SMALL BUSINESS CREDIT SURVEY

FEDERAL RESERVE BANK *of* NEW YORK

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ACKNOWLEDGMENTS

The views expressed in the following pages are those of the report team and do not necessarily represent the views of the Federal Reserve System.

4   *Emily Wavering Corcoran coordinated the development of the 2018 survey instrument.*

EXECUTIVE SUMMARY

Nonemployer firms—establishments without employees on payroll—are a dynamic and growing part of the U.S. economy. While their total economic output may be small, representing three percent of business receipts,[5] the number of nonemployer firms has grown during the last two decades and represents 81 percent of all small businesses. Nonemployer firms are sources of primary and supplemental income for 17 percent of American workers,[6] which underscores the importance of understanding the financial characteristics of these firms and their owners. The Small Business Credit Survey (SBCS), a national collaboration of the 12 Federal Reserve Banks, provides an in-depth look at the revenue and profitability of these firms and their owners, including financing needs, decisions, and overall success. Fielded in Q3 and Q4 2018, the survey yielded 5,841 responses from nonemployer firms, businesses in the 50 states and the District of Columbia that have no full- or part-time employees.

NUMBER OF NONEMPLOYER FIRMS OVER TIME

Year	Number
2017	25,701,671
2007	21,708,021
1997	15,439,609

Source: U.S. Census Bureau, Nonemployer Statistics

CONTRIBUTIONS AND KEY FINDINGS

In this report, we find that, despite being a key income source for their owners, these firms face acute profitability and financing challenges. Our key findings include:

Finding #1: Nonemployer firms are an important income source for their owners. Nearly two-thirds of nonemployer firms (63%) serve as the primary source of income for their owner(s).

Finding #2: One in 5 nonemployer firms was started because the owner lacked other employment options.

Finding #3: Despite their owners' reliance on the firm for income, a majority of nonemployer firms are either unprofitable or are operating at break even.

Finding #4: One in 4 nonemployers anticipates hiring employees in the future.

Finding #5: Nonemployer firms seeking capital face significant obstacles, with more than half experiencing financing shortfalls.

DIVERSITY OF NONEMPLOYERS

In this report, we highlight the diversity of nonemployer firms, categorizing them by the financial goals the owners have for their businesses and their likelihood of hiring future employees. The advent of technology-based work platforms has raised great interest in the gig economy, but nonemployers comprise a much broader group than gig workers. Nonemployers are diverse—ranging from contract and gig work to stable sole proprietorships and future employer firms.

We divide nonemployers into five groups, based on whether or not the firm is the owner's primary source of income, their plans to hire employees, their status as a 1099 worker, and the age of the firm.

1) **Supplemental Work:** firms for which the business is not the owner's primary source of income and the owner has no plans to hire employees. These are 29 percent of nonemployers.

2) **Contract Work:** firms working as independent contractors or 1099 workers, where the business is the owner's primary source of income, and the owner has no plans to hire employees. Of nonemployers, 21 percent are contract work firms.

3) **Stable Nonemployer:** firms where the business is the owner's primary source of income and the owner has no plans to hire employees. Owners of these firms do not work as independent contractors or 1099 workers. These are 26 percent of nonemployers.

4) **Early-Stage Potential Employer:** new firms, in business two years or less, that plan to add employees in the next 12 months. These firms account for 11 percent of nonemployers.

5) **Later-Stage Potential Employer:** firms that have been in business more than two years and plan to add employees in the next 12 months. These are 13 percent of nonemployers.

In our analysis, we highlight key findings for the overall group of nonemployers, and we also highlight differences across the groups.

5   https://www.sba.gov/sites/default/files/advocacy/Nonemployer-Fact-Sheet.pdf
6   Jeff Larrimore et al. "Report on the Economic Well-Being of U.S. Households in 2017." Consumer and Community Development Research Section. Federal Reserve Board Division of Consumer and Community Affairs, May 2018.

CHARACTERISTICS OF NONEMPLOYER FIRMS

▪ **Primary source of income:** Most nonemployer firms are the primary source of income, not supplemental or side hustles, for the owner(s). For two-thirds of nonemployers, the business serves as the primary source of income for one or more owners. This is more common when the primary decision maker has less than a Bachelor's degree than when he or she has at least a Bachelor's degree.

▪ **Employment opportunity:** One-fifth of nonemployer firms started because the owner lacked other employment options.

▪ **Apps and online sources of work are important channels of revenue:** 15% of nonemployers leverage an app or online marketplace for the majority of their sales. This is more common among firms with younger decision makers (18%) than with older decision makers (13%), and more common with early-stage potential employers (18%) than with stable nonemployers (11%).

FINANCIAL WELL-BEING OF NONEMPLOYERS

▪ **Revenues are small:** Nearly three-quarters of nonemployers (72%) earn $100K or less in annual revenue. Lower revenues are common among early stage potential employers (92%), firms with non-Hispanic Black ownership (87%), and women-owned firms (81%).

▪ **A majority of firms are not profitable:** Revenue performance among nonemployers was mostly positive, with a net 19% more firms reporting an increase than a decrease in revenues over the prior 12 months. However, only 10% more firms were profitable than operated at a loss at the end of 2017. Nonemployers that were more likely to operate at a loss than at a profit include early stage potential employers (33% more on net) and firms with non-Hispanic Black ownership (29% more on net).

▪ **These firms face increasing costs, but most do not pass them on to customers:** A majority of nonemployers reported an increase in their input costs over the prior 12 months, but only 34% of nonemployers increased the prices they charged. Firms that were most likely to pass on costs were later stage potential employers (44%).

▪ **Financial challenges are common:** Nearly two-thirds of nonemployers reported having financial challenges in the prior 12 months. This was more common among early and later stage potential employers (76% and 73%, respectively) and firms with non-Hispanic Black ownership (76%).

▪ **Most firms report low credit risk:** More than half of nonemployers report that they are low credit risk (58%). However, lower personal and business scores were concentrated among potential employers (56%) and firms with non-Hispanic Black ownership (70%).

▪ **About half of nonemployers report prior debt outstanding:** Most nonemployer firms with prior debt outstanding report balances of $25K or less (59%), and a vast majority have balances of $100K or less (87%). Additionally, firms with prior debt are more likely to report funding shortfalls (29%) than firms without prior debt (9%). Stable nonemployers and later stage potential employers are more likely to have debt outstanding (53% and 59%, respectively).[7]

▪ **Low collateral, reliance on personal guarantees:** 32% of nonemployers with debt have unsecured debt, more than the share of employer firms.[8] 42% have debt secured by a personal guarantee, and 25% reported using personal assets as their collateral.

▪ **Less than half of nonemployer firms report their funding needs being met:** Whether a nonemployer firm applied for financing or not, 39% reported their funding needs were met, 18% of firms had a funding shortfall, and another 43% may have unmet funding needs. Only 17% of firms with non-Hispanic Black ownership reported their funding needs were met.

FUTURE GROWTH

▪ **Growth ambitions are common:** 71% of nonemployers want to expand their business. Only 2% want the business to become smaller.

▪ **Growth ambitions do not necessarily translate into increased revenues:** Expectations for future revenue growth are relatively flat, with only 19% more firms expecting revenue increases than decreases in the coming year.

▪ **Low credit demand:** Only 26% of nonemployers applied for credit, compared to 43% of employer firms.[8]

▪ **Credit sought for expansion, but funding gaps are common:** Most applicants sought financing to expand their business (62%), higher than the rate for employer firms (56%). 42% of nonemployer applicants sought financing to pay operating expenses. 62% of nonemployer applicants received at least some financing: 32% received all, 30% received some, and 38% received none.

▪ **36% of nonemployers are either debt averse or discouraged from applying:** Among nonemployers, 31% reported having sufficient enough financing that they did not need to apply for financing in the prior 12 months, 23% reported debt aversion, and 13% reported being discouraged from applying.

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7   *See Appendix for more detail.*
8   *Federal Reserve Banks, 2019 Report on Employer Firms.*

GROWTH AND NUMBER OF NONEMPLOYER ESTABLISHMENTS

81% of U.S. small businesses are nonemployer businesses.

NUMBER OF SMALL BUSINESSES,[9] *1997-2016* (in millions)

■ Nonemployer firms ■ Small employer firms

NUMBER OF NONEMPLOYER FIRMS[10]

2017	25,701,671
2007	21,708,021
1997	15,439,609

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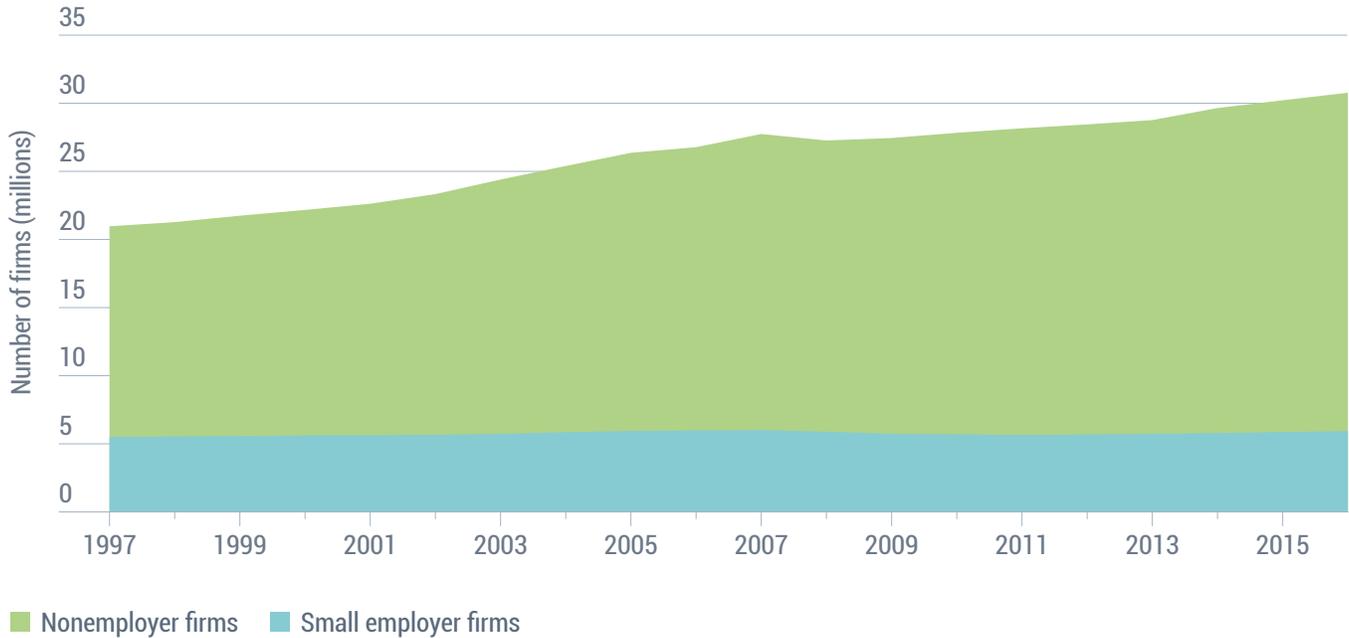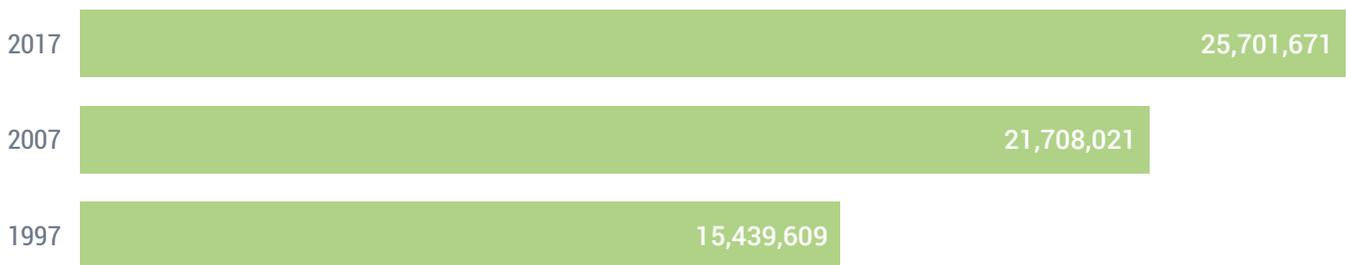
9   *Data for small employer firms is sourced from U.S. Census Bureau's Statistics of U.S. Businesses.*
     Data for nonemployer firms is sourced from U.S. Census Bureau's Nonemployer Statistics.
10   *Source: U.S. Census Bureau, Nonemployer Statistics*

DIVERSITY OF NONEMPLOYER ESTABLISHMENTS

Nonemployer firms have diverse financial goals and growth ambitions. To examine these differences, we segment nonemployers into five categories based on the owner's reliance on the business for income, future hiring plans, and stage of development.

Nonemployer firms				
29% **Supplemental work** Supplemental work firms are nonemployer firms where the business is not the owner's primary source of income and the owner has no plans to hire employees.	**21%** **Contract work** Contract work firms are nonemployer firms working as independent contractors or 1099 workers, the business is the owner's primary source of income, and the owner has no plans to hire employees.	**26%** **Stable nonemployer** Stable nonemployer firms are firms that do not work as independent contractors or 1099 workers, the business is the owner's primary source of income, and the owner has no plans to hire employees.	**11%** **Early-stage potential employer** Early stage potential employers are new firms, in business 2 years or fewer, that plan to add employees in the next 12 months.	**13%** **Later-stage potential employer** Later stage potential employers are firms that have been in business more than two years and plan to add employees in the next 12 months.

N=3,631

		Future hiring?	
		YES	**NO**
Primary source of income?	**YES**	**7%** Early stage potential employer	**21%** Contract worker
		10% Late stage potential employer	**26%** Stable nonemployer
	NO	**4%** Early stage potential employer	**29%** Supplemental work
		3% Late stage potential employer	

N=3,631

CHARACTERISTICS OF NONEMPLOYER FIRMS

Nearly two-thirds of nonemployer firms are the primary source of income for their owner(s).

PRIMARY SOURCE OF INCOME
(% of nonemployer firms)

N=5,156

63%

of firms serve as primary source of income for one or more owner(s)
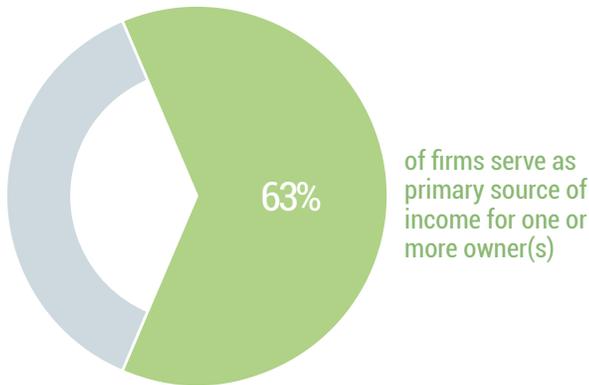
PRIMARY SOURCE OF INCOME BY EDUCATION LEVEL OF PRIMARY DECISION MAKER
(% of nonemployer firms)

Less than Bachelor's N=1,848	69%
More than Bachelor's N=3,304	59%

One in five nonemployer firms was started because the owner lacked other employment options. This is equally common across gender, race, and ethnicity of owner.

SHARE OF FIRMS THAT WERE STARTED OR ACQUIRED BECAUSE AN OWNER LACKED OTHER OPTIONS BY GENDER OF OWNER(S) (% of nonemployer firms)

All nonemployer firms N=5,394	20%
Men-owned or equally owned N=2,963	20%
Women-owned N=2,431	21%
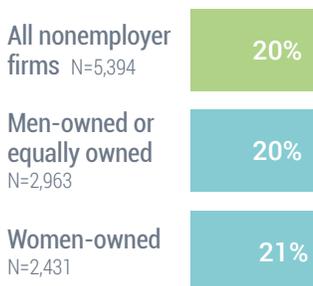
SHARE OF FIRMS THAT WERE STARTED OR ACQUIRED BECAUSE AN OWNER LACKED OTHER OPTIONS BY RACE/ETHNICITY OF OWNER(S) (% of nonemployer firms)

All nonemployer firms N=5,394	20%
Non-Hispanic White N=3,620	20%
Non-Hispanic Black or African American N=1,019	21%
Hispanic N=451	22%
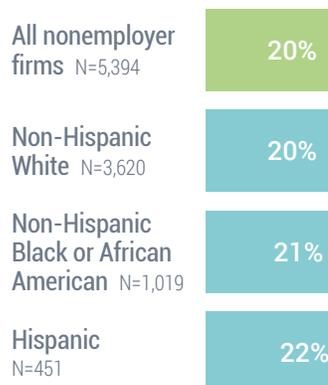
15% of nonemployers leverage an app or online marketplace for the majority of their sales. Younger owners are more likely to use apps, as are supplemental work firms and early stage potential employers.

HOW NONEMPLOYERS SOURCE SALES N=4,002
(% of nonemployer firms)

15% of firms made majority of sales through app/online marketplace
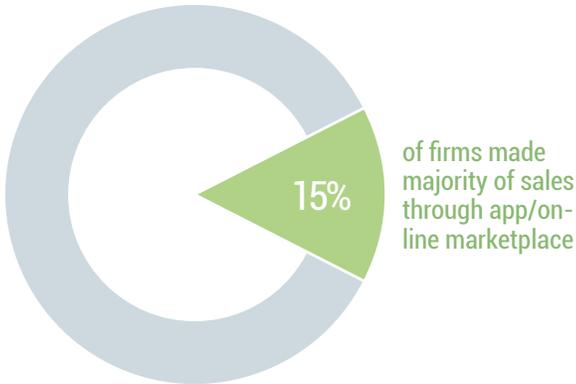
USE OF APPS AND ONLINE SOURCES BY AGE OF PRIMARY DECISION MAKER
(% of nonemployer firms)

Under 46
N=1,246 — 18%

46 and older
N=2,750 — 13%
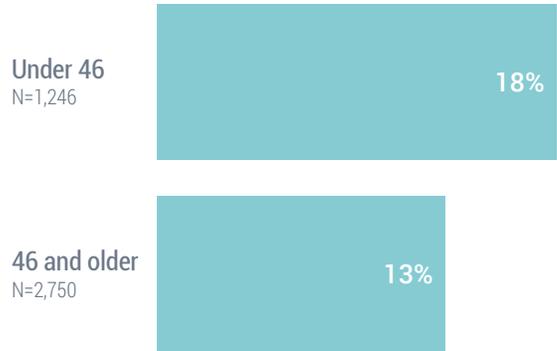
SHARE OF FIRMS USING AN APP/ONLINE MARKETPLACE FOR MOST OF THEIR SALES BY RACE/ETHNICITY OF OWNER(S)
(% of nonemployer firms)

Non-Hispanic White N=2,778 — 14%

Non-Hispanic Black or African American N=706 — 16%

Hispanic N=310 — 16%
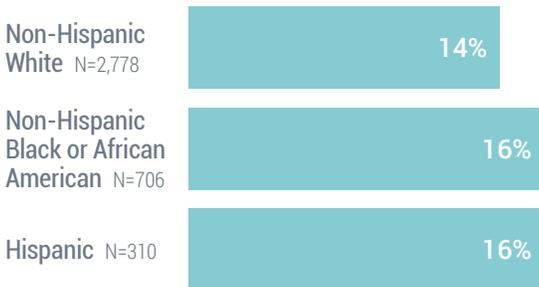
SHARE OF FIRMS USING AN APP/ONLINE MARKETPLACE FOR MOST OF THEIR SALES BY NATURE OF WORK
(% of nonemployer firms)

Supplemental work N=1,121 — 17%

Contract work N=652 — 13%

Stable nonemployer N=843 — 11%

Potential employer, early stage N=505 — 18%

Potential employer, later stage N=503 — 14%
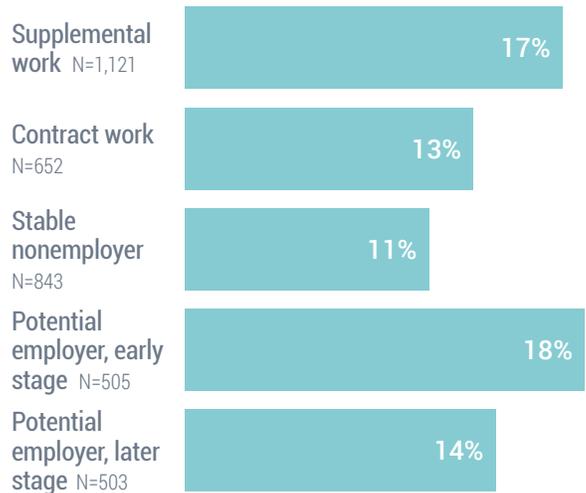
FINANCIAL WELL-BEING OF NONEMPLOYERS

Nearly three-quarters of nonemployer firms earn $100K or less in annual revenues. Non-Hispanic Black or African American and women-owned firms are much less likely to be among top earners.

ANNUAL REVENUES BY RACE/ETHNICITY OF OWNER(S) (% of nonemployer firms)
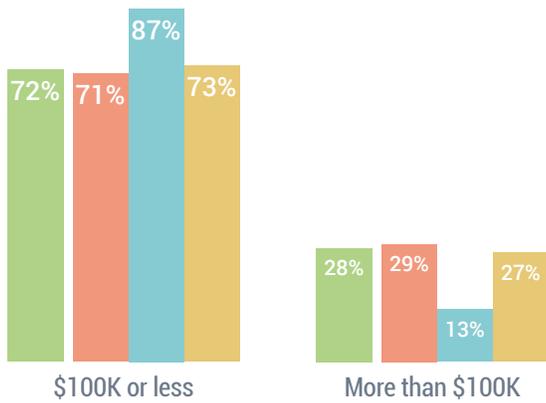
- ■ All nonemployer firms N=5,277
- ■ Non-Hispanic White N=3,603
- ■ Non-Hispanic Black or African American N=985
- ■ Hispanic N=407

ANNUAL REVENUES BY GENDER OF OWNER(S) (% of nonemployer firms)
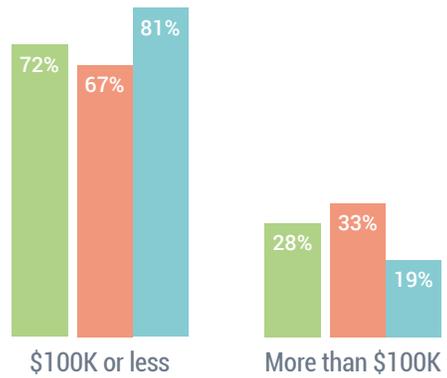
- ■ All nonemployer firms N=5,277
- ■ Men-owned or equally owned N=2,759
- ■ Women-owned N=2,518

ANNUAL REVENUES BY NATURE OF WORK
(% of nonemployer firms)
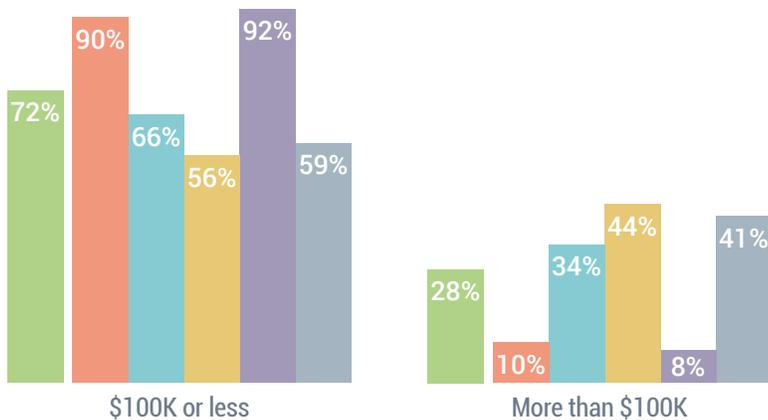
- ■ All nonemployer firms N=5,277
- ■ Supplemental work N=1,014
- ■ Contract work N=616
- ■ Stable nonemployer N=790
- ■ Potential employer, early stage N=427
- ■ Potential employer, later stage N=496

On net, 10% more nonemployer firms operated at a profit than at a loss. Non-Hispanic Black or African American firms are much more likely to be operating at a loss than at a profit. Supplemental work and early stage potential employers were also more likely to operate in the red.

PROFITABILITY INDEX BY RACE/ETHNICITY OF OWNER(S),[11] *End of 2017*
(% of nonemployer firms)

- All nonemployer firms N=4,905
- Non-Hispanic White N=3,387
- Non-Hispanic Black or African American N=873
- Hispanic N=389

PROFITABILITY INDEX BY NATURE OF WORK,[11] *End of 2017*
(% of nonemployer firms)

- All nonemployer firms N=4,905
- Supplemental work N=952
- Contract work N=581
- Stable nonemployer N=743
- Potential employer, early stage N=363
- Potential employer, later stage N=482
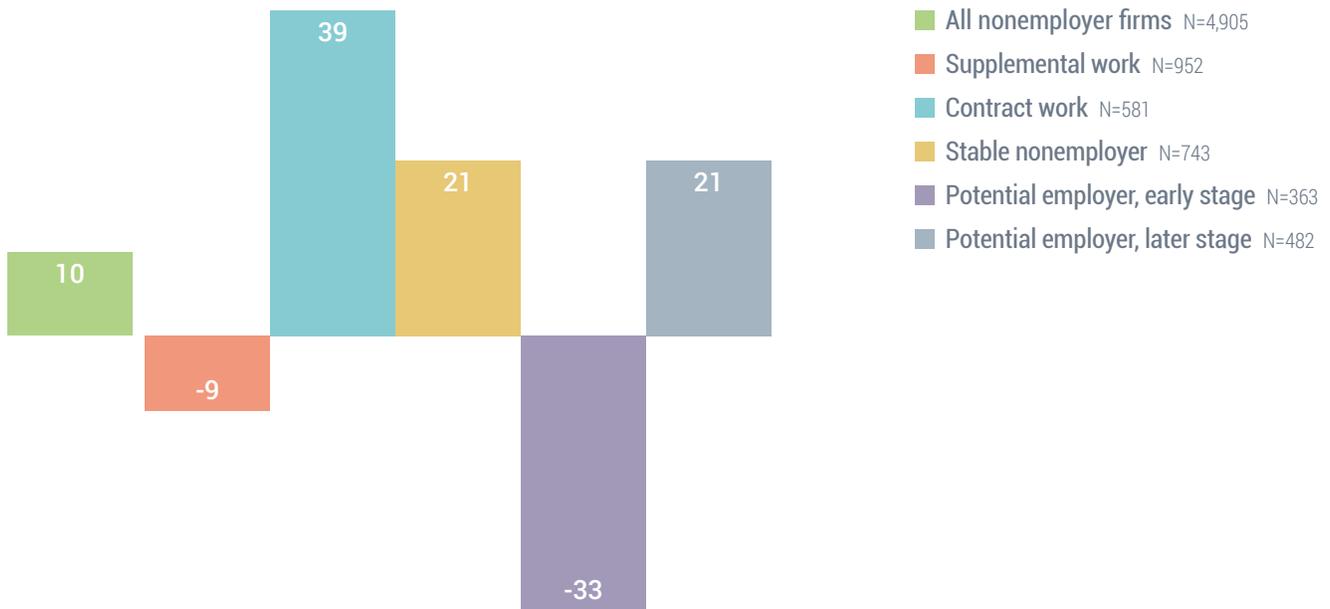
11   *The index is the share that reported profits minus the share that reported losses.*

Nonemployers' profitability challenges are partly due to increased input costs, which most firms do not pass on in the form of increased prices to their customers.

INCREASED INPUT COSTS BY NATURE OF WORK, *Prior 12 Months*[12]

(% of nonemployer firms)

	53%	49%	58%	59%	48%	64%
	All nonemployers firms N=5,747	Supplemental work N=1,111	Contract work N=650	Stable nonemployer N=835	Potential employer, early stage N=499	Potential employer, later stage N=498
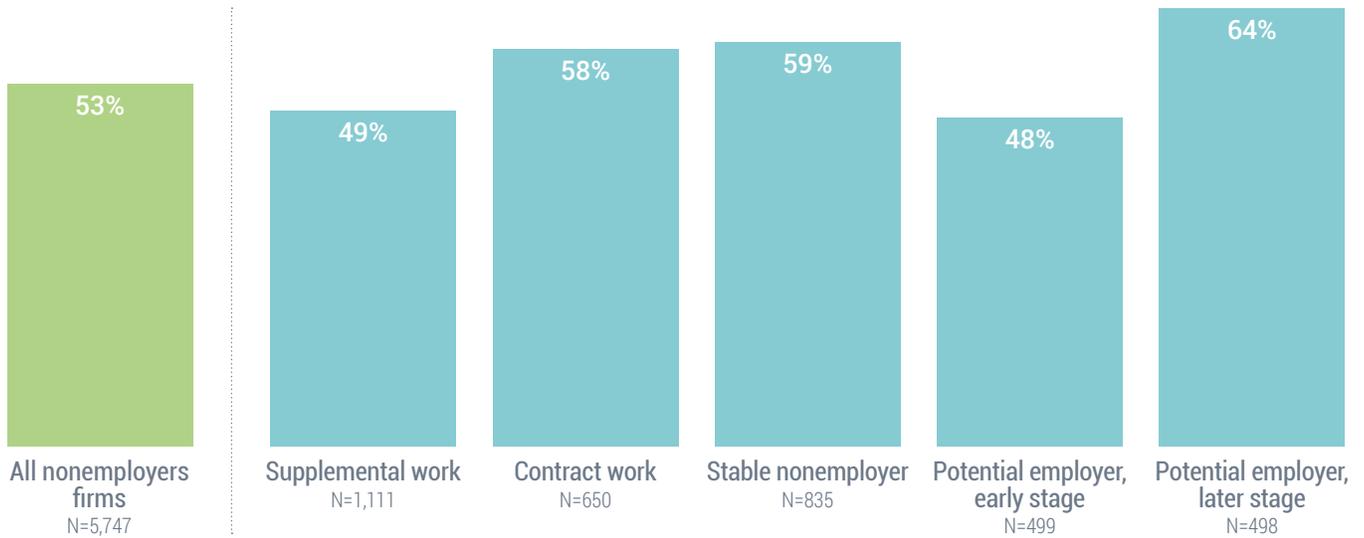
INCREASED PRICES CHARGED BY NATURE OF WORK, *Prior 12 Months*[12]

(% of nonemployer firms)

	34%	29%	31%	38%	37%	44%
	All nonemployers firms N=5,626	Supplemental work N=1,099	Contract work N=644	Stable nonemployer N=831	Potential employer, early stage N=490	Potential employer, later stage N=497
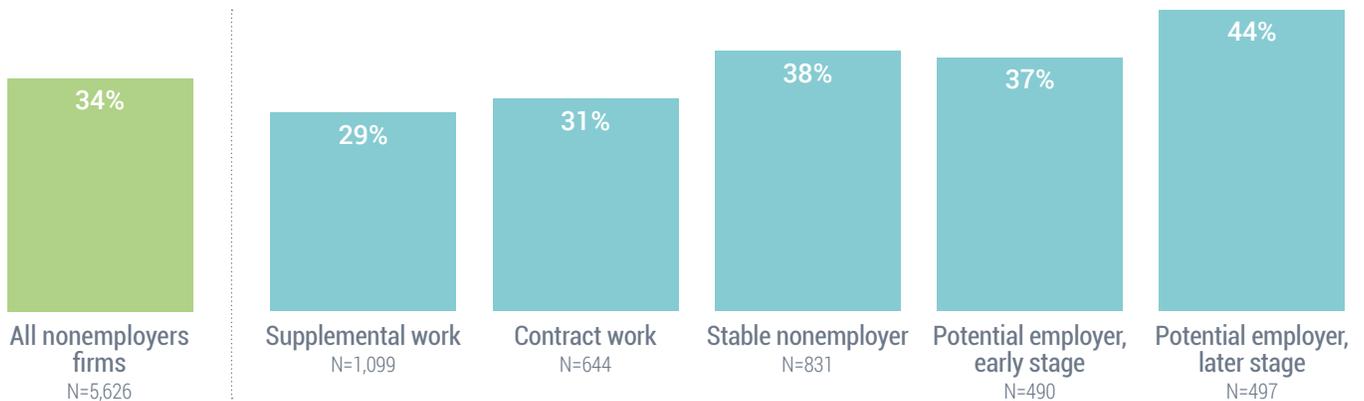
12   *Approximately the second half of 2017 through the second half of 2018.*

Financial challenges are common among nonemployers but highest among Non-Hispanic Black or African American and Hispanic-owned firms and potential employers (early and later stage).

PREVALENCE OF FINANCIAL CHALLENGES BY RACE/ETHNICITY OF OWNER(S), *Prior 12 Months*[13]

(% of nonemployer firms)

62%	**59%**	**76%**	**70%**
All nonemployer firms N=5,764	Non-Hispanic White N=3,875	Non-Hispanic Black or African American N=1,092	Hispanic N=479
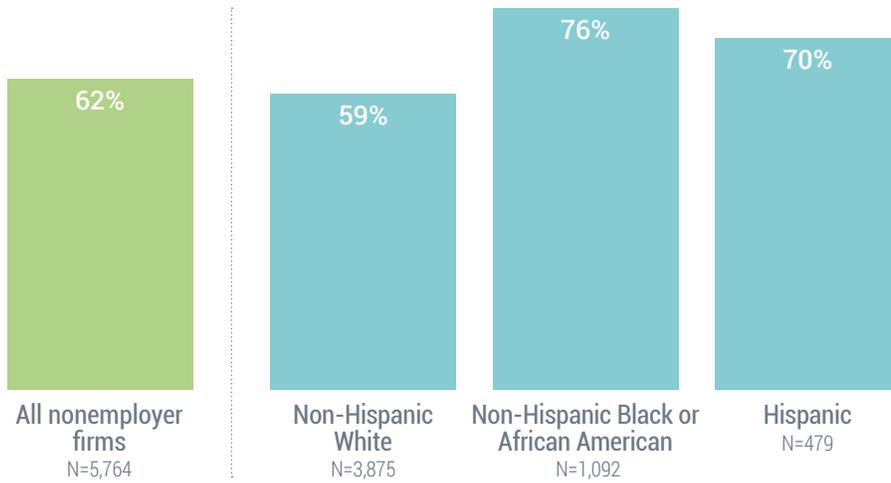
PREVALENCE OF FINANCIAL CHALLENGES BY NATURE OF WORK, *Prior 12 Months*[13]

(% of nonemployer firms)

|					
62%	**52%**	**61%**	**64%**	**76%**	**73%**
All nonemployers firms N=5,764	Supplemental work N=1,102	Contract work N=651	Stable nonemployer N=836	Potential employer, early stage N=502	Potential employer, later stage N=501
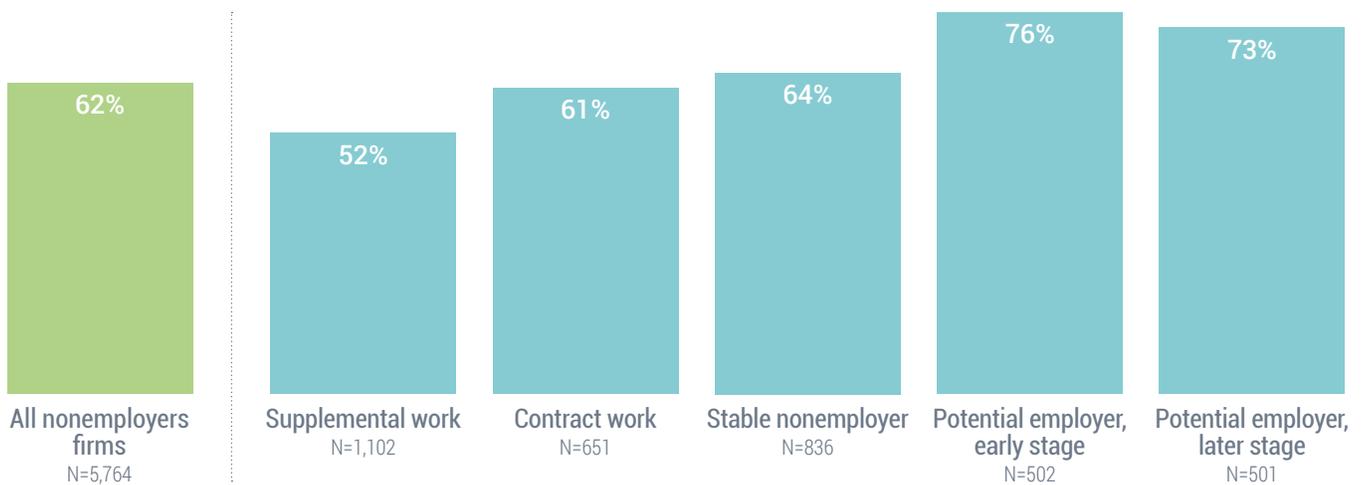
13   *Approximately the second half of 2017 through the second half of 2018.*

Although more than half of nonemployers report low credit risk, early stage potential employers and Non-Hispanic Black or African American and Hispanic-owned firms are more likely to report being higher risk.

CREDIT RISK BY RACE/ETHNICITY OF OWNER(S)[14]
(% of nonemployer firms)

- ■ All nonemployer firms N=3,775
- ■ Non-Hispanic White N=2,456
- ■ Non-Hispanic Black or African American N=760
- ■ Hispanic N=340

Low credit risk
- 58%
- 64%
- 30%
- 44%

Medium/high credit risk
- 42%
- 36%
- 70%
- 56%
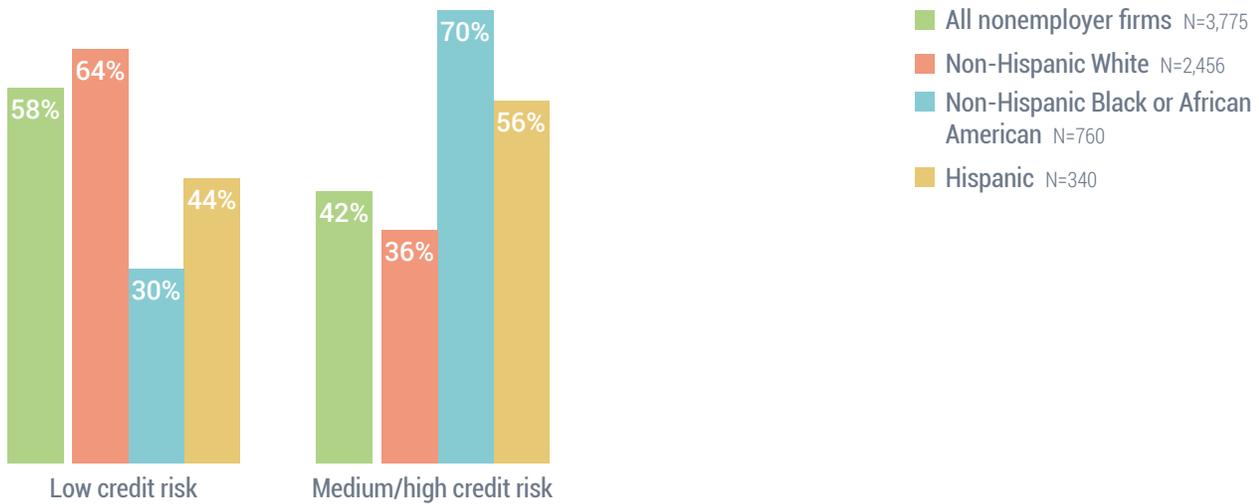
CREDIT RISK BY NATURE OF WORK[14]
(% of nonemployer firms)

- ■ All nonemployer firms N=3,775
- ■ Supplemental work N=725
- ■ Contract work N=452
- ■ Stable nonemployer N=583
- ■ Potential employer, early stage N=357
- ■ Potential employer, later stage N=379

Low credit risk
- 58%
- 68%
- 59%
- 64%
- 44%
- 44%

Medium/high credit risk
- 42%
- 32%
- 41%
- 36%
- 56%
- 56%

14   *Self-reported business credit score or personal credit score, depending on which is used. If the firm uses both, the higher risk rating is used. 'Low credit risk' is a 80–100 business credit score or 720+ personal credit score. 'Medium credit risk' is a 50–79 business credit score or a 620–719 personal credit score. 'High credit risk' is a 1–49 business credit score or a <620 personal credit score.*

FINANCING AND DEBT

Half of nonemployer firms report having debt outstanding.

SHARE OF FIRMS WITH DEBT OUTSTANDING BY NATURE OF WORK
(% of nonemployer firms)

|					
46%	35%	43%	53%	50%	59%
All nonemployer firms N=5,769	Supplemental work N=1,107	Contract work N=646	Stable nonemployer N=834	Potential employer, early stage N=499	Potential employer, later stage N=501
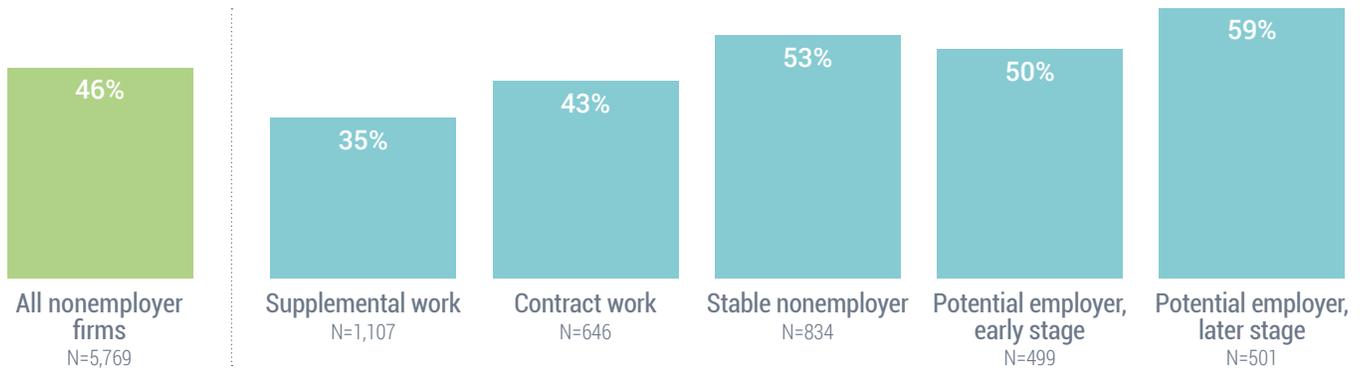
32% of nonemployers reported having no collateral with which to obtain financing, double the share of employer firms.

PLEDGE OF COLLATERAL BY NATURE OF WORK[15]
(% of nonemployer firms with debt)

68% 42% 25%	61% 38% 20%	72% 48% 28%	70% 46% 26%	72% 46% 28%	75% 47% 30%
All nonemployer firms N=2,491	Supplemental work N=399	Contract work N=258	Stable nonemployer N=411	Potential employer, early stage N=233	Potential employer, later stage N=282

■ Share with collateral   ■ Personal guarantee as collateral   ■ Used personal assets as collateral

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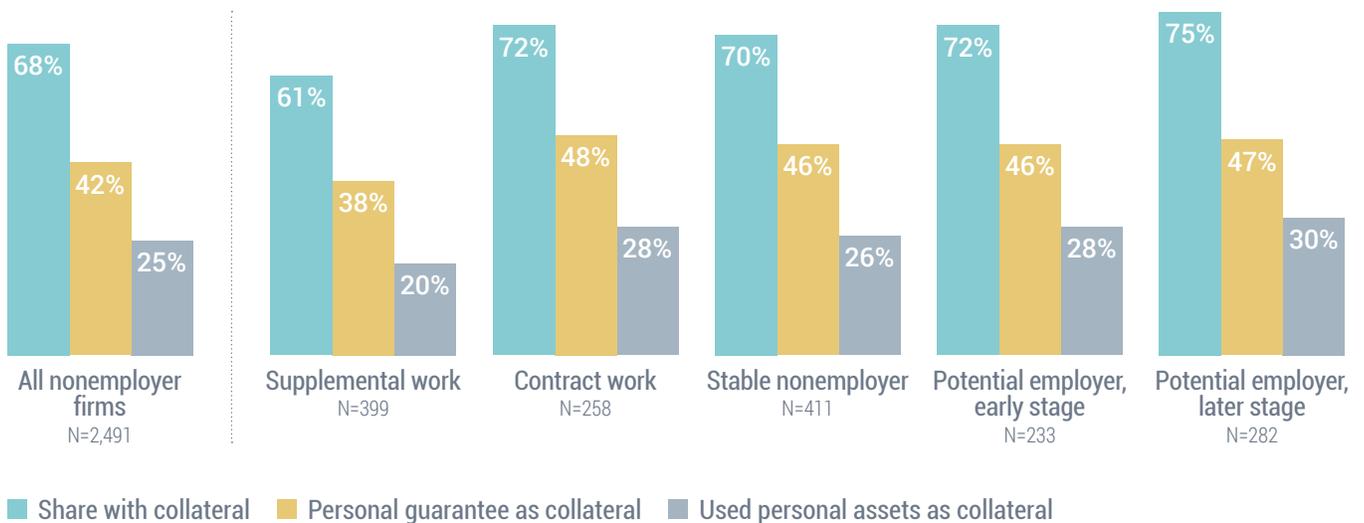
15   *Respondents could select multiple options. Select response options shown. See Appendix for more detail.*

Less than half of nonemployers report their funding needs being met.

FUNDING NEEDS AND OUTCOMES BY RACE/ETHNICITY OF OWNER(S)
(% of nonemployer firms)

All nonemployer firms
N=5,713

| 39% | 18% | 43% |

Non-Hispanic White
N=3,856

| 45% | 16% | 39% |

Non-Hispanic Black or African American
N=1,074

| 17% | 23% | 60% |

Hispanic N=466

| 25% | 21% | 54% |
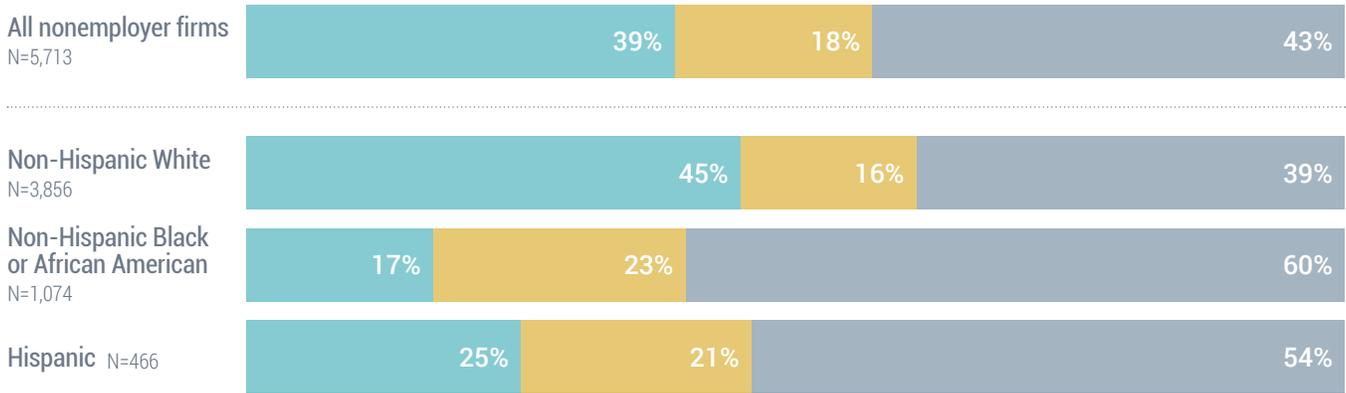
■ Funding needs met   ■ Funding shortfall   ■ May have unmet funding needs

FUTURE GROWTH

71% of nonemployers want to expand their business.

PLANS FOR FUTURE FIRM SIZE BY NATURE OF WORK[16]
(% of nonemployer firms)

All nonemployer firms
N=5,413
71% | 23% | 2% 3%

Supplemental work
N=1,110
67% | 29% | 2% 2%

Contract work N=647
61% | 33% | 2% 4%

Stable nonemployer
N=836
71% | 21% | 1% 7%

Potential employer, early stage N=500
96% | 4% | 1% 0%

Potential employer, later stage N=501
92% | 5% | 1% 1%
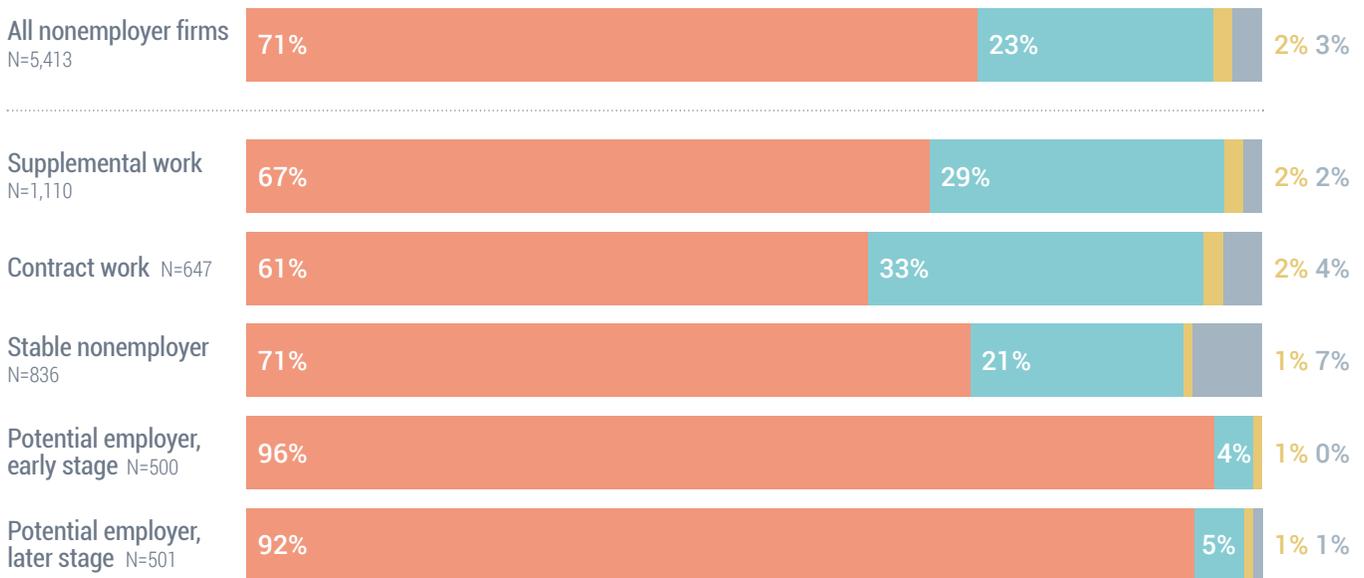
■ Share with preference for firm expansion   ■ Share with preference for same size
■ Share with preference for reducing firm size   ■ Share with plan to sell/close

REVENUE EXPECTATIONS INDEX BY NATURE OF WORK,[17] *Next 12 Months*[18]
(% of nonemployer firms)

All nonemployer firms N=5,691	Supplemental work N=1,097	Contract work N=646	Stable nonemployer N=817	Potential employer, early stage N=499	Potential employer, later stage N=488
59	56	40	45	98	95

16   *Percentages may not sum to 100 due to rounding.*
17   *The index is the share reporting increased revenues minus the share reporting decreased revenues.*
18   *Approximately the second half of 2018 through the second half of 2019.*

However, growth ambitions do not necessarily translate into increased revenues.

REVENUE CHANGE INDEX BY NATURE OF WORK,[19] *Prior 12 Months*[20]
(% of nonemployer firms)

19		

Chart bars:
- All nonemployer firms N=5,622: **19**
- Supplemental work N=1,083: **14**
- Contract work N=636: **6**
- Stable nonemployer N=811: **15**
- Potential employer, early stage N=479: **53**
- Potential employer, later stage N=490: **31**
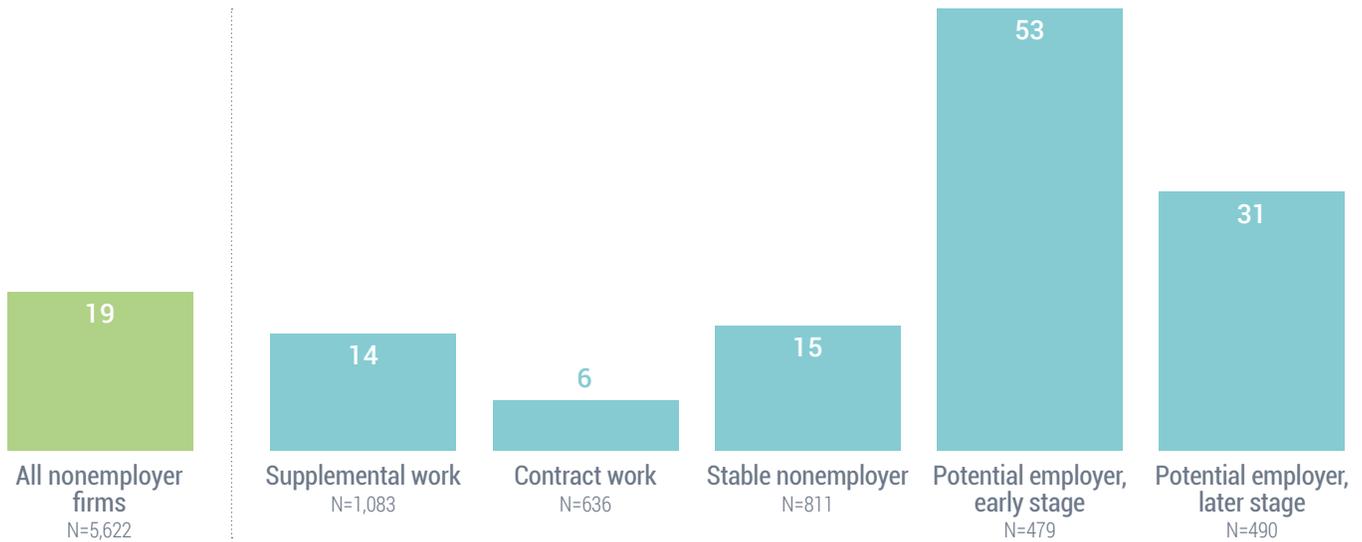
Demand for financing is relatively weak among nonemployers, with 26% applying, in spite of persistent funding gaps. Most nonemployer applicants are seeking funds for expansion.

SHARE THAT APPLIED FOR FINANCING BY RACE AND ETHNICITY OF OWNER(S), *Prior 12 Months*[20]
(% of nonemployer firms)

- All nonemployer firms N=5,841: **26%**
- Non-Hispanic White N=3,937: **25%**
- Non-Hispanic Black or African American N=1,102: **28%**
- Hispanic N=481: **28%**

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19   *The index is the share reporting increased revenues minus the share reporting decreased revenues.*
20   *Approximately the second half of 2017 through the second half of 2018.*

REASONS FOR APPLYING BY RACE AND ETHNICITY OF OWNER(S)[21]
(% of nonemployer applicants)

Expand business/ new opportunity: 62%, 61%, 67%, 60%
Meet operating expenses: 42%, 40%, 56%, 38%
Refinance or pay down debt: 27%, 28%, 20%, 23%
Replace capital assets or make repairs: 16%, 18%, 16%, 12%
Other reason: 3%, 3%, 2%, 4%

■ All nonemployer firms N=1,516 ■ Non-Hispanic White N=975
■ Non-Hispanic Black or African American N=309 ■ Hispanic N=137
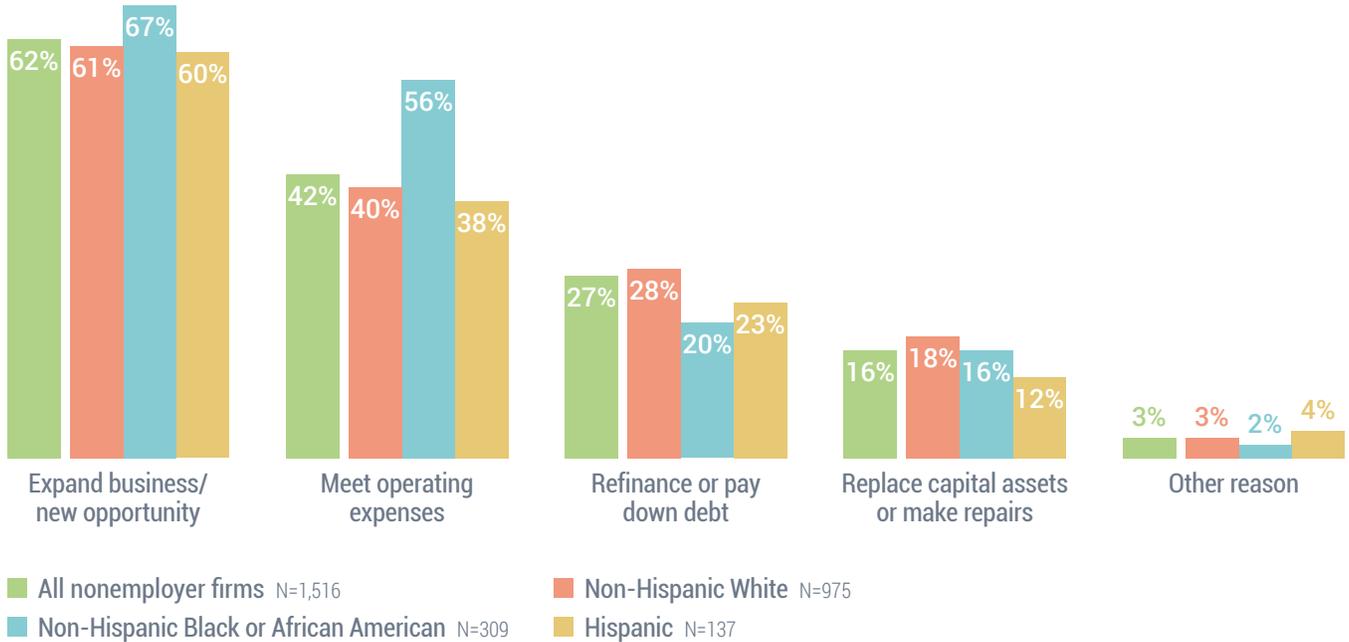
Funding gaps are common and are largest among Non-Hispanic Black or African American and Hispanic-owned firms.

FINANCING RECEIVED BY RACE AND ETHNICITY OF OWNER(S)[22]
(% of nonemployer applicants)

All nonemployer firms N=1,470: 32% / 30% / 38%
Non-Hispanic White N=945: 35% / 29% / 36%
Non-Hispanic Black or African American N=296: 17% / 30% / 54%
**Hispanic** N=134: 26% / 29% / 45%

■ All ■ Some ■ None
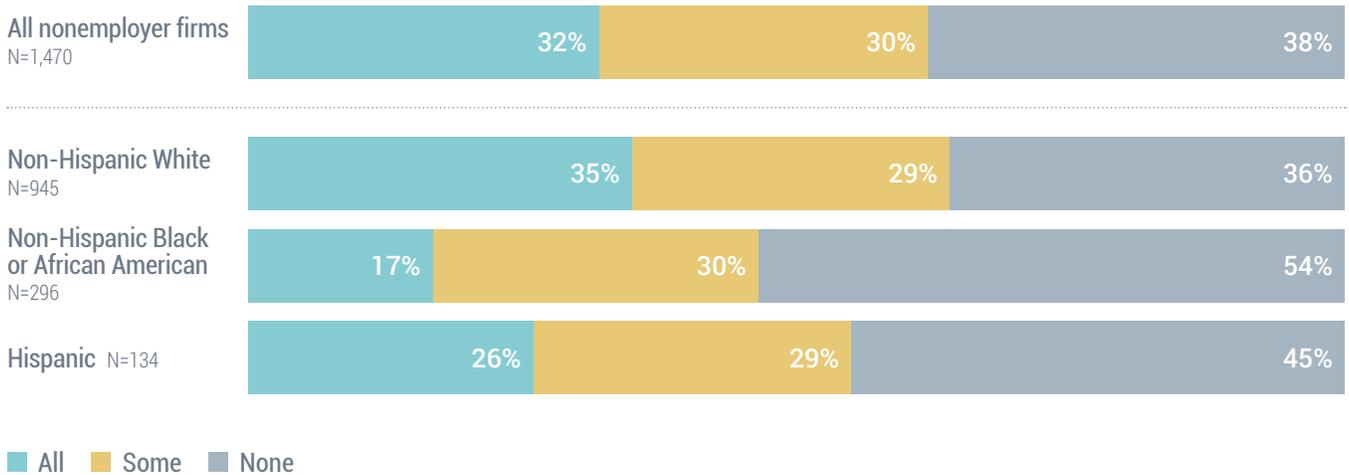
21   *Respondents could select multiple options.*
22   *Percentages may not sum to 100 due to rounding.*

36% of all nonemployer firms are either debt averse or discouraged; therefore, they did not apply for financing in the prior 12 months.

REASONS FOR NOT APPLYING BY RACE AND ETHNICITY OF OWNER(S)[23, 24]
(% of nonemployer firms)

All nonemployer firms
N=5,713

Non-Hispanic White
N=3,856

Non-Hispanic Black or
African American
N=1,074

Hispanic
N=466

■ Already have sufficient financing   ■ Debt averse   ■ Discouraged from applying
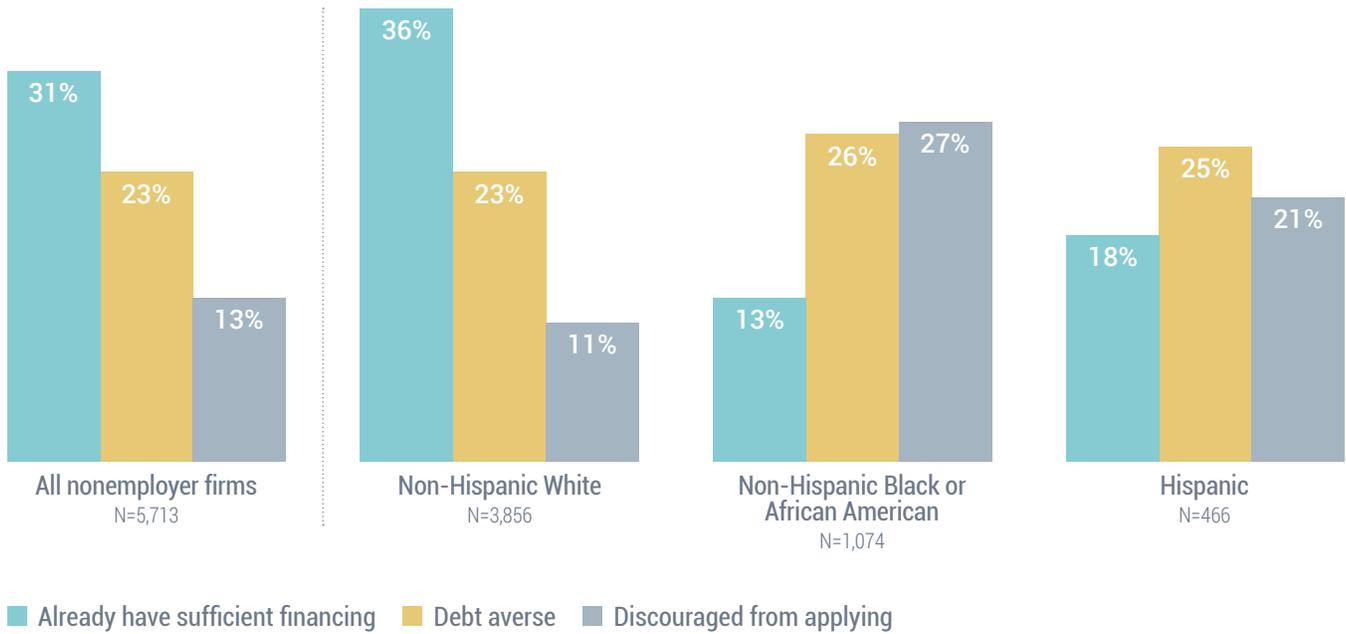
23   *This chart uses all nonemployer firms as the denominator, rather than nonemployer nonapplicant firms. Therefore, these percentages are not directly comparable to the percentages shown in the Report on Employer Firms or in the Appendix.*
24   *Select response options shown.*

METHODOLOGY

DATA COLLECTION

The Small Business Credit Survey (SBCS) uses a convenience sample of establishments. Businesses are contacted by email through a diverse set of organizations that serve the small business community.[25] Previous SBCS participants and small businesses on publicly available email lists[26] are also contacted directly by the Federal Reserve Banks. The survey instrument is an online questionnaire that typically takes 6 to 12 minutes to complete, depending upon the intensity of a firm's search for financing. The questionnaire uses question branching and flows based upon responses to survey questions. For example, financing applicants receive a different line of questioning than nonapplicants. Therefore, the number of observations for each question varies by how many firms receive and complete a particular question.

WEIGHTING

A sample for the SBCS is not selected randomly; thus, the SBCS may be subject to biases not present with surveys that do select firms randomly. For example, there are likely firms not on our contact lists, and this may lead to a noncoverage bias. To control for potential biases, the sample data are weighted so the weighted distribution of firms in the SBCS matches the distribution of the nonemployer firm population in the United States by age, industry, geographic location (urban or rural location), gender of owner(s), and race or ethnicity of owner(s).

We first limit the sample in each year to only nonemployer firms. We then post-stratify respondents by their firm characteristics. Using a statistical technique known as "raking," we compare the share of businesses in each category of each stratum (for example, within the industry stratum,[27] the share of firms in the sample that are manufacturers) to the share of nonemployer businesses in the nation that are in that category. As a result, underrepresented firms are up weighted, and overrepresented businesses are down weighted. We iterate this process several times for each stratum in order to derive a sample weight for each respondent. This weighting methodology was developed in collaboration with the National Opinion Research Center (NORC) at the University of Chicago. The data used for weighting come from data collected by the U.S. Census Bureau.[28]

RACE/ETHNICITY AND GENDER IMPUTATION

Sixteen percent of respondents completed the survey, but did not provide information on the gender, race, and/or the ethnicity of their business' owner(s). This information is needed to correct for differences between the sample and the population data. To avoid dropping these observations, a series of statistical models is used to attempt to impute the missing data. When the models are able to predict with an average accuracy of 80 percent in out-of-sample tests,[29] the predicted values from the models are used for the missing data. When the model is less certain, those data are not imputed, and the responses are dropped. After data are imputed, descriptive statistics of key survey questions with and without imputed data are compared to ensure stability of estimates. In the final sample of nonemployers, 10 percent of observations have imputed values for the gender, race, or ethnicity of a firm's ownership.

To impute for owners' race and ethnicity, a series of logistic regression models is used that incorporates a variety of firm characteristics, as well as demographic information on the business owner's zip code. First, a logistic regression model is used to predict if business owners are members of a minority group. Next, for firms classified as minority-owned,[30] a logistic probability model is used to predict if business owners are of Hispanic ethnicity. Finally, the race for the business owner is imputed separately for Hispanic and non-Hispanic firms using a multinomial logistic probability model.

A similar process is used to impute the gender of a business' owner. First, a logistic model is used to predict if a business is owned by a man. Then, for firms not classified as men-owned or equally owned, another model is used to predict if a business is owned by a woman.

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25   *For more information on partnerships, please visit www.fedsmallbusiness.org/partnership.*
26   *System for Award Management (SAM) Entity Management Extracts Public Data Package; Small Business Administration (SBA) Dynamic Small Business Search (DSBS); state-maintained lists of certified disadvantaged business enterprises (DBEs); state and local government Procurement Vendor Lists, including minority and women-owned business enterprises (MWBEs); state and local government maintained lists of small or disadvantaged small businesses; and a list of veteran-owned small businesses maintained by the Department of Veterans Affairs.*
27   *Age strata are 0–2 years, 3–4 years, 5–12 years, and 13+ years. Industry strata are non-manufacturing goods production and associated services, manufacturing, retail, leisure and hospitality, finance and insurance, healthcare and education, professional services and real estate, and business support and consumer services. Race/ethnicity strata are non-Hispanic white, non-Hispanic black or African American, non-Hispanic Asian, non-Hispanic Native American, and Hispanic. Gender strata are men-owned or equally owned and women-owned. See Appendix for industry definitions and urban and rural definitions.*
28   *Data on industry and urban/rural location come from the U.S. Census Bureau's 2016 Nonemployer Statistics. Data from the Center for Medicare and Medicaid Services are used to classify a business's zip code as urban or rural. Data on firm age come from the U.S. Census Bureau's 2012 Survey of Business Owners. Data on the race, ethnicity, and gender of business owners are derived from the U.S. Census Bureau's 2017 1-Year American Community Survey.*
29   *Out-of-sample tests are used to develop thresholds for imputing the missing information. To test each model's performance, half of the sample of non-missing data is randomly assigned as the test group, while the other half is used to develop coefficients for the model. The actual data from the test group is then compared with what the model predicts for the test group. On average, prediction probabilities that are associated with an accuracy of around 80 percent are used, although this varies slightly depending on the number of observations that are being imputed.*
30   *For some firms that were originally missing data on the race/ethnicity of their ownership, this information was gathered from public databases or past SBCS surveys.*

COMPARISONS TO PAST REPORTS

Because previous SBCS reports have varied in terms of the population scope, geographic coverage, and weighting methodology, the survey reports are not directly comparable across time. Geographic coverage and weighting strategies have varied from year to year. For example, the 2016 data were not weighted by race, ethnicity, or gender of owner(s), whereas the 2017 data and 2018 data (presented in this report) include these owner demographics in the weighting scheme, as described previously. In addition to being weighted by different firm characteristics over time, the categories used within each characteristic have also differed across survey years. Finally, some of the survey questions have changed from year to year, making some question comparisons unreliable even when employing our time-consistent weighting strategy.

CREDIBILITY INTERVALS

The analysis in this report is aided by the use of credibility intervals. Where there are large differences in estimates between types of businesses, we perform additional checks on the data to determine whether such differences are statistically significant. The results of these tests help guide our analysis and help us decide what ultimately is included in the report. In order to determine whether differences are statistically significant, we develop credibility intervals using a balanced half-sample approach.[31] Because the SBCS does not come from a probability-based sample, the credibility intervals we develop should be interpreted as model-based measures of deviation from the true national population values.[32] We list 95 percent credibility intervals for key statistics in Table 1. The intervals shown apply to all firms in the survey. More granular results with smaller observation counts will generally have larger credibility intervals.

Table 1: Credibility Intervals for Key Statistics in the 2018 Report on Nonemployer Firms		
	Percent	**Credibility Interval**
Share that applied	26.2%	+/-1.5%
Share with outstanding debt	45.9%	+/-1.3%
Profitability index[1]	10.2%	+/-1.3%
Revenue growth index[1]	19.2%	+/-1.5%
Loan/line of credit and cash advance approval rate[2]	63.3%	+/-1.2%
Seeking financing to cover operating expenses[3]	42.2%	+/-3.1%
Seeking financing to expand/pursue new opportunity[3]	62.4%	+/-1.8%
Percent of nonapplicants that were discouraged[4]	18.2%	+/-1.6%

Table notes:
1 For revenue growth, the index is the share reporting growth minus the share reporting a reduction.
   For profitability, it is the share profitable minus the share with losses during the 12 months prior to the survey.
2 The share of loan, line of credit, and cash advance applicants that were approved for at least some financing.
3 Percent of applicants.
4 Discouraged firms are those that did not apply for financing because they believed they would be turned down.

31   *Wolter. Survey Weighting and the Calculating of Sampling Variance. 2007.*
32   *AAPOR. Task Force on Non-probability Sampling. 2013.*