IMPACTS OF INCREASING COLORADO’S MINIMUM WAGE

Prepared for
Common Sense Policy Roundtable

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## About the author

Eric Fruits, Ph.D. is president and chief economist at Economics International Corp., consulting firm specializing in economics, finance, and statistics. He is also an adjunct professor at Portland State University, where he teaches in the economics department and is the editor of the university’s real estate journal.

Dr. Fruits has been engaged by private and public sector clients, including state and local governments, to evaluate the economic and fiscal impacts of business activities and government policies. His economic analysis has been widely cited and has been published in *The Economist*, the *Wall Street Journal*, and *USA Today*. His research has been published in top-tier academic journals, such as the *Journal of Law and Economics* and the *Journal of Real Estate Research*. ■
Executive summary

Economics International Corp. has been retained by the Common Sense Policy Roundtable to evaluate ballot initiatives which would mandate steep increases to Colorado’s minimum wage. The minimum wage initiatives would raise the state’s minimum wage to $12.00 an hour by 2020 and increase the wage with inflation in subsequent years. Our research focuses on the effects on employment and income impacts as a result of a minimum wage increase. A statistical analysis finds the following impacts on Colorado employment and incomes:

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum Wage</th>
<th>Total Reduced Employment</th>
<th>Reduced Wage &amp; Salary Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Jobs    Percent</td>
<td>Income    Percent</td>
</tr>
<tr>
<td>2017</td>
<td>$9.30</td>
<td>7,000   0.3%</td>
<td>$258,000,000 0.2%</td>
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<td>2019</td>
<td>10.46</td>
<td>31,000  1.2%</td>
<td>1,212,000,000 0.7%</td>
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<tr>
<td>2020</td>
<td>12.00</td>
<td>52,000  2.0%</td>
<td>2,092,000,000 1.1%</td>
</tr>
<tr>
<td>2021</td>
<td>12.31</td>
<td>71,000  2.7%</td>
<td>2,989,000,000 1.5%</td>
</tr>
<tr>
<td>2022</td>
<td>12.65</td>
<td>90,000  3.3%</td>
<td>3,902,000,000 1.9%</td>
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</tbody>
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<table>
<thead>
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<th>Year</th>
<th>Minimum Wage</th>
<th>Reduced Teen Employment</th>
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Once fully phased-in, the minimum wage hikes under the initiative would reduce Colorado’s total employment by as much as 90,000. The reduced employment would result from some workers losing their jobs and some workers being unable to find a job. Some job losses would result from business closures and consolidation. Some workers may be discouraged by reduced employment opportunities and exit the labor force entirely.

Once fully phased-in, the minimum wage hikes would reduce teen employment by as much as 10,500. More than 1 in 6 Colorado residents between the ages of 16 and 19 are unemployed. A large number of teen workers save their earnings to fund their higher education costs. A reduction in employment opportunities for Colorado teens would likely lead to a higher student debt burden for students seeking higher education in the state.

The proposed minimum wage increases would reduce Colorado wage and salary incomes by as much as $3.9 billion a year. The reduced incomes would result from reduced employment and increased underemployment.

Reduced employment and smaller incomes resulting from a steep increase in the minimum wage are likely to increase poverty. An increase in the minimum wage will not benefit the unemployed and will worsen employment opportunities, thus contributing to a worsening poverty rate, especially in those areas with already high rates of unemployment and poverty.

While some employees would undoubtedly benefit from a higher minimum wage, most if not all of these income benefits would be offset by lost wages from reductions in employment and increased underemployment, particularly among young and low-skilled workers. Workers currently having the most difficulty finding jobs today would have even worse prospects if a large increase in the minimum wage went into effect. Consequently, a steep increase in the minimum wage would likely harm those Coloradans who need the most help with employment and income opportunities.
IMPACTS OF INCREASING COLORADO’S MINIMUM WAGE

ERIC FRUITS, PH.D.

Economics International Corp.

Economics International Corp. has been retained by the Common Sense Policy Roundtable to evaluate ballot initiatives which would mandate steep increases to Colorado’s minimum wage. The minimum wage initiatives would raise the state’s minimum wage to $12.00 an hour by 2020 and increase the wage with inflation in subsequent years. Our research focuses on the effects on employment and income as a result of a minimum wage increase.

Much of the academic empirical research supports the understanding that increased minimum wages are associated with reduced employment, with the working poor facing a disproportionate share of the job losses. Studies focusing on teenage employment are relatively consistent in finding that a 10 percent increase in the minimum wage would be associated with a 1 percent to 4 percent decrease in teenage employment. Research suggests that minimum wage impacts may take a year to affect employment. For example, researchers from UCLA and

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1 See, for example, Sabia, J. J. and Burkhauser, R. V. Minimum wages and poverty: Will a $9.50 federal minimum wage really help the working poor? Southern Economic Journal, 76(3), 562–623.
the Federal Reserve Board find that employed individuals who were affected by an increase in the minimum wage are less likely to be employed a year later.²

1 Unemployment is at the core of poverty

Poverty is clearly and directly linked to unemployment. Thus, any state policies—such as steep increases in the minimum wage—that increase unemployment are almost sure to increase poverty. On a global level, the United Nations has explicitly identified employment as central to poverty eradication.³ At the state level, in 2015, the Colorado Center on Law & Policy published a report concluding, “The surest route out of poverty is a well-paying job.”⁴ The report also concludes:

Low unemployment and a tight labor market is the surest route to income gains for most American households. And the benefits of a full employment economy accrue most significantly to historically disadvantaged groups of workers

Figure 1 shows for Colorado counties the relationship between the counties’ unemployment rates and the share of the counties’ population in poverty.⁵ The relationship shows that a 1.0 percentage point increase in unemployment is associated with a 0.9 percentage point increase in poverty. Contrast two counties in the figure: Huerfano County’s unemployment rate is 11.7 percentage points higher than Yuma County’s, while Huerfano’s poverty rate is 9.6 percentage points higher.

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Figure 1: More unemployment, more poverty in Colorado counties

![Scatter plot showing the relationship between poverty rate and unemployment rate across Colorado counties.](image)

Each point represents a Colorado county. The American Community Survey reports five-year averages for poverty and unemployment (2009 through 2014) for every Colorado county. For clarity, Crowley County is not displayed. Across Colorado counties, a 1.0 percentage point increase in unemployment is associated with a 0.9 percentage point increase in poverty.

Colorado is no different from the rest of the U.S. or the rest of the world: Unemployment and lack of employment lie at the core of poverty. Colorado’s high unemployment counties are also the state’s high poverty counties; Colorado’s high poverty counties are also the state’s high unemployment counties.\(^6\) Statewide, approximately two-thirds of those in poverty are not

employed—they are either unemployed or out of the labor force. In rural counties such as Otero and Conejos, three-quarters of individuals in poverty are out-of-work or have given up looking for work.

2 Youth unemployment

Unemployment among Colorado youth age 16 to 19 is about four times greater than the rate of the state as a whole. In 2015, the U.S. Bureau of Labor Statistics reports that 15 percent of Colorado’s 16–19 year olds were unemployed. In other words, roughly 1 in 6 Colorado teens wanted to work, but could not find a job.

It has been suggested youth have traded education for work experience—that they have opted to stay in high school or enroll in higher education instead of entering the workforce. The Census Bureau’s American Community Survey shows, however that in 2014, 1 in 10 teens enrolled in school wanted to work, but could not find a job. This observation debunks the notion that education and employment are substitutes. In fact, the large number of students seeking work demonstrates many youth want employment while they further their education.

Work experience is a key element to workforce development and individual advancement. The experience builds the critical thinking, problem-solving and basic work readiness skills required to become valued employees, advance along the career and income ladders, and become successful in life.

Youth unemployment has long-term consequences:

- The time young people spend unemployed is time not spent gaining on-the-job experience, making it harder for them to compete with experienced applicants.

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Helping teens find and be successful in their first work experiences could improve their long-term labor market outcomes.

Recent research finds that 1 in 6 working teens set aside half or more of their earnings to fund future education. These earnings reduce the amount borrowed to finance higher education and, in turn, reduce student debt.

The Congressional Budget Office estimated the impacts of an increase in the federal minimum wage associated with two proposals to raise the federal minimum wage. Their analysis found that youth employment had an elasticity of −0.075; in other words, a 10 percent increase in the minimum wage would reduce employment among teenage workers by three-quarters of one percent.

Research published by the National Bureau of Economic Research (NBER) finds the 30 percent increase in the average effective minimum wage over the late 2000s “reduced the national employment-to-population ratio—the share of adults with any kind of job—by 0.7 percentage point” between December 2006 and December 2012. This amounts to 14 percent of the total working-age decline during that period. In addition, minimum wage increases make it harder for low-income workers to climb the ladder to the middle class (emphasis added):

\[ \text{We find that binding minimum wage increases had significant, negative effects on the employment and income growth of targeted workers.} \]

Lost income reflects contributions from employment declines, increased probabilities of working without pay (i.e., an “internship” effect), and lost wage growth associated with reductions in experience accumulation.

We also present evidence of the minimum wage’s effects on low-skilled workers’ economic mobility. We find that binding minimum wage increases had significant, negative effects on the employment and income growth of targeted workers.
minimum wage increases significantly reduced the likelihood that low-skilled workers rose to what we characterize as lower middle class earnings. This curtailment of transitions into lower middle class earnings began to emerge roughly one year following initial declines in low wage employment. Reductions in upward mobility thus appear to follow reductions in access to opportunities for accumulating work experience.

This recent paper supports earlier NBER research that found “the best evidence still points to job loss from minimum wages for very low-skilled workers—in particular, for teens.” 13 In other words, reliable evidence indicates teens and other low-skilled workers are the most adversely affected by increases in the minimum wage.

3 Impacts of a steep rise in the minimum wage

In most families with a minimum wage earner, the worker at minimum wage is not the only source or even the primary source of family income. That is one reason why Census data report the average income for a Colorado family with a wage earner making $12 or less an hour is approximately $61,000 a year, or more than three times the federal poverty level for 2016 for a family of three. 14 In addition, a large portion of families in poverty have no one working. Thus, a minimum wage increase would do very little to improve the incomes of working families.

Proponents of steep increases in the minimum wage often cite the premise that “nobody who works full-time should have to live in poverty.” However, the U.S.

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Census Bureau reports only three percent of full time workers are below the poverty level.\(^{15}\)

Those proposing to increase the minimum wage have also pushed the notion that an increase in the minimum wage creates extra money in the economy that gets spent by wage earners who in turn spend the extra money, thereby boosting the economy. This notion misses the fact the money is not created, but diverted from elsewhere in the form of higher prices and lower incomes.

Researchers from the Federal Reserve have found that in response to a minimum wage increase, households benefitting from the increase spend more, but also take on more debt to buy durable goods—especially new cars. This provides a short-term boost that sputters out as incomes are diverted over time toward paying off the debt. The Fed’s researchers therefore found a minimum wage hike provides stimulus for a year or so, but “serves as a drag on the economy beyond that.”\(^ {16}\)

### 3.1 Employment impacts

Most academic empirical research supports the common sense understanding that increased minimum wages are associated with reduced employment, with the working poor facing a disproportionate share of the job losses.\(^ {17}\)

The Congressional Budget Office estimated the impacts of an increase in the federal minimum wage associated with two proposals to raise the federal minimum wage.\(^ {18}\) Their analysis found adult employment had a wage elasticity of \(-0.025\); in other words, a 10 percent increase in the minimum wage would reduce employment among adult workers by one quarter of one percent. CBO’s analysis is based on an increase in the federal minimum wage. Impacts of an

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individual state’s minimum wage are likely to be larger as many employers operate in a national labor market and can shift staffing across state lines.

A review of more than 400 estimates of employment supports the understanding that increased minimum wages are associated with reduced employment, with a median elasticity of $-0.05$. In other words, a 10 percent increase in the minimum wage would reduce employment and/or hours worked among adult workers by one half of one percent. That median may seem like a small number, but an increase from $8.31 an hour to $12 an hour (a 44 percent increase) would be associated with a 2.2 percent drop in employment and/or hours. Focusing on Colorado employment, that would amount to 57,600 fewer people working in the short run.

Studies focusing on teenage employment are relatively consistent in finding that a 10 percent increase in the minimum wage would be associated with a 1 percent to 4 percent decrease in teenage employment. Research suggests that minimum wage impacts may take a year to affect employment. For example, researchers from UCLA and the Federal Reserve Board find that employed individuals who were affected by an increase in the minimum wage are less likely to be employed a year later. In this way the long run impacts are expected to be larger than the short run impacts.

Regression analysis was performed in this study evaluating the impact of the federal minimum wage and Colorado’s minimum wage on the state’s employment. U.S. employment is included as an independent variable to account for macroeconomic factors that would affect national employment. Lagged Colorado employment is also included as an independent variable. Employment counts are from the U.S. Bureau of Labor Statistics. Forecasts of future U.S. employment are from IHS Global Insights. A similar analysis was applied to employment among 16 to 19 year olds, adding teen population as a control variable.

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The regression analysis spans all 50 states and the District of Columbia and the years 1974 to 2015. A panel spanning many states and years allows for variation across states and for variation over time within each state. As a result, it is possible to measure coefficients that more accurately demonstrate causation. More importantly, it allows for the calculation of state-specific effects of the minimum wage on employment.

### 3.1.1 Impacts on total employment

The regression analysis indicates a short run employment-versus-minimum-wage elasticity of $-0.03$, for the state of Colorado. For example, a 10 percent increase in the minimum wage in Colorado would reduce employment by approximately three-tenths of one percent in the short-run. Long-run elasticity is larger as the impacts compound over time. For example, in 2020, the initiatives would raise Colorado’s minimum wage to be 30 percent higher than under current law, while employment is projected to be 2 percent lower, indicating an elasticity of $-0.067$ over the phase-in period. This is in line with previous research, especially in light of the expectation that state-level minimum wage increases would have a bigger impact on state employment than changes to the federal minimum wage.

<table>
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<td>2022</td>
<td>12.65</td>
<td>90,000</td>
<td>3.3%</td>
</tr>
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</table>
As the minimum wage hikes work their way through the economy over time, the impacts continue. By 2020, Colorado’s minimum wage would be 30 percent higher than it would be under the existing minimum wage law and employment would be 52,000 lower. By 2022, reduced employment grows to 90,000.

The reduced employment would result from some workers losing their jobs and some workers being unable to find a job. Others may get discouraged by the reduced employment opportunities and exit the labor force.
In addition, a large rise in the minimum wage would trigger a “benefit cliff” in which some individuals would be better off out-of-work than they would be employed at the higher minimum wage.\footnote{Trotter, Jim. The “cliff effect” thwarts the working poor. Rocky Mountain PBS. August 8, 2013. http://inewsnetwork.org/series/losing-ground-the-cliff-effect/, accessed May 12, 2016.}

This is consistent with peer-reviewed research published in a top-tier economics journal finding that more than 20 percent of additional earnings from a minimum wage increase are taxed away as Social Security contributions and state and federal income taxes. As a result, the research concludes (emphasis added):\footnote{MaCurdy, T. How effective is the minimum wage at supporting the poor? \textit{Journal of Political Economy}, 123(2). April 2015.}

\begin{quote}
[t]he costs imposed by the minimum wage are paid in a way that is more regressive than a sales tax.
\end{quote}

### 3.1.2 Impacts on teen employment

The regression analysis indicates a short run elasticity for teen employment-versus-minimum-wage of $-0.20$ for the state of Colorado. For example, a 10 percent increase in the minimum wage in Colorado would reduce employment among 16–19 year olds by approximately 2 percent in the short-run. Long-run elasticity is larger as the impacts compound over time. For example, in 2020, the initiative would raise Colorado’s minimum wage to be 30 percent higher than under current law, while teen employment is projected to be 8 percent lower, indicating an elasticity of $-0.267$ over the phase-in period. This is in line with previous research.

As the minimum wage hikes work their way through the economy over time, the impacts continue. By 2020, Colorado’s minimum wage would be 30 percent higher than it would be under the existing minimum wage law and teen employment would be 8,000 lower. By 2022, reduced teen employment grows to 10,500.
Table 2:  Colorado employment impacts of higher minimum wage
Ages 16–19

<table>
<thead>
<tr>
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<td>10,500</td>
</tr>
</tbody>
</table>

3.2 Wage and salary income impacts

While a minimum wage increase will make some employees better off, those who lose their jobs or cannot find employment will be worse off. Indeed, it would be virtually impossible for the increased incomes associated with a steep increase in the minimum wage to offset the foregone incomes associated with reduced employment.

Regression analysis was performed in this study evaluating the impact of the federal minimum wage and Colorado’s minimum wage on the state’s wage and salary incomes. U.S. wage and salary income is included as an independent variable to account for macroeconomic factors that would affect incomes. Lagged Colorado wage and salary income is also included as an independent variable. Wage and salary incomes are reported by the U.S. Bureau of Economic Analysis. Forecasts of future U.S. wage and salary incomes are from IHS Global Insights.

The regression analysis spans all 50 states and the District of Columbia and the years 1974 to 2015. A panel spanning many states and years allows for variation across states and for variation over time within each state. As a result, it is possible to measure coefficients that more accurately demonstrate causation. More importantly, it allows for the calculation of state-specific effects of the minimum wage on wage and salary income.

The regression analysis indicates a wage-and-salary-versus-minimum-wage elasticity of –0.02. For example, a 10 percent increase in the minimum wage in
Colorado would reduce wage and salary incomes by approximately two-tenths of one percent.

By 2020, Colorado’s minimum wage would be 30 percent higher than it would be under the existing minimum wage law and wage and salary incomes in the state would be $2.1 billion lower. By 2022, wage and salary incomes would be $3.9 billion lower.

**Table 3: Colorado income impacts of higher minimum wage**

<table>
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<tr>
<th>Year</th>
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<th>Reduced Wage &amp; Salary Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>Percent</td>
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<td>$9.30</td>
<td>$258,000,000</td>
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<td>2022</td>
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<td>3,902,000,000</td>
</tr>
</tbody>
</table>

The reduced wage and salary incomes would result from:

- Some workers losing their jobs, some workers being unable to find a job, and some Colorado residents exiting the labor force. To the extent some businesses would close or consolidate locations, all of the employees would be displaced or otherwise affected—not just the employees working at minimum wage.

- A reduction in hours worked for some employees, with some full-time workers involuntarily transitioning to part-time work or underemployment.

- “Wage compression” in which a minimum wage increase results in newer and lesser skilled workers suddenly earning as much as employees with more skills or more experience. Research has found employers can respond to a minimum wage increase by cutting wages for other, higher-paid workers. One survey found that nearly half of employers faced with
a minimum-wage hike “would delay or limit pay raises/bonuses for more experienced employees.”

The Congressional Budget Office found that with an increase in the federal minimum wage, the increased earnings for some workers would be accompanied by reductions in real income for the people who became jobless because of the minimum-wage increase, for business owners, and for consumers facing higher prices.

In this way, the minimum wage increase takes income from one group of Colorado workers in order to benefit another group of Colorado workers, without increasing—and likely decreasing—total Colorado wage income. The statistical analysis finds that while some employees would see a modest increase in their annual salaries, tens of thousands of Coloradans would be unable to find employment. The income lost from those who are not working would be bigger than the bump in pay from those who are working.

4 Conclusion

It is well known and widely accepted that unemployment and underemployment are core sources of poverty. Decades of research conclude that higher mandated wage rates reduce employment. A steep increase in the minimum wage would have the worst impact on people already suffering most from a lack of jobs, a lack of full-time jobs, and families living in poverty.

• Once fully phased-in, the minimum wage hikes under the initiative would reduce Colorado employment by as much as 90,000. Teen employment would be reduced by as much as 10,500.

• The proposed minimum wage increases would reduce Colorado wage and salary incomes by as much as $3.9 billion a year.


While some employees would undoubtedly benefit from a higher minimum wage, most if not all of these income benefits would be offset by lost wages from reductions in employment and increased underemployment, particularly among young and low-skilled workers. Workers currently having the most difficulty finding jobs today would have even worse prospects with a large increase in the minimum wage. Consequently, a steep increase in the minimum wage would likely harm those Coloradans who need the most help with employment and income opportunities.
Sources


