative to males also report greater challenges for a variety of different challenges (losing access to other income shown in column 1, attracting domestic customers shown in column 4, and dealing with the unpredictability of business conditions shown in column 12). These results highlight that the underlying challenges that underrepresented groups experience as entrepreneurs are meaningfully different in magnitude than their counterparts.³²

Given the significance of financing to businesses, we further focus on financing-specific challenges, shown in Figure 9. Concerns about one’s personal financial situation is a top financing challenge, followed by costs/fees being too high.³³ Our demographic analysis, shown in Table 12, highlights that Blacks, Hispanics, and females report greater financing challenges across the board relative to their non-minority counterparts (note that this analysis also controls for a variety of individual and business characteristics). Conversely, individuals with a bachelor’s degree or higher report having fewer financing-specific challenges.³⁴

³² These results are broadly similar when we code the dependent variable as a 1 if the respondent scored the challenge as a 4 or 5 versus just a 5, shown in Appendix Table 7.

³³ Note that costs/fees here refer to those associated with business financing in general.

³⁴ These results are broadly similar when we code the dependent variable as a 1 if the respondent scored the challenge as a 4 or 5 versus just a 5, shown in Appendix Table 8, though differences between females and males are less pronounced.

We are also interested in how these entrepreneurs perceive challenges related to attracting customers and growing sales, particularly given their use of an online platform. As shown in Figure 10, over 30% of respondents find the high cost of tools/marketing a very significant challenge. When we examine demographic differences in Table 13, we find that female business owners report greater challenges attracting customers across the board (relative to men), and Black business owners report struggling with the high cost of tools and finding networks. Young owners, conversely, have an easier time dealing with these challenges across the board.³⁵

In aggregate, challenges related to operating the business appear to be less significant than some of the challenges presented in Figures 9 and 10 (less than 20% noted any of the listed challenges as “very challenging”), shown in Figure 11. However, when we examine demographic differences in Table 14, relative to their non-minority counterparts, we find that minorities generally report more operational challenges, particularly with respect to building a brand, ensuring customer satisfaction, managing their workforce, and managing the costs/sourcing of inputs and with distribution/fulfillment, though this varies by minority subgroup.³⁶ Female and young (under age 35) owners experienced greater challenges relative to their counterparts with deciding how to set up their business (e.g., incorporated vs. unincorporated, LLC vs. corporation).³⁷

Finally, in Figure 12 we examine challenges related to navigating taxes and regulations. As with operating challenges, in aggregate, these appear to be less significantly challenging across the board (less than 20% noted any of the listed challenges as “very challenging”). However, when we compare differences across demographic groups in Table 15, we find that Black business owners report more challenges across the board relative to their white counterparts, such as managing taxes and managing labor, advertising, licensing and permitting, and environmental regulations. Hispanic business owners also report more challenges than their non-Hispanic counterparts (though these effects are more muted when we examine ro-

³⁵ These results are broadly similar when we code the dependent variable as a 1 if the respondent scored the challenge as a 4 or 5 versus just a 5, shown in Appendix Table 9.

³⁶ There are some differences in the results when we code the dependent variable as a 1 if the respondent scored the challenge as a 4 or 5 versus just a 5, shown in Appendix Table 10.

³⁷ These results are broadly similar when we code the dependent variable as a 1 if the respondent scored the challenge as a 4 or 5 versus just a 5, shown in Appendix Table 10.

bustness in Appendix Table 11, when we code the dependent variable as a 1 if the respondent scored the challenge as a 4 or 5 versus just a 5). Both groups also experience greater challenges finding adequate financial or legal advice relative to their non-minority counterparts, suggesting that providing more advice for minority business owners could be a useful policy option.

Broadly, the challenges that we document in this section parallel the challenges that minorities face in general, as noted extensively in prior research. Understanding the extent to which these challenges are still present in new forms of entrepreneurship is crucial to developing policies targeted toward supporting minority entrepreneurs. Future research could assess the ways in which the provision of additional supports/resources might mitigate these challenges, particularly for specific demographic groups.

4 Conclusion

This paper presents evidence about the changing nature of entrepreneurial activity in the U.S. using novel data on online entrepreneurs from Shopify, a platform which enables small businesses to start and grow their business. These data provide new insights on how online platforms are reducing barriers to entry for new types of entrepreneurs, particularly those who have traditionally been underrepresented in entrepreneurship, such as Black and female business owners. The overrepresentation of Black and female entrepreneurs in Shopify’s data suggests that online marketplaces may play a vital role in democratizing entry into entrepreneurship, particularly given the explosion of e-commerce since the COVID-19 pandemic.

Our study presents a unique window into the experiences of these entrepreneurs. Business-level data allow us to explore the revenue trajectory of their businesses; these data highlight that a significant share of recent businesses experience growth between their first and second year and that exit rates from the platform are modest relative to typical new business exit rates. When we examine how demographic characteristics predict revenue growth, we find disparities between Black and white entrepreneurs and between female and male entrepreneurs in terms of business earnings trajectories. This is aligned with prior

research on the range of challenges that minorities face such as financing/access to credit, initial startup capital/wealth, and networking, which could be contributing factors to these earnings disparities (e.g., Guzman & Kacperczyk 2019; Fairlie, Robb & Robinson 2022; Fairlie 2018; Federal Reserve Small Business Credit Survey 2016, 2021; Gallup 2023; Federal Reserve Bank of St. Louis, 2021, 2024; Fairlie & Robb 2007; Abraham 2020). This motivates a deeper understanding of the specific challenges experienced by different demographic groups for this new class of entrepreneurs.

Our large-scale survey of 4,000 business owners who use the platform allows us to further investigate the supports that these business owners rely on. Key supports cited most often as “very important” included the platforms they rely on to reach customers and manage their business, their own personal and professional networks, their prior entrepreneurial experiences, and other online resources or training. Conversely, attracting customers, the unpredictability of business conditions (such as costs of marketing and of business inputs), securing financial capital, and losing access to other non-business income were cited most often as key challenges. These findings highlight the degree to which these owners rely upon and are sensitive to the conditions that they experience on online platforms, marketplaces, and information sources.

Our survey data reaffirm the higher importance underrepresented business owners place on a variety of resources and supports relative to their non-minority counterparts. This suggests that platforms such as Shopify – which offers a variety of resources and supports via their own products / apps and via third-party apps – has the potential to be particularly useful to these entrepreneurs. Our survey also highlights a number of avenues to address pre-existing financing challenges faced by minority entrepreneurs, including reducing owners’ challenges around navigating lending processes (e.g., completing the application processes and finding adequate financial advice), ensuring fairness in lending standards to mitigate any potential impacts of bias, and innovations in data and analytics to support more robust lending to newer and smaller businesses writ large. The rise of platformed business may present new opportunities in this regard, as platforms such as Shopify have greater access to information about business performance over time that could support new types of lending decisions, such as those undertaken by Shopify Capital, Shopify’s lending arm. Both black

and female online entrepreneurs in our survey data describe platforms and other key supports as highly important in mitigating the challenges they face.

There are some limitations of this research which motivate further study. In particular, Shopify represents a sample of online businesses, and thus provides a window into – rather than a census – of this dynamic and fast-growing space. Future research could build upon this work to develop a comprehensive picture of online businesses by drawing on additional samples. Second, our analyses of business performance are limited to changes on Shopify’s platform or exits from the platform; however, many businesses and business owners are operational offline or on other online platforms and sales channels, and thus, our picture of business performance is necessarily incomplete. Future work should aim to develop comprehensive information about the multiple different platforms a business owner might be using, and how these different platforms facilitate their business goals. Finally, our analyses are descriptive; future research could exploit economic shocks or policy changes to more rigorously assess the impact of the various supports and challenges that we identify on business and business owner outcomes. In particular, identifying geographic-specific factors – such as changes in broadband access or local taxes and regulation – may also help in identifying business conditions that impact firm performance and growth.

Another promising direction for future research involves leveraging these large-scale platforms to employ experimental methods. For example, randomized controlled trials on these platforms could inform our understanding of how best to enhance businesses owners’ access to financing, information, and professional networks, or what factors are more correlated with rapid growth. For example, one could randomly nudge new businesses to use ancillary supports (such as Shopify Capital or tools for accessing international markets), and then assess how those who were nudged versus those who were not fare in terms of usage of those tools and corresponding business outcomes. The ability to more easily collect data and access a broad sample of entrepreneurs should facilitate these experimental studies, and lower the costs of researcher execution.

If the recent uptick in business creation rates in the U.S. is to be sustained, key players in the entrepreneurial ecosystem, such as financial institutions, government, and technology providers, must consider how best to support new entrants to this space. Analyzing data

from Shopify's sample of emerging entrepreneurs is a first step in understanding the health of these online businesses. Additional research and policy insights from future research is necessary to support these businesses in this new era of U.S. entrepreneurship.

References

- 2022: Self-employment rate: Oecd data. <https://data.oecd.org/emp/self-employment-rate.htm>.
- 2024: U.s. census bureau: U.s. retail sales reach \$7,040 billion. <https://www.census.gov/newsroom/press-releases/2024/annual-retail-trade-survey.html>.
- The economist: The number of new businesses in america is booming. <https://www.economist.com/united-states/2020/10/10/the-number-of-new-businesses-in-america-is-booming>. October 2020.
- (2017). Report to the congress on the availability of credit to small businesses: Board of governors of the federal reserve system.
- (2020). Small business owner race, liquidity, and survival: Jpmorgan chase & co. institute.
- (2023). 2023 report on nonemployer firms: Findings from the 2022 small business credit survey: Federal reserve banks.
- (2024). 1-year survival rates for new business establishments by year and location: Bureau of labor statistics.
- (2024). Entrepreneurial insights owning and employing as a pathway to wealth and wellbeing: Gallup.
- (2024). Small business checkpoint: Bank of america.
- Abraham, K., Haltiwanger, J., Sandusky, K., and Spletzer, J. (2017). Measuring the gig economy: Current knowledge and open issues. *Measuring and Accounting for Innovation in the 21st Century*.
- Abraham, M. (2020). Gender-role incongruity and audience-based gender bias: An examination of networking among entrepreneurs. *Administrative science quarterly*, 65(1):151–180.
- Akcigit, U. and Ates, S. T. (2021). Ten facts on declining business dynamism and lessons from endogenous growth theory. *American Economic Journal: Macroeconomics*, 13(1):257–298.

- Akcigit, U. and Ates, S. T. (2023). What happened to us business dynamism? *Journal of Political Economy*, 131(8):2059–2124.
- Ardagna, S. and Lusardi, A. (2010). Heterogeneity in the effect of regulation on entrepreneurship and entry size. *Journal of the European Economic Association*, 8(2-3):594–605.
- Azoulay, P., Jones, B. F., Kim, J. D., and Miranda, J. (2022). Immigration and entrepreneurship in the united states. *American Economic Review: Insights*, 4(1):71–88.
- Banks, F. R. (2016). 2016 small business credit survey report on women-owned firms. *Fed Small Business Report*.
- Banks, F. R. (2021). Small business credit survey: 2021 report on firms owned by people of color. *Fed Small Business Report*.
- Barr, M. S. (2015). Minority and women entrepreneurs: Building capital, networks, and skills. *Brookings Working Paper*.
- Barrios, J. M., Hochberg, Y. V., and Yi, H. (2022). Launching with a parachute: The gig economy and new business formation. *Journal of Financial Economics*, 144(1):22–43.
- Bloom, N., Fletcher, R. S., and Yeh, E. (2021). The impact of covid-19 on u.s. firms. *National Bureau of Economic Research*.
- Bloom, N., Van Reenen, J., and Williams, H. (2019). A toolkit of policies to promote innovation. *Journal of economic perspectives*, 33(3):163–184.
- Bracha, A. and Burke, M. A. (2023). Informal work and official employment statistics: What’s missing? *FRB of Boston Working Paper*.
- Chetty, R., Friedman, J. N., Stepner, M., and the Opportunity Insights Team (2023). The economic impacts of covid-19: Evidence from a new public database built using private sector data. *Quarterly Journal of Economics*.
- Chodavadia, S. A., Kerr, S. P., Kerr, W. R., and Maiden, L. J. (2024). Immigrant entrepreneurship: New estimates and a research agenda.

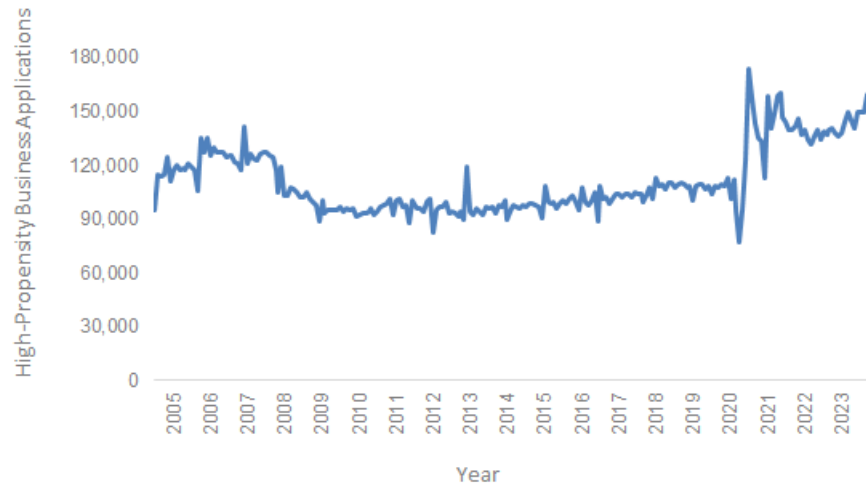
- Decker, R., Haltiwanger, J., Jarmin, R., and Miranda, J. (2014). The role of entrepreneurship in us job creation and economic dynamism. *Journal of Economic Perspectives*, 28(3):3–24.
- Fairlie, R. (2018). Racial inequality in business ownership and income. *Oxford Review of Economic Policy*, 34(4):597–614.
- Fairlie, R. (2020). The impact of covid-19 on small business owners: Evidence from the first three months after widespread social-distancing restrictions. *Journal of economics & management strategy*, 29(4):727–740.
- Fairlie, R. (2024). The impacts of covid-19 on racial inequality in business earnings. *Journal of Policy Analysis and Management*, 43(1):258–288.
- Fairlie, R., Robb, A., and Robinson, D. T. (2022). Black and white: Access to capital among minority-owned start-ups. *Management Science*, 68(4):2377–2400.
- Fairlie, R. W. and Fossen, F. M. (2019). Defining opportunity versus necessity entrepreneurship: Two components of business creation.
- Fairlie, R. W. and Robb, A. M. (2007). Why are black-owned businesses less successful than white-owned businesses? the role of families, inheritances, and business human capital. *Journal of Labor Economics*, 25(2):289–323.
- Fairlie, R. W. and Robb, A. M. (2010). *Disparities in Capital Access Between Minority and Non-minority-owned Businesses*. US Department of Commerce, Minority Business Development Agency.
- Gelles-Watnick, R. and Anderson, M. (2021). Racial and ethnic differences stand out in the u.s. gig workforce. *Pew Research Center*.
- Glaeser, E. L., Kerr, S. P., and Kerr, W. R. (2015). Entrepreneurship and urban growth: An empirical assessment with historical mines. *Review of Economics and Statistics*, 97(2):498–520.
- Guzman, J. and Kacperczyk, A. O. (2019). Gender gap in entrepreneurship. *Research Policy*, 48(7):1666–1680.

- Haltiwanger, J., Jarmin, R., Kulick, R., and Miranda, J. (2017). High growth young firms: Contribution to job, output and productivity growth. *U.S. Census Bureau*.
- Harper-Anderson, E., O'Hollaren, K., and Gates, S. (2023). Roles for city governments in entrepreneurial ecosystems: An initial exploration. *RAND Corporation Report*.
- Jackson, E. (2023). Availability of the gig economy and long run labor supply effects for the unemployed. *Revise and Resubmit, Review of Economics and Statistics*.
- Kent, A. H. (2021). Gender wealth gaps in the u.s. and benefits of closing them. *Federal Reserve Bank of St Louis (September 29, 2021)*, <https://www.stlouisfed.org/open-vault/2021/september/gender-wealth-gaps-us-benefits-of-closing-them>.
- Kent, A. H. and Ricketts, L. R. (2024). The state of us wealth inequality. *Federal Reserve Bank of St Louis (February 5, 2024)*, <https://www.stlouisfed.org/institute-for-economic-equity/the-state-of-us-wealth-inequality>.
- Kerr, S. P. and Kerr, W. R. (2016). Immigrant entrepreneurship. In *Measuring entrepreneurial businesses: Current knowledge and challenges*, pages 187–249. University of Chicago Press.
- Liang, J., Wang, H., and Lazear, E. P. (2018). Demographics and entrepreneurship. *Journal of Political Economy*, 126(S1):S140–S196.
- Lim, K., Miller, A., Risch, M., and Wilking, E. (2019). Independent contractors in the us: New trends from 15 years of administrative tax data. *Unpublished working paper*. <https://www.irs.gov/pub/irs-soi/19rpindcontractorinus.pdf>.
- Misera, L. (2020). An uphill battle: Covid-19's outsized toll on minority-owned firms. *Community Development Reports*, (20201008).
- Misera, L. and Perlmeter, E. R. (2023). 2023 report on startup firms owned by people of color: Findings from the 2022 small business credit survey.
- Robb, A. and Morelix, A. (2016). Startup financing trends by race: How access to capital impacts profitability: Annual survey of entrepreneurs data briefing series.

Yu, W. (2023). The godaddy/ucla anderson forecast microbusiness activity index update, 2023q2.

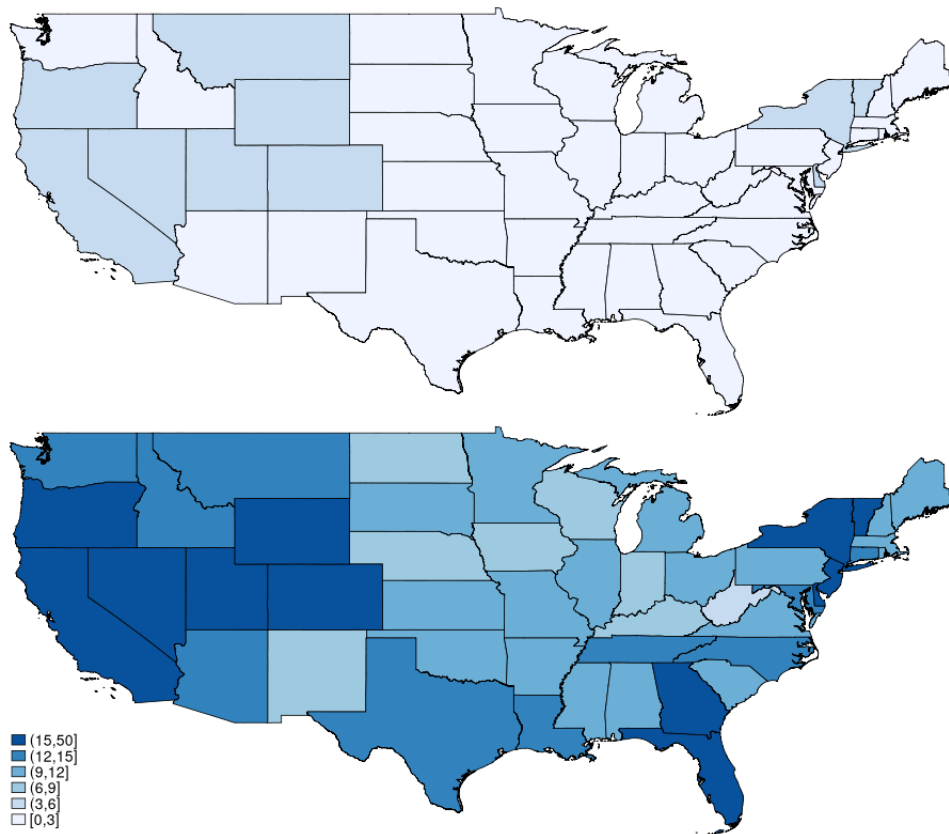
Figures & Tables

FIGURE 1: HIGH-PROPENSITY BUSINESS APPLICATIONS



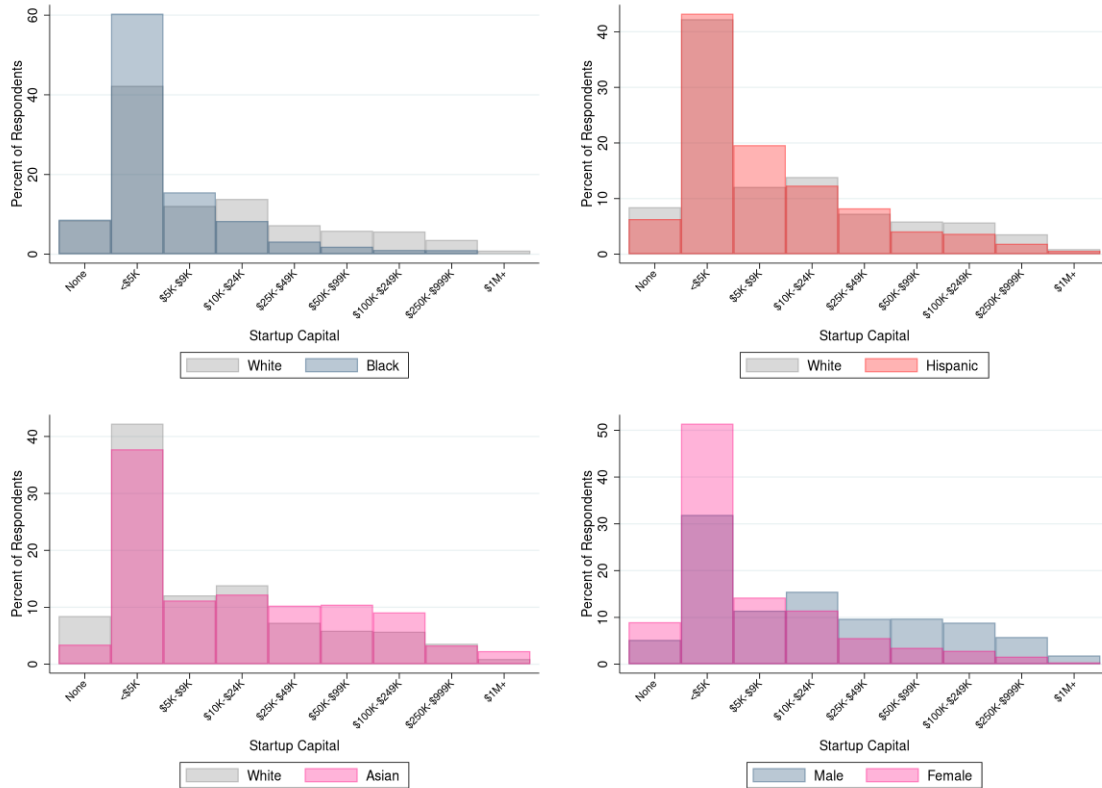
Notes: This figure displays the share of high-propensity business applications (seasonally adjusted) as calculated by the U.S. Census Bureau Business Formation Statistics. High propensity business applications refer to applications with a high-propensity of turning into a business with a payroll, based on various factors.

FIGURE 2: MAPS OF SHOPIFY BUSINESSES: 2017 VERSUS 2022



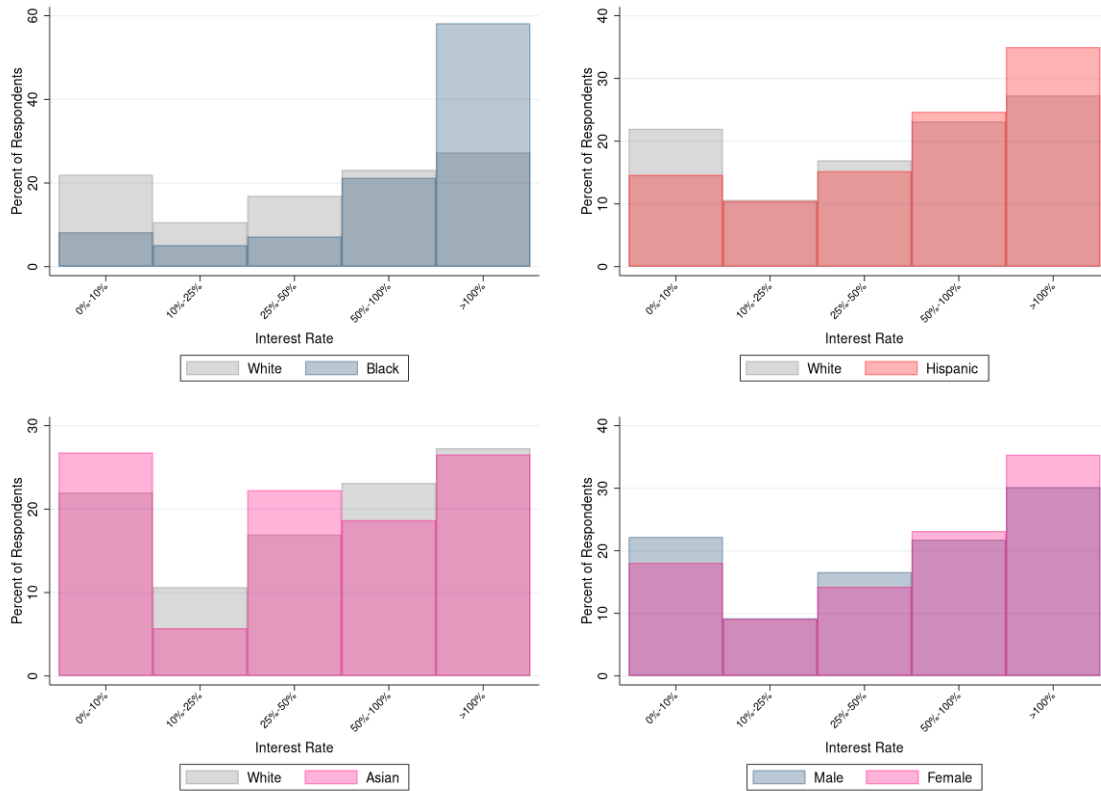
Notes: This figure plots the number of Shopify stores per 1,000 individuals in 2017 (top) and in 2022 (bottom) for stores with over \$100 in total revenue in each respective year. We also remove businesses with no orders, those with overall negative revenue, those which belong to a zip code tabulation area that does not match a zip code, and those with missing zip-code level population data.

FIGURE 3: STARTUP CAPITAL



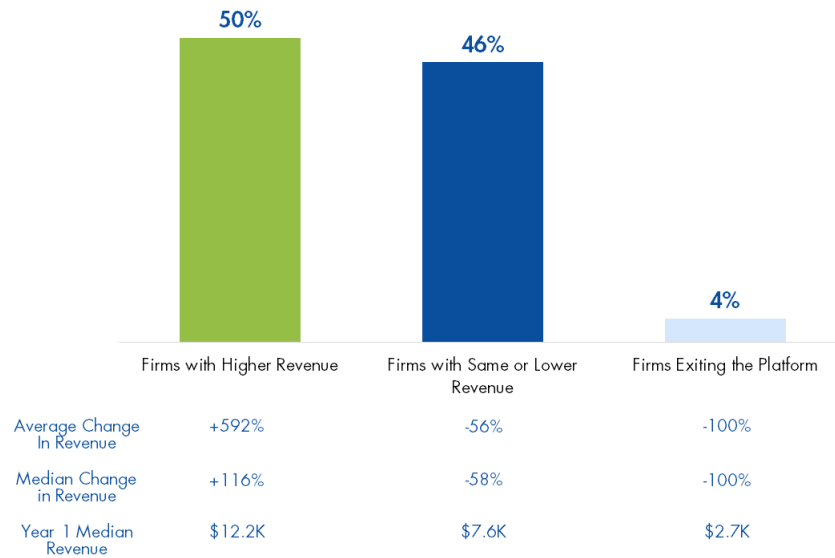
Notes: This figure displays the distribution of reported startup capital using data from the RAND-Shopify survey. The x-axis reflects the amount of startup capital and the y-axis reflects the share of Shopify survey respondents in the startup capital bucket. The data are shown for four different demographic comparisons (overlapping distributions): white versus Black business owners (a), white versus Hispanic business owners (b), white versus Asian business owners (c), and male versus female business owners (d). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 4: IMPLIED REQUIRED INTEREST RATE



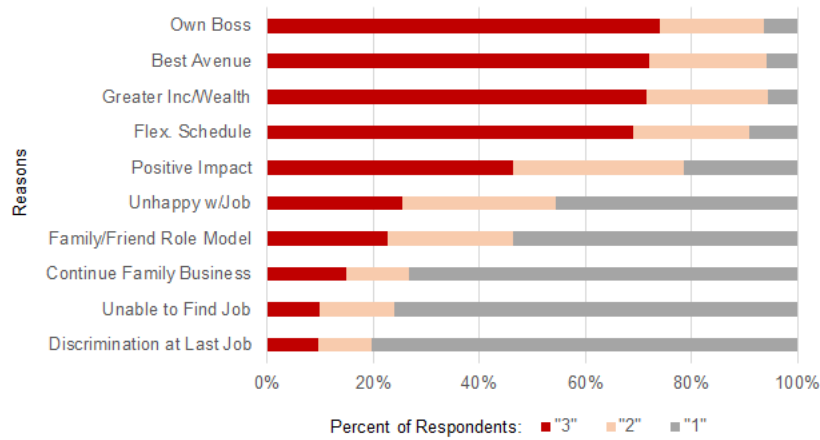
Notes: This figure displays the distribution of implied required interest rates necessary to induce the business owner to wait a year versus receiving \$1K today using data from the RAND-Shopify survey. The x-axis reflects the implied required interest rate and the y-axis reflects the share of Shopify survey respondents in the given interest rate bucket. The data are shown for four different demographic comparisons (overlapping distributions): white versus Black business owners (a), white versus Hispanic business owners (b), white versus Asian business owners (c), and male versus female business owners (d). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 5: REVENUE TRAJECTORIES OF FIRMS IN THEIR SECOND YEAR USING THE PLATFORM



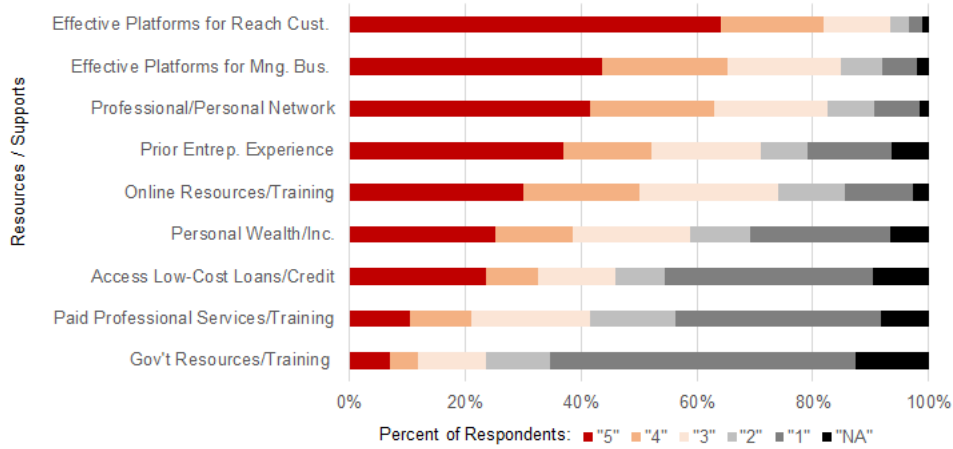
Notes: This figure presents the business performance of Shopify businesses using data from the administrative sample. This sample reflects Shopify businesses between 2017 and 2021 with more than \$1K in annualized platform revenue in their first year (160,634 businesses over all years); we remove businesses who opened between September and December to generate more stable estimates of annualized revenue. Then, we examine their revenue growth in the first two years they are observed on the platform during this time period (year 2 platform revenue relative to year 1 platform). Each business is grouped into three discrete buckets: those with earnings growth, defined as a positive change in earnings between year 2 and year 1; those with same or lower earnings, defined as a negative change in earnings between year 2 and year 1; and those who exited the platform. The fraction of businesses in each of these three buckets is shown on the y-axis. In the rows below the figure, we present the average change in sales between year 1 and year 2, the median change in sales between year 1 and year 2, and median year 1 sales. All dollar amounts are inflation-adjusted to 2022 dollars.

FIGURE 6: REASONS FOR STARTING SHOPIFY BUSINESS



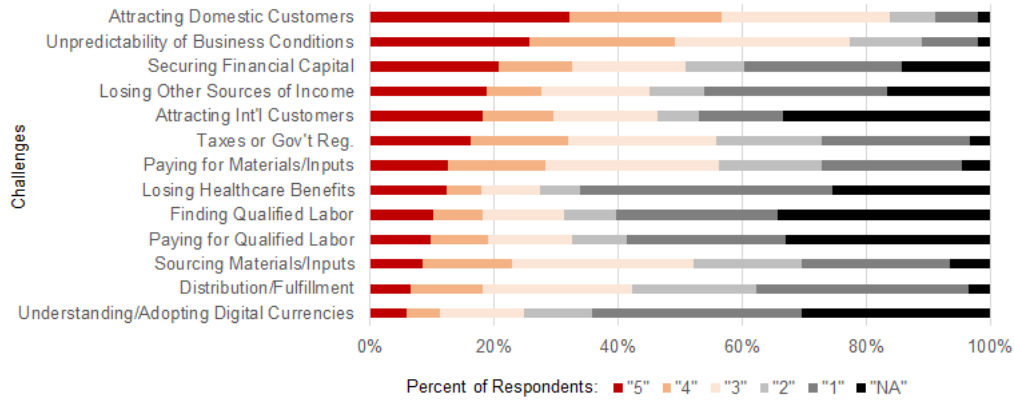
Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about reasons for starting their business. The y-axis lists the reasons and the x-axis reflects the percent of respondents in each category. Specifically, each bar reflects a different reason and the colors denote the different proportions responding very important (3), somewhat important (2), and not important (1). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 7: RESOURCES / SUPPORTS



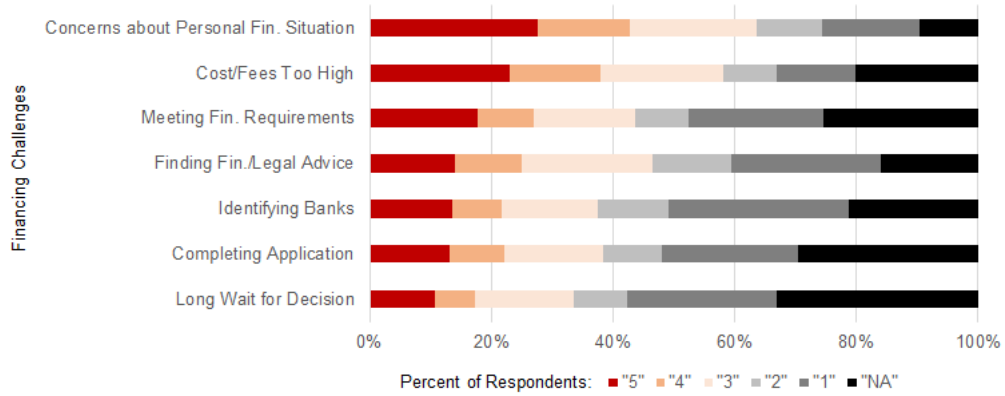
Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about the resources / supports they find more valuable regarding their business. The y-axis lists the resources / supports and the x-axis reflects the percent of respondents in each category. Specifically, each bar reflects a different resource / support and the colors denote the different proportions responding very important (5) to not important (1), as well as respondents who indicated the resource / support was not applicable to their business. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 8: CHALLENGES



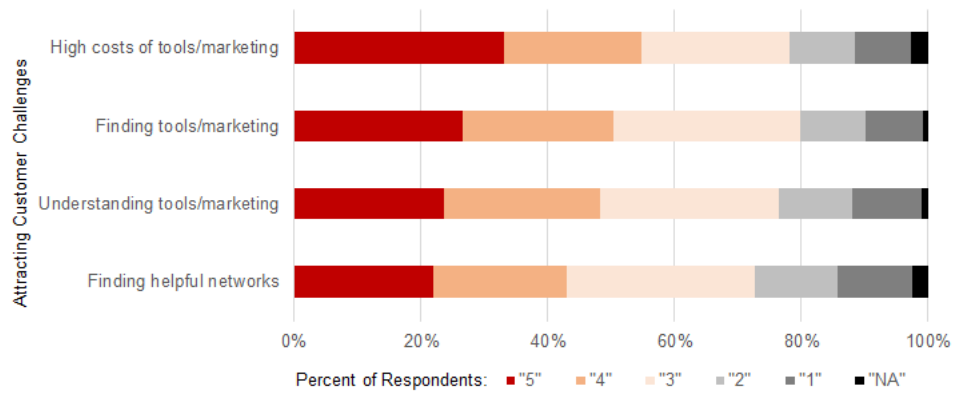
Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about challenges associated with their business. The y-axis lists the challenges and the x-axis reflects the percent of respondents in each category. Specifically, each bar reflects a different challenge and the colors denote the different proportions responding very challenging (5) to not challenging (1), as well as respondents who indicated the challenge was not applicable to their business. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 9: FINANCING CHALLENGES



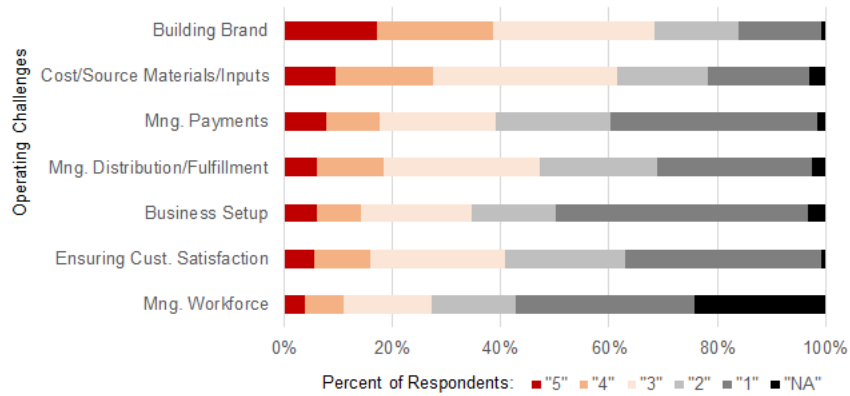
Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about financing challenges associated with their business. The y-axis lists the financing challenges and the x-axis reflects the percent of respondents in each category. Specifically, each bar reflects a different financing challenge and the colors denote the different proportions responding very challenging (5) to not challenging (1), as well as respondents who indicated the financing challenge was not applicable to their business. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 10: CHALLENGES RELATED TO ATTRACTING CUSTOMERS



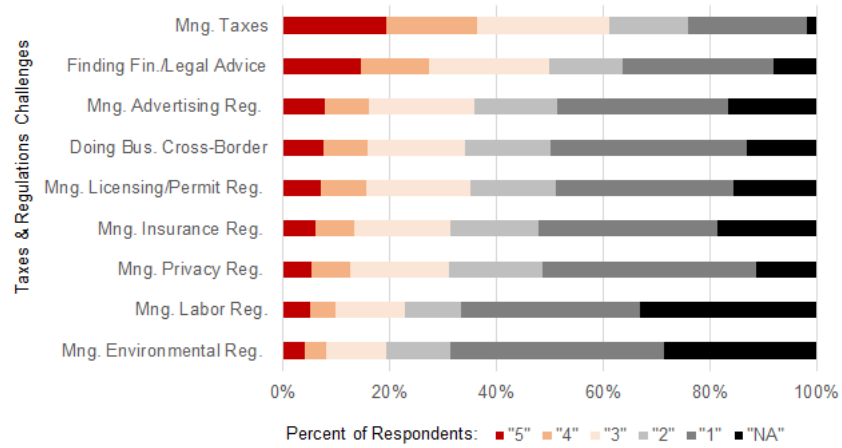
Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about challenges related to attracting customers to their business. Each bar reflects a different challenge related to attracting customers and the colors denote the different proportions responding very challenging (5) to not challenging (1), as well as respondents who indicated the challenge was not applicable to their business. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 11: CHALLENGES RELATED TO OPERATING THE BUSINESS



Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about challenges related to operating their business. The y-axis lists the operating challenges and the x-axis reflects the percent of respondents in each category. Specifically, each bar reflects a different challenge related to operating their business and the colors denote the different proportions responding very challenging (5) to not challenging (1), as well as respondents who indicated the challenge was not applicable to their business. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

FIGURE 12: CHALLENGES RELATED TO TAXES & REGULATIONS



Notes: This figure displays the distribution of responses from the RAND-Shopify survey for the survey question which asked respondents about challenges related to managing taxes and regulations for their business. The y-axis lists the taxes and regulations challenges and the x-axis reflects the percent of respondents in each category. Specifically, each bar reflects a different challenge related to taxes and regulations and the colors denote the different proportions responding very challenging (5) to not challenging (1), as well as respondents who indicated the challenge was not applicable to their business. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 1: ADMINISTRATIVE SAMPLE: SUMMARY STATISTICS

| | Statistic |
|-------------------------------------|-----------|
| Total Number of Businesses | 337,462 |
| 2022 Mean Revenue | \$320,304 |
| 2022 Median Revenue | \$13,880 |
| Mean Years on Shopify Platform | 3.7 |
| <i>Industry: (%)</i> | |
| Clothing, shoes, and/or accessories | 55 |
| Food or Beverages | 8 |
| Health & Beauty | 13 |
| Home & Garden | 19 |
| <i>Region: (%)</i> | |
| Northeast | 17 |
| Midwest | 15 |
| West | 31 |
| South | 37 |

Notes: This table presents summary statistics for those Shopify businesses in our analytic sample, which is focused on businesses that are relatively more active on the platform. This sample reflects Shopify businesses with over \$1,000 in annualized revenue in 2022, restricting to those businesses which opened before September 2022. We also remove businesses with no orders, those with overall negative revenue, those which belong to a zip code tabulation area that does not match a zip code, and those with missing zip-code level population data.

TABLE 2: LOCATION CHARACTERISTICS OF SHOPIFY STORES

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---------------|-----------|-----------|-------------|-----------------|------------|--------------|---------------------|----------------|------------------|
| Pop: Black NH | 0.799**** | Pop: BA+ | Pop: HHInc | Estab: Black NH | Estab: BA+ | Estab: HHInc | Rwt Estab: Black NH | Rwt Estab: BA+ | Rwt Estab: HHInc |
| ShopifyStore | (0.0268) | 3.974**** | -2141.4**** | 1.535**** | 1.243**** | 270.0**** | 1.344**** | 1.766**** | 522.8**** |
| | | (0.0177) | (29.09) | (0.0235) | (0.0199) | (32.61) | (0.0314) | (0.0239) | (39.11) |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the results of our analysis comparing the zip-code characteristics of where Shopify businesses are located in the U.S. to the same zip-code characteristics of where people and businesses are located, specifically the share of Black Non-Hispanics (“Black NH”); the share of those with a bachelor’s degree or higher (“BA+”); and the level of median household income (in 2019 inflation-adjusted dollars) (“HHInc”). The first three columns compare Shopify businesses to (a) population estimates from American Community Survey data (“Pop”); the next three columns compare Shopify businesses to (b) establishments from County Business Patterns data (“Estab”); and the last three columns compare Shopify businesses to (c) establishments in the retail and wholesale trade sector (also from County Business Patterns data) with fewer than 5 employees (“Rwt: Estab”). The sample reflects all Shopify businesses in existence from January 2017 through December 2022 with over \$1000 in annualized revenue in 2022. We stack the data at the zip code tabulation area (ZCTA) level, where the outcome variable is the ZCTA characteristic of interest (e.g., percent Black Non-Hispanic) and the independent variable is a dummy variable equaling 1 if it corresponds to being in the Shopify dataset; the data are further weighted by the number of Shopify businesses (or population or establishments) in the given ZCTA. There are 32,604 zip codes in the population dataset; 30,261 zip codes in the establishment dataset which includes all industries; 21,877 zip codes in the establishment date which reflects those in the retail and wholesale trade sector with fewer than 5 employees; and 21,095 zip codes in the Shopify administrative dataset.

TABLE 3: BUSINESS CHARACTERISTICS OF SURVEY SAMPLE

| | All | Male | Female | White | Black | Asian | Hispanic |
|---|-----|------|--------|-------|-------|-------|----------|
| Fraction of Single-Owned Businesses | 74 | 61 | 82 | 72 | 89 | 68 | 73 |
| <i>Types of Workers:</i> | | | | | | | |
| Fraction w/ W-2 Employees | 28 | 38 | 22 | 29 | 20 | 32 | 21 |
| Median Number of W-2 Workers (among those with W-2 Workers) | 3.0 | 4.0 | 2.0 | 4.0 | 1.0 | 3.0 | 3.0 |
| Mean Age of Business (yrs) | 4.1 | 4.6 | 3.8 | 4.3 | 3.1 | 3.7 | 3.3 |
| Median Age of Business (yrs) | 2.8 | 3.0 | 2.7 | 2.8 | 2.5 | 2.9 | 2.4 |
| Business Setup: Professional Advice (%) | 22 | 32 | 17 | 25 | 10 | 22 | 16 |
| <i>Business Type: (%)</i> | | | | | | | |
| Sole proprietorship | 26 | 15 | 32 | 29 | 20 | 17 | 29 |
| Informal business | 3 | 3 | 4 | 3 | 3 | 3 | 3 |
| Limited liability company | 55 | 59 | 53 | 52 | 70 | 57 | 53 |
| A partnership | 2 | 3 | 2 | 2 | 1 | 1 | 4 |
| A corporation | 12 | 19 | 8 | 12 | 6 | 23 | 8 |
| Other | 1 | 1 | 2 | 2 | 0 | 0 | 2 |
| <i>Retail Locations: (%)</i> | | | | | | | |
| All Online | 73 | 70 | 74 | 70 | 83 | 75 | 76 |
| Physical | 27 | 30 | 26 | 30 | 17 | 25 | 24 |
| <i>Sales Channels:</i> | | | | | | | |
| Mean % Online (Shopify store or other) | 70 | 72 | 69 | 69 | 76 | 77 | 71 |
| Mean % Physical storefront | 11 | 11 | 10 | 12 | 7 | 8 | 9 |
| Mean % Pop up or temporary location | 11 | 6 | 13 | 10 | 12 | 8 | 13 |
| Mean % All other avenues | 9 | 11 | 7 | 9 | 5 | 7 | 7 |

Notes: This table displays the business characteristics of the RAND-Shopify survey sample. Each column refers to a separate sample, e.g., “Male” refers to the sample of business owners who identified as male. “Physical” refers to having at least one or more physical storefronts (and a small minority of respondents who said they were not sure) versus being solely online. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1. See survey instrument in Appendix Document 2 for more detail.

TABLE 4: DEMOGRAPHIC CHARACTERISTICS OF SURVEY SAMPLE & COMPARISON TO PUBLICLY AVAILABLE DATA

| | Shopify Sample | ABS & NES | ABS & NES: RWT |
|---------------------------|----------------|-----------|----------------|
| Female (%) | 66 | 39 | 44 |
| Male (%) | 33 | 57 | 50 |
| Other Gender (%) | 1 | | |
| White (%) | 69 | 80 | 83 |
| Black (%) | 15 | 11 | 7 |
| Asian (%) | 7 | 9 | 10 |
| Hispanic (%) | 13 | 14 | 11 |
| Age Under 35 (%) | 40 | 19 | 17 |
| Less than Bachelor (%) | 38 | 47 | 54 |
| Bachelors (%) | 41 | 30 | 35 |
| Greater than Bachelor (%) | 21 | 23 | 11 |

Notes: This table displays the demographic characteristics of the RAND-Shopify survey sample as compared to publicly available data. The first column presents statistics from the RAND-Shopify survey, where responses are weighted using the survey weights described in Appendix Document 1. The second column presents statistics drawn from the U.S. Census Bureau’s Annual Business Survey (ABS) and Nonemployer Statistics-Demographics (NES-D) program. The third column presents statistics from these two Census Bureau data sources but restricted to businesses in the retail and wholesale trade sectors. When possible, we pool data for employer (ABS) and nonemployer (NES-D) businesses. We note that the race categories in the ABS and NES-D are not mutually exclusive. Moreover, businesses may be owned equally by males and females or Hispanic and non-Hispanic individuals and those shares are not shown here. The last three rows reflect data from ABS respondents only (educational attainment). The RAND-Shopify survey had 4,000 respondents. See survey instrument in Appendix Document 2 for more detail on the RAND-Shopify demographic data.

TABLE 5: WORK CHARACTERISTICS OF SURVEY SAMPLE

| | All | Male | Female | White | Black | Asian | Hispanic |
|---|------|------|--------|-------|-------|-------|----------|
| Mean Usual Hours Worked | 46.3 | 49.5 | 44.6 | 46.9 | 43.6 | 46.3 | 44.8 |
| Mean Fraction of Work Time on Shopify Bus. | 59 | 56 | 61 | 60 | 54 | 56 | 58 |
| Fraction Working Less than 30 Hours on Shopify Bus. | 53 | 52 | 53 | 52 | 59 | 53 | 57 |
| <i>Health Insurance: (%)</i> | | | | | | | |
| Self | 8 | 14 | 5 | 9 | 4 | 14 | 5 |
| Full-Time | 21 | 23 | 20 | 19 | 34 | 22 | 19 |
| Partner/Spouse | 22 | 14 | 26 | 26 | 9 | 17 | 15 |
| Medicare/Medicaid | 12 | 9 | 14 | 12 | 15 | 9 | 13 |
| ACA Marketplace | 11 | 12 | 10 | 12 | 7 | 13 | 11 |
| Uninsured | 11 | 11 | 11 | 9 | 15 | 11 | 18 |
| Other Insurance | 16 | 16 | 15 | 14 | 16 | 15 | 19 |

Notes: This table displays the work characteristics of the RAND-Shopify survey sample. Each column refers to a separate sample, e.g., “Male” refers to the sample of business owners who identified as male. Responses are weighted using survey weights described in Appendix Document 1. “Self” refers to health insurance provide to employees at their Shopify business. “Other” refers to health insurance provided by the respondent’s parent’s employer, through a military health program, coverage obtained outside the marketplaces established by the Affordable Care Act, or another form of insurance. The RAND-Shopify survey had 4,000 respondents. See survey instrument in Appendix Document 2 for more detail.

TABLE 6: PRIOR WORK EXPERIENCES OF SURVEY RESPONDENTS

| | All | Male | Female | White | Black | Asian | Hispanic |
|---------------------------------|-----|------|--------|-------|-------|-------|----------|
| <i>Worked Prior: (%)</i> | | | | | | | |
| Owned Business | 25 | 35 | 20 | 27 | 20 | 27 | 21 |
| Full-Time Job | 58 | 60 | 57 | 55 | 70 | 60 | 59 |
| Part-Time Job | 11 | 8 | 13 | 11 | 8 | 9 | 14 |
| Contract/Freelance Work | 10 | 11 | 10 | 11 | 10 | 10 | 9 |
| Unemployed/Disability Insurance | 5 | 4 | 6 | 5 | 5 | 7 | 8 |
| Choose Not to Work or Other | 7 | 4 | 9 | 8 | 4 | 3 | 5 |

Notes: This table displays the prior work experiences of the RAND-Shopify survey sample. Each column refers to a separate sample, e.g., “Male” refers to the sample of business owners who identified as male. Note that respondents were instructed to select all prior work experiences immediately prior to running their primary Shopify business, so values do not add to 100%. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1. See survey instrument in Appendix Document 2 for more detail.

TABLE 7: FINANCIAL CHARACTERISTICS OF SURVEY SAMPLE

| | All | Male | Female | White | Black | Asian | Hispanic |
|--------------------------------------|---------|----------|---------|---------|---------|---------|----------|
| Median Total Revenue | \$33000 | \$100000 | \$21000 | \$45000 | \$10000 | \$75000 | \$18000 |
| Median Shopify Revenue from Platform | \$10746 | \$19061 | \$8263 | \$13528 | \$3890 | \$13831 | \$5912 |
| % Total Revenue Outside of the US | 7.3 | 8.3 | 6.8 | 6.3 | 9.4 | 10.4 | 7.8 |
| % Operating at Profit | 48.5 | 56.1 | 44.2 | 51.9 | 34.5 | 47.9 | 41.1 |
| % Expect Higher Future Revenues | 73 | 75 | 72 | 71 | 87 | 63 | 78 |
| % Loan Application Ever Rejected | 19.6 | 20.6 | 19.2 | 16.4 | 36.3 | 9.7 | 23.3 |

Notes: This table displays the financial characteristics for the businesses in the RAND-Shopify survey sample. Each column refers to a separate sample, e.g., “Male” refers to the sample of business owners who identified as male. Responses are weighted using survey weights described in Appendix Document 1. All data reflect information related to the respondent’s current business. Median total revenue reflects total revenue (across any platform or source) earned by the business reported by the business owner, and median Shopify revenue reflects current business revenue from Shopify’s administrative data for these respondents. % Operating at a Profit reflects the share of respondents who have profits that are greater than 0 for the current business. % Expect Higher Future Revenues reflects the share of respondents who expect higher future revenues for their current business. % Loan Application Ever Rejected reflects the share of respondents who had a loan rejected related to their current business. The RAND-Shopify survey had 4,000 respondents. See survey instrument in Appendix Document 2 for more detail.

TABLE 8: CORRELATES OF BUSINESS PERFORMANCE

| | (1) | (2) | (3) |
|----------------------------------|------------------------|------------------------|------------------------|
| | Ln(Rev 2022) | Ln(Rev 2022) | Ln(Rev 2022) |
| Ln(Rev 2021) | 0.812**** (0.0157) | 0.809**** (0.0156) | 0.798**** (0.0156) |
| Age<35 | -0.100** (0.0453) | -0.102** (0.0453) | -0.0785* (0.0449) |
| Black | -0.371**** (0.0602) | -0.367**** (0.0605) | -0.331**** (0.0611) |
| Asian | -0.0745 (0.0953) | -0.0557 (0.0993) | -0.0551 (0.0995) |
| Hispanic | -0.0375 (0.0768) | -0.0209 (0.0793) | -0.0253 (0.0770) |
| Female | -0.175**** (0.0469) | -0.170**** (0.0461) | -0.123** (0.0483) |
| Bachelor+ | 0.0480 (0.0448) | 0.0412 (0.0448) | 0.00448 (0.0454) |
| HHInc | 8.03e-08 (6.30e-08) | 7.87e-08 (6.27e-08) | 7.04e-08 (5.93e-08) |
| Individual Controls | X | X | X |
| Business Startup Controls | X | X | X |
| Business Location Controls | | X | X |
| Business Characteristic Controls | | | X |
| Observations | 1979 | 1979 | 1952 |
| R-squared | 0.679 | 0.689 | 0.695 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the results of an analysis examining the correlates of business performance. The sample is the RAND-Shopify survey data given that that sample allows us to control for a richer set of demographic characteristics. 2022 and 2021 revenues are trimmed to drop those below the 5th percentile and above the 95th percentile and 2021 revenues are annualized for those whose first year on platform was before September 2021 (we remove businesses who opened in September 2022 or later to generate more stable annualization estimates). The dependent variable is the natural log of trimmed revenues in 2022. The independent variables include: the natural log of trimmed revenues in 2021, and a set of individual, business startup, business location, and business characteristic variables. Individual Controls reflect dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for household income (“HHInc”); Business Startup Controls reflect dummy variables for the year business started, the month business started, and whether the business had no revenues in its first year of operations; Business Location Controls reflect headquarter state; and Business Characteristic Controls reflect self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The sample reflects 1,952 Shopify businesses. The regression is weighted using the survey weights described in Appendix Document 1.

TABLE 9: REASONS FOR STARTING SHOPIFY BUSINESS

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|--------------|------------------------|------------------------|------------------------|------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Boss | Family Bus. | Flexible | Inc. Income | Best Avenue | No Job | Job Diss. | Job Discrim | Impact | Role Model |
| Age<35 | 0.0498*** (0.0168) | -0.0125 (0.0133) | 0.0464*** (0.0176) | 0.0613*** (0.0170) | 0.0200 (0.0178) | 0.00776 (0.0119) | 0.0800*** (0.0174) | 0.00587 (0.0116) | 0.0539*** (0.0192) | 0.0532*** (0.0168) |
| Black | 0.0908*** (0.0216) | 0.206*** (0.0234) | 0.0460** (0.0233) | 0.228*** (0.0183) | 0.150*** (0.0213) | 0.0812*** (0.0199) | 0.0646** (0.0253) | 0.141*** (0.0207) | 0.256*** (0.0264) | 0.114*** (0.0251) |
| Asian | -0.0580 (0.0377) | 0.0691** (0.0304) | -0.0460 (0.0403) | 0.0532 (0.0369) | -0.0406 (0.0398) | 0.0553** (0.0264) | 0.00962 (0.0352) | 0.0525* (0.0271) | -0.0287 (0.0406) | -0.0308 (0.0341) |
| Hispanic | 0.00183 (0.0285) | 0.0661*** (0.0255) | 0.0244 (0.0294) | 0.0311 (0.0281) | -0.00318 (0.0301) | 0.0326 (0.0223) | 0.0613** (0.0299) | 0.0460** (0.0216) | 0.0735** (0.0326) | -0.0136 (0.0280) |
| Female | 0.0114 (0.0183) | 0.00233 (0.0144) | 0.149*** (0.0198) | -0.0564*** (0.0183) | 0.0332* (0.0191) | 0.0277** (0.0124) | 0.0184 (0.0181) | 0.0398*** (0.0123) | 0.101*** (0.0204) | -0.00623 (0.0181) |
| Bachelor+ | -0.0543*** (0.0161) | -0.0447*** (0.0142) | -0.0673*** (0.0172) | -0.0572*** (0.0163) | -0.0241 (0.0170) | -0.0281** (0.0122) | -0.0343** (0.0170) | -0.0269** (0.0119) | -0.0224 (0.0188) | 0.000552 (0.0169) |
| BusAge | 0.0234*** (0.00531) | 0.00491 (0.00454) | 0.0204*** (0.00570) | 0.000594 (0.00576) | 0.00913 (0.00575) | 0.00195 (0.00389) | 0.00581 (0.00551) | 0.000386 (0.00350) | -0.00138 (0.00638) | 0.00383 (0.00551) |
| Observations | 3431 | 3425 | 3430 | 3431 | 3431 | 3427 | 3425 | 3425 | 3427 | 3427 |
| R-squared | 0.0499 | 0.0892 | 0.0801 | 0.0842 | 0.0461 | 0.0450 | 0.0356 | 0.0565 | 0.0906 | 0.0379 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with reasons for starting their Shopify business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the reason as “very important” (3) and 0 if they listed the reason as somewhat or not important. Reasons are: Wanted to be my own boss / start my own business (column 1); Wanted to carry on family business (column 2); Wanted to have flexible hours / have the ability to work from home / and/or better balance work and family (column 3); Opportunity for greater income / wanted to build wealth (column 4); Best avenue for my ideas / goods / services (column 5); Unable to find employment / lost my main source of income (column 6); Dissatisfied with my last job (column 7); Experienced discrimination in my last job (column 8); Wanted to have a positive impact on society / my community (column 9); An entrepreneurial friend or family member was a role model (column 10). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 10: CORRELATES OF RESOURCES / SUPPORTS

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|--------------|------------------------|-----------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Prior Exp. | Personal Inc. | Access to LC Loans | Gov't Res. | Prof Res. | Online Res. | Network | Platform for Mng | Platform for Customer |
| Age<35 | -0.0877*** (0.0186) | 0.00565 (0.0164) | -0.0192 (0.0162) | -0.00749 (0.00935) | -0.00881 (0.0118) | 0.00571 (0.0185) | 0.00403 (0.0192) | -0.0483** (0.0193) | -0.00433 (0.0187) |
| Black | 0.113*** (0.0273) | 0.248*** (0.0262) | 0.293*** (0.0258) | 0.173*** (0.0199) | 0.183*** (0.0220) | 0.154*** (0.0270) | 0.148*** (0.0282) | 0.149*** (0.0277) | 0.0987*** (0.0253) |
| Asian | -0.0188 (0.0399) | 0.108*** (0.0363) | -0.0135 (0.0319) | 0.0242 (0.0185) | 0.0396 (0.0247) | 0.0877** (0.0382) | -0.000657 (0.0398) | 0.0513 (0.0409) | 0.0338 (0.0416) |
| Hispanic | 0.0427 (0.0325) | 0.0632** (0.0289) | 0.0703** (0.0292) | 0.0540*** (0.0181) | 0.0472** (0.0209) | 0.0399 (0.0301) | 0.0569* (0.0329) | 0.0194 (0.0330) | 0.0155 (0.0314) |
| Female | -0.0674*** (0.0206) | 0.0730*** (0.0175) | 0.0261 (0.0175) | 0.0519*** (0.00890) | 0.0408*** (0.0112) | 0.0364* (0.0191) | 0.0617*** (0.0207) | 0.0392* (0.0209) | 0.0925*** (0.0206) |
| Bachelor+ | -0.0295 (0.0189) | -0.0260 (0.0166) | -0.0844*** (0.0164) | -0.0266*** (0.0101) | -0.00922 (0.0122) | 0.0266 (0.0177) | -0.0463** (0.0193) | -0.0185 (0.0193) | -0.0438** (0.0183) |
| BusAge | 0.0116* (0.00628) | 0.00881 (0.00535) | 0.0159*** (0.00550) | -0.00134 (0.00283) | -0.00491 (0.00390) | -0.00791 (0.00595) | -0.00518 (0.00630) | 0.00331 (0.00643) | 0.00259 (0.00617) |
| Observations | 3431 | 3431 | 3426 | 3427 | 3424 | 3422 | 3413 | 3428 | 3429 |
| R-squared | 0.0463 | 0.0844 | 0.114 | 0.108 | 0.0778 | 0.0455 | 0.0386 | 0.0432 | 0.0472 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with the most valuable resources/supports used by business owners in the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the resource/support as “very important” (5) and 0 if they listed the resource / support as somewhat or not important, or said it was not applicable. Resources/supports are: Prior entrepreneurial experience (column 1); Personal or family wealth or income (column 2); Access to low-cost loans or credit (column 3); Government (e.g., local, state, federal) resources/training (column 4); Paid professional services or training (column 5); Online resources/training (column 6); My professional or personal network (column 7); Effective platforms for managing your business (e.g., paying bills, fulfillment) (column 8); Effective platforms for reaching customers (e.g., social media, marketing) (column 9). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 11: CORRELATES OF CHALLENGES

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|--------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|
| | Lose Inc. | Lose HC | Secure Fin. | Attract Domestic | Attract Int'l | Find Labor | Pay Labor | Find Inputs | Pay Inputs | Distro. | Tax/Reg | Unpredict | Dig. Currency |
| Age<35 | 0.0205 (0.0151) | 0.00215 (0.0125) | -0.0104 (0.0152) | -0.109*** (0.0179) | -0.0108 (0.0153) | -0.0160 (0.0114) | -0.0223* (0.0118) | -0.0249** (0.0102) | -0.00733 (0.0127) | -0.00360 (0.0103) | -0.0107 (0.0149) | -0.0419** (0.0171) | -0.0123 (0.00918) |
| Black | 0.188*** (0.0243) | 0.0752*** (0.0194) | 0.283*** (0.0254) | 0.0675** (0.0263) | 0.159*** (0.0243) | 0.0625*** (0.0181) | 0.0831*** (0.0186) | 0.0722*** (0.0173) | 0.140*** (0.0214) | 0.0718*** (0.0167) | 0.0468** (0.0212) | 0.0566** (0.0252) | 0.0412*** (0.0147) |
| Asian | 0.0263 (0.0305) | 0.0691** (0.0289) | 0.0190 (0.0310) | 0.0572 (0.0383) | 0.151*** (0.0345) | 0.0393 (0.0270) | 0.00462 (0.0238) | 0.0463* (0.0251) | 0.0423 (0.0279) | 0.0399* (0.0227) | 0.0224 (0.0319) | 0.0486 (0.0369) | 0.0766*** (0.0233) |
| Hispanic | 0.0894*** (0.0300) | 0.0133 (0.0235) | 0.0882*** (0.0308) | 0.0669** (0.0321) | 0.120*** (0.0287) | 0.0534** (0.0215) | 0.0343 (0.0245) | 0.0208 (0.0191) | 0.0368 (0.0243) | 0.0286 (0.0198) | 0.0247 (0.0268) | 0.0734** (0.0314) | 0.0416** (0.0180) |
| Female | 0.0513*** (0.0159) | 0.0370*** (0.0133) | 0.0372** (0.0165) | 0.0777*** (0.0193) | 0.0174 (0.0160) | 0.0169 (0.0133) | 0.0320*** (0.0124) | -0.0139 (0.0116) | 0.0360*** (0.0128) | -0.00145 (0.0106) | 0.0198 (0.0159) | 0.0940*** (0.0179) | 0.0262*** (0.0100) |
| Bachelor+ | -0.00988 (0.0149) | -0.0365*** (0.0127) | -0.0594*** (0.0155) | 0.00453 (0.0180) | -0.0197 (0.0152) | -0.0259** (0.0121) | -0.0122 (0.0119) | -0.00646 (0.0104) | -0.0227* (0.0129) | -0.01000 (0.00967) | -0.0353** (0.0147) | -0.0280 (0.0173) | -0.0217** (0.00926) |
| BusAge | -0.000689 (0.00493) | 0.00248 (0.00435) | -0.000972 (0.00492) | -0.00908 (0.00610) | -0.00690 (0.00514) | 0.00591 (0.00393) | -0.00240 (0.00360) | -0.000343 (0.00346) | 0.00288 (0.00407) | 0.00175 (0.00314) | -0.00560 (0.00487) | 0.0175*** (0.00582) | -0.000112 (0.00281) |
| Observations | 3431 | 3430 | 3425 | 3425 | 3419 | 3425 | 3422 | 3424 | 3420 | 3420 | 3421 | 3426 | 3427 |
| R-squared | 0.0687 | 0.0362 | 0.117 | 0.0478 | 0.0670 | 0.0497 | 0.0443 | 0.0327 | 0.0527 | 0.0397 | 0.0319 | 0.0443 | 0.0437 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges for the RAND-Shopify survey sample when running their business. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges are: Losing access to other sources of income not generated from your primary Shopify business (e.g., wages, unemployment assistance) or benefits (column 1); Losing access to healthcare benefits (column 2); Securing financial capital (capital = savings, other assets, or borrowed funds) (column 3); Attracting domestic customers / growing sales domestically (column 4); Attracting international customers / growing sales internationally (column 5); Finding qualified labor (column 6); Paying for qualified labor (column 7); Sourcing materials / inputs (column 8); Paying for materials / inputs (column 9); Distribution and fulfillment of your goods / services (column 10); Taxes or government regulations (column 11); The unpredictability of business conditions (e.g., costs, competitive pressures, changing technologies, etc.) (column 12); Understanding / adopting digital currencies (column 13). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 12: CORRELATES OF FINANCING CHALLENGES

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|--------------|-------------------------|------------------------|-----------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | Identify Banks | Advice | Complete App | Meet Req. | Long Wait | High Cost/Fees | Concerns |
| Age<35 | -0.0277** (0.0130) | 0.000752 (0.0135) | -0.0195 (0.0126) | -0.0422*** (0.0143) | 0.00240 (0.0117) | -0.00663 (0.0163) | -0.00451 (0.0172) |
| Black | 0.209**** (0.0233) | 0.146**** (0.0224) | 0.188**** (0.0226) | 0.267**** (0.0248) | 0.185**** (0.0215) | 0.117**** (0.0248) | 0.236**** (0.0264) |
| Asian | 0.0239 (0.0273) | 0.0282 (0.0264) | 0.0144 (0.0238) | 0.0431 (0.0301) | 0.0448* (0.0262) | 0.0747** (0.0361) | 0.0150 (0.0340) |
| Hispanic | 0.0737*** (0.0272) | 0.0987**** (0.0273) | 0.0826*** (0.0265) | 0.100**** (0.0287) | 0.0657*** (0.0236) | 0.0829*** (0.0304) | 0.0392 (0.0307) |
| Female | 0.0417*** (0.0138) | 0.0371*** (0.0134) | 0.0385*** (0.0132) | 0.0591**** (0.0146) | 0.0181 (0.0122) | 0.0231 (0.0177) | 0.0777**** (0.0180) |
| Bachelor+ | -0.0674**** (0.0135) | -0.0324** (0.0136) | -0.0256* (0.0132) | -0.0525**** (0.0147) | -0.0586**** (0.0124) | -0.0648**** (0.0164) | -0.0478**** (0.0170) |
| BusAge | -0.00143 (0.00412) | 0.00190 (0.00410) | -0.00238 (0.00388) | -0.00379 (0.00459) | -0.00154 (0.00368) | 0.00676 (0.00546) | -0.000294 (0.00559) |
| Observations | 3433 | 3427 | 3430 | 3424 | 3426 | 3428 | 3425 |
| R-squared | 0.0892 | 0.0594 | 0.0744 | 0.104 | 0.0850 | 0.0495 | 0.0805 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with financing challenges for the RAND-Shopify survey sample when running their business. The dependent variable is a dummy variable equal to 1 for respondents who listed the financing challenge as “very challenging” (5) and 0 if they listed the financing challenge as somewhat or not challenging, or said it was not applicable. Financing challenges are: Identifying banks or financial institutions for your funding needs (column 1); Finding adequate financial or legal advice (column 2); Completing the application process for loans / grants (e.g., navigating it, finding the time) (column 3); Meeting minimum financing requirements (column 4); Long wait times for funding decisions (column 5); Costs / fees too high (column 6); Concerns about your personal financial situation (column 7). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 13: CORRELATES OF CHALLENGES RELATED TO ATTRACTING CUSTOMERS

| | (1) | (2) | (3) | (4) |
|--------------|------------------------|-------------------------|-------------------------|-------------------------|
| | Find Tools | Understand Tools | High Costs of Tools | Find Networks |
| Age<35 | -0.114**** (0.0168) | -0.0971**** (0.0162) | -0.0935**** (0.0187) | -0.0765**** (0.0155) |
| Black | 0.00360 (0.0241) | 0.0237 (0.0234) | 0.0695*** (0.0265) | 0.0691*** (0.0239) |
| Asian | -0.0344 (0.0354) | 0.0146 (0.0338) | 0.0760* (0.0394) | 0.0165 (0.0314) |
| Hispanic | 0.0486* (0.0292) | 0.0320 (0.0294) | 0.0790** (0.0321) | 0.0811*** (0.0296) |
| Female | 0.0808**** (0.0182) | 0.0596**** (0.0175) | 0.0646*** (0.0199) | 0.0867**** (0.0165) |
| Bachelor+ | 0.00620 (0.0169) | 0.0187 (0.0164) | -0.00590 (0.0182) | -0.0101 (0.0157) |
| BusAge | -0.00293 (0.00576) | -0.00389 (0.00577) | 0.00359 (0.00628) | -0.00579 (0.00513) |
| Observations | 3433 | 3432 | 3433 | 3431 |
| R-squared | 0.0490 | 0.0386 | 0.0380 | 0.0570 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges related to attracting customers to their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges related to attracting customers are: Finding the right tools or marketing channels to reach potential customers (column 1); Understanding how to use tools or marketing channels to reach potential customers (column 2); High costs of using tools or marketing channels to reach potential customers (column 3); Finding helpful networks (e.g., personal, professional, etc.) to promote the business (column 4). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 14: CORRELATES OF CHALLENGES RELATED TO OPERATING THE BUSINESS

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|--------------|--------------------------|------------------------|-------------------------|-----------------------|-----------------------|--------------------------|-------------------------|
| | Setup | Mng Labor | Mng Inputs | Mng Distro | Mng Payments | Brand | Customer |
| Age<35 | 0.0287*** (0.0105) | -0.00166 (0.00809) | -0.00604 (0.0119) | -0.00223 (0.0101) | 0.00901 (0.0106) | -0.0387*** (0.0146) | 0.00800 (0.00971) |
| Black | -0.0188 (0.0119) | 0.0310** (0.0124) | 0.0475*** (0.0176) | 0.0346** (0.0146) | 0.0370** (0.0161) | 0.0433** (0.0214) | 0.0363** (0.0145) |
| Asian | 0.00177 (0.0203) | 0.0510** (0.0209) | 0.0385 (0.0266) | 0.0367 (0.0240) | 0.0456* (0.0258) | 0.109*** (0.0339) | 0.0727** (0.0284) |
| Hispanic | 0.0338* (0.0204) | 0.0331* (0.0169) | 0.0300 (0.0221) | 0.0258 (0.0198) | 0.0311 (0.0219) | 0.0998**** (0.0285) | 0.0437** (0.0209) |
| Female | 0.0194** (0.00987) | 0.00794 (0.00781) | 0.0227* (0.0132) | 0.00731 (0.0112) | 0.0282** (0.0116) | 0.0113 (0.0162) | -0.0444**** (0.0107) |
| Bachelor+ | -0.0295*** (0.0102) | -0.00243 (0.00782) | -0.0133 (0.0120) | -0.00449 (0.00946) | -0.0137 (0.0105) | 0.00775 (0.0143) | 0.0144 (0.00907) |
| BusAge | -0.00852*** (0.00281) | -0.000725 (0.00232) | -0.00747** (0.00362) | 0.00287 (0.00326) | -0.00154 (0.00308) | -0.0159**** (0.00464) | -0.00409 (0.00306) |
| Observations | 3433 | 3432 | 3433 | 3431 | 3432 | 3430 | 3430 |
| R-squared | 0.0427 | 0.0206 | 0.0275 | 0.0343 | 0.0246 | 0.0462 | 0.0407 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges related to operating their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges related to operating the business are: Deciding how to set up your business (e.g., incorporated vs. unincorporated, LLC vs. corporation) (column 1); Managing your workforce (column 2); Costs and sourcing of the right materials / inputs (column 3); Managing distribution and fulfillment of goods / services (column 4); Managing payments (e.g., credit cards payments) and fees (column 5); Building a brand for your business (column 6); Ensuring customer satisfaction with the product (column 7). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

TABLE 15: CORRELATES OF CHALLENGES RELATED TO NAVIGATING TAXES AND REGULATIONS

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|--------------|-----------------------|------------------------|-----------------------|------------------------|------------------------|-------------------------|------------------------|-----------------------|-----------------------|
| | Advice | Mng Tax | Mng Labor | Mng Ad | Mng Privacy | Mng Ins. | Mng Lic. | Mng Env. | Border |
| Age<35 | 0.0111 (0.0140) | -0.00537 (0.0157) | 0.00348 (0.00914) | -0.0159 (0.0110) | -0.00974 (0.00877) | -0.00340 (0.00968) | -0.0117 (0.00973) | -0.00815 (0.00794) | -0.0118 (0.0101) |
| Black | 0.102**** (0.0216) | 0.0934**** (0.0238) | 0.0411*** (0.0141) | 0.0792**** (0.0179) | 0.0219 (0.0135) | 0.0326** (0.0148) | 0.0305** (0.0151) | 0.0363** (0.0142) | 0.0290* (0.0153) |
| Asian | 0.0421 (0.0282) | 0.0300 (0.0311) | 0.0262 (0.0190) | 0.0324 (0.0238) | 0.0220 (0.0190) | 0.0139 (0.0210) | 0.0339 (0.0237) | 0.0340 (0.0209) | 0.0295 (0.0226) |
| Hispanic | 0.0878*** (0.0275) | 0.0615** (0.0286) | 0.0205 (0.0184) | 0.0317 (0.0201) | 0.0752**** (0.0200) | 0.0558*** (0.0211) | 0.0634*** (0.0221) | 0.0441*** (0.0171) | 0.0655*** (0.0212) |
| Female | 0.0338** (0.0142) | 0.0486*** (0.0162) | 0.000836 (0.00961) | 0.0166 (0.0121) | 0.0104 (0.00983) | 0.00145 (0.0107) | 0.00888 (0.0111) | 0.0102 (0.00928) | 0.0110 (0.0114) |
| Bachelor+ | -0.0324** (0.0140) | -0.0260* (0.0157) | -0.0153* (0.00879) | -0.0342*** (0.0114) | -0.00574 (0.00932) | -0.0161 (0.0100) | -0.0150 (0.0102) | 0.00286 (0.00796) | 0.0104 (0.00967) |
| BusAge | -0.00466 (0.00424) | -0.00387 (0.00501) | 0.000429 (0.00243) | -0.00373 (0.00364) | -0.00339 (0.00261) | -0.00512** (0.00254) | -0.000357 (0.00304) | -0.00107 (0.00276) | -0.00127 (0.00333) |
| Observations | 3431 | 3433 | 3428 | 3431 | 3427 | 3423 | 3425 | 3429 | 3428 |
| R-squared | 0.0498 | 0.0417 | 0.0305 | 0.0507 | 0.0306 | 0.0361 | 0.0326 | 0.0343 | 0.0335 |

Standard errors in parentheses

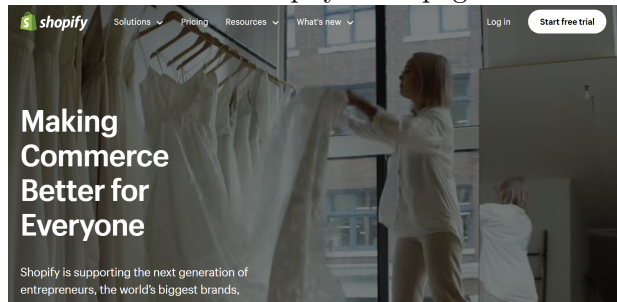
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges related to navigating taxes and regulations regarding their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges related to navigating taxes and regulations are: Finding adequate financial or legal advice (column 1); Managing taxes (column 2); Managing labor regulations (column 3); Managing advertising regulations (column 4); Managing privacy regulations (column 5); Managing insurance regulations (column 6); Managing licensing and permit regulations (column 7); Managing environmental regulations (column 8); Doing business across state or country borders (column 9). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

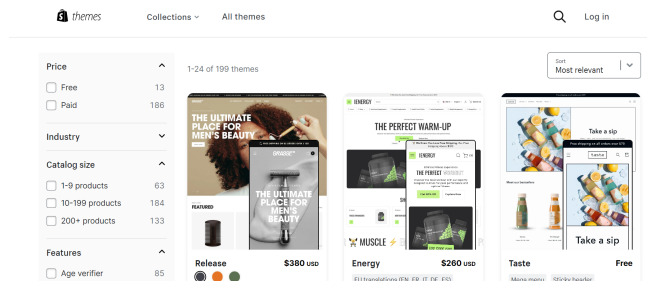
Appendix Figures & Tables

APPENDIX FIGURE 1: SHOPIFY PLATFORM

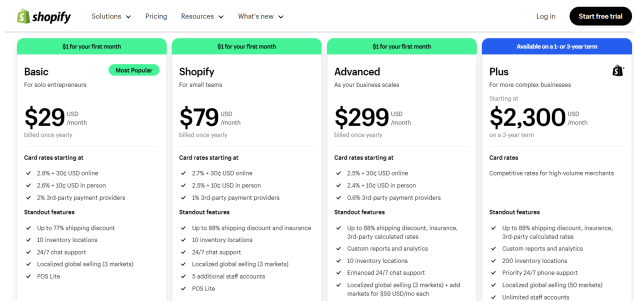
Panel A: Shopify Homepage



Panel B: Shopify Online Storefront Themes



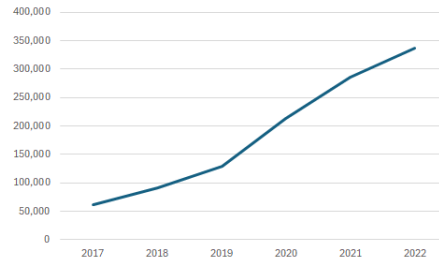
Panel C: Shopify Pricing Plans



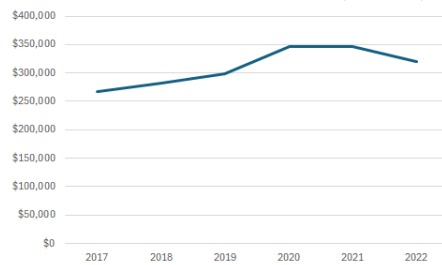
Notes: This top panel of this figure displays the homepage of the Shopify website. The second panel of this figure displays the themes that a business owner can choose from when setting up their own online storefront. The third panel of this figure displays the different pricing plans for Shopify customers (as of June 2024).

APPENDIX FIGURE 2: ADMINISTRATIVE PATTERNS OVER TIME

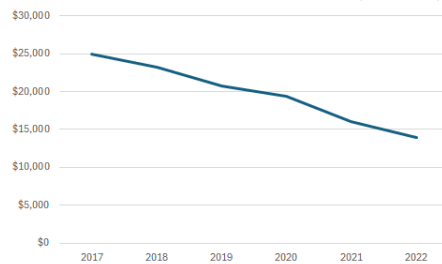
Panel A: Cumulative Number of Active Merchants



Panel B: Mean Revenue (\$2022)

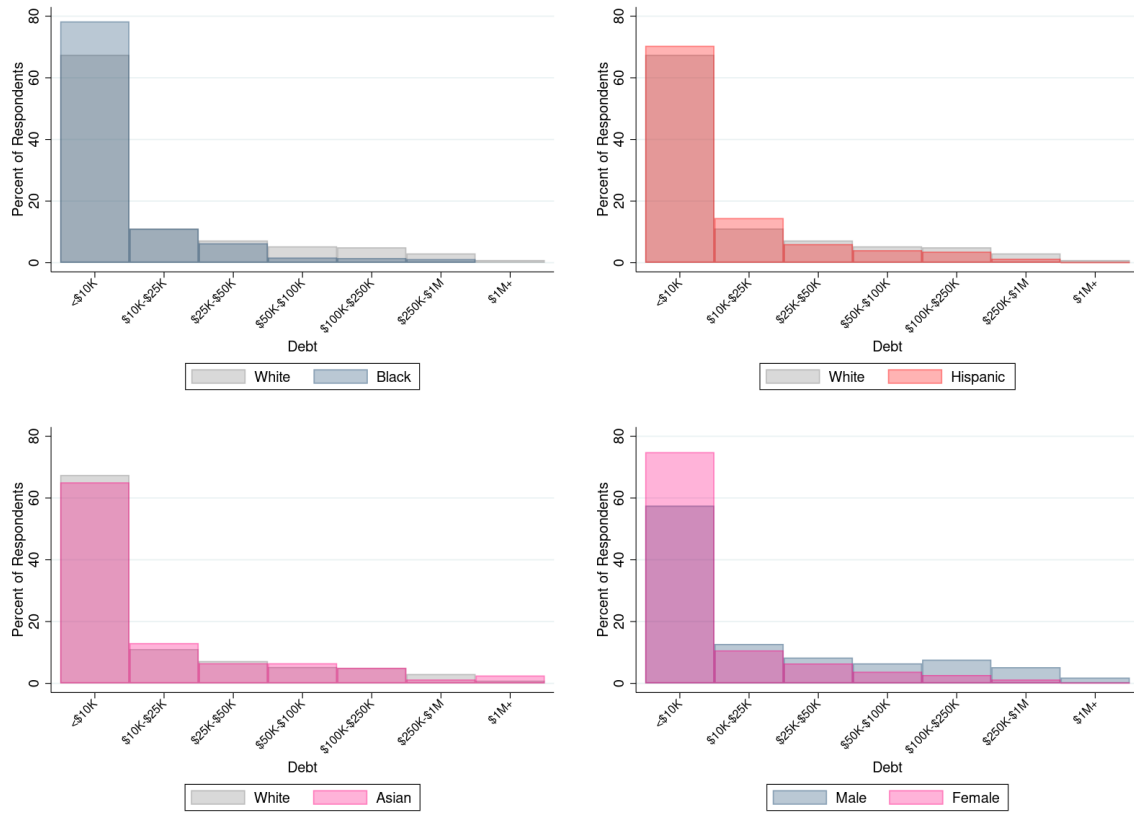


Panel C: Median Revenue (\$2022)



Notes: This set of figures display the patterns for the administrative sample over time, focused on merchants who were relatively more active on the platform. In each year, we keep merchants with over \$1,000 in annualized revenue through the platform; we further drop merchants opened between September through December in each year to obtain more stable measures of annualized revenues (the results are similar when we include this subgroup). The top panel shows the cumulative number of merchants in each year. The middle panel reflects the mean revenue in each year. The bottom panel reflects the median revenue in each year. All \$USD values are shown in 2022 dollars.

APPENDIX FIGURE 3: DEBT



Notes: This figure displays the distribution of reported debt (as of the survey date) using data from the RAND-Shopify survey. The data are shown for four different demographic comparisons (overlapping distributions): white versus Black business owners (a), white versus Hispanic business owners (b), white versus Asian business owners (c), and male versus female business owners (d). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 1A: BALANCE TABLE FOR SURVEYED POPULATION AND WEIGHTED COMPLETED RESPONDENTS

| Category | Variable | Surveyed Mean (SD) or % | Completed Mean (SD) or % | Cohen's d |
|--------------|--|----------------------------|-----------------------------|-----------|
| Time Zone | Eastern | 45.25% | 45.25% | < 0.001 |
| | Central | 26.06% | 26.06% | < 0.001 |
| | Mountain | 5.83% | 5.83% | < 0.001 |
| | Pacific | 22.05% | 22.05% | < 0.001 |
| | Hawaii / Alaska | 0.80% | 0.80% | < 0.001 |
| Zip Code | % Non-US Citizen | 7.96 (7.30) | 7.74 (7.08) | 0.031 |
| | % Less than High School | 10.64 (8.26) | 10.78 (8.33) | 0.018 |
| | % High School Equivalent | 22.96 (9.78) | 23.24 (9.54) | 0.028 |
| | % Some College | 27.44 (7.54) | 27.76 (7.37) | 0.043 |
| | % Bachelor's Degree | 23.55 (9.83) | 23.16 (9.67) | 0.039 |
| | % Graduate Degree | 15.42 (9.98) | 15.06 (9.80) | 0.036 |
| | % White, non-Hispanic | 59.04 (26.01) | 59.26 (26.04) | 0.009 |
| | % Black, non-Hispanic | 12.20 (17.31) | 12.18 (17.19) | 0.001 |
| | % American Indian / Alaska Native, non-Hispanic | 0.44 (1.96) | 0.43 (1.29) | 0.008 |
| | % Asian, non-Hispanic | 7.11 (9.79) | 6.89 (9.44) | 0.022 |
| | % Native Hawaiian / Pacific Islander, non-Hispanic | 0.19 (0.92) | 0.19 (0.84) | 0.007 |
| | % Other race, non-Hispanic | 0.27 (0.49) | 0.29 (0.67) | 0.033 |
| | % More than one race, non-Hispanic | 2.58 (2.06) | 2.58 (1.90) | 0.002 |
| | % Hispanic | 18.17 (19.33) | 18.18 (19.38) | < 0.001 |
| | % Female | 50.70 (3.00) | 50.75 (2.86) | 0.017 |
| | Median Age | 38.64 (6.28) | 38.63 (6.20) | < 0.001 |
| | Median Household Income | 75128.05 (30430.38) | 74228.48 (30177.31) | 0.030 |
| | % Below Poverty Line | 12.54 (8.27) | 12.57 (8.12) | 0.004 |
| | % Between 100% and 150% Poverty Line | 7.74 (4.31) | 7.86 (4.43) | 0.027 |
| | % Above 150% Poverty Line | 79.72 (11.57) | 79.57 (11.49) | 0.013 |
| % Unemployed | 5.17 (2.72) | 5.21 (2.82) | 0.013 | |

Notes: This table presents a comparison between the surveyed sample and the respondent sample (e.g., the “completed” sample). Estimates for the surveyed group are unweighted, while estimates for the completed group are weighted with the survey weights used in the analysis. Continuous variables are reported as “mean (standard deviation)” and categorical variables are reported as “%”. Cohen’s d is the difference between the two groups divided by the shared standard deviation. Cohen’s d is a measure of effect size, with values less than 0.2 indicating a small effect and values less than 0.01 indicating a very small effect. All effect sizes are well below the small threshold and most qualify as very small, indicating that our weighted sample is representative of the surveyed population. The surveyed sample reflects 313,085 Shopify businesses, and the completed sample reflects 4,000 Shopify businesses.

APPENDIX TABLE 1A (CONTINUED): BALANCE TABLE FOR SURVEYED POPULATION AND WEIGHTED COMPLETED RESPONDENTS

| Category | Variable | Surveyed Mean (SD) or % | Completed Mean (SD) or % | Cohen's d |
|----------|------------------------------|----------------------------|-----------------------------|-----------|
| | Business Age | 2.85 (1.51) | 2.74 (1.48) | 0.068 |
| | Revenue (log-scale) | 9.58 (2.08) | 9.58 (2.00) | 0.001 |
| | Animals and Pet Supplies | 1.37% | 1.37% | < 0.001 |
| | Aparrel and Accessories | 55.95% | 55.95% | < 0.001 |
| | Arts and Entertainment | 2.40% | 2.40% | < 0.001 |
| | Baby and Toddler | 0.20% | 0.20% | < 0.001 |
| | Business and Industrial | 0.44% | 0.44% | < 0.001 |
| | Cameras and Optics | 0.09% | 0.09% | < 0.001 |
| | Electronics | 1.84% | 1.84% | < 0.001 |
| | Food, Beverages, and Tobacco | 7.94% | 7.94% | < 0.001 |
| | Furniture | 0.90% | 0.90% | < 0.001 |
| | Hardware | 0.44% | 0.44% | < 0.001 |
| Shop | Health and Beauty | 12.84% | 12.84% | < 0.001 |
| | Home and Garden | 18.69% | 18.69% | < 0.001 |
| | Luggage and Bags | 0.21% | 0.21% | < 0.001 |
| | Media | 3.56% | 3.56% | < 0.001 |
| | Office Supplies | 0.33% | 0.33% | < 0.001 |
| | Sporting Goods | 2.35% | 2.35% | < 0.001 |
| | Toys and games | 1.13% | 1.13% | < 0.001 |
| | Vehicles and Parts | 2.12% | 2.12% | < 0.001 |

Notes: This table presents a comparison between the surveyed sample and the respondent sample (e.g., the “completed” sample). Estimates for the surveyed group are unweighted, while estimates for the completed group are weighted with the survey weights used in the analysis. Continuous variables are reported as “mean (standard deviation)” and categorical variables are reported as “%”. Cohen’s d is the difference between the two groups divided by the shared standard deviation. Cohen’s d is a measure of effect size, with values less than 0.2 indicating a small effect and values less than 0.01 indicating a very small effect. All effect sizes are well below the small threshold and most qualify as very small, indicating that our weighted sample is representative of the surveyed population. The surveyed sample reflects 313,085 Shopify businesses, and the completed sample reflects 4,000 Shopify businesses.

APPENDIX TABLE 1B: BALANCE TABLE FOR FULL ADMINISTRATIVE SAMPLE AND WEIGHTED COMPLETED RESPONDENTS

| Category | Variable | Full Administrative Mean (SD) or % | Completed Mean (SD) or % | Cohen's d |
|--------------|--|------------------------------------|--------------------------|-----------|
| Time Zone | Eastern | 44.92% | 45.25% | 0.007 |
| | Central | 25.42% | 26.06% | 0.015 |
| | Mountain | 5.89% | 5.83% | 0.002 |
| | Pacific | 22.94% | 22.05% | 0.021 |
| | Hawaii / Alaska | 0.84% | 0.80% | 0.005 |
| Zip Code | % Non-US Citizen | 8.00 (7.29) | 7.74 (7.08) | 0.037 |
| | % Less than High School | 10.53 (8.26) | 10.78 (8.33) | 0.030 |
| | % High School Equivalent | 22.66 (9.79) | 23.24 (9.54) | 0.060 |
| | % Some College | 27.25 (7.60) | 27.76 (7.37) | 0.069 |
| | % Bachelor's Degree | 23.85 (9.85) | 23.16 (9.67) | 0.071 |
| | % Graduate Degree | 15.71 (10.08) | 15.06 (9.80) | 0.066 |
| | % White, non-Hispanic | 59.49 (25.84) | 59.26 (26.04) | 0.009 |
| | % Black, non-Hispanic | 11.70 (16.79) | 12.18 (17.19) | 0.028 |
| | % American Indian / Alaska Native, non-Hispanic | 0.44 (1.95) | 0.43 (1.29) | 0.009 |
| | % Asian, non-Hispanic | 7.24 (9.88) | 6.89 (9.44) | 0.036 |
| | % Native Hawaiian / Pacific Islander, non-Hispanic | 0.19 (0.93) | 0.19 (0.84) | 0.003 |
| | % Other race, non-Hispanic | 0.27 (0.48) | 0.29 (0.67) | 0.028 |
| | % More than one race, non-Hispanic | 2.60 (2.09) | 2.58 (1.90) | 0.008 |
| | % Hispanic | 18.07 (19.22) | 18.18 (19.38) | 0.005 |
| | % Female | 50.67 (3.03) | 50.75 (2.86) | 0.027 |
| | Median Age | 38.73 (6.33) | 38.63 (6.20) | 0.015 |
| | Median Household Income | 75759.90 (30709.04) | 74228.48 (30177.31) | 0.050 |
| | % Below Poverty Line | 12.47 (8.25) | 12.57 (8.12) | 0.013 |
| | % Between 100% and 150% Poverty Line | 7.67 (4.30) | 7.86 (4.43) | 0.043 |
| | % Above 150% Poverty Line | 79.87 (11.53) | 79.57 (11.49) | 0.026 |
| % Unemployed | 5.17 (2.72) | 5.21 (2.82) | 0.013 | |

Notes: This table presents a comparison between the full administrative sample (presented in Table 1) and the respondent sample (e.g., the “completed” sample). Estimates for the administrative sample are unweighted, while estimates for the completed group are weighted with the survey weights used in the analysis. Continuous variables are reported as “mean (standard deviation)” and categorical variables are reported as “%”. Cohen’s d is the difference between the two groups divided by the shared standard deviation. Cohen’s d is a measure of effect size, with values less than 0.2 indicating a small effect and values less than 0.01 indicating a very small effect. Nearly all effect sizes are well below the small threshold and most qualify as very small, indicating that our weighted sample is representative of the surveyed population; the exception to this is business age, which reflects the fact that our completed respondents are newer businesses, since we restricted the surveyed sample to be businesses which had opened in 2017 or later. The full administrative sample reflects 337,462 Shopify businesses, and the completed sample reflects 4,000 Shopify businesses.

APPENDIX TABLE 1B (CONTINUED): BALANCE TABLE FOR FULL ADMINISTRATIVE SAMPLE AND WEIGHTED COMPLETED RESPONDENTS

| Category | Variable | Full Administrative Mean (SD) or % | Completed Mean (SD) or % | Cohen's d |
|----------|------------------------------|------------------------------------|--------------------------|-----------|
| | Business Age | 3.68 (2.30) | 2.74 (1.48) | 0.504 |
| | Revenue (log-scale) | 9.88 (2.07) | 9.58 (2.00) | 0.147 |
| | Animals and Pet Supplies | 1.40% | 1.37% | 0.002 |
| | Aparrel and Accessories | 54.67% | 55.95% | 0.026 |
| | Arts and Entertainment | 2.49% | 2.40% | 0.006 |
| | Baby and Toddler | 0.21% | 0.20% | 0.001 |
| | Business and Industrial | 0.43% | 0.44% | < 0.001 |
| | Cameras and Optics | 0.09% | 0.09% | < 0.001 |
| | Electronics | 1.92% | 1.84% | 0.006 |
| | Food, Beverages, and Tobacco | 8.16% | 7.94% | 0.008 |
| | Furniture | 0.93% | 0.90% | 0.003 |
| | Hardware | 0.50% | 0.44% | 0.008 |
| Shop | Health and Beauty | 12.72% | 12.84% | 0.004 |
| | Home and Garden | 18.57% | 18.69% | 0.003 |
| | Luggage and Bags | 0.19% | 0.21% | 0.003 |
| | Media | 3.84% | 3.56% | 0.015 |
| | Office Supplies | 0.34% | 0.33% | 0.002 |
| | Sporting Goods | 2.54% | 2.35% | 0.012 |
| | Toys and games | 1.13% | 1.13% | < 0.001 |
| | Vehicles and Parts | 2.12% | 2.12% | < 0.001 |

Notes: This table presents a comparison between the full administrative sample (presented in Table 1) and the respondent sample (e.g., the “completed” sample). Estimates for the administrative sample are unweighted, while estimates for the completed group are weighted with the survey weights used in the analysis. Continuous variables are reported as “mean (standard deviation)” and categorical variables are reported as “%”. Cohen’s d is the difference between the two groups divided by the shared standard deviation. Cohen’s d is a measure of effect size, with values less than 0.2 indicating a small effect and values less than 0.01 indicating a very small effect. Nearly all effect sizes are well below the small threshold and most qualify as very small, indicating that our weighted sample is representative of the surveyed population; the exception to this is business age, which reflects the fact that our completed respondents are newer businesses, since we restricted the surveyed sample to be businesses which had opened in 2017 or later. The full administrative sample reflects 337,462 Shopify businesses, and the completed sample reflects 4,000 Shopify businesses.

APPENDIX TABLE 2: DEMOGRAPHIC CHARACTERISTICS OF BUSINESS OWNERS BY MAJOR SUBGROUPS

| | All | Male | Female | White | Black | Asian | Hispanic |
|---------------------------|--------|--------|--------|--------|-------|--------|----------|
| Under age 35 (%) | 40 | 32 | 44 | 35 | 51 | 47 | 49 |
| Less than Bachelor (%) | 38 | 35 | 40 | 37 | 44 | 20 | 48 |
| Bachelor (%) | 41 | 46 | 38 | 43 | 32 | 52 | 33 |
| Greater than Bachelor (%) | 21 | 20 | 22 | 20 | 24 | 28 | 19 |
| Median HHInc (USD) | 100000 | 120000 | 99000 | 100000 | 70000 | 110000 | 90000 |

Notes: This table displays age, education, and household income characteristics by demographic characteristics for the RAND-Shopify survey sample. Each column refers to a separate sample, e.g., “Male” refers to the sample of business owners who identified as male. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1. See survey instrument in Appendix Document 2 for more detail.

APPENDIX TABLE 3: TOP THREE SOURCES OF CAPITAL

| | All | Male | Female | White | Black | Asian | Hispanic |
|---------------------------------------|-----|------|--------|-------|-------|-------|----------|
| <i>Source of Capital Among Top 3:</i> | | | | | | | |
| Personal Savings (%) | 82 | 78 | 84 | 81 | 85 | 85 | 81 |
| Personal Loan (%) | 6 | 8 | 4 | 5 | 6 | 7 | 8 |
| Personal or Bus. Credit Card (%) | 39 | 41 | 38 | 38 | 44 | 47 | 39 |
| Govt. Loan (%) | 4 | 5 | 4 | 4 | 5 | 6 | 4 |
| Bus. Loan (%) | 14 | 20 | 11 | 15 | 13 | 14 | 14 |
| Venture Capital (%) | 2 | 3 | 1 | 2 | 2 | 4 | 0 |
| Grants (%) | 4 | 2 | 4 | 3 | 6 | 3 | 5 |
| Other (%) | 4 | 4 | 4 | 4 | 4 | 2 | 4 |

Notes: This table displays the top 3 sources of capital for the RAND-Shopify survey sample. Each column refers to a separate sample, e.g., “Male” refers to the sample of business owners who identified as male. Note that respondents could choose all that apply, so the fractions do not add up to 100%. The RAND-Shopify survey had 4,000 respondents. The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1. See survey instrument in Appendix Document 2 for more detail.

APPENDIX TABLE 4: CORRELATES OF FINANCIAL OUTCOMES

| | (1) Startup Capital <5K | (2) Loan Reject | (3) Higher IR |
|--------------|----------------------------|-------------------------|------------------------|
| Age<35 | 0.133**** (0.0186) | -0.0121 (0.0152) | 0.0230 (0.0181) |
| Black | 0.137**** (0.0246) | 0.209**** (0.0248) | 0.267**** (0.0267) |
| Asian | -0.0321 (0.0376) | -0.0668** (0.0266) | 0.0153 (0.0383) |
| Hispanic | -0.0475 (0.0319) | 0.0222 (0.0284) | -0.00114 (0.0308) |
| Female | 0.139**** (0.0199) | -0.0267 (0.0164) | 0.00472 (0.0193) |
| Bachelor+ | -0.0723**** (0.0181) | -0.0882**** (0.0156) | -0.0497*** (0.0179) |
| BusAge | -0.000132 (0.00618) | 0.0152*** (0.00511) | -0.00927 (0.00576) |
| Observations | 3434 | 3434 | 3430 |
| R-squared | 0.153 | 0.0868 | 0.0849 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with financial outcomes. The dependent variable in column 1 is a dummy variable equal to 1 if the respondent indicated they had startup capital under 5K. The dependent variable in column 2 is a dummy variable equal to 1 if the respondent indicated they had experienced a loan rejection in the past. The dependent variable in column 3 is a dummy variable equal to 1 if the respondent indicated they required an interest rate of over 100% in order to forgo \$1,000 today. The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, and business structure (i.e., sole proprietorship, LLC, or other). In columns 2 and 3, we additionally control for startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 5: REASONS FOR STARTING SHOPIFY BUSINESS - ALTERNATE VERSION

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|--------------|------------------------|------------------------|------------------------|-------------------------|-----------------------|-----------------------|----------------------|------------------------|-----------------------|------------------------|
| | Boss | Family Bus. | Flexible | Inc. Income | Best Avenue | No Job | Job Diss. | Job Discrim | Impact | Role Model |
| Age<35 | 0.0342*** (0.00913) | 0.0244 (0.0168) | 0.0264** (0.0108) | 0.0288*** (0.00831) | 0.00743 (0.00886) | 0.0224 (0.0169) | 0.116*** (0.0194) | 0.0242 (0.0157) | 0.0585*** (0.0161) | 0.0996*** (0.0195) |
| Black | 0.0216* (0.0114) | 0.271*** (0.0260) | -0.0166 (0.0148) | 0.0379*** (0.00965) | 0.0289*** (0.0107) | 0.0670** (0.0251) | 0.0370 (0.0275) | 0.200*** (0.0248) | 0.131*** (0.0174) | 0.0762*** (0.0273) |
| Asian | -0.0231 (0.0223) | 0.0892** (0.0373) | -0.00194 (0.0255) | 0.0165 (0.0165) | 0.0106 (0.0181) | 0.116*** (0.0375) | 0.00661 (0.0417) | 0.0926** (0.0362) | 0.00359 (0.0347) | 0.0575 (0.0413) |
| Hispanic | -0.00547 (0.0174) | 0.108*** (0.0310) | 0.0121 (0.0207) | 0.0257* (0.0134) | -0.0285 (0.0201) | 0.0851*** (0.0301) | 0.0546* (0.0321) | 0.0759*** (0.0277) | 0.0484* (0.0265) | -0.0356 (0.0328) |
| Female | -0.00528 (0.0109) | 0.00136 (0.0179) | 0.0654*** (0.0126) | 0.00518 (0.0100) | 0.0169 (0.0104) | 0.0163 (0.0180) | 0.0329 (0.0211) | 0.0640*** (0.0165) | 0.0894*** (0.0182) | -0.0375* (0.0212) |
| Bachelor+ | -0.00510 (0.00902) | -0.0588*** (0.0169) | -0.0227** (0.0104) | -0.0248*** (0.00816) | -0.00229 (0.00853) | -0.0233 (0.0168) | 0.000301 (0.0193) | -0.0205 (0.0152) | 0.00237 (0.0158) | 0.0492** (0.0193) |
| BusAge | 0.0125*** (0.00272) | 0.00140 (0.00546) | 0.0112*** (0.00327) | -0.000902 (0.00286) | 0.00346 (0.00293) | 0.00583 (0.00537) | 0.00764 (0.00653) | -0.000894 (0.00472) | -0.00372 (0.00546) | -0.000846 (0.00644) |
| Observations | 3431 | 3425 | 3430 | 3431 | 3431 | 3427 | 3425 | 3425 | 3427 | 3427 |
| R-squared | 0.0387 | 0.0971 | 0.0543 | 0.0350 | 0.0357 | 0.0411 | 0.0471 | 0.0654 | 0.0630 | 0.0438 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with reasons for starting their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the reason as “very important” (3) or “somewhat important” (2) and 0 if they listed the reason as somewhat or not important. Reasons are: Wanted to be my own boss / start my own business (column 1); Wanted to carry on family business (column 2); Wanted to have flexible hours / have the ability to work from home / and/or better balance work and family (column 3); Opportunity for greater income / wanted to build wealth (column 4); Best avenue for my ideas / goods / services (column 5); Unable to find employment / lost my main source of income (column 6); Dissatisfied with my last job (column 7); Experienced discrimination in my last job (column 8); Wanted to have a positive impact on society / my community (column 9); An entrepreneurial friend or family member was a role model (column 10). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 6: CORRELATES OF RESOURCES / SUPPORTS - ALTERNATE VERSION

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|--------------|------------------------|-----------------------|------------------------|------------------------|-------------------------|-----------------------|-----------------------|----------------------|-------------------------|
| | Prior Exp. | Personal Inc. | Access to LC Loans | Gov't Res. | Prof Res. | Online Res. | Network | Platform for Mng | Platform for Customer |
| Age<35 | -0.0870*** (0.0196) | -0.00241 (0.0188) | 0.00290 (0.0180) | -0.00227 (0.0122) | -0.0214 (0.0161) | -0.00739 (0.0197) | -0.00273 (0.0191) | -0.0328* (0.0188) | -0.0203 (0.0152) |
| Black | 0.0925*** (0.0274) | 0.223*** (0.0268) | 0.294*** (0.0264) | 0.212*** (0.0225) | 0.205*** (0.0253) | 0.173*** (0.0273) | 0.0792*** (0.0267) | 0.124*** (0.0254) | 0.0597*** (0.0199) |
| Asian | -0.0200 (0.0417) | 0.0792* (0.0405) | -0.0116 (0.0362) | 0.0370 (0.0242) | 0.00256 (0.0330) | 0.105** (0.0415) | -0.0376 (0.0410) | 0.104*** (0.0377) | 0.0252 (0.0327) |
| Hispanic | 0.0430 (0.0333) | 0.0274 (0.0317) | 0.0786** (0.0317) | 0.0750*** (0.0235) | 0.0185 (0.0273) | 0.0520 (0.0332) | 0.0597* (0.0314) | 0.00746 (0.0312) | 0.0192 (0.0246) |
| Female | -0.0482** (0.0211) | 0.0780*** (0.0201) | -0.0132 (0.0196) | 0.0598*** (0.0119) | 0.0365** (0.0168) | 0.0467** (0.0212) | 0.0807*** (0.0208) | 0.0463** (0.0204) | 0.0714*** (0.0167) |
| Bachelor+ | 0.00357 (0.0194) | -0.00492 (0.0186) | -0.0964*** (0.0179) | -0.0456*** (0.0126) | 0.0142 (0.0156) | 0.0514*** (0.0192) | -0.0192 (0.0187) | 0.0275 (0.0184) | -0.0331** (0.0144) |
| BusAge | 0.0140** (0.00637) | -0.00729 (0.00610) | 0.0161*** (0.00604) | -0.00399 (0.00359) | -0.0134*** (0.00507) | -0.00776 (0.00646) | -0.00782 (0.00638) | 0.00771 (0.00605) | -0.0000938 (0.00490) |
| Observations | 3431 | 3431 | 3426 | 3427 | 3424 | 3422 | 3413 | 3428 | 3429 |
| R-squared | 0.0491 | 0.0645 | 0.110 | 0.112 | 0.0651 | 0.0490 | 0.0289 | 0.0414 | 0.0394 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with the most valuable resources/supports used by business owners in the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the resource/support as “very important” (5) or (4) and 0 if they listed the resource / support as somewhat or not important, or said it was not applicable. Resources/supports are: Prior entrepreneurial experience (column 1); Personal or family wealth or income (column 2); Access to low-cost loans or credit (column 3); Government (e.g., local, state, federal) resources/training (column 4); Paid professional services or training (column 5); Online resources/training (column 6); My professional or personal network (column 7); Effective platforms for managing your business (e.g., paying bills, fulfillment) (column 8); Effective platforms for reaching customers (e.g., social media, marketing) (column 9). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 7: CORRELATES OF CHALLENGES - ALTERNATE VERSION

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|--------------|-----------------------|------------------------|------------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|----------------------|------------------------|-----------------------|------------------------|
| | Lose Inc. | Lose HC | Secure Fin. | Attract Domestic | Attract Int'l | Find Labor | Pay Labor | Find Inputs | Pay Inputs | Distro. | Tax/Reg | Unpredict | Dig. Currency |
| Age<35 | 0.0295* (0.0172) | 0.00500 (0.0145) | 0.0360** (0.0177) | -0.111*** (0.0190) | 0.0265 (0.0178) | -0.00857 (0.0147) | -0.0271* (0.0151) | -0.0166 (0.0163) | 0.00962 (0.0175) | 0.0191 (0.0159) | -0.000429 (0.0185) | -0.00998 (0.0196) | -0.0127 (0.0124) |
| Black | 0.189*** (0.0261) | 0.0946*** (0.0217) | 0.357*** (0.0263) | 0.0730*** (0.0262) | 0.191*** (0.0263) | 0.0631*** (0.0219) | 0.0859*** (0.0222) | 0.0686*** (0.0239) | 0.169*** (0.0263) | 0.101*** (0.0231) | 0.0669** (0.0262) | 0.0148 (0.0273) | 0.0892*** (0.0207) |
| Asian | 0.0599* (0.0363) | 0.110*** (0.0334) | 0.0411 (0.0366) | 0.0738* (0.0395) | 0.140*** (0.0394) | 0.0762** (0.0339) | 0.0218 (0.0330) | 0.0541 (0.0367) | 0.0527 (0.0373) | 0.0797** (0.0350) | 0.0459 (0.0389) | 0.0585 (0.0415) | 0.0974*** (0.0288) |
| Hispanic | 0.0903*** (0.0319) | 0.0534* (0.0276) | 0.124*** (0.0332) | 0.0447 (0.0315) | 0.146*** (0.0315) | 0.0316 (0.0254) | 0.0486* (0.0287) | 0.0226 (0.0281) | 0.0657** (0.0307) | 0.0577** (0.0270) | -0.0000375 (0.0315) | -0.0154 (0.0330) | 0.0588** (0.0234) |
| Female | 0.0637*** (0.0182) | 0.0241 (0.0155) | 0.0118 (0.0191) | 0.104*** (0.0207) | 0.0127 (0.0190) | -0.00113 (0.0164) | 0.0365** (0.0164) | -0.0445** (0.0181) | 0.0761*** (0.0183) | -0.00480 (0.0166) | 0.0268 (0.0199) | 0.0826*** (0.0210) | 0.0429*** (0.0127) |
| Bachelor+ | -0.0335* (0.0173) | -0.0588*** (0.0149) | -0.0541*** (0.0174) | 0.0452** (0.0188) | -0.0226 (0.0176) | -0.0326** (0.0146) | -0.0166 (0.0154) | 0.000170 (0.0162) | -0.000849 (0.0172) | 0.00585 (0.0149) | -0.0424** (0.0183) | 0.00356 (0.0194) | -0.0412*** (0.0126) |
| BusAge | 0.00291 (0.00566) | 0.00149 (0.00492) | 0.000642 (0.00563) | -0.00619 (0.00628) | -0.00448 (0.00596) | 0.0147*** (0.00512) | 0.00791 (0.00495) | -0.000316 (0.00539) | 0.000683 (0.00562) | 0.00275 (0.00497) | -0.00915 (0.00603) | 0.0140** (0.00652) | -0.00216 (0.00396) |
| Observations | 3431 | 3430 | 3425 | 3425 | 3419 | 3425 | 3422 | 3424 | 3420 | 3420 | 3421 | 3426 | 3427 |
| R-squared | 0.0740 | 0.0423 | 0.123 | 0.0623 | 0.0679 | 0.0823 | 0.0512 | 0.0403 | 0.0512 | 0.0416 | 0.0397 | 0.0365 | 0.0488 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges for the RAND-Shopify survey sample when running their business. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) or (4) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges are: Losing access to other sources of income not generated from your primary Shopify business (e.g., wages, unemployment assistance) or benefits (column 1); Losing access to healthcare benefits (column 2); Securing financial capital (capital = savings, other assets, or borrowed funds) (column 3); Attracting domestic customers / growing sales domestically (column 4); Attracting international customers / growing sales internationally (column 5); Finding qualified labor (column 6); Paying for qualified labor (column 7); Sourcing materials / inputs (column 8); Paying for materials / inputs (column 9); Distribution and fulfillment of your goods / services (column 10); Taxes or government regulations (column 11); The unpredictability of business conditions (e.g., costs, competitive pressures, changing technologies, etc.) (column 12); Understanding / adopting digital currencies (column 13). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 8: CORRELATES OF FINANCING CHALLENGES - ALTERNATE VERSION

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|--------------|-------------------------|-----------------------|------------------------|-------------------------|-------------------------|-----------------------|-----------------------|
| | Identify Banks | Advice | Complete App | Meet Req. | Long Wait | High Cost/Fees | Concerns |
| Age<35 | -0.0121 (0.0154) | 0.00584 (0.0167) | 0.00102 (0.0160) | -0.0159 (0.0168) | 0.00981 (0.0145) | 0.0288 (0.0190) | -0.00102 (0.0187) |
| Black | 0.252**** (0.0252) | 0.180**** (0.0255) | 0.236**** (0.0253) | 0.325**** (0.0264) | 0.209**** (0.0238) | 0.155**** (0.0272) | 0.237**** (0.0262) |
| Asian | 0.0679* (0.0349) | 0.104*** (0.0369) | 0.0442 (0.0327) | 0.0771** (0.0370) | 0.0267 (0.0300) | 0.122*** (0.0409) | 0.0171 (0.0390) |
| Hispanic | 0.105**** (0.0306) | 0.0951*** (0.0315) | 0.0870*** (0.0303) | 0.108**** (0.0319) | 0.0710** (0.0281) | 0.0885*** (0.0331) | 0.0443 (0.0329) |
| Female | 0.0235 (0.0170) | 0.0404** (0.0173) | 0.0349** (0.0168) | 0.0131 (0.0179) | 0.00299 (0.0155) | -0.0123 (0.0206) | 0.105**** (0.0202) |
| Bachelor+ | -0.0740**** (0.0159) | -0.0210 (0.0166) | -0.0450*** (0.0161) | -0.0631**** (0.0169) | -0.0746**** (0.0147) | -0.0384** (0.0187) | -0.0227 (0.0186) |
| BusAge | 0.00361 (0.00511) | -0.00663 (0.00526) | 0.00438 (0.00510) | -0.000336 (0.00556) | 0.00102 (0.00476) | 0.0120* (0.00635) | 0.00838 (0.00615) |
| Observations | 3433 | 3427 | 3430 | 3424 | 3426 | 3428 | 3425 |
| R-squared | 0.0900 | 0.0664 | 0.0773 | 0.105 | 0.0883 | 0.0465 | 0.0829 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with financing challenges for the RAND-Shopify survey sample when running their business. The dependent variable is a dummy variable equal to 1 for respondents who listed the financing challenge as “very challenging” (5) or (4) and 0 if they listed the financing challenge as somewhat or not challenging, or said it was not applicable. Financing challenges are: Identifying banks or financial institutions for your funding needs (column 1); Finding adequate financial or legal advice (column 2); Completing the application process for loans / grants (e.g., navigating it, finding the time) (column 3); Meeting minimum financing requirements (column 4); Long wait times for funding decisions (column 5); Costs / fees too high (column 6); Concerns about your personal financial situation (column 7). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 9: CORRELATES OF CHALLENGES RELATED TO ATTRACTING CUSTOMERS - ALTERNATE VERSION

| | (1) Find Tools | (2) Understand Tools | (3) High Costs of Tools | (4) Find Networks |
|--------------|------------------------|-------------------------|----------------------------|-------------------------|
| Age<35 | -0.135**** (0.0195) | -0.111**** (0.0195) | -0.106**** (0.0194) | -0.0874**** (0.0190) |
| Black | -0.00801 (0.0272) | 0.0171 (0.0273) | 0.0428 (0.0273) | 0.0852*** (0.0273) |
| Asian | -0.0104 (0.0411) | 0.0257 (0.0411) | 0.0540 (0.0409) | 0.0411 (0.0406) |
| Hispanic | 0.0205 (0.0327) | 0.0508 (0.0334) | 0.116**** (0.0319) | 0.0686** (0.0332) |
| Female | 0.0724**** (0.0211) | 0.0713**** (0.0209) | 0.0217 (0.0208) | 0.0904**** (0.0206) |
| Bachelor+ | 0.0599*** (0.0193) | 0.0437** (0.0193) | 0.0378** (0.0193) | 0.0338* (0.0188) |
| BusAge | -0.00402 (0.00647) | -0.00145 (0.00654) | 0.00658 (0.00650) | -0.00467 (0.00628) |
| Observations | 3433 | 3432 | 3433 | 3431 |
| R-squared | 0.0531 | 0.0424 | 0.0500 | 0.0522 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges related to attracting customers to their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) or (4) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges related to attracting customers are: Finding the right tools or marketing channels to reach potential customers (column 1); Understanding how to use tools or marketing channels to reach potential customers (column 2); High costs of using tools or marketing channels to reach potential customers (column 3); Finding helpful networks (e.g., personal, professional, etc.) to promote the business (column 4). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 10: CORRELATES OF CHALLENGES RELATED TO OPERATING THE BUSINESS - ALTERNATE VERSION

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|--------------|------------------------|-----------------------|-----------------------|----------------------|------------------------|------------------------|-------------------------|
| | Setup | Mng Labor | Mng Inputs | Mng Distro | Mng Payments | Brand | Customer |
| Age<35 | 0.0470*** (0.0144) | 0.0122 (0.0124) | 0.0304* (0.0176) | 0.00507 (0.0156) | 0.0204 (0.0148) | -0.0461** (0.0190) | 0.0401*** (0.0152) |
| Black | -0.0367** (0.0182) | 0.0490*** (0.0174) | 0.0507** (0.0250) | 0.0248 (0.0209) | 0.0710**** (0.0215) | 0.0266 (0.0272) | 0.0286 (0.0205) |
| Asian | 0.00112 (0.0279) | 0.0882*** (0.0305) | 0.0419 (0.0378) | 0.113*** (0.0367) | 0.111*** (0.0355) | 0.172**** (0.0413) | 0.118*** (0.0369) |
| Hispanic | 0.0287 (0.0255) | 0.0351 (0.0219) | 0.0366 (0.0302) | 0.0280 (0.0274) | 0.0407 (0.0275) | 0.0484 (0.0323) | 0.0445* (0.0256) |
| Female | 0.0377*** (0.0144) | -0.00685 (0.0137) | 0.0591*** (0.0189) | -0.00228 (0.0170) | 0.0383** (0.0159) | -0.00794 (0.0206) | -0.0822**** (0.0170) |
| Bachelor+ | -0.0256* (0.0139) | 0.00372 (0.0122) | 0.00133 (0.0173) | 0.0133 (0.0147) | -0.00801 (0.0145) | 0.0306* (0.0186) | 0.0514**** (0.0136) |
| BusAge | -0.0112** (0.00437) | 0.000102 (0.00414) | 0.000453 (0.00582) | 0.00145 (0.00495) | -0.00310 (0.00454) | -0.0154** (0.00628) | -0.00244 (0.00486) |
| Observations | 3433 | 3432 | 3433 | 3431 | 3432 | 3430 | 3430 |
| R-squared | 0.0529 | 0.0390 | 0.0353 | 0.0392 | 0.0364 | 0.0393 | 0.0495 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges related to operating their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) or (4) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges related to operating the business are: Deciding how to set up your business (e.g., incorporated vs. unincorporated, LLC vs. corporation) (column 1); Managing your workforce (column 2); Costs and sourcing of the right materials / inputs (column 3); Managing distribution and fulfillment of goods / services (column 4); Managing payments (e.g., credit cards payments) and fees (column 5); Building a brand for your business (column 6); Ensuring customer satisfaction with the product (column 7). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX TABLE 11: CORRELATES OF CHALLENGES RELATED TO NAVIGATING TAXES AND REGULATIONS - ALTERNATE VERSION

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|--------------|------------------------|-----------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|
| | Advice | Mng Tax | Mng Labor | Mng Ad | Mng Privacy | Mng Ins. | Mng Lic. | Mng Env. | Border |
| Age<35 | 0.0494*** (0.0178) | 0.0154 (0.0187) | 0.0193 (0.0126) | -0.0179 (0.0150) | -0.0114 (0.0131) | -0.00540 (0.0135) | 0.00869 (0.0143) | 0.0117 (0.0104) | 0.00337 (0.0142) |
| Black | 0.107**** (0.0256) | 0.0599** (0.0270) | 0.0666**** (0.0189) | 0.108**** (0.0226) | 0.0364* (0.0199) | 0.0477** (0.0204) | 0.0508** (0.0210) | 0.0632**** (0.0176) | 0.0398* (0.0206) |
| Asian | 0.116*** (0.0377) | 0.0450 (0.0384) | 0.0464* (0.0280) | 0.0807** (0.0332) | 0.0470 (0.0300) | 0.0180 (0.0298) | 0.0901*** (0.0332) | 0.0616** (0.0271) | 0.0560* (0.0325) |
| Hispanic | 0.0463 (0.0311) | 0.0446 (0.0326) | 0.0127 (0.0225) | 0.0370 (0.0268) | 0.0896**** (0.0251) | 0.0540** (0.0257) | 0.0593** (0.0266) | 0.0257 (0.0197) | 0.0914**** (0.0268) |
| Female | 0.0353* (0.0183) | 0.0369* (0.0201) | -0.0171 (0.0132) | 0.0182 (0.0158) | 0.0179 (0.0141) | 0.0171 (0.0142) | 0.00545 (0.0150) | -0.000533 (0.0118) | 0.00752 (0.0157) |
| Bachelor+ | -0.0266 (0.0174) | -0.00910 (0.0185) | -0.0139 (0.0119) | -0.0419*** (0.0147) | 0.00533 (0.0128) | -0.00411 (0.0133) | -0.00887 (0.0137) | -0.00325 (0.0105) | 0.0318** (0.0133) |
| BusAge | -0.0107** (0.00547) | -0.00924 (0.00614) | -0.00173 (0.00367) | -0.0135*** (0.00471) | -0.00836** (0.00415) | -0.0113*** (0.00405) | -0.00848** (0.00430) | -0.00210 (0.00339) | -0.00205 (0.00467) |
| Observations | 3431 | 3433 | 3428 | 3431 | 3427 | 3423 | 3425 | 3429 | 3428 |
| R-squared | 0.0458 | 0.0465 | 0.0391 | 0.0555 | 0.0400 | 0.0439 | 0.0387 | 0.0374 | 0.0343 |

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Notes: This table presents the factors correlated with challenges related to navigating taxes and regulations regarding their business for the RAND-Shopify survey sample. The dependent variable is a dummy variable equal to 1 for respondents who listed the challenge as “very challenging” (5) or (4) and 0 if they listed the challenge as somewhat or not challenging, or said it was not applicable. Challenges related to navigating taxes and regulations are: Finding adequate financial or legal advice (column 1); Managing taxes (column 2); Managing labor regulations (column 3); Managing advertising regulations (column 4); Managing privacy regulations (column 5); Managing insurance regulations (column 6); Managing licensing and permit regulations (column 7); Managing environmental regulations (column 8); Doing business across state or country borders (column 9). The independent variables are a vector of individual characteristics and business characteristics: dummy variables for being under age 35 (“Age<35”), race (“Black”, “Asian”, and “Other Race” (the latter is not shown)), ethnicity (“Hispanic”), gender (“Female”), having a bachelor’s degree or higher (“Bachelor+”), and a continuous variable for business age over all time (not just on the Shopify platform, “BusAge”), headquarter state, a continuous variable for annualized revenue in 2022, dummy variables for self-reported industry, business structure (i.e., sole proprietorship, LLC, or other), and startup financing bucket (under \$5K, between \$5K-\$25K, or over \$25K). The RAND-Shopify survey had 4,000 respondents. Responses are weighted using survey weights described in Appendix Document 1.

APPENDIX DOCUMENT 1: SURVEY DEVELOPMENT, SAMPLING & WEIGHTING

I. Survey Development

To develop our survey, we both wrote new questions and drew or adapted existing questions from surveys of business owners including the Census Annual Survey of Entrepreneurs, the Census Annual Business Survey, and from internal surveys previously administered to business owners by Shopify. In total, around 45 percent of the questions were new questions developed by the research team.

To provide an initial check of respondents' sense-making around the instrument, we conducted phone interviews with a convenience sample of five business owners, requesting their input on how they understood the questions and adapting our language in light of this feedback. Then, prior to administering the full survey, we piloted the survey with a subsample of 1,000 business owners, assessing response rates and answer distributions, as well as checking for alignment between survey questions and Shopify administrative data for those questions that elicit information similar to the data already in the administrative records. After confirming we were satisfied with the survey's properties in this pilot we proceeded to administer the survey to our full outreach sample.

II. Survey Sampling

We sent the survey to a total of approximately 313K merchants on the platform who had opened between January 2017 and December 2022 and were still active in May 2023 (note that we sent the survey at the merchant level instead of the store level as we were interested in merchant-level characteristics). We chose to target merchants who had opened during this time since data on merchants' historical revenues prior to 2017 was not available for use in our study, so ex-post comparisons of revenue in early years on the platform would not have been possible; we excluded merchants who opened in January 2023 or later, since no revenue data was available for these merchants. The merchants in our surveyed sample largely reflected those earning more than \$1,000 in annualized revenue in 2022 (approximately 97%); the remaining 3% were sent to those with \$1,000 or less in annualized revenue in that year.

The survey was fielded in a single day, within which we achieved our desired response total of 4,000 respondents. We closed the survey to further responses after achieving this to-

tal, in order to remain within our project budget for respondent incentives. This restriction at 4,000 respondents resulted in an implied response rate of 1.3%. A significant difference between our survey and prior surveys conducted by Shopify is that our RAND survey was incentivized with a guaranteed dollar amount (\$20); prior Shopify surveys offered a lottery amount instead of a guaranteed payment. We calibrated the \$20 amount so that it represented a high hourly wage for this sample (e.g., roughly \$80 an hour for a 15-minute survey).

III. Survey Weighting

Once we obtained the survey results (i.e., data from the respondent sample), we compared the characteristics of the respondents against those of the surveyed population (see Appendix Table 1a). There are small differences, shown in Appendix Table 1a. For example, 22% of the population was in the US Pacific time zone, while only 14% of respondents were.

To adjust for this, we used weights to correct for imbalances between the surveyed sample and the respondent sample, and then use these weights in the analysis throughout the paper; more specifically, when doing inferences about statistical significance, we declare the survey design for the dataset and then apply the weights. To determine the weights, we used the raking algorithm implemented in the *anesrake* R package (Pasek, Debell & Krosnick 2014); weights were created so that the weighted characteristics of the respondents matched those of the population. We used the following characteristics to create the weights: time zone, the racial demographics of the merchant’s zip code (because we do not have *a priori* access to the race of business owners), merchant’s revenue, and merchant’s industry.³⁸ These characteristics were prioritized in the weighting to mitigate some degree of imbalance on these dimensions and because they were more central to our analyses. The raking algorithm returned standardized weights for each respondent ranging from 0.36 to 4.21, with a design effect of 1.17, which reduces our sample size ($N = 4,000$) to an effective sample size of 3,421. All differences between the weighted characteristics and the full sample were less than 10^{-10} (effect size scale), indicating that the weights were successful in matching the characteristics

³⁸ Raking requires categorical characteristics, and so we created bins where appropriate (e.g., for each racial group, we created five bins evenly spanning the range of values for that group, and similarly for store revenue). We merged the Alaska and Hawaii time zones, resulting in five total time zones (Eastern, Central, Mountain, Pacific, and Alaska/Hawaii).

of the respondents to those of the population.³⁹

³⁹ Note that we compared the weights generated by raking alone with those generated by raking preceded by non-response adjustment using logistic regression. The weights were nearly identical (correlation = 0.9998).

APPENDIX DOCUMENT 2: SURVEY INSTRUMENT

Intro

Welcome to the Survey of Shopify Store Owners!

Understanding Your Participation

Study Purpose. This survey is part of a research study by RAND, a nonprofit research organization. The results will inform policymakers and the public about merchant experiences. Your participation is **voluntary** and can be discontinued at any time without penalty.

Procedures. This survey should take about 15 minutes. The first two questions will determine if you are eligible to participate (you must be at least 18 years old and the owner of a Shopify store to participate). The survey includes some personal questions (such as about your personal and business finances and your citizenship status) that are important for the research team to understand the challenges facing business owners from different backgrounds. You can skip any question in the survey that you do not wish to answer.

Compensation. If you are eligible to participate, you will receive a \$20 electronic gift card immediately after survey completion to thank you for your time.

Confidentiality. The RAND research team will keep all survey responses **confidential** and will only use them for the study. We will not provide information that identifies you or your business to anyone outside the research team. RAND may share survey response data with Shopify, but would remove any identifying personal information from the survey data, including all open response answers, so that neither you nor your business can be identified by Shopify.

Benefits and Risks. Taking the survey will allow you to reflect on your experiences as an entrepreneur. You will be providing valuable feedback that may help improve public policy. In the very unlikely event of a breach of confidentiality, you could experience a loss of privacy due to your survey responses being made public. However, we believe the risks are minimal given that we are securely storing the survey responses in data files that do not include the names or contact information of you or your business.

Questions? If you have any questions about this survey or the study, please feel free to email the project leaders Dr. Lisa Abraham and Dr. Ben Master at merchantsurvey@rand.org. If you have concerns or questions about your rights as a participant, contact the RAND Human Subjects Protection Committee by emailing hspinfo@rand.org, referencing study number 2022-N0143.

Thank you for your help in this important research study!

If you would like to participate in this survey, please provide your consent.

In place of a paper signature, I am providing my consent electronically by clicking "Yes" below.

- Yes, I consent.
- No, I do not wish to participate.

Start

Opt out

You have opted to not participate in our survey. Thank you for your time.

Back

Start

Questions about this survey or how to answer?
Email us at srgwebhelp@rand.org.

Section1

Note: Throughout this survey, we ask questions about your primary Shopify business. If you own multiple businesses that operate through Shopify, please think about only *the business that has the most Shopify revenue* when you answer the questions on this survey.

The following questions ask about your role in the business and your age.

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Next

Which of the following best describes you?

- Business owner (or co-owner)
- I'm using Shopify to sell products and/or services but don't consider myself a business owner
- Employee – I work for a business that uses Shopify
- I'm a Shopify partner (I own or work for a business that provides services and/or technology to Shopify merchants)
- None of the above

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Next

What was your age as of January 1, 2023?

- 17 or younger
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or older

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Next



Thank you for your interest in our survey. This survey is meant only for business owners, so unfortunately you are not eligible to participate.

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Next



What was your age as of January 1, 2023?

- 17 or younger
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or older

Back

Next



Thank you for your interest in our survey. This survey is meant only for business owners who are 18 years old or older, so unfortunately you are not eligible to participate.

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Next

Section2

Section 2. The following questions ask about some basic characteristics of your business.

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Next

When did you initially start your primary Shopify business?

(This may be different from when you first started using Shopify for this business)

Month Year

Please select your answer ▼

Please select your answer ▼

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Next

Which of the following best describes your business?

(Select one)

An Unincorporated Business

- A sole proprietorship
- Informal business

An Incorporated Business

- Limited liability company (LLC)
- A partnership
- A corporation

Other, specify:

Back

Next

What was the most important step for you in determining **how to set up your business structure** (e.g., incorporated versus unincorporated, LLC versus corporation)?

(Select one)

- Researched how to set up my business structure myself
- Consulted a financial and/or legal advisor
- Consulted a family member, friend, and/or mentor
- Other, specify:

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[Next](#)

Which of the following describes **what your business sells**?

(Select all that apply)

- Physical goods / products (e.g., clothing, cosmetics, art)
- Services (including restaurants / cafés)
- Digital goods / products (including content that can be downloaded, streamed, licensed, etc.)
- Other, specify:

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What is the **primary industry** that your business operates in?

(Select one)

- Arts and entertainment (e.g., arts & crafts supplies, collectibles, musical instruments, party supplies, etc.)
- Baby and toddler items, excluding clothing and shoes (e.g., strollers, car seats, diaper bags, etc.)
- Business and industrial (e.g., safety equipment, laboratory supplies, medical equipment, food service supplies, signage, etc.)
- Cameras and optics (e.g., cameras, lenses, lighting equipment, etc.)
- Clothing, shoes, and/or accessories
- Craft / hobby patterns (e.g., sewing or knitting patterns, etc.)
- Digital art
- Ebook / audio book
- Electronics and/or electronics accessories (e.g., computers, computer accessories, printers, mobile phones, mobile phone accessories, etc.)
- Food, beverages, or tobacco
- Furniture (e.g., chairs, tables, sofas, etc.)
- Graphic design work (logos, icons, etc.)
- Hardware (e.g., building materials, plumbing fixtures, power & electrical supplies, tools, etc.)
- Health and beauty (e.g., first aid, cosmetics, hair care supplies, shaving, grooming supplies, etc.)
- Home and garden (e.g., bathroom accessories, home decor items, household appliances, household supplies, kitchen & dining items, lawn & garden items, lighting, linens & bedding, etc.)
- Luggage and/or bags (e.g., suitcases, briefcases, luggage tags, etc.)
- Media (e.g., books, comics, magazines, etc.)
- Office supplies (e.g., pens, pencils, stationery, office equipment, etc.)
- Online courses / webinars
- Pet supplies (e.g., pet food, pet toys, pet accessories, etc.)
- Religious and ceremonial (e.g., religious items, wedding supplies, etc.)
- Sporting goods (e.g., sports equipment, exercise equipment, etc.)
- Toys and games
- Vehicles and parts
- Other, specify:

Back

Next

How many **retail locations** (i.e., brick-and-mortar stores) does your business currently have? Retail is defined as a physical location that you own / operate.

- None (all online)
- 1 or more permanent retail locations
- 1 or more temporary retail locations (e.g., pop-up shops)
- Not sure

Back

Next

How many **employees at your business** received a W-2 in 2022?

(If you have no employees who received a W-2, type "0")

Back

Next

Which of the following **other types of workers** were hired by your business over the last 12 months?

(Select all that apply)

- Paid day laborers
- Temporary staffing obtained from a temporary help service
- Leased employees from a leasing service or a professional employer organization
- Contractors, subcontractors, independent contractors, or outside consultants (workers who received a 1099 or payment from another company)
- None of the above

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Next

Section3

Section 3. The following questions ask about the supports and challenges you have encountered while running your primary Shopify business.

Back

Next

How important have each of the following resources or supports been to you over the last 12 months?

For each option listed, indicate the value that best corresponds: 1 = not important, 5 = very important or Not Applicable (N/A).

| | |
|--|-----------------------------|
| Prior entrepreneurial experience | Please select your answer ▼ |
| Personal or family wealth or income | Please select your answer ▼ |
| Access to low-cost loans or credit | Please select your answer ▼ |
| Government (e.g., local, state, federal) resources/training | Please select your answer ▼ |
| Paid professional services or training | Please select your answer ▼ |
| Online resources/training | Please select your answer ▼ |
| My professional or personal network | Please select your answer ▼ |
| Effective platforms for managing your business (e.g., paying bills, fulfillment) | Please select your answer ▼ |
| Effective platforms for reaching customers (e.g., social media, marketing) | Please select your answer ▼ |
| Other, specify: | Please select your answer ▼ |

Back

Next

To what extent have each of the following been **challenges** for you in running your business over the last 12 months?

For each option listed, indicate the value that best corresponds: 1 = not challenging, 5 = very challenging or Not Applicable (N/A).

- Losing access to other sources of income not generated from your primary Shopify business (e.g., wages, unemployment assistance) or benefits Please select your answer ▼
- Losing access to healthcare benefits Please select your answer ▼
- Securing financial capital (capital = savings, other assets, or borrowed funds) Please select your answer ▼
- Attracting domestic customers / growing sales domestically Please select your answer ▼
- Attracting international customers / growing sales internationally Please select your answer ▼
- Finding qualified labor Please select your answer ▼
- Paying for qualified labor Please select your answer ▼
- Sourcing materials / inputs Please select your answer ▼
- Paying for materials / inputs Please select your answer ▼
- Distribution and fulfillment of your goods / services Please select your answer ▼
- Taxes or government regulations Please select your answer ▼
- The unpredictability of business conditions (e.g., costs, competitive pressures, changing technologies, etc.) Please select your answer ▼
- Understanding / adopting digital currencies Please select your answer ▼
- Other, specify: Please select your answer ▼

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Next

When looking for **financing for your business**, how challenging have you found each of the following?

For each option listed, indicate the value that best corresponds: 1 = not challenging, 5 = very challenging, or Not Applicable (N/A).

- Identifying banks or financial institutions for your funding needs Please select your answer ▼
- Finding adequate financial or legal advice Please select your answer ▼
- Completing the application process for loans / grants (e.g., navigating it, finding the time) Please select your answer ▼
- Meeting minimum financing requirements Please select your answer ▼
- Long wait times for funding decisions Please select your answer ▼
- Costs / fees too high Please select your answer ▼
- Concerns about your personal financial situation Please select your answer ▼

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Next

When it comes to **attracting customers and growing sales**, how challenging have you found each of the following?

For each option listed, indicate the value that best corresponds: 1 = not challenging, 5 = very challenging, or Not Applicable (N/A)

- Finding the right tools or marketing channels to reach potential customers Please select your answer ▾
- Understanding how to use tools or marketing channels to reach potential customers Please select your answer ▾
- High costs of using tools or marketing channels to reach potential customers Please select your answer ▾
- Finding helpful networks (e.g., personal, professional, etc.) to promote the business Please select your answer ▾

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Next

When it comes to **operating the business**, how challenging have you found each of the following?

For each option listed, indicate the value that best corresponds: 1 = not challenging, 5 = very challenging, or Not Applicable (N/A)

- Deciding how to set up your business (e.g., incorporated vs. unincorporated, LLC vs. corporation) Please select your answer ▾
- Managing your workforce Please select your answer ▾
- Costs and sourcing of the right materials / inputs Please select your answer ▾
- Managing distribution and fulfillment of goods / services Please select your answer ▾
- Managing payments (e.g., credit cards payments) and fees Please select your answer ▾
- Building a brand for your business Please select your answer ▾
- Ensuring customer satisfaction with the product Please select your answer ▾

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Next

When it comes to **navigating taxes and regulations**, how challenging have you found each of the following?

For each option listed, indicate the value that best corresponds: 1 = not challenging, 5 = very challenging, or Not Applicable (N/A)

- | | |
|--|-----------------------------|
| Finding adequate financial or legal advice | Please select your answer ▼ |
| Managing taxes | Please select your answer ▼ |
| Managing labor regulations | Please select your answer ▼ |
| Managing advertising regulations | Please select your answer ▼ |
| Managing privacy regulations | Please select your answer ▼ |
| Managing insurance regulations | Please select your answer ▼ |
| Managing licensing and permit regulations | Please select your answer ▼ |
| Managing environmental regulations | Please select your answer ▼ |
| Doing business across state or country borders | Please select your answer ▼ |

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Section4

Section 4. The following questions ask about your primary Shopify business finances.

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Next

Where did you get the **financial capital** you needed to start or acquire this business?

(Capital includes savings, other assets, and borrowed funds.)

(Select up to 3 top sources)

- Personal/family savings
- Personal/family home equity loan
- Personal or business credit cards
- Government-guaranteed loan from a bank or financial institution, including SBA-guaranteed loans
- Business loan from a bank, credit union, or other financial institution
- Business loan from federal, state, or local government
- Business loan/investment from family/friends
- Business loan from an online lender
- Investment by venture capitalist(s)
- Grants (e.g., from government or philanthropic organizations)
- Other source(s) of capital _____
- Don't know
- None needed

Back

Next

What was the total amount of capital you used to start or acquire this business? (Capital includes savings, other assets, and borrowed funds)

- None (i.e., no capital needed)
- Less than \$5K
- \$5K-\$9K
- \$10K-\$24K
- \$25K-\$49k
- \$50K-\$99K
- \$100K-\$249K
- \$250K-\$999K
- More than \$1M
- Don't know

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Next

Have you ever had a loan application related to this business rejected?

- Yes
- No

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Next

What was your business' approximate total annual revenue in the last 12 months (in U.S. Dollars)?

Please include all revenue sources and all sales channels (not just revenues through Shopify)

\$ USD

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Next

What portion of your total business revenue do you estimate comes from sales outside of the U.S. (including non-Shopify revenue)?

Out of the U.S.: % (out of 100%)

I do not know

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Next

Approximately what proportion of your business's total revenue in the last 12 months came each from the following sources:

Please ensure the sum of your answers equals 100%.

Through your Shopify online store %

Through online e-commerce channels other than your Shopify online store %

Through sales at a physical store front that you own %

Through sales at a pop-up or temporary physical location %

Through all other avenues not described above %

Total 0

Don't know

Back

Next

How much **outstanding debt** do you have related to this business (i.e., from business loans, personal loans, or credit card balances)?

- \$10,000 or less
- \$10,001 - \$25,000
- \$25,001 - \$50,000
- \$50,001 - \$100,000
- \$100,001 - \$250,000
- \$250,001 - \$1,000,000
- More than \$1,000,000
- Unsure

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At the end of 2022, was your business operating at a **profit, break-even, or loss**?

- Profit
- Loss
- Break-even (0 profits)
- Don't know

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[Next](#)

What would you expect business revenues to be **1 year from now**?

- Higher
- About the same
- Lower
- Don't know

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[Next](#)

Given the choice, would you prefer to have **\$1,000 today** to support your business needs OR **\$1,100 in one year**?

- \$1,000 today
- \$1,100 in one year

Back

Next

Given the choice, would you prefer to have **\$1,000 today** to support your business needs OR **\$1,250 in one year**?

- \$1,000 today
- \$1,250 in one year

Back

Next

Given the choice, would you prefer to have **\$1,000 today** to support your business needs OR **\$1,500 in one year**?

- \$1,000 today
- \$1,500 in one year

Back

Next

Given the choice, would you prefer to have **\$1,000 today** to support your business needs OR **\$2,000 in one year**?

- \$1,000 today
- \$2,000 in one year

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Next

Section5

Section 5. The following questions ask about your background and demographics.

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Next

What race best describes you?

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Pasifika/ Pacific Islander
- Not Listed
- Prefer not to say

Back

Next

Are you of Hispanic, Latinx or Latin American, or Spanish origin?

- No - not Hispanic, Latinx or Latin American, or Spanish origin
- Yes
- Prefer not to say

Back

Next

What is your gender identity?

- Man
- Woman
- Non-binary
- Transgender
- Two Spirit
- Genderqueer
- Gender non-conforming
- Agender
- Prefer to self-identify
- Not Listed
- Prefer not to say

Back

Next

What is the highest level of education you have completed?

- Some high school or below
- High school graduate or equivalent
- Technical, trade, or vocational school
- Some college, but no degree
- Associate degree
- Bachelor's degree
- Masters degree (for example, MA, MEng, MEd, MSW, MBA)
- Doctorate degree or Professional degree beyond Bachelor's degree (e.g., PhD, EdD MD, DDS, DVM, LLB, JD)

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Next

Are you a U.S. citizen?

- Yes – born a U.S. citizen
- Yes – acquired citizenship through naturalization
- No

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Next

Have you ever **served** in any branch of the U.S. Armed Forces, including the Coast Guard, the National Guard, or a Reserve component of any service branch?

- Yes
- No

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Next

How many **other people live with you** (including children)?

- 1
- 2
- 3
- 4
- 5+

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Next

What was your **approximate total household income** (income from all members of your family living with you, before taxes) during the past 12 months?

Total Household Income (USD \$): \$

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Next

Are you currently covered by any form of health insurance or health plan?

(Select the one that best applies)

- Yes – through insurance I provide to employees at my business
- Yes – through employer-provided insurance I receive from another full-time job
- Yes – through employer-provided insurance I receive from another part-time job
- Yes – through my partner/spouse’s employer-provided insurance
- Yes – through my parent’s employer-provided insurance
- Yes – through Medicare and/or Medicaid
- Yes – through military health program
- Yes – coverage through Marketplaces established by Affordable Care Act (ACA)
- Yes – coverage obtained outside of Marketplaces established by Affordable Care Act (ACA)
- Yes – other
- No – I am uninsured

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Next

During the past 12 months, how many hours did you usually work each week?

(Only think about the weeks that you worked)

Usual hours worked each week
across all jobs:

Usual hours worked each week at
your primary Shopify business:

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Next

Where did you **work immediately prior** to running your primary Shopify business?

(Select all that apply)

- I owned one or more businesses prior to this one
- I had a full-time job
- I had a part-time job
- I did contract work
- I did freelance or "gig" work (e.g., platformed-based work such as Task Rabbit, Uber/Lyft)
- I was unemployed
- I was on disability insurance
- I chose not to work
- Other, please specify

Back

Next

What are your **reasons for owning** this business? (Select one for each row: Not important/ Somewhat important/ Very important)

| | Not Important | Somewhat Important | Very Important |
|--|-----------------------|-----------------------|-----------------------|
| Wanted to be my own boss / start my own business | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wanted to carry on family business | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wanted to have flexible hours / have the ability to work from home / and/or better balance work and family | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Opportunity for greater income / wanted to build wealth | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Best avenue for my ideas / goods / services | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Unable to find employment / lost my main source of income | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Dissatisfied with my last job | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Experienced discrimination in my last job | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Wanted to have a positive impact on society / my community | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| An entrepreneurial friend or family member was a role model | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other, specify: _____ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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Next

Those are all the questions we have. Thank you for taking the time to complete the survey.

Please click "Submit" at the bottom right corner. You will be immediately re-directed to an external website where you will be able to choose a \$20 gift card from one of the listed options.

If you have any difficulty accessing your incentive, you can contact us at merchantsurvey@rand.org for help.

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