

Trinity University

Digital Commons @ Trinity

Economics Faculty Research

Economics Department

1-2019

Who's Affected by a \$15 Minimum Wage?

David A. Macpherson

Trinity University, dmacpher@trinity.edu

W. E. Even

Follow this and additional works at: https://digitalcommons.trinity.edu/econ_faculty

 Part of the [Economics Commons](#)

Repository Citation

MacPherson, D., & Even, W. (2019). Who's affected by a \$15 minimum wage? In L. Sigaud & M. Saltsman (Ed.), *Fighting \$15? An evaluation of the evidence and a case for caution* (pp. 19-30). Employment Policies Institute.

This Contribution to Book is brought to you for free and open access by the Economics Department at Digital Commons @ Trinity. It has been accepted for inclusion in Economics Faculty Research by an authorized administrator of Digital Commons @ Trinity. For more information, please contact jcostanz@trinity.edu.

CHAPTER 2:

WHO'S AFFECTED BY A \$15 MINIMUM WAGE?

DAVID MACPHERSON
TRINITY UNIVERSITY

WILLIAM EVEN
MIAMI UNIVERSITY

In 2015, the federal minimum wage was \$7.25 and the Bureau of Labor Statistics (BLS) reports that, of the 78.2 million workers aged 16 and older in the U.S. that were paid hourly rates, 870,000 were paid a wage of exactly \$7.25 per hour.⁵ Another 1.7 million hourly workers were paid wages below the federal minimum. In total, these 2.6 million workers made up 3.3 percent of all hourly workers in the U.S.

This chapter considers the history of the number of workers paid the minimum wage and projects how the landscape would change if the minimum wage were increased to \$15 in 2020. In particular, this chapter provides a description of the type and share of workers that were paid at or below the minimum wage over the past 20 years.

In contrast to the statistics provided annually by the BLS, this chapter estimates the share of workers at or below the federal minimum wage as well as the share at or below the relevant state minimum wage. Over the years, the number of states with a minimum wage above the federal minimum has risen. As we will show, this has led to a decrease in the fraction of workers at the federal minimum wage. Also, unlike the BLS figures, we describe the characteristics of workers at the minimum

wage that is relevant for their state of residence.

Our projections of the effect of a \$15 minimum wage in 2020 are rather startling. Assuming no job loss but modest wage growth between 2015 and 2020, we estimate that a \$15 minimum wage would cause the percentage of hourly workers paid the minimum wage to increase from 3.3 percent in 2015 to 44.0 percent in 2020. Clearly, a \$15 minimum wage would cause significant compression of the wage distribution among hourly workers.

Our analysis does not consider the detailed effects of a \$15 minimum wage increase on employment (see chapter 3 for a discussion of that topic), though an estimate following a methodology developed by the Congressional Budget Office suggests substantial job loss would occur.

DATA AND METHODS

Since 1995, the federal minimum wage has increased in nominal terms from \$4.25 to \$7.25. This increase was the result of five separate increases that occurred in 1996 (to \$4.75), 1997 (to \$5.15), and three consecutive \$0.70 increases in 2007, 2008, and 2009. There has been no change in the federal minimum wage since 2009.⁶

⁵The reports on the characteristics of minimum wage workers between 2002 and 2015 are available from the Bureau of Labor Statistics at <http://www.bls.gov/opub/reports/archive.htm>

⁶This chapter uses the Outgoing Rotation Groups of the Current Population Survey between 1995 and 2015 to estimate the number of hourly workers paid at or below the minimum wage. Unlike the BLS, we also estimate the fraction of hourly workers paid at or below the minimum wage applicable in the worker's state of residence. In addition, we compute the fraction of all wage and salary workers paid at or below the minimum wage. Wage and salary workers includes hourly workers as well as workers paid on a salary basis, but excludes self-employed workers. To estimate an hourly wage for salaried workers, we divide usual weekly earnings by usual weekly hours. We predict usual weekly hours for those workers who report variable hours.

Over the past 20 years, the number of states with a minimum wage exceeding the federal minimum has gradually risen. As shown in figure 1, in 1995, there were nine states that imposed a minimum wage above the federal level. This had risen to 30 states by 2007 and fell sharply to 15 in 2010 after the federal hikes between 2007 and 2009 surpassed many of the state laws. Since 2010, the number of states with a minimum above the federal minimum has returned to its earlier peak of 30.

Figure 1 also shows the percentage of workers that are employed in states with a minimum above the federal minimum. This peaked at nearly 70 percent in 2007 and then fell sharply after the federal hikes from 2007 to 2009. As the number of states with a minimum above the federal level rose since 2010, the percentage of workers employed in states with a minimum above the federal minimum stood at approximately 60 percent in 2015. This is in stark contrast to the 10 percent of workers that were employed in states with a minimum above the fed-

eral level in 1995. The importance of state-specific laws has grown over time.

The consequence of federal and state laws on the overall level of the minimum wage is presented in figure 2. The federal minimum wage represents its value at the beginning of each year so that the July 2009 increase to \$7.25 doesn't appear in the graph until 2010. The state minimum wage is also measured at the beginning of each year and an employment weighted average is calculated across the states. A comparison of the average federal and state minimum wages shows that the gap between the two reached its peak of \$1.30 in 2007. After the 2007-2009 federal increases took effect, this disparity dropped to \$0.20 by 2010 but subsequently increased to \$0.70 in 2015.

As noted earlier, the BLS routinely provides updates on the characteristics of workers earning at or below the federal minimum wage. As the gap between federal and state minimum wages grows, the number of workers at

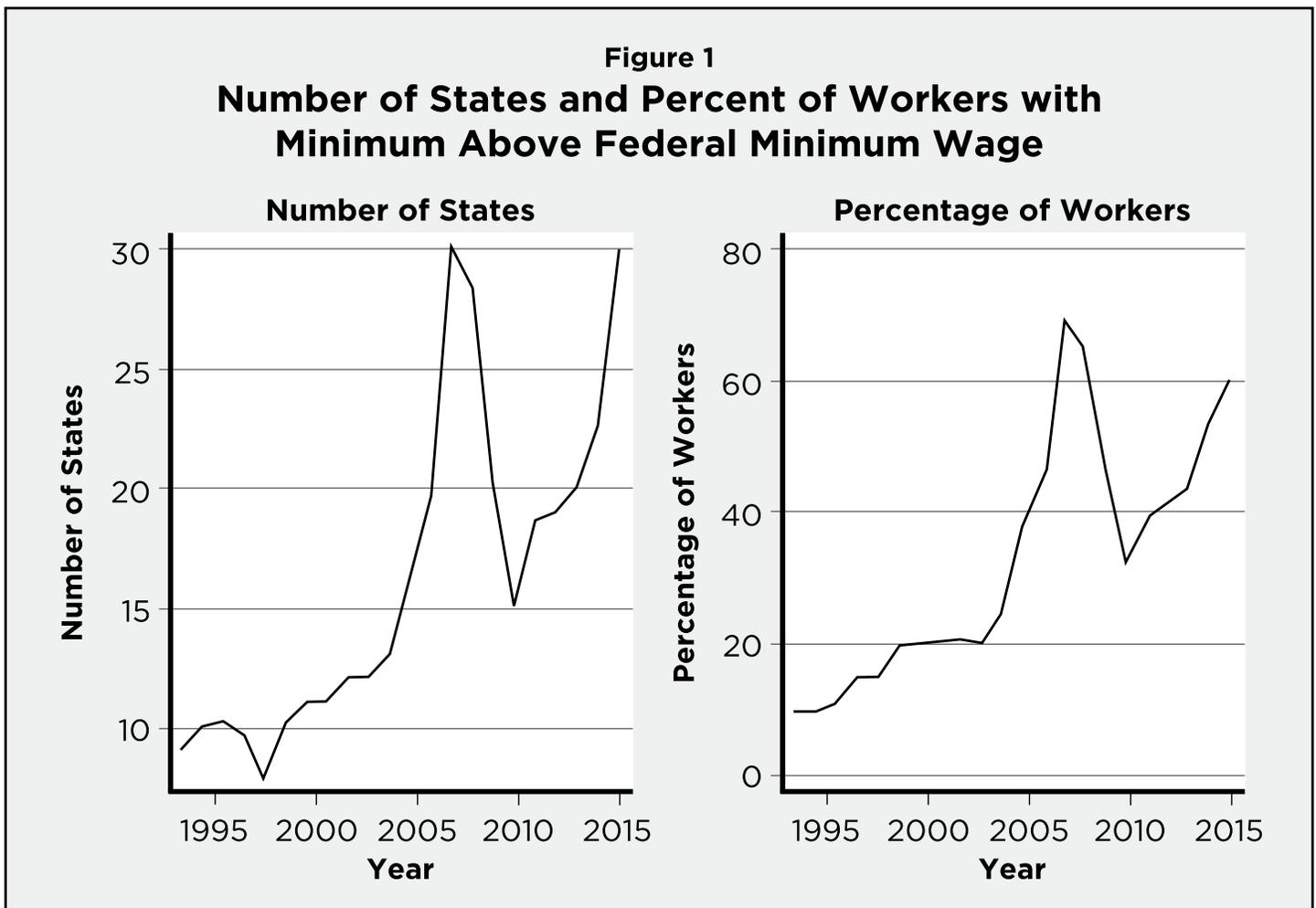
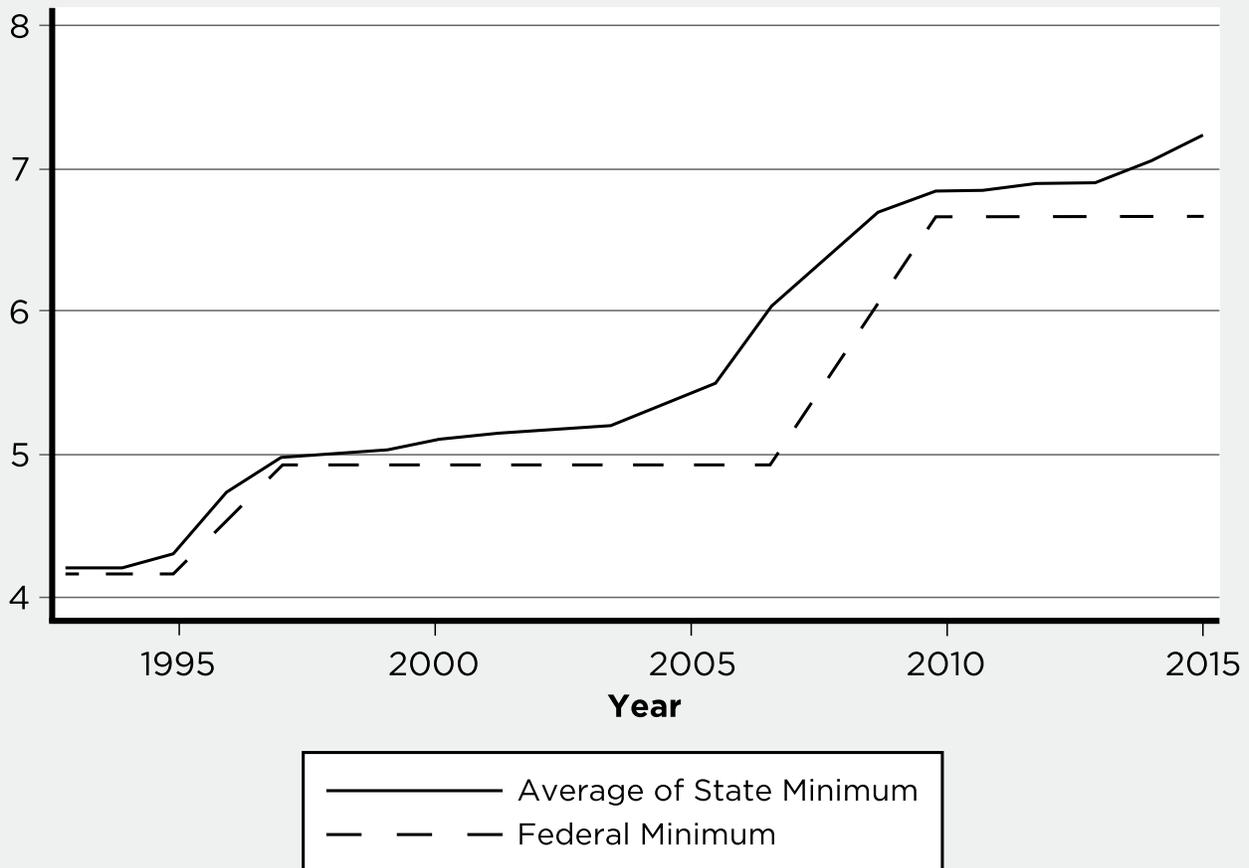


Figure 2
Federal and State Minimum Wages: 1994-2015



Average of state minimum is an employment weighted mean across states.
Minimum wages are averaged across the 12 months of the year.

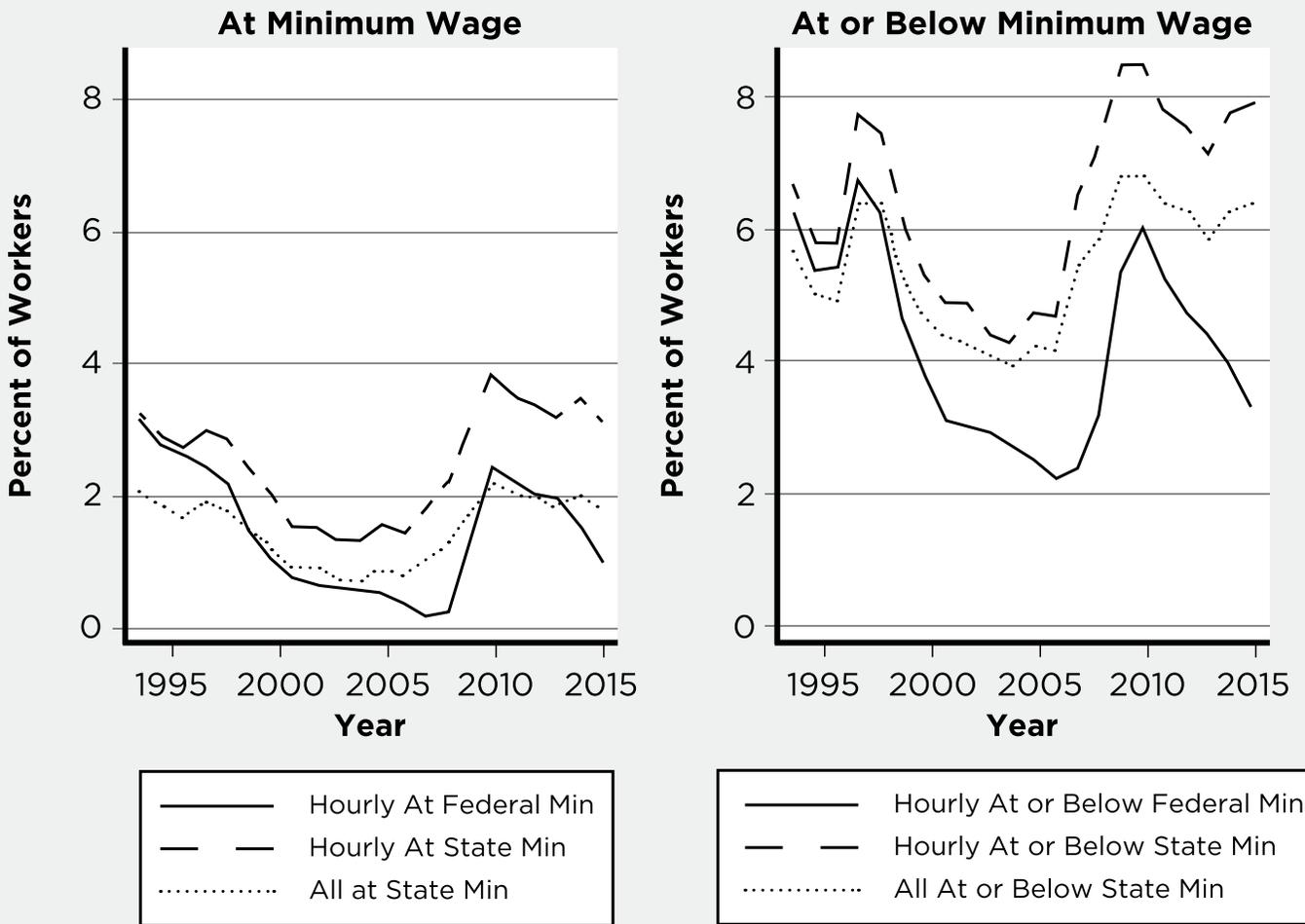
the federal minimum will shrink. Moreover, it is likely that many of the workers in states with a minimum wage above the federal minimum would earn the federal minimum in the absence of their states' laws. For example, if the federal minimum is \$7.25 and a state has a minimum wage of \$8.00, many (but not all) of those earning \$8.00 in the state would earn \$7.25 without the state law.

Since the importance of state laws has varied over time, we think it is useful to compare estimates of the number of workers at the state and federal minimums to get a sense of the relative importance of the state laws over time. Also, unlike the BLS estimates, we provide separate estimates for hourly workers as well as wage and salary workers (i.e., all workers except the self-employed).

Figures 3 and 4 present estimates of the percentage and number of workers at the minimum wage and at or below the minimum wage. Separate estimates are provided based on whether the relevant minimum wage is the federal or the relevant state minimum, and for hourly workers only versus all wage and salary workers.

As of 2015, 1.1 percent of hourly workers were earning the federal minimum wage and 3.3 percent were earning a wage at or below the federal minimum. In contrast, 3.2 percent were earning the relevant state-specific minimum wage and 7.8 percent were at or below the minimum wage. If the universe of workers is expanded from hourly to all wage and salary workers, the percent at or below the minimum drops to 6.3 percent in 2015 because most non-hourly workers are not paid wages at

Figure 3
Percentage of Workers At or Below Minimum Wage



The state minimum wage is the greater of the federal or state minimum wage.
 Hourly refers to those workers paid by the hour. All includes both hourly and non-hourly workers, but excludes the self-employed.

or below the minimum.

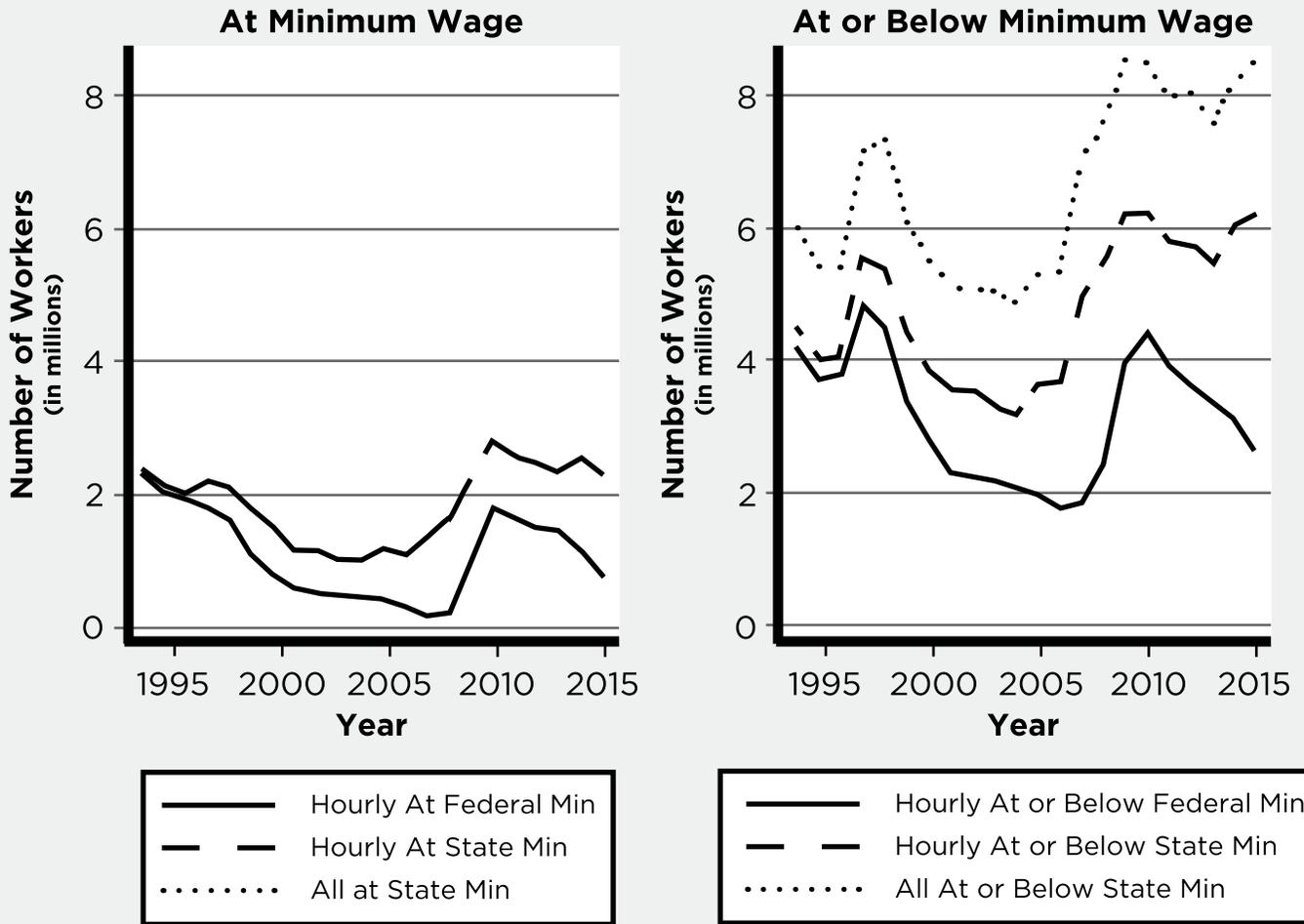
Over the past 20 years, the percent of hourly workers at or below the minimum has varied significantly. It fell from 1995 through 2007 as nominal wages generally grew and more states passed minimum wage increases that pushed workers above the federal minimum. When the federal minimum wage increased from \$5.15 to \$7.25 between 2007 and 2009, the percent of workers at the federal minimum rose to 2.5 percent by 2010 but steadily declined to 1.1 percent in 2015.

Overall, figures 3 and 4 illustrate several important points. First, the percent of workers earning the minimum wage tends to fall over time when the minimum

wage is held steady. This is partly due to the fact that nominal wages tend to rise over time. Second, when the federal minimum wage is increased, the percentage of workers at or below the minimum wage rises sharply. Third, the percent of workers at or below the minimum wage is quite sensitive to whether it is based on the federal minimum wage or the minimum wage that is relevant in each state. Over time, the importance of this difference has fluctuated as the number of states with a minimum wage above the federal minimum has varied.

Figure 5 shows the importance of the state minimum wage relative to the median wage in the economy compared to the percentage of workers at the state mini-

Figure 4
Number of Minimum Wage Workers



The minimum wage is the greater of the federal or state minimum wage. Hourly refers to those workers paid by the hour. All includes both hourly and non-hourly workers, but excludes the self-employed.

mum. The ratio of the minimum to the median wage is calculated by state and an employment weighted average is presented for all the states combined. The graph shows a strong relationship between the two variables. As either the federal or state minimum wage rises relative to the median wage in the economy, the percentage of workers at the minimum wage rises sharply.

Figure 6 shows that the percentage of workers at the minimum wage has always been higher among teenagers (age 16-19) than among older workers (age 25 and up). It also shows that, in the face of minimum wage hikes, the percent of teens earning the minimum wage rises much faster than it does for other groups. This is

to be expected since teens are much more likely to have wages that are clustered at low levels and more likely to be affected when the minimum wage increases. As an illustration, when the federal minimum wage rose from \$5.15 to \$7.25 between 2007 and 2009, the percentage of teens at the state-specific minimum rose by 8 percentage points (from 7.8 to 15.8 percent). On the other hand, the percentage of workers over age 25 earning the state-specific minimum wage rose by 0.7 percentage points (from 0.7 to 1.4 percent).

In 2015, 12.8 percent of teen workers were paid the state-specific minimum wage. For workers aged 25 and over, only 1.1 percent were at the state-specific mini-

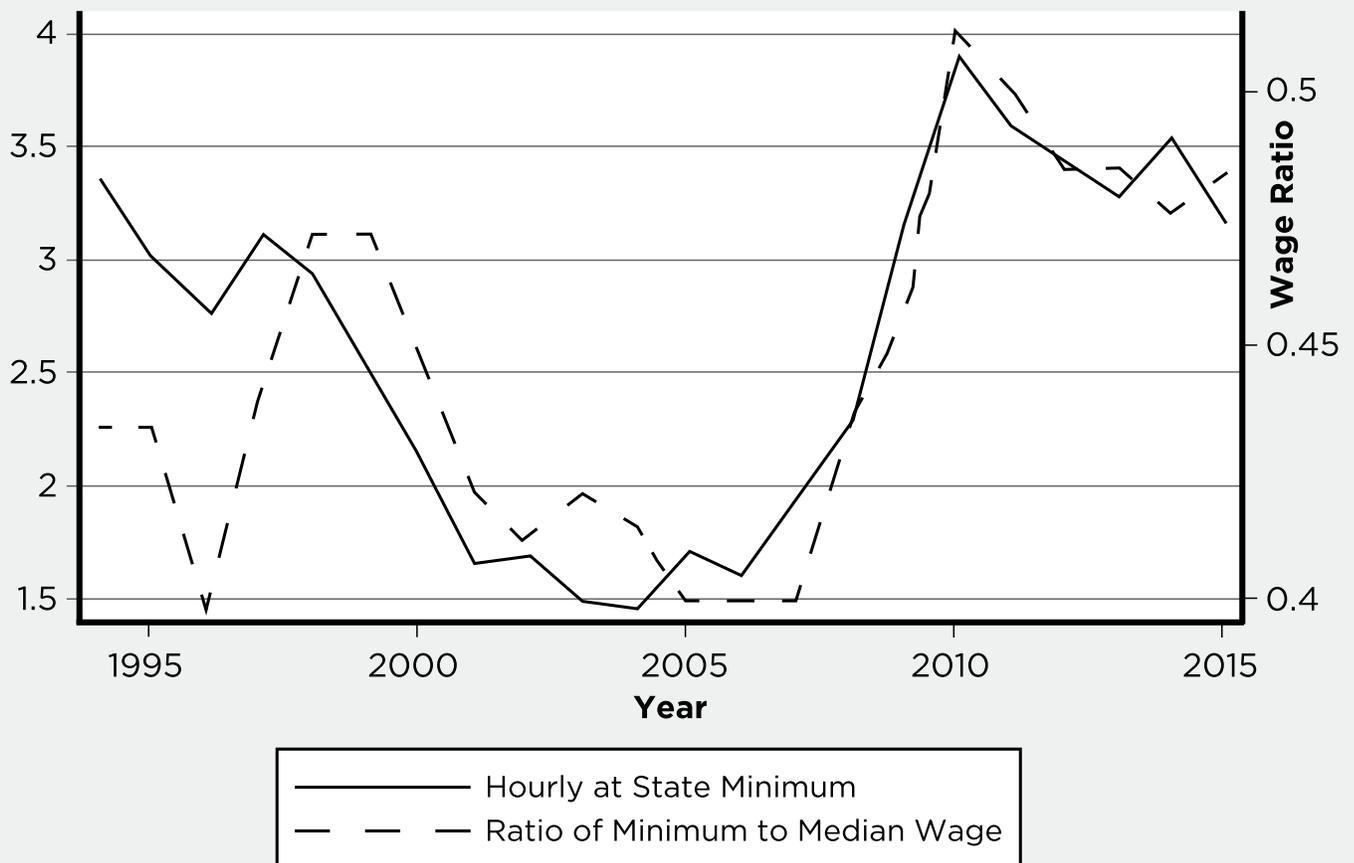
mum. Consequently, if the minimum wage is increased in all states, the fraction of workers impacted will be much higher among teen than adult workers. It is important to emphasize that this is a comparison of the *fraction* of workers affected, not the number. Teens represent a much smaller share of the work force than adults, so the *number* affected by a minimum wage hike is greater among adults than teens. We estimate that approximately 4 million teens would be affected by a minimum wage hike to \$15, whereas nearly 41 million workers over age 25 would be affected.

Figure 7 compares the percentage of workers at the state-specific minimum wage across race and Hispanic status. Over the 1995-2015 time period, white workers have generally (though not always) been the least likely to be earning the minimum wage. In 2015, the percentage of workers at the minimum wage was respectively

1.8, 2.0 and 2.5 for white, African-American, and other races. Hispanic workers are much more likely than any racial group to be earning the minimum wage. The percentage of workers earning the minimum wage has been substantially higher among Hispanics than other workers every year from 1995 and 2015. In 2015, 4.0 percent of Hispanic workers earned the state-specific minimum wage. This compares to 1.9 percent among all workers. Minimum wage hikes will therefore have a proportionately larger effect on the Hispanic population.

A breakdown of the percentage of workers earning the state-specific minimum wage by gender is given in figure 8. Over the 1995-2015 time period, women have always been more likely to be paid the minimum wage than men. The sex-difference in the share of minimum wage workers fell until the federal minimum wage hikes in 2007-2009 and has grown since then. As of 2015, the

Figure 5
Percentage of Hourly Workers at Minimum Wage vs. Ratio of minimum to Median Wage



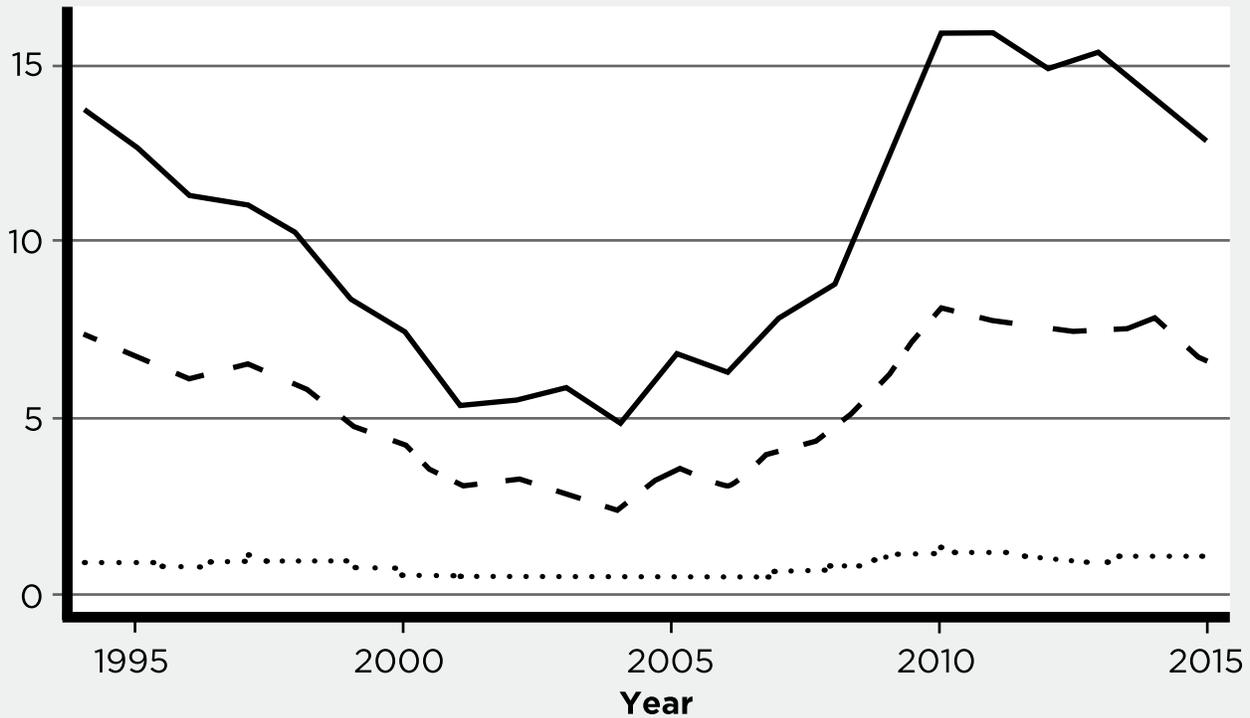
percentage of workers earning the state-specific minimum wage was 1.5 and 2.3 for men and women, respectively.

Figure 9 shows the percentage of workers earning the state-specific minimum wage for different education groups. Not surprisingly, the percentage earning the minimum is greatest among the least educated group: those with less than a high school diploma. As of 2015, the percentage of workers earning the minimum wage was 7.5 percent among workers with less than a high school diploma, 2.3 percent among those with a high school diploma, 2.0 among those with some college, and 0.3 percent among those with at least a bachelor's degree. Clearly, a minimum wage hike will have much larger effects on less educated workers.

The average family income of minimum wage

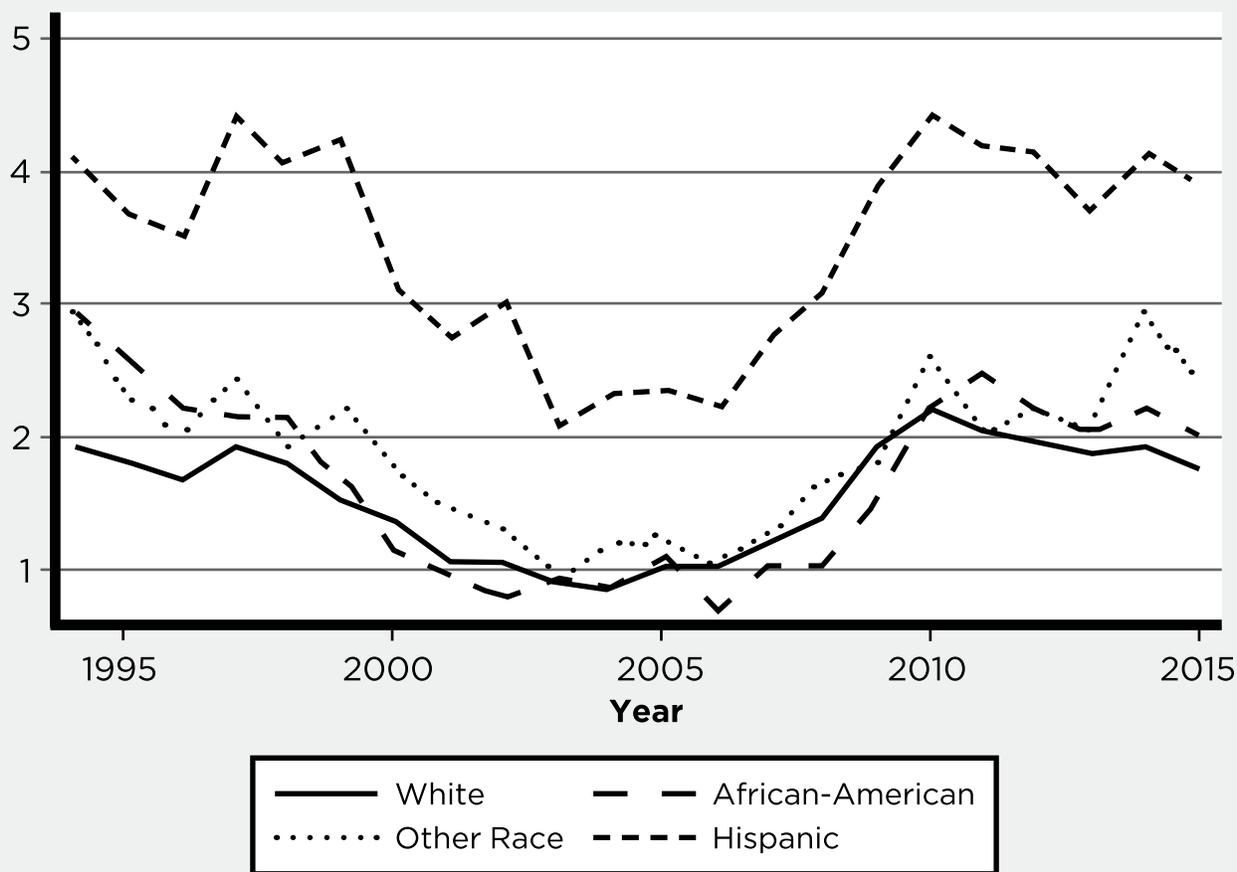
workers is compared to that for all workers in figure 10. While minimum wage workers are generally in families with lower than average incomes, after converting to 2015 dollars to remove the effect of inflation, the average family income of minimum wage workers has hovered around \$50,000 over the past 20 years. Despite the large changes in the real value of the minimum wage due to a combination of changes in federal and state laws, the average family income of the workers earning the minimum wage has been relatively constant. Finally, the share of workers paid the minimum wage by firm size is presented in figure 11. Since the monthly Current Population Survey (CPS) data does not report on a worker's firm size, we used the March Supplement to the CPS to calculate this variable. In the March data, hourly earnings are not reported, so we imputed an hour-

Figure 6
Percentage of Workers Earning Minimum Wage by Age Group



Minimum wage workers are those that earn the state-specific minimum wage.

Figure 7
Percentage of Workers Earning
Minimum Wage by Race and Hispanic Status



Minimum wage workers are those that earn the state-specific minimum wage.

ly wage by dividing weekly earnings by weekly hours. We defined a worker as earning the minimum wage if their imputed wage was within 25¢ of the minimum.

The firm size results reveal that workers at small firms are more likely to be paid the minimum wage than workers at large or medium-sized firms. As of 2015, the percentage of workers earning the state-specific minimum wage was 2.6, 2.4, and 1.5 for firms with 1-9, 10-99, and 100 or more workers, respectively.

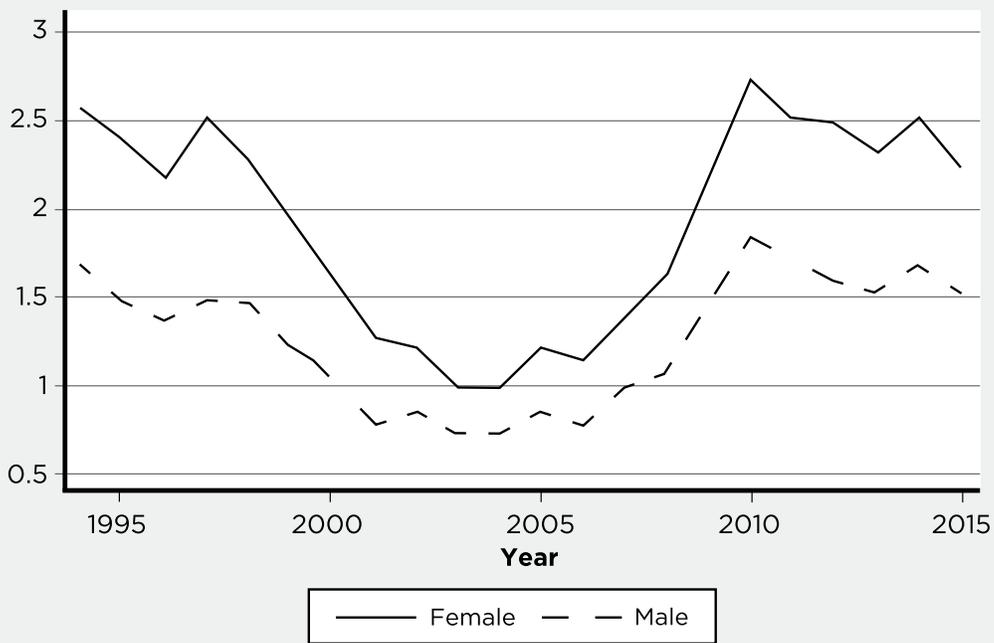
In sum, the extent to which the minimum wage “binds”, as measured by the percentage of workers that earn the minimum wage, has varied significantly over time. Generally speaking, when the federal and state minimum wages were held steady, the percentage of workers earning the minimum wage fell as wage growth in the economy pushed many workers above the mini-

imum wage. The importance of state-specific laws has been rising over the past 20 years, but the trend was reversed by the federal hikes from \$5.15 to \$7.25 between 2007 and 2009 that pushed the federal minimum above many state minimums. Since 2010, states have passed a series of minimum wage increases that pushed the importance of states laws close to the peaks realized prior to the federal hikes that began in 2007.

THE EFFECT OF A \$15 MINIMUM WAGE IN 2020

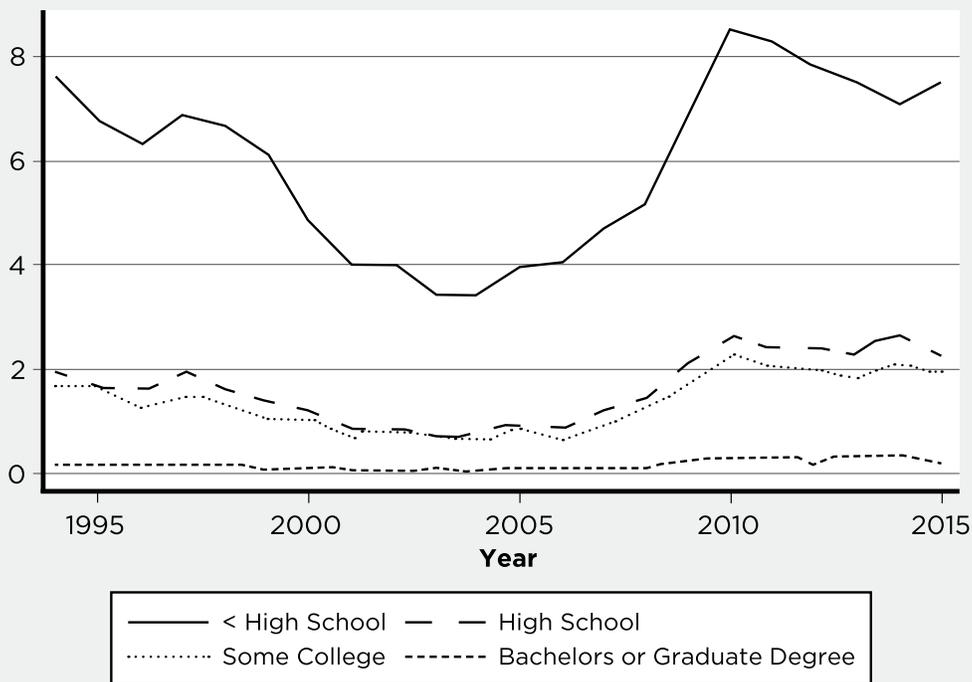
To illustrate the dramatic impact a \$15 minimum wage would have on the American economy, this section provides a comparison of the number and characteristics of minimum wage workers given the current laws in 2015 versus our projections for 2020. To project the number and characteristics of minimum wage workers

Figure 8
Percentage of Workers Earning Minimum Wage by Gender



Number of workers with a wage equal to state-specific minimum wage

Figure 9
Percentage of Workers Earning Minimum Wage by Education



Number of workers with a wage equal to state-specific minimum wage.

Figure 10
Average Family Income of Workers
by Minimum Wage Status

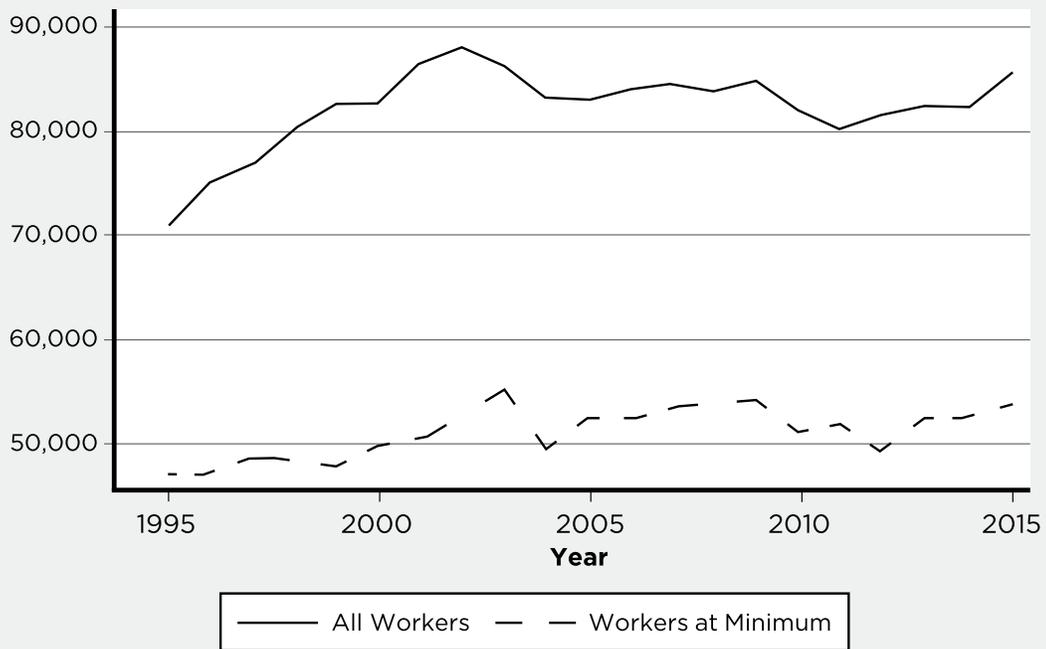
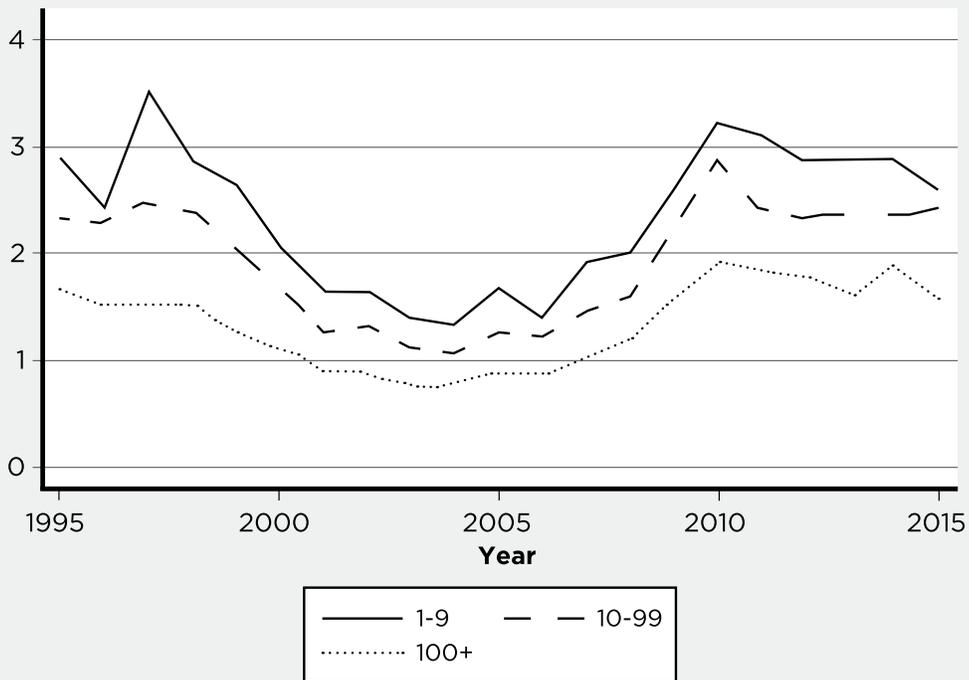


Figure 11
Percentage of Workers Earning
Minimum Wage by Employer Size



Number of workers with a wage equal to state-specific minimum wage.

CHAPTER 2: WHO'S AFFECTED BY A \$15 MINIMUM WAGE?

in 2020, we start with the 2015 Current Population Survey (CPS). Consistent with projections from the Congressional Budget Office (CBO), we assume that the labor force will grow by 0.6% per year.

For each wage and salary worker, we estimate an hourly wage rate in 2015 using the same methods described in the prior section. We then assume that every worker's hourly wage rate grows by 3.1 percent annually based on economic projections from the CBO for 2015-2020. For each state, we estimate the minimum wage that would exist in 2020 based on laws in effect in 2016, including legislated increases for the future. For states that index the minimum wage for inflation, we assume 2.1 percent annual inflation to forecast the growth of the minimum wage between 2016 and 2020.⁷

To account for the fact that some workers' wages will be increased due to minimum wage hikes, any worker whose wage was at or above the 2015 minimum wage but below the 2020 minimum has their wage rate increased to the 2020 minimum. For example, if a state's minimum wage was \$9 in 2015 and is projected to grow to \$12 by 2020, anyone who had a wage above \$9 in 2015 and has a projected wage below \$12 by 2020 would have their projected wage increased to \$12 in 2020.

For workers who earned below the minimum wage in 2015 who are still predicted to earn below the projected minimum for 2020 after adding wage growth, we increase their hourly wage by the projected increase in the minimum wage between 2015 and 2020. For example, if a state has a minimum of \$9 in 2015 that is projected to grow to \$12 by 2020, a worker who had an \$8 wage in 2015 (\$1 below the minimum) has their projected wage for 2020 increased to \$11.00 (\$1 below the 2020 minimum).

Using the above methods, we can compare the pool of workers at or below the minimum wage in 2015 based on the current legislation to our projections for 2020 if there was a federal increase to \$15. For simplicity, our analysis assumes that the minimum wage would cause no job loss. Table 1 (see Appendix A) provides estimates of the percentage of workers earning the minimum, and earning the minimum wage or less in 2015 and 2020. Separate estimates are provided for hourly workers and for all wage and salary workers (which excludes the self-employed). The table also presents separate estimates for each state along with the state-specific minimum wage in 2015 and the projection for 2020 based on

legislation passed by July 2016.

For the U.S. as whole, we estimate that the percentage of hourly workers at the minimum wage would grow from 3.3 to 43.9 percent if the minimum wage was increased from 2015 values to a \$15 minimum in 2020. For wage and salary workers, we estimate the percentage earning the minimum wage would grow from 1.9 to 30.3 percent. The percent of hourly workers at the minimum wage would be over 10 times higher than the 20 year peak of 3.9 percent realized in 2010. A \$15 minimum wage would be epic in terms of the percentage of workers that would be affected.

Not surprisingly, our projection of the percentage of workers that would be earning the \$15 minimum wage varies substantially across the states. In the case of hourly workers, the percentage projected to be at a \$15 minimum ranges from a low of 30.3 percent in Washington D.C. to a high of 52.2 percent in Mississippi.

Table 2 (see Appendix A) provides a comparison of the percentage of workers at the minimum wage by demographic group in 2015 versus what is projected for 2020 with a \$15 minimum wage. The statistics reveal which workers are most likely to be affected by a \$15 minimum. For some demographic groups, more than half of wage and salary workers would be earning the minimum wage. For example, with a \$15 minimum wage, we project that 86.3 percent of 16-19 year olds and 62.2 percent of 20-24 year olds would earn the minimum wage. We also estimate that 67.8 percent of wage and salary workers with some high school (but no diploma) would earn the minimum wage. Retail trade and the arts, entertainment, recreation, accommodations and food services industry would have 52.4 and 59.9 percent of workers earning the minimum wage, respectively. The data also show that the percentage of wage and salary workers at a \$15 minimum wage would be much higher among small firms than among larger firms.

Table 3 (see Appendix A) shows the average family income of workers who would earn the minimum wage in 2015 versus our projections for 2020. It is important to point out that we do not adjust family income for any effects that the minimum wage would have on family income in our projections. The changes in family income are driven entirely by changes in the group of workers that would be at the minimum wage, not the minimum wage increase itself.

The figures show that family income (average and

⁷Our estimates ignore city specific minimum wage laws because of the difficulty in identifying the geographic boundaries relevant to the city laws in the CPS data.

median) is higher among workers that are paid wages above the minimum than among workers that are paid the minimum. Also, an increase in the minimum wage to \$15 would create a group of workers at the minimum wage from higher income families. As the minimum wage is increased, its rewards generally go to newly affected workers from higher income families.

All of our analysis to this point assumes that a \$15 minimum wage will not cause any job loss. While the extent or existence of job loss is a controversial subject, the Congressional Budget Office reviewed the wide range of studies on the subject and concluded that there would be job loss from a minimum wage hike. Using the CBO assumptions regarding employment losses from a minimum wage hike, we estimated the potential job loss from a hike to \$15 beginning in 2020 is approximately two million jobs. This estimate used the same employment elasticities assumed by the CBO and allows for CBO projections of wage and employment growth between 2015 and 2020. It also factors in state minimum wage increases that will occur due to existing legislation, including increases in 2020. An increase to \$15 phased in between 2020 and 2026, as has been proposed in Congress, would reduce employment by roughly 850,000 jobs--given natural wage growth, as well as states that will have independently raised their minimum wages to \$15 prior to 2026.⁸

CONCLUSION

In this chapter, we described the characteristics of minimum wage workers over the past 20 years and projected the impact of a \$15 minimum in 2020. The evidence shows that the importance of the federal minimum wage has gradually waned as many states have passed minimum wage increases that exceed the federal level. As of 2015, nearly 60 percent of workers were employed in one of the 30 states with a minimum wage above the federal minimum. As of 2015, only 1.1 percent of hourly workers earned the federal minimum wage, but 3.1 percent earned the relevant state minimum.

If the federal minimum wage rises to \$15 in 2020, we project that the percentage of hourly workers earning the minimum wage would approach 44 percent. The percentage of all wage and salary workers at the minimum is projected to reach 30 percent. Keep in mind that this compares to a range of approximately 1.5 to 4 percent of hourly workers at the minimum over the past 20 years. A \$15 minimum wage would create a seismic shift in the share of workers at the minimum wage. Our estimates assume no job loss and therefore are likely to overstate the percentage of workers that would be at the minimum wage. Given the magnitude of the wage increases for many workers, it is difficult to project the size of the job loss since the U.S. has never experienced a minimum wage increase that reaches this high into the wage distribution and affects so many workers and employers.

Our analysis also shows how the effect of a \$15 minimum would differ across demographic groups. As expected, less educated and younger workers would be impacted more than older workers with more education. Also, female, Hispanic, and African American workers would be impacted more. For example, assuming no job loss, we project that nearly 9 out of 10 teenagers (aged 16 to 19) would be earning the minimum wage if it increased to \$15 in 2020. We also project that over half of black and Hispanic hourly workers would earn the minimum wage, as would nearly half of all hourly female workers. The U.S. economy has never come close to this high a fraction of workers at the minimum wage. With such a large fraction of workers at the minimum wage, one must wonder how it would affect work incentives. With such a large increase in labor costs, it will be difficult for employers to differentially reward its more productive workers with higher wages. One might also be concerned that the returns to a college degree would be reduced, at least in terms of the wage increase that a college degree brings. Instead, the college degree's return may come entirely from the ability to get a job, since many low skill workers will be priced out of the labor market.

⁸The estimates rely on CPS data from 12/2017 through 11/2018 (the most recent 12 months of data). The projected minimum wage for each state is based on current law (provided by EPI) and adjustment for states with indexing between 2019 and 2020. We use the CBO forecast of inflation for 2019 (2.2%) to adjust the 2019 minimum for a 2020 forecast. We use the CBO forecast of inflation for 2019-2026 (2.2%) to adjust the 2019 minimum for a 2026 forecast. We also assume that wages would grow by 3.4% in 2019 based on CBO projections for growth in Employment Cost index and employment would grow by 0.6%. It's worth noting that our analysis does not account for city-specific minimum wages. To the extent that city-minimums exceed state minimums, our estimates of employment loss will overstate the true employment loss, with the caveat that those jobs may instead be lost independent of this estimate.