

**Center for American Progress**



# ECONOMIC ANALYSIS

## Of The Arizona Minimum Wage Proposal

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## Economic Analysis of Arizona Minimum Wage Proposal

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# HIGHLIGHTS OF BASIC FINDINGS

## Economic Analysis of Arizona Minimum Wage Proposal

On the November 2006 ballot, citizens of Arizona will vote on a proposal to raise the statewide minimum wage to \$6.75 per hour. At present the federal minimum wage, which prevails in Arizona, is \$5.15 per hour. The measure also calls for tipped workers to receive a raise from the current federal mandate of \$2.13 to \$3.75 per hour. If Arizona voters approve this measure, the \$6.75 minimum will become law on January 1, 2007. Arizona will then become the 23rd state in the country to operate with a minimum wage above the federal minimum. The measure also includes an automatic cost-of-living adjustment, by which further raises in the statewide minimum wage would occur automatically at the national inflation rate.

### Motivation for Proposal

The federal minimum wage has fallen by nearly 40 percent from its peak in 1968 (in inflation-adjusted dollars) of \$8.98 per hour. At present, someone who works full-time for 52 weeks at the \$5.15 federal minimum would earn \$10,712 a year, an amount that is 32 percent below the 2005 federal poverty threshold for a family of three. Families experience real hardship when the working members of the family are employed at jobs paying close to the \$5.15 minimum wage. For example, nearly 30 percent of families with incomes at twice the poverty line or lower faced hardships such as missing meals, being evicted from their housing, having their utilities disconnected, or doubling up on housing.

This long-term decline in the minimum wage is also part of a larger pattern facing working people in the U.S. As of 2005, the average wage for non-supervisory workers was 9 percent lower than its peak in 1973. Even since George W. Bush took office in January 2001, the average wage for non-supervisory workers has grown by merely 1.6 percent, while the average productivity of workers has grown by more than 20 percent.

### Main Findings from Research

#### Net Effects: Workers and their Families Benefit while Costs are Modest

We estimate that a total of about 345,000 workers will receive wage increases through this measure. This is about 13 percent of Arizona's total workforce. Moreover, these workers, on average, live in families with two other people. This means that the beneficiaries of the wage increases will exceed 1 million people, including all family members—that is, about 17 percent of Arizona's total population of 5.9 million. The average net income gain for low-wage workers and their families will be between \$650 and 700 per year.

The total costs of these wage increases to private businesses in Arizona will be about \$312 million per year. This cost increase is equal to 0.08 percent of the total sales of these businesses, which was \$370 billion in 2005. The average business in Arizona would therefore have to increase its revenues by less than 1/10th of one percent to fully cover the costs of the minimum wage increase to \$6.75. Because these overall cost increases will be such a small proportion of sales to businesses, we conclude that these costs can be readily absorbed by the businesses and consumers, primarily through very small price increases.

Overall, this minimum wage measure is an effective policy intervention. Its benefits are relatively concentrated among low-wage workers from low-income families, the intended beneficiaries, while the costs are widely diffused, primarily among consumers in the state.

## Benefits of Minimum Wage Increase

### Benefits to Workers

- Roughly 345,000 workers, about 13 percent of Arizona's total workforce, will receive wage increases. This includes both mandated wage increases—i.e. raising all workers at least up to the new \$6.75 minimum; and “ripple-effect” raises. These are non-mandated raises that businesses voluntarily provide to some of their workers after the higher minimum wage is implemented.
- These workers, on average, live in families with two other people. This means that the beneficiaries of the wage increases will exceed 1 million people, including all family members.
- Seventy-seven percent of these workers are adults. Fifty percent are non-white, 42 percent are Hispanic and 57 percent are female. Their average age is 28, and they have been in the labor force for over 12 years. For a representative family with a low-wage worker, the family's overall income is about \$26,323.
- Low-wage workers and their families will enjoy increases in disposable income of between \$650 and \$700.
  - This is an average disposable income gain in the range of 3.5 percent for families currently living below 150 percent of the official poverty thresholds.
  - It is an average disposable income gain of about 3.2 percent for families currently living below what we define as a “basic needs” living standard, measured relative to expenditures on necessities.
  - This increase in disposable income will enable these families—frequently living paycheck-to-paycheck—to reduce debt, reduce work hours, take a modest vacation or purchase a car.



- This improvement in the family's living standard will result through raising earned income rather than government subsidies. It is widely held that, in terms of dignity and commitment to work, most people value a dollar of earned income more highly than a dollar of government support.

## Benefits to Business

- Retail stores in the state's low-income neighborhoods will experience an increase in sales, reflecting the increased disposable income of workers and their families living in these neighborhoods.
  - For low-income neighborhoods in Phoenix, we estimate that retail businesses will experience a sales increase of about two percent.
- Out-of-state tourists in Arizona will inject roughly an additional \$80 million of disposable income into the pockets of Arizona tourist industry workers and their families due to the price increases resulting from the minimum wage increase. The overall "multiplier" impact of this increase in out-of-state spending will amount to \$114 million, equal to about 1/3 of the total costs of the measure to in-state businesses.

## Costs of Minimum Wage Increase

- The primary costs of the measure will be those incurred by businesses that will pay the increased wages to the low-wage workers they employ. Businesses will face two kinds of wage increases:
  - Legally mandated wage increases for workers now earning between \$5.15 and \$6.74; and tipped workers now earning between \$2.13 and \$3.74; and
  - "Ripple-effect" increases—for workers now earning up to \$8.00.
- We estimate that costs for private businesses—including all mandated and ripple-effect raises, as well as increases in payroll taxes—will amount to \$312 million. The total costs to governments operating in Arizona at all levels—including local, state, and federal government offices—will amount to another \$44 million. This brings the total costs to all private and public enterprises to \$356 million.
- The \$312 million in increased costs to private businesses amounts to 0.08 percent of the total sales of these businesses, which was \$370 billion in 2005. The average company in Arizona would therefore have to increase its revenues by less than 1/10th of one percent to fully cover the costs of the minimum wage increase to \$6.75.



- The ratio of cost increases/sales will vary widely by industry. The industry with the highest cost increase/sales is the restaurant industry, where the representative business will face a cost increase of 1.4 percent of sales. With limited-service restaurants, including fast-food outlets, the cost increase/sales ratio is 1.7 percent. Thus, even the most heavily impacted industries will still face relatively modest cost increases from the minimum wage increase.

## How Businesses Adjust

- The primary way that businesses are likely to adjust to these cost increases is to raise their prices by very small amounts.
  - A representative retail clothing store would face a cost increase of 0.09 percent of its sales. It could fully cover its increased costs by, for example, raising the price of a \$20 sweatshirt to \$20.02.
  - A representative restaurant would have to raise the price of a \$20 meal to \$20.28 to cover its increased costs of 1.4 percent of sales.
  - A representative hotel would have to raise the price of a room from, for example, \$100 to \$100.80 to cover its increased costs of 0.8 percent of sales.
- Businesses will also be able to absorb some of their increased costs through increasing productivity. Productivity should rise by a small amount with the wage increases as workers should become more committed to their jobs. This will lower turnover and absenteeism, and more generally raise morale.
- Because businesses should be able to cover their cost increases mostly, if not fully, through small price and productivity increases, they are also not likely to experience reductions in profitability from the minimum wage increase.
- Regarding prospects for negative “unintended consequences” resulting from business adjustments to the minimum wage increase, two possibilities have been frequently raised:
  - *Unemployment:* Businesses lay off workers, creating unemployment;
  - *Relocation:* To avoid having to increase wages for low-wage workers, businesses in Arizona relocate out of the state, or out-of-state firms choose not to locate in Arizona.



- Our results show that these negative “unintended consequences” are very unlikely to occur. This is, again, because businesses will be able to absorb their cost increases through modest price and productivity gains. They will not need to resort to more extensive measures—lay-offs or relocations—that are costly for the businesses themselves.
- Regarding employment effects, we also analyze the experience from other states that have recently raised their statewide minimum wage relative to states that operated with the lower federal minimum wage. We find that employment growth in high minimum wage states are roughly on par with—if not somewhat stronger than—states still operating at the \$5.15 federal minimum.

## Arizona State Government Fiscal Impact Estimate

- Overall, we estimate roughly a net fiscal savings for the State of Arizona of \$4.1 million resulting from the minimum wage increase. And while this is a very rough estimate, it is clear that there are no significant net fiscal costs to the measure.
- There are seven potential areas of fiscal impact, of which:
  - Three will provide either more revenues or lower expenditures for the state through increased individual tax revenues, increased sales tax revenue, and publicly subsidized health care cost savings.
  - Four will create either increased expenditures or lower revenues for the state through wage increases for state employees, cost pass-throughs from state goods and service suppliers, lower business tax revenues, and administrative costs of implementing the law.
- Some low-wage workers and their families will receive reduced State subsidies. But we do not anticipate any families experiencing a net loss of overall income. Their income gains from the minimum wage increase will be greater than any reductions in government support.





## SUMMARY

# Economic Analysis of Arizona Minimum Wage Proposal

On the November 2006 ballot, citizens of Arizona will vote on a proposal to raise the statewide minimum wage to \$6.75 per hour. At present the federal minimum wage, which prevails in Arizona, is \$5.15 per hour. The measure also calls for tipped workers to get a raise from the current federal mandate of \$2.13 to \$3.75 per hour. If Arizona voters approve this measure, the \$6.75 minimum will become law on January 1, 2007. The measure also includes an automatic cost-of-living adjustment, by which further raises in the statewide minimum wage would occur automatically at the national inflation rate.

If Arizona voters approve this measure, Arizona will become the 19th state in the country to operate with a minimum wage above the federal minimum. Moreover, over the past decade, about 140 municipalities throughout the country have passed “living wage” measures, which set minimum wage mandates significantly above both the current federal minimum as well as the various statewide standards.

The aim of this study is to provide a careful assessment of what the overall impact would be if Arizona were to increase its minimum wage to \$6.75 per hour. In this summary, we provide background on the economic motivation of this and similar proposals around the country, then present an overview of the major costs and benefits of this particular measure for the economy and people of Arizona.

We draw on a wide range of evidence to identify the likely costs and benefits of the proposal, and weigh the importance of costs and benefits. In developing this evidence, we have relied almost entirely on publicly available data sources supplied by various branches of the United States government. These are the same statistical sources that serve as the foundation for most economic policy decisions at the federal, state, and local levels within the United States. In the main body of the report, we briefly describe the various statistical techniques we utilize in the study. We provide a fuller explanation of these techniques in the appendices of the report.

## Motivations for Statewide Minimum Wage and Municipal Living Wage Measures

The primary force giving motivation for these laws over the past decade has been the precipitous decline in the real value of the federal minimum wage over the past generation. The federal minimum wage—which is the minimum wage that applies today throughout Arizona—is currently \$5.15 per hour. In real dollars, the federal minimum wage reached its peak in 1968, at \$8.98 per hour (adjusting for inflation using the Consumer Price Index CPI-U). Thus, in real, inflation-adjusted dollars, the federal minimum wage has fallen by nearly 40 percent between 1968 and the present. By contrast, average productivity per worker in the U.S. rose by more than 90 percent between 1968 and 2005. This means that if the real value of the national minimum wage had risen exactly in step with the average rate of productivity growth—and no more than that—the minimum wage as of 2005 would be about \$17.10.



This long-term decline in the minimum wage is also part of a larger pattern facing working people in the U.S. As of 2005, the average wage for non-supervisory workers was 9 percent lower than its peak in 1973. Between January 2001, when George W. Bush took office, and June 2006, the average wage for non-supervisory workers has grown by merely 1.6 percent. Over this 5 ½ year period, the overall U.S. economy (measured by Gross Domestic Product) grew by more than 15 percent and average worker productivity grew by more than 20 percent. This is even after allowing for the September 2001 terrorist attacks, the Wall Street crash, and the recession.

The collapse since 1968 in the real value of the minimum wage has had severe consequences for the lowest-paid workers in the United States. This is because the minimum wage plays a crucial role in setting wages for low-wage workers. These workers generally have little bargaining power when they seek employment, or in trying to obtain a raise once they have a job. To a significant extent, low-wage workers rely on increases in mandated minimum wages simply to obtain cost-of-living adjustments in their hourly pay rates.

The effects on living standards of a declining minimum wage become evident by considering the income that a minimum wage worker would bring home relative to some basic poverty thresholds for the United States. For example, someone who works full-time for 52 weeks at the \$5.15 per hour federal minimum would earn \$10,712 a year. This figure is 32 percent below the 2005 federal poverty threshold for a family of three (2 adults, 1 child) of \$15,720. By contrast, someone in the same situation in 1968—working full-time at the federal minimum—would still have been earning a low income, but at least it would have been 19 percent above the official poverty line.

Families experience real hardship when the working members of the family are employed at jobs paying a wage close to the \$5.15 minimum wage. For example, a recent study by the Economic Policy Institute in Washington, DC found that nearly 30 percent of families with incomes at twice the poverty line or lower faced hardships such as missing meals, being evicted from their housing, having their utilities disconnected, doubling up on housing, or not having access to needed medical care.

## Net Effects of the \$6.75 Minimum Wage

We estimate that a total of about 345,000 workers will receive wage increases through this measure.<sup>1</sup> This is about 13 percent of Arizona's total workforce. Moreover, these workers, on average, live in families with two other people. This means that the beneficiaries of the wage increases will exceed 1 million people, including all family members—that is, about 17 percent of Arizona's total population of 5.9 million. The average net income gain for low-wage workers and their families will be between \$650 and \$700 per year.

The total costs of these wage increases to private businesses in Arizona will be about \$312 million a year. This cost increase is equal to 0.08 percent of the total sales of these businesses, which was \$370 billion in 2005. The average business in Arizona would therefore have to increase its revenues by less than 1/10th of one percent to fully cover the costs of the minimum wage increase to \$6.75. Because these overall cost increases will be such a small proportion of sales to businesses, we conclude that these costs can be readily absorbed by the businesses and consumers, primarily through very small price increases.



Overall, this minimum wage measure is an effective policy intervention. Its benefits are relatively concentrated among low-wage workers and their families, the intended beneficiaries, while the costs are widely diffused, primarily among consumers in the state.

## Major Costs to Businesses

**Mandated Wage and Cost Increases.** The measure would provide for two categories of mandated wage increases. The first is for workers now earning between the current federal minimum of \$5.15 and the proposed new minimum of \$6.75. The second is for tipped workers now earning between the current federal minimum for tipped workers of \$2.13 and the proposed minimum of \$3.75 (excluding tips). We assume that workers earning below the current federal mandates are exempt from coverage.

According to our estimates, there are 153,099 workers in Arizona currently earning between \$5.15 and \$6.74 per hour. Their current average wage is \$6.00, and they currently work 1,417 hours/year (32.2 hours a week, 44 weeks a year). Assuming all these workers continued working the same number of hours per year, raising them all to a \$6.75 minimum would therefore mean a yearly wage increase of \$1,063 per worker, and a total wage increase for all workers of \$162.7 million. In addition, there are currently 20,098 tipped workers earning between \$2.13 and \$3.74 per hour. Bringing them all up to the new federal mandate would produce annual raises of \$1,174 per worker, with an overall wage bill of \$28.5 million. Overall, the measure would produce \$191.2 million in mandated wage increases for about 173,000 workers. The companies that will pay these wage increases will also experience increases in their payroll taxes that amount to \$14.7 million, bringing the total mandated costs to about \$206 million.

**“Ripple-Effect” Wage and Cost Increases.** This category of costs refers to the non-mandated increases in wages above the minimum that businesses voluntarily provide to some of their workers after a higher minimum wage rate is implemented. Businesses provide these non-mandated raises to maintain some semblance of the wage hierarchy that prevailed prior to implementation of a new mandated minimum wage. Establishing ripple effects is necessarily more speculative than estimates of mandated raises precisely because these ripple effects are non-mandated. We have developed a statistical estimating technique for generating rough estimates of the ripple effect, based on previous experiences in the U.S. with increases in the minimum wage.

To estimate the ripple effect for Arizona, we group all workers into two broad categories. The first group includes private sector workers and those working for local government entities. If the Arizona measure passes, all of these workers will be required to receive at least the \$6.75 statewide minimum. Following our estimation technique, we find that, beyond just those now earning less than \$6.75 per hour, about 160,000 private sector and local government workers presently earning up to \$8.00 per hour will likely receive raises ranging between 5 percent and 14 percent. We also estimate that another 11,084 federal and state government workers will receive non-mandated raises. Unlike the private sector and local government workers, none of the state or federal workers are formally covered by the ordinance. But we suggest that those earning between \$5.15 to \$8.00 will receive raises ranging, on average, between 5 percent to 24 percent.

In short, the non-mandated ripple-effect increases will be a major factor both in terms of benefits to workers and costs to businesses. In total, ripple-effect raises will provide nearly \$140 million in wage increases—fully three-quarters the total of mandated wage increases of \$191.2 million. Moreover, the roughly 172,000 workers receiving ripple-effect increases alone (not counting private sector and local government workers now earning below \$6.75 whose raises should also bring them above the new \$6.75 mandate) is roughly equal to the total number that will receive mandated increases.

**Total Cost Increases Relative to Sales.** Calculating a ratio of total cost increases resulting from the minimum wage increase relative to sales is central for evaluating the impact of the minimum wage increase to \$6.75 per hour. From this ratio, we are able to gauge how much additional revenue businesses would have to produce to exactly equal the increase in costs they will experience due to the higher minimum wage.

Totaling both mandated and ripple-effect wage increases, as well as the payroll taxes associated with both, we estimate that the average company in Arizona will experience cost increases from the \$6.75 minimum wage of about 0.08 percent of their sales. In other words, roughly speaking, the average business in Arizona would have to *increase its sales revenue by less than 1/10th of one percent in order to fully cover the additional costs resulting from the minimum wage proposal.* But we also find that this cost increase to sales ratio varies considerably by industry. We estimate that the industry with the highest cost increase/sales ratio is the restaurant industry, where the ratio will be roughly 1.4 percent. Limited-service restaurants—including fast-food outlets, delicatessens, and carry-out pizzerias—face the highest costs among restaurants, with a ratio of 1.7 percent. Hotels will experience cost increases of about 0.8 percent of their sales. For most industries in Arizona—including those employing roughly 75 percent of all workers in the state—the representative (median) cost increase/sales ratio due to the \$6.75 minimum wage will be less than 1/10th of one percent.<sup>2</sup>

Overall, then, these findings are the basis on which we conclude that the minimum wage increase is not likely to have a significant effect on the operations of businesses in the state. Rather, they will be able to absorb the relatively small cost increases they will experience through modest adjustments in their normal mode of operation.

**Methods for Businesses to Adjust to Minimum Wage Increase.** We focus on one primary way that businesses are likely to adjust to their increased costs. This is to raise their prices by very small amounts. We consider how such price increases would work primarily with respect to the restaurant and hotel industries, where the cost increases due to the minimum wage raise will be highest. We also consider the prospects of businesses improving their productivity modestly after they give raises to low-wage workers, primarily through reducing employee turnover.

We focus on modest price increases, and secondarily on modest productivity improvements, as adjustment methods for businesses because they will almost certainly be the primary ways that businesses will in fact adjust. This is because for the overwhelming majority of companies in the state, the cost increases resulting from the minimum wage increase will be very small. Other methods of adjustment,



including experiencing profit declines, laying off workers or relocating out of Arizona, would be more likely to occur if the cost increases faced by businesses were considerably larger than what we estimate will occur due to this measure.

However, we do still examine in some detail the possibility that this minimum wage increase will produce increasing unemployment among low-wage workers in Arizona. In particular, we examine the employment patterns for other states in the U.S. after they raised their minimum wage, and compare their experiences with states that did not raise their minimum wage. We find no evidence that employment opportunities worsened in the states that had raised their minimum wages.

**Raising prices.** With respect to the restaurant industry overall, our results find that a representative restaurant would have to raise its prices 1.4 percent to fully cover the costs of the measure. For limited-service restaurants, including fast-food outlets, the price increase would have to be 1.7 percent to fully cover their increased labor costs. This means that a fast-food restaurant, for example, would have to raise the price of a \$2.00 hamburger to \$2.03 for the company to fully cover the costs it would incur due to the minimum wage rise. The price increase at a full-service restaurant would be proportionally lower; a \$20 meal would have to rise by 1.4 percent to \$20.28. A representative hotel in Arizona would face a still lower 0.8 percent price increase—from, say \$100 to \$100.80.

We review the academic and trade literature to see whether restaurants and hotels would likely be able to raise their prices by these small amounts without experiencing a decline in customer demand. The evidence strongly supports the conclusion that these firms could indeed raise their prices by this amount without losing customers. There are two basic reasons for this. The first is that the needed price increases in this case are very small. The second is that—as a substantial body of evidence shows—with-in a given price range, spending for hotels and restaurants is primarily based on quality considerations. In other words, quality factors dominate over *small* differences in price (though certainly not over *large* differences in price) when consumers make spending decisions on restaurants and hotels.

It is notable that a significant share of the price increases for Arizona's restaurants and hotels will be covered by out-of-state tourists. The additional revenue from these out-of-state tourists will translate into an \$80 million increase in disposable income for Arizona tourist industry workers. When we take account of the “multiplier effects” of this \$80 million in extra spending—stimulus from additional spending by state residents who have received the out-of-state revenues—the total benefit to Arizona's economy from the increase in out-of-state spending will be roughly \$114 million. This amount is equal to about 1/3 the total costs of the minimum wage increase for Arizona's private businesses.

**Improving productivity.** The primary way that implementing a higher minimum wage in Arizona could raise business productivity is by reducing employee turnover and, to a lesser extent, absenteeism. This is because when workers receive better wages, their morale rises, and they become more committed to keeping their job and performing well. We do not expect that the average business will make significant gains in productivity in overall dollar terms. But they are likely to make modest improvements, which could in turn cover a significant share of what are going to be, as we have seen, modest increases in costs.



**Overall Conclusion on Business Adjustments to Higher Costs.** Our key conclusion is that the overwhelming majority of businesses in Arizona—including fast-food outlets and other types of restaurants, which employ a large number of low-wage workers—will be able to absorb the increased costs through some combination of small price increases and improvements in productivity. To the extent that businesses can absorb their increased costs through small price and productivity increases, they will not face any decline in their profitability. And without declining profitability, they will not face pressures to reduce their payrolls, which means that workers in Arizona are unlikely to experience layoffs due to the minimum wage increase. Similarly, businesses will not choose to locate outside of Arizona to avoid paying the higher costs: companies now operating in Arizona will not leave the state nor will companies outside the state choose to stay away due to the minimum wage increase. The small amounts that restaurants and perhaps other businesses will raise their prices to cover their higher costs will produce some general rise in prices. But because the cost increases for businesses are so small relative to their sales, these inflationary pressures will be virtually undetectable.

In short, we do not expect that there will be any significant negative unintended consequences from Arizona implementing a \$6.75 minimum wage.

## Benefits of Minimum Wage Increase

**Benefits to Workers and their Families.** We estimate that roughly 345,000 workers will receive either mandated or ripple-effect wage increases resulting from a \$6.75 minimum wage in Arizona. This is about 13 percent of the total Arizona workforce. About half of all the workers receiving raises are non-white, 42 percent are Latino and 57 percent are female.<sup>3</sup> The workers receiving these raises are overwhelmingly adults well into their working lives, and are providing their families with more than 1/3 of their families' total income. More than 40 percent of the workers live in families whose overall income places them below 150 percent of the official federal poverty line.<sup>4</sup> Nearly three-quarters live in families whose overall income places them below what we term a “basic needs” threshold, meaning that these families have a difficult time purchasing basic needs in the areas of food, housing, transportation, child care, clothing, and other necessities.<sup>5</sup> For a representative family with a low-wage worker, the family's overall income is about \$26,323.

The increase in disposable income for low-wage workers and their families will vary, of course, first by the size of the wage increase they receive. Workers now earning between \$5.15 and \$6.74 per hour would receive an average raise of 13 percent—a small but still significant difference in their living standard. Overall, after accounting for wage increases, as well as increases in taxes and reduced eligibility for government subsidies such as food stamps and the Earned Income Tax Credit, we estimate that the income gains from the minimum wage increase for representative families with low-wage workers will be in the range of \$650 to \$700. This is a net income increase for families of low-wage workers of about 3.2 percent to 3.5 percent.



This improvement in disposable income could bring important benefits to families that live pay-check-to-paycheck. For example, having the extra \$700 per year should enable the family to reduce its debt, take a vacation, purchase a car, or reduce work hours. At the same time, in the contemporary U.S. economy where the real purchasing power of the minimum wage has fallen precipitously over the past 38 years, the absence of a minimum wage increase has produced a worsening of living standards among low-wage workers and their families. The increase in the Arizona minimum wage will therefore at least serve as a counterweight to the tendency of worsening living standards for low-wage workers in the U.S.

It is also significant that this improvement in living conditions for low-income families in Arizona is occurring through an increase in the family's *earned income* rather than raising their benefits from EITC, food stamps, or some other government assistance program.<sup>6</sup> Surveys of low-wage workers themselves suggest that to receive a dollar of government assistance is by no means the same in terms of dignity and commitment to work as receiving a dollar of earned income.

**Benefits to Business.** The primary benefit for businesses will be for retail outlets in low-income neighborhoods throughout Arizona. This is for the simple reason that the low-income families living in these neighborhoods will now have more disposable income to spend in their neighborhoods. Focusing on the situation in the 182 low-income census tracts in Phoenix, we estimate that retail spending will rise about 2.2 percent as a result of the minimum wage increase. We have not conducted similar data exercises for low-income neighborhoods in other cities in Arizona, but we expect that the spending gain will be approximately equal to the three percent improvement in Phoenix.

There is also a benefit to the state's economy overall. As we discussed above, a significant share of the price increases for Arizona's tourist industry (including restaurants and hotels) will be covered by out-of-state tourists. The additional revenue from these out-of-state tourists will translate into an \$80 million increase in disposable income for Arizona tourist industry workers. When we take account of the "multiplier effects" of this \$80 million in extra spending—stimulus from additional spending by state residents who have received this \$80 million in out-of-state revenues—the total benefit to Arizona's economy from the increase in out-of-state spending will be roughly \$114 million. This amount is equal to about 1/3 the total costs of the minimum wage increase for Arizona's private businesses.

## Fiscal Impact Estimate for State of Arizona

Our overall estimate of net fiscal impact for the State of Arizona is *\$4.1 million in net fiscal savings*. This includes \$16.0 million in either increased tax revenues or spending savings, and \$11.9 million in new expenditures or tax revenue losses. Given a State of Arizona budget of around \$20 billion, our conclusion is that the net fiscal impact of raising the Arizona minimum wage to \$6.75 will be negligible.



There are seven major areas to consider for potential fiscal impacts with respect to raising the minimum wage to \$6.75. Three of these areas will bring positive fiscal impacts, through either more revenues or lower expenditures for the state. They are: increased individual tax revenues, with low-wage workers and their families receiving higher incomes; increased sales tax revenues, through private firms raising prices in response to higher labor costs; and reduced public health care expenditures, with some families moving from Medicaid to KidsCare or coverage from the Health Insurance Flexibility and Accounting Act (HIFA).

The remaining four areas will entail a net fiscal loss, either through increased expenditures or lower revenues for the state. They are: wage increases for state government employees; cost pass-throughs from state goods and service contractors; lower business income tax revenues, corresponding to an assumed small decline in business profits; and the administrative costs of implementing the new law.

We note that one significant source of net fiscal gains is that some low-wage workers and their families, having moved into somewhat higher income brackets, will thereby receive reduced state subsidies, including state-financed health benefits. But we do not anticipate any families experiencing a net loss of overall income through these changes. According to our estimates, in all cases, the income gains received by families from the minimum wage increase will be greater than any reductions in government support.

## Effect of Indexing Minimum Wage to Inflation

The analysis we provide considers the effects of a one-time event—the rise in the minimum wage to \$6.75 per hour as of January 2007. Would our overall conclusions about the impact of the measure be altered when, in subsequent years, the Arizona minimum wage continues to rise in step with inflation?

In fact, our basic analysis of costs and benefits would not change as the minimum wage rises above \$6.75 along with inflation. Rather, the purpose of indexing the minimum wage to inflation is precisely to prevent the benefits of a \$6.75 minimum from dissipating with inflation. In an economy experiencing a general rise in prices over time, what one can buy with one dollar, or \$6.75, necessarily goes down over time. Indeed, if the minimum wage did not rise with inflation after the initial increase to \$6.75, then all the costs and benefits of the measure would diminish with time relative to what we have identified for the \$6.75 minimum. It is only through indexing, then, that our analysis of costs and benefits will remain approximately stable over time.



# FULL REPORT

## Economic Analysis of Arizona Minimum Wage Proposal

### I. Introduction

The purpose of this report is to provide an assessment of the likely costs and benefits of the proposal to raise the minimum wage in Arizona from the current federal minimum of \$5.15 per hour to \$6.75 per hour. For tipped workers, the minimum wage would rise from its current federal level of \$2.13 to \$3.75 per hour. The Arizona law would apply to virtually all people employed in the state.<sup>7</sup> This proposal will be presented to Arizona voters as a referendum item in the November 2006 election. If Arizona voters approve this measure, the \$6.75 minimum will become law on January 1, 2007. The measure also includes an automatic cost-of-living adjustment, by which further raises in the statewide minimum wage would occur automatically at the national inflation rate.

If the Arizona voters do endorse this measure, Arizona will become the 19th state in the country to operate with a minimum wage above the federal minimum. Moreover, over the past decade, about 140 municipalities throughout the country have passed “living wage” measures, which set minimum wage mandates significantly above both the current federal minimum as well as the various statewide standards.

For the 17 states and the District of Columbia that currently have minimum wages higher than the national minimum, the minimum wages range between \$6.15 in Delaware, Maryland, Minnesota and New Jersey and \$7.63 in Washington.<sup>8</sup> The District of Columbia also currently has such a law in place, operating with a \$7.00 minimum wage. Two other states, Michigan and Arkansas, recently established new state minimums that exceed the federal rate that will go into effect either later this year (Arkansas) or in 2007 next year (Michigan). After Arkansas and Michigan laws are implemented nearly half of the U.S. workforce will reside in states with minimum wage standards that exceed the federal minimum. If the Arizona proposal passes, that will be the tipping point after which more than 50 percent of the U.S. workforce will live in states that have decided to raise their minimum wage rates above the federal standard.

In section II of this report, we present a short discussion of the history of the minimum wage in the United States as well as a discussion as to why voters and policymakers in 19 states and the District of Columbia, as well as about 140 municipalities throughout the country have passed minimum wage mandates above the current federal minimum. Section III briefly reviews the data sources and statistical techniques we employ in this study. In section IV, we assess the costs of the measure for the covered businesses, including mandated wage increases and non-mandated “ripple-effect” wage increases. Section V evaluates the likely ways that businesses will adjust to their increased costs. In terms of the adjustment mechanisms



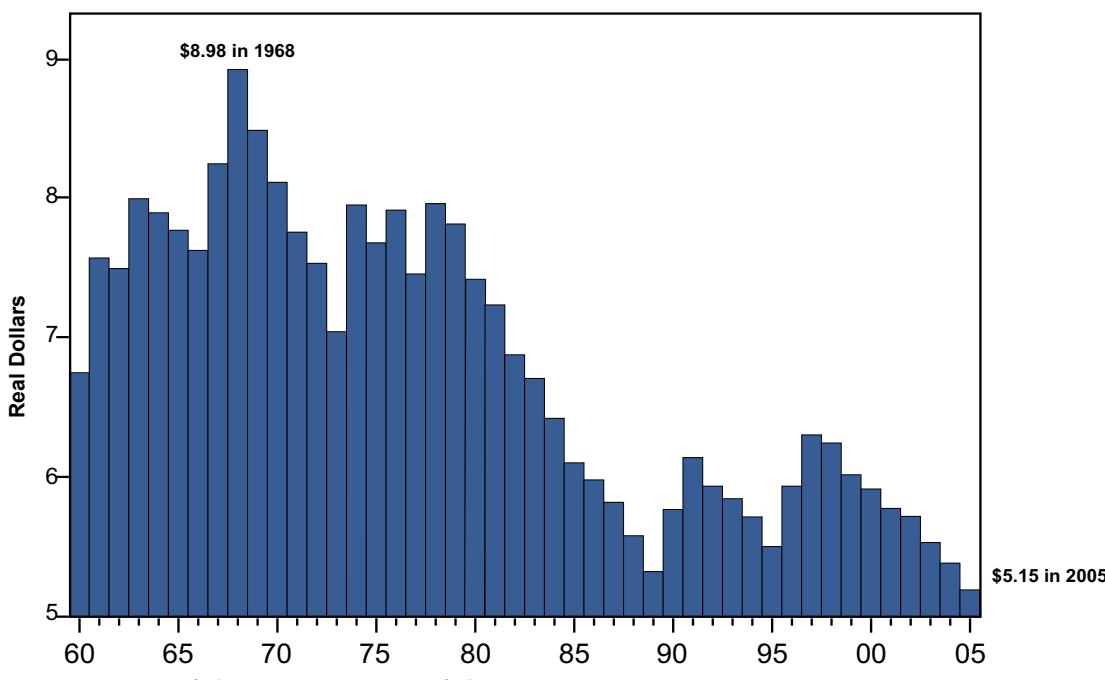
for businesses, we devote primary attention to the possibilities of covered businesses—in particular restaurants and hotels—passing through their increased costs in the form of higher prices to consumers. We also consider the likelihood that businesses will enjoy modest productivity gains after they provide raises to their lowest paid workers. We also focus on the possibility that businesses will reduce their hiring of low-wage workers after the minimum wage increases. This would mean higher unemployment for Arizona’s low-wage workers—an obvious and serious *unintended consequence* of raising the statewide minimum wage.

Section VI considers the likely benefits of the measure for low-wage workers and their families, as well as to businesses operating in the state. We begin by providing a profile of the individual and family characteristics of the workers who will receive raises. We then present a discussion of the *net benefits* of the measure for low-wage workers and their families, after taking account of all income sources within the affected families as well as changes in taxes and subsidies. Finally, we examine the gains for businesses in Arizona when low-wage workers and their families enjoy increased disposable income. This effect has particular relevance for retail companies operating in low-income neighborhoods. In section VII, we assess the fiscal impact of the measure on the budget of the State of Arizona.

## II. Background on Minimum Wages and Living Wages in the United States

Minimum wage laws in the United States were first implemented at the state level beginning with Massachusetts in 1912 then moving to the Federal level through various measures between 1933 and 1936. The establishment of these measures was the culmination of an explicit “living wage” movement in the country. One of the most influential works supporting the movement was a 1906 book by Monsignor John A. Ryan titled *A Living Wage: Its Ethical and Economic Aspects*. By the mid-1930s, President Franklin D. Roosevelt made his position on the issue clear, stating that “no business which depends for existence on paying less than living wages to its workers has any right to exist in this country.”<sup>9</sup>

The real purchasing power of the federal minimum wage reached its peak in 1968, and has since experienced an extraordinary decline. We can see this clearly in Figure 1. As the figure shows, the real value of the national minimum wage as of 2005, at \$5.15 per hour, was 43 percent below its peak value in 1968 of \$8.98 (expressed in constant 2005 dollars). This means that, outside of those exempt from minimum wage laws and after controlling for inflation, the lowest-paid legally employed workers in the United States in 1968 were earning nearly \$9.00 an hour (2005 dollars). In other words, even a teenager coming to work for his or her first day at McDonalds would legally earn no less than \$8.98 an hour in 1968. It is also important to recognize that average labor productivity rose in the U.S. by more than 90 percent between 1968 and 2005. This means that if the real value of the national minimum wage had risen exactly in step with the rate of productivity growth—and no more than that—the minimum wage as of 2005 would be about \$17.10.

**FIGURE 1—Real Value of United States Minimum Wage, 1960-2005 (in constant 2005 dollars)**

Sources: Bureau of Labor Statistics, U.S. Department of Labor

This long-term decline in the minimum wage is also part of a larger pattern facing working people in the U.S. As of 2005, the average wage for non-supervisory workers was 9 percent lower than its peak in 1973. Between January 2001, when George W. Bush took office, and June 2006, the average wage for non-supervisory workers has grown by merely 1.6 percent. Over this 5 ½ year period, the overall U.S. economy (i.e. its Gross Domestic Product) grew by more than 15 percent and average worker productivity rose by more than 20 percent. This is even after allowing for the September 2001 terrorist attacks, the Wall Street crash, and the recession.

The collapse since 1968 in the real value of the national minimum wage has had severe consequences for the lowest paid workers in the United States. This is because the minimum wage plays a crucial role in setting wages for low-wage workers, since these workers generally have little bargaining power when they seek employment, or in trying to obtain a raise once they have a job. Indeed, a substantial body of research now demonstrates that, unlike all other groups in the labor force, the lowest paid workers do not tend to receive raises that even enable their pay to keep pace with inflation.<sup>10</sup> As such, the living standards of low-wage workers almost inevitably deteriorate simply as a result of inflation, unless the mandated minimum wage rises.

The general effects on living standards of a declining minimum wage become evident by considering the income that a minimum wage worker would bring home relative to some basic poverty thresholds in the United States. For example, someone who works full-time for 52 weeks at the \$5.15 national minimum wage—the minimum wage that applies to Arizona today—would earn \$10,712 over a year. This figure is 32 percent below the 2005 federal poverty threshold for a family of three (2 adults, 1 child) of \$15,720. Even if we allow for two full-time minimum wage workers in this family, their



combined income of \$21,424 would still place them 9 percent below 150 percent of the official poverty line for this family type. Moreover, it is widely recognized among economists and other social scientists that the official poverty benchmark is probably about 40 percent to 50 percent too low. This is because it is calculated using an outdated approach which does not reflect the actual costs of providing for basic necessities other than food, including housing, healthcare and child care. The poverty benchmarks also take no account of regional differences in the cost of living.<sup>11</sup> We address these inadequacies of the U.S. poverty thresholds in section VI.

Families experience real hardship when the working members of the family are employed at jobs paying a wage close to the \$5.15 minimum wage. For example, a recent study by the Economic Policy Institute in Washington, DC found that nearly 30 percent of families with incomes at twice the poverty line or lower faced hardships such as missing meals, being evicted from their housing, having their utilities disconnected, doubling up on housing, or not having access to needed medical care.<sup>12</sup> Such problems, further, spread throughout the broader community. Working people earning poverty wages obviously have less money to spend. It therefore becomes difficult for businesses in the communities serving them to prosper.

The collapse in the purchasing power of the federal minimum wage has been the primary factor motivating both the increase in statewide minimum wage standards in 19 states and the District of Columbia, but also, even more broadly, the spread of the living wage movement throughout the United States. The contemporary living wage movement in the United States began in Baltimore in 1994. Since then, more than 140 living wage ordinances of various types have become law in communities throughout the country, and roughly 67 campaigns are ongoing as of this writing.<sup>13</sup>

### III. Statistical Methods

The data presented in this study are derived almost entirely from publicly available U.S. government data sources. We provide detailed information on these data sources and our methods of data construction in the appendices. Here we just mention two crucial points about our statistical method.

**1. Year of estimation.** The evidence we provide in this study is meant to reflect as best we can conditions in Arizona for the year 2005. In some cases, we have had to draw on data for previous years. When we have had to utilize data for years prior to 2005, we have made adjustments to these data, as appropriate, to best reflect conditions in 2005. In the appendices, we describe how we have made these adjustments on the data for prior years.

As mentioned above, the \$6.75 minimum wage will become law in January 2007 if it is endorsed by voters in November. But conditions in the Arizona economy will have changed between 2005 and 2007, including for low-wage workers and their employers. How are these changes likely to affect our estimates? Use of 2005 data means that we will have somewhat *overstated* the costs and benefits of the minimum wage increase. This is because, on average, wages in Arizona will have risen between 2005 and 2007, even if modestly. The wage increases needed to bring workers to the \$6.75 minimum will



therefore be smaller than would have been true in 2005.<sup>14</sup> However, relatively speaking, our estimates will be generally unaffected. The relative costs to businesses will still be modest, if not more so, because we have overstated the level of costs. The benefits will still be concentrated among low-income families, again if not more so, because there is a greater concentration of low-income families among the affected workers with the lowest wages.

**2. Accuracy and corroboration of main findings.** All the figures we present in this study are *estimates*. For example, we do not know—nor could we or anybody else know—the exact number of workers who will receive raises as a result of this measure, or exactly how much the measure will cost businesses that have to give raises to their employees. However, we are confident that all of our figures are accurate to a level that is relevant for the purposes of our analysis. Thus, we estimate that the average business in Arizona will experience a total cost increase of about 0.1 percent of its total sales due to the impact of raising the statewide minimum wage to \$6.75 per hour. We also estimate that the average restaurant will experience a total cost increase of about 1.4 percent of their sales. We cannot be certain that these figures are precisely correct. But we are certain that the ratio for all businesses is not 1 percent or 0.01 percent, as opposed to 0.1 percent. Similarly, we are certain that the ratio for restaurants is not 14 percent or even 4 percent as opposed to 1.4 percent. As such, we are confident that the estimates we have enable us to make accurate evaluations about the likely ways businesses will respond to the measure.

In the various appendices to the study, we provide details about our estimating procedures, which are the basis on which we establish confidence in our overall findings. But in addition, our confidence is strengthened by the fact that our estimates are very much in line with those we obtained in previous studies of our own on this issue (see Pollin and Luce 2000, Pollin and Brenner 2000, Pollin, Brenner and Wicks-Lim 2004, and Pollin 2004), as well as the work of other researchers (see Tolley et al. 1996; Reich, Hall, and Jacobs 2005, Fairris, Runsten, Briones, and Goodheart 2005, Dube, Naidu and Reich 2005). These previous studies were for different cities and frequently utilized different types of data sources, including direct surveys of covered businesses and workers.

## IV. Estimated Costs of Minimum Wage Proposal for Arizona Businesses

### Mandated Costs

Table 1 presents evidence on the number of workers that we estimate would be covered by the Arizona minimum wage proposal. This includes the number of workers who are now earning between the current federal minimum of \$5.15 and the proposed new minimum of \$6.75. It also includes tipped workers in restaurants and hotels now earning between \$2.13 and \$3.74. We exclude from these measurements untipped workers who are presently earning below the current \$5.15 minimum. We assume that all workers who are currently earning below the current minimum wage, and are therefore likely to be presently exempt from federal minimum wage coverage, will remain exempt from coverage under the new Arizona provision (see footnote 7).

**TABLE 1—Mandated Wage Increases of Raising Minimum Wage to \$6.75/hour and \$3.75/hour for Tipped Workers**

	Covered Workers Earning \$5.15-\$6.74/hour	Restaurant and Hotel Tipped Workers Earning \$2.13-\$3.74/hour
1. Total Number of Workers Covered	153,099	20,098
2. Full-time workers	78,693	8,622
3. Part-time workers	74,406	11,476
4. Full-time equivalent workers	103,636	11,479
5. Average hourly wage	\$6.00	\$2.54
6. Average hourly wage increase	\$0.75 = 13% raise	\$1.21 = 48% raise
7. Average hours worked/week	32.2	32.6
8. Average weeks/year	44	36
9. Average hours worked/year (row 7 x row 8)	1,417	1,174
10. Average yearly wage increase (row 6 x row 9)	\$1,063	\$1,421
11. Total raise for all workers in category (row 1 x row 10)	\$162.7 million	\$28.5 million

*Notes:* All private sector workers plus local government workers are included here. Sources: See Appendix 1.

According to the most recent evidence available that we present in column 2 of Table 1, there are now 153,099 workers in Arizona earning between \$5.15 and \$6.74 per hour. Of this total, 78,693 are full-time workers and 74,406 are part-time. The average work week for all of these workers is 32.2 hours, and the average number of weeks per year that they work is 44. Clearly, most of the low-wage workers in Arizona are working far less than full-time. However, if we converted all of the \$5.15-to-\$6.74 workers to full-time equivalence—40 hours for 52 weeks per year—they would amount to 103,636 full-time equivalent workers.

The next set of figures shows data on wages for these workers. We estimate that the average worker who earns between \$5.15 and \$6.74 per hour in Arizona now earns \$6.00. Thus, to bring the average worker up to the new \$6.75 minimum, he or she would receive a raise of 75 cents per hour. If we assume that these workers maintain exactly the same level of employment after the higher minimum wage is implemented—the same average work year of 1,417 hours—then the average worker would receive a raise of \$1,063, or 1,417 hours times 75 cents per hour. From these figures, we are then able to estimate that the total mandated wage increase for the 153,099 (103,636 Full-Time Equivalent) workers is \$162.7 million.

Column 3 of Table 1 shows the comparable data for tipped workers now earning between \$2.13 and \$3.74. As we see, there are 20,098 workers in this category, with a current average wage of \$2.54 without tips. Their mandated wage increase will total \$28.5 million.



## Non-Mandated Cost Increases: Ripple Effects

“Ripple effects” refer to the non-mandated increases in wages and benefits above the newly-established minimum wage businesses provide to some of their workers after a minimum wage increase is enacted. Businesses provide these non-mandated raises to maintain some semblance of the wage hierarchy that prevailed prior to implementation of a new mandated minimum wage. But estimating ripple effects is necessarily more speculative than estimates for mandated raises, for precisely the reason that ripple-effect raises are non-mandated.

The \$6.75 minimum wage proposal for Arizona would apply to most private sector businesses and local government employees. State and federal government employees in Arizona would be formally exempt from the law. Based on these provisions, there are three broad categories of likely recipients of non-mandated ripple-effect wage increases:

1. Private sector and local government employees who, before the Arizona measure would be implemented, earn somewhere between the federal minimum wage of \$5.15 but less than the new Arizona minimum of \$6.75. Once the Arizona measure would become law, some of these employees would receive wage increases that put them above \$6.75. For these workers, their raise up to \$6.75 would count as a mandated raise, while anything they earn beyond \$6.75 is a ripple-effect raise.
2. Private sector and local government employees who earn more than \$6.75 prior to the time the Arizona proposal is implemented, but who nevertheless receive a raise when the new Arizona minimum becomes law.
3. State and federal government low-wage employees, none of whom are formally covered by the Arizona proposal. But the government will likely need to raise wages of these workers so that their pay is broadly comparable to workers in similar jobs in the private sector.

The key issue in determining the size of the ripple effect is to evaluate how much of a change in wage equality is likely to occur after the lowest-paid workers receive their mandated raises. The term “wage compression” is often used to describe the condition of wages becoming more equal, either within a given company or more broadly, throughout the economy as a whole. Past research has found that the increases tend to diminish fairly rapidly at higher wage rates so that wages become more equal. Wage compression does indeed generally occur (Card and Krueger 1995; Dinardo, Fortin, and Lemieux, 1996; Lee, 2001).

Recent research by one of us (Wicks-Lim 2005) studied ripple-effect raises that accompanied federal and statewide minimum wage increases in the U.S. between 1983 and 2002. We draw on the findings of this study to estimate the likely size of ripple-effect raises that would accompany the establishment of a \$6.75 minimum wage in Arizona. That is, we proceed with our analysis here on the assumption that the patterns for the relationship between mandated wage increases and ripple-effect raises that held throughout the U.S. between 1983 and 2002 will also apply, at least roughly, for the current situation in Arizona.



Wicks-Lim found that with the previous federal and statewide increases in minimum wages between 1983 and 2002 in the U.S., the total wage increases received throughout the economy extended up to workers earning wages around the 15th wage percentile. The 15th wage percentile is the point at which 15 percent of all workers earn lower wages and 85 percent earn higher wages.

We can apply this finding to the Arizona case for 2005 as follows: In 2005 in Arizona, a worker in the 15th percentile earned \$8.00 an hour (indeed, workers earning \$8.00 an hour in Arizona accounted for the 15th to the 18th percentiles of Arizona's workforce). Thus, assuming that the previous patterns for ripple-effect raises were to hold in Arizona, this would mean that workers earning up to \$8.00 per hour in Arizona today will receive a ripple-effect increase when the minimum wage rises to \$6.75.<sup>15</sup>

How large are these ripple-effect raises likely to be? Based on Wicks-Lim's previous research, we present in Table 2 estimates of the size that ripple-effect raises are likely to be, assuming the mandated minimum wage increase is 10 percent. As the table shows, if the minimum wage were to rise by 10 percent at the federal or statewide level between 1983 and 2002, the typical raise experienced by workers around the 5th percentile—workers whose wages are higher than 5 percent of the total workforce but lower than 95 percent of the workforce—would be 4.4 percent. That would be a raise which is 44 percent as large as the 10 percent mandated raise for a minimum-wage worker. Workers in the 10th wage percentile typically receive a 2.2 percent raise relative to a 10 percent minimum wage increase, and workers in the 15th percentile typically receive a 1.5 percent raise. As the table shows, workers in the 20th wage percentile typically receive no ripple-effect raise from a minimum wage increase.

**TABLE 2—Estimated Raises from Recent Federal and Statewide Minimum Wage Increases**

Wage Level	Estimated Raise From a 10% Increase in the Minimum Wage
Minimum Wage	10.0%
5th percentile	4.4%
10th percentile	2.2%
15th percentile	1.5%
20th percentile	0.0%

Source: Wicks-Lim (2005).

We can use these findings to roughly estimate the effects of raising the Arizona minimum wage by 31 percent, from \$5.15 to \$6.75 per hour. We work through the technical details of our estimation procedure in Appendix 1. In Table 3, we summarize the total ripple-effect in terms of both the number of workers receiving ripple-effect raises and the total dollar amount of these non-mandated raises. As we see in the table, we estimate that a total of 279,129 workers will receive some ripple-effect raise after the \$6.75 minimum wage is implemented in Arizona. Of these workers, 172,368 will receive ripple-effect raises only. These are the private sector and local government workers who now earn over \$6.75 per hour as well as all state and federal government workers getting raises once the \$6.75 minimum is put in place in Arizona. We estimate that the total amount of ripple-effect raises will amount to \$139.8 million.

**TABLE 3—Total Estimated Ripple-Effect Raises After Arizona Minimum Wage Increase to \$6.75**

Total Number of Workers Receiving Ripple-Effect Raises (Including Those Receiving Both Ripple-Effect and Mandated Raises)	Total Number of Workers Receiving Ripple-Effect Raises Only	Total Ripple-Effect Wage Increases (in millions)
279,129	172,368	\$139.8

Sources: Data are from Table A2; see Appendix 1.

From these figures, it becomes clear that the ripple effect plays a very important role in evaluating the overall impact of the Arizona minimum wage proposal. In terms of both the number of people receiving raises and the total amount of these raises, our estimates of the ripple-effect increases are roughly comparable to the mandated increases. That is, as we have seen, we estimate that roughly 173,000 workers will receive mandated increases (including about 153,000 now earning \$5.15 or above, and 20,000 in the tipped-worker category, earning between \$2.13 and \$3.74). This figure is almost identical to the 172,368 we estimate as receiving ripple-effect increases only. We estimate the total mandated wage increase as being roughly \$190 million. Thus, the \$140 million in ripple-effect raises is nearly 75 percent as large as the mandated wage increase.

## Total Costs

In Table 4, we summarize the cost increases businesses will face due to the Arizona minimum wage proposal, including all mandated increases for \$5.15-to-\$6.74 per hour workers, mandated raises for \$2.13-to-\$3.74 per hour tipped workers, as well as all ripple-effect raises. To these, we then add payroll taxes of 7.65 percent that businesses will face along with each category of wage increases.<sup>16</sup> As we can see, we estimate that 345,565 workers will be receiving \$331 million in total wage increases. These wage increases will in turn generate \$25.3 million in additional payroll taxes. As such, the total cost increases for Arizona businesses will be \$356.3 million.

**TABLE 4—Total Estimated Cost Increases from Arizona Minimum Wage Proposal**

	Number of Workers Receiving Raises	Wage Increases (in millions)	Payroll Tax Increases (in millions)	Total Cost Increases (in millions)
Mandated Raises for \$5.15-\$6.74	153,099	\$162.7	\$12.5	\$175.2
Mandated Raises for \$2.13-\$3.74 tipped workers	20,098	\$28.5	\$2.2	\$30.7
Ripple-Effect Raises Only	172,368	\$139.8	\$10.7	\$150.5
Totals	345,565	\$331.0	\$25.3	\$356.3

Sources: Data are from Tables 1 and 3; see also Appendix 1.

## Total Costs Relative to Sales of Arizona's Businesses

In Table 5, we present data showing the estimated total cost increase of \$356.3 million relative to the total number of companies in Arizona and the total sales of these businesses. To begin with, we show that of the total estimated cost increase of \$356.3 million, private sector businesses will bear \$312.4 million of the total, or 88 percent of the total costs. We will consider the cost effects for the public sector—amounting to 12 percent—in section VII of this report, on net fiscal impact.

We also focus here only on private businesses that have employees. As Table 5 reports, there are 126,348 private business establishments overall in Arizona, according to the most recent available data. This means that, on average, companies in Arizona with employees will face a cost increase of \$2,473 resulting from the minimum wage increase. In addition, total sales of these businesses were \$370.0 billion in 2005. This means that our \$312.4 million estimate of the total increase in costs for private firms due to the minimum wage measure is less than 0.1 percent of sales of these private firms. In other words, roughly speaking, *the average firm in Arizona would have to increase its sales revenue by less than 1/10th of one percent in order to fully cover the additional costs resulting from the minimum wage proposal.*

**TABLE 5—Total Cost Increases Relative to Sales for Covered Arizona Firms**

1. Total Cost Increase from Minimum Wage Increases	\$356.3 million
2. Cost Increase for Private Sector Firms	\$312.4 million
3. Private Business Firms in Arizona with Employees	126,348
4. Total Cost Increase per Private Sector Firm (rows 2/3)	\$2,473
5. Estimated Sales of Private Sector Firms with Employees	\$370.0 billion
6. Total Cost Increase of Covered Private Firms Relative to Sales	0.08%

*Notes:* Line 1 includes government employees (local, state, and federal). Sources: See Appendix 1

This is a crucial initial finding in evaluating the impact that the \$6.75 minimum wage proposal is likely to have on businesses in Arizona. However, we still need to consider this cost increase/sales ratio in more specific terms, especially as it varies on an industry-by-industry basis, before we can reasonably consider how companies are likely to adjust to the cost increases they will face.

In Table 6 therefore, we examine the ratio of minimum wage costs/sales of the minimum wage proposal, broken down on an industry-by-industry basis. The industrial groupings in the table are based on the North American Industrial Classification System (NAICS) coding system put out by the U.S. Census Bureau.<sup>17</sup> The table lists the industrial groups according to their minimum wage cost/sales ratio, starting with industries with the highest ratios.<sup>18</sup> In columns 3 and 4, the table then presents information on the size of the industry within the Arizona economy. We measure industry size according to two dimensions, its share of the total employment in the state, and its share of total sales.

**TABLE 6—Impact of Minimum Wage Increase by Industry**

	Median Costs Relative to Total Sales	Share of Total Arizona Employment	Share of Total Arizona Sales (Gross Receipts)
Accommodation and Food Services	1.36%	10.7%	2.61%
Administrative and Support and Waste Management and Remediation Services	0.91%	10.4%	2.48%
Arts, Entertainment, and Recreation	0.36%	1.5%	0.91%
Other Services (except Public Administration)	0.19%	3.3%	1.53%
Retail Trade	0.09%	14.6%	18.67%
Educational Services	0.08%	1.6%	0.70%
Transportation and Warehousing	0.07%	3.3%	1.96%
Agriculture Crop and Animal Production	0.06%	1.5%	0.71%
Construction	0.05%	9.7%	9.49%
Real Estate and Rental and Leasing	0.05%	2.3%	2.11%
Information	0.04%	2.4%	2.74%
Manufacturing	0.03%	8.9%	13.88%
Health Care and Social Services	0.02%	11.2%	5.93%
Mining	0.02%	0.4%	0.58%
Professional, Scientific, and Technical Services	0.02%	5.5%	3.72%
Finance and Insurance	0.02%	6.0%	11.11%
Utilities	0.01%	0.6%	1.67%
Wholesale trade	0.00%	4.8%	19.12%
Management of Companies and Enterprises	NA	1.1%	0.07%
All Industries	0.06%	100.0%	100.0%

Sources: See Appendix 1.

As the table shows, the “accommodation and food services industry”—including hotels, restaurants, bars, cafes, and caterers—has the highest cost increase among all industries in the state. We estimate the cost increase for accommodations and food services to be 1.36 percent. This is more than 20 times greater than the median for all industries which is 0.06 percent. At the same time, it is clear that this cost increase remains modest, even though it is more burdensome than for any other industries in the state. A cost increase of 1.4 percent of sales for restaurants and hotels is not likely to represent a significant burden for the state’s restaurants and hotels (a subject we consider in depth below).

As the table also shows, the accommodation and food services industry is the only one in the state that will experience a cost increase greater than one percent as a result of raising the state’s minimum wage to \$6.75 per hour. The industry with the second highest ratio is, as defined by the NAICS classification system, “administrative support, waste management and remediation services,” whose cost increase/sales ratio is 0.91 percent. This industry includes security guard, janitorial, call center, trash collection, and temporary services. The industry that is next highest in terms of cost increase is “arts, entertainment, and recreation,” where the ratio is barely more than 1/3 of one percent.



The accommodation and food services industry—restaurants and hotels—is clearly of major significance here. Not only will the restaurants and hotels experience the largest cost increases, but, as we also see from the table, this is a significant industry in terms of its relative size in the Arizona economy. In terms of employment, restaurants and hotels employ nearly 11 percent of all workers in the state of Arizona, making it the third-largest industry in the state in terms of employment, after retail trade, and health care and social services.

Hotels and restaurants are much smaller relatively speaking in terms of sales. At less than 3 percent of total sales, hotels and restaurants are far below wholesale trade, which is the largest in the state by sales, at 19 percent of total state sales. However, the wholesale trade industry will experience a cost increase from the \$6.75 wage increase that is almost statistically indiscernible—at 0.004 percent of sales. The second-largest industry in the state in terms of sales is retail trade. Here the cost increase/sales ratio, at 0.09 percent, is well above wholesale trade, but still very low—about 1/15 as large as that for restaurants and hotels. In general, because of its combination of the highest cost ratio and a relatively high percentage of employment in the state, the hotel and restaurant industries are clearly the industries on which to focus in considering how the minimum wage increase is likely to impact businesses in Arizona.

As such, in Table 7, we examine the restaurant and hotel industry in a bit more detail, by first dividing up the category according to whether the businesses are hotels or restaurants, then considering “limited-service restaurants” only as a separate category. The limited-service restaurants include in particular the fast-food industry, as well as carry-out restaurants, pizza delivery services, delicatessens, and the like. Because the fast-food firms have the highest concentration of low-wage workers in their overall labor force and cost structures, the impact of the minimum wage increase should be highest here. With the available data, we were unable to isolate fast-food firms from other types of limited-service restaurants. But the general situation for fast-food firms should still be clarified from the figures we do have.

**TABLE 7—Impact of Minimum Wage Increase for Hotels and Restaurants**

	Median Costs Relative to Total Sales	Share of Total Arizona Employment	Share of Total Arizona Sales (Gross Receipts)
Hotels	0.76%	2.24%	0.79%
All Restaurants	1.36%	8.44%	1.81%
Limited-Service Restaurants, Only	1.73%	3.64%	0.71%

Sources: See Appendix 1.

As we see in Table 7, the median ratios of cost increases/sales are significantly higher for restaurants than hotels—at roughly 0.8 percent for hotels and 1.36 percent for all restaurants. The restaurant industry is also larger than the hotel industry in terms of both employment and sales, but especially so for employment (8.4 versus 2.2 percent of total statewide employment).



Not surprisingly, the median cost increase for limited-service restaurants, at slightly less than 2 percent of sales, is substantially higher than for the restaurant industry as a whole, and more than doubles the cost increase ratio for hotels. In other words, it is clear that, by a wide margin, limited-service restaurants will experience the highest cost increases in the state. This is of particular significance since, according to our estimates, fully 63 percent of workers in this industry will receive wage increases with the rise to a \$6.75 minimum wage. That represents about 18 percent of the roughly 346,000 workers in the state who will receive raises resulting from raising the statewide minimum wage. Thus, in considering the impact of the rise in the Arizona minimum wage to \$6.75, we will clearly need to pay particular attention to limited-service restaurants.

## V. Methods of Adjusting to Minimum Wage Increase by Arizona Firms

A roughly 13 percent average pay increase for more than 150,000 workers, a nearly 50 percent raise in wages for 20,000 tipped workers, and additional, if smaller, non-mandated ripple-effect increases for roughly another 170,000 workers, will obviously entail that businesses in Arizona make some adjustments in the way they operate. What are these adjustments likely to be?

Two types of adjustment processes are most frequently the focus of discussions in considering the impact of raising minimum wages at the national, statewide or municipal levels. The first is *unemployment*, or, more specifically, that businesses will lay off workers and will become more reluctant to hire new employees, thus creating job losses and fewer opportunities for the working poor. The second is *business relocation*, that is, to avoid paying the higher minimum wage, companies located in the city or state will move out and companies considering moving into the city or state will be discouraged from doing so. Such moves would also then create job losses and fewer opportunities for the working poor. Since the purpose of raising minimum wage laws is to improve living standards and create better employment opportunities for the working poor, a rise in unemployment or business flight from the city or state would obviously be unintended and undesirable consequences of passing such a measure into law.

Laying off workers or relocating, however, are not the only ways that businesses might adjust to a minimum wage increase. In fact, there are three other ways that companies might respond to an increase in the Arizona minimum wage to \$6.75: 1) Businesses may raise prices, 2) They may operate more productively, and 3) They may see low-wage employees receive a relatively greater share of businesses' total wage, salary and profit payments. These three adjustment paths are likely to be the primary channels through which Arizona companies adjust to the ordinance, since they can be accomplished more readily and at lower costs than either laying off workers or relocating.



The adjustment process that would be least costly and disruptive for businesses would be to simply raise prices to reflect their increased costs. If a restaurant or hotel faced a 1.4 percent cost increase relative to sales due to the increased statewide minimum wage and they were able to raise their prices by 1.4 percent, then they would be able to fully pass through their increased minimum wage costs to their customers. In other words, their profits would not fall at all due to the \$6.75 minimum wage, and no other adjustments, such as unemployment or relocation, would be necessary to absorb their increased minimum wage costs.

Is it reasonable to expect that restaurants or hotels could raise their prices by 1.4 percent without losing business? This is the question on which we will focus in this section, but we will not need to give the same attention to this question as it relates to other industries. This is for the simple reason that, because other industries will face significantly lower cost increases relative to their sales, they will not experience serious difficulties raising their prices slightly to cover their higher costs. This point should be clear from considering briefly the case of the retail trade industry, where the representative, or median cost increase/sales ratio is 0.09 percent. This figure for the retail trade is much greater than the 0.06 percent cost increase/sales ratio median for all industries in Arizona, but is still roughly 1/15 the ratio for restaurants and hotels. The case of retail trade is also an important case to consider, since it employs nearly 15 percent of all people working in Arizona and also accounts for roughly 20 percent of total sales in the state.

With the retail industry facing a cost increase/sales ratio of 0.09 percent, this would mean that, to compensate itself penny-for-penny for the increased costs it faces, it should raise the price of its inventory by exactly the same 0.09 percent. The price of a \$20 sweatshirt would therefore need to rise to \$20.02—a *two-cent price increase on this \$20 item*. We then assume that this two-cent increase in the price of a sweatshirt will not be large enough to alter consumer purchasing habits, especially given that all retail clothing stores in the state will face comparable cost increases in their operations resulting from the \$6.75 minimum wage. All of the retail clothing outlets, in other words, are likely to raise their prices by the same two cents on the \$20 sweatshirt, so that none of the retail firms in the state are placed at a competitive disadvantage due to the higher minimum wage. If customers keep buying the same number of sweatshirts at \$20.02 as they did at \$20 even, this would then generate exactly the additional 0.09 percent in revenue necessary to cover the increase in costs due to the minimum wage raise to \$6.75.

Thus, we turn now to the hotel and restaurant industries, where the issue of raising prices to cover cost increases does require more attention.

## Price Increases for Restaurants and Hotels

In 1995 David Card and Alan Krueger published *Myth and Measurement: The New Economics of the Minimum Wage*. This was a path-breaking book that examined, among other questions, the effects in the fast-food industry in New Jersey when the state raised its minimum wage in 1991 by 18.8 percent above the national minimum wage. Card and Krueger were particularly interested in how fast-food



outlets on the New Jersey side of the New Jersey-Pennsylvania border would respond to their statewide minimum wage requirement, since these businesses faced nearby competitors who were required to pay only the lower national minimum wage. They found that the New Jersey fast-food outlets were able to raise their prices by about the same amount as their total costs were increased, which amounted to about 3.4 percent. They summarized their results by writing, “A comparison of price changes at fast-food restaurants in New Jersey and Pennsylvania after the increase in the New Jersey minimum wage suggests that average prices in New Jersey rose by about enough to cover the cost of the higher minimum wage,” (1995, p. 390).

Card and Krueger, along with other researchers, also compared this finding with experiences in the fast-food industries in other states after the national minimum wage increased. Again, they found that, for the most part, prices at these restaurants were marked up roughly in correspondence with the increased total costs associated with the minimum wage increase. For example, a series of studies between 2001 and 2006 by researchers at the U.S. Department of Agriculture and the Federal Reserve Bank of Chicago have consistently confirmed the view that fast-food businesses pass through their price increases quickly to customers following a minimum wage increase. For example, the most recent of these studies, a 2006 paper by James MacDonald of the U.S. Department of Agriculture and Daniel Aaronson of the Federal Reserve Bank of Chicago, examined the movement of individual item prices in restaurants throughout the United States after the 1996 and 1997 increases in the federal minimum wage. They found that:

Restaurant responses to minimum wage changes followed textbook expectations—prices rose, quickly, by amounts consistent with the modest costs imposed by minimum wage increases. And prices rose more where the wage increases raised costs more, in fast-food outlets and low-wage locations (p. 293; see also Aaronson 2001 and Aaronson, French, and MacDonald 2005).

Thus, these researchers provide strong evidence for the importance of the price mark-up as an adjustment mechanism in the fast-food industry. But can we assume that these findings will also apply to hotels and restaurants in Arizona after implementation of a \$6.75 minimum wage? There are two crucial questions to ask here:

### **1. How much would they have to raise prices to cover their increased costs?**

Based on the figures we have presented above, a representative firm in the hotel industry would have to raise prices about 0.8 percent to cover their increased costs relative to sales, and a representative restaurant would have to raise its prices by 1.4 percent. The figure is of course higher for limited-service restaurants, where a roughly 2 percent price increase would be needed to cover the cost increases from the minimum wage raise.



## 2. How much would they be able to raise their prices to cover these increased costs?

Answering this question first depends on how sensitive consumers are to price increases. Consider an average restaurant. If the price of a meal was, say, \$10 to begin with, would customers be discouraged from buying this meal if, due to the \$6.75 minimum wage, its price were to rise by 1.4 percent—with the 1.4 percent price increase bringing the price of the meal to \$10.14?

We also need to consider the competitive environment in which these businesses operate. Would the restaurants that raised their prices lose customers to other restaurants that did not raise prices? Here we need to focus on the fact that *all businesses in the same industry—hotels, restaurants, and fast-food outlets*—will face comparable cost increases. Hence, no business within Arizona loses its competitive position by having to cover the costs of the \$6.75 minimum wage. It is true that Arizona companies would face higher low-wage labor costs relative to their competitors in border states that continue operating under the Federal \$5.15 minimum. For the present, that would include New Mexico, Nevada, Colorado and Utah. California already operates with a \$6.75 minimum wage. For restaurants and hotels, however, the competition they face is overwhelmingly focused within their particular localities. They do not, for the most part, compete with other hotels and restaurants outside their locality, much less in other states.

Some hotels do compete with entities outside the state—for example, hotels in Prescott are in competition with hotels in, say, Santa Fe or Las Vegas for some vacationers and convention organizers. We will therefore consider this particular situation in our discussion below. Otherwise, our primary concern in considering the effects of cost increases will be the response of consumers to higher prices, rather than the possibility that businesses raising prices to cover their increased costs could lose their market share to those that do not face comparable cost pressures.

### Basics of Price Competition in the Restaurant and Hotel Industry

The key consideration here is straightforward: the relevant price increase necessary to cover costs, at 0.8 percent for hotels, 1.4 percent for all restaurants, and 2.0 percent for limited-service restaurants, is small in absolute terms, even if it is still higher than any other industry in Arizona. Thus, a restaurant with a \$20 average-priced meal would need a price increase to \$20.28. For the fast-food restaurant, the price of a \$2.00 hamburger would have to rise to \$2.04. And finally, considering the case for hotels, a \$100 hotel room would have to rise to about \$100.80, and a \$200 room to \$201.60. How much would price increases of this size likely affect customers' willingness to spend for restaurant meals and hotel rooms?

In fact, the available relevant literature suggests that consumer behavior is not likely to change by any discernable amount as long as price increases remain this small. This is because spending on hotels and restaurants are forms of discretionary consumption. Within a given price range—a \$20 restaurant meal or a \$100 hotel room, for example—consumers are primarily interested in the quality they are purchasing, and perceived quality differences between hotels and restaurants are more important in determining consumer demand than whether a meal will cost, say \$20 or \$20.28.



**Evidence on Hotels.** Consultants and researchers in the field of hotel management have long recognized this general situation. For example a 1997 paper by Robert Lewis and Stowe Shoemaker in the *Cornell Hotel and Restaurant Administration Quarterly* explains how price can serve as a crucial indicator of quality to potential high-end hotel and restaurant clients. Such clients are not seeking low prices as a priority. They are rather seeking high-quality services, and are willing to pay high prices in exchange for high quality. A hotel or restaurant that can maintain strong client demand with high prices is therefore signaling with its high prices that it is able to deliver on high quality. Correspondingly, for a hotel or restaurant in this market segment, to cut prices would signal that they have failed to maintain the high level of quality that their potential clients are seeking.

Hotel clients in this market segment are therefore willing to accept a broad range of room prices, depending on how they perceive the quality of the service they are receiving in return. According to Lewis and Shoemaker's own research, the range of acceptable prices for hotels for business purposes varied by \$54 around a mid-point price for rooms of a given quality. Lewis and Shoemaker also argue strongly against "cost-driven pricing," or letting costs rather than customer attitudes determine prices, for all hospitality services, including both hotels and restaurants. Citing leading management theorists Peter Drucker and Theodore Leavett, they argue that the error with cost-driven pricing is precisely that it does not attempt to gauge what the market will bear, and specifically, the fact that customers perceive prices as an important quality indicator.

This general view has been supported in two papers published in 2004 and 2006 by Linda Canina and Cathy Enz of the Cornell University School of Hotel Administration's Center for Hospitality Research, along with Mark Lomanno, President of Smith Travel Research. The 2006 paper by Canina and Enz studied pricing behavior in over 6,000 brand-name hotels in the U.S. between 2001 and 2003. They conclude from their research that "the results were clear that hotels in direct competition make more money when they maintained comparatively higher prices and did not discount to fill rooms" (Canina and Enz, 2006, page 6).

The overall point concerning hotels for our purposes is clear: potential clients of Arizona's hotels will almost certainly never be swayed in their decision to choose Arizona as a destination relative to other potential destinations by the fact that a room price in Arizona is set at \$100.80 rather than \$100. Arizona hotels do indeed compete with destinations outside the state. But the costs they will incur due to the minimum wage increase to \$6.75 will not be a factor in this competition.

**Evidence on Restaurants.** The literature on the restaurant industry reaches the same basic conclusions as that focused on high-end hotels. One important piece of research was an innovative 1994 study by Nicholas M. Kiefer, Thomas J. Kelly and Kenneth Burdett, published both in the *Journal of Business and Economic Statistics* and the *Cornell Hotel and Restaurant Administration Quarterly*. With the cooperation of a restaurant owner, these researchers set different prices within a given restaurant for a popular item on the menu, a fried haddock dinner. Specifically, they examined the effect on demand at the restaurant when they varied the price of the haddock dinner between \$8.95 and \$10.95 for different customers at the restaurant on a given night. Their major finding was that there was no effect on the



demand for the haddock dinner regardless of the variation in the price within this range. They write, “The data clearly indicate that a substantial negative effect of price on the amount of fish fry ordered is quite unlikely in the range of prices we tested,” (*Cornell H.R.A. Quarterly*, p. 52).

More generally, they conclude that their findings are consistent with the view expressed by the National Restaurant Association itself in its publication *Price-Value Relationships at Restaurants* (1992). The National Restaurant Association suggests in this publication that “consumers view themselves as being more quality and value conscious as opposed to price conscious—they want quality and are willing to pay for it” (quoted in Kiefer, Kelly, and Burdett 1994, p. 49).

Beyond the higher end market segments, the evidence from the Card and Krueger study of New Jersey fast-food restaurants suggests that, even with the fast-food restaurants, relatively small price changes do not lead to large changes in consumer demand. Card and Krueger deliberately studied fast-food restaurants along the border with Pennsylvania. As such, the restaurants on the New Jersey side of the border raised their prices 3.4 percent to cover their increased costs; in Pennsylvania, firms did not face any mandated wage increase at all.<sup>19</sup> Nevertheless, the New Jersey firms did not experience any significant change in consumer demand, despite having raised their prices 3.4 percent.

In other words, fast-food restaurant clients along this border did not migrate to the Pennsylvania side of the border to avoid the price increases in New Jersey. This experience would seem relevant to businesses in Arizona along its borders with New Mexico, Nevada, Utah, and Colorado. Even fast-food firms along this border should not expect to face increased competitive pressures from the fact that they may try to raise their hamburger prices from \$2.00 to \$2.04, or even somewhat higher, while those on the other side of the border maintain prices at \$2.00.<sup>20</sup>

In fact, given the modest price increases, this seems to be the only likely outcome because an important reason for the popularity of fast-food restaurants is precisely that getting a meal at these restaurants is *fast*. According to a 1999 study of the sales growth in the fast-food industry, “People want quick and convenient meals; they do not want to spend a lot of time preparing meals, traveling to pick up meals, or waiting for meals in restaurants. As a result, consumers rely on fast-food” (Jekanowski, p. 11). In other words, modest price increases are unlikely to cause consumers to take the time to drive further away for a quick meal.

This basic finding was confirmed most recently in a study on the specific effects of the living wage ordinance in San Francisco, which implemented a city-wide minimum wage of \$8.50 per hour in February 2004. In a 2006 paper, Arindrajit Dube, Suresh Naidu and Michael Reich of the Institute of Industrial Relations at University of California Berkeley examined how restaurants in San Francisco adjusted to their cost increases by, among other things, comparing their prices before and after implementing the \$8.50 minimum wage to restaurants in the area that are not located within San Francisco proper, and therefore were not covered by the law. They found that, in considering all San Francisco restaurants in their sample, prices rose by 2.8 percent relative to the restaurants outside the city limits; and limited-service restaurants within the city itself raised their prices by 6.2 percent. At the same time, they found that the San Francisco restaurants did not experience “any increased rate of business closure nor employment loss,” (p. 25).



## Productivity Improvements

How might business firms in Arizona raise productivity as a result of paying a higher mandated minimum wage and also giving ripple-effect wage increases? Considerable research in recent years has shown that a higher minimum wage can improve firm performance through several channels. These include lower costs for recruiting low-wage workers as well as lower turnover and less absenteeism among the low-wage workers on the job. Less turnover and absenteeism in turn mean that businesses' training and supervisory costs should fall. Combining all of these factors may then yield a workplace with better morale, less unneeded hierarchy and greater cooperation.<sup>21</sup>

Actually, the recent perspective on wages and company productivity has actually only rediscovered some old ideas that most economists had neglected for a generation. Probably the most famous historical case illustrating this approach was that of Ford Motor Company in the early part of this century. In 1913, the turnover rate at Ford Motors was roughly 400 percent. That means that Henry Ford found himself hiring four times the average number of workers he actually needed to staff production over the course of a year. Rates of absenteeism were similarly high.

Recognizing this problem, Ford instituted the \$5.00 a day wage rate for production workers, which amounted to a *near doubling* of wages at that time. It is now well documented in the professional literature that Ford's bold move led to significant decreases in both absenteeism and turnover. Other companies in this period, including Goodyear, General Electric, and Bethlehem Steel, took slightly different, but equally dramatic, approaches in the attempt to reduce turnover and raise morale. These included profit-sharing arrangements, pension plans, health insurance and educational subsidies for employees and their children.<sup>22</sup>

In the contemporary economy, we see these same considerations showing up at all sorts of companies, and not only ones where the pay increases are as dramatic as in the Ford case. Indeed, the basic point is that businesses operating in the same industry often have significantly different pay scales, and it does not necessarily follow that those paying higher wages charge higher prices or lose out in market competition. The successful ones paying higher wages do have higher *direct labor costs*, but they also tend to have lower *indirect labor costs*, including recruitment, turnover, absenteeism, and supervision.<sup>23</sup>

But the view that companies gain in efficiency through paying a higher minimum wage raises a vexing question. If there are benefits for businesses to grab through paying a higher minimum wage, why don't they just *voluntarily* pay their workers the higher wage? The answer to this question is that, as noted above, many companies, from the Ford Motors example onward, have understood that they can benefit through paying low-wage workers above the legal minimum wage. This is often termed the "high road" path to competitive success.



At the same time, for most companies, the savings they would gain through lowering turnover, absenteeism, and associated recruitment, training and supervisory costs will still be less than the cost increases they would face from paying higher wages. The average business, in other words, is not likely to get a \$1 benefit in cost savings for a given \$1 increase in wages. And unless they get the full \$1 in cost savings, they are not likely to raise the wage by that same \$1. This is why some firms do indeed succeed through what is termed a “low road” strategy—minimizing wage costs at the expense of higher costs of recruitment, turnover, absenteeism and supervision.

The recent research on the effects of living- and minimum wage increases consistently shows that companies paying the higher minimum wages have benefited through lowering turnover and absenteeism and raising morale. But these gains do not occur on a consistent basis, nor do they generate sufficient productivity gains to fully cover their rise in labor costs. For example, the 2005 study by Fairris, Runsten, Briones, and Goodheart of the Los Angeles living wage ordinance, which established a \$7.25 minimum wage with health benefits in 1997 for firms holding contracts with the City of Los Angeles (with the wage minimum rising to \$8.78 in 2004) found that turnover did fall significantly. The annual turnover at living wage firms averaged 32 percent per year, which compared with 49 percent for comparable non-living wage companies. The authors found that such turnover reductions represented a cost savings for the average living wage business that covered 16 percent of their higher labor costs.<sup>24</sup>

In general, we do not expect that the average business will be able to cover a high proportion of its increased costs through improved productivity. But they are likely to make modest gains in productivity. And given that, on average, hotels and restaurants will need to cover cost increases of no more than 1 percent to 2 percent of their sales, even a modest gain in productivity could make a significant contribution to absorbing some, if not all, of these costs.

## Employment Effects and Additional Business Adjustments

The evidence we have reviewed strongly suggests that business firms in Arizona will be able to absorb the increased costs of the \$6.75 minimum wage through a combination of raising prices and improving productivity by only slight amounts. This means that the \$6.75 minimum wage is very unlikely to induce companies to either lay off employees or relocate out of Arizona to avoid the increased costs of the measure. It correspondingly means that businesses will not need to cut into their profits or reduce the wages of higher-paid workers in order to cover their higher wage payments to low-wage workers.

This conclusion is especially pertinent as regards unemployment effects, or whether a rise in Arizona’s minimum wage to \$6.75 would lead businesses to lay off low-wage workers or be more reluctant to hire them in the future. Certainly in considering the negative unintended consequences of minimum wage or living wage laws, the potential for creating unemployment among low-wage workers is, rightfully, the single greatest matter of concern. As such, it is appropriate to consider the unemployment question in a bit more detail now.



The best-known recent work in considering the employment effects of minimum wage laws has been that of David Card and Alan Krueger, especially their 1995 book that we cited above, *Myth and Measurement: The New Economics of the Minimum Wage*. Card and Krueger have consistently found that changes in the minimum wage have not tended to raise unemployment by any discernable amount (and indeed have tended to be associated with slight *increases* in low-wage employment; see also Card and Krueger 2000). However the Card/Krueger research methods and results have been challenged by a number of authors, most notably David Neumark and William Wascher (for example 2000). But Neumark and Wascher's most recent findings, while still at variance with those of Profs. Card and Krueger, also show either no significant employment effects at all resulting from a minimum wage increase or only small negative effects.

The differences between the Card/Krueger and Neumark/Wascher findings have been well summarized by Professor Richard Freeman of Harvard University: "The debate is over whether modest minimum wage increases have "no" employment effect, modest positive effects, or small negative effects. It is *not* about whether or not there are large negative effects," (1995, p. 833; emphasis in original). Freeman's overall conclusion has also been supported by the findings of a recent survey of professional economists at 40 leading research universities in the fields of labor economics and public economics (Fuchs, Krueger, and Poterba 1998). The general professional view was, again, that there were no strong negative employment effects, if any, from raising the minimum wage by relatively modest amounts.<sup>25</sup>

The findings from these general studies are also consistent with the series of 2005 studies examining the impact of living- and minimum wage increases in San Francisco, Los Angeles, and Boston. None of these studies found evidence of significant employment reductions associated with the implementation of living wage laws.<sup>26</sup>

This summary of the academic research is also consistent with other evidence. In particular, we have examined the employment experience of two sets of states (including the District of Columbia as a state): the 11 states that operated with minimum wage levels higher than the federal minimum for the full period since the last recession, 2001 through 2005; and the 33 states that operated with the federal \$5.15 minimum throughout these years. These 11 high minimum wage states were Alaska, California, Connecticut, Delaware, the District of Columbia, Hawaii, Massachusetts, Oregon, Rhode Island, Vermont and Washington. The minimum wage in these states ranged between \$6.15 and \$7.50 as of January 2005. We present some basic findings from that comparison in Table 8.<sup>27</sup>



**TABLE 8—Comparing Employment Growth for States with Above \$5.15 Minimum Wage Standards versus States with only Federal \$5.15 Minimum**

**Average Annual Employment Growth in the Private Sector, 2001-2005 (in percentages)**

	All 50 States and the District of Columbia	11 States with Above \$5.15 Minimum Wage <sup>a</sup>	33 States with Only Federal \$5.15 Minimum <sup>b</sup>
Overall Employment Growth	0.48	0.57	0.52
Hotel Industry Employment Growth	0.07	0.19	0.12
Restaurant Industry Growth	2.29	2.21	2.32

Notes: <sup>a</sup>The states that have minimum wage standards that exceed \$5.15 during 2001-2005 are: Alaska, California, Connecticut, Delaware, the District of Columbia, Hawaii, Massachusetts, Oregon, Rhode Island, Vermont and Washington. <sup>b</sup>The states that have minimum wage standards equal to \$5.15 during 2001-2005 include the remaining states excluding the seven states (Florida, Illinois, Maine, Minnesota, New Jersey, New York, and Wisconsin) that have minimum wage standards that exceed \$5.15 for part of this time period. Sources: See Appendix 2

As we see, in terms of overall employment, the 11 states with a minimum wage higher than the \$5.15 federal mandate in these years experienced an average annual rate of employment growth of 0.57 percent, while the 33 states that did not have statewide minimums that exceeded the federal rate experienced an average annual employment growth rate of 0.52 percent. In other words, there was slightly *faster* growth in the eleven states with higher minimum wages over the full period than in the 33 states with statewide minimums at the federal rate.

The table next focuses on employment in the restaurant and hotel industries—those industries that would be most heavily affected by the \$6.75 minimum wage in Arizona. With restaurants, we do see that employment growth is somewhat slower in the 11 states with higher minimum wages—2.2 percent growth versus 2.3 percent for the 33 states with statewide minimums at the federal rate. For the hotel industry, the growth in employment was 0.19 percent for the 11 states with higher minimum wage mandates, whereas it was slightly slower, at 0.12 percent in the 33 with statewide minimums at the federal rate.

Overall, there is certainly no evidence in this table to suggest that a higher minimum wage in a state significantly reduced that state's rate of employment growth. To the contrary, if anything, employment in states with higher minimum wages tended to grow slightly faster than those operating at the federal \$5.15 minimum. Of course, many things other than the minimum wage mandate affect employment growth at any given time. For example, the September 11, 2001 terrorist attacks no doubt contributed to the almost non-existent employment growth in the hotel industry during this period. The national recession in 2001 (which began in March of that year, well before the terrorist attacks) obviously led to a decline in employment growth in all the states.

Recognizing these considerations, what the data in Table 8 still shows is that instituting a minimum wage law higher than the federal mandate does not, *on its own*, produce a major negative effect on employment—or indeed any significant discernable effect on employment of any kind—relative to all the other influences that may also be affecting employment. If the higher minimum wage laws in the



11 states were, on their own, producing a major influence on employment relative to other factors, then we would observe significantly lower employment growth figures for these states. This obviously did not happen in the years that we are observing, 2001-2005.

Through more formal statistical procedures, we are also able to test how statewide minimum wage laws affects employment in the states, *after controlling for other factors that could affect employment in the states*. We present this formal statistical analysis in Appendix 2. To summarize the main finding of this analysis: Considering the period 1991–2000, and controlling for other factors that influence employment growth, we found states which had minimum wage standards above the federal mandate did not experience slower employment growth in either the retail trade, the restaurant industry or the hotel industry.

In other words, this formal statistical analysis again supports our main conclusion from this section: that raising the minimum wage in Arizona from \$5.15 to \$6.75 will not produce any significant change in the employment practices of businesses in the state. Businesses will make small adjustments in their operations due to the higher minimum wage. But the primary adjustment they will make will almost certainly be to slightly raise prices, especially in the hotel and restaurant industries, and most especially among fast-food and other limited-service restaurants. Small improvements in productivity encouraged by the wage increase may also make a modest contribution to absorbing the increased costs resulting from the \$6.75 minimum wage.

## VI. Estimated Benefits from Raising Arizona Minimum Wage to \$6.75

### Who are the Low-Wage Workers in Arizona?

In Tables 9-11, we analyze the characteristics of the roughly 350,000 workers in Arizona—13 percent of the state’s total employed workforce—who would receive either mandated raises or ripple-effect wage increases if the state were to raise its minimum wage to \$6.75 per hour. We consider three basic features of these workers’ lives: Their individual characteristics; their family characteristics; and the poverty status of the workers and their families. We also provide the same set of information for the roughly 230,000 workers in Phoenix, 63,000 in Tucson and 20,000 in Yuma<sup>28</sup> who would receive raises through the \$6.75 minimum wage proposal.

**Individual Characteristics.** The basic facts are presented in Table 9. These workers constitute nearly 13 percent of the total Arizona workforce. Of these, 77 percent are adults (ages 20 or over); 50 percent are non-white, including Hispanics; 42 percent are Hispanics; and 57 percent are female. Their average age is 28 years old, and they have been in the labor force for over 12 years. In other words, the jobs that these workers hold now reflect their long-term occupational trajectory. They are not on a career ladder that will be moving them to a significantly better job situation. The overwhelming majority are not middle-class teenagers earning some extra spending money.

**TABLE 9—Individual Characteristics of Low-Wage Workers in Arizona, 2005**

	Arizona	Phoenix	Tucson	Yuma
Number of Workers	345,565	229,139	62,880	19,777
Percentage of Workforce	12.8	12.5	15.1	31.2
Average Age	28	27	24	30
Labor Force Tenure (years)	12	11	7	14
Percentage Teenagers (15-19)	22.6	24.5	26.9	14.3
Percentage Non-White (including Hispanics)	49.7	48.4	47.4	79.8
Percentage Hispanic	42.1	41.3	31.1	79.8
Percentage Female	56.5	53.1	58.4	53.9

Sources: See Appendix 3.

Considering the results for these metropolitan areas, the profile of workers in Phoenix closely resembles that for the state overall. This isn't surprising, since two-thirds of all the low-wage workers in the state are in Phoenix. In Tucson, with 18 percent of the state's low-wage workers, the major departure from the state's overall profile is that the percentage of Latino workers, at 31.1 percent, is well below the statewide average. The story is roughly the reverse for Yuma, where 5.7 percent of the state's low-wage workers live. Here, as Table 9 shows, nearly 80 percent of the low-wage workers are Hispanic. Moreover, the Yuma workers tend to be older and with more work experience. Their average age is 30 years, and they have been in the workforce for more than 14 years.

**Family Structure and Income Levels.** Figures on family status and income of workers who would be covered by the minimum wage are presented in Table 10. We are presenting data here on representative low-wage workers and their families in Arizona.<sup>29</sup> Considering such a representative worker who would receive mandated or ripple-effect raises from the increase to a \$6.75 Arizona minimum wage, they live in families that include approximately two other people, of whom one other person is likely to also be working. These statewide figures also apply to Phoenix and Tucson. In Yuma, families are larger, with 4.0 people on average, but the number of workers in the family is still 2.0. Broadly speaking, the figures on family size have an important implication; as we have seen, approximately 350,000 workers will receive either mandated or ripple-effect raises due to the minimum wage increase. But the benefits of this increase will apply to all family members—that is, to 1.1 million people. Considering the family as a whole, then, nearly 20 percent of the 5.9 million people living in Arizona would receive some direct income through raising the state's minimum wage to \$6.75.

In terms of earnings, for the state overall, we see that the workers in our sample getting a minimum wage increase live in families where overall earnings are about \$26,323.

**TABLE 10—Family Structure, Earnings, and Incomes of Representative Low-Wage Workers in Arizona, 2005**

	Arizona	Phoenix	Tucson	Yuma
Representative Family Size	3.0	3.0	3.0	4.0
Number of Wage Earners for Representative Family	2.0	2.0	2.0	2.0
Total Family Earnings	\$26,323	\$30,356	\$21,865	\$23,709
Percentage of Total Family Earnings Contributed by Worker	41.9	39.3	48.1	31.0
Total Family Income	\$31,097	\$33,093	\$31,463	\$33,219
Percentage of Total Family Income Contributed by Worker	35.7	32.3	37.2	25.7

Sources: See Appendix 3.

The representative low-wage worker's earnings amount to roughly 42 percent of the family's total earnings. This figure is higher in Tucson, at 48 percent, and slightly lower in Phoenix, at 39.3 percent. The earnings figure for our representative worker is substantially lower in Yuma, at 31.0 percent, where there are more likely to be more than two earners within the family.<sup>30</sup> Regardless of this variation, the basic picture holds throughout the state—low-wage workers in our sample are not bringing home the majority of their family's total earnings. At the same time, by contributing somewhere between 30 percent and 50 percent of earnings in most family situations, their contributions are clearly crucial to their family's overall wellbeing.

We next consider data on workers' contributions to their families' overall *income* as opposed to earnings. The income figures are necessarily higher than those for family earnings. This is because the income figures will include sources of money other than earnings to support the family, including welfare, interest, dividends, alimony and child support, Social Security, and unemployment insurance. The family's median income is about \$31,000. This statewide figure is also very similar to that for Phoenix, Tucson and Yuma. For the state overall, the low-wage worker is contributing about 36 percent to the family's total income. So again, the worker in our sample is not the primary source of the family's income. But they are a very large income source in families where overall incomes are generally low.

**Poverty Status.** In Table 11, we obtain a further sense of the situation of the families in which low-wage workers live by comparing their income levels to some basic living standard benchmarks—specifically a poverty benchmark and a “basic family budget” benchmark. But for these benchmarks to be at all meaningful, we first need to briefly describe the ways in which they have been developed. Of course, the U.S. government has calculated for many decades its own measurements of a poverty benchmark for families of different types. But, as we have discussed in previous work (e.g. Pollin and Brenner 2000), there are some serious problems with this standard. These problems have been widely recognized in the professional literature.



The basic concern with the official poverty line is that its methodology for measuring poverty has not been modified since the 1960s, even though conditions facing the poor in the U.S. have changed substantially over the past 40 years.

When it was first developed, the government methodology began by determining the costs for families of various sizes subsisting on what the Department of Agriculture terms the “Economy Food Plan,”—which was the lowest cost bundle of food items available that could ensure each family member received the basic caloric minimum. Based on survey evidence from the time, the government’s methodology then assumed that poor families spent approximately one-third of their budget on food. Thus, to generate the dollar figures for the poverty threshold, the government simply multiplied the dollar value of the “Economy Food Plan” by three. In subsequent years, upward adjustments to the poverty thresholds were made every year using the annual rate of inflation.

The fundamental problem with this methodology is its assumption that the costs for the poor of purchasing basic necessities are accurately reflected in this annual inflation adjustment. In fact, the costs of necessities for the poor—including medical treatment, childcare, transportation, and especially housing—have risen faster than the overall rate of inflation as measured by the Consumer Price Index that applies to all urban households. Indeed, a large research project sponsored by the National Research Council (NRC) provided a range of alternative methodologies that take account of the rising relative costs to the poor of non-food necessities.<sup>31</sup> Of particular interest for our purposes, the NRC reported that in considering six alternative methodologies, the average value for the poverty threshold generated by these six alternative methodologies was 41.7 percent higher than the official poverty threshold.

In addition, the official methodology for measuring poverty makes no adjustment for regional differences in the cost of living. But the cost of living in Phoenix is roughly four percent higher than the national average, and Yuma is six percent higher. The cost of living in Tucson is roughly at the national average.<sup>32</sup>

To obtain a better measure of poverty as is relevant for low-wage workers throughout Arizona, we should combine the effects of these two weaknesses in the official poverty thresholds: That the studies reported by the NRC suggest an alternative poverty line in the range of 42 percent above the official line; and that the cost of living for a good share of the affected workers in Arizona (at least those living in the Phoenix and Yuma areas) is about 4 percent to 6 percent above the national average. Adding these two factors together would suggest that the appropriate poverty line for much, if not most, of the state should be roughly 50 percent above the official line.

We therefore report a 150 percent of official poverty as our basic Arizona poverty line. We then also report 175 percent of official poverty as a “near poor” standard. We do also report the official poverty threshold figures in Table 11, but consider this as properly measuring a “severe poverty” standard.



Finally, we report a “basic family budget” line. This concept draws on the work of numerous recent researchers, and is defined by Boushey, Brocht, Gundersen and Bernstein (2001) as providing “a realistic picture of how much income it takes for a safe and decent standard of living. Boushey et. al. have developed specific estimates of this concept for communities throughout the United States. In Phoenix, for example, they estimate the following as constituting a basic family budget for a family with one parent and one child (in 2004 dollars): \$817/month for housing; \$265/month for food; \$363/month for childcare; \$255/month for transportation; \$249/month for health care; \$292/month for other necessities; and \$266/month for taxes. This amounts to a total of \$2,467/month, or roughly \$30,000/year. Their estimate of a basic family budget would then obviously rise for a larger family. For a family with two parents and three children, the basic family budget level for Phoenix is a little more than \$52,000. The comparable figures for both Tucson and Yuma are somewhat lower. For example, the basic family budget for the one parent/one child family in both Tucson and Yuma is about \$26,000. Drawing from this general methodology, we then also estimate the percentage of families with low-wage workers that fall below the basic family budget threshold.

In Table 11, we now are able to get a sense of what types of workers, along with their families, would be affected by the increase to a \$6.75 minimum wage. As we see, 22 percent of the families with low-wage workers in Arizona now live below the official government poverty line, what we conclude, following the work of the National Research Council study, should properly be termed a “severe poverty” threshold. Moreover, still referring to the studies cited by the National Research Council, 43 percent of low-wage workers and their families in Arizona live below what is a more reasonable poverty line and 49 percent are near poor. Finally, we see in Table 11 that fully 73 percent live below the basic family budget line.<sup>33</sup>

**TABLE 11—Poverty Status of Low-Wage Workers in Arizona, 2005**

	Arizona	Phoenix	Tucson	Yuma
Families in Severe Poverty (Percentage below official poverty line)	22.3	18.9	22.3	26.0
Families in Poverty (Percentage below 150% of official poverty line)	43.0	39.3	41.3	53.9
Families in Near-Poverty (Percentage below 175% of official poverty line)	49.4	48.2	46.0	64.2
Families below Basic Needs Threshold (Percentage below threshold)	73.3	73.3	66.8	NA

*Note: Percentage below basic needs threshold for Yuma is not reported because of its small sample size. Sources: See Appendix 3.*



## Impact of Minimum Wage Increase on Various Low-Income Families

How would raising the Arizona minimum wage affect the living standards of the workers receiving raises and their families? We have seen that the majority of low-wage workers in Arizona live in families in which they are not their family's only income source (and indeed are frequently not the primary income source). This means that we have to show how much overall family income changes after accounting for all income sources for the family. Moreover, the family's overall size and combined earnings level, rather than just the covered worker's wage income, will establish the family's tax obligations and eligibility for government subsidies—the most important of these being the Earned Income Tax Credit and Food Stamps.

In Table 12, panels A and B, we present data on what the overall change in disposable income—the most direct measure of a family's living standard—would be due to the minimum wage increase (details and references on how we generated these figures are in Appendix 4). We present these calculations for all families that include tipped workers earning between \$2.13 and \$3.74 and untipped workers now earning between \$5.15 and \$8.00. As we have seen earlier, workers now earning between \$7.25 and \$8.00 are likely to receive only a modest ripple-effect raise, on the order of 5 percent. As such, the gains for their families in disposable income will be much smaller than those which include workers in the \$5.15-to-\$6.75 wage range, in which the workers receiving raises will be getting an average increase of about 13 percent.

In panel A we show the effects on all families that now fall below what we have termed a “poverty” threshold—150 percent of the government’s official poverty line. This includes the families of 43 percent of all workers that will receive raises through the minimum wage measure. In panel B, we show the same calculations for all families falling below what we have termed the “basic needs” threshold, which includes the families of the 73 percent of workers that will benefit from the minimum wage increase (among the workers with family types for which we have basic budget thresholds; see footnote 33).



**TABLE 12—Changes in Living Standards for Low-Wage Workers and their Families After Arizona Minimum Wage Raise to \$6.75**

**Data are for workers earning up to \$8.00 per hour before minimum wage increase**

**A) Affected Workers in Poor Families**

(*Families at 150% of official poverty line or below; 43% of all affected workers*)

	Minimum Wage at \$5.15	Minimum Wage at \$6.75	Percentage Increase/Decrease
1. Worker Annual Earnings	\$10,676	\$11,541 (+866)	8.1%
2. Total Family Income before Taxes and Subsidies*	\$15,688	\$16,569	5.6%
3. Food Stamps	\$958	\$837	-12.6%
4. Medicaid/SCHIP	\$757	\$757	0.0%
5. EITC	\$1,584	\$1,567	-1.0%
6. Child Tax Credit	\$624	\$714	14.5%
7. Federal Tax	\$111	\$200	80.2%
8. State Tax	\$69	\$94	36.5%
9. FICA	\$1,070	\$1,137	6.3%
Disposable Income [rows (2+3+4+5+6)-(7+8+9)]	\$18,361	\$19,012 (+652)	3.5%

**B) Affected Workers in Families Below Basic Needs Thresholds**

(*73% of all affected workers with at least one child under 12 years old*)

	Minimum Wage at \$5.15	Minimum Wage at \$6.75	Percentage Increase/Decrease
1. Worker Annual Earnings	\$11,045	\$11,969 (+924)	8.4%
2. Total Family Income before Taxes and Subsidies*	\$18,412	\$19,389	5.3%
3. Food Stamps	\$889	\$762	-14.2%
4. Medicaid/SCHIP	\$762	\$733	-3.8%
5. EITC	\$2,380	\$2,337	-1.8%
6. Child Tax Credit	\$873	\$1,000	14.5%
7. Federal Tax	\$18	\$116	528.4%
8. State Tax	\$88	\$116	31.5%
9. FICA	\$1,227	\$1,302	6.1%
Disposable Income [rows (2+3+4+5+6)-(7+8+9)]	\$21,981	\$22,687 (+706)	3.2%

Sources: See Appendix 4. \*Total Family Income includes other subsidy income not examined separately here (e.g., SSI).



Our calculations take account of all income sources within the affected families—that is, the change in earnings from all the workers who would receive either mandated or ripple-effect raises resulting from the minimum wage increase; and the effect of these earnings increases on overall pretax family income. We then also calculate the effects of changes in income tax and social security (FICA) taxes, as well as changes in eligibility for the Earned Income Tax Credit, Medicaid/SCHIP, and Food Stamp subsidies.<sup>34</sup>

Considering all families in poverty in panel A, we see that the average worker in such families will receive an \$866, or a 8.1 percent wage increase, from \$10,676 to \$11,541 per year. This wage increase then leads to a 5.6 percent gain in the family's overall income before changes in taxes and subsidies. However, the family will now have to pay \$91 more in taxes (including Federal, State, FICA, and the child tax credit). Their support from both the EITC and Food Stamps will also fall by \$138. Overall then, the family's disposable income rises by \$652, a 3.5 percent gain. In panel B, considering workers in families that now fall below the basic needs threshold, we see that the overall disposable income rises by \$706, from \$21,981 to \$22,687, a 3.2 percent increase.

The roughly \$650-to-\$700 gain that these families receive is clearly not going to bring a dramatic improvement in their living standards. Nevertheless, such increases can bring modest yet still significant improvements in a variety of ways, as previous studies of the impact of living wage laws have shown. For example, having the extra \$650-to-\$700 per year should enable the family to reduce its debt, take a vacation, help toward purchasing a car, or reduce work hours. At the same time, in the context of the contemporary economy where, as we have seen earlier, the real purchasing power of the minimum wage has fallen precipitously over the last 35 years, previous studies have shown that workers who did not receive increases in the minimum wage appear to have experienced a worsening of their living standard.<sup>35</sup> The increase in the Arizona minimum wage will therefore at least serve as a counterweight to the tendency that otherwise appears prevalent for low-wage workers and their families in the United States today, which is a long-term deterioration of their living conditions.

It is also significant that this improvement in living conditions for low-income families in Arizona is occurring through an increase in the family's *earned income* rather than raising their benefits from EITC, Food Stamps, or some other government assistance program.<sup>36</sup> Surveys of low-wage workers themselves suggest that to receive a dollar of government assistance is by no means the same in terms of dignity and commitment to work as receiving a dollar of earned income. For example, the sociologist Kathryn Edin and anthropologist Laura Lein interviewed nearly four hundred welfare and low-income single mothers from cities of four states during the late 1980s and early 1990s and found that, "Self-reliance through work remained most mothers' long-term goal. The vast majority said that they wanted to pay all their bills with what they earned. Full financial independence, allowing them to forgo any outside help, was the only strategy that, in these mothers' eyes, involved no loss of self-respect..." (p.144, 1997).



## Benefits to Retail Businesses of Minimum Wage Increase

We have examined in detail the costs Arizona businesses will face resulting from raising the statewide minimum wage to \$6.75, and how the businesses are likely to respond to these costs. But many businesses in the state will also benefit from the rise to the \$6.75 minimum wage. The reason they will benefit is straightforward. When low-wage workers and their families have more money to spend, they will spend a good share of it in the lower-income communities in which they live.

Which businesses are likely to benefit and how much will they gain? As we have seen, raising the Arizona minimum wage to \$6.75 (\$3.75 for tipped workers) will provide mandated raises of about \$190 million and ripple-effect increases of another \$140 million—in total, roughly \$330 million in wage increases for 350,000 workers. However, not all \$330 million in wage gains will represent an increase in spending for Arizona businesses. There are two basic reasons for this:

1. As we have seen, the increases in *net family incomes* will be less than the wage gains because most low-wage workers will see their government subsidies go down and their taxes go up after they receive a raise. This is why, for example, among the families below the basic needs threshold with at least one worker earning up to \$8.00, workers' earnings rises by 8.4 percent but family disposable income increases by only 3.2 percent.
2. For the most part, the \$330 million in wage gains will be paid for through small price increases by the affected businesses. This means that the extra money being received by low-income families is coming out of the pockets of everyone else who is spending money in Arizona; the benefits to low-income families is resulting through an income transfer from the incomes of all consumers in the state. Considering this income transfer in itself, there should be no net benefit to businesses in Arizona from raising the minimum wage to \$6.75, only a different set of people spending the \$330 million worth of wage increases—lower income consumers are in a position to spend more while higher income consumers having slightly less to spend.

Even recognizing that the gains from the low-income families comes from the pockets of higher-income families, there are still two ways in which Arizona businesses will benefit from the minimum wage increase. We term these an *out-of-state spending injection* and a *low-income neighborhood spending injection*.

**Out-of-State Spending Injection.** Some of the extra income going to low-income families in Arizona will be coming from the pockets of out-of-state consumers, in particular, *out-of-state* tourists spending money in Arizona's restaurants, hotels, retail stores, and entertainment establishments. When these businesses raise their prices slightly to cover their higher labor costs, the effect of this is that extra money from out of state is being transferred into Arizona. This extra spending does first go to the low-wage workers in the tourist industry serving out-of-state tourists, and therefore does not directly benefit the business owners in the tourist industry themselves, or businesses in the state more generally. Low-wage



workers in the tourist industry, however, now have extra money to spend that came from outside of Arizona. When these workers spend their extra income they are spending money that, if not for the minimum wage increase to \$6.75, would not otherwise have been available to any consumers in the state. This is why we refer to this effect as an *out-of-state spending injection*, resulting from the minimum wage increase.

How large is this out-of-state spending injection likely to be? We estimate that the annual net income increase to Arizona workers coming from out-of-state tourists will be \$80 million (a technical description with references as to how we derived this figure is in Appendix 5). But this \$80 million in increased spending will in turn create further spending increases within the state—what economists call a *multiplier effect*. The multiplier effect will occur after low-income families spend their extra \$80 million. The business owners and workers who receive this extra money will also then spend a major portion making purchases from other business owners and workers in Arizona. Thus, the effect of the initial \$80 million out-of-state injection multiplies throughout Arizona's economy. To be specific, for every extra dollar spent by low-income families due to the out-of-state injection the total increase in spending for Arizona's economy will be \$1.43. In other words, the \$80 million out-of-state spending injection will generate a total of \$114 million in new spending in Arizona.

This \$114 million figure for net new spending is, of course, tiny in comparison to the total sales figure in the state of \$370 billion (\$114 million is 0.03 percent of \$370 billion). At the same time, as we have seen, the total costs to businesses from the minimum wage are \$356 million (including now the public sector). From this perspective, the \$114 million in new spending due to the out-of-state spending injection and the multiplier effects represents *fully 32 percent of the increase in costs* that businesses will face. Of course, there is no guarantee that the businesses that will be paying out \$356 million in extra wages and payroll taxes due to the higher minimum wage will be the same ones who receive the extra \$114 million in sales from the spending injection and multiplier. But there will certainly be some broad compensation operating through the effects of the out-of-state spending injection.

**Low-Income Neighborhood Spending Injection.** The primary business beneficiaries from the minimum wage increase will be retail stores in poor neighborhoods. This is for the simple reason that low-wage workers and their families will spend most of their increase in disposable income in the neighborhoods in which they live. How significant will be the spending increases in low-income neighborhoods? To estimate this, we have calculated how this effect is likely to operate within the 182 census tracts that constitute the low-income neighborhoods in the Phoenix metropolitan area. We present the basic data from this exercise in Table 13 (and again, a fuller methodological discussion is in Appendix 5).

**TABLE 13—Sales Increases for Retail Firms in Low-Income Phoenix Area Neighborhoods**

Total number of workers in Phoenix MSA receiving raises	229,139
Number of workers living in low-income neighborhoods that receive raises	144,358 (63% of Phoenix workers receiving raises)
Total disposable income in low-income neighborhoods	\$6.8 billion
Increased disposable income for low-wage workers and families living in low-income neighborhoods	\$148.3 million
Percentage increase in disposable income	2.2%

Sources: See Appendix 5.

As the table shows, we estimate that of the roughly 230,000 workers in the Phoenix area who will receive raises, 144,358, or 63 percent, are members of low-income families that live in one of the area's 182 low-income census tracts. The families in which these workers live will receive a total increase in disposable income of \$148 million due to the minimum wage increase. This increase in disposable income amounts to about 2.2 percent of the total disposable income among families living in these neighborhoods.

For the purposes of our estimate, we make the reasonable assumption that, whatever the proportion of their total disposable income the affected families were spending in their own neighborhoods *before the minimum wage rises*, they would keep spending that same proportion of their disposable income in their neighborhoods *after* the minimum wage is raised to \$6.75. As such, we estimate that spending in Phoenix's low-income neighborhoods will rise by about 2.2 percent after the minimum wage goes up to \$6.75. We have not conducted the same focused data exercise for other communities in Arizona. However, broadly speaking, we expect that spending in the other low-income neighborhoods in the state will increase by approximately the same two percent.

Such a 2.2 percent boost in sales for retail businesses in Arizona's low-income neighborhoods is a small, but still significant benefit. For purposes of comparison, it is an amount that is approximately equal to two-thirds the average rate of annual income growth of the U.S. economy over the past full business cycle, 1991–2000—that is, it is equal to eight months worth of average national income growth. If we assume that income growth in Arizona's low-income neighborhoods approximately mirror the average rate of income growth for the national economy, this means that the retail business in Arizona's low-income neighborhoods would effectively jump roughly eight months ahead of a normal pace of sales growth.

Moreover, as with the income benefits to individuals and families, a 2.2 percent increase in sales for a business can be compounded to the degree that this additional income also increases the creditworthiness of a business, and of the community more generally. With increased access to credit, businesses are able to expand, increase amenities to customers, or smooth over periods when sales revenue may fluctuate. This should mean further benefits to the life of low-income neighborhoods throughout Arizona.



## VII. Fiscal Impact on State of Arizona

In this section, we provide an estimate of the net fiscal impact for the State of Arizona of the proposed increase of the Arizona minimum wage to \$6.75 per hour. Though our focus is on the effects for the State of Arizona's budget, we do not expect that the proportionate magnitudes of the effects on government will vary significantly for either local or federal government operations in Arizona.

There are seven major areas to consider the potential fiscal impact with respect to this law. Three of these will bring positive fiscal impacts, through either more revenues or lower expenditures for the state. They are: increased individual tax revenues, with low-wage workers and their families receiving higher incomes; increased sales tax revenues, through private firms raising prices in response to higher labor costs; and reduced public health care expenditures, with some families moving from Medicaid to KidsCare or coverage from the Health Insurance Flexibility and Accounting Act (HIFA). The other four areas will entail a net fiscal loss, either through increased expenditures or lower revenues for the state. They are: wage increases for state government employees; cost pass-throughs from state goods and service contractors; lower business income tax revenues, corresponding to an assumed small decline in business profits; and the administrative costs of implementing the new law.

We summarize the overall effects from these seven fiscal impact categories in Table 14. As we can see from the table, our overall estimate of net fiscal impact is \$4.1 million in net fiscal savings, or a small net positive impact within an overall state budget for 2005 of \$20.9 billion (the \$4.1 million in net fiscal savings amounts to 0.02 percent of the state's 2005 budget). This includes \$16.0 million in either increased tax revenues or spending savings and \$11.9 million in new expenditures or reduced revenues. We should also note that these various effects will not all occur at a single point in time once the higher minimum wage standard becomes law. In the discussion below, we distinguish the effects according to whether they are ongoing changes or one-time effects; and, for the ongoing changes, according to the rate at which they are phased in over time.

**TABLE 14—Estimated Net Fiscal Impact of Arizona Minimum Wage Proposal**

<b>Positive Fiscal Impacts</b>	
1. Individual tax revenue increases	\$9.5 million
2. Sales tax revenue increases	\$4.0 million
3. Reduced public health care expenditures	\$2.5 million
4. TOTAL POSITIVE FISCAL IMPACTS (rows 1+2+3)	\$16.0 million
<b>Negative Fiscal Impacts</b>	
5. Wage increases for state government employees (ripple-effect raises)	\$6.8 million
6. Cost pass-throughs from state goods and service contractors	\$2.5 million
7. Business tax revenue reductions	\$2.4 million
8. Administrative costs of implementation	\$200,000
9. TOTAL NEGATIVE FISCAL IMPACTS (rows 5+6+7+8)	\$11.9 million
<b>NET FISCAL IMPACT (rows 4–9)</b>	<b>\$4.1 million</b>

Sources: See Appendix 6.



We should call attention here to one important point. One significant source of net fiscal gains is that some low-wage workers and their families, having moved into somewhat higher income brackets, will thereby receive reduced state subsidies, including state-financed health benefits. But even given this reduction in their state subsidies, we do not anticipate any families experiencing a net loss of overall income through these changes. According to our estimates, in all cases, the income gains received by families from the minimum wage increase will be greater than any reductions in government support. We provide some additional detail on this point below, with respect to health care subsidies specifically.

In what follows, we document briefly how we derived our estimates for each of the seven fiscal effects. Overall, our conclusion is that the net fiscal impact of raising the Arizona minimum wage to \$6.75 will be negligible.

## Positive Fiscal Impacts

### **1. Individual Income Tax Revenue Increases**

*Fiscal Impact: \$9.5 million in increased revenue, phased in with lag relative to wage increase*

As we have seen, we estimate that total wage increases from raising the Arizona minimum wage to \$6.75—including mandated and ripple-effect increases—will be \$331 million. The lowest individual tax rate in Arizona is 2.87 percent. We assume that it is appropriate to apply this lowest tax rate to the \$331 million in wage increases. It is true that not all workers receiving wage increases will be from the lowest income families. At the same time, not all of the wage increases will be taxable. These two effects should roughly counterbalance each other. This implies that the increased Arizona state revenue will be approximately \$9.5 million (\$331 million times 0.0287).

### **2. Increased Sales Tax Revenues from Private Business Pass-Throughs**

*Fiscal Impact: \$4.0 million in increased state revenue; revenue increases phased in at approximately same rate as state's wage increases*

The overwhelming majority of the workers who will receive either mandated or ripple-effect wage increases will be employed by private sector companies which do not hold state contracts. We estimate that these businesses will experience total cost increases—including mandated and ripple-effect raises as well as payroll tax revenues—of approximately \$312 million. It is reasonable to assume for our purposes here, as we have done above, that price pass-throughs will cover 75 percent of these increased costs from raising the Arizona minimum wage to \$6.75. Assuming this price pass-through, and assuming no change in spending patterns, this means that businesses will increase their revenues by a total of approximately \$233 million.



To estimate the effects of this revenue increase on state sales tax revenues, we need to also take account of the exemptions from sales taxes that operate in the State. For fiscal year 2005, we estimate \$370 billion in gross sales (see Table 5), and the Arizona Department of Revenue reports \$71.3 billion in taxable sales, or a taxable/total sales ratio of 19 percent. However, the restaurant and hotel industry, which will experience the largest proportionate increase in labor costs, had much higher taxable/total sales ratios. The ratio for restaurants and hotels was 72 percent. Thus, to estimate the increase statewide in sales tax revenues, we assume that our estimate of revenue increases for hotels and restaurants will come from a base of 72 percent of their sales. For the rest of the Arizona economy, we assume the sales tax revenue increase will come from 20 percent of a revenue increase.

Working from these assumptions, we show in Table 15 our estimation as to how sales tax revenues are likely to increase from the higher minimum wage. As we see, the increased revenue from hotels and restaurants is about \$3.4 million, and from the rest of the economy, about \$1.7 million. Not all of sales tax revenue, however, is distributed to the State. Rather, according to the Arizona Department of Revenue, the State receives 79 percent of sales tax revenue. By our estimate then, the total increase in sales tax revenue from the minimum wage law will be \$4.0 million (79 percent times \$5.1 million).

**TABLE 15—Calculation of Increased Sales Tax Revenue for State**

	Restaurants and Hotels	All Other Industries	Totals for Private Economy
Cost Increases from Minimum Wage Law	\$112.3 million	\$200.1 million	\$312.4 million
Revenue Increase from Price Pass-Throughs (75% of cost increase)	\$84.2 million	\$150.1 million	\$234.3 million
Taxable Sales Increase	\$60.6 million (72% of revenue increase)	\$30.0 million (20% of revenue increase)	\$90.6 million
Sales Tax Revenue Increase (5.6%)	\$3.4 million	\$1.7 million	\$5.1 million
Sales Revenue Distributed to State (79%)	\$2.7 million	\$1.3 million	<b>\$4.0 million in increased state revenue</b>

Sources: See Appendix 6.



### 3. Reductions in State Healthcare Expenditures

*Fiscal impact: \$2.5 million in state saving; state will experience savings at same rate at which wage increases are phased in, with a lag relative to wage increases*

In estimating the change in living standards for families resulting from the minimum wage increase, we saw that, with the average family living below the basic needs threshold, the increase in income from the higher minimum wage would also mean a reduction in their combined benefits from Medicaid and KidsCare from \$762 to \$733. This example applies more generally among some low-income families. As we see in Table 16, we estimate that 3,695 people in Arizona will lose Medicaid eligibility as a result of someone in their family receiving a wage increase, including 645 adults and 3,050 children. But as Table 16 also shows, all of those losing Medicaid eligibility will move into an alternative state-supported health insurance program—the adults into HIFA and the children to KidsCare. As the table shows, the benefits from these alternative programs are lower than those for Medicaid. This is the basis on which the State will receive a net fiscal savings of \$2.5 million.

According to our estimates, none of these changes in coverage will lead to a net loss of income for any families. More specifically, we estimate that there are presently a total of about 220,000 recipients of subsidized healthcare—including both children and adults—among families with at least one worker that will receive a raise after the \$6.75 minimum is implemented. Of these 220,000 subsidy recipients, about 4,000 people, or 2 percent, will lose some of their benefits because of the increase in their family earnings that would accompany the \$6.75 minimum wage. But in all 4,000 cases, the overall change in family income will still be positive, even after their health care subsidy falls.

This result should not be surprising, since government subsidy programs are designed to work in precisely this manner. That is, as earned income rises, households face both a rising tax burden and a decline in eligibility for subsidies. But the rise in income—the trigger for the decline in subsidies—is always intended to exceed the amount of money a family would receive through government support programs.

**TABLE 16—Net Effects of Changes in Health Care Eligibility**

Change in Eligibility	Number of People Affected by Eligibility Change	Fiscal Impact Per Person of Eligibility Change	Total Fiscal Impact of Eligibility Change
1. Loss of Medicaid Eligibility	3,695 people lose eligibility: 645 adults and 3,050 children	State saves \$872/adult; \$869/child	\$3.2 million
2. KidsCare and HIFA Offset to Medicaid Eligibility Loss	645 adults move from Medicaid to HIFA (part of SCHIP); 3,050 children move from Medicaid to KidsCare (SCHIP)	New state expenditures \$212/adult; \$181/child	\$690,000
Net Effect of Changes in Health Care Eligibility (rows 1-2)	3,695 (645 adults and 3,050 children)		<b>\$2.5 million in state savings</b>

Sources: See Appendix 6.



## Negative Fiscal Impacts

### 4. Raises for State Employees<sup>37</sup>

*Fiscal Impact: \$6.8 million in increased state expenditures*

We estimate that 7,389 workers will receive non-mandated ripple-effect increases following on the mandated raises. We estimate these ripple-effect raises will amount to approximately \$6.3 million, or about \$853 per worker. We then add payroll tax increases of 7.65 percent to the \$6.3 million in wage increases, which amounts to \$482,000. Adding all wage and payroll tax increases together, we estimate an overall increase in state expenditures of \$6.8 million.

**Time dimension of state employee wage increases.** The state will face no mandate to raise the wages of state workers after the \$6.75 minimum wage is implemented. We anticipate, however, that the non-mandated ripple-effect raises will most likely occur concurrently with mandated wage raises.

### 5. State Contractor Pass-Throughs

*Fiscal Impact: \$2.5 million in increased state expenditure; all spending phased in as new contracts are awarded*

When the statewide minimum wage rises to \$6.75, this will affect the bidding process for government contracts both for the goods purchased by the state and the services for which the state employs private companies. This is because both goods and service contractors with the state will attempt to pass through to the state their increased costs associated with the minimum wage rise. To estimate the fiscal impact of these pass-throughs, we need to consider three factors: The amount of money the state spends on out-sourced contracts with private companies; the likely cost increases that the private contractors will face due to the minimum wage proposal; and what percentage of their increased costs the contractors are likely to be able to pass through to the state, assuming that the awarding of contracts operates through competitive bidding. We have made some rough calculations as follows.

Based on State of Arizona budget documents for fiscal year 2005 (Office of the Governor, 2006), we have roughly estimated that the state spent about \$5.5 billion, or 26 percent of its overall \$20.9 billion budget, on goods and services purchased from private contractors. We provide details on how we derived this figure in Appendix 6. We then make two assumptions with respect to how large a cost increase the state will experience with these private contractors due to the minimum wage increase. First, we assume that, on average, the state's private contracting companies will experience cost increases from the minimum wage rise equal to the median level for all businesses in Arizona. And second, we assume that, on average, these state contractors will pass through to the state 75 percent of the cost increases they experience (with the other 25 percent of cost increases being absorbed through a combination productivity improvements and small reductions in profits). Based on these two assumptions, we then calculate that the state will experience an increase of \$2.5 million in costs from both their goods and services contractors.



## 6. Reductions in Business Tax Revenues

*Fiscal Impact: \$2.4 million in reduced revenue phased in with lag relative to wage increases*

As we have discussed in section V, we assume that the predominant way through which Arizona businesses will adapt to their higher labor costs associated with the \$6.75 minimum wage will be to raise their prices by small amounts. Given that the average business will face cost increases well below one percent of their sales, we expect that these price increases will be correspondingly small.

But we also allow in section V that businesses may absorb a share of their extra costs through two other measures, raising productivity and reducing profits. If firms' profits were to decline, that will, in turn entail a reduction in the taxes they pay, either as corporate profit taxes or, for unincorporated businesses, individual income taxes for the businesses' owners. Again, given that cost increases will be small for virtually all Arizona businesses, we do not actually expect most firms to incur any loss of profits due to the minimum wage increase.

For the purpose of this exercise, however, we want to be careful not to underestimate any potential net fiscal losses. We therefore allow that businesses will, on average, absorb 12.5 percent of their total increased costs through a profit reduction (representing, on average, less than 1/100 of 1 percent of business revenue)—with, again by assumption for this exercise, 75 percent of the total cost increases being absorbed by price increases and the other 12.5 percent being covered through productivity improvements.

How much revenue loss would the State of Arizona experience if Arizona businesses were to absorb 12.5 percent of their increased labor costs through profit reductions? Any such revenue losses would come from two tax revenue streams: the corporate profit tax, which is currently set at slightly less than seven percent; and the individual income taxes for the owners of unincorporated businesses. We assume that owners of unincorporated businesses pay individual Arizona income taxes at the highest 5.04 percent rate.

We therefore generate an estimate of business tax revenue losses based on these assumptions:

- As we reported in Section IV, the total costs to private businesses of the Arizona minimum wage increase will be \$312 million. If we assume that businesses themselves absorb 12.5 percent of this cost increase, that translates to \$39 million.
- We find that corporate revenue in the United States amounts to about 55 percent of all business profits and unincorporated businesses receive the remaining 45 percent.
- We apply the corporate and individual tax rates proportionately to these two business income streams.



Through these calculations, we derive our estimate that business tax revenue losses will amount to a total of \$2.4 million. Again, to emphasize, we generate this estimate not because we believe that businesses will necessarily experience such losses in profits, but rather, simply to be careful in allowing for such a possibility in estimating net fiscal impacts.

This loss of revenue would be phased in over the period that businesses fully adjust to their increased labor costs.

## 7. State Administrative Costs of Implementing New Law

*Fiscal Impact: \$200,000 in increased state expenditure; spending increases are immediate*

We have checked with government officials in five other states that have implemented minimum wage laws in recent years—those in Massachusetts, Connecticut, Washington, Maine and California—as to the costs these states incurred in implementing the law. The states already have in place administrative personnel assigned to monitoring and enforcing existing labor laws, including the federal minimum wage statute. Thus, they did not increase their administrative costs at all in the areas of monitoring and enforcement.

The only additional costs they reported incurring were the costs of placing advertisements in the media about the new law; and of producing and sending out posters that private businesses were to post announcing the new minimum wage standard. None of the officials that we contacted in any of the states were able to point us to a fully documented accounting history of these costs. This suggests that the costs were not high enough to incur detailed accounting assessments from state officials. An official in California informed us that the state sent out posters to one million employers, at a cost, including printing and postage, of \$380,000, or \$0.38 per company. An official from Maine informed us that they spent \$1,500 to produce and distribute 3,000 posters, or \$0.50 per company.

If we extrapolate this single cost to the roughly 126,000 businesses that now operate in Arizona, that would represent a total high-end cost of printing and mailing posters of roughly \$70,000 (though, in the case of Maine, not all companies were sent posters). We assume that the costs of administering the mailing of the posters would amount to another \$30,000, bringing the total costs of sending the posters to about \$100,000. If we then say that the State would spend roughly the same total amount on media advertisements of the new law, that would bring the total costs of implementation to roughly \$200,000.



## Possible Fiscal Impact of Higher Unemployment and Business Relocations

Two possible negative effects of raising statewide minimum wages that have been widely discussed are that the mandated wage increases will induce businesses to lay off workers, and that businesses will relocate out of the geographic area covered by the higher minimum wage mandate.

Both of these effects would, in turn, generate fiscal impacts. If businesses did lay off workers, this could produce a reduction in sales tax revenues for the state, since unemployed workers would likely reduce their level of spending. The state would also be faced with increased spending for low-income laid off workers, whose family members become newly eligible for state-supported health insurance coverage. If businesses were to relocate out of Arizona to avoid its higher minimum wage mandate, this would mean loss of sales tax revenues from the relocated businesses. But as we have discussed at length above, both the unemployment and relocation effects are likely to be negligible. This is why we have not attempted to quantify them formally in this section of the report.





# Appendix 1

## Generating Business Cost Estimates

Cost calculations were derived using the latest data from the following publicly available government sources: the 2004 Quarterly Census of Employment and Wages (QCEW), formerly known as ES-202 reports, published by the Bureau of Labor Statistics; the 2002 Economic Census (EC) also published by U.S. Census Bureau; the 2002 Census of Agriculture published by the National Agricultural Statistics Service, and the Current Population Survey's Outgoing Rotation Group (CPS-ORG) and Annual Social and Economic Supplement (CPS-ASEC) published jointly by the Bureau of Labor Statistics and the Census Bureau. Wage, sales, and other dollar-denominated variables were adjusted to constant 2005 dollars using the CPI-U (the national consumer price index for all urban consumers) unless otherwise noted. In this appendix we discuss how these sources of data were combined to produce our cost estimates.

### Calculations

#### 1. Number of Workers Receiving Wage Increases and Cost of Wage Raises

To determine the number of workers receiving wage increases we primarily used data from the 2005 CPS-ORG. In most cases, we used the sampling weights provided by the CPS.

**Mandated Raises.** The 2005 CPS-ORG data allow us to estimate the number of workers in 2005 who are expected to receive mandated raises (workers earning between \$5.15 and \$6.74 per hour and tipped workers in hotels and restaurants earning between \$2.13 and \$3.74, excluding tips, per hour). The CPS-ORG data also provide the information necessary to estimate the cost increase of mandated raises. For workers earning between \$5.15 and \$6.74, we take the difference of \$6.75 and their average current wage, multiply this amount by the average hours usually worked, and the average number of weeks worked per year (calculated for similarly waged workers for the state of Arizona from the 2005 CPS-ASEC). We repeat the same basic calculation for hotel and restaurant tipped workers, this time taking the difference between \$3.75 and workers' average current wage to determine the size of their raises. Because of small sample sizes, however, we pool three years of CPS-ORG data (2003-2005) to estimate the number and work characteristics of affected hotel and restaurant tipped workers.

**Ripple-Effect Raises.** The statistical results that form the background for our estimation procedure are the wage increases that Wicks-Lim calculated as having occurred at different wage levels subsequent to recent federal and statewide minimum wage increases. We presented these wage increases in Table 2 of the main text. We then apply these figures to generate a ripple-effect estimate, following three basic steps.

1. *Estimates of wage increases at different wage percentiles.* We assume that the ripple-effect increase for workers in the 5th, 10th, 15th, and 20th percentiles in Arizona will be proportionate to the typical ripple-effect increases we observe in the previous cases described above. For example, we saw in Table 2 that the increase for the 5th percentile workers was 44



percent as large as the increase in the minimum wage itself (a 10 percent increase in the minimum wage producing a 4.4 percent increase in the wages of 5th percentile workers). Thus, we estimate that in Arizona, the 31 percent increase in the minimum wage from \$5.15 to \$6.75 would elicit a wage increase for 5th percentile workers, 44 percent as large as a 31 percent increase—meaning that wages will rise by 14 percent for 5th percentile workers. Given the 31 percent increase in the minimum wage to \$6.75, we present in Table A1 our estimate of the likely percentage raises for workers in the 5th, 10th, 15th, and 20th wage percentiles in Arizona.

**2. Defining raises for different wage ranges.** We then assume that workers within a given wage range will receive increases equal to each of the percentage point estimates we see in Table A1. Thus, we assume that, when the minimum wage rises by 31 percent in Arizona, workers earning between the range of \$5.93-to-\$6.24 will all receive wage increases of 14 percent, equivalent to that of the 5th percentile worker. The \$5.93 worker will be the first to earn a ripple-effect raise because a 14 percent raise over \$5.93 is \$6.76. That is, the \$5.93 worker will receive a mandated raise to \$6.75, and a one-cent ripple-effect raise to \$6.76. We then assume correspondingly that Arizona workers earning between \$6.25 and \$7.25 will all receive a percentage wage increase equal to the 7 percent increase of workers in the 10th percentile. The 10th percentile worker in Arizona is now earning \$7.00 per hour. Finally, we assume that a third grouping of workers, earning between \$7.25 and \$8.00 will all receive wage increases equal to the 15th percentile worker in Arizona. The 15th percentile worker in Arizona now earns \$8.00 per hour.

**3. Dividing total wage increases between mandated and ripple-effect increases.** Workers who now earn between \$5.93 and \$6.74 will all receive raises that put them over the new \$6.75 minimum. But for these workers, part of their wage increase will be mandated—the part of the raise that puts them at \$6.75—and only the remainder of their wage increase will be a ripple-effect raise. For example, based on our estimation technique, we assume that a worker now earning \$6.00 per hour will receive a 14 percent raise after the Arizona minimum wage rises to \$6.75. This means that the \$6.00-per-hour worker will receive a new wage of \$6.84—14 percent above \$6.00. For this worker, the total increase to \$6.84 should be divided into two parts. Her mandated increase is from \$6.00 to \$6.75. Her ripple-effect raise is from \$6.76 to \$6.84.

**TABLE A1—Assumptions on Proportionate Wage Increases Resulting from Raising Arizona Minimum Wage to \$6.75**

Wage Level	Wage Rate Among Arizona's Workforce in 2005	Estimated Raise (Percentage) From a 31% Increase in the Minimum Wage
Minimum Wage	\$5.15	31%
5th percentile	\$6.00	14%
10th percentile	\$7.00	7%
15th percentile	\$8.00	5%
20th percentile	\$8.50	0.0%

Sources: Wicks-Lim (2005); also see Appendix text.



In panel A of Table A2, we document the ripple-effect raises that will apply for all private sector and local government workers in Arizona now earning between \$5.93 and \$8.00. With the workers in the first two wage categories—between \$5.93 and \$6.24, and between \$6.25 and \$6.74—we show the breakdown in the wage increases between the amounts that are mandated, bringing these workers up to \$6.75; and the remainder that are ripple-effect raises. For workers now earning \$6.75 - \$8.00, all of their raises are ripple-effect increases.

**TABLE A2—Estimation of Ripple Effects From Minimum Wage Increase**

**A) Private Sector and Local Government Employees**

Wage Range	(1) Present Average Wage	(2) Estimated Percentage Wage Increase	(3) Average Wage After Minimum Wage Increase	(4) Average Number of Hours Worked/Year	(5) Number of Workers in Category	(6) Total Yearly Wage Increases (In Millions)
\$5.93-\$6.24 (approx. 4th–6th wage percentiles)	\$6.01	14%	\$6.86	1440 (31.3 weekly hours x 46 weeks)	54,946	\$67.2 (\$58.5 mandated; \$8.7 ripple-effect)
\$6.25-\$6.74 (approx. 7th–9th wage percentiles)	\$6.50	7%	\$6.96	1398 (34.1 weekly hours x 41 weeks)	51,815	\$33.3 (\$18.1 mandated; \$15.2 ripple-effect)
\$6.75-\$7.24 (approx. 10th–11th wage percentiles)	\$6.98	7%	\$7.47	1610 (35.0 weekly hours x 46 weeks)	84,638	\$66.8
\$7.25-\$8.00 (approx. 12th–18th wage percentiles)	\$7.51	5%	\$7.89	1357 (34.8 weekly hours x 39 weeks)	76,646	\$39.5
Totals					268,045	\$206.9 (\$76.6 mandated; \$130.3 ripple-effect)

**B) Federal and State Employees in Arizona**

Wage Range	(1) Present Average Wage	(2) Estimated Percentage Wage Increase	(3) Average Wage After Minimum Wage Increase	(4) Average Number of Hours Worked/Year	(5) Number of Workers in Category	(6) Total Yearly Wage Increases (In Millions)
\$5.15-\$5.95	\$5.43	24%	\$6.75	1449 (31.5 weekly hours x 46 weeks)	1,390	\$2.7
\$5.95-\$6.24	\$6.01	14%	\$6.86	1440 (31.3 weekly hours x 46 weeks)	2,198	\$2.7
\$6.25-\$6.74	\$6.50	7%	\$6.96	1398 (34.1 weekly hours x 41 weeks)	518	\$0.3
\$6.75-\$7.24	\$6.98	7%	\$7.47	1610 (35.0 weekly hours x 46 weeks)	846	\$0.7
\$7.25-\$8.00	\$7.51	5%	\$7.89	1357 (34.8 weekly hours x 39 weeks)	6,132	\$3.2
Totals					11,084	\$9.5

Sources: See Appendix text.

Thus, in Table A2, we divide all workers receiving ripple-effect increases into four categories:

1. **Workers now earning between \$5.93 and \$6.24.** We assume they all receive 14 percent wage increases following the rise in the Arizona minimum wage to \$6.75. Their raises are divided into both mandated and ripple-effect increases.
2. **Workers now earning between \$6.25 and \$6.74.** We assume they all receive 7 percent raises, again, divided between mandated and ripple-effect raises.
3. **Workers now earning between \$6.75 and \$7.24.** We assume they also receive 7 percent raises. But for this group, their raises will all be ripple-effect increases.
4. **Workers now earning between \$7.25 and \$8.00.** We assume they all receive 5 percent raises, all of which are ripple-effect increases.

Table A2 then shows in columns 1 and 3 the average present wage for each of the wage categories, and the average wage for workers in this category once the \$6.75 minimum wage is implemented. In columns 4 and 5 we then show the average hours worked by employees in each of these wage categories and the number of workers in each category. From this, we can then calculate in column 6 an estimate of the total yearly wage increase for each of the wage categories. This calculation assumes that all workers remain at their present jobs, working the same number of hours as before the minimum wage increase. We believe that it is reasonable to assume that workers will maintain roughly their same level of total employment hours after the new minimum wage, as we discuss at some length in section V of this study.

Thus, for workers in the \$5.93-to-\$6.24 wage range, we find that their average number of hours worked is 1,440, and that there are 54,946 workers in this wage category. If all of these workers receive a 14 percent raise, and maintain their same number of hours after the new minimum wage is put into effect, the total wage increases, as shown in column 6, will be \$67.2 million dollars. As we also see in column 6, of that total of \$67.2 million in wage increases for this category of workers, \$58.5 million will be mandated increases, and \$8.7 will be ripple-effect increases. We can move down column 6 to see the comparable calculations made for the remaining three wage categories. We also see, in the last row of column 6, the total wage increases for these workers, of \$206.9 million; and the division of these increases into mandated and ripple-effect raises, with \$76.6 million being mandated increases and ripple-effect increases being \$130.3 million.

In panel B of Table A2, we present comparable estimates of ripple-effect raises that we assume will apply to federal and state employees in Arizona after a \$6.75 statewide minimum wage is established. As we have noted, all federal and state employees are not formally covered by the \$6.75 minimum wage proposal. In this situation, a ripple effect is still likely to occur because a large majority of the total workforce would be covered by the \$6.75 mandate. The federal and state government employers will be forced to hire out of the same pool as those employers operating under the \$6.75 standard. This is likely



to pressure the federal and state employers to voluntarily bring their wage standard up to the standard prevailing among other employers in Arizona. For generating the federal and state government ripple effects in Table A2, we adapted the same methodology that we have applied above to Arizona's private sector and local government employees. As we see in Table A2, including these workers among those receiving ripple-effect raises means an additional 11,084 workers obtaining ripple-effect raises, and an additional \$9.5 million total in ripple-effect raises accompanying the increase to \$6.75 in Arizona's minimum wage.

**Sampling weights using CPS-ASEC data.** An adjustment was made to the sampling weights used with the CPS-ASEC data so that the wage distribution produced from the CPS-ASEC data was consistent with the CPS-ORG data across several demographic characteristics. This adjustment was made because the CPS-ORG data is generally considered to provide more reliable wage data than the CPS-ASEC data. This is because the CPS-ORG wage data are based on respondents' recollection of their wages during the week prior to the survey. For hourly wage earners, the hourly wage rate is reported directly. For non-hourly wage earners, their wage rates are calculated by dividing usual weekly earnings by usual hours worked on their primary job. In contrast, CPS-ASEC wage data are based on respondents' recollections of their earnings and work schedule from the year prior to the survey. Specifically, wages are calculated by dividing a respondent's wage and salary earnings from last year by the product of his or her usual weekly hours last year and the number of weeks that she or he worked last year. Because of the retrospective nature of these data, the CPS-ASEC wages appear to suffer from greater measurement error than the CPS-ORG wages. In particular, teenagers, women, students and part-time workers are less prevalent among the low-wage categories analyzed in this study. Workers with these characteristics are less likely to be employed the entire year and/or with full-time schedules and as a result, more likely to fail to report their wage and hours accurately. To correct for this, the CPS-ASEC sampling weights were adjusted so that the frequency of teenagers, women, student, and part-time workers among low-wage workers matched that found in the CPS-ORG. Also, when using either data (CPS-ASEC or CPS-ORG) we exclude workers with hourly wages below \$0.50 per hour and above \$150 per hour to further control for measurement error.

## 2. Payroll Taxes and Other Costs

Along with the mandated and ripple-effect wage increases likely to result from a higher statewide minimum wage in Arizona, we provide an estimate of the payroll taxes that will accompany these higher wages. In our calculations we include a Social Security tax of 6.2% and a Medicare tax of 1.45% for a total FICA tax of 7.65 percent. Other legally required benefits include federal and state unemployment insurance and worker's compensation. Because of the dramatic differences in workers compensation costs across industries and between occupations within a given industry we are not able to reliably estimate the costs of these other legally required benefits. However, because the Social Security and Medicare taxes that we can estimate account, on average, for the majority of legally required benefits we are confident that adding the others would not alter our overall assessment of costs or the cost-to-sales ratios for Arizona firms (U.S. BLS, 2006).



### 3. Measuring the Relative Cost of Raising Arizona's Minimum Wage

To estimate the impact of an increase in Arizona's minimum wage relative to the level of economic activity of Arizona businesses, we used a methodology that we have applied in many other settings (e.g., Pollin and Brenner, 2000; Pollin, 2003; Pollin, Brenner, and Wicks-Lim, 2004).

In order to make a relative cost calculation, we must first have an estimate of the mandated and ripple-effect costs. To do this, we used the 2004 QCEW data in combination with the 2005 CPS-ORG to estimate the number of workers receiving mandated or ripple-effect raises and the overall cost of these raises. We estimate the proportion of workers earning wages in the following wage categories from the CPS-ORG: \$2.13-to-\$3.75/hour (hotel and restaurant workers only), \$5.15-to-\$5.93/hour, \$5.93-to-\$6.25/hour, \$6.25-to-\$7.25/hour, and \$7.25-to-\$8.00/hour for each detailed industry (4-digit NAICS code) for the state of Arizona in 2005. We also estimate, using the 2005 CPS-ORG and 2005 CPS-ASEC, the average wage, the average hours worked per week, and the average weeks worked per year for workers in the above wage categories for each 4-digit NAICS industry. In those cases where there were not enough observations in the dataset to reliably estimate these proportions in a 4-digit NAICS (a threshold was set at 30 individuals) we used estimates from a lower level of aggregation.

Applying the proportions and average work characteristics from the CPS-ORG and CPS-ASEC to the industry employment data from the QCEW, we are able to estimate the number of affected workers in each 4-digit industry, as well as how much each 4-digit industry's wage bill increases due to the minimum wage proposal. Specifically, the mandated wage increase for each industry is arrived at by multiplying the number of workers in each wage category by their average weekly hours, times their average number of weeks per year, times the difference between \$6.75 and their average hourly wage. Adding those totals together for each industry gives us the mandated wage cost increase for each industry. The ripple-effect wage increase for each industry is arrived at the same way. In this case there are three different categories of workers that we calculate costs for: workers earning \$5.93-to-\$6.25 who receive a 14% raise; and workers earning \$6.25-to-\$7.25 who receive a 7% raise; and workers earning \$7.25-to-\$8.00 who receive a 5% raises. (We subtract the mandated wage increases for those earning between \$5.93 and \$6.75). Adding these totals together for each industry gives us the ripple-effect raise cost increase for each industry. As before, we add a FICA tax of 7.65% to these total wage increases.

After estimating the total cost of the Arizona minimum wage proposal for each detailed industry, we need to examine these costs relative to some measure of businesses' economic activity. In this study we chose to compare total costs to each industry's total sales. In order to estimate each industry's total sales, we use the Economic Census (EC) for 2002 and the Census of Agriculture for 2002.

From the EC we were able to measure average sales per employee for all non-agricultural private sector firms in each detailed industry in the state of Arizona in 2002. Adjusting these sales figures for inflation using the national consumer price index, we then have a sales-per-employee figure expressed in 2005 dollars for each 4-digit NAICS industry. Multiplying the inflation-adjusted sales-per-employee figures times employment in each industry from the 2004 QCEW gives us our estimate of total sales in each



4-digit industry. For some industries, sales-per-employee figures were not available at the state-level, and so national figures were used. We adjusted the national figures downward to account for the lower average sales-per-employee figure across industries in Arizona. Specifically, the national sales-per-employee figures were reduced by 13 percent for our Arizona estimates.

The 2002 Census of Agriculture provides sales data at the national level for agricultural products sold by farms (establishments involved in crop or animal production). We divided the sales figure by the total number of employees from the 2002 QCEW for NAICS 111 and 112 (Crop Production and Animal Production) to arrive at a national sales-per-employee figure for the crop and animal production industries. We then adjusted this figure downward as with other national-level sales-per-employee data to better reflect the conditions in Arizona. Next, we multiplied this figure by the level of employment in these industries in Arizona from the 2004 QCEW. Finally, we adjusted this figure for inflation to reflect 2005 dollars.

With both cost figures and sales figures for each 4-digit NAICS industry represented in the QCEW, as well as two additional agricultural industries (NAICS 111 and 112), we are able to construct industry cost-to-sales ratios. The median cost-to-sales ratios reported in Table 6 for each 2-digit NAICS industry are weighted by industry employment to take into account the varying shares each 4-digit NAICS industries represent of the 2-digit NAICS industries listed.

These estimates exclude private companies and their workers who are in other agricultural industries (NAICS 113 to 119) and unclassified (BLS classification of NAICS 99) because of the lack of publicly available data. As a result, about 4% of establishments and less than 1% of employment in Arizona reported by the 2004 QCEW were excluded from these estimates.

**Measuring Averages: Mean versus Median Figures.** The statistical analysis we conduct here entails utilizing data from several sources about conditions in a wide range of industries. To make these usable for the purposes of analysis then entails estimating conditions for the average or representative companies derived from these data samples. The mean and median of a data sample are two separate statistics for measuring average or representative conditions. Both measures provide valuable information and frequently, both measures provide similar, if not identical information about a given data set. But at times, the two measures provide different pictures of reality, and, in such situations, we need to decide which is more reliable.

To illustrate the issue, consider the case of five businesses, which have generated the following amounts of sales over the past year: \$2,000, \$2,000, \$2,000, \$2000, \$12,000. We calculate the mean level of sales for these five firms by adding up the total amount of sales of the five companies, which is \$20,000, and dividing by the number of firms which is five. The mean sales of these five firms is therefore \$4,000. We calculate the median by putting the five firms in a rank-order, from the lowest to the highest sales figure. The sales figure that is precisely in the middle of the rank-ordering is the median. The median income of the five firms is therefore \$2,000. Which is the most accurate indicator of the reality we are trying to describe? Both the mean and median tell us something useful about the world. But



the difference is that, with the mean, the one company earning \$12,000 in sales brings up the average substantially, and the resulting \$4,000 figure does not adequately capture the fact that most businesses earned only \$2,000 and that none of the businesses actually earned something close to \$4,000.

As such, in cases where there is a divergence between the mean and median, the median figure is almost always a more accurate measure of the representative situation. Thus, in our analysis above, we rely primarily on median statistics when the two statistics diverge significantly. But there are also some cases when neither the mean nor the median provides an accurate picture of the main patterns within a data sample. In such cases, we would simply not report either the mean or median as providing an accurate picture, and would instead provide a greater level of detail for a data set through which the mean or median will offer a reliable statistical picture. The most important example of this in our study is with the figures for the increase cost/sales ratios as they apply on an industry-by-industry basis as reported above.

We also provide a couple other “average” measures in Table A3 to provide the reader with even more information about the data. In the second and third rows, we provide the mean and median cost-to-sales ratios across all 290 4-digit NAICS industries represented in our sample. The mean reported here varies from the ratio of the total cost increases of private firms relative to total sales reported in Table 5 because it is the mean cost-to-sales ratio across 4-digit NAICS industry observations not a ratio of aggregate sums (i.e., total costs for all industries divided by total sales for all industries). These two expressions are mathematically different. Also, note that the statistics in Table A3 do not adjust for the employment shares of each 4-digit industry. As a result, the median varies from that reported in Table 6 above. Despite the varying techniques behind each statistic, they are all roughly the same magnitude: the typical cost-to-sales ratio for Arizona business firms is 1/10th of 1 percent of sales or less. Finally, to provide a measure of the variation in the cost-to-sales ratios across 4-digit NAICS industries, we provide the standard deviation of these cost-to-sales ratios in the last row of Table A3.

**TABLE A3—Unweighted Summary Statistics of Cost-to-Sales Ratios**

Number of observations (4-digit NAICS industries)	290
Mean	0.11%
Median	0.04%
Standard Deviation	0.22%

Source: See Appendix text.



## Measuring the Relative Cost of Raising Arizona's Minimum Wage for Limited-Services Restaurants.

**Restaurants.** Because the CPS-ORG does not provide an industry classification fine enough to identify limited-service restaurants, the narrowest NAICS classification (722211) containing fast-food restaurants, we turned to the BLS Occupational Employment Statistics (OES) to estimate the proportion of limited-service restaurant workers who would receive a raise from the Arizona proposal. This BLS program publishes estimates of the 10th, 25th, 50th, 75th, and 90th wage percentiles of limited-service restaurant workers at the national level in 2004. We used these wage percentiles to approximate the proportions of workers who are likely to receive raises from the Arizona minimum wage proposal.

Two steps had to be taken to use these wage percentiles to approximate the proportions of affected Arizona workers in the limited-service restaurant industry. First, we adjusted the national wage percentiles downward to reflect that fact that the average wage of food service workers in Arizona (\$5.65) is lower than the average wage in the food service industry nationally (\$5.75). Second, based on the adjusted wage percentiles (10th, 25th, 50th, 75th, and 90th) we imputed the wage distribution of limited-service restaurant workers in Arizona. Specifically, we approximated the following percentages of limited-service restaurant workers for each of the wage intervals that we analyze:

**TABLE A4—Percent of Affected Limited-Service Restaurant Workers in Arizona, 2005**

Wage Interval	Percent of Limited-Service Restaurant Workforce
\$5.15-\$6.25	26%
\$6.25-\$6.75	12%
\$6.75-\$7.25	11%
\$7.25-\$8.00	14%

*Source: See Appendix text.*

In other words, we estimate that approximately 63 percent of workers in the limited-service restaurant industry are expected to receive mandated and/or ripple-effect raises due to the Arizona minimum wage proposal. Of that 63 percent, 38 percent are expected to receive mandated raises.

We derived the remaining data needed to calculate the cost-to-sales ratio for the limited-service restaurant industry using the same methodology as discussed above.





# Appendix 2

## Examining Employment Effects of State Minimum Wages

One central question that states must address whenever they consider raising their minimum wage is the effect such action will have on state employment. In this appendix we present an in-depth statistical analysis over the last full business cycle (1991 to 2000) of the changes in state employment in industries likely to be heavily affected by minimum wage changes, specifically the retail trade, restaurant, and hotel industry. We extended Card and Krueger's (1995) cross-state analysis, constructing a dataset with one observation for each of the fifty states for each year between 1991 and 2000, i.e. over the last full business cycle.

Our first analysis, presented above in Table 8 is an examination of the average annual percentage change in state employment for each state between 2001 and 2005. We divide states into two groups, those that had higher state minimum wages during the 2001 to 2005 period and those that did not, taking the group average for each. Our employment data come from the 2001 to 2005 QCEW reports published by the Bureau of Labor Statistics. Note that only the first three quarters of 2005 QCEW data are currently available. We take the average across the three quarters to produce an annual average for 2005. Discussion of this analysis can be found in the main body of the report.

For our second analysis, using panel data techniques, we regressed the change in log employment on a series of independent variables, including: the fraction of directly affected workers in the year prior to an increase in the minimum wage; the change in the state's employment to population ratio; the change in the state's unemployment rate; the change in the log of average adult male wages; and a regional effect. The results are reported in Table A5 (this analysis was originally published in Pollin, Brenner and Wicks-Lim, 2004).

**TABLE A5—Regression Analysis of the Employment Effects of Federal and State Minimum Wage Changes**

Dependent Variable—Change in Log Employment in:	Retail Trade	Restaurants	Hotels
Fraction of Directly Affected Workers Prior to Minimum Wage Increase	0.191*** (5.75)	0.369*** (9.35)	-0.103 (0.97)
Change in the State Employment/Population Ratio	0.014 (0.23)	-0.049 (0.68)	0.290 (1.48)
Change in the State Unemployment Rate	-0.453*** (4.13)	-0.483*** (4.05)	-0.556* (1.78)
Change in the Log Wage of Adult Males	0.010 (0.46)	0.036 (1.40)	0.007 (0.10)
Region Effect	-0.004*** (3.91)	-0.006*** (4.40)	-0.003 (1.01)

*Note: This model is estimated on 450 state-year observations for the fifty states (excluding the District of Columbia) between 1991 and 2000 using a random effects generalized least squares regression. Employment totals are taken from ES-202 data published by the Bureau of Labor Statistics. The employment to population ratio and the unemployment rate are taken from Geographic Profiles of Unemployment and Employment, also published by the Bureau of Labor Statistics. The fraction of directly affected workers and the average wage of adult males are calculated for each state from the Current Population Survey's Outgoing Rotation Group file. T-statistics are reported in parentheses below the estimated coefficients; \* significant at the 10 percent level; \*\* significant at the 5 percent level; \*\*\* significant at the 1 percent level.*

If an increase in the state minimum wage diminished employment prospects in a specific industry, we would expect for the coefficient on the fraction of directly affected workers prior to the minimum wage increase to be negative and statistically significant. In fact, we find the exact opposite effect for the retail trade and restaurant industry, where this coefficient is positive and statistically significant at the 99 percent confidence level. Although this regression coefficient is negative in the hotel industry, it is not statistically significant. This more in-depth statistical analysis confirms the findings from our cross state comparisons between 2001 and 2005.



# Appendix 3

## Using the Current Population Survey to Analyze Potentially Affected Workers and Their Families

In this study we utilize the Current Population Survey (CPS) to examine the demographic characteristics and labor force participation of low-wage workers in Arizona. Our methodology closely mirrors that found in Pollin and Brenner (2000) and Pollin, Brenner, and Wicks-Lim (2004), so interested readers can find a more detailed discussion of this approach in the appendices of those reports. This appendix briefly summarizes our methods, highlighting differences from those used in Pollin and Brenner (2000) where appropriate.

### Data

Data for our analysis was drawn from CPS Annual Social and Economic Supplemental survey (ASEC). The CPS-ASEC data set provides extensive information on respondent income, family demographics, the sources of family income and poverty status. Our calculations for Arizona are based on three years of CPS-ASEC data (2003 to 2005). This survey asks about respondents' income sources and labor force participation in the previous year. Our calculations for the Metropolitan Statistical Areas (MSA) of Phoenix, Tucson, and Yuma are based on CPS-ASEC data from 2001-2005. As in our other analyses, wages and incomes were updated using the national consumer price index (CPI-U) to 2005 levels and CPS- ASEC sampling weights were adjusted to reflect the wage distributions generated by the CPS-ORG (see discussion in Appendix 1).

Our sample of low-wage workers include workers earning between \$5.15 and \$8.00 per hour and hotel and restaurant workers earning between \$2.13 and \$3.75 per hour (excluding tips). We exclude from our sample of workers those wage earners who are self-employed, and workers who earn wages less than \$0.50 per hour or greater than \$150 per hour (2005 dollars). Unlike our analysis in Pollin and Brenner (2000) we do not place any restrictions on annual hours worked. Also, we use the basic family budget thresholds reported in Boushey et al. (2001) as the benchmark for our basic needs thresholds. Note that these thresholds apply only to those families that have one to two adults and one to three children under the age of 12. Approximately 30 percent of affected workers have families that meet these criteria. Finally, we adjust our sampling weights so that the number of affected workers is consistent with our estimates from the CPS-ORG 2005 data.

## Measuring Averages: Mean versus Median Figures

As discussed in Appendix 1, means and median statistics provide two different views of the same data. Statistics of the individual and family characteristics of the representative worker (i.e., the median individual and family characteristics) are provided in Tables 9–11 above. We present the mean statistics (and standard errors) for the same characteristics in Tables A6–A8 to provide the reader with a sense of how the overall sample of low-wage workers vary in these characteristics from the representative worker.

Differences between the median and mean statistics are significant for several of the characteristics presented in these tables. These include family earnings, family income, percentage of total family earnings contributed by worker, and percentage of total family income contributed by worker. The mean statistics for each of these characteristics are higher than the median statistics. This pattern indicates that for each characteristic, there is a relatively small subset of workers who are very different from the “representative” or “typical” worker.

### **1. Average Family Income and Earnings**

There is a small subset of workers who are members of families with incomes and earnings that are much higher than the vast majority of low-wage workers. While the majority of low-wage workers may be described as low-income (with incomes less than the median U.S. household income of \$44,389 in 2004)<sup>38</sup>, as indicated by the median family income reported in Table 10 (\$31,097), less than 15 percent of low-wage workers come from families that may be described as high income (with incomes in the highest quintile of U.S. household incomes, or greater than \$88,029, in 2004). The high income levels of this small minority of low-wage workers skew the family income and earnings distributions to the right. As a result, the family characteristics of these workers “pull” the mean family income and earnings above the medians.

### **2. Average Worker Contributions to Total Family Income and Earnings**

There is a small subset of low-wage workers, approximately 20 percent, who are the sole contributors to their families’ incomes. The contributions of these workers (roughly half of whom are single) are much higher than the typical worker, and as a result, do not reflect the typical situation for low-wage workers. Because their contributions are significantly higher (100 percent) than the majority of low-wage workers, they “pull” the mean worker contribution to family income and earnings above the median.

**TABLE A6—Means of Individual Characteristics of Low-Wage Workers in Arizona, 2005**

(Standard errors in parentheses)

	Arizona	Phoenix	Tucson	Yuma
Weighted N	345,565	229,139	62,880	19,777
Unweighted N	559	576	160	56
Age	31.7 (0.7)	31.2 (0.7)	29.5 (1.1)	33.2 (2.2)
Labor Force Tenure (years)	15.3 (0.7)	15.1 (0.7)	12.2 (1.1)	17.3 (2.3)
Percentage Teenagers (15-19)	22.6 (2.1)	24.5 (2.1)	26.9 (4.3)	16.2 (5.9)
Percentage Non-White (including Hispanics)	49.7 (2.4)	48.4 (2.3)	47.4 (4.5)	79.6 (6.2)
Percentage Hispanic	42.1 (2.3)	41.3 (2.2)	31.1 (3.8)	79.6 (6.2)
Percentage Female	56.5 (2.3)	53.1 (2.3)	58.4 (4.5)	56.3 (7.0)

Source: See Appendix text.

**TABLE A7—Family Structure, Earnings, and Incomes of Average Low-Wage Workers in Arizona, 2005**

(Standard errors in parentheses)

	Arizona	Phoenix	Tucson	Yuma
Weighted N	345,565	229,139	62,880	19,777
Unweighted N	559	576	160	56
Family Size	3.2 (0.1)	3.3 (0.1)	3.0 (0.1)	3.9 (0.2)
Number of Wage Earners	2.0 (0.1)	2.0 (0.1)	2.0 (0.1)	2.4 (0.2)
Total Family Earnings	\$42,452 (\$2,889)	\$44,522 (\$2,843)	\$40,501 (\$3,916)	\$27,546 (\$3,071)
Percentage of Total Family Earnings Contributed by Worker	54.0 (2.0)	51.5 (2.0)	55.5 (3.9)	44.7 (5.0)
Total Family Income	\$47,288 (\$3,043)	\$49,476 (\$3,135)	\$46,997 (\$4,608)	\$32,915 (\$2,832)
Percentage of Total Family Income Contributed by Worker	45.7 (1.9)	44.9 (1.8)	47.7 (3.7)	34.4 (3.9)

Source: See Appendix text.

**TABLE A8—Poverty Status of Low-Wage Workers in Arizona, 2005** (*Standard errors in parentheses*)

	Arizona	Phoenix	Tucson	Yuma
Weighted N	345,565	229,139	62,880	19,777
Unweighted N	559	576	160	56
Families in Severe Poverty (Percentage below official poverty line)	22.3 (2.0)	18.9 (1.9)	22.3 (3.8)	26.0 (6.1)
Families in Poverty (Percentage below 150% of official poverty line)	43.0 (2.4)	39.3 (2.3)	41.3 (4.5)	53.9 (7.2)
Families in Near-Poverty (Percentage below 175% of official poverty line)	49.4 (2.4)	48.2 (2.3)	46.0 (4.5)	64.2 (7.1)
Families below Basic Needs Threshold (Percentage below threshold)	73.3 (3.7)	73.3 (3.9)	66.8 (7.6)	NA NA

Source: See Appendix text.



# Appendix 4

## Generating Net Benefit Estimates

Net benefit estimates are calculated for all families with at least one affected worker (we expect at least one worker in the family to have increased their earnings due to the minimum wage increase) using the 2005 Annual Social and Economic supplemental survey of the CPS (CPS-ASEC). Affected workers include those who receive either or both mandated and ripple-effect wage increases. We employed the method described in Appendix 1 to identify these affected workers. As in our other analyses, wages and incomes were updated using the national consumer price index (CPI-U) to 2005 levels and CPS-ASEC sampling weights were adjusted to reflect the wage distributions generated by the CPS-ORG (see discussion in Appendix 1). We only used one year of data to avoid complications of year-to-year changes in program eligibility requirements.

The 2005 CPS-ASEC data set provides detailed information about family earnings, family incomes, applicable poverty thresholds, family structure, non-cash benefits, and simulated income tax filing status and income tax liabilities. We use these data to calculate each family's disposable income before and after the minimum wage change to provide a measure of the family's net benefit from the minimum wage increase. Specifically, we adjust the amount of disposable family income (with and without the increased earnings) by the following items: federal and state income tax, Child Tax Credit, Earned Income Tax Credit, FICA, food stamps, and subsidized healthcare (Medicaid/SCHIP) each of which varies with changes in earnings. Note that Arizona has a progressive state individual income tax.

To provide a measure of the variability of our net benefits estimates, we provide in Table A9 the average values presented in Table 12 above, along with their standard errors.

## Calculations

### 1. Disposable income

To determine the net benefits (or change in disposable income) for each family after the minimum wage increase we made the following calculation:

Disposable income before minimum wage change =

Total family income – federal income tax – state income tax – FICA + EITC + Child Tax Credit + value of food stamp benefit + fungible value of subsidized health care

Disposable income after minimum wage change =

Total family income + minimum wage raise in annual family earnings – federal income tax  
 – state income tax – FICA + EITC + Child Tax Credit + value of food stamp benefit + fungible value of subsidized health care

where the federal income tax, state income tax, FICA, EITC, Child Tax Credit, food stamp benefit and fungible value of subsidized health care values reflect the additional family earnings.

## **2. Increase in annual family earnings**

To calculate the increase in a family's earnings due to the minimum wage increase we did the following. First, we calculated each individual's wage increase using the same method as described in Appendix 1 using the 2005 CPS-ASEC dataset. We assume that the worker will continue to work at the same number of weekly hours and annual weeks as in the past year. We then summed this value across all family members for each family to get the total increase in family earnings.

## **3. Federal and State income tax liability**

The CPS-ASEC provides the following simulated tax information for each family: tax filing status of individuals within the family, taxable income (adjusted gross income minus deductions) and federal income marginal tax rates. Using the simulated tax information provided by the CPS-ASEC, we calculate the federal income tax each family owes with and without the increase in family earnings due to the minimum wage change. Only the applicable increase in family earnings was used to determine a family's (or individual's) tax liability. This includes increased earnings from both spouses for married couples filing jointly, from the tax filer only for families who had a tax filer filing as a head of household, from each spouse separately for families where married couples filed separately, and from the tax filer only for individuals filing as single status tax filers. We calculate the state income tax each family owes with and without the increase in family earnings due to the minimum wage change the same way, this time applying the state income marginal tax rates.

## **4. Earned Income Tax Credit (EITC)**

The amount of EITC a family receives depends primarily on two factors: adjusted gross income; and number of qualifying children. We used the CPS simulated data on these two factors to determine each family's EITC value before the minimum wage increase. To insure comparability with CPS data, the 2004 EITC guidelines were used (Tax Policy Center 2006; Internal Revenue Service 2006) and then expressed all final values in 2005 dollars. To determine each family's EITC value after the minimum wage change, we added the total applicable increase in family earnings due to the minimum wage increase to each family's adjusted gross income (or other appropriate income): from both spouses for married couples filing jointly, from the tax filer only for either families who had a tax filer filing as a head of household or single status tax filers (those filing married, separately are not eligible for EITC). Arizona does not have its own state EITC.



## **5. Child Tax Credit (CTC)**

The CTC offsets families' federal tax liability. If a family's child tax credit exceeds its federal income tax liability, a portion of the credit may be refundable. This tax credit depends on a family's earned income, number of qualifying dependent children, and federal tax liability. This credit was assessed according to the guidelines provided by Burman and Wheaton (2005) and the Tax Policy Center (2006).

## **6. FICA**

We assessed a 7.65 percent FICA tax (6.2% social security tax plus a 1.45% Medicare tax) to the sum of all additional earnings of each family member.

## **7. Food Stamp Benefits**

The CPS collects data on the actual value of food stamp benefits families receive, as reported by survey respondents. With this data, we were able to use the reported food stamp value that each family received and adjust the benefit according to the following formula: for each \$1 increase in family earnings, their food stamp benefit was reduced by \$0.36. This reduction takes into account a combination of the effect of the increase in earnings on the family income and on the amount of shelter deduction allowable used in determining a family's food stamp benefit (for details see Center for Budget and Policy Priorities, 1999 and Rosenbaum, Tenny and Elkin, 2002). For those families that had CPS data that conformed to the program's requirements, we also assessed whether families were made ineligible with the increased earnings. For those families that did not have CPS data that conformed to the program's requirements, we only discounted the benefits according to the formula above.

## **8. Subsidized Health Care**

The CPS collects data on the actual participation in subsidized health care programs, as reported by survey respondents. The CPS also provides the fungible value of this benefit. Specifically, the CPS assumes that if a family's income does not cover necessary expenditures for food and housing, then the fungible value of this benefit is zero. In other words, having this benefit does not "free up" any income for other expenditures and thus does not increase disposable income. Likewise, losing this benefit does not decrease disposable income since it is assumed that no income would have been spent on this benefit given that basic food and shelter expenses were not being met. As a result, the fungible value of this benefit is different than the actual dollar value of this benefit. Because this analysis is focused on the overall impact on families' disposable income, the fungible value of the subsidized health care benefits is used here (for further discussion on this measure see U.S. Census Bureau, 1993). Among the families analyzed in this section, there were only cases of individuals moving from Medicaid to the less valuable SCHIP program (including coverage through HIFA) rather than cases of individuals losing their eligibility for subsidized health care altogether (for a detailed discussion of how we determined eligibility status see Appendix 6). As a result, only a portion of the fungible value of Medicaid was lost. Because



the value of the SCHIP health care subsidy is approximately 60 percent of the value of the Medicaid health care subsidy, the families of individuals who moved to the SCHIP program from the Medicaid program because of the minimum wage increases are assigned a loss of 60 percent of the fungible value of the Medicaid subsidy.

## 9. Other Social Welfare Programs

While other social welfare programs that are means-tested (and thus possibly affected by the change in family earnings) are available to Arizona residents we do not include them in our calculations because the size of these programs are too small to affect the average family with an affected worker. Specifically, we examined participation rates among all affected workers in the following programs: WIC, SSI, TANF, housing subsidies (Section 8 vouchers or public housing), LIHEAP (energy subsidy), Food Stamps, EITC, Child Tax Credit, and Medicaid/SCHIP (also called KidsCare or HIFA). The first five programs have very low rates of participation among families of affected workers: participation rates (i.e., at least one family member receives benefits from a program) for each of these five programs ranges between one percent to six percent of affected workers. In contrast, participation rates for each of the latter four programs ranges between 16 percent to 50 percent of affected workers. The one exception to this is the more widely used National School Lunch Program. However, because other research has shown that program participation in the National School Lunch program does not appear to be closely linked to family income levels, as would be expected for means-tested programs, we are not able to reliably identify families that would experience a change in this benefit or the value of this benefit (Food and Nutrition Service, 1999). Note that in Appendix 6 we do a careful examination of families' Medicaid/SCHIP benefits.



**TABLE A9—Changes in Living Standards for Low-Wage Workers and their Families After Arizona Minimum Wage Raise to \$6.75**

**Data are for workers earning up to \$8.00 per hour before minimum wage increase**

**A) Affected Workers in Poor Families**

(Families at 150% of official poverty line or below; 43% of all affected workers)

	Minimum Wage at \$5.15	Minimum Wage at \$6.75
Unweighted N: 68		
1. Worker Annual Earnings	\$10,676 (\$603)	\$11,541 (\$637)
2. Total Family Income before Taxes and Subsidies*	\$15,688 (\$1,143)	\$16,569 (\$1,161)
3. Food Stamps	\$958 (\$206)	\$837 (\$190)
4. Medicaid/SCHIP	\$757 (\$201)	\$757 (\$201)
5. EITC	\$1,584 (\$230)	\$1,567 (\$230)
6. Child Tax Credit	\$624 (\$133)	\$714 (\$138)
7. Federal Tax	\$111 (\$40)	\$200 (\$41)
8. State Tax	\$69 (\$15)	\$94 (\$16)
9. FICA	\$1,070 (\$87)	\$1,137 (\$88)
Disposable Income [rows (2+3+4+5+6)-(7+8+9)]	\$18,361 (\$1,354)	\$19,012 (\$1,368)



## B) Affected Workers in Families Below Basic Needs Thresholds

(73% of all affected workers with at least one child under 12 years old)

	Minimum Wage at \$5.15	Minimum Wage at \$6.75
Unweighted N: 39		
1. Worker Annual Earnings	\$11,045 (\$941)	\$11,969 (\$973)
2. Total Family Income before Taxes and Subsidies*	\$18,412 (\$1,704)	\$19,389 (\$1,707)
3. Food Stamps	\$889 (\$280)	\$762 (\$253)
4. Medicaid/SCHIP	\$762 (\$269)	\$733 (\$264)
5. EITC	\$2,380 (\$302)	\$2,337 (\$307)
6. Child Tax Credit	\$873 (\$169)	\$1,000 (\$165)
7. Federal Tax	\$18 (\$14)	\$116 (\$16)
8. State Tax	\$88 (\$24)	\$116 (\$24)
9. FICA	\$1,227 (\$133)	\$1,302 (\$135)
Disposable Income [rows (2+3+4+5+6)-(7+8+9)]	\$21,981 (\$1,700)	\$22,687 (\$1,693)

Notes: \*Total Family Income includes other subsidy income not examined separately here (e.g., SSI). Standard errors are in parentheses.

Source: See Appendix text.



# Appendix 5

## Estimating Out-of-State and Low-Income Neighborhood Spending Injections

### Out-of-State Spending Injection

To generate the out-of-state spending injection and its corresponding multiplier effect we combine information from the 2003-2005 CPS-ORG data set described in Appendix 1, the *Arizona Tourism Statistical Report 2004* produced by the Arizona Office of Tourism, and the input-output models provided by IMPLAN, a regional economic impact assessment software system developed by researchers from the University of Minnesota and the USDA Forest Survey. We use constant 2005 dollars, as needed, in our calculations (adjusting with the national CPI-U).

### Calculations

#### **1. Increase in earnings in the tourist industry**

We first estimate the total increase in earnings that we expect workers in the tourist industry to receive. To obtain a measure of this, we apply the method described in Appendix 1 to identify affected tourist industry workers and to calculate the cost of their annual wage increase. The affected workers considered to be part of the tourist industry include three groups: hotel and restaurant tipped workers earning between \$2.13 and \$3.75; other hotel and restaurant workers earning between \$5.15 and \$8.00; and workers in the arts, entertainment and recreation industry (2-digit NAICS industry 71) earning between \$5.15 and \$8.00. We use data from three years of CPS-ORG data (2003 to 2005). We estimate that 119,000 tourist industry workers will experience wage raises that amount to \$122 million.

#### **2. Increase in out-of-state tourist expenditures injected into Arizona's economy**

We assume for this analysis, that the wage increases for tourist industry workers will be covered by price increases. Therefore, to determine the increase in tourist expenditures attributable to out-of-state consumers, we need to estimate the proportion of this increased tourist expenditures attributable to out-of-state visitors. To do this, we use data from the *Arizona Tourism Statistical Report 2004*. According to this report, approximately 87 percent of tourist spending can be attributed to out-of-state visitors. Specifically, of the \$13.1 billion spent by overnight visitors in 2004, \$11.14 billion is spent by out-of-state domestic visitors and another \$295 million is spent by international visitors. The 2004 report provides the amount spent by out-of-state domestic visitors. The amount spent by international visitors is derived from the report's estimates of the number of international visitors (633,000) in 2004, the average number of nights per visit (4.7) and average amount spent per person per day (\$99) among international visitors traveling by air. The product of these figures produces an



approximation of the total amount spent by international visitors in 2004 (633,000 international visitors x 4.7 nights/visit x \$99/visitor-day = \$295 million). Because these estimates exclude Mexican and Canadian visitors traveling by land, this calculation underestimates the spending by out-of-state visitors but probably not dramatically so.

We apply this proportion of 87 percent to the total amount of increased earnings produced by the minimum wage increase among tourist industry workers (\$122 million) to produce an estimated \$106 million increase in out-of-state consumer expenditures if the state establishes a \$6.75 state minimum wage ( $0.87 \times \$122 \text{ million} = \$106 \text{ million}$ ).

### **3. Determining net change in disposable income and the multiplier effect**

While \$106 million more may be spent by out-of-state visitors due to price increases to cover the increased earnings of tourist industry workers, only a proportion of that amount will turn into increased disposable income in the pockets of tourist industry workers and their families. Thus, we need to adjust the amount of increased earnings to determine the net change in disposable income for tourist industry workers in order to approximate how the spending of out-of-state consumers will impact the Arizona economy, both directly and through the multiplier effect.

As we saw in Table 12 and in Table A9, the change in disposable income varies across family income levels. To account for this, we calculated the ratio of the change in disposable income to change in earnings for nine different intervals of household income using the method described in Appendix 4. The household income intervals are as follows: less than \$10,000; \$10,000-to-\$15,000; \$15,000-to-\$25,000; \$25,000-to-\$35,000; \$35,000-to-\$50,000; \$50,000-to-\$75,000; \$75,000-to-\$100,000; \$100,000-to-\$150,000; and greater than \$150,000. The average proportions of increased earnings that result in increased disposable income for these household groupings range from 0.68-to-0.80.

To make a final determination of the total amount of disposable income received by tourist industry workers and their families, we take two steps. First, we estimate what proportion of the increased earnings will be received by each group of households. This proportion is calculated by summing the increased earnings of individual workers over all the households within each income interval (household income data is provided in the 2005 CPS-ASEC) and dividing by the total increase in earnings. Second, we multiply the ratio of the change in disposable income to change in earnings for each group of households by their corresponding amount of increased earnings to produce the final amount of disposable income that will be received by the households of tourist industry workers. This final amount is \$79.4 million. Thus, as reported above, we approximate that the minimum wage increase will produce a total *direct* out-of-state spending injection of about \$80 million.

Finally, to estimate the total economic impact of such an injection of disposable income into the Arizona economy attributable to out-of-state consumers we use the input-output models provided by IMPLAN. IMPLAN is one of the leading regional economic analysis tools of its kind in the country, and is used extensively in academia, government and the private sector. At their most basic, IMPLAN's input-out-



put models provide a picture of the local economy in terms of the various goods and services produced at the local level, as well as the types and quantities of good required to produce them. IMPLAN also provides data on patterns of household consumption by the household income groups listed above. Thus, with IMPLAN we are able to estimate the overall economic effect of an increase in disposable income based on characteristics of the Arizona economy and the household expenditure patterns of those households receiving increased earnings. According to the IMPLAN model of the Arizona economy, the *direct* out-of-state spending injection of \$80 million will be multiplied by 1.43 to produce an overall out-of-state spending injection of about \$114 million.

## Low-Income Neighborhood Spending Injection

We begin by defining low-income neighborhoods as those where average household income falls below the low-income threshold for a four person household, as defined by the Department of Housing and Urban Development (HUD). Our example is taken from the Phoenix-Mesa MSA, where the low-income threshold for a four-person household in 2004 was \$46,900.

Our analysis is based on three data sources, the detailed census tract information available in the Summary Tape File 3 (STF3) of the Census Bureau, the Current Population Survey (described in Appendix 1), and the Consumer Expenditure Survey conducted by the Census Bureau for the Bureau of Labor Statistics.

The calculation can usefully be divided into two parts: the determination of the number of affected workers in low-income neighborhoods and the calculation of the net increase in annual income for each worker's family; and the calculation of this wage increase relative to total expenditures in neighborhood places of business. We will consider each element of the calculation in the sub-sections below.

### 1. Determining the Number of Affected Workers and the Net Increase in Neighborhood Income

The first step in determining the effect of a wage increase on low-income neighborhoods is identifying the number of affected workers receiving mandated and ripple-effect raises residing in those neighborhoods. We use five years of CPS-ASEC data (2001 to 2005) to identify the proportion of affected workers in the Phoenix-Mesa MSA whose family incomes fall below the HUD low-income threshold. We assume that these workers all reside in the 182 census tracts where average household income is below the HUD low-income threshold. We estimate the number of affected workers who reside in Phoenix-Mesa MSA as described in Appendix 1. Combining these two estimates we approximate the number of affected workers residing in low-income neighborhoods in the Phoenix-Mesa MSA.

We also use the CPS-ASEC to approximate the total increase in annual earnings for affected Phoenix-Mesa MSA workers in low-income families (\$146 million), as well as the net increase in family disposable income that occurs after taking account changes in their EITC, food stamps, and tax liabilities (\$105 million). To do this we utilize the same methodology employed in our net benefits calculations, described

in Appendix 4. We rely on IMPLAN again to estimate the overall economic effect of an increase in disposable income based on characteristics of the Maricopa County (which includes the city of Phoenix) economy and the household expenditure patterns of those households receiving increased earnings. According to the IMPLAN model of the local economy, the direct impact of the increased disposable income among the low-income families of affected workers will be multiplied by 1.41 to produce an overall injection of about \$148 million in new spending (\$105 million x 1.41).

## **2. Wage Increase Relative to Total Expenditures in Neighborhood Businesses**

To complete our analysis, we want to compare the net increase in household incomes with the level of economic activity observed by local businesses. While the STF3 file does not contain any information on business activity in the low-income communities of the Phoenix-Mesa MSA, an appropriate sense of the impact can be gathered by comparing the net income increases to the total household income in the low-income communities. This assumes that the bulk of sales in neighborhood businesses come from local residents, and that the spatial expenditure patterns of households will be roughly the same for new income as it is for existing income.

When making these comparisons, it is important to make one additional refinement. When trying to assess the expenditure effects of this wage increase, one should compare the net income increase to the amount of money households had available for retail expenditure prior to the wage increase. This implies that essential household expenditures, most importantly housing costs (rent, mortgage, utilities, etc.), should not be considered in these calculations, as we would expect them to change little, given the magnitude of the total wage increase.

This is an important distinction to make, as these gross housing costs for low-income households in the Phoenix-Mesa MSA equaled approximately 41 percent of total income. This proportion is based on data from the 2004 Consumer Expenditure Survey collected by the Census Bureau and published by the Bureau of Labor Statistics. Specifically, 41 percent is the average ratio of housing expenditures to total family income for households with incomes between \$10,000 and \$40,000. This figure is based on the housing costs among low-income households nationally and then adjusted to reflect the fact that the average cost of housing in the Phoenix-Mesa MSA is higher than the national average.

With this adjustment, the ratio of the net income increase to the adjusted measure of total household income in the low-income census tracts gives us an estimate of the impact on sales in neighborhood businesses. These are the figures we present in Table 13 for the Phoenix-Mesa MSA.



# Appendix 6

## Estimating the Fiscal Impact of the Arizona Minimum Wage Measure

### Calculating Wage Increases for State Government Employees

We estimate the total increase in costs to the state government due to the minimum wage increase using generally the same method described in Appendix 1 with the following differences. Because of the small sample sizes of state employees we estimated the proportion of affected workers who were employed by the state using three years of CPS-ORG data (2003-2005). We then used the characteristics of all affected workers (their average wages, and average weekly hours, and average weeks worked) to approximate these characteristics for state government employees. To get the total cost of wage increases we add 7.65% of the total amount of wage increases to cover the cost of additional payroll taxes.

### Assessing the Cost Pass-Throughs from State Goods and Services Contractors

To estimate the amount of cost pass-throughs likely to be absorbed by the state government we had to estimate the total amount the Arizona state government spends on goods and services produced by outside vendors and then estimate how much these outside vendors would pass-through the costs of an increased minimum wage to the state through increased prices. Combining these two estimates, we produce a rough overall estimate of the likely increase in costs from the minimum wage proposal passed to the state from outside vendors.

First, we used the Executive Budget for Fiscal Year (FY) 2007 which reports how appropriated funds were actually spent in FY 2005. We use this information to produce a rough estimate of the proportion of appropriated funds actually spent in FY 2005 on goods and services provided by outside vendors. This is very likely an overestimate because we pooled expenditures for all aggregate budget categories—the “object codes” of the Arizona Accounting Manual—that appeared to have any goods or services provided by outside vendors (8 out of 11 categories). These expenditures totaled to about 32 percent of the total \$9.5 billion in appropriated funds, or \$3.05 billion. We were not able to find published reports with a similar break down on of the expenditures from FY 2005 of non-appropriated funds, which comprised about 55 percent of the state budget. In this case, we used the 32 percent derived from the expenditure pattern of the appropriated funds, and applied this to the relevant total of non-appropriated funds. The relevant total of non-appropriated funds excludes budget items that were federally-funded or were funded through means other than fees or taxes (e.g., funds from a court settlement). The relevant total of non-appropriated funds amounted to roughly 60 percent of the total non-appropriated funds for FY 2005. Based on these assumptions, we estimate that



approximately \$2.4 billion of non-appropriated funds were potentially spent on goods and services provided by outside vendors. In other words, we estimate roughly \$5.5 billion (\$3.05 billion + \$2.4 billion) out of the total FY 2005 state budget of \$20.9 billion (Joint Legislative Budget Committee, 2006), or 26 percent, was potentially spent on goods and services produced by outside vendors.

Second, we assume that the cost increase-to-sales ratio for state contractors who provide goods or services to the state government is equal to the average across industries (see Table 6) of 0.06 percent. If these state contractors pass on 75 percent of their cost increase to the state through the form of increased prices, this amounts to \$2.5 million (75 percent x 0.06 percent x \$5.5 billion).

## Assessing Changes in State Healthcare Program Eligibility and Costs

In this section we describe how we generate the fiscal savings that would be produced by changes in families' state healthcare program eligibility if the Arizona minimum wage proposal is passed.

### 1. State Healthcare Program eligibility and changes in eligibility status

We examine the state subsidized health programs administered by the Arizona Health Care Cost Containment System (AHCCCS), the Medicaid agency of Arizona. These include, among others, Medicaid programs such as AHCCCS for Families and Children (or AFC) and SOBRA (coverage provided by the Sixth Omnibus Budget Reconciliation Act), as well as Arizona's state children's health insurance program (SCHIP) KidsCare and HIFA (adult coverage provided by the Health Insurance Flexibility Accountability Act).

As discussed in Appendix 4, the CPS-ASEC survey provides data on whether survey respondents received state subsidized healthcare. We used this information to identify the number of affected workers (affected workers were identified as described in Appendix 1 using the CPS-ASEC data set in place of the CPS-ORG with adjusted sampling weights) and their family members that received state subsidized healthcare. We pooled the 2004 and 2005 CPS-ASEC datasets to increase the sample size of healthcare benefit recipients, adjusting all dollar values to constant 2005 dollars using the national CPI-U. From these data, we estimate that roughly 220,000 recipients of state subsidized healthcare are either affected workers or a member of a family with an affected worker.

Once the recipients of these healthcare benefits were identified, their eligibility status was assigned according to the eligibility requirements of the program (AHCCCS, 2005). Eligibility requirements depend primarily on age, family structure and family income, but can also depend on other factors such as disability, exceptional medical expenses, and pregnancy status. Also, the family income requirements, which are linked to various levels of the federal poverty income levels, are different for different groups of recipients. Because of this, we were not always able to clearly identify the eligibility requirement for every recipient of subsidized healthcare. This affected our ability to clearly identify which recipients would lose their benefits after the minimum wage increase since we require clearly defined eligibility



requirements to determine their program eligibility. As a consequence, those recipients that did not clearly fall within the eligibility requirements based on family income, family structure, and age were not subject to losing their eligibility status and were assumed to be eligible under conditions we could not account for. Thus, we may be underestimating the amount of movement out of the state subsidized healthcare programs.

In this process, we estimate that 645 adults and 3,050 children would lose their Medicaid eligibility status. However, these individuals would still qualify for other state subsidized healthcare programs: KidsCare (or SCHIP) and HIFA (part of SCHIP). These other state subsidized healthcare programs require participants to pay monthly premiums—\$10 to \$35 per household for all children covered under KidsCare and \$15-\$25 per parent covered by HIFA (AHCCCS, 2005)—and therefore represent a reduction in the value of the subsidy.

## **2. Medicaid/SCHIP costs**

Along with identifying the number of affected workers and/or their family members participating in state subsidized healthcare programs and their movement between or out of such programs, we need to identify the associated costs of participation in each program to calculate the costs or savings to the state resulting from this movement. To assess the costs associated with program participation we assessed the costs per recipient in the following ways.

**Medicaid.** According to the 2004 Kaiser State Medicaid Fact Sheet (The Kaiser Commission on Medicaid and the Uninsured, 2006), the Arizona state government spent, on average over one year, \$1,429 for each adult receiving Medicaid and \$1,425 for each child in 2002 (the most recent data available). Two adjustments are made to these cost figures. First, we inflate the 2002 figures at an annual growth rate of 23.3 percent, the growth rate in Medicaid expenditures reported by the AHCCCS, to arrive at a figure for FY 2005 (AHCCCS, 2006). These figures are \$2,679 and \$2,671 for adults and children, respectively. We then applied the current federal matching rate of 0.6745 (the state incurs approximately 33 cents of every \$1.00 spent), to arrive at the actual cost per recipient for the state government of \$872 and \$869 for adults and children, respectively.

**KidsCare/HIFA.** Costs to the state are somewhat lower for participants in KidsCare, Arizona's SCHIP program and the SCHIP coverage provided for adults through HIFA because of several factors including: less costly benefits, a higher federal matching rate of 0.77 for this program, and the required monthly premiums paid by participants. Taking into account these factors, we estimate that the per enrollee cost to the Arizona state government for these more limited state subsidized health care programs are \$212 per year for adults and \$181 per year for children.

As presented in Table 16 above, these costs are used to determine first, how much the Arizona state government saves as some participants move out of Medicaid and second, how much these savings are offset by the new costs associated with their participation in Arizona's SCHIP program (KidsCare and HIFA).





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## Endnotes

<sup>1</sup> An August 2006 study by the Children's Action alliance, "Arizona's Minimum Wage Initiative," separately estimated the total number of workers likely to receive raises from the minimum wage increase to \$6.75 per hour. Their estimated figure of 303,000 workers is somewhat lower than ours. The reason for the difference between the two estimates is that their estimate is based on what they project conditions in the Arizona economy will be in 2007. Our estimate is based on conditions as of 2005.

<sup>2</sup> Of course, the average (mean) or representative (median) cost-to-sales ratio does not portray the situation for all companies in an industry. Some businesses will certainly experience cost increases well above the average for their industry (while others will be well below the average). However, given that the representative cost increases are so low relative to sales, even if some companies were to experience cost increases/sales of, say, 3 times the statewide average, this would still mean that their cost increase due to the minimum wage rise would be 0.18 percent of sales. We present details on these estimates, including measures of dispersion, in Appendix 1.

<sup>3</sup> We use the terms Hispanic and Latino interchangeably in this report in recognition of the differing views on what is the appropriate label for this demographic category.

<sup>4</sup> We argue that the 150 percent of poverty is also a more reasonable poverty threshold than the official poverty line, which we rather term a "severe poverty" standard.

<sup>5</sup> The estimate for families below the basic needs threshold is derived from a more limited data sample, as described in the main text and Appendix 3.

<sup>6</sup> Note that with some family types, EITC benefits can rise along with the wage increase.



- <sup>7</sup> The Arizona proposal is actually broader than the federal minimum wage law, in that the federal standard includes exemptions based on occupation while the Arizona law has no such exemptions. However, the Arizona proposal does include an exemption for small businesses where small businesses are defined as businesses with less than \$500,000 in annual gross revenue and not covered by the Fair Labor Standards Act (FLSA). Because the FLSA requires coverage for businesses who engage in interstate commerce (handling or selling goods that have been shipped across states), some small businesses will still be covered by the Arizona proposal. No publicly available data clearly identifies which businesses are engaged in interstate commerce and which are not. As a result, we can only approximate how many private sector businesses will not be covered. Based on the methodology used by the U.S. Department of Labor (1998) to approximate FLSA coverage, we estimate that only one to two percent of all Arizona workers are likely to both be exempt from coverage and earn low wages. To account for workers who will not be covered by the Arizona proposal, we assume in all of our calculations that the approximately two percent of Arizona workers currently earning below the federal minimum wage of \$5.15 (or below \$2.13 for tipped workers) will be exempt.
- <sup>8</sup> The full list of states that already operate with minimum wages above the national minimum includes Alaska, California, Connecticut, Delaware, Florida, Hawaii, Illinois, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New York, Oregon, Rhode Island, Vermont, and Washington.
- <sup>9</sup> Glickman (1997) is a book-length history of living wage movements in the United States during the 20th century. The quote from Roosevelt is cited in Stabile (1993), p. 13.
- <sup>10</sup> These references include Spriggs and Klein (1994), DiNardo, Fortin and Lemieux (1996), Lee (1999), and Wicks-Lim (2005).
- <sup>11</sup> Citro and Michael (1995) offer a comprehensive discussion of the problems with the U.S. government's official poverty measures.
- <sup>12</sup> Boushey, Brocht, Gundersen, and Bernstein (2001).
- <sup>13</sup> See the website for ACORN's Living Wage Resource Center <http://livingwagecampaign.org/> for listings of living wage ordinances passed to date as well as ongoing campaigns.
- <sup>14</sup> For example, consider the situation as it applies to Arizona state government employees. These workers are not formally covered by the proposal. Nevertheless, we argue below that these workers will receive ripple-effect raises in concert with the mandated raises received by private sector workers in the state. How large will these increases be? In fact, state employees all received raises in 2006, one effective in March and the second in July. However, our estimate of their ripple-effect raises is based on their 2005 pay scale.
- <sup>15</sup> We do not anticipate ripple-effect raises for tipped workers who earn hourly wage rates between \$2.13 and \$3.74 because the vast majority of such workers earn a roughly uniform wage rate that is very close to the required minimum rate of \$2.13 for tipped workers. As a result, we only expect these workers to receive mandated raises from the Arizona proposal.



- <sup>16</sup> We do not include workers' compensation costs associated with the wage increase because these costs vary widely between industries and even between occupations within the same industry. Nevertheless, even assuming the largest reasonable magnitude for an increase in these costs, including them would not alter our overall assessment of costs or the cost increase/sales ratio for Arizona firms (U.S. BLS, 2006).
- <sup>17</sup> All but one of these industries listed are 2-digit NAICS industries. The one exception is Agriculture, Crop and Animal Production. This industry is a combination of two 3-digit NAICS industries (111 and 112). These are the only two agricultural industries with sales data from the Census of Agriculture.
- <sup>18</sup> No cost-to-sales ratio is estimated for the Management of Companies and Enterprises industry (NAICS 55) because most establishments in this industry are auxiliary offices to businesses in other industries and do not themselves sell any goods or services. In fact, the vast majority of the payroll of establishments in this industry is covered by revenue generated by the businesses they serve, primarily in manufacturing, retail trade and wholesale trade. If the cost increase for establishments in the Management of Companies and Enterprises industry associated with a minimum wage increase to \$6.75 is added to these other industries the affect on the cost-to-sales ratios of these other industries is negligible.
- <sup>19</sup> The Pennsylvania companies may have increased their prices anyway, to take advantage of the rising prices in New Jersey, but they would not have raised prices to cover mandated cost increases.
- <sup>20</sup> A 2003 journal survey of pricing strategies among chain restaurants (Peters 2003) reports that some restaurants are reluctant to raise prices even by small amounts while others are more willing to do so, both to build sales and to offset cost increases. The restaurants less willing to raise prices have taken other measures in the face of higher costs, such as trimming portions and deleting side items.
- <sup>21</sup> This issue has been examined most recently specifically with respect to living- and minimum wage increases in the work of Brenner and Luce (2005); Fairris, Runsten, Briones, and Goodheart (2005); Reich, Hall and Jacobs (2005); and Dube, Naidu and Reich (2005). The earlier empirical literature on these effects is reviewed in Bernstein and Schmitt (1998). Akerlof and Yellen (1986) provides a still earlier, more academic treatment of the broader set of concerns around wages, work effort, productivity and employment.
- <sup>22</sup> William Lazonick's book *Competitive Advantage on the Shop Floor* (1990) provides an extensive discussion of the Ford Motor experience. See also Daniel Raff and Lawrence Summers, "Did Henry Ford Pay Efficiency Wages?" (1987). Laura Owen (1995) presents the most comprehensive analysis of the broader experience of high wage/benefit companies in the early twentieth century.
- <sup>23</sup> See Pollin and Luce (2000), pp. 151-57 for a profile of three companies that compete successfully in Los Angeles through paying higher than market wages and benefits.



- <sup>24</sup> Beyond the work of Fairris et al. on Los Angeles, the Dube et al. (2005) study in San Francisco found mixed evidence on reduced turnover. Brenner and Luce's (2005) study on Boston observed greater turnover in living wage companies, but they attribute this to the then booming Massachusetts economy. The study by Fairris et al. on Los Angeles and Reich et al. (2005) on the San Francisco airport did observe some evidence of reduced absenteeism associated with the establishment of the living wage standard; and Reich et al. and Brenner and Luce also observed evidence of improvements in both worker morale and effort.
- <sup>25</sup> More specifically the Fuchs, Krueger, and Poterba (1998) survey asked economists what they thought was the “employment elasticity of demand” for teenagers of a minimum wage increase—that is, how much employment of teenagers would go down when the minimum wage went up. In the median, the economists’ view was that a 10 percent increase in the minimum wage would lead to a 1 percent decline in teenage employment—a relatively modest negative employment effect for this group of workers who are relatively most affected by changes in the minimum wage. The survey did not ask the economists how overall employment would be affected by a minimum wage increase or its impact on adult as well as teenage employment. But given their median position that the effect on teenagers is itself modest, it follows that most economists would regard the employment effect to be significantly more modest still for the adult labor market.
- <sup>26</sup> See again, Brenner and Luce (2005), Dube et al. (2005), Fairris et al. (2005), and Reich et al. (2005). We should note that one recent study of the Santa Fe living wage measure by Yelowitz (2005) has indeed found a significant negative employment effect in the city in the resulting from the first year from July 2003 – June 2004 of the citywide \$8.50 minimum wage standard. However, we have examined the Yelowitz study in depth (see Pollin and Wicks-Lim 2005), and have demonstrated that his conclusions are erroneous. Indeed, the evidence shows that Santa Fe experienced relatively robust employment growth during the first year that the living wage law was in place, especially in hotels and restaurants, where, as we have discussed generally, the costs of the measure are highest.
- <sup>27</sup> The findings we present here are broadly similar to two other recent studies. These studies (Burton and Hanauer 2006 and Parrott and Kramer 2006) compare employment, business, and payroll growth among small businesses and small retail businesses in states with minimum wages that exceed the federal rate to those in states with minimums equivalent to the federal rate of \$5.15 during roughly the last decade. Though they study the trends for a different set of years (1997 to 2003) from our analysis and focus specifically on small businesses, their findings are generally consistent with ours: Businesses in the states with higher minimums fared at least as well, if not better, as businesses in states with \$5.15 minimums.
- <sup>28</sup> When we refer to Phoenix, Tucson and Yuma, we are referring to the metropolitan statistical areas used by the Census Bureau.
- <sup>29</sup> Here again, by “representative” we refer to the median statistic for the various data categories. We also present in Appendix 3 data on means and standard errors for the same data sets. We also discuss why median data are more representative in this situation than means.



- <sup>30</sup> This characteristic is reflected in the fact that Yuma's mean number of wage earners is 2.4 versus 2.0 for Phoenix, Tucson, and the state of Arizona overall (see Appendix 3).
- <sup>31</sup> Constance F. Citro and Robert T. Michael, eds. 1995, *Measuring Poverty: A New Approach*, Washington, DC: National Academy Press.
- <sup>32</sup> The cost of living figures for Phoenix, Tucson and Yuma are derived from the ACCRA Cost of Living Index. In Phoenix, the main factor driving up the overall cost of living is housing costs. For Yuma, housing costs are roughly at the national average, but utilities and transportation are significantly above the national average. We discuss the appropriateness of using the ACCRA index for lower-income families in Pollin and Brenner (2000), pp. 138-140.
- <sup>33</sup> The data sample for measuring percentages of families below the basic needs budget does not include all families, but only those family types for which Boushey et al. (2001) have provided estimated budget figures. Those family types are one parent with one, two, or three children under 12; and two parents with one, two or three children under 12. The budget figures for these various family types are available at: <[http://www.epinet.org/content.cfm/datazone\\_fambud\\_budget](http://www.epinet.org/content.cfm/datazone_fambud_budget)>.
- <sup>34</sup> Low-income households in Arizona are eligible for other subsidies as well, including child care subsidies, housing subsidies, and home-energy assistance. However, for most low-income families in the state, the effects of the minimum wage increase on their eligibility for these additional programs are not large enough to significantly affect our calculations of average changes in disposable income due to the minimum wage increase because of their low participation rates among these other programs. We discuss the details of our calculations including the participation rates of additional subsidy programs in Appendix 4.
- <sup>35</sup> See Brenner and Luce (2004) for an examination of the effect of Boston's living wage law on the lives of workers who received raises due to the law. Reich, Hall and Jacobs (2005) document the effect of living wage laws on workers at the San Francisco airport. Their survey evidence includes the qualitative finding that low-wage workers who did not receive a living wage increase experienced a decline in their living conditions, while the majority who did receive the raise felt that their living conditions were at least not falling.
- <sup>36</sup> Note that with some family types, EITC benefits can rise along with the wage increase.
- <sup>37</sup> We consider here only employees of state government, not local or federal governments, in keeping with the focus on the fiscal impact of the State of Arizona.
- <sup>38</sup> These U.S. income statistics are taken from the U.S. Census Bureau (2005).





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