

# ISSUE BRIEF

No. 4596 | JULY 26, 2016

## Raising Minimum Starting Wages to \$15 per Hour Would Eliminate Seven Million Jobs

James Sherk

Prominent Members of Congress have proposed raising the minimum wage to \$15 per hour, more than doubling the federal minimum wage. States with lower costs of living would see an even greater real increase. At the state level, the minimum wage would cover one-third of wage and salary workers. The new minimum-wage legislation, including payroll taxes and the employer mandate, would increase the minimum cost of hiring a full-time worker to \$18.61 per hour.

Businesses would respond to these higher labor costs by reducing employment of affected workers by over one-sixth, thus eliminating approximately seven million full-time-equivalent (FTE) jobs by 2021. Forcing employers to pay starting wages of \$15 per hour would make many less skilled workers unemployable.

### Growing Support for \$15-an-Hour Starting Wages

A \$15-per-hour minimum wage was once a fringe idea. Politicians of every ideological stripe agreed that raising starting wages that high would eliminate too many job opportunities. Nonetheless, recent, union-backed campaigns have pushed the idea into the mainstream.

The California and New York legislatures recently passed bills raising minimum starting wages in their states to this level.<sup>1</sup> Several cities, including Washington, DC, have also passed \$15-per-hour minimum wages.

In Congress, Senator Bernie Sanders (I-VT) has introduced the Pay Workers a Living Wage Act, which would raise the federal minimum wage from \$7.25 per hour to \$15.00 per hour over four years.<sup>2</sup> Prominent Senators, including Assistant Minority Leader Dick Durbin (D-IL), have co-sponsored this bill. The Democratic Party has formally included a \$15-per-hour minimum starting wage in its 2016 campaign platform.<sup>3</sup>

Since the \$15-per-hour minimum wage was a fringe proposal, it received relatively little empirical examination. Economists widely agreed \$15 was too high, and instead examined smaller increases that actually had political support. This *Issue Brief* fills that gap, examining how a \$15-per-hour federal minimum wage would affect workers.

### Unprecedented Increase

If Congress passed the Pay Workers a Living Wage Act in 2017, the federal minimum wage would rise to \$15 by 2021 (equal to \$13.80 in 2016 dollars).<sup>4</sup> In contrast, adjusted for inflation, the federal minimum wage has never stood higher than \$8.55 per hour.<sup>5</sup> No state has increased starting wages above \$10.00 per hour. (The California and New York increases have not yet taken full effect.)<sup>6</sup> Raising minimum starting wages this high has no historical precedent.

Table 1 shows how raising the federal minimum wage to \$15 per hour in 2021 would directly affect one-third of wage and salary workers (44.9 mil-

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This paper, in its entirety, can be found at <http://report.heritage.org/ib4596>

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TABLE 1

## Workers Directly Affected by \$15/Hour Minimum Wage Proposal in 2021

Wage and salary workers (percent)	<b>33.1%</b>
Wage and salary hours worked (percent)	<b>28.2%</b>
Average wage increase necessary to comply with proposal	<b>27.4%</b>
Total number of workers affected (millions)	<b>44.9</b>
Full-time equivalent wage and salary jobs affected (millions)	<b>37.5</b>

**NOTE:** Calculations for wage and salary workers covered by the \$15/hour minimum wage exclude self-employed workers, who are not covered by minimum wage statutes. These figures also show the incremental effect of federal legislation net of state increases. If New York had not legislated a \$15/hour minimum wage this table would show an even larger impact.

**SOURCES:** Heritage Foundation calculations using data from the 2015 Current Population Survey-Outgoing Rotation Group and state minimum wage schedules. See Appendix for details.

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lion employees).<sup>7</sup> Lower-wage jobs are more likely to be part-time than higher-wage positions, so the increase would affect a somewhat smaller proportion (28.2 percent) of total hours worked in the economy. Those work hours still represent 37.5 million FTE jobs.<sup>8</sup> These numbers do not include “spillover effects” from near-minimum-wage employees getting raises to maintain pay differentials.

At the \$15-per-hour level, minimum starting wages would affect a greater proportion of workers than ever before. Chart 1 shows the proportion of workers directly affected by the minimum wage by state and year, along with average coverage across the U.S.<sup>9</sup> Federal and state minimum wages typically cover between 4 percent and 10 percent of the workforce. At present, 5.5 percent of workers across the U.S. make the minimum starting wage. In the late 1970s and early 1980s, the federal minimum wage briefly covered as many as one in five workers in some Southern states with low costs of living (Mississippi, Arkansas, and Alabama).

Chart 1 also shows how raising the minimum wage to \$15 per hour using the schedule proposed by Senator Sanders would bring it to cover one-third of the workforce.<sup>10</sup> The minimum wage has never

before come close to covering such a large share of workers. Whether expressed in real dollars or as a proportion of workers directly affected, no state has experienced minimum starting wages this high.

### Larger Impact in Areas with Lower Living Costs

A \$15 federal mandate would have a greater effect in states with lower costs of living. Employers in lower-cost areas generally pay lower wages, although those wages purchase more goods and services than they would in high-cost areas.<sup>11</sup> The federal minimum wage ignores these regional living cost differences. Thus, employers in Mississippi or Ohio would have to pay the same starting wages as employers in California or New York—even though those wages purchase considerably more goods and services in low-cost areas.

A federal minimum-wage increase disproportionately affects states with lower living costs. Map 1 shows the value of \$15 per hour, relative to living costs in the state with the highest living costs (Hawaii). As the map illustrates, living cost differences considerably affect effective wages. A minimum starting wage of \$15 per hour has similar purchasing power in high-cost states like Hawaii, New York, and California. However, it would take approximately \$20 per hour in Hawaii to purchase the same goods and services that \$15 per hour buys in low-cost states like South Dakota, Arkansas, or Alabama.

### Employer Costs Would Rise Above \$15

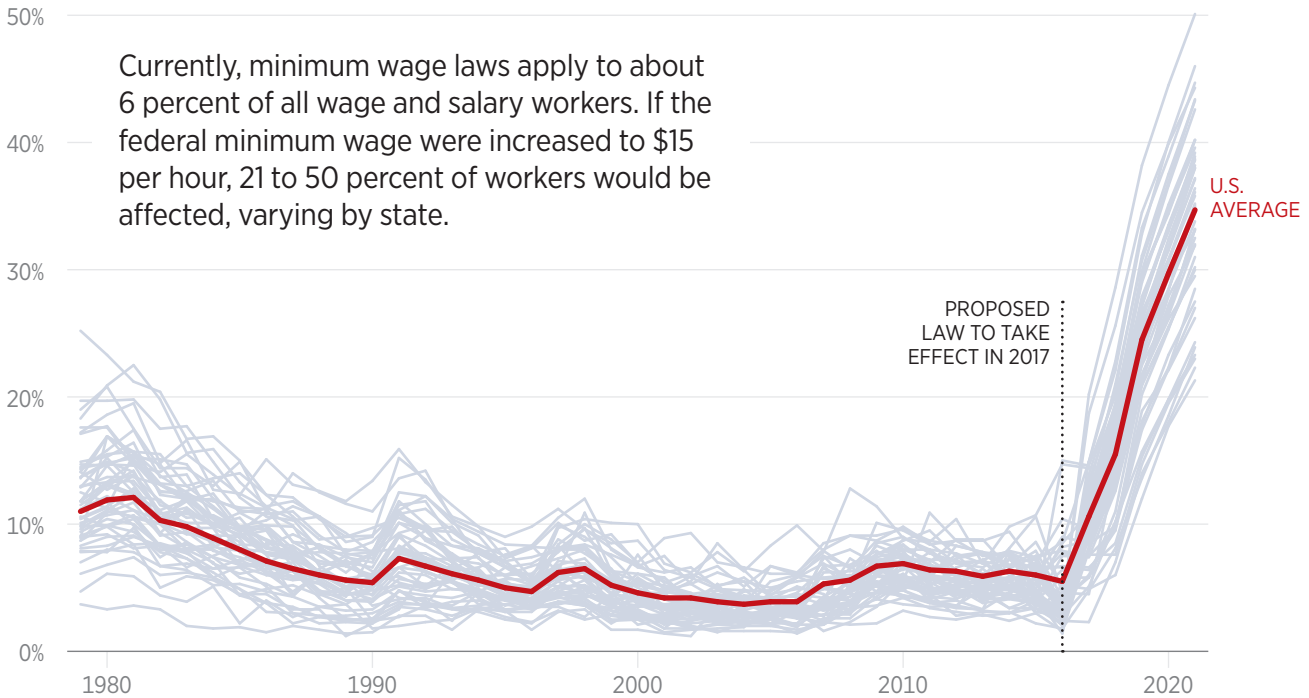
Raising minimum starting wages to \$15 per hour would actually raise hiring costs well above \$15 per hour. The Affordable Care Act (Obamacare) requires most employers with 50 or more employees to offer full-time workers qualifying health coverage.<sup>12</sup> Failing that, they must pay a per employee penalty (after the first 30 workers) out of after-tax dollars.<sup>13</sup> The penalty currently stands at \$2,160 per employee and is projected to rise to \$2,886 by 2021.<sup>14</sup> This equates to a \$4,731 increase in pre-tax payroll costs<sup>15</sup>—\$2.27 per hour for a full-time worker.<sup>16</sup>

These costs come on top of other government mandates. Businesses must also pay the employer share of payroll taxes and unemployment insurance (UI) taxes. Businesses normally defray these costs by reducing workers’ wages by an offsetting amount. However, employers cannot reduce the pay of minimum-wage employees, so they must pay these payroll costs themselves or forgo hiring.

CHART 1

## National Minimum Wage Law Would Cover One-Third of Workers

PERCENTAGE OF WORKERS AFFECTED BY MINIMUM WAGE, BY STATE



**SOURCES:** Heritage Foundation analysis of data from the National Bureau of Economic Research, Current Population Survey-Outgoing Rotation Group, 1979–2015; historical state and federal minimum wage rates; and the proposed minimum wage schedule in Pay Workers a Living Wage Act, S. 1832. See Appendix for details.

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Chart 2 shows the minimum costs of hiring a full-time worker in 2021 under current federal and state laws. Under current law minimum hiring costs will stand at \$12.84 per hour.<sup>17</sup> This includes the effect of states like California and New York raising their minimum wage, as well as payroll and UI taxes and the Obamacare mandate.

If Congress raises the federal minimum wage to \$15 per hour, minimum hiring costs will rise to \$18.61 per hour. That figure includes:

- \$15.00 for the minimum wage,
- \$0.19 in unemployment insurance taxes,
- \$1.15 in payroll taxes, and
- \$2.27 per hour in Obamacare penalties.

Government mandates add at least \$3.61 to employers' full-time hiring costs, although employees do not see those costs in their paychecks.

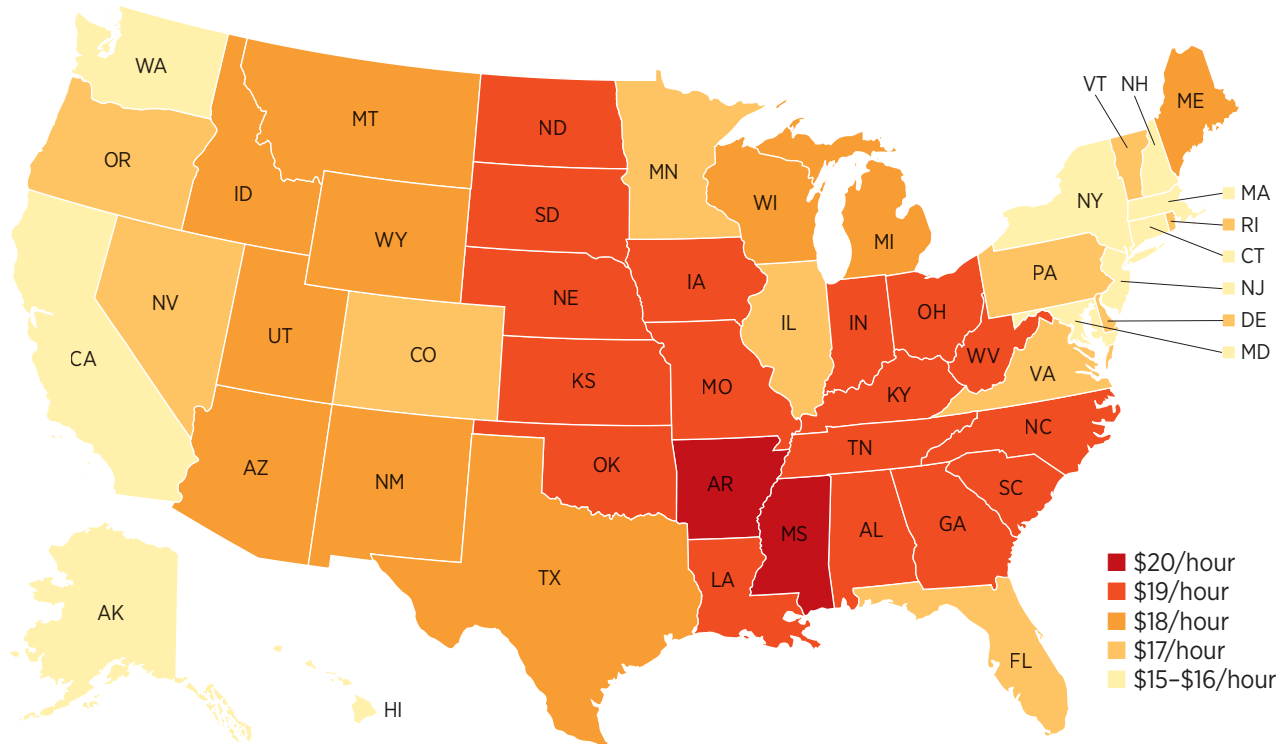
### Hurting Less Skilled Workers

Raising minimum starting wages to \$15.00 would badly hurt many workers. Companies hire workers when the additional earnings their labor creates exceeds the cost of employing them. Starting wages of \$15.00 per hour mean full-time employees must create at least \$38,700 a year in value for their employers. Such a high hurdle would make it much harder for less experienced and less skilled workers to find full-time jobs. Many of these workers are not yet productive enough to create that much value for their employers, and businesses will not hire them at a loss.

Moreover, Senator Sander's legislation does not establish lower starting wages for youth; it covers

MAP 1

## Minimum Wage Increase Would Have Greatest Effect on States with Lower Costs of Living



ESTIMATED VALUE OF \$15 PER HOUR RELATIVE TO STATE WITH HIGHEST COST OF LIVING (HAWAII)

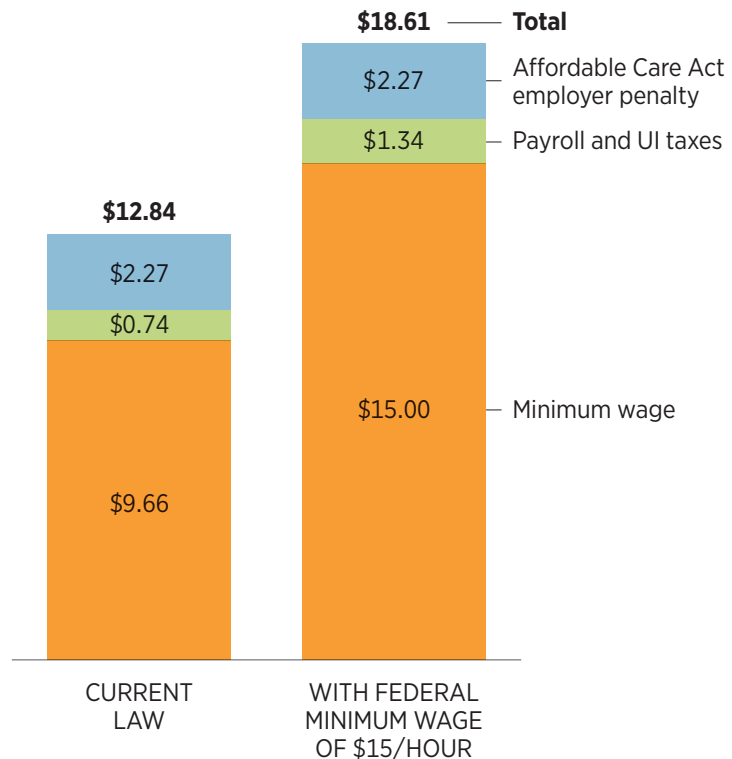
Alabama	\$19.95	Indiana	\$19.17	Nebraska	\$19.34	South Carolina	\$19.36
Alaska	\$16.58	Iowa	\$19.40	Nevada	\$17.93	South Dakota	\$19.91
Arizona	\$18.17	Kansas	\$19.32	New Hampshire	\$16.65	Tennessee	\$19.42
Arkansas	\$20.02	Kentucky	\$19.75	New Jersey	\$15.30	Texas	\$18.14
California	\$15.59	Louisiana	\$19.17	New Mexico	\$18.44	Utah	\$18.06
Colorado	\$17.18	Maine	\$18.04	New York	\$15.14	Vermont	\$17.31
Connecticut	\$16.10	Maryland	\$15.88	North Carolina	\$19.11	Virginia	\$17.08
Delaware	\$17.19	Massachusetts	\$16.36	North Dakota	\$19.15	Washington	\$16.88
Florida	\$17.68	Michigan	\$18.62	Ohio	\$19.62	West Virginia	\$19.71
Georgia	\$19.04	Minnesota	\$17.95	Oklahoma	\$19.45	Wisconsin	\$18.76
Hawaii	\$15.00	Mississippi	\$20.21	Oregon	\$17.70	Wyoming	\$18.21
Idaho	\$18.76	Missouri	\$19.60	Pennsylvania	\$17.84		
Illinois	\$17.40	Montana	\$18.60	Rhode Island	\$17.75		

**SOURCE:** Heritage Foundation calculations using data from the Bureau of Economic Analysis, “Real Personal Income for States and Metropolitan Areas, 2014,” July 7, 2016, [http://www.bea.gov/newsreleases/regional/rpp/rpp\\_newsrelease.htm](http://www.bea.gov/newsreleases/regional/rpp/rpp_newsrelease.htm) (accessed July 20, 2016).

CHART 2

## Minimum Wage Hike Would Significantly Increase the Cost of Employment

Under current law, the average minimum cost of employing a full-time worker will be \$12.84 per hour in 2021. If the federal minimum wage is increased to \$15 per hour, that cost would rise to \$18.61—a 45 percent increase.



**NOTE:** Figures are averages for rates across U.S. states, weighted by private-sector employment in each state. The current law estimates reflect state minimum wages set to take effect, such as New York state raising its minimum hourly wage to \$15.

**SOURCE:** Author's calculations using data on legislated 2021 minimum wage rates, Employment and Training Administration data on state UI taxes, and the projected employer penalty in 2021. See Appendix for details.

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everyone irrespective of age. This lack of distinction would make it particularly difficult for younger workers to find entry-level jobs. Most teenagers lack the skills necessary to produce over \$15 per hour in additional earnings for their employer.<sup>18</sup>

### Even Liberal Economists Agree \$15-an-Hour Mandate Hurts Workers

Raising starting wages to \$15 per hour has gained political support. However, even liberal economists widely agree it would hurt workers. Princeton economist Alan Krueger, the former Chair of President Obama's Council of Economic Advisers, explained that "a \$15-per-hour national minimum wage would put us in uncharted waters, and risk undesirable and unintended consequences.... [T]he push for a nationwide \$15 minimum wage strikes me as a risk not worth taking."<sup>19</sup>

Harry Holzer, a senior researcher affiliated with both the Brookings Institution and the Urban Institute, who previously served as the chief economist in the Labor Department under President Clinton, also opposes a \$15 minimum wage:

[S]uch increases are extremely risky. In job markets where young or less-educated workers already have difficulty finding jobs and gaining important work experience, such mandates will likely make it much harder.... Many employers will be very reluctant to pay high wages to workers whose skills—including the ability to speak English, in the case of many immigrants—are so modest.<sup>20</sup>

These views appear widespread among liberal economists, although many have kept quiet about

their reservations. Dylan Matthews, a writer for the liberal news site Vox.com, recently wrote he had observed “[o]ne really fascinating phenomenon: left-wing economists saying off the record that \$15/hr is super-dangerous, but not saying that publicly.”<sup>21</sup>

### **Wage Mandates Eliminate Jobs**

Economists have good reason for these reservations. If Congress passed a \$15 federal minimum wage, employers would have to increase affected workers’ wages by an average of 27.4 percent.<sup>22</sup> Additional raises are likely for workers currently making near \$15 per hour.<sup>23</sup> Quantifying the magnitude of these “spillover” effects, however, is highly subjective.<sup>24</sup> Wages will almost certainly increase more than the minimum necessary to comply with the law, but predicting how much more is difficult.

Increasing starting wages to \$15 per hour would eliminate jobs and reduce hiring. When a good or service becomes more expensive, consumers buy less of it. Employers react the same way when wages rise. If Congress raised minimum starting wages to \$15—and total hiring costs to \$18.61 per hour—businesses would respond by eliminating positions, cutting hours, and looking for new ways to implement labor-saving technology. Some companies might have to face shutting down or leaving America entirely to cope with the additional expenses.

In fact, that process has already begun in California. Shortly after Los Angeles raised its minimum wage to \$15 per hour, American Apparel eliminated 500 clothing manufacturing jobs in the city. *The Los Angeles Times* reports the company planned to relocate those jobs within California. After California raised minimum starting wages statewide, however, American Apparel began examining options to move production outside California.<sup>25</sup>

### **Seven Million Jobs Lost**

Existing minimum-wage studies shed little light on the total number of jobs a \$15 mandate would cost. Those studies examined much smaller minimum-wage increases that affected relatively few workers. Most of these studies look at just teenage employment or the restaurant sector—the only sec-

tors significantly impacted by the increase. They provide little guidance on the effects of a minimum wage covering one-third of the workforce.

However, economists have extensively studied how businesses respond to higher wages overall, not just minimum-wage increases.<sup>26</sup> On average these studies find a 10 percent increase in labor costs causes firms to reduce employment of less-skilled workers by 6.8 percent in the long run.<sup>27</sup> This is not a precise estimate—some studies find greater job losses, others find lower. This average does indicate, however, the approximate magnitude of job losses that occur when labor costs rise.

These studies imply that if Congress raised starting wages to \$15 employers would reduce employment of affected workers by approximately 19 percent.<sup>28</sup> That represents about 6.9 million fewer FTE jobs in the U.S. by 2021.<sup>29</sup> These job losses come on top of jobs lost by state-level minimum-wage increases. The Pay Americans a Living Wage Act would prevent seven million workers from getting paid anything.

### **Conclusion**

Raising minimum wages to \$15 per hour has quickly gone from a fringe idea to a serious policy proposal. Such an increase would bring the federal minimum wage into uncharted territory. At that level, the minimum wage would cover one-third of the U.S. workforce—37.5 million FTE jobs. The increase would have particularly large effects on states with lower costs of living. Including the cost of mandatory employer taxes, minimum hiring costs for a full-time worker would rise to \$18.61 per hour.

Such a large increase in starting wages would make it difficult for less skilled workers to find jobs. Employers will not pay workers more than the value they produce. Employers would respond by reducing employment of affected workers by approximately one-fifth, eliminating roughly seven million FTE jobs.

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## Appendix

### Table 1

The figures in Table 1 were calculated using Current Population Survey–Outgoing Rotation Group data from the National Bureau of Economic Research.<sup>30</sup> Hourly earnings for workers in the CPS–ORG data were calculated using the reported hourly wage of hourly workers, and dividing usual weekly earnings by usual hours worked for salaried workers. Hourly earnings of waiters in bars and restaurants were calculated using the same method as for salaried workers.<sup>31</sup> The author excluded imputed observations, as well as respondents with calculated hourly earnings below \$1 per hour or above \$200 per hour.<sup>32</sup>

CPS–ORG data show that between 2007 and 2015 median nominal wages for adult (25–59-year-old) workers in the U.S. grew 1.68 percent a year. The author used this inflation factor to convert \$15 per hour in 2021 into 2015 dollars (\$13.57 per hour).<sup>33</sup>

Estimated hourly earnings were then adjusted for future minimum-wage increases. Many states have legislated minimum-wage hikes that will take place over time, such as California and New York’s phased-in \$15 mandates. To account for this, the author calculated nominal minimum wages in each state in 2021.<sup>34</sup> The author used the 1.68 percent inflation factor to convert these nominal 2021 minimum-wage values into 2015 dollars. Reported hourly earnings for any worker in the 2015 CPS–ORG reporting less than their state’s 2021 minimum wage (in 2015 dollars) were replaced with the mandated minimum wage.

Table 1 displays the proportion of wage and salary workers in the 2015 CPS–ORG whose adjusted earnings are less than \$13.57 per hour (\$15 in 2021 dollars). This figure is 33.1 percent. This calculation treats agricultural workers as unaffected by the increase as the federal minimum wage does not cover them, and entirely excludes self-employed workers for the same reason. Any worker in a state with a minimum wage at \$15 per hour in 2021 (i.e., New York) is treated as unaffected as their adjusted earnings already stood at \$13.57 per hour. The same calculation was performed, weighting by hours worked, to estimate the total proportion of wage and salary work hours directly affected by a \$15-per-hour federal minimum wage: 28.2 percent.

To estimate the number of workers affected, the author projected U.S. employment in 2021. Between 2010 and the June 2016 payroll survey, employment grew an average of 1.39 percent a year. In June 2016, the payroll survey reported 151.1 million Americans had jobs. The author extrapolated that growth rate forward to estimate total U.S. employment of 161.9 million in 2021.

This estimate includes self-employed Americans not covered by the minimum wage. The calculations reported in Table 1 were re-estimated for all workers, including the self-employed. These calculations showed that a \$15 federal minimum wage in 2021 would affect 27.7 percent of all workers (including minimum-wage-exempt self-employed workers). Those workers work 24.1 percent of all hours in the economy. The author multiplied the 27.7 percent estimate by 161.9 million total workers in 2021 to estimate a federal increase would affect 44.9 million workers.

To estimate the number of FTE jobs lost the author calculated the ratio of FTE workers to total workers in the 2015 CPS–ORG: 96.0 percent.<sup>35</sup> The author multiplied that ratio by estimated 2021 total employment to estimate the U.S. economy will have 155.5 million FTE workers in 2021. This figure includes self-employed workers. This figure was multiplied by the 24.1 percent of all work hours (affected including self-employed hours) to conclude a \$15 federal mandate would affect 37.5 million FTE jobs.

The author also calculated the average amount affected workers’ adjusted base earnings (as described above) would have to rise to reach \$13.57 per hour in the 2015 CPS–ORG. Weighted by hours worked this figure was 27.4 percent. This figure is net of future state minimum-wage increases. For example, California will have a \$14-per-hour minimum wage in 2021. It will thus take a relatively smaller increase for California employers to come into compliance than employers in other states. The figure presented in Table 1 takes account of this fact and only shows the incremental effect of a federal increase, above and beyond already legislated state increases.

### 6.9 Million Jobs Lost

In their Appendix Table B-3 Lichter et al. (2009) report meta-regression estimates of the own-wage elasticity of labor demand that account for publica-

tion bias. The coefficients on these estimates imply an elasticity of  $-0.677$  for a study published in 2012 (the most recent year in their data) of long-run unconditional labor demand for low-skilled labor in the U.S., estimated using industry-level administrative panel data and a structural form model.<sup>36</sup>

Multiplying this long-run elasticity by the 27.4 percent wage increase necessary to comply with a \$15 mandate shows employers would reduce total labor demanded by  $-0.677 * 0.274 = 18.5$  percent.<sup>37</sup> That figure, multiplied by 37.5 million FTE jobs shows the Pay Americans a Living Wage Act would cause employers to eliminate approximately 6.9 million FTE jobs. These losses would take the form both of hour reductions and jobs lost. These figures represent the incremental effect of a federal increase over and above existing state minimum-wage increases.

### Chart 1

The author calculated Chart 1 using data on historical state minimum-wage rates and the 1979–2015 CPS–ORG. Hourly earnings were calculated as described for Table 1. For each year from 1979 to 2015, the author calculated the proportion of workers in each state making less than their state or federal minimum wage (whichever was binding).

Chart 1 also displays the average percent of workers directly covered by the minimum wage across all states. For 2016, the author used 2015 CPS–ORG data, but calculated nominal 2016 minimum wages in 2015 dollars (using the 1.68 percent inflation factor).

For 2017 to 2021 the analysis uses the minimum-wage schedule set out in the Pay Workers a Living Wage Act, assuming Congress passed it in 2017, or the relevant state minimum wage (whichever was greater). These figures are converted into 2015 dollars and calculated using the 2015 CPS–ORG.

### Map 1

Map 1 converts \$15 per hour nationally into living cost adjusted dollars that account for price differences across states. These relative wages are expressed relative to Hawaii, the state with the highest living cost in 2014. The author did this by dividing \$15 by the ratio of the Bureau of Economic Analysis' estimate of each state's regional price parity (RPP) value for all goods and services in 2014 and the RPP for all goods and services for Hawaii that year.

For example, Indiana had an RPP of 91.4 in 2014 while Hawaii's was 116.8. The author divided \$15 by

(91.4/116.8) to estimate a relative minimum wage of \$18.17 per hour in Indiana. This means that \$15 has the same purchasing power in Indiana that \$18.17 does in Hawaii.

An alternative measure of living costs comes from the Council for Community and Economic Research (C2ER). This report used RPP data instead of C2ER data for two reasons:

1. C2ER living-cost comparisons measure the prices of goods and services purchased by professional and managerial households in the top income quintile. They do not examine consumption baskets purchased by lower-income workers.
2. C2ER data measures housing costs by comparing new home purchase prices across cities. The RPP measures housing costs by comparing rental prices. Research finds that wages track living costs estimated using rental values much more closely than living costs estimated using home purchase prices.<sup>38</sup>

### Chart 2

The author calculated the minimum cost of hiring a full-time, full-year employee in each state in 2021 assuming no increase in the federal minimum wage but that state minimum wages take effect as currently legislated. For each state, the author took the legislated minimum wage in 2021 and added to it the 7.65 percent share of employer payroll taxes. Minimum wages indexed to inflation were calculated assuming 1.68 percent inflation each year indexing occurs.

To these amounts were added the prorated hourly cost of the Obamacare penalty (\$2.27 per hour) and the prorated hourly cost of UI taxes paid by a newly formed business hiring a full-time worker at the minimum wage in that state.

In states for which UI tax rates for new firms are calculated separately by industry, the average employer rate for the entire state was used. These proration calculations assumed a full-time worker puts in 2,080 hours a year. The national average was then calculated by taking the weighted average of these state-specific hourly costs, with the weights being each state's share of total employment between June 2015 and May 2016.

Calculating minimum hiring costs under a federal minimum wage of \$15 per hour proceeded



as above, except that every state was assigned a \$15.00-per-hour minimum wage. In these calculations the only differences between state hiring costs come from differences in UI tax rates and UI taxable wage bases.

This employer penalty is linked to the growth of health care premiums. Mercer LLC projects the employer penalty will rise to \$2,260 in 2017. This report projects the average annual growth rate between 2017's estimated penalty and the 2015 penalty forward to 2021.<sup>39</sup> Under these assumptions, the penalty will stand at \$2,886 in 2021. In pre-tax dollars that amounts to \$4,731, which prorates out to \$2.27 per hour over 2,080 hours a year.

## Endnotes

1. These state increases phase in over several years. The California increase will take full effect in 2023. The New York increase will take full effect in 2021, although depending on economic conditions the minimum wage in upstate New York may only rise to \$12.50.
2. Pay Workers a Living Wage Act, S. 1832, 114th Congress, 2nd Sess., <https://www.congress.gov/bill/114th-congress/senate-bill/1832> (accessed July 20, 2016).
3. News release, “\$15 Federal Minimum Wage Included in Democratic Platform,” Bernie Sanders for President Campaign, July 9, 2016, <https://berniesanders.com/15-federal-minimum-wage-included-democratic-platform/> (accessed July 20, 2016).
4. To maintain consistency with the empirical analysis presented later in this report, inflation for the years 2017–2021 is estimated using median nominal wage growth between 2007–2015, approximately 1.7 percentage points a year. This is slightly higher than the average rate of PCE inflation over this period, roughly 1.5 percentage points a year.
5. The minimum wage in 1968 averaged \$1.58 in nominal dollars, or \$8.55 per hour in 2016 dollars (inflation-adjusted with the PCE deflator). Note that the minimum wage rose from \$1.40 per hour to \$1.60 per hour in February 1968. The \$1.58 figure is the average rate for all of 1968.
6. Author’s calculations using data on historical state minimum wage rates and the PCE deflator. Both Massachusetts and California have state minimum wages of \$10.00 per hour in 2016. The next highest state minimum wage occurred in Alaska, whose 1979 minimum wage is equivalent to \$9.45 in 2016 dollars.
7. Author’s calculations using the 2015 The National Bureau of Economic Research Current Population Survey–Merged Outgoing Rotation Groups (CPS–ORG). See Appendix for details. Note that these numbers represent the incremental effect of a federal minimum wage increase. They are thus net of state minimum wages. Had New York State not passed a \$15 minimum wage, Table 1 would show an even larger effect of a federal increase.
8. Throughout this *Issue Brief*, FTE job calculations assume a full-time job is 40 hours a week. So, for example, two workers with 20-hour-a-week schedules would represent one FTE 40-hour-a-week job.
9. Chart 1 only examines state-level minimum wages back to 1979. This is because very few states raised their minimum wages above the federal level until the mid-1980s. Between 1974 and 1984, the only states with minimum wages above the federal rate were Alaska and Hawaii. Additionally, the CPS–ORG data used in the analysis in Chart 1 only goes back to 1979.
10. Note that the 2017–2021 projections in Chart 1 show the total number of workers directly affected by either state or federal minimum wages, while Table 1 looks only at the net effect of a federal increase, exclusive of state increases. Thus, Chart 1 shows a slightly greater proportion of workers affected by a \$15 mandate in 2021 (34.7 percent) than Table 1 does because it includes workers covered by New York and Washington, DC’s minimum-wage increases. See Appendix for details.
11. John Winters, “Wages and Prices: Are Workers Fully Compensated for Cost of Living Differences?” *Regional Science and Urban Economics*, Vol. 39, No. 5 (September 2009), pp. 632–643, [http://unionstats.gsu.edu/9220/Winters\\_RSUE\\_CityWagesPrices.pdf](http://unionstats.gsu.edu/9220/Winters_RSUE_CityWagesPrices.pdf) (accessed July 20, 2016).
12. Self-insured plans, large employer-sponsored group plans, and employer-sponsored plans that have been grandfathered will not be required to provide minimum essential health benefits.
13. This penalty only applies to workers eligible for federally subsidized premiums on the federal or state insurance exchanges, not to workers covered by the Medicaid expansion. However, most full-time workers making \$15 per hour would qualify for exchange coverage, not Medicaid.
14. See Appendix for details of this calculation.
15. The average combined state and federal corporate tax rate in the United States is 39 percent. Payroll costs are deductible from these taxes. Consequently, increasing payroll costs by \$4,731 reduces tax obligations by \$1,845 (0.39 \* \$4,731). The increase in payroll costs reduces after-tax earnings by \$2,886 (\$4,731 – \$1,845).
16. Paying the penalty is generally less expensive than providing qualifying health coverage, so it is the penalty—not the cost of health coverage—that affects minimum hiring costs.  
  
Full-time is here defined as 40 hours a week, 52 weeks a year. If the employee worked fewer weeks or hours, the prorated hourly cost would be higher.
17. See the Appendix for the details of these calculations.
18. Note that employers would not have to pay the Obamacare penalty for teenage employees working part time. They would only owe the UI and payroll taxes. Thus for part-time teenage workers, minimum hiring costs would rise only to \$16.34 per hour, not \$18.61.
19. Alan Krueger, “The Minimum Wage: How Much Is Too Much,” *The New York Times*, October 9, 2015, <http://www.nytimes.com/2015/10/11/opinion/sunday/the-minimum-wage-how-much-is-too-much.html> (accessed July 20, 2016).
20. Harry Holzer, “A \$15-hour Minimum Wage Could Harm America’s Poorest Workers,” *Fortune Magazine*, July 30, 2015, <http://www.brookings.edu/research/opinions/2015/07/15-dollar-minimum-wage-harm-economy-holzer> (accessed July 20, 2016).
21. Dylan Matthews, Twitter post, April 14, 2016, 6:31 p.m., <https://twitter.com/dylanmatt/status/720786520509165568> (accessed July 20, 2016).
22. Heritage Foundation analysis using data from the NBER 2015 CPS–ORG. This figure represents the percent increase in wages for all directly affected workers necessary to bring their wages up to \$15 per hour in 2021 dollars, weighted by total hours worked. This calculation excludes

employees in states, such as New York, which will have minimum wages already at \$15 in 2021. This figure also only looks at differences in wage costs and abstracts from benefits, taxes, and the Obamacare employer mandate.

23. This happens because employers want to reward more productive workers with pay that is above entry-level rates. For example, roughly a quarter of first-line supervisors of retail sales workers in Tennessee make less than \$15 per hour in 2021 dollars. (Heritage Analysis of May 2015 Occupational Employment Statistics data published by the Bureau of Labor Statistics. Note that \$15.00 in 2021 dollars is \$13.57 in 2015 dollars.) Paying these managers the same starting wages as the newly hired employees they supervise would eliminate the incentive to work harder.
24. Little empirical data exists to guide estimates of spillover effects so high up the income distribution. Some insight comes from Puerto Rico, which was covered by the federal minimum wage in the late 1970s—despite having much lower average wages. Puerto Rico’s experience suggests affected workers’ wages will tightly bunch around the new minimum.
25. Shan Li and Natalie Kitroeff, “California Minimum Wage Hike Hits L.A. Apparel Industry: ‘The Exodus Has Begun,’” *The Los Angeles Times*, April 15, 2016, <http://www.latimes.com/business/la-fi-garment-manufacturing-la-20160416-story.html> (accessed July 20, 2016).
26. Lichter et al. report a meta-analysis of economic research on the price elasticity of labor demand. See Andreas Lichter, Andreas Peichl, and Sebastian Siegloch, “The Own-wage Elasticity of Labor Demand: A Meta-regression Analysis,” *European Economic Review*, Elsevier, Vol. 80(C) (2015), pp. 94–119, <http://ftp.iza.org/dp7958.pdf> (accessed July 20, 2016).
27. Lichter et al. in Appendix Table B-3 report meta-regression estimates that account for publication bias. The coefficients on these estimates imply an elasticity of  $-0.677$  for long-run labor demand for unskilled workers. See Appendix for details.  

The author used a long-run labor demand elasticity estimate from Lichter et al. that accounts for publication bias. Estimates that do not account for publication bias tend to show a long-run elasticity closer to  $-1.0$ . See, for example, George Borjas, *Labor Economics*, 6th ed. (Columbus, OH: McGraw-Hill, 2013), Chapter 4: “The evidence also suggests that the estimates of the long-run labor demand elasticity cluster around  $-1$ , so the long-run labor demand curve is indeed more elastic than the short-run curve.” Had this analysis used the larger elasticity it would show even greater job losses.
28. This estimate comes from multiplying the elasticity of  $-0.677$  by the 27.4 percent increase in wages necessary to bring all affected workers into minimal compliance with the mandate. It does not account for job or hour losses caused by “spillover” raises above and beyond \$15 per hour. Consequently, these estimates should be taken as a lower bound of probable job losses.
29. Author’s calculations using data from the CPS-ORG. See Appendix for details.
30. Available online from the National Bureau of Economic Research at <http://www.nber.org/data/morg.html> (accessed July 20, 2016).
31. The reported hourly wage measure excludes tips, while tips are included in usual weekly earnings. Using reported hourly wages for hourly employees in heavily tipped occupation would systematically undercount their pay.
32. In many cases these outliers are the result of data errors, such as the interviewer reporting an individual works 4 hours a week instead of 40 hours a week. This would make a salaried employee who makes \$1,000 a week appear to make \$250 per hour instead of their actual hourly earnings of \$25 per hour.
33. Using nominal wage growth accounts for the fact that wages can be expected to grow above and beyond simple price inflation.
34. Some states have minimum wages that are, or will become, indexed to inflation. In all cases this report used the same 1.68 percent inflation factor to forecast the 2021 nominal value of inflation-indexed minimum wages.
35. This FTE calculation assumes a 40-hour workweek.
36. The author chose to focus on long-run labor demand of unskilled workers in the U.S. in the most recent period available because this is most directly relevant to examining a current minimum wage hike. In correspondence, Sebastian Siegloch (one of the co-authors of the Lichter et al. meta-analysis) explained that Lichter et al. found structural form models less susceptible to publication bias than reduced form models. Industry-level data was used in preference to firm-level data because employment may respond less strongly to an industry-wide wage hike that affects all competitors than an increase in labor costs at a single firm. Administrative data was used in preference to survey data because of its greater reliability. Panel data was chosen because it allows for more robust analysis.
37. The author used the increase in wage costs instead of the increase in total employment costs because the CPS-ORG does not contain the information necessary to calculate employer penalties under Obamacare. While the marginal penalty per affected employee is straightforward to calculate, this penalty is owed only if the employer does not provide qualifying coverage, at least one employee claims subsidized coverage on the exchanges, or ignores the first 30 covered employees. None of this can be reliably estimated from CPS-ORG responses.
38. See Winters, “Wages and Prices: Are Workers Fully Compensated for Cost of Living Differences?”
39. This annual growth rate is 6.3 percent.