

## Research



# The Gig Economy: Research and Policy Implications of Regional, Economic, and Demographic Trends

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## EXECUTIVE SUMMARY

Over the past few years, policymakers have grappled with the policy implications of the so-called “gig economy.” This paper adds to the small but growing literature by examining regional, economic, and demographic trends in the gig economy and its workers.

To do so, we use the General Social Survey (GSS) to construct three measures of gig economy workers:

- Gig 1: independent contractors, consultants, and freelancers.
- Gig 2: Gig 1 + temp agency workers and on-call workers.
- Gig 3: Gig 2 + contract company workers.

Our broadest measure of gig economy workers, gig 3, is the same measure of gig economy workers employed by Katz & Krueger (2016).<sup>[1]</sup>

Using these measures, we find:

1. The data show rapid growth in gig economy employment. From 2002 to 2014, while total employment increased 7.5 percent, gig economy workers increased by between 9.4 percent and 15.0 percent, depending on the definition of gig economy workers. Between 2010 and 2014, growth in independent contractors alone accounted for 29.2 percent of all jobs added during that time period.
2. There is tremendous geographic heterogeneity in the utilization of gig economy workers, with the lowest concentrations in Northeast and Upper Midwest states, and highest concentrations in Mountain and Pacific states. Moreover, what little information is available about regional trends is heavily influenced by the recovery from the Great Recession.
3. Gig economy workers are less attached to the workforce and may turn to gig economy opportunities for additional income after getting laid off. All employed people in the United States in 2014 worked an average 46.7 weeks in 2013. Gig economy workers, on the other hand, worked an average 41.8 to 44 weeks. Meanwhile, 6.7 percent to 12 percent of gig economy workers have been laid off from previous work. That's substantially higher than the 5.4 percent rate of all employed people in the country.
4. Gig economy workers are also more likely to be part-time workers, and the portion of gig economy

workers who are part-time has increased since 2002. They are also much more likely to mainly work at home than traditional workers, though this difference has narrowed in the last decade.

5. The pattern of shifts in the income distribution differs between the entire workforce and gig economy workers, and the pattern within gig economy workers is sensitive to the definition. The timeframe also matters: looking at the changes between 2006 and 2014 (which contains both the downturn and recovery) produces a different picture than that from 2010 to 2014 (which focuses on the recovery).
6. Pulling these results together, one finds a picture of the gig economy workforce that is, compared to traditional workers, more likely to be married, but also more reliant on part-time work and more likely to have been previously laid off, perhaps as a result of the Great Recession.
7. The online gig economy appears to contribute to firm growth. This is especially true in the transportation sector, where online labor platforms have become pervasive. On average, in metropolitan areas the total average annual growths of establishments and receipts in the transportation sector were 7.7 percent and 9.4 percent respectively prior to the introduction of a ridesharing service, and 39.3 percent and 20.4 percent, respectively, in the years after the introduction of a ridesharing service.

Our results suggest some fruitful avenues for further research. First, the role of gig economy employment in cyclical recoveries stands out as an important issue for understanding overall employment patterns, labor supply among couples, and the economic well-being of gig employees. At the same time, the regional differences unearthed in these data merit further documentation and understanding. What, for example, is the role of state-level policy in generating these trends?

These findings suggest a stance of forbearance by federal policymakers. The nature of employment and economic well-being patterns is sensitive to data definitions – always an indication that drawing bright policy lines is a problematic endeavor. It also suggests that there may be a role for federalizing the gig economy policy response.

## INTRODUCTION

Over the past few years, policymakers have grappled with the policy implications of the so-called “gig economy.” How many workers participate in the gig economy? Do they treat their work in the gig economy as full-time employment or just additional income on the side? How well are gig workers compensated? Do gig workers require workplace protections awarded to conventional employees? How much did the Great Recession and the development of smartphone technology impact the gig economy?

These are important questions. Unfortunately, answering them has been handicapped by a paucity of information. Using the information available in the GSS and Census non-employer establishment data, Gitis and Rinehart previously found that the overall number of gig economy workers grew between 8.8 percent and 14.4 percent between 2002 and 2014, with the result that as of 2014 gig economy workers represented between 14.0 percent and 20.3 percent of the workforce. In addition, in recent years non-employer firms have started growing much more quickly than before the advent of much of the current online platform technology.

In this paper, we build on this previous research by examining how these trends in the gig economy workforce vary regionally. In particular, this paper is presented in two sections:

First, we examine how trends in the entire gig economy workforce – that is, all people in alternative work arrangements – vary by region, industry, and occupation. We also aim to better document the economic lives of

gig economy workers with information such as work history, full-time or part-time status, and various demographic characteristics.

Second, to better understand how online platforms are allowing workers to utilize new technologies for gig economy work, we analyze how trends in non-employer firms vary by metropolitan area. We perform this analysis for firms in industries that have been particularly impacted by online platforms, such as the taxi and hotel industries.

## PREVIOUS RESEARCH

Previously, Gitis and Rinehart examined two aspects of the gig economy: (1) all people in gig economy work, and (2) workers who specifically utilize new technologies, markets, and platforms for gig economy work.<sup>[2]</sup>

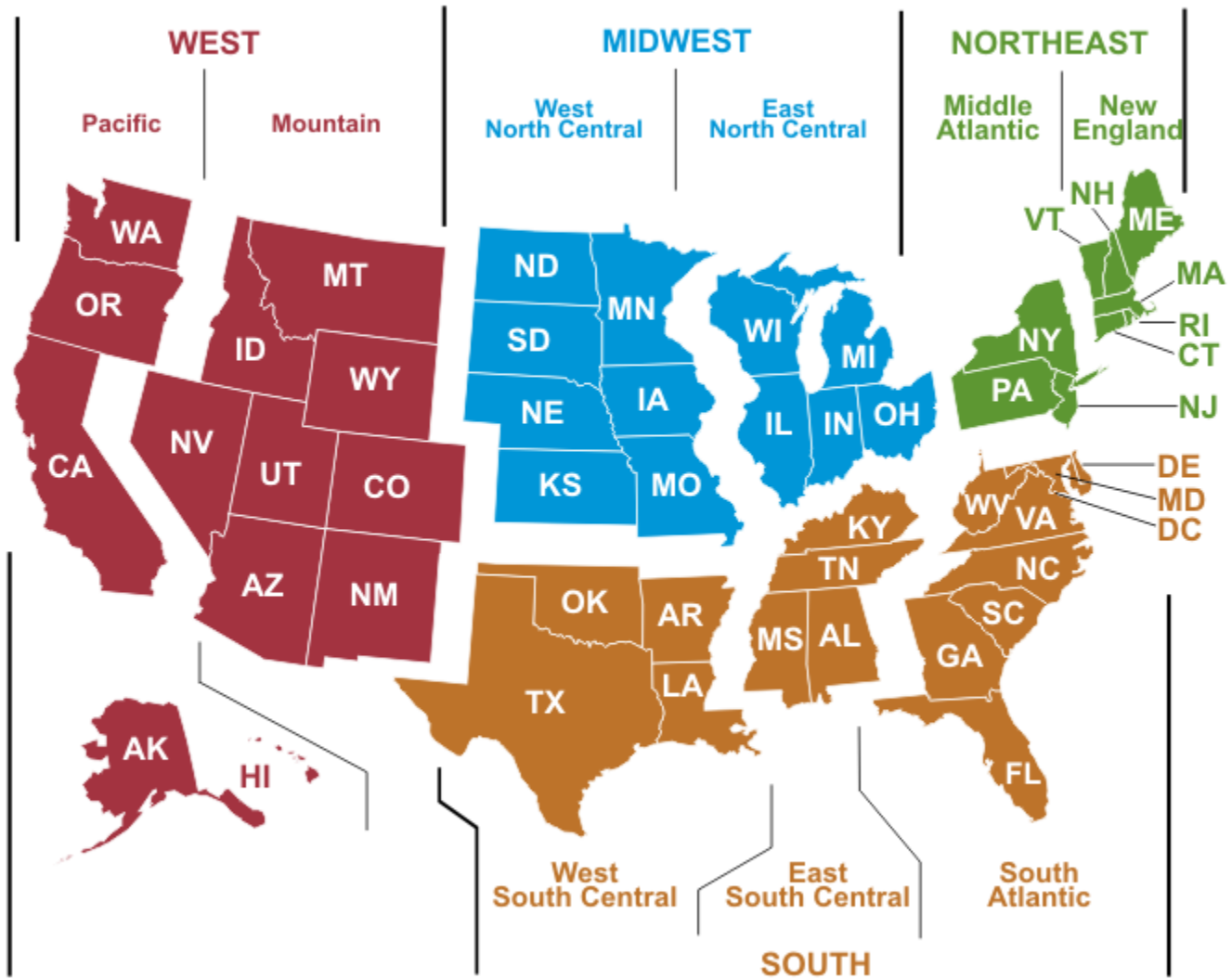
To analyze gig economy work, they utilized the GSS, a statistical survey conducted by University of Chicago's National Opinion Research Center. There is no consensus definition of who is a "gig economy worker." Instead, they employed a range of measures to identify alternative work arrangements. Specifically, they constructed three measures:

- Gig 1. The narrowest definition: independent contractors, consultants, and freelancers.
- Gig 2. The middle measure: Gig 1 plus temp agency workers and on-call workers.
- Gig 3. The broadest definition: Gig 2 plus contract company workers.

In order to better understand the growth of gig economy workers who utilize online platforms, Gitis and Reinhart used Census data on businesses that have no paid employees and that pay federal income tax. These firms are called non-employer establishments and they may provide one illustration of the rise in the online gig economy. They found that since the recovery began, nearly 1.3 million new non-employer establishments were created between 2009 and 2013. In fact, growth in these firms outpaced growth in all establishments to become almost 75 percent of all businesses. They also found that growth in companies like Airbnb, Lyft, and Uber coincides with substantial increases in non-employer firms in the transportation and warehousing sector. For example, from 2002 to 2008, non-employer firms in the taxi and limousine sector increased at an average rate of 4.3 percent per year. After Uber was established, the average annual growth rate among these non-employer firms jumped to 7 percent from 2009 to 2013. In this paper, we update these figures by incorporating 2014 non-employer data.

## REGIONAL, INDUSTRY, OCCUPATION, AND ECONOMIC TRENDS IN THE CONTINGENT WORKFORCE

Building on this previous work, we examine how trends in the gig economy workforce vary by region, industry, and occupation. In addition, we examine economic and demographic characteristics of gig economy workers to better understand their economic lives and well-being. In doing so, we again employ the GSS data and the same menu of measures to identify gig economy workers (Gig 1, Gig 2, Gig 3).<sup>[3]</sup> For our analysis, we use the conventional Census definitions of regions in the United States (see below).



## Regional Differences in Alternative Work Arrangements

Table 1 contains the estimated number of all workers and gig economy workers in each of the nine regional divisions in the United States in 2014. The latest data indicate that in 2014, there were 20.7 million to 30 million gig economy workers in the United States.<sup>[4]</sup> Clearly, the regions are not merely clones of one another; the U.S. displays great heterogeneity in the geography of gig economy workers.

Table 1: Regional Distribution of Gig Economy Workers, 2014

(thousands)

Region	All Workers	Gig 1	Gig 2	Gig 3
New England	7,328	782	938	1,145

Middle Atlantic	19,218	2,251	2,618	3,121
East North Central	21,791	2,678	3,596	3,987
West North Central	10,594	547	1,169	1,272
South Atlantic	28,388	3,756	5,017	5,225
East South Central	7,893	954	1,246	1,402
West South Central	17,320	2,519	2,890	3,305
Mountain	10,618	3,121	3,732	4,858
Pacific	23,487	4,111	4,893	5,683
Total	146,637	20,718	26,039	29,998

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data> & Bureau of Labor Statistics, “Local Area Unemployment Statistics,” Department of Labor, <http://www.bls.gov/data/>.

This is seen even more clearly in Table 2, where gig economy workers accounted for 14.1 percent to 20.5 percent of all workers in the country, but also where the range varied significantly across regions.

Region	Gig 1	Gig 2	Gig 3
New England	10.7%	12.8%	15.6%
Middle Atlantic	11.7%	13.6%	16.2%
East North Central	12.3%	16.5%	18.3%
West North Central	5.2%	11.0%	12.0%
South Atlantic	13.2%	17.7%	18.4%
East South Central	12.1%	15.8%	17.8%
West South Central	14.5%	16.3%	19.1%
Mountain	29.4%	35.1%	45.7%
Pacific	17.5%	20.8%	24.2%
Total	14.1%	17.8%	20.5%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

Gig economy workers are least common in the West North Central and New England. In 2014, gig economy workers only represented 5.2 percent to 12 percent of all employees in West North Central and 10.7 percent to 15.6 percent of workers in New England. In the western regions of the country, however, the gig economy is far more substantial: in 2014, gig economy workers represented 17.5 percent to 24.2 percent of all workers in the Pacific region. The Mountain region had the highest rate of alternative work arrangements: gig economy workers represented 29.4 percent to 45.7 percent of all employees in the region.

Table 2a takes a slightly different approach to regional variation, showing the fraction of workers – overall and by definition of gig economy worker – in each region.

Region	All Workers	Gig1	Gig2	Gig3
New England	5.0%	3.8%	3.6%	3.8%
Middle Atlantic	13.1%	10.9%	10.1%	10.4%
East North Central	14.9%	12.9%	13.8%	13.3%
West North Central	7.2%	2.6%	4.5%	4.2%
South Atlantic	19.4%	18.1%	19.3%	17.4%
East South Central	5.4%	4.6%	4.8%	4.7%
West South Central	11.8%	12.2%	10.9%	11.0%
Mountain	7.2%	15.1%	14.3%	16.2%
Pacific	16.0%	19.8%	18.8%	18.9%
Total	100.0%	100.0%	100.0%	100.0%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In addition, despite growing at a rapid pace in the last decade overall, the growth in the gig economy also varied significantly across the United States. Table 3 shows the percent change in the gig economy workforce in each region between 2002 and 2014.

Region	All Workers	Gig 1	Gig 2	Gig 3
New England	3.0%	-47.2%	-41.7%	-32.4%
Middle Atlantic	3.0%	-3.4%	-15.3%	-9.0%
East North Central	-1.0%	-5.6%	3.6%	-3.9%
West North Central	4.5%	-50.4%	-18.8%	-16.5%
South Atlantic	12.4%	21.5%	42.7%	14.2%
East South Central	1.6%	-37.4%	-37.4%	-38.7%
West South Central	17.4%	35.2%	39.2%	36.9%

Mountain	15.6%	93.9%	100.3%	160.7%
Pacific	9.1%	33.0%	31.3%	36.9%
Total	7.5%	9.4%	14.5%	15.0%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data> & Bureau of Labor Statistics, “Local Area Unemployment Statistics,” Department of Labor, <http://www.bls.gov/data/>.

From 2002 to 2014, total employment in the United States increased 7.5 percent. Meanwhile, the number of gig economy workers expanded by between 9.4 percent and 15 percent. But each region has a unique story. In New England, for instance, total employment increased 3 percent. Gig economy workers, however, declined 32.4 percent to 47.2 percent. Meanwhile, in the Pacific region, employment grew 9.1 percent and the number of gig economy workers increased by 31.3 percent to 36.9 percent. And the area with the most growth in gig economy workers, the Mountain region, experienced a 15.6 percent increase in total employment and a 93.9 percent to 160.7 percent rise in gig economy workers.

As becomes clear in Table 4, however, since the end of the Great Recession, many of these trends have changed or even reversed.

Region	All Workers	Gig 1	Gig 2	Gig 3
New England	3.1%	104.5%	90.7%	132.9%
Middle Atlantic	2.5%	20.8%	-8.8%	1.0%
East North Central	3.5%	55.0%	20.7%	22.6%
West North Central	3.9%	-44.7%	18.3%	28.7%
South Atlantic	6.7%	-26.4%	-21.6%	-35.7%
East South Central	1.5%	40.3%	-8.4%	-17.0%
West South Central	7.8%	0.5%	-14.9%	-17.0%
Mountain	6.3%	212.7%	161.8%	228.2%
Pacific	6.9%	-6.5%	-15.9%	-18.2%
Total	5.1%	11.1%	1.5%	-0.2%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In New England, for instance, while gig economy workers declined overall between 2002 and 2014, since 2010 these workers have increased 90.7 percent to 132.9 percent. As a result, since 2010 gig economy workers have accounted for 179.7 percent to 293.7 percent of all new jobs added in New England, suggesting that traditional work in the region is declining and being replaced with gig economy jobs.

The reverse is true in the Pacific Region. Despite the long-term growth in gig economy work, the prevalence of gig economy workers declined 6.5 percent – to 18.2 percent – since 2010 even though employment in the region

overall rose 6.9 percent. This suggests that since 2010, gig economy work has been declining in the Pacific and is being replaced with traditional payroll jobs.

Overall, independent contractors (Gig 1) played a large role in the economic recovery. Between 2010 and 2014, independent contractors grew 11.1 percent (2.1 million workers) and represented 29.2 percent of all jobs added during that time period.

The upshot of the regional data is that there is tremendous geographic heterogeneity in the utilization of gig economy workers, and that what little information is available about regional trends is heavily influenced by the recovery from the Great Recession. The cyclical role of gig economy employment should be a central topic of future research.

## Industry and Occupation

The size of the gig economy workforce also varies considerably by industry and occupation. Table 5 contains the estimated percent of workers in each industry in a gig economy job, for each of our gig economy worker definitions.

Industry	Gig 1	Gig 2	Gig 3
Agriculture & Mining	33.9%	33.9%	33.9%
Construction	35.2%	44.7%	56.2%
Manufacturing	4.5%	9.6%	12.1%
Wholesale & Retail Trade	8.5%	9.9%	11.5%
Transportation & Utilities	19.9%	23.8%	28.6%
Information	15.1%	15.1%	20.3%
Financial Activities	22.0%	27.8%	27.8%
Professional & Business Services	22.0%	24.2%	26.7%
Education & Health Services	7.2%	8.7%	9.6%
Leisure & Hospitality	6.5%	12.4%	13.2%
Other Services	39.0%	46.8%	48.5%
Public Administration	1.5%	1.5%	6.7%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

The industries with a highest percentage of gig economy workers are agriculture and mining; construction; finance; professional and business services; and other services. The other services industry category includes miscellaneous personal services such as beauty shops, laundry and cleaning services, and various repair shops. In 2014, gig economy workers constituted 35.2 percent to 56.2 percent of all employed people in the construction industry. Gig economy workers also represented 33.9 percent of workers in agriculture and mining.



Meanwhile in leisure and hospitality, education and health services, and manufacturing, gig economy workers are not a major factor. For instance, gig economy workers in 2014 only represented 7.2 percent to 9.6 percent of education and health services workers and 6.5 percent to 13.2 percent of leisure and hospitality workers. Finally, government appears to be much less affected by the gig economy.

Table 6 turns to occupational distributions, showing the percent of workers in gig economy positions by occupation.

Table 6: Prevalence of Gig Economy Workers in Each Occupation, 2014			
Occupation	Gig 1	Gig 2	Gig 3
Management, business, and financial	17.9%	18.9%	20.4%
Professional and related	10.8%	12.4%	13.7%
Service	14.4%	19.2%	20.6%
Sales and related	23.6%	25.1%	27.0%
Office and administrative support	4.4%	8.4%	10.8%
Farming, fishing, and forestry	26.7%	26.7%	26.7%
Construction and extraction	30.5%	40.6%	57.2%
Installation, maintenance, and repair	15.7%	15.7%	17.6%
Production	9.5%	19.4%	23.9%
Transportation and material moving	13.3%	20.6%	27.5%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

For some occupation categories, the gig economy is not a major factor. This is particularly true for office and administrative support workers, of whom only 4.4 percent to 10.8 percent were gig economy workers in 2014. On the other hand, the gig economy seems to be consistently quite large for workers in sales and farming occupations – 23.6 percent to 27 percent of sales workers were gig economy workers, as were 26.7 percent of farmers.

Moreover, the prevalence of the gig economy workforce varies substantially within construction and production occupations, depending on how gig economy is defined. At the lower end, only 9.5 percent of production workers were independent contractors (Gig 1) in 2014. But, 23.9 percent were independent contractors, temp agency workers, on-call workers, or contract company workers (Gig 3). At the upper end, independent contractors represented a substantial 30.5 percent of construction workers. But independent contractors, along with temp agency, on-call, and contract company workers represented 57.2 percent of construction workers.

Finally, one might suspect that regional differences in growth in the gig economy are an artifact of regional differences in the industrial or occupational concentrations. A closer look at the data, however, reveals no such clear explanation.

## Economic Characteristics

The economic progress of U.S. workers has been a central focus of policy debates during the course of the recovery from the Great Recession. This has raised the obvious question: are gig economy workers doing better or worse? While many worry that the gig economy leaves workers worse off with lower earnings, fewer benefits, and undependable hours, others believe that workers in the gig economy enjoy more workplace flexibility and that these gig economy jobs provide relief to those who have previously lost a job and face economic hardship. To help understand these issues, we examine the economic characteristics of gig economy workers, such as work history, current job characteristics, and family income.

We start with work history. As illustrated in Table 7, compared to the entire workforce in 2014, gig economy workers worked fewer weeks in the previous year and were more likely to have ever been laid off.

Category	Weeks Worked Last Year	Ever Laid Off
All Workers	46.7	5.4%
Gig 1	44.0	6.7%
Gig 2	41.8	9.0%
Gig 3	42.3	12.0%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

According to the GSS data, all employed people in the United States in 2014 worked an average 46.7 weeks in 2013. Gig economy workers, on the other hand, worked an average 41.8 to 44 weeks. Meanwhile, 6.7 percent to 12 percent of gig economy workers have been laid off from previous work. That’s substantially higher than the 5.4 percent rate for all employed people in the country. The fewer hours indicate that workers in the gig economy are less attached to the workforce and many may turn to those opportunities for additional income after getting laid off.

Gig economy workers are also more likely to be part-time workers, and the portion of gig economy workers who are part-time has increased since 2002. This is highlighted in Table 8.<sup>[5]</sup>

Category	2002	2014	Percentage point Change
All Workers			
Full-Time	79.5%	79.9%	0.4
Part-Time	18.6%	17.6%	-1.0
Gig 1			
Full-Time	70.9%	61.5%	-9.4
Part-Time	27.5%	35.4%	7.8

Gig 2			
Full-Time	66.5%	56.7%	-9.8
Part-Time	30.4%	38.4%	8.1
Gig 3			
Full-Time	67.7%	59.5%	-8.2
Part-Time	29.4%	35.7%	6.3

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In 2002, 18.6 percent of all employed people were part-time workers, with 27.5 percent to 30.4 percent of gig economy workers working part-time. By 2014, the entire workforce was slightly less likely to work part-time at 17.6 percent. In the gig economy, however, workers became far more likely to work part-time. In 2014, 35.4 percent to 38.4 percent of gig economy workers were part-time.

To help illustrate trends in workplace flexibility for gig economy workers, Table 9 contains the information on how often they work at home.

<b>Frequency</b>	<b>2002</b>	<b>2014</b>	<b>Percentage Point Change</b>
All Workers			
Never	62.1%	60.9%	-1.2
Occasional	20.1%	19.0%	-1.1
Frequent	17.7%	19.9%	2.2
Gig 1			
Never	28.6%	33.6%	4.9
Occasional	17.7%	20.6%	3.0
Frequent	53.7%	45.8%	-7.9
Gig 2			
Never	35.8%	41.1%	5.4
Occasional	16.6%	20.0%	3.4
Frequent	47.7%	38.9%	-8.7
Gig 3			
Never	40.8%	44.6%	3.9
Occasional	16.2%	18.9%	2.6
Frequent	43.0%	36.5%	-6.5

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In general, gig economy workers work from home much more often than the workforce as a whole. Over time, however, it appears that as the gig economy becomes more widespread, gig economy workers are less likely to work from home. In 2002, 17.7 percent of all employed people indicated that they frequently work at home, which increased to 19.9 percent in 2014. Meanwhile 43 percent to 53.7 of gig economy workers frequently worked at home in 2002. By 2014, however, 36.5 percent to 45.8 percent of gig economy workers frequently worked at home. So while gig economy workers are still much more likely to mainly work at home than traditional workers, they appear to be doing so much less often than they did a decade ago.

Perhaps the most comprehensive indicator of a gig economy worker’s resources is his or her family income. Table 10 contains the distribution of family income for all workers and gig economy workers in 2006, 2010, and 2014, the three years that GSS reported this information for gig economy workers.

Unfortunately, no compelling patterns emerge from examining the table.

Category	2006	2010	2014	Percentage Point Change since 2006
All Workers				
Under \$30,000	18.0%	23.6%	19.1%	1.1
\$30,000 to \$49,999	18.1%	15.6%	17.7%	-0.4
\$50,000 to \$89,999	27.6%	27.7%	27.1%	-0.5
\$90,000 to \$129,999	13.8%	12.5%	14.0%	0.2
\$130,000 and over	10.4%	12.2%	15.5%	5.1
Refused/Don't Know	12.2%	8.4%	6.7%	-5.5
Gig 1				
Under \$30,000	14.8%	24.7%	25.7%	10.9
\$30,000 to \$49,999	14.5%	11.2%	12.2%	-2.4
\$50,000 to \$89,999	23.8%	25.5%	25.4%	1.6
\$90,000 to \$129,999	12.7%	11.5%	10.4%	-2.4
\$130,000 and over	20.2%	14.4%	18.8%	-1.3
Refused/Don't Know	14.0%	12.8%	7.6%	-6.4
Gig 2				
Under \$30,000	20.6%	31.2%	28.0%	7.4
\$30,000 to \$49,999	15.1%	10.2%	14.6%	-0.5
\$50,000 to \$89,999	22.5%	23.5%	24.5%	2.0

\$90,000 to \$129,999	10.9%	10.6%	10.5%	-0.4
\$130,000 and over	16.0%	13.1%	15.8%	-0.2
Refused/Don't Know	15.0%	11.4%	6.7%	-8.3
<b>Gig 3</b>				
Under \$30,000	21.1%	32.5%	28.1%	7.0
\$30,000 to \$49,999	14.1%	10.0%	16.3%	2.2
\$50,000 to \$89,999	25.0%	23.7%	25.5%	0.5
\$90,000 to \$129,999	11.5%	11.0%	9.8%	-1.7
\$130,000 and over	14.6%	12.3%	14.6%	0.0
Refused/Don't Know	13.7%	10.5%	5.8%	-7.9

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

The pattern of shifts in the income distribution differs between the entire workforce and gig economy workers, and the pattern within gig economy workers is sensitive to the definition. The timeframe also matters: looking at the changes between 2006 and 2014 (which contains both the downturn and recovery) produces a different picture than that from 2010 to 2014 (which focuses on the recovery).

One interpretation is that workers in recent years have turned to gig economy work after losing a job and facing a decline in family income. In this sense, the gig economy could be providing struggling families with opportunities for additional resources that they otherwise would not be able to obtain. This seems particularly true in light of the fact that gig economy workers are more likely to have been laid off from a previous job and have become more likely to be part-time workers.

## Demographic Trends

Given the income and work characteristics of gig economy workers, it also is important to consider how demographic factors may be driving these economic trends. For instance, gig economy workers on average are older than the entire workforce and the average age of gig workers has increased more rapidly. This is illustrated in Table 11.

Worker Category	2002	2006	2010	2014	2002-2014 Change
All Workers					
Mean	40.9	41.4	43.2	43.4	2.4
Median	40	42	43	43	3.0
<b>Gig 1</b>					
Mean	46.1	45.6	50.4	50.1	4.0
Median	46	44	50	53	7.0

Gig 2					
Mean	44.8	45.0	47.2	48.1	3.3
Median	45	43	46	51	6.0
Gig 3					
Mean	44.5	44.1	46.7	47.7	3.2
Median	44	43	46	50	6.0

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In 2002, the average age of all employed people was 40.9, while the average age among gig economy workers was 44.5 to 46.1. This means that gig economy workers in 2002 were already a considerable 3.6 to 5.2 years older than all employed people on average. (Notice the same pattern emerges using median ages.) By 2014 the average age for gig economy workers increased, ranging from 47.7 to 50.1 years old. By comparison, the average for all workers meanwhile only increased by 2.4 years to 43.4, meaning that the age differential between gig economy workers and the entire workforce (4.3 to 6.7 years) is growing. This may indicate that a number of gig economy workers are relying on gig work for additional income later in their careers or in retirement, rather than for full-time income to support an entire family.

In addition, gig economy workers are more likely to be married than all workers, but the spouses of gig economy workers are less likely to have full-time jobs. These trends are illustrated in Tables 12 and 13.

Marital Status	All Workers	Gig 1	Gig 2	Gig 3
Married	54.2%	61.9%	57.2%	55.9%
Divorced, Widowed, or Separated	18.1%	20.7%	23.9%	24.9%
Never Married	27.7%	17.5%	18.9%	19.2%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In 2014, 54.2 percent of all workers were married, while 55.9 percent to 61.9 percent of gig economy workers were married. Gig economy workers were also more likely to have been previously married than the entire workforce, but less likely to have never been married.

The spouses of gig economy workers who are married, however, are less likely to be employed full-time than the spouses of all workers who are married.

Spouse Employment Status	All Workers	Gig 1	Gig 2	Gig 3
Full-Time	61.5%	55.3%	55.2%	55.5%
Part-Time	11.4%	12.5%	14.2%	14.2%

Total	72.9%	67.7%	69.4%	69.7%
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Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In 2014, 61.5 percent of the spouses of all married workers had a full-time job and 72.9 percent were employed at all. Only 55.2 percent to 55.5 percent of the spouses of gig economy workers had a full-time job and 67.7 percent to 69.7 percent were employed at all.

Pulling these results together, one finds a picture of the gig economy workforce consisting of a greater fraction of married couples, but a greater likelihood of part-time work and layoffs from jobs, perhaps as a result of the Great Recession.

Next we turn to the gender and race characteristics of gig economy workers. Table 14 contains the gender distribution of gig economy workers in 2002 and in 2014.

Category	2002		2014	
	Male	Female	Male	Female
All Worker	49.4%	50.6%	49.0%	51.0%
Gig 1	54.4%	45.6%	60.7%	39.3%
Gig 2	52.7%	47.3%	59.5%	40.5%
Gig 3	55.4%	44.6%	59.9%	40.1%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

Men have continually held the majority of gig economy jobs and since 2002 they have only become more likely to be in those work arrangements. In 2002, while 49.4 percent of the entire workforce was male and 50.6 percent was female, 52.7 percent to 55.4 percent of gig economy workers were male and 44.6 percent to 47.3 percent were female. By 2014, the gig economy had become even more heavily dominated by men: 59.5 percent to 60.7 percent of gig economy workers were male and 39.3 percent to 40.5 percent were female. By comparison, the gender distribution of the entire workforce – 49 percent male and 51 percent female – was relatively unchanged over this period.

Finally, we find that over the last decade gig economy workers have been slightly more likely to be White and less likely to be Black than the entire workforce. These trends are illustrated in Table 15.

Category	2002			2014		
	White	Black	Other	White	Black	Other
All Worker	79.7%	13.4%	7.0%	73.2%	14.2%	12.7%
Gig 1	83.5%	8.7%	7.8%	78.9%	7.7%	13.4%

Gig 2	82.1%	10.2%	7.6%	74.4%	9.0%	16.6%
Gig 3	80.8%	11.5%	7.6%	72.5%	11.7%	15.8%

Source: NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

In 2002, 79.7 percent of all workers were White and 80.8 percent to 83.5 percent of gig economy workers were White. Meanwhile, 13.4 percent of all employed people were Black, as were 8.7 percent to 11.5 percent of gig economy workers. By 2014, 73.2 percent of all workers were White and 14.2 percent were Black. 72.5 percent to 78.9 percent of gig economy workers were White and 7.7 percent to 11.7 percent were Black. In addition, all workers and gig economy workers in particular have become more likely to be labeled by GSS as an “Other” race, which includes Asian, Native American, and Native Hawaiian or Other Pacific.[6] From 2002 to 2014, the portion of all workers who were one of those race categories increased from 7 percent to 12.7 percent. The portion of gig economy workers who were one of those race categories increased from a range of 7.6 percent to 7.8 percent to a range of 13.4 percent to 16.6 percent.

## ONLINE GIG ECONOMY AND NON-EMPLOYER FIRMS

Standard methods have found it difficult to track employment changes due to the online gig economy, a subset of the larger gig economy workforce. For one, the businesses employing this group of workers have higher rates of entry into the market, but also have high rates of exit.[7] According to internal surveys, about 11 percent of Uber drivers stop working on the platform within a month, and around half are gone by the one-year mark.[8] Many workers also do not consider their online gig economy work to be a job (either part time or full time) and resist calling it one when answering surveys. About 11 percent of all active Etsy sellers identify themselves as unemployed even though their dealings online would often qualify as work.[9]

Like in our previous work, to examine the growth of the online gig economy we use Census data for non-employer firms as a proxy, which includes businesses that have no paid employees, pay federal income tax, and have receipts over \$1,000. Released on an 18-month delay, this survey provides establishment and receipt data for all of the top level sectors as outlined by the North American Industry Classification System (NAICS), and many of the specific sectors as well. Establishment numbers approximate the number of firms by sector, while the receipts approximate revenue. In selected sectors where online gig economy workers would file earnings, increases in non-employer establishments and receipts can be found.

Table 16 below shows recent data for non-employer establishments and their average receipts.

Year	Total Non-employer Establishments	Receipts (in \$1,000s)	Average Receipt / Establishment
2002	17,646,062	770,032,328	\$43,638
2003	18,649,114	829,819,228	\$44,496
2004	19,523,741	887,001,820	\$45,432
2005	20,392,068	951,206,297	\$46,646
2006	20,768,555	970,384,137	\$46,724



2007	21,708,021	991,791,563	\$45,688
2008	21,351,320	962,791,527	\$45,093
2009	21,695,828	923,018,039	\$42,544
2010	22,110,628	950,813,840	\$43,003
2011	22,491,080	989,628,512	\$44,001
2012	22,735,915	1,030,932,886	\$45,344
2013	23,005,620	1,052,025,268	\$45,729
2014	23,836,937	1,115,921,379	\$46,815

Source: United States Census Bureau, “Nonemployer Statistics,” U.S. Department of Commerce, 1997-2014, <http://www.census.gov/econ/nonemployer/download.htm>.

Since the beginning of the recovery in 2009, over 2.1 million new non-employer establishments were created, far outpacing growth in total employer establishments by nearly 3 times. In the most recent year of data, between 2013 and 2014, nearly 831,000 non-employer businesses were created, substantially above the 270,000 non-employer businesses added the previous year. Just under 18 percent of this growth came from the transportation and warehousing sector alone, placing it as the quickest growing sector.

**Table 17: Non-employer Firms by Industry**

	2014	2013	2012	2011	2010	2009	Average Annual Percent Change 2003 – 2008	Average Annual Percent Change 2009 – 2014
Total for all sectors	23,836,937	23,005,620	22,735,915	22,491,080	22,110,628	21,695,828	14.5	9.9
Agriculture, forestry, fishing and hunting	237,817	239,863	240,054	237,942	236,705	228,788	2.3	3.9
Mining, quarrying, and oil and gas extraction	109,866	106,610	109,931	109,736	105,922	101,584	23.7	8.2
Utilities	19,984	19,344	18,452	17,430	16,644	16,894	31.9	18.3
Construction	2,442,519	2,368,442	2,346,798	2,387,969	2,424,231	2,455,453	12.9	-0.5
Manufacturing	350,346	343,025	344,658	329,785	318,409	313,195	5	11.9
Wholesale trade	416,799	406,469	408,487	403,292	393,408	390,126	3.2	6.8
Retail trade	1,960,682	1,906,597	1,905,147	1,847,993	1,821,620	1,826,224	-0.3	7.4
Transportation and warehousing	1,250,881	1,102,255	1,059,040	1,038,293	1,021,217	1,002,056	21	24.8
Information	331,061	326,526	327,795	317,803	311,127	306,143	17.9	8.1

Finance and insurance	715,767	706,394	720,598	713,727	716,815	733,669	5.5	-2.4
Real estate and rental and leasing	2,543,791	2,448,282	2,389,906	2,345,766	2,343,136	2,372,879	4.1	7.2
Professional, scientific, and technical services	3,363,252	3,235,906	3,212,202	3,163,966	3,121,404	3,066,934	14.4	9.7
Administrative and support and waste management and remediation services	2,075,368	2,032,516	2,006,177	1,985,237	1,937,326	1,864,703	41.2	11.3
Educational services	677,143	616,952	603,455	578,148	567,274	560,607	47.5	20.8
Health care and social assistance	1,986,042	1,959,723	1,943,028	1,968,099	1,934,831	1,869,681	17.4	6.2
Arts, entertainment, and recreation	1,311,429	1,256,694	1,236,539	1,188,143	1,154,020	1,123,989	26.3	16.7
Accommodation and food services	364,001	346,280	340,770	340,845	328,796	313,971	18.8	15.9
Other services (except public administration)	3,680,189	3,583,742	3,522,878	3,516,906	3,357,743	3,148,932	13.9	16.9

Source: United States Census Bureau, "Nonemployer Statistics," U.S. Department of Commerce, 1997-2014, <http://www.census.gov/econ/nonemployer/download.htm>.

Over the same time period, nearly \$192 billion was added in additional receipts for non-employers, which translates to a 21 percent increase from 2009 to 2014. Tepid growth could be found in heavily regulated industries like finance and insurance, and health care and social assistance, while transportation and warehousing grew by over 50 percent.

	2014 Receipts (\$1,000)	2013 Receipts (\$1,000)	2012 Receipts (\$1,000)	2011 Receipts (\$1,000)	2010 Receipts (\$1,000)	2009 Receipts (\$1,000)	Average Annual Percent Change 2003 – 2008	Average Annual Percent Change 2009 – 2014
Total for all sectors	1,115,921,379	1,052,025,268	1,030,932,886	989,628,512	950,813,840	923,018,039	16	20.9
Agriculture, forestry, fishing and hunting	11,205,657	10,937,201	10,613,759	10,258,802	10,115,355	9,009,698	13.9	24.4
Mining, quarrying, and oil and gas extraction	8,069,955	7,699,360	7,820,264	7,623,294	6,922,791	6,138,745	84.9	31.5

Utilities	966,556	878,870	786,823	736,626	697,528	707,583	26.5	36.6
Construction	141,799,960	132,282,411	127,049,119	122,633,298	120,150,896	121,298,344	13.8	16.9
Manufacturing	17,131,665	16,247,004	16,164,062	15,472,440	14,571,621	13,811,284	11.3	24
Wholesale trade	38,157,430	36,814,965	37,187,323	36,220,984	34,082,418	32,825,333	13.2	16.2
Retail trade	85,166,180	82,476,313	82,494,176	79,730,576	75,719,636	74,432,867	4.3	14.4
Transportation and warehousing	81,850,553	72,487,761	69,902,217	66,390,395	60,746,245	54,453,065	49.1	50.3
Information	12,584,570	11,945,232	11,784,901	11,323,383	10,739,102	10,249,651	29.8	22.8
Finance and insurance	54,742,426	51,506,073	52,045,924	50,311,687	50,626,266	51,578,908	19.2	6.1
Real estate and rental and leasing	247,884,410	237,171,809	227,427,897	215,428,132	209,549,445	208,306,182	-7.2	19
Professional, scientific, and technical services	153,886,552	143,066,789	142,974,538	136,701,902	130,613,013	123,436,546	27.8	24.7
Administrative and support and waste management and remediation services	45,389,544	42,969,163	42,443,032	40,887,001	39,110,676	37,428,950	39.9	21.3
Educational services	9,354,856	8,686,538	8,504,722	8,048,744	7,702,746	7,334,977	51.3	27.5
Health care and social assistance	62,403,175	59,903,352	59,887,058	59,111,121	57,686,231	56,077,807	27.2	11.3
Arts, entertainment, and recreation	33,307,788	30,891,954	30,281,203	28,194,224	26,755,943	25,622,829	32.5	30
Accommodation and food services	16,197,028	15,306,070	15,021,102	14,862,828	14,354,581	14,015,112	5.4	15.6
Other services (except public administration)	95,823,074	90,754,403	88,544,766	85,693,075	80,669,347	76,290,158	24	25.6

Source: United States Census Bureau, "Nonemployer Statistics," U.S. Department of Commerce, 1997-2014, <http://www.census.gov/econ/nonemployer/download.htm>.

## ***Ridesharing***

The growth in companies like Lyft and Uber coincides with significant gains in taxi and limousine service non-employer businesses, suggesting that these companies have likely driven non-employer establishment growth. From 2002 to 2008, the number of new taxi and limousine companies increased at an average rate of 4.3 percent

per year. After Uber was established in 2009, the average annual growth rate in taxi and limousine companies jumped to 10.5 percent from 2009 to 2014.

The total receipts in taxi and limousine non-employer firms from 2002 to 2008 increased at an average annual rate of 8.3 percent, but have accelerated since then. From 2009 to 2014, yearly increases averaged 9.6 percent, with receipts growing 9 percent in 2012, 11 percent in 2013, and 17.8 percent in 2014.

Ridesharing companies have effectively lowered barriers to enter the taxi industry, leading to new market participants, more opportunity, and significant economic activity. For instance, in 2014 taxi and limousine non-employer receipts were about \$573 million higher than they would have been had the pre-ridesharing growth trends from 2002 to 2008 continued to today. Similarly, there were 81,286 more establishments in 2014 than what would have happened had growth trends continued from the previous period. If the accelerated growth is wholly the result of ridesharing companies, then they helped to create 65 percent of these new jobs since 2009.

These non-employer establishment trends vary by metropolitan area and reveal a striking picture. The taxi and limousine industry in New York City had a 1.5 percent non-employer establishment growth rate the year before Uber entered into the market, which was followed by an average growth of 7.4 percent every year after.

After Uber established itself in Boston, the yearly average increase in establishments grew from 3.7 percent to 27 percent. Using 2009 as a baseline and calculating the annual average change both before and after a market had been opened, the total average annual increases in establishments and receipts were 7.7 percent and 9.4 percent respectively in metropolitan areas before a market had the ridesharing service. Afterwards in the markets where Uber had been established, those numbers increased to an average annual 39.3 increase in establishments and 20.4 percent increase in receipts. Below is a table charting the yearly average increase for all of the cities in which Uber had a presence by 2013.

**Table 19: Average Yearly Increases in Establishments and Receipts from Before and After Uber's Entry**

Metro	Year of Uber Entry	Establishments Before Uber (In Percent)	Receipts Before Uber (In Percent)	Establishments After Uber (In Percent)	Receipts After Uber (In Percent)
San Jose-San Francisco-Oakland, CA CSA	2010	*	*	34	27.8
New York-Newark, NY-NJ-CT-PA CSA	2011	1.5	7.2	7.4	9.8
Boston-Worcester-Providence, MA-RI-NH-CT CSA	2012	3.7	12.9	27	13.8
Chicago-Naperville, IL-IN-WI CSA	2012	6.8	10.8	16.2	15.3
Los Angeles-Long Beach, CA CSA	2012	12.3	14.5	39.8	23.6
Philadelphia-Reading-Camden, PA-NJ-DE-MD CSA	2012	5.9	14.2	13.9	13.3
Seattle-Tacoma, WA CSA	2012	6.8	11.7	26.6	20.5

Washington-Baltimore-Arlington, DC-MD-VA-WV-PA CSA	2012	7.7	7.7	18.7	15
Atlanta–Athens-Clarke County–Sandy Springs, GA CSA	2013	5.4	8.7	28.8	19.6
Charlotte-Concord, NC-SC CSA	2013	5.5	11.9	30.4	22.1
Dallas-Fort Worth, TX-OK CSA	2013	6.0	11	35.4	28.4
Denver-Aurora, CO CSA	2013	14.4	15.9	37.1	22.2
Indianapolis-Carmel-Muncie, IN CSA	2013	13.1	14.7	27.5	11.8
Minneapolis-St. Paul, MN-WI CSA	2013	7.7	10	24.2	19.6
Sacramento-Roseville, CA CSA	2013	7.9	9.8	39.5	23.5

Source: United States Census Bureau, “Nonemployer Statistics,” U.S. Department of Commerce, 1997-2014, <http://www.census.gov/econ/nonemployer/download.htm>.

\* 2009 is used as a baseline, so San Francisco doesn’t have a yearly average from before Uber’s entry

## ***Roomsharing***

The rideshare industry is not the only part of the online gig economy to see rises in usage. Before the rise of on demand ridesharing, VBRO and others invited regular people to rent out their property as alternative living arrangements for vacationers. However, it was not until Airbnb was founded in late 2008 that the industry became more widely known. From 2009 until 2014, the number of new establishment filings in the rooming and boarding subsector grew by a total of 25 percent, substantially faster than the 10 percent increase from 2003 to 2008. Similarly, receipts totals increased 30 percent during the time period from 2009 to 2014, up from the 21 percent during 2003 to 2008.

## **CONCLUSION**

As policymakers consider changes to employment classification and consider policy options for the gig economy, it is important first that the nature of the gig economy, how workers fit into it, and their demographic characteristics are understood. This paper contributes to the nascent research literature on the gig economy and makes modest suggestions for future research.

[1] Lawrence F. Katz & Alan B. Krueger, “The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015,” NBER Working Paper No. 22667, September 2016, [http://www.nber.org/papers/w22667?utm\\_campaign=ntw&utm\\_medium=email&utm\\_source=ntw](http://www.nber.org/papers/w22667?utm_campaign=ntw&utm_medium=email&utm_source=ntw)

[2] Will Rinehart & Ben Gitis, “Independent Contractors and the Emerging Gig Economy,” American Action Forum, July 2015, <https://www.americanactionforum.org/research/independent-contractors-and-the-emerging-gig-economy/>.

[3] NORC at the University of Chicago, “General Social Survey,” University of Chicago, <http://gss.norc.org/get-the-data>.

[4] These figures are slightly revised from our previous paper due to data revisions.

[5] The full-time and part-time percentages may not add up to 100 percent because some respondents in the GSS survey did not indicate their full-time/part-time status.

[6] Due to GSS survey methodology, the “Other” race does not include Hispanic ethnicity.

[7] Zoltan J. Acs, Brian Headd, & Hezekiah Agwara, “Nonemployer Start-up Puzzle,” Small Business Administration, Office of Advocacy, December 2009, <https://www.sba.gov/sites/default/files/Non-employer%20Start-up%20Puzzle.pdf>.

[8] Brian Solomon, “The Numbers Behind Uber’s Exploding Driver Force,” Forbes.com, May 2015, <http://www.forbes.com/sites/briansolomon/2015/05/01/the-numbers-behind-ubers-exploding-driver-force/#1bf833964901>.

[9] Etsy, “Building an Etsy Economy: The New Face of Creative Entrepreneurship,” Etsy, July 2015, [https://extfiles.etsy.com/Press/reports/Etsy\\_NewFaceofCreativeEntrepreneurship\\_2015.pdf](https://extfiles.etsy.com/Press/reports/Etsy_NewFaceofCreativeEntrepreneurship_2015.pdf).