Why Are Prime-Age Men Vanishing from the Labor Force?

By Didem Tüzemen

The labor force participation rate for prime-age men (age 25 to 54) in the United States has declined dramatically since the 1960s, but the decline has accelerated more recently. From 1996 to 2016, the share of prime-age men either working or actively looking for work decreased from 91.8 percent to 88.6 percent. In 1996, 4.6 million prime-age men did not participate in the labor force. By 2016, this number had risen to 7.1 million.

Prime-age men are at their most productive in terms of working years, and a decline in their participation has important implications for the future of the labor market and economic growth. But this decline is unlikely to be uniform across prime-age men of different ages, education levels, and skill levels. Profiling these men in greater detail may be important to better understand the demographic factors driving nonparticipation as well as the personal situations preventing nonparticipants from working or actively searching for work.

In this article, I examine two decades of data from the Current Population Survey (CPS) to document changes in the nonparticipation rates among prime-age men with different demographic characteristics as well as changes in their personal situations during nonparticipation. I find that from 1996 to 2016, the nonparticipation rate increased most

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for men with only a high school degree, some college, or an associate's degree and for men on the younger end of the prime-age range (age 25–34). During this period, the most common personal situation reported among nonparticipating prime-age men was disability or illness, while the least common personal situation was retirement.

In addition, I argue that "job polarization," a phenomenon that describes declining demand for middle-skill workers in response to advancements in technology and globalization, has been a key contributor to the increase in nonparticipation among prime-age men. I show that if job polarization had not changed the composition of jobs in the labor market in the past two decades, 1.9 million more men would likely be employed in 2016, representing a 3.6 percent increase in overall employment of prime-age men. However, the effects of job polarization are unlikely to unwind any time soon—survey evidence suggests nonparticipating prime-age men are unlikely to return to the labor force if current conditions hold.

Section I documents changes in the nonparticipation rates for different education and age groups of prime-age men from 1996 to 2016. Section II reviews recent explanations for the increase in nonparticipation among prime-age men and shows job polarization has contributed to the decline. Section III examines the likelihood that nonparticipants will return to the labor force.

I.   Changes in Nonparticipation among Prime-Age Men in the Past Two Decades

Labor force nonparticipation has increased for the population as a whole over the last two decades. During the Great Recession, this overall increase accelerated, primarily due to large-scale layoffs (Aaronson and others 2014; Erceg and Levin 2014; Hotchkiss and Rios-Avila 2013; and Van Zandweghe 2012). But the increase in nonparticipation was especially stark for prime-age men. Chart 1 shows that the nonparticipation rate for prime-age men increased from 8.2 percent to 11.4 percent over the past two decades.

To understand the forces behind this stark increase in nonparticipation, I first examine the characteristics of nonparticipating prime-age men using micro-level data from the CPS, also known as the household survey. The CPS is the primary source of labor force statistics and

Chart 1
Nonparticipation Rate of Prime-Age Men
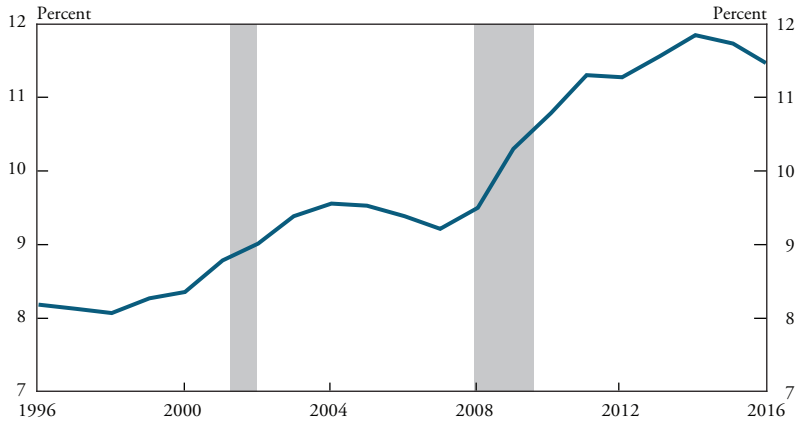
Notes: Gray bars denote National Bureau of Economic Research (NBER)-defined recessions at a monthly
frequency. Nonparticipation rates correspond to monthly observations averaged for each year.
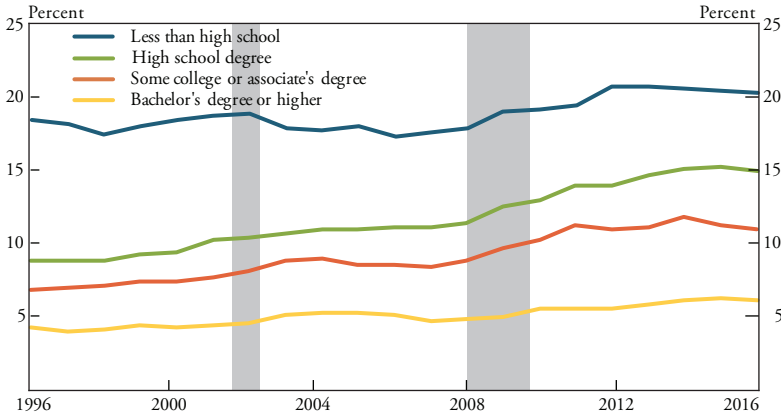Sources: CPS, NBER, and author's calculations.

demographic data for the U.S. population. The U.S. Census Bureau collects survey data for the Bureau of Labor Statistics at a monthly frequency from approximately 60,000 households.[1] For the purposes of this article, I restrict the data sample to men age 25–54 and base the analysis on annualized data from 1996 to 2016.[2] I then examine changes in nonparticipation by educational attainment, age, and the interaction between them as well as by prime-age men's personal situations.

Changes in nonparticipation rates by educational attainment

A change in the educational composition of the workforce could lead to a change in the labor force nonparticipation rate. Workers with lower educational attainment, for example, historically have higher nonparticipation rates than their more-educated counterparts. To facilitate comparison, I group workers by education level into one of four groups: those with less than a high school degree, those with only a high school degree, those with some college or an associate's degree, and those with a bachelor's degree or higher. Chart 2 shows that while the nonparticipation rates rose for all education groups over the past

Chart 2

Nonparticipation Rates of Prime-Age Men by Education Group

Notes: Gray bars denote NBER-defined recessions at a monthly frequency. Nonparticipation rates correspond to monthly observations averaged for each year.
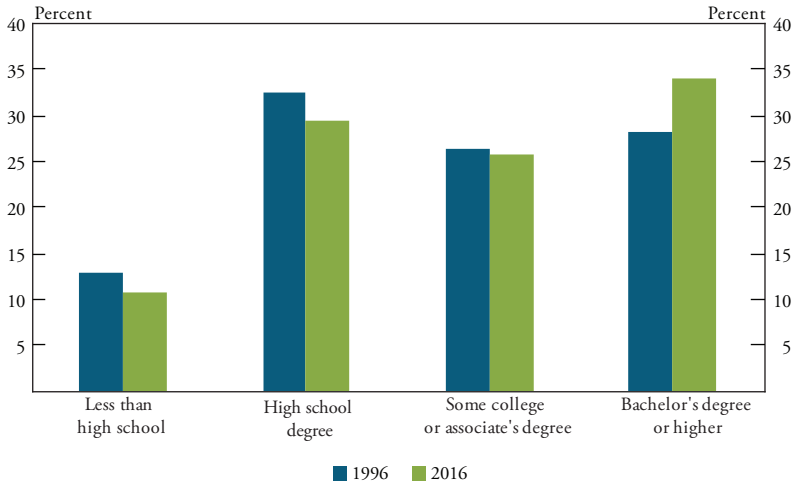Sources: CPS, NBER, and author's calculations.

two decades, the largest increase was for those in the middle-education groups, who had only a high school degree, some college, or an associate's degree. More specifically, the nonparticipation rate for prime-age men with only a high-school degree rose from 8.8 percent in 1996 to 14.9 percent in 2016 (a 70.3 percent increase), while the nonparticipation rate for prime-age men with some college or an associate's degree rose from 6.8 percent in 1996 to 11.0 percent in 2016 (a 61.7 percent increase). The nonparticipation rate for prime-age men in the highest education group, who had a bachelor's degree or higher, increased more modestly, from 4.1 percent in 1996 to 6.0 percent in 2016 (a 45.9 percent increase). Similarly, the nonparticipation rate for those in the lowest education group, who had less than a high school degree, rose only slightly, from 18.3 percent in 1996 to 20.3 percent in 2016 (only a 10.6 percent increase).

These changes in nonparticipation rates have shifted the educational composition of nonparticipating prime-age men toward the middle-education groups. Chart 3 shows how the educational composition of all prime-age men has changed over the past 20 years, while Chart 4 narrows this focus to show how the educational composition of non-participating prime-age men has evolved. Among nonparticipating
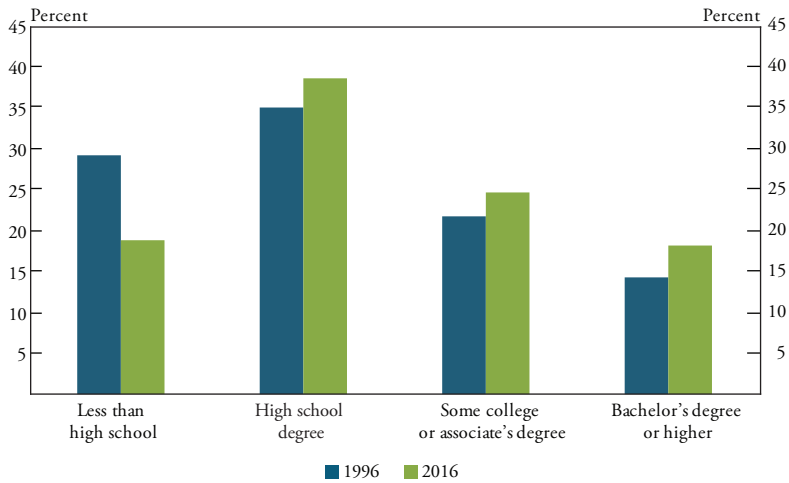
Chart 3
Composition of Prime-Age Men by Education Group

Note: Monthly data are averaged for each year.
Sources: CPS and author's calculations.

Chart 4
Composition of Nonparticipating Prime-Age Men by Education Group

Note: Monthly data are averaged for each year.
Sources: CPS and author's calculations.

prime-age men, the shares in the lowest and highest education groups—those with less than a high school degree or a bachelor's degree or higher, respectively—have moved in the same directions as the overall shares among prime-age men from 1996 to 2016. But for men in the middle-education groups, this pattern reversed. The share of all prime-age men with only a high school degree decreased from 32.6 percent to 29.5 percent over the last two decades, but the share of *nonparticipating* men with only a high school degree actually increased from 34.9 percent to 38.6 percent. Similarly, while the share of all prime-age men with some college or an associate's degree decreased by less than a percentage point over the past two decades, the share of *nonparticipating* men with some college or an associate's degree increased from 21.8 percent to 24.6 percent.

Changes in nonparticipation rates by age

As with education, a change in the age composition of the labor force could influence nonparticipation. I divide prime-age men into three age groups: those age 25–34, those age 35–44, and those age 45–54. Chart 5 shows the nonparticipation rates for all three groups over the past two decades. Although the nonparticipation rates for all three groups increased over time, younger prime-age men saw the largest increase. From 1996 to 2016, the nonparticipation rate for younger prime-age men surged from 6.7 percent to 11.3 percent, a 67.0 percent increase. Over the same period, the nonparticipation rate for men in the 35–44 age group rose from 7.6 to 9.5 percent (a 25.1 percent increase), while the nonparticipation rate for men in the 45–54 group rose from 10.8 to 13.4 percent (a 24.4 percent increase).

As the nonparticipation rate for prime-age men in the 25–34 age group increased, so did their share of all prime-age nonparticipants. Chart 6 shows that among nonparticipants, each age group had nearly equal shares in 1996, with men in the 25–34 age group having a slightly smaller share at 28.8 percent. By 2016, however, the share of nonparticipating men age 25–34 increased to 34.4 percent, the largest increase of all three age groups. The share of nonparticipating men age 45–54 also increased over this period, from 36.6 percent to 39.4 percent. In contrast, the share of nonparticipants age 35–44 declined by 8.5 percentage points, from 34.7 percent to 26.2 percent.

Chart 5

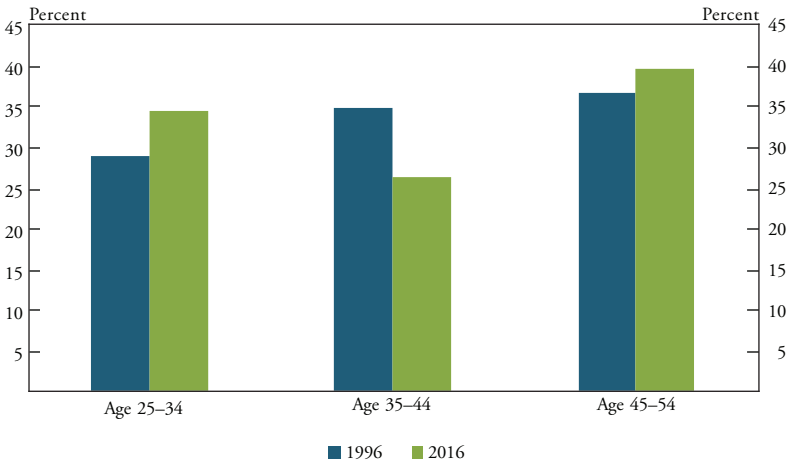## Nonparticipation Rates of Prime-Age Men by Age Group
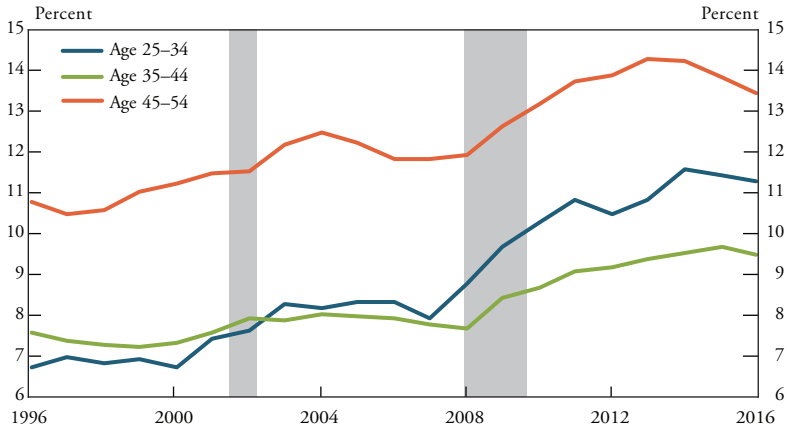
Notes: Gray bars denote NBER-defined recessions at a monthly frequency. Nonparticipation rates correspond to monthly observations averaged for each year.
Sources: CPS, NBER, and author's calculations.

Chart 6

Composition of Nonparticipating Prime-Age Men by Age Group

Note: Monthly data are averaged for each year.
Sources: CPS and author's calculations.

Changes in nonparticipation rates by the interaction between age and education

To get a more complete picture of how the composition of prime-age workers has changed over time, I next examine the breakdown across both age and educational attainment. Within every age group, nonparticipation rates increased most for those in the middle education groups. Although nonparticipation rates increased for men age 25–34 in all education groups from 1996 to 2016, the largest increases were for those with a high-school degree (6.4 to 14 percent) and some college or an associate's degree (5.7 to 11.1 percent), as shown in Table 1. Nonparticipation rates for men age 35–44 increased most for those with a high-school degree (8.3 to 13.4 percent) and a bachelor's degree or higher (3.0 to 4.3 percent). Interestingly, the nonparticipation rate for men 35–44 with less than a high school degree fell slightly, from 18 percent to 17.4 percent. Among men in the 45–54 age group, the highest increase in the nonparticipation rate was for those with some college or an associate's degree (8.9 to 13 percent).

Overall, prime-age men in the age 45–54 group and prime-age men with less than a high school degree had the highest nonparticipation rates throughout the analysis period. However, younger prime-age men and those in the middle-education groups—specifically, those who had only a high school degree, some college, or an associate's degree—experienced the largest *increases* in their nonparticipation rates over the past two decades.

Changes in the self-reported "situations" of nonparticipants

Although the nonparticipation rates for prime-age men in different age and education categories have changed over the past 20 years, the reasons for these changes are not obvious. One way to identify these reasons is to look at CPS respondents' answers to a question about their personal situations. Each month, the CPS asks respondents about their labor force status (employed, unemployed, or not in the labor force). Those who report their status as "not in the labor force" also respond to another question, which asks, "what best describes your situation at this time? For example, are you disabled, ill, in school, taking care of house or family, in retirement, or something else?" Based on the responses to these questions, I group nonparticipating prime-age men into one of five

Table 1

Nonparticipation Rates of Prime-Age Men by Education and Age Group

Age group	Nonparticipation rates				
	Less than high school (percent)	High school degree (percent)	Some college or associate's degree (percent)	Bachelor's degree or higher (percent)	Total (percent)
1996					
Age 25–34	13.6	6.4	5.7	4.8	6.7
Age 35–44	18.0	8.3	6.3	3.0	7.6
Age 45–54	25.0	13.0	8.9	4.7	10.8
Total	18.3	8.8	6.8	4.1	—
2016					
Age 25–34	17.1	14.0	11.1	7.4	11.3
Age 35–44	17.4	13.4	8.7	4.3	9.5
Age 45–54	25.9	17.2	13.0	6.2	13.4
Total	20.3	14.9	11.0	6.0	—
Difference					
Age 25–34	25.8	118.9	96.6	55.2	67.0
Age 35–44	–3.8	61.4	37.8	42.4	25.1
Age 45–54	3.4	32.7	44.8	32.9	24.4
Total	10.6	70.3	61.7	45.9	—

Note: Monthly data are averaged for each year.
Sources: CPS and author's calculations.

categories: retired, disabled or ill, in school, taking care of family, and other reasons.

Throughout the sample period, the most common situation nonparticipants reported was having a disability or illness, while the least common situation was retirement. In 1996, 56.0 percent of nonparticipating prime-age men reported they were disabled or ill, while only 7.2 percent said they were retired (Table 2). At the same time, 10.3 percent reported being in school, 10.8 percent reported taking care of family, and 15.7 percent reported other reasons for nonparticipation. By 2016, the share of nonparticipating men who reported they were disabled or ill declined to 48.3 percent, while the share who were retired rose to 10.0 percent. The share who reported being in school rose to 13.8 percent, the share taking care of family rose to 14.6 percent, and the share reporting other situations declined to 13.2 percent.

Table 2
Situations Reported among Nonparticipating Prime-Age Men

	Years	Disabled or ill (percent)	Family care (percent)	In school (percent)	Retired (percent)	Other (percent)
All nonparticipating prime-age men	1996	56.0	10.8	10.3	7.2	15.7
	2016	48.3	14.6	13.8	10.0	13.2
Education groups	1996					
	LHS	70.6	10.2	2.0	3.7	13.5
	HS	62.3	11.4	3.1	7.3	15.9
	SC	47.0	10.4	19.0	8.4	15.2
	BA+	24.5	11.1	31.2	12.6	20.6
	2016					
	LHS	63.9	12.0	6.3	5.5	12.3
	HS	58.2	16.0	4.9	8.3	12.6
	SC	41.2	13.5	22.0	11.4	11.8
	BA+	20.2	16.0	29.7	16.5	17.6
Age groups	1996					
	25–34	38.7	12.7	24.1	1.4	23.1
	35–44	61.2	14.0	7.0	2.1	15.7
	45–54	64.7	6.3	2.4	16.6	9.9
	2016					
	25–34	32.9	14.8	29.5	5.0	17.8
	35–44	49.9	19.6	8.6	8.4	13.5
	45–54	60.6	11.2	3.6	15.4	9.1

Notes: LHS denotes less than a high school degree, HS denotes high school degree, SC denotes some college or an associate's degree, and BA+ denotes bachelor's degree or higher. Monthly data are averaged for each year.
Sources: CPS and author's calculations.

I observe similar patterns for prime-age men across education and age groups. From 1996 to 2016, the shares of prime-age men in all age and education groups reporting disability as their situation declined slightly. In contrast, the shares reporting retirement, being in school, and taking care of family increased slightly. A natural question is whether the increased share of nonparticipating prime-age men in school could explain the especially dramatic hike in the nonparticipation rate for younger prime-age men. However, schooling does not appear to be the main driver of nonparticipation. Based on the self-reported responses, only one-third of the increase in the number of nonparticipating younger prime-age men was related to being in school.

Similar to the other age groups, the majority (one-third) of younger prime-age men reported disability as their reason for nonparticipation in 2016.

While self-reported responses offer some insight into the reasons for nonparticipation, the limited survey options may mask other, potentially more important reasons behind the increase in nonparticipation. For example, some individuals may have left the labor force because they were unable to find jobs suitable for their skills. Others may have recovered from disability or illness but become dependent on pain medication, rendering them unable to work. In such cases, self-reported responses about the "situation" of nonparticipants would not fully capture the reasons they left the labor force. To account for these alternatives, I review some recent explanations from researchers for the rise in nonparticipation among prime-age men.

II. Possible Explanations for the Increase in Nonparticipation among Prime-Age Men

Changes in both labor supply and labor demand could have contributed to the increase in prime-age men's nonparticipation. For example, prime-age men may have chosen to leave the labor force because they have easier access to alternative income sources—such as a working spouse or public assistance programs—compared with two decades ago. However, prime-age men may also have been forced out of the labor force as jobs suitable for their skills vanished.

Changes in labor supply: alternative income sources and pain

One explanation for the decline in labor force participation among prime-age men could be a change in labor supply—that is, prime-age men may be choosing not to work. A rise in alternative income sources, such as a working spouse or access to public assistance programs such as Social Security Disability Insurance (SSDI), Temporary Assistance for Needy Families (TANF), or the Supplemental Nutrition Assistance Program (SNAP) might explain this choice.

However, none of these alternative income sources seems sufficient to have shifted the labor supply. In fact, survey evidence shows that the share of nonparticipating prime-age men who are married has declined over the past two decades. In 2016, almost half of nonparticipating

prime-age men reported they had never been married (author's calculations). Moreover, nearly 36 percent of nonparticipating prime-age men lived in poverty in 2014 (Council of Economic Advisers 2016). Almost half of all households with a male prime-age nonparticipant were in the bottom quintile of income (Hamilton Project 2017). All in all, evidence does not support the claim that alternative income through a working spouse encouraged men to choose to leave the labor force.

Likewise, increased reliance on public assistance does not seem to be a credible explanation for the increase in nonparticipation among prime-age men. While the share of prime-age men receiving SSDI increased from 1 percent to 3 percent from 1967 to 2014, the labor force participation rate among prime-age men declined by 7.5 percentage points over the same period (Council of Economic Advisers 2016). Analysis by the Council of Economic Advisers (CEA) suggests that an increasing share of SSDI recipients can explain at most 0.5 percentage point of the decline in the participation rate of prime-age men over this period. Additionally, according to the CEA, other government programs, such as TANF and SNAP, have become increasingly hard to access. Therefore, reductions in labor supply due to alternative income sources seem to explain relatively little of the increase in nonparticipation among prime-age men.

A more recent explanation for rising nonparticipation is that daily pain and dependence on pain medication have become barriers to regular employment for many prime-age men who are out of the labor force. Krueger (2016) argues that nearly half of nonparticipating prime-age men are taking pain medication on a daily basis, nearly two-thirds of whom are using prescribed pain medication.

While this evidence is compelling, it is hard to identify the direction of this relationship—that is, it is hard to know whether these men left the labor force because of a disability that required pain medication or whether they became dependent on pain medication because they were forced out of the labor force for other reasons. Some anecdotal evidence suggests individuals are likely to claim disability when they are unable to find new jobs after losing their jobs, perhaps because a local mill shuts down or a factory closes.[3]

Moreover, if a reduced labor supply has been the key driver of the increase in nonparticipation, the wages of workers with only a high

Chart 7

Ratio of Weekly Median Wages of Workers with a High School Degree to Workers with a Bachelor's Degree or Higher
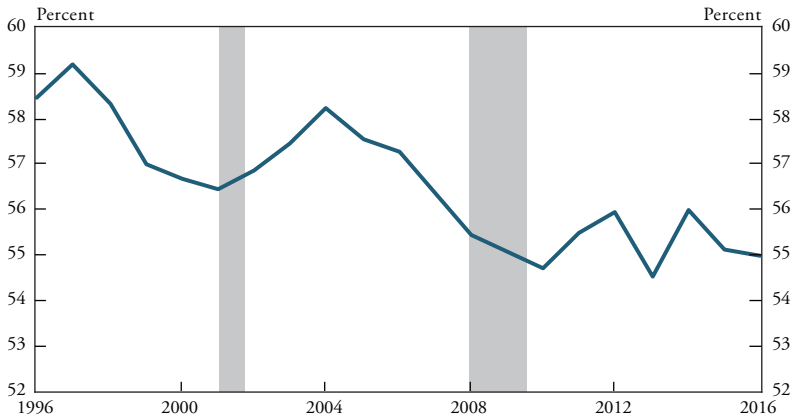
Notes: Gray bars denote NBER-defined recessions at a monthly frequency. All other data are annual.
Sources: CPS (Bureau of Labor Statistics) and author's calculations.

school degree—the group of workers who experienced the largest increase in their nonparticipation rate—might be expected to increase relative to those with a bachelor's degree or higher. However, Chart 7 shows that the ratio of the median weekly earnings of workers with a high school degree to the median weekly earnings of workers with a bachelor's degree or higher has actually declined. As such, reduced labor demand has likely played a more important role in the increase in labor force nonparticipation among prime-age men.

Changes in labor demand: job polarization

Labor demand and the skill composition of jobs have changed dramatically over the past 40 years in response to advancements in technology and globalization. The employment share of middle-skill jobs has declined significantly, while the employment shares of low- and high-skill jobs have rapidly increased. This aggregate shift in employment away from middle-skill jobs and toward low- and high-skill jobs is called "job polarization" (Goos and Manning 2007; Autor and others 2006; Autor 2010; Acemoglu and Autor 2011; and Tüzemen and Willis 2013).

Technological advancements help explain why the share of workers employed in middle-skill jobs has fallen so sharply. Middle-skill jobs are

considered "routine" occupations, as workers typically perform tasks that are procedural and rule-based. The tasks performed in many of these jobs have become automated by computers and machines.

Tasks performed in high- and low-skill jobs, however, are more difficult to automate, making them "non-routine" jobs. Workers in low-skill jobs typically have lower educational attainment and work in jobs that are physically demanding. Many of these jobs are service oriented, such as food preparation, cleaning, and security and protective services. In contrast, workers in high-skill jobs are typically highly educated and perform tasks requiring analytical ability, problem solving, and creativity. Many of these jobs are managerial, professional, and technical in nature in fields such as engineering, finance, management, and medicine.
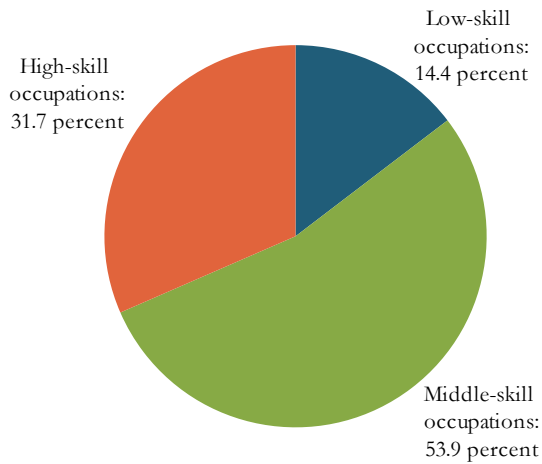
International trade and weakening unions have also contributed to the decline in middle-skill jobs. Many jobs in this category, particularly those in manufacturing, have been offshored to countries where workers can perform similar tasks for lower wages (Goos and others 2011; Oldenski 2012). In addition, some firms have contracted out portions of their businesses to workers in foreign countries through outsourcing.

Overall, job polarization has led to a large increase in the demand for highly educated workers and a decline in demand for less-educated workers, many of whom were employed in middle-skill jobs. Chart 8 shows how the shares of jobs in each skill category changed over the past 20 years. In 1996, 53.9 percent of all jobs were middle-skill jobs, and low- and high-skill jobs accounted for 14.4 percent and 31.7 percent of total jobs, respectively. By 2016, however, only 43.2 percent of jobs were middle-skill jobs, and low- and high-skill jobs accounted for 18.2 percent and 38.6 percent of all jobs, respectively.[4]
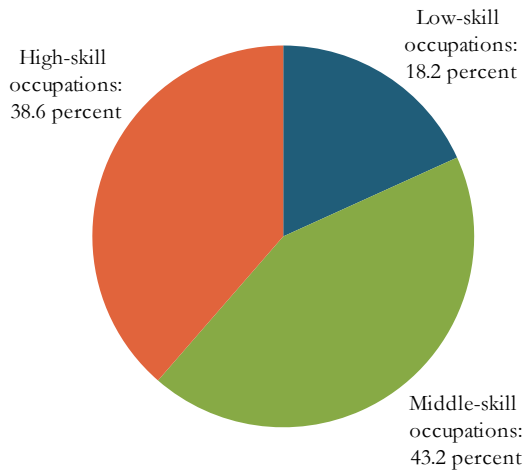
The decline in middle-skill jobs disproportionately affected prime-age men. Table 3 shows that 57.8 percent of all employed, prime-age men worked in middle-skill jobs in 1996. These jobs were largely routine occupations in sales, office and administrative services, production, construction, installation, maintenance, and transportation—most of which employed disproportionately more men than women. By 2016, the share of employed men in middle-skill occupations had declined by 8.5 percentage points. The largest employment losses for prime-age men were in production occupations, reflecting the decline in manufacturing employment. Employment of prime-age men shifted almost

Chart 8
Employment Shares by Skill Level

Panel A: 1996

High-skill
occupations:
31.7 percent

Low-skill
occupations:
14.4 percent

Middle-skill
occupations:
53.9 percent

Panel B: 2016

High-skill
occupations:
38.6 percent

Low-skill
occupations:
18.2 percent

Middle-skill
occupations:
43.2 percent

Notes: Data are restricted to workers age 16 to 64 who are not self-employed or working without pay and are not employed in military or agricultural occupations or mining or agricultural industries. Monthly data are averaged for each year.
Sources: CPS and author's calculations.

Table 3
Employment Shares of Prime-Age Men by Occupation

Occupations	Share of men within occupation			Employment shares of men		
	1996 (percent)	2016 (percent)	Change (percentage point)	1996 (percent)	2016 (percent)	Change (percentage point)
High-skill						
Management, business, and financial	51.8	51.9	0.2	14.7	16.5	1.8
Professional and related	44.2	41.3	−2.9	17.8	20.5	2.7
Middle-skill						
Sales and related	51.4	52.2	0.8	10.0	9.0	−1.0
Office and administrative support	20.6	27.8	7.2	6.4	6.4	0.0
Construction, extraction, installation, maintenance, repair, and production	79.1	86.6	7.5	33.7	24.4	−9.3
Transportation and material moving	89.8	82.4	−7.4	7.7	9.5	1.8
Low-skill						
Service	41.7	44.3	2.6	9.7	13.7	4.0

Notes: Data are restricted to working prime-age men who are not self-employed or working without pay and are not employed in military or agricultural occupations or mining or agricultural industries. Monthly data are averaged for each year.
Sources: CPS and author's calculations.

equally toward high- and low-skill jobs. The share of employed prime-age men in managerial and professional occupations, which are classified as high-skill jobs, rose by 4.5 percentage points. At the same time, the share of employed prime-age men in low-skill service jobs rose by 4.0 percentage points.

Prime-age men with a high school degree or less have been especially vulnerable to job polarization. Table 4 shows the shares of prime-age men with different levels of educational attainment employed in each occupation type. In 1996, 78.4 percent of workers with a high school degree and 80.0 percent of workers with less than a high school degree were employed in middle-skill jobs. By 2016, these employment shares had declined to 71.0 percent and 72.0 percent, respectively. Employment gains for both groups were primarily in low-skill jobs, likely because workers in these groups lacked the education or training to find employment in high-skill jobs. Workers with some college degree

Table 4
Employment Shares of Prime-Age Men by Education Group

Level of educational attainment	Occupation type	1996 (percent)	2016 (percent)	Change (percentage point)
Less than high school	Low-skill	16.2	24.1	7.9
	Middle-skill	80.0	72.0	–8.0
	High-skill	3.8	3.9	0.1
High school degree	Low-skill	11.2	17.8	6.6
	Middle-skill	78.4	71.0	–7.4
	High-skill	10.4	11.2	0.8
Some college or associate's degree	Low-skill	11.6	16.7	5.1
	Middle-skill	60.5	57.6	–2.9
	High-skill	27.9	25.7	–2.2
Bachelor's degree or higher	Low-skill	4.1	6.3	2.2
	Middle-skill	25.0	22.6	–2.4
	High-skill	70.9	71.1	0.2

Notes: Employment shares are computed separately for each respective level of educational attainment. Data are restricted to working prime-age men who are not self-employed or working without pay and are not employed in military or agricultural occupations or mining or agricultural industries. Monthly data are averaged for each year. Sources: CPS and author's calculations.

or an associate's degree fared similarly: the share of these workers in both middle- and high-skill jobs declined from 1996 to 2016, while the share in low-skill jobs increased. Prime-age men with a bachelor's degree or higher were less affected. In 1996, 29.1 percent of these workers were in low- and middle-skill occupations. By 2016, the share in middle-skill jobs had declined by 2.4 percentage points, accompanied by almost an equal increase in the share in low-skill jobs.

As the demand for workers in middle-skill jobs declined, some displaced middle-skill workers were able to transition to high-skill jobs, while other workers moved to low-skill service sector jobs. However, most of the displaced middle-skill workers permanently dropped out of the labor force (Cortes and others 2014). Thus, job polarization likely contributed to the increase in nonparticipation among prime-age men, especially among those without a bachelor's degree.

The effect of job polarization on the increase in nonparticipation

How much of the increase in nonparticipation among prime-age men from 1996 to 2016 can job polarization explain? To answer this question, I run a simple counterfactual exercise that considers how employment of prime-age men would have changed if job polarization had not affected the composition of jobs in the labor market over the past two decades.

Employment in low-, middle-, and high-skill jobs varies greatly across education groups. However, if the composition of jobs and demand for skills in the labor market had not changed from 1996 to 2016, the share of prime-age men in each age-education group who were employed in each skill category would have remained the same. In other words, the employment-to-population ratios for men in each age-education group would be unchanged across low-, middle-, and high-skill employment. In that case, any change in the total employment of prime-age men from 1996 to 2016 would result only from the changes in the number of prime-age men in each age-education group.

To calculate the counterfactual employment level in 2016, I hold each age-education group's employment-to-population ratios in low-, middle-, and high-skill jobs at their 1996 levels. I then multiply these ratios by the population of each age-education group in 2016.

My calculation shows that if the skill composition of jobs had not changed, 1.9 million more prime-age men would have been employed in 2016 (54.4 million versus the actual level of 52.5 million). The actual number of nonparticipating prime-age men rose from 4.6 million in 1996 to 7.1 million in 2016, a 2.5 million increase. My simple counterfactual exercise suggests that if job polarization had not changed the demand for skills in the labor market, almost 80 percent of these 2.5 million nonparticipants could be employed in 2016.

Other studies provide further support for the relationship between job polarization and nonparticipation. For example, Aaronson and others (2014) find that the participation rates among less-educated individuals (those without a bachelor's degree) fell more in states with greater declines in middle-skill employment. Moreover, the authors find that participation rates among less-educated individuals were more responsive to job polarization compared with the participation rates among adults with higher educational attainment.

More recently, Foote and Ryan (2015) use both an individual-level model of unemployment transitions and a more theoretically grounded empirical model based on demographic groups to show that the increase in nonparticipation among prime-age men was a quantitatively important response to job polarization. The authors interpret this empirical relationship between job polarization and nonparticipation as pointing to a lack of employment alternatives for a large share of middle-skill workers and thus a lower probability of these workers willingly leaving their jobs in recessions to search for alternative employment.

Together, my simple counterfactual exercise and research by other economists provide evidence that a change in labor demand—specifically, the decline in the employment share of middle-skill jobs—helps explain a significant part of the recent increase in labor force nonparticipation among prime-age men.

III. Are Nonparticipants Likely to Return to the Labor Market?

If the increase in nonparticipation among prime-age men is the result of a long-term change in labor demand, how likely are these men to return to the labor market? To answer this question, I analyze prime-age men's flows into and out of the labor force in 1996 and 2016. I then document changes in the profile of nonparticipating prime-age men who report that they want a job.

The structure of the CPS makes it possible to follow individuals over two consecutive months and observe flows between employment, unemployment, and nonparticipation. Panels A and B of Table 5 categorize these flows based on whether participants are flowing into or out of nonparticipation from one month to the next.

In 1996, most nonparticipating prime-age men—82.9 percent—were also nonparticipants in the previous month. Only 10.2 percent of nonparticipants were employed in the previous month, while only 6.9 percent were unemployed in the previous month. The shares were similar for those flowing out of nonparticipation: 8.9 percent of nonparticipating prime-age men became employed in the subsequent month, and only 6.2 percent became unemployed.

In 2016, the flows between employment and nonparticipation remained largely unchanged, while the flows between unemployment

Table 5

Flows into and out of Nonparticipation for Prime-Age Men

Panel A: Flows into Nonparticipation

Year	From employment (percent)	From unemployment (percent)	From nonparticipation (percent)
1996	10.2	6.9	82.9
2016	10.3	5.9	83.8

Panel B: Flows out of Nonparticipation

Year	To employment (percent)	To unemployment (percent)	To nonparticipation (percent)
1996	8.9	6.2	84.9
2016	9.0	5.0	86.0

Note: Monthly data are averaged for each year.
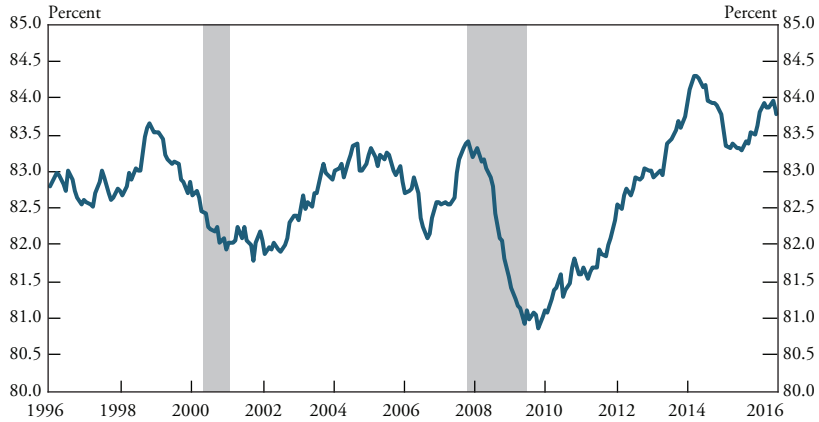Sources: CPS and author's calculations.

and nonparticipation declined. The share of nonparticipating prime-age men who were also nonparticipants in the previous month rose to 83.8 percent in 2016.

Although the flows at the start and end of the sample period may look similar, they have not been constant over time. During the Great Recession, nonparticipation among prime-age men increased rapidly due to large-scale layoffs. The economic downturn resulted in many temporary dropouts from the labor market. In the aftermath of the recession, some of these individuals re-entered the labor force: Chart 9 shows that the share of nonparticipants remaining out of the labor force from one month to the next declined rapidly from 2008 to 2009. However, this share started rising again in mid-2010 and reached an average of 83.8 percent (higher than its pre-recession rate) in 2016. Thus, recent flows data do not suggest nonparticipating prime-age men are likely to return to the labor force.

Another way to assess whether nonparticipating prime-age men are likely to return to the labor force is by examining whether they want a job. The CPS asks respondents who are "not in the labor force" whether they want a job. Chart 10 shows that the share of prime-age men who want a job has fluctuated over the past 20 years. In 1996, around 17.9 percent of nonparticipating prime-age men reported they wanted a job. This share declined to 13.9 percent by 1999 but increased again during the Great Recession. Since 2011, the share of nonparticipating prime-age men who want a job has steadily declined, reaching 14.8 percent in
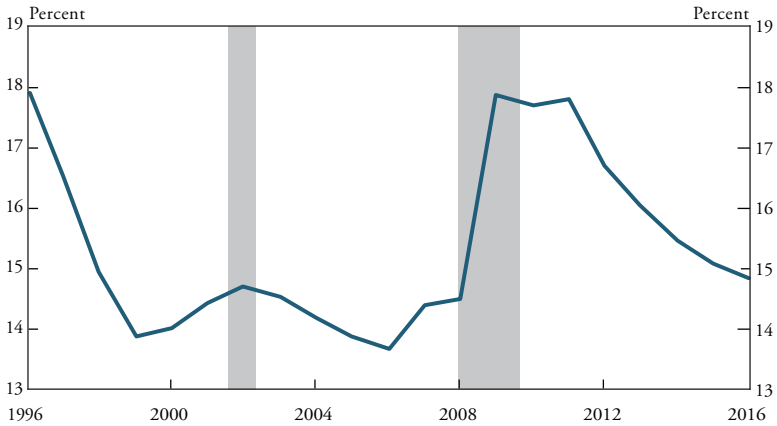
Chart 9

Probability of Remaining a Nonparticipant for Prime-Age Men

Notes: Gray bars denote NBER-defined recessions. Chart shows 12-month moving average.
Sources: CPS, NBER, and author's calculations.

Chart 10

Share of Nonparticipating Prime-Age Men Who Want a Job

Notes: Gray bars denote NBER-defined recessions at a monthly frequency. Shares correspond to monthly
observations averaged for each year.
Sources: CPS, NBER, and author's calculations.

Table 6
Characteristics of Prime-Age Men Who Want a Job

| | | Nonparticipating prime-age men who want a job | | |
Group	Characteristic	1996 (percent)	2016 (percent)	Difference (percentage point)
Education groups	Less than high school	24.6	16.2	–8.4
	High school degree	35.8	38.2	2.4
	Some college or associate's degree	23.8	25.7	1.9
	Bachelor's degree or higher	15.8	19.8	4.0
Age groups	Age 25–34	40.6	44.3	3.7
	Age 35–44	36.5	27.7	–8.8
	Age 45–54	22.9	28.0	5.1

Note: Monthly data are averaged for each year.
Sources: CPS and author's calculations.

2016. This low share suggests nonparticipants are not likely to return to the labor force soon, possibly due to a lack of available jobs suitable for their skills.

Changes over time in the education and age composition of those who want a job support this interpretation. In 1996, over 60 percent of nonparticipating prime-age men who wanted a job had at most a high school degree—24.6 percent had less than a high school degree, while 35.8 percent had completed high school (Table 6). In 2016, however, the share of those with less than a high school degree who wanted a job fell to 16.2 percent. For all other education groups, the shares of nonparticipating prime-age men who wanted a job increased from 1996 to 2016. This compositional change is not surprising given that the job opportunities for individuals with lower educational attainment declined as a result of job polarization. As Table 4 showed, prime-age men with less than a high school degree saw the largest decline of any education group in their share of middle-skill jobs. Consistent with this explanation, the largest increase in the share of prime-age nonparticipants who wanted a job was among those with a bachelor's degree or higher—the education group least affected by the decline in middle-skill jobs.

The age composition of men who wanted a job shifted toward the younger and older edges of the prime-age range. From 1996 to 2016,

the share of nonparticipants who wanted a job in the 35–44 age group declined by 8.8 percentage points. In contrast, the shares in the 25–34 and 45–54 age groups increased by 3.7 and 5.1 percentage points, respectively. The change in the age composition of those who want a job largely reflects the change in the age group composition of prime-age male nonparticipants.

IV. Conclusion

Over the past two decades, the nonparticipation rate among prime-age men rose from 8.2 percent to 11.4 percent. This article shows that the nonparticipation rate increased the most for men in the 25–34 age group and for men with a high school degree, some college, or an associate's degree. In 1996, the most common situation prime-age men reported during their nonparticipation was a disability or illness, while the least common situation was retirement. While the share of prime-age men reporting a disability or illness as their situation during nonparticipation declined by 2016, this share still accounted for nearly half of all nonparticipating prime-age men. This result is in line with Krueger's (2016) finding, as many of these men with a disability or illness are likely suffering from daily pain and using prescription painkillers.

I argue that a decline in the demand for middle-skill workers accounts for most of the decline in participation among prime-age men. In addition, I find that the decline in participation is unlikely to reverse if current conditions hold. In 2016, the share of nonparticipating prime-age men who stayed out of the labor force in the subsequent month was 83.8 percent. Moreover, less than 15 percent of nonparticipating prime-age men reported that they wanted a job. Together, this evidence suggests nonparticipating prime-age men are less likely to return to the labor force at the moment.

The stark increase in prime-age men's nonparticipation may be the result of a vicious cycle. Skills demanded in the labor market are rapidly changing, and automation has rendered the skills of many less-educated workers obsolete. This lack of job opportunities, in turn, may lead to depression and illness among displaced workers, and these health conditions may become further barriers to their employment. Ending this vicious cycle—and avoiding further increases in the nonparticipation rate among prime-age men—may require equipping workers with the new skills employers are demanding in the face of rapid technological advancements.

Endnotes

[1]The survey has a response rate ranging from 91 to 93 percent, one of the highest response rates among government surveys.

[2]To construct annual series, I average monthly observations for each year.

[3]In 2013, such a story was featured in "Unfit for Work," an episode of the National Public Radio (NPR) podcast *Planet Money*.

[4]In calculating these skill shares, I restrict the data to workers who are not self-employed and not employed in military or agricultural occupations.

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