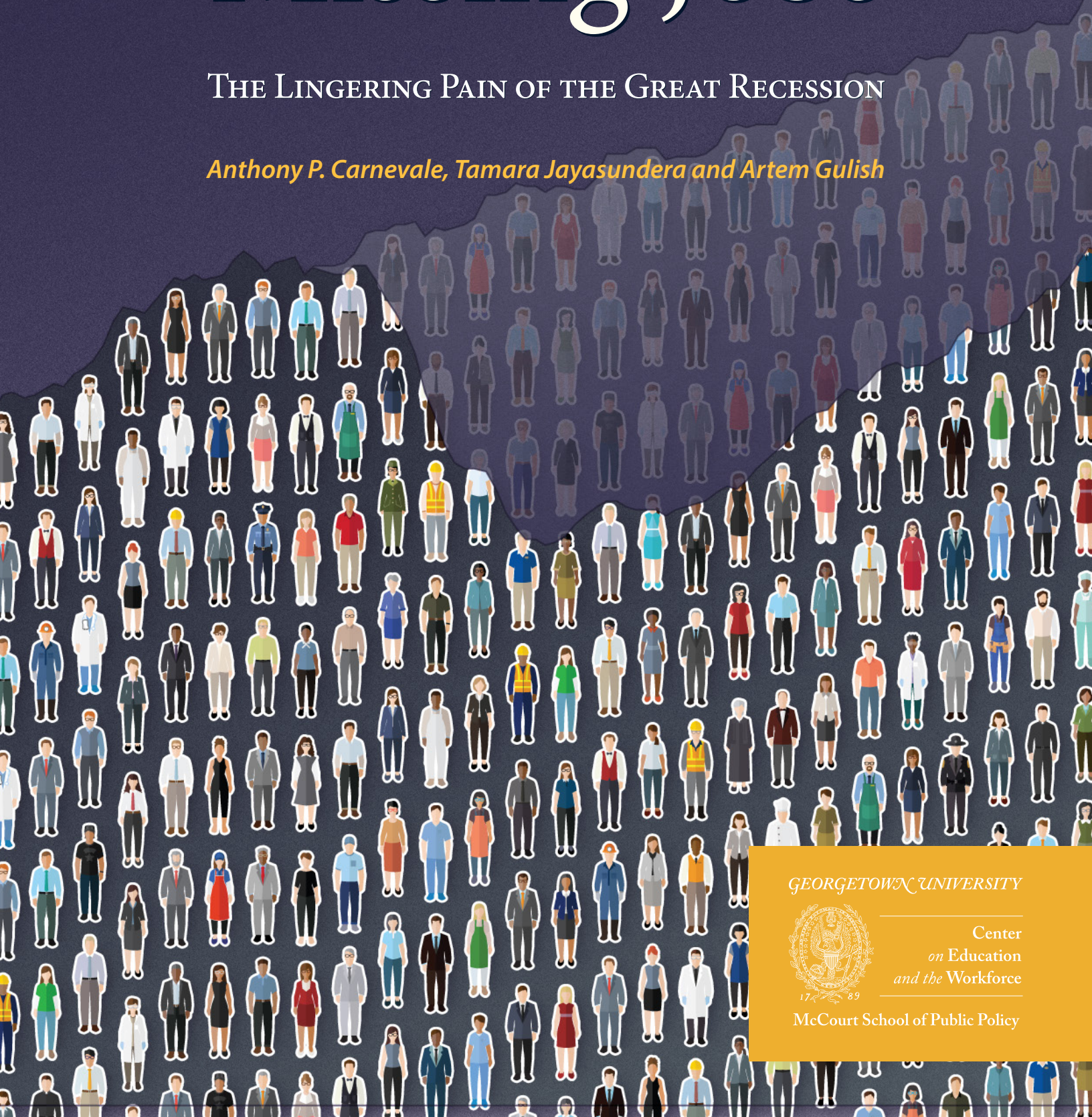


# Six Million Missing Jobs

THE LINGERING PAIN OF THE GREAT RECESSION

*Anthony P. Carnevale, Tamara Jayasundera and Artem Gulish*



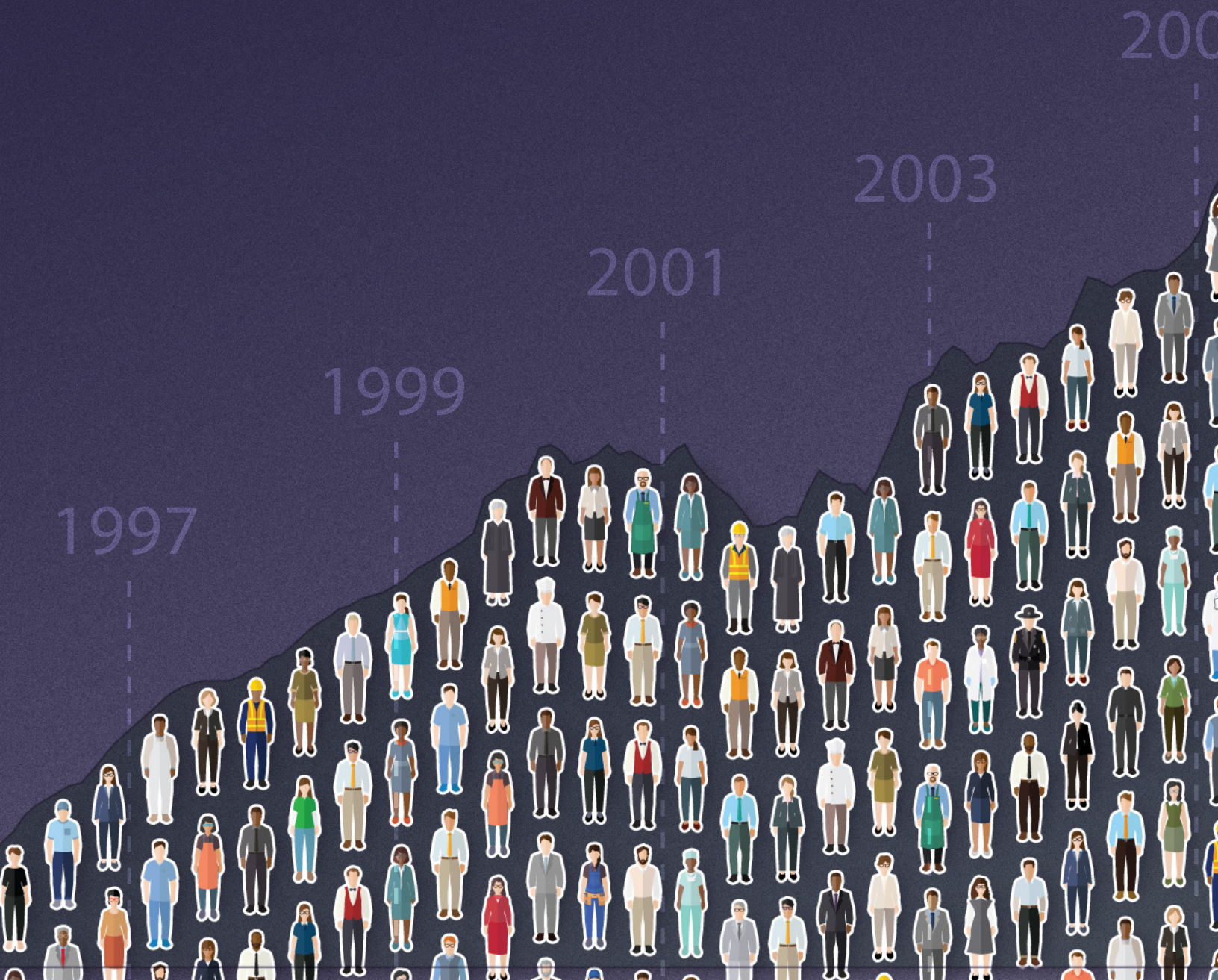
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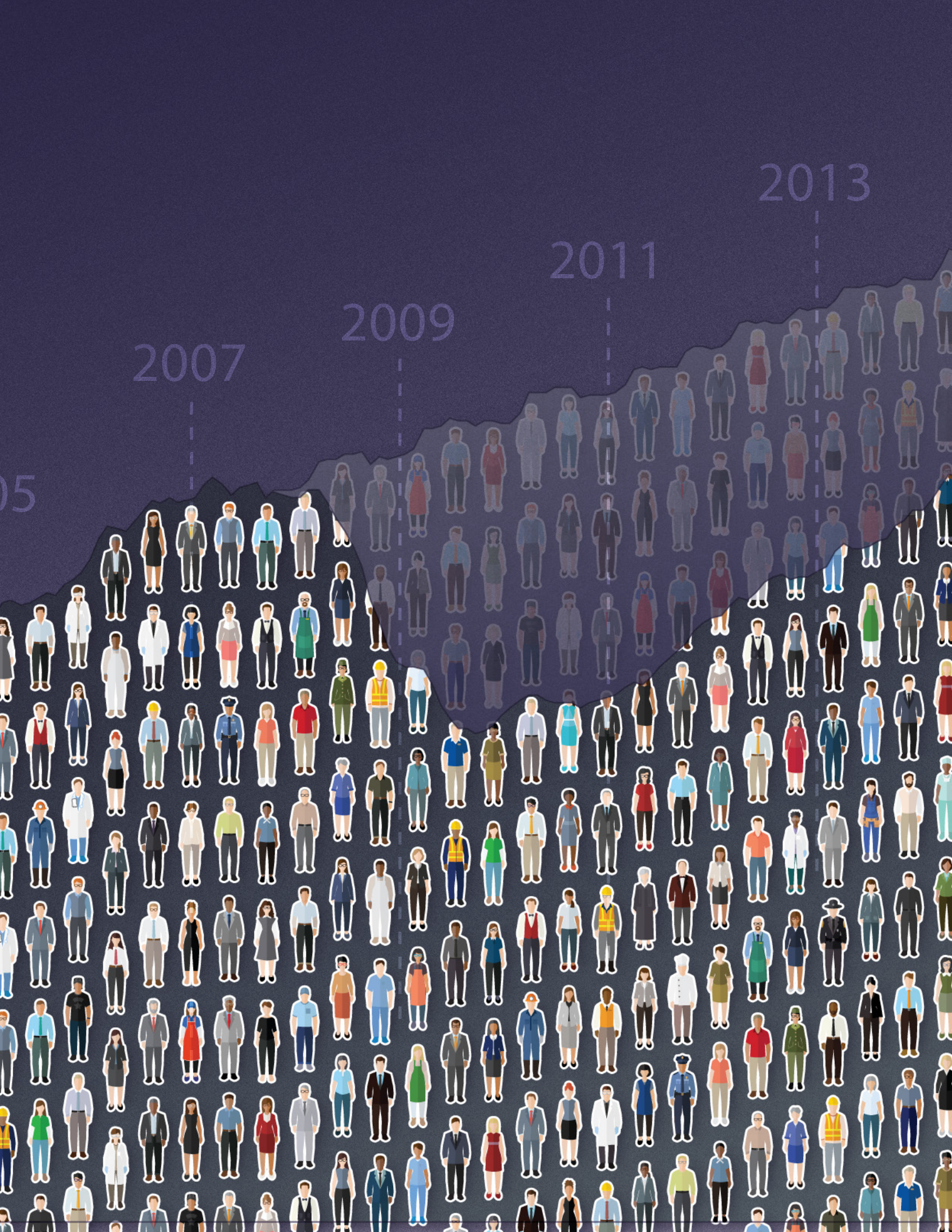


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**The 6 million missing jobs are at the center of today's flat wages and slack labor markets.**





The recovery from the Great Recession is now in its sixth year and jobs are growing steadily. The unemployment rate has fallen to its pre-recession level of 5 percent, half of what it was at the height of the recession. On average, employers have been adding 234,000 jobs per month since the first quarter of 2014.<sup>1</sup> Many of those new jobs are good, full-time jobs, with benefits, especially for workers with at least some education or training beyond high school.<sup>2</sup> Yet, despite strong overall job growth over the past few years, the Great Recession's devastating impact on the labor market is still with us,<sup>3</sup> in the form of 6.4 million jobs that were never created.

About 8 million jobs were lost between 2007 and 2010. Since the jobs recovery began in 2010, the economy has created 10.6 million jobs – there are now 2.6 million more jobs in the economy than there were before the Great Recession. But had the recession never occurred and job creation continued at the same rate as in the years leading up to the recession, the economy would have created 9 million jobs, bringing total employment

to 155.3 million by the end of 2015.<sup>4,5</sup> Instead, the economy currently has 148.9 million jobs (Figure 1), which means 6.4 million jobs are missing.<sup>6</sup> More than half of those jobs are low-skill jobs for workers with no more than a high school diploma, but 3 million jobs would have gone to workers with at least some education or training beyond high school.

These missing jobs help explain some of the remaining slack in the labor market, even as the economy is growing steadily and the jobs engine is hard at work. They are also a major contributor to the atmosphere of economic uncertainty in the recovery.

The notion that there are still missing jobs seems counterintuitive, since the economy

<sup>1</sup> Bureau of Labor Statistics, *Current Employment Statistics*, 2015.

<sup>2</sup> Carnevale, Jayasundera, and Gulish, *Good Jobs Are Back: College Graduates Are First in Line*, 2015.

<sup>3</sup> The economic slowdown erased an entire year's worth of gross domestic product (\$13 trillion) during the recession (Government Accountability Office, 2013). The drop in house prices caused net wealth to decline by \$9 trillion. Some factors for continued concern include slow GDP growth, low labor market participation rates, and global factors, such as the slowdown in growth of the Chinese economy, continued uncertainty involving the Greek bankruptcy, and political instability in the Middle East.

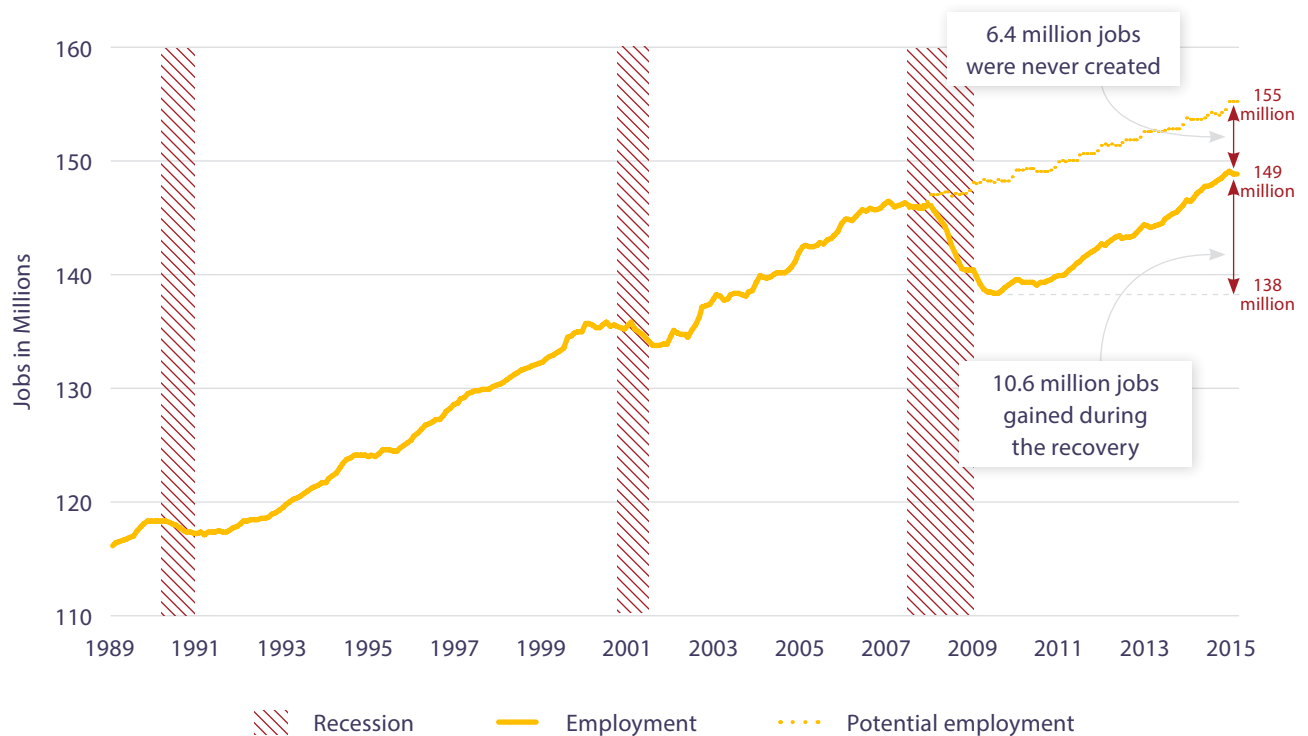
<sup>4</sup> Engemann and Wall, 2010. This St. Louis Federal Reserve study shows that the Great Recession had the largest combination of job losses and jobs that were not created, relative to all recessions, going back to the 1970s.

<sup>5</sup> In 2005, the U.S. Bureau of Labor Statistics (BLS) projected the 2014 employment would reach 164.5 million. <http://www.bls.gov/opub/mlr/2005/11/art5full.pdf>. The lower potential employment of 155 million, in this report, takes into account the population growth adjustments made based on the 2010 decennial census and changes in employment growth trends due to retirements by baby boomers.

<sup>6</sup> The job creation rate takes into account demographic changes by age, gender, and educational attainment. The Hamilton Project, using a similar method, estimates the job gap for payroll employment to be 3.2 million, as of October 2015 (Harris, Hershbein, and Kearny). The Hamilton Project estimates are based on the payroll employment, which does not include the self-employed and federal government workers. The Hamilton Project analysis also does not factor in the positive effects on employment from increasing educational attainment.

**FIGURE 1**

Since the recovery began in 2010, the economy has created 10.6 million jobs, but is still 6.4 million jobs short of where it would have been had the Great Recession not occurred.



Source: Georgetown University Center on Education and the Workforce analysis based on Current Population Survey (CPS) data, 1989-2015.

Note: The potential employment is the estimated employment (age 16 and older) the economy would need in order to maintain the same employment-to-population ratio that existed in December 2007, adjusted for demographic and population trends.

is nearing full employment.<sup>7</sup> But the unemployment rate does not take into account

more than half a million discouraged workers – those who have stopped actively seeking a job but still want to work. In addition, many workers remain underemployed, working in part-time, temporary, or freelance jobs. Today, the labor force still includes 2 million more part-time employees than it did prior to the

<sup>7</sup> In theory, full employment is when all who are able and willing to work are employed. However, in practice there will be some individuals who are unemployed even when the economy is at full employment because some people quit their jobs, get laid off, or lose a seasonal job and are in the process of getting a new job. Most economists consider the unemployment level at full employment to be roughly 5 percent.

recession.<sup>8</sup> Up-to-date official estimates of workers involved in alternative work arrangements are scarce, but our analysis indicates that this category includes as many as 30 percent of all workers.<sup>9</sup> The underemployment rate hovered around 8.4 percent before the recession, but by the end of the recession reached a peak of 17.1 percent.<sup>10</sup> Today it remains at 9.8 percent, well above pre-recession levels.<sup>11</sup>

The 6.4 million missing jobs contribute to the flat wages and slack labor markets.<sup>12</sup> Rising wages are typical of labor markets at full employment, as employers bid for scarce workers; stagnant wages are evidence of slack in the labor market.<sup>13</sup>

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<sup>8</sup> Georgetown University Center on Education and the Workforce analysis of *Current Population Survey*, 2007-2015.

<sup>9</sup> This estimate is based on the number of incorporated and unincorporated self-employed and part-time workers in the *Current Population Survey*, 2015 and the number of employees in the temporary help-services industry in the *Current Employment Statistics*, 2015. According to GAO analysis using the 2010 *General Social Survey (GSS)* in the *Contingent Workforce* report, April 2015, 40.4 percent of workers were in alternative work arrangements (including agency temps, on-call workers, contract-company workers, independent contractors, and self-employed and part-time workers).

<sup>10</sup> The U.S. Bureau of Labor Statistics (BLS) measures underemployment through its degree of labor under-utilization (U6) indicator.

<sup>11</sup> U.S. Bureau of Labor Statistics, "Total unemployed, plus all marginally attached workers plus total employed part time for economic reasons, as a percent of all civilian labor force plus all marginally attached workers" data series based on *Current Population Survey*, 2007-2015.

<sup>12</sup> U.S. Bureau of Labor Statistics, "Average hourly earnings of production and nonsupervisory employees" data series based on *Current Employment Statistics*, 2007-2015.

<sup>13</sup> U.S. Bureau of Labor Statistics, "Average hourly earnings of production and nonsupervisory employees" data series based on *Current Employment Statistics*, 2007-2015.

The magnitude of that slack can best be understood through what is known as the nation's employment-to-population ratio. In December 2007, at the onset of the Great Recession, 62.8 percent of the total civilian population was employed. Over the course of the 18-month recession, this ratio dropped to 57.8 percent—the largest decline since this data was first collected in 1948. As the economy has slowly recovered over the last six years, the employment-to-population ratio has risen, but only to 59.3 percent. So, despite the fact that the economy has recovered all the jobs that were lost in the recession, 3.5 percent of the civilian population is still waiting on the sidelines.

While virtually all workers were negatively affected by the recession, the magnitude of the effect depended on the workers' educational attainment.

- The number of jobs held by workers with a high school diploma or less declined by 6.3 million during the recession. These jobs would have declined anyway, but only by 2.9 million based on pre-recession trends. These job losses were exacerbated by the collapse of the housing market and substantial contraction of the construction and manufacturing industries.<sup>14</sup> There has been virtually no recovery of these jobs since the recession ended. Thus, there are 3.4 million fewer jobs for workers with a high school diploma or less than there would have been if not for the recession (Table 1).

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<sup>14</sup> Carnevale, Jayasundera, and Cheah, *College Advantage: Weathering the Economic Storm*, 2012.

**TABLE 1**

The jobs gap for high school-educated workers is 3.4 million, compared to 1 million for workers with a Bachelor's degree or higher.

Employment change, Dec. 2007- Sept. 2015 (in millions)			
Educational attainment	Actual	Potential	Jobs gap
High school diploma or less	-6.3	-2.9	3.4
Some college/Associate's degree	0.7	2.7	2
Bachelor's degree or higher	8.1	9.1	1
All	2.6	9	6.4

Source: Georgetown University Center on Education and the Workforce analysis based on Current Population Survey (CPS) data, 2007-2015.

Note: The jobs gap is the difference between actual employment change and potential employment change from December 2007 to September 2015. The potential employment is the estimated number of jobs for workers (age 16 and older) that the economy would need in order to maintain the same employment-to-population ratio that existed in December 2007, adjusted for demographic and population trends.

- Jobs held by workers with some college or an Associate's degree declined by 1.8 million during the recession. Since the beginning of the recovery, jobs have increased by 2.5 million and there are now 700,000 more jobs for workers with this level of education than before the recession began. However, there are still 2 million fewer jobs for workers with some college or an Associate's degree than there would have been if the recession had not occurred.
- Jobs held by college graduates grew faster than jobs for less educated workers before the recession, and the same high pace of growth is continuing in the recovery. However, the growth of jobs held by college graduates was also affected by the economic slowdown: while

jobs for college graduates have increased by 8.1 million in the recovery, there are still 1 million fewer jobs in this category than there would have been had the recession not occurred.

*The economy will need to create 205,000 jobs a month to recover all the missing jobs by 2020.*

If the economy is to close the jobs gap by 2020, we estimate that employers will need to add 205,000 jobs a month over the next four years. This is in line with the job growth over the last four years (2012-2015), which has averaged over 200,000 jobs a month. Average monthly job creation in 2014 even exceeded this number, with an impressive 260,000

jobs per month. So, if the economy keeps adding jobs at the current pace, we will recover all the missing jobs by 2020.

One factor that is important to sustain this pace of job growth is stable economic growth. Historically, there has been a strong relationship between Gross Domestic Product (GDP) growth and job creation. Since 2011, real GDP growth has averaged a little over 2 percent per year. The

real GDP grew by 2.1 percent in the third quarter of 2015, according to the most recent estimates from the Bureau of Economic Analysis.<sup>15</sup> In order to sustain strong job growth, the GDP annual growth rate will need to remain at 2 percent or more.

<sup>15</sup> U.S. Bureau of Economic Analysis (BEA), "Percent Change From Preceding Period in Real Gross Domestic Product (Seasonally Adjusted at Annual Rates)," 2015.

**TABLE 2**

The U.S. economy needs to add 205,000 jobs per month to get back on track by 2020.

	Number of jobs
Current Employment (2015)	148,880,000
Potential employment based on pre-recession trends (2015)	155,293,000
Potential employment for 2020 based on pre-recession trends	159,785,000
Number of jobs the economy needs to add to get to potential employment level	10,905,000
Number of jobs the economy needs to add per month to get back on track by 2020	214,000/month
<b>Number of payroll jobs that the economy needs to add per month to get back on track by 2020</b>	<b>205,000/month</b>

Source: Georgetown University Center on Education and the Workforce forecasts based on Current Population Survey (CPS) data, 1990-2015 and U.S. Census Bureau's National Population Projections, 2014, along with Current Employment Statistics (CES) data, 2015 (for conversion to payroll jobs).

Note: The required monthly payroll jobs number was derived by using the ratio of nonfarm payroll employment (CES data) to total employment from Current Population Survey (See Appendix on Data Sources and Methodology).



## CONCLUSION

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Despite consistent job growth and an unemployment rate that indicates the job market is nearing full employment, the economy still has a long way to go to achieve full recovery. Six years into the recovery, the economy is still missing 6.4 million jobs compared to where it would have been had the recession not occurred. Jobs held by workers with a high school diploma or less have been hit particularly hard, accounting for more than half of the gap. What's more, wages have remained stagnant – a sign that the economy is still fragile. The largest indicator that the economy is not back on track is the sizable population of workers who are still on the sidelines, either because they have become so

discouraged that they have stopped looking for jobs, or because they are settling for part-time or contract work. Until these potential workers are absorbed into the workforce, the recovery will continue to seem weak. Wage growth is not likely to pick up until the demand for workers grows enough to boost competition among employers. Early positive signs indicate that some workers are getting multiple job offers and that wages in some occupations are beginning to grow. But these isolated examples will have to become widespread before statistics showing full employment translate into actual economic optimism among workers.

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# APPENDIX: DATA SOURCES AND METHODOLOGY

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This report uses data from *Current Population Survey (CPS)*, a monthly survey administered by the U.S. Census Bureau on behalf of the U.S. Bureau of Labor Statistics (BLS). The *CPS* surveys from 1989 to 2015 were used to estimate the civilian population (16 and over) by age, gender, and educational attainment.

The potential employment trend provides an estimate of what the employment for each education level would have been if the recession had not occurred. To estimate potential employment, we use an approach similar to the fixed employment-to-population ratios method used by The Hamilton Project in its *Jobs Gap Calculator* analysis. We take employment-to-population ratios from 2007 separately for different demographic groups and use the population trends to determine what would happen if these ratios had persisted going forward.<sup>16</sup> This analysis differs from The Hamilton Project analysis in that we factor in education level as part of demographic adjustments for calculating potential employment. The Hamilton

Project uses 14 age groups separately for men and women (28 subsets in total). We use the employment-to-population ratio estimates for each of the five education levels (less than a high school diploma, high school diploma, some college or Associate's degree, Bachelor's degree, and Master's degree or higher) and nine different age groups (16 and over). We also separate men and women. We then apply these employment-to-population ratios to each subset of the civilian population, defined by age, gender, and education level (90 subsets in total) going forward through September 2015, to estimate potential employment in 2015. The potential employment from all demographic (age/gender/education) groups is then aggregated to employment by three education levels (high school diploma or less, some college or Associate's degree, and Bachelor's degree or higher) and total potential employment for the economy.

This approach keeps the level of employment the same as before the recession, but adjusts for changes in population growth and demographic makeup (age, gender, and education). The slower population growth and aging of the population are two structural factors that are slowing down the potential employment growth, regardless of whether the economy is in a recession or expansion phase.

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<sup>16</sup> Harris, Hershbein, and Kearny, "An Update to The Hamilton Project's Jobs Gap Analysis," 2014. Our estimates differ from The Hamilton Project because its estimates are adjusted to reflect payroll employment, which excludes self-employed and federal government workers, and does not factor in educational attainment.

To analyze the years after 2015, we relied on the *National Population Projections, 2014-2060* from the U.S. Census Bureau to obtain population estimates by age and gender for nine age groups and separately by men and women through 2020.<sup>17</sup> These population projections were then adjusted to match BLS civilian population numbers. The employment-to-population ratios from December 2007 are then applied to each age and gender group and then aggregated to estimate potential employment through 2020. An adjustment to account for changes in education distribution was then applied to this projection to obtain potential employment for 2020 that is in line with potential employment through 2015.

The current employment was then subtracted from the potential employment in 2020 to calculate the number of jobs that needs to be added to get back on track by 2020. That gap was

then divided by the number of months remaining till 2020 (51), to derive the number of jobs that need to be added monthly to get back on the pre-recession job creation trend.

The required monthly payroll jobs number was derived by dividing the payroll employment from the Current Employment Statistics (September 2015) by total employment from the Current Population Survey (September 2015). Then that ratio (0.956) was applied to adjust estimated potential employment for 2020. The difference between the potential payroll employment in 2020 and current payroll employment was calculated and divided by the number of months remaining until 2020, to calculate monthly payroll jobs necessary to get back on trend.

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<sup>17</sup> The age and gender subsets are aggregated from the detailed single age year, race, sex, Hispanic origin population Census projection files, similar to the ones used by The Hamilton Project.

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