



IRLE WORKING PAPER
#124-05
August 2005

How Will An Increase From \$6.75 to \$7.75 in the California Minimum Wage Impact the California Economy?

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Cite as: Amy Vassalotti. (2005). "How Will An Increase From \$6.75 to \$7.75 in the California Minimum Wage Impact the California Economy?" IRLE Working Paper No. 124-05.
<http://irle.berkeley.edu/workingpapers/124-05.pdf>

ADVANCED POLICY ANALYSIS

**How will an increase from \$6.75 to \$7.75 in the California
minimum wage impact the California economy?**

by

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Spring 2005

The author conducted this study as part of the program of professional education at the Goldman School of Public Policy, University of California at Berkeley. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Goldman School of Public Policy, by the University of California or by any other agency.

Table of Contents

Summary.....	4
Introduction.....	4
Background on minimum wages in the United States.....	5
Methodology and Data Sets.....	7
The structure of the private sector of the California economy.....	11
How a California minimum wage increase would affect workers and businesses	
<i>Effects on workers</i>	12
<i>Effects on businesses</i>	15
How California employers might adjust to a minimum wage increase.....	21
Conclusion.....	26
Appendices.....	27
Bibliography.....	34

List of Tables

- Table 1: Household income distributions for California and US
Table 2: State minimum wage and cost of living comparisons
Table 3: Wage distribution of private workforce
Table 4: Percent of all establishments, by industry
Table 5: California private workforce demographics
Table 6: If \$7.75 minimum wage, percent of establishments that would experience increases in labor costs of no more than...
Table 7: Average percent increase in wage bill, by industry
Table 8: Average percent increase in wage bill, by size
Table 9: If \$7.75 minimum wage, percent of establishments that would experience increases in operating costs of no more than...
Table 10: SIC 5812: Eating Establishments—establishments and workers
Table 11: SIC 5812: Eating Establishments—cost increases
Table 12: Effect of low wage workforce on vacancy rate, turnover rate, new employee training hours, and health care coverage rate

List of Figures

- Figure 1: Minimum wage as a percent of average wage
Figure 2: Percent of all establishments, by industry
Figure 3: Number of workers affected at alternative minimum wage levels
Figure 4: Percent of all workers versus percent of all low wage workers, by industry
Figure 5: Percent of all workers versus percent of all low wage workers, by size
Figure 6: Frequency distribution of wage bill increase
Figure 7: Frequency distribution of operating cost increase
Figure 8: Average percent increase in operating cost, by industry
Figure 9: Average percent increase in operating cost, by size
Figure 10: Surveyed response of employers to a cost increase

Summary

California policymakers are considering raising the state minimum wage for the first time since 2001. The proposed bill regarding the minimum wage would increase the state minimum wage from the current \$6.75 per hour to \$7.25 per hour effective January 1, 2006 and \$7.75 per hour effective January 1, 2007. In addition, the measure would require the state to adjust the minimum wage rate annually—beginning January 1, 2008—based on inflation. This prospective analysis may help policymakers, employers, employees, and the public understand the potential economic implications of an increase in the current California minimum wage from \$6.75 to \$7.75. Specifically, the study includes the following:

- an analysis of the current demographic characteristics of California low wage workers,
- estimates of the costs incurred to establishments of various sizes and in different industries assuming no change in employment, and
- a discussion of how establishments in industries that face significant cost increases will likely adjust to an increased minimum wage.

The study finds that almost 1.65 million workers in the private sector would be directly affected by the minimum wage increase. These workers are largely employed in the service sector, specifically in the accommodations and food services industry. The average operating cost increase to firms is about 0.7 percent, but most establishments face increases less than half that much with large increases concentrated in a small portion of establishments. The establishments in the accommodations and food services industry face operating cost increases of 2.4 percent on average. Over 98.6 percent of firms would face operating cost increases of less than five percent. It is likely that most establishments will make only minor adjustments, if at all, to compensate for small cost increases. Establishments in the accommodations and food services industry will likely pass through a large portion of the increased costs to consumers by raising prices. Overall, the minimum wage increase should not affect the California economy in a negative way, specifically through loss of employment or business relocation out of California.

Introduction

California policymakers are considering raising the state minimum wage for the first time since 2001. Assembly Bill 48, the bill currently proposed, would increase the state minimum wage from the current \$6.75 per hour to \$7.25 per hour effective January 1, 2006 and \$7.75 per hour effective January 1, 2007. In addition, the measure would require the state to adjust annually—beginning January 1, 2008—the minimum wage rate based on inflation.

A similar bill was proposed last year and was vetoed by the Governor in September 2004. The inflation adjustment makes this proposal much stronger than the proposal that preceded it. Adjusting annually would eliminate the need to consider similar proposals year after year. Washington state, for example, began indexing its minimum wage in 2001, and the minimum wage has automatically increased from \$6.50 in 2000 to \$7.35 in 2005. The current bill authored by Assemblywoman Sally Lieber was approved by the Labor and Employment committee on April 21, 2005.

On March 4, 2005, the California Legislative Analysts Office (LAO) released a general document outlining the potential fiscal effects of an increased minimum wage.¹ In terms of the economic impact, the LAO predicts that the minimum wage increase proposed by this measure would result in somewhat higher wage costs for firms. They suggest that firms might compensate by raising prices, reducing other costs, and substituting automation for labor. They caution that firms unable to compensate for the higher costs would face a reduction in profits and some could relocate outside of California. They believe that the measure would likely result in some decline in employment and business activity in the state relative to what would otherwise occurred.

In terms of effects to low-wage employees, the LAO states that although workers making less than the new minimum wage level would experience pay increases and thus would have more income, low-wage workers could face reduced employment. If employment is reduced, some individuals will lose income. In some cases where firms were able to “pass along” part or all of the wage increase, the resulting increases in product prices would leave consumers and other businesses with less income and fewer profits than otherwise.

The LAO’s predictions are quite general. They suggest potential aggregate effects to any minimum wage increase, but they fail to address the specific impacts and responses in the context of the California economy. Relying on such little information on the economic impacts of an increased minimum wage, state legislators and the governor are ill-prepared to vote on the initiative. This study provides an analysis of how a minimum wage increase would affect the California economy, with a focus on the private sector. Specifically, the study includes the following:

- an analysis of the current demographic characteristics of California low wage workers,
- estimates of the costs incurred to establishments of various sizes and in different industries assuming no change in employment, and
- a discussion of how establishments in industries that face significant cost increases will likely adjust to an increased minimum wage.

Data come from the 2003 California Establishment Survey, the Current Population Survey, and the Employment Development Department.

Background on Minimum Wages in the United States

Federal minimum wage laws were first enacted as part of the Fair Labor Standards Act of 1938 to provide a national, livable wage floor. President Franklin D. Roosevelt said that “no business which depends for existence on paying less than living wages to its workers has any right to exist in this country.”² The real value of the minimum wage peaked in 1968 at \$8.89 in 2005 dollars. Since this time, though, the real value of the minimum wage has significantly declined. Adjusting for inflation, the current federal minimum wage of \$5.15 is almost 40 percent less than it was in 1968. Since the federal minimum wage is not indexed to inflation, it loses value over time between increases.

Fourteen states, including California, and the District of Columbia have reacted by implementing their own minimum wage requirements in excess of the federal requirements. The highest state minimum wages are currently in Washington (\$7.35), Oregon (\$7.25), Alaska (\$7.15), Connecticut (\$7.10), Vermont (\$7.00) and California, Massachusetts, and Rhode Island (\$6.75).³ Washington

¹ California Legislative Analysts Office website, http://www.lao.ca.gov/ballot_source/Initiatives.aspx

² quote cited in Stable, 1993, pg. 13.

³ US Department of Labor website, <http://www.dol.gov/esa/minwage/america.htm>

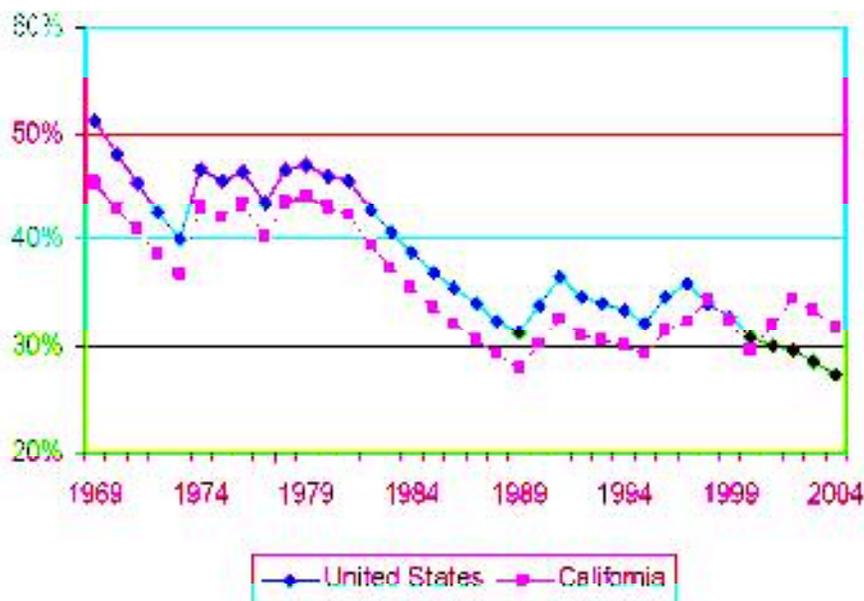
state and Oregon are the first states to adjust their wage to inflation using the Consumer Price Index.

In addition to state minimum wage laws, “living wage” laws are being enacted more frequently. These laws require employers to pay wages in excess of the minimum wage, sometimes more if employers fail to provide health insurance. Most of these laws are extremely limited in their scope. They often apply to a small subset of the low wage population because they are usually implemented only in the public sector.

California first instituted a 45 cent minimum wage in 1943. Since then, the state minimum wage has risen 18 times. The minimum wage was raised from \$4.25 in 1996 to \$6.75 in 2002—a 59% increase over just six years. The minimum wage most recently increased from \$5.75 to \$6.75 in 2002.

Despite the recent increases in minimum wage, the real value of California's minimum wage still remains over thirty percent lower than the 1968 value of \$9.17 (in 2005 dollars). Furthermore, as Figure 1 demonstrates, California’s minimum wage was 32% of the average wage in 2004, up from 28% in 1989 but far below the 45% of 1969.⁴ While this is higher than the national minimum wage’s fraction of the average wage, both reflect a downward trend over the last 35 years.

Figure 1: Minimum wage as a percent of average wage



Source: Steven Levy, Institute for Regional and Urban Studies

On average, Californians earn more than Americans elsewhere, but as Table 1 indicates, the inequality measure (defined as the mean to median ratio) is quite similar. This indicates that there are still many Californians at the low end of the earnings spectrum.

⁴ Levy, Steven “Raising the Minimum Wage in California,” memorandum, Institute for Regional and Urban Studies, 2004.

	California	US
Median household income (dollars)	50,220	43,564
Mean household income (dollars)	67,022	58,036
inequality measure	1.335	1.332

Source: US Census Bureau, <http://factfinder.census.gov>.

Housing costs in California are also far higher than the national average. The US Census Bureau projects that the median home in California costs over \$334,000 in comparison to just over \$147,000 nationwide in 2003 based on 2000 Census data.⁵ The California Legislative Analysts Office reports a median housing value of \$474,000 in 2004.⁶ The average rental cost in California is \$890 per month in comparison to \$679 nationwide, and the average Californian spends a larger portion of his income on rent than the average American. Table 2 shows that California's minimum wage remains well below comparable state wages. Using housing costs as a proxy for cost of living differentials, California's minimum wage as a percentage of its housing wage is significantly lower than Washington, Oregon, and Alaska among western states.⁷ Furthermore, California's wage is lower than every other state that has imposed a state minimum wage except for Massachusetts by this measure.

	2004 Wage	Possible Changes to Wage	2003 Housing Wage*	Minimum Wage as percent of Housing Wage
California	\$6.75 and no indexing		\$21.18	32%
		July '06 - \$7.25		34%
		July '07 - \$7.75 and indexing		37%
Washington	\$7.16 and indexing		\$15.15	47%
Oregon	\$7.05 and indexing		\$13.59	52%
Alaska	\$7.15 and no indexing		\$16.75	43%
Nevada	\$5.15 (no state law)		\$16.08	32%

Source: Michael Reich, Institute of Industrial Relations, UC Berkeley

Methodology and Data Sets

Data Sets

This paper draws on two primary data sources:

⁵ US Census Bureau, www.factfinder.census.gov

⁶ California Legislative Analysts Office, www.lao.ca.gov/2004/cal_facts/cal_facts_econ_2004.pdf

⁷ This is the amount a worker would have to earn per hour in order to be able to work 40 hours per week and afford a two-bedroom unit at the area's Fair Market rent. See "Out of Reach 2003: America's Growing Wage-Rent Disparity." National Low-Income Housing Coalition, <http://www.hlihc.org>.

1. 2003 California Establishment Survey, Institute of Industrial Relations, UC Berkeley
2. 2003 and 2004 Current Population Survey, US Census Bureau

The Institute of Industrial Relations at Berkeley (IIR) developed and conducted a survey of California business establishments in 2003 that provided a wealth of information about various aspects of the participating establishments. I used portions of this survey to determine how an increased state minimum wage would affect California workers and businesses. The IIR survey of establishments provides two types of essential information not contained in other available data sources.

- First, an employer-based survey provides information at the establishment level. Census Bureau data is at the individual level and labor data is rarely available at the establishment level. The survey provides the wage distribution and the wage bill as a percentage of operating costs by establishment. In particular, an employer-based survey allows analysis by establishment size and detailed industry. The other datasets are not available at the microdata level, so sufficient disaggregation is not possible.
- Second, the employer-based survey includes behavioral questions about how employers are likely to respond to cost increases. Such questions are not asked in standard household surveys conducted by government agencies.

The sample for the California Survey of Establishments was a stratified random sample, based on the Dun and Bradstreet database of establishments for California. The sample includes business and non-profit establishments with five or more employees. Government agencies, public schools or universities, and agriculture, forestry, and fishing industries were excluded from the sampling frame. The instrument contained over 100 questions to obtain information regarding organizational characteristics, employee composition, costs, and likely behavioral responses to an increase in operating costs. See Appendix A for detail on survey weighting

The extent of disaggregation of wage distribution data was not sufficient for the minimum wage analysis. To correct this problem, I applied wage distributions under \$9.00 per hour, by industry, from the 2003 Current Population Survey to the lowest wage bin on the establishment survey. See Appendix B for detailed explanation. This method could be utilized because the calculated worker wage distributions by industry were similar across surveys.

Each wage bin was adjusted to reflect 2004 Current Population Survey data. This final step was only conducted in the aggregate because it can reasonably be concluded that most movement was simply due to inflation, and thus changes were likely to be fairly constant across business industry and size.

The Current Population Survey (CPS) is a monthly survey of about 50,000 households conducted by the Bureau of the Census for the Bureau of Labor Statistics. The survey has been conducted for more than 50 years. The CPS is the primary source of information on the labor force characteristics of the U.S. population. For this study, the CPS data was restricted to private sector workers (both non-profit and business) in California and weighted by gender, race, and other characteristics for earnings when appropriate.⁸

⁸ Although the Current Population Survey measure of weekly earnings is supposed to include tips, this may not be the case. The CPS data partially relies on self-reported hourly wages for workers who report hourly wages. Tipped workers who answer the CPS wage question by reporting an hourly wage that does not include tips will not have their tips show up in the measure of wages used in this analysis.

Methodology

A. Calculating effects on workers

Workers can experience two kinds of wage effects from an increase in the minimum wage, which are described below:

Direct Wage Effect

The direct wage effect consists simply of the wage increase to employees who previously earned below the new minimum wage. Under a new minimum wage of \$7.75, a worker previously earning \$6.75 would receive a direct increase of \$1.00 to the new wage of \$7.75. To calculate the direct wage effects, I simply increased all workers below the new minimum wage to the new minimum of \$7.75.

Indirect wage effects

Direct wage effects account for only part of the total wage increase to workers. The relative pay employees receive is highly correlated with their job title, tenure, experience, and skill, rated relative to other workers. To preserve the wage hierarchy, an establishment may decide to raise the wages of additional workers to those who receive a mandated wage increase. There are two categories of workers who might receive such indirect wage effects:

1. Workers previously earning just below the new minimum wage prior to the increase could earn more than \$7.75 after the increase. A senior short-order cook who made \$7.50 an hour prior to a minimum wage increase is an example of this type of worker. If a minimum wage increase brought comparatively junior coworkers up to \$7.75 per hour, it is likely that the senior employee would receive a pay increase to more than this amount.
2. Workers previously earning just more than the new minimum wage prior to the increase could earn more than they were previously earning after the increase. A manager who made \$7.85 before the increase is an example of this type of worker. If a minimum wage brought the comparatively junior employees to \$7.75, it is possible that the manager would receive a pay increase, although such an increase is not mandated by the new minimum wage.

Both of these examples represent potential indirect effects of a minimum wage increase. This is commonly referred to in minimum wage literature as the ‘ripple effect’ of the minimum wage.⁹

The size of ripple effects

The extent to which these ripple effects exist is largely unknown, and it likely varies by establishment. It makes sense that those workers originally closest to the point of impact (the new minimum) receive the largest, most concentrated, effects, while those further out receive more moderate increases. Card and Krueger (1995) examined the strength and duration of the ‘ripple effect’ and found that those workers closest to the new minimum indeed received the greatest indirect increases; these increases averaged less than half of the direct increase received by workers previously at the old minimum wage.¹⁰ In their study of Texas restaurants, Katz and Krueger (1992) found that the majority of restaurants allowed wage compression to occur at the cost of preserving

⁹ The ‘ripple effect’ was first tested in Jean B. Grossman, “The Impact of the Minimum Wage on Other Wages,” *Journal of Human Resources*, vol. 18, 1983, pp. 359–78.

¹⁰ See Card and Krueger, *Myth and Measurement*, pg. 160 – 166.

the prior hierarchy.

Calculating the indirect effects

Since the extent of indirect effects is unclear, I use a conservative estimate. I assume that workers earning very close to \$7.75 before the wage increase will make fifty percent of the minimum wage increase (50 cents) and the effect will phase out 100 percent above the minimum wage increase at \$8.75. In other words, the average wage of the group of workers who were earning between \$7.25 and \$7.75 before prior to the new minimum wage increases from \$7.50 per hour to \$8.00 per hour when considering indirect effects (the average wage increases to \$7.75 when considering direct effects only). The average wage of the group of workers who were earning between \$7.75 and \$8.75 per hour prior to the new minimum wage increases from \$8.25 per hour to \$8.50 per hour. See Appendix C for equation.

B. Calculating effects on businesses

To predict the effect on businesses, I estimated the increase in the wage bill and operating costs by establishment assuming no change in employment. Stated alternatively, these cost estimates represent the cost to employers *if they did not adjust their employment levels in response to the increased minimum wage*. The rationale for this methodology is fully explained in the next section. In general, the estimates are useful in identifying which firms will most likely adjust to compensate for the higher minimum wage.

Wage bill

To construct the wage bill, I relied on answers to survey questions about proportions of part time and full time workers and the wage distribution of workers. As discussed above, the low-end of the wage distribution was constructed using Current Population Survey Data. See Appendix B for a detailed explanation. Workers were divided into eleven wage bins, the lowest “under \$6.75” and the highest “over \$30.00.” The midpoint of each wage bin served as an estimate of the average wage for the bin. An average wage was calculated for each firm. The average wage was multiplied by the total number of hours worked by all employees assuming a 40 hour work week for full time employees and a 20 hour work week for the part time employees. To calculate the wage bill under a \$7.75 minimum wage, I applied a \$7.75 wage to each of the three bins of workers under \$7.75. The lowest wage bin is “under \$6.75,” which represents the portion of workers making less than the current \$6.75. This method brings the wage of these workers up to \$7.75, which might not be the case since their employers currently pay less than minimum wage. For this reason, the wage bill might be slightly overstated. However, the portion of workers in this bin is small across industries.

Operating costs

To estimate the increase in operating costs, I used the answer to a survey question that asked employers to report their labor cost as a percentage of overall costs and applied this percentage to wage bill increases. This figure may be overstated. The average restaurant reports that over 40 percent of its overall costs are labor costs, but a study on the restaurant industry found that 10-K company reports, the Economic Census for Accommodations and Food Services, and the IRS Statistics on Income Bulletin each provide an estimate between 30 and 35 percent.¹¹

¹¹ See footnote 17 in Aaronson, French, and MacDonald “The Minimum Wage, Restaurant Prices, and Labor Market Structure,” working paper, Federal Reserve Bank of Chicago, 2004.

The structure of the private sector of the California economy

In 2004, 12.7 million Californians, 73 percent of the entire workforce, were employed in the private sector. The average worker in the private sector made \$18.60 in 2004, and the median wage was \$14.80. Table 3 shows the distribution of wages in the private workforce. Although almost 22 percent of the private workforce made over \$30.00 per hour, an additional 32 percent made less than \$11.00 per hour, which translates into only \$22,000 per year for a full time worker.

Wage	Percent	Cumulative percent	Number
under \$6.75	4.4	4.4	555287
\$6.75 - \$7.24	5.7	10.1	729211
\$7.25 - \$7.74	2.8	13.0	360793
\$7.75 - \$8.24	3.5	16.5	444555
\$8.25 - \$9.00	5.0	21.6	647733
\$9.01 - \$11.00	10.2	31.8	1294987
\$11.01 - \$15.00	16.4	48.2	2084197
\$15.01 - \$20.00	14.5	62.6	1835403
\$20.01 - \$30.00	15.8	78.4	2001018
over \$30.00	21.6	100.0	2746816
Total			12700000

Source: 2004 Current Population Survey

Figure 2 shows each of the nine major industry's share of total establishments in California. The California Establishment Survey data confirms the extent to which the California economy is heavily dependent on the service industry. Almost 60 percent of establishments are classified as belonging to the service industry in some capacity.¹² Specifically, 19 percent of establishments classify themselves as professional, financial, or communications services, 13 percent as business and personal services, 13 percent as accommodations and food services, and 12 percent as health and social services.¹³

¹² Service industry refers to professional services, finance, and communications; accommodations and food services; business and personal services, and health and social services.

¹³ The Current Population Survey uses the detailed industry coding system, which considers food services part of the retail industry. This report considers food services part of 'Accommodations and Food Services,' a common industry aggregation for SIC codes. For this reason, the meaning of services and retail might differ in this report compared to others.

Figure 2: Percent of all establishments, by industry

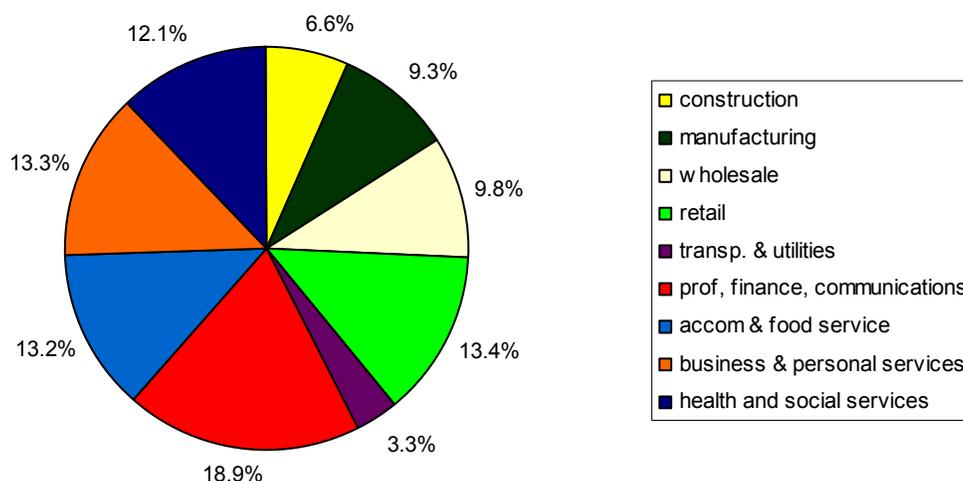


Table 4 summarizes the distribution of establishments by size. The vast majority of establishments are small. Over 65 percent of firms reported having fewer than 25 employees and over 80 percent of firms have fewer than 40 employees. Only eight percent of firms have more than 100 employees.

Table 4: Percent of all establishments, by size

Size, measured by # of employees	Percent	Cumulative percent
Very small: <10	34.2	34.2
Small: 10 – 24	32.0	66.3
Small/Medium: 25 – 49	17.0	83.3
Medium: 50 – 99	8.3	91.7
Medium/Large: 100 – 499	7.2	98.8
Large: 500 – 999	0.8	99.6
Very large: 1000 and more	0.4	100.0

Source: California Establishment Survey

How a California minimum wage increase would affect workers

According to the 2004 Current Population Survey, 1.65 million private sector workers would be affected directly by a minimum wage increase to \$7.75, which comprised 13 percent of the private sector workforce last year. In 2001, the year of the last minimum wage increase, 1.5 million private sector workers, which also comprised 13 percent of the private workforce at the time, were affected directly by minimum wage increase to \$6.75. Therefore, the fraction of affected low wage workers that would be affected by the proposed increase is similar to the fraction affected by the last policy.

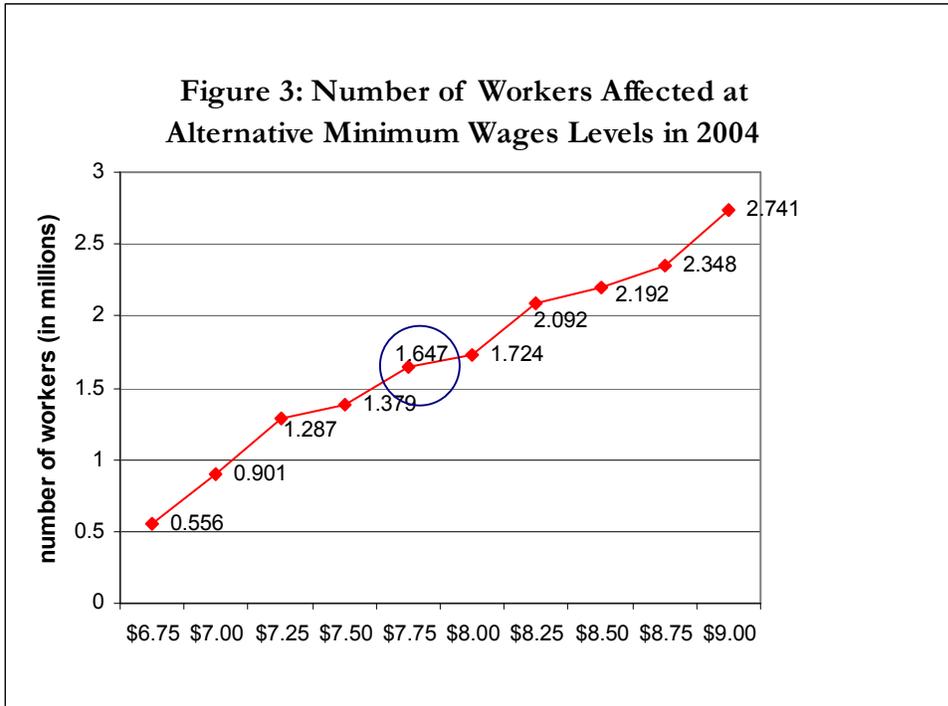


Figure 3 reports the numbers of workers that would be affected at alternative minimum wage levels. In 2004, three years after the last minimum wage policy, over a half million workers reported making less than \$6.75, the legally mandated minimum wage in California. This figure indicates that some employers are not following the current law, and we could expect to see a similar pattern with a new minimum wage. Almost 2.4 million workers make under \$8.75, so approximately 700,000 workers would receive some indirect wage increases if the minimum wage increased to \$7.75, assuming the method of estimating indirect effects described above reflects the behavior of employers in California.

Table 5: California Private Workforce Demographics

	Total	% male	% female	% white	% Latino	% AA	% other
all workers	12700000	56.1	43.9	45.4	34.4	5.3	14.9
workers under \$7.75	1645291	51.3	48.7	23.5	59.8	4.1	12.6

Source: 2004 Current Population Survey, US Census Bureau

Table 5 shows that almost 60 percent of workers earning under \$7.75 per hour are Latino, in comparison to 34 percent of the entire workforce. African Americans make up a smaller portion of the low wage workforce than the overall workforce in the private sector.¹⁴ This may be because they are disproportionately employed in the public sector, but I did not test this hypothesis. In addition, low wage workers are disproportionately female.

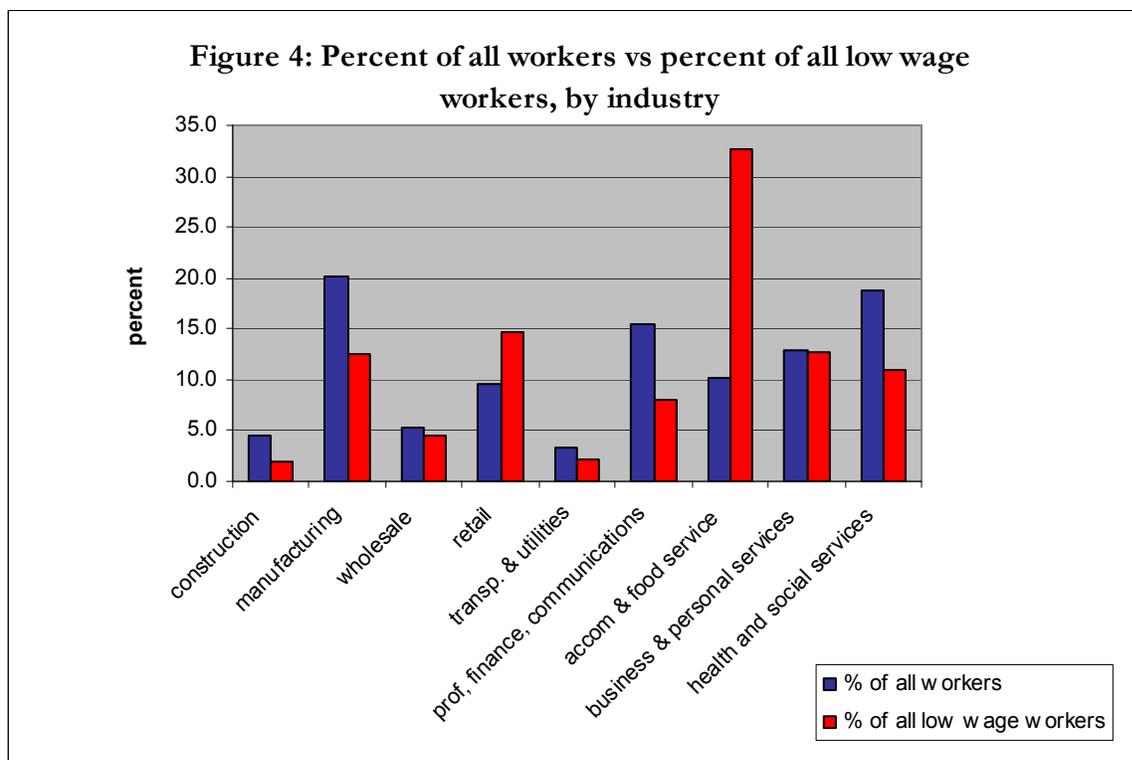
More than one in four workers under the age of 25 earns less than \$7.75 per hour, but only one in ten workers age 25 and over earns less than \$7.75 per hour. Though teenagers compose a large fraction of the low-wage workforce, the average low-wage worker in California is 33 years old.

¹⁴ Throughout this report, the term ‘low-wage workers’ is defined as workers in the private sector making less than \$7.75 per hour. This wage level is used because it is the proposed new minimum wage level.

Forty four percent of low wage workers do not have a high school diploma, as compared to 18 percent of all workers. Sixty four percent of low wage workers report working at least 40 hours per week.

Workers by establishment characteristics

Figure 4 shows the percentage of all workers and the percentage of all low-wage workers in establishments divided by industry. About 60 percent workers are employed by service-related establishments.¹⁵ Although a large portion of the workforce (20 percent) works in manufacturing, this number has been decreasing and will likely continue to decrease over time.¹⁶



Low wage workers are disproportionately concentrated in the accommodations and food services industry. Thirty three percent of workers earning under \$7.75 per hour are employed in establishments that consider themselves part of the accommodations or food services industry, despite the fact that only ten percent of workers overall are in these firms. Eighty-three percent of establishments in the accommodations and food services industry have a workforce that is over 30 percent low wage. Sixty six percent of workers within accommodations and food services are specifically employed by eating and drinking establishments, more commonly known as bars and restaurants. According to the Current Population Survey, almost 40 percent of those who work in bars and restaurants earn less than \$7.75 per hour. Although the Current Population Survey’s measure of weekly earnings is supposed to include tips, this may not be the case.¹⁷ It is unclear to what extent workers in the accommodations and food services industry are tipped. If tipping is not reported, or inaccurately reported, some of the workers characterized as low wage in accommodations and food services may be better off than the average low wage worker.

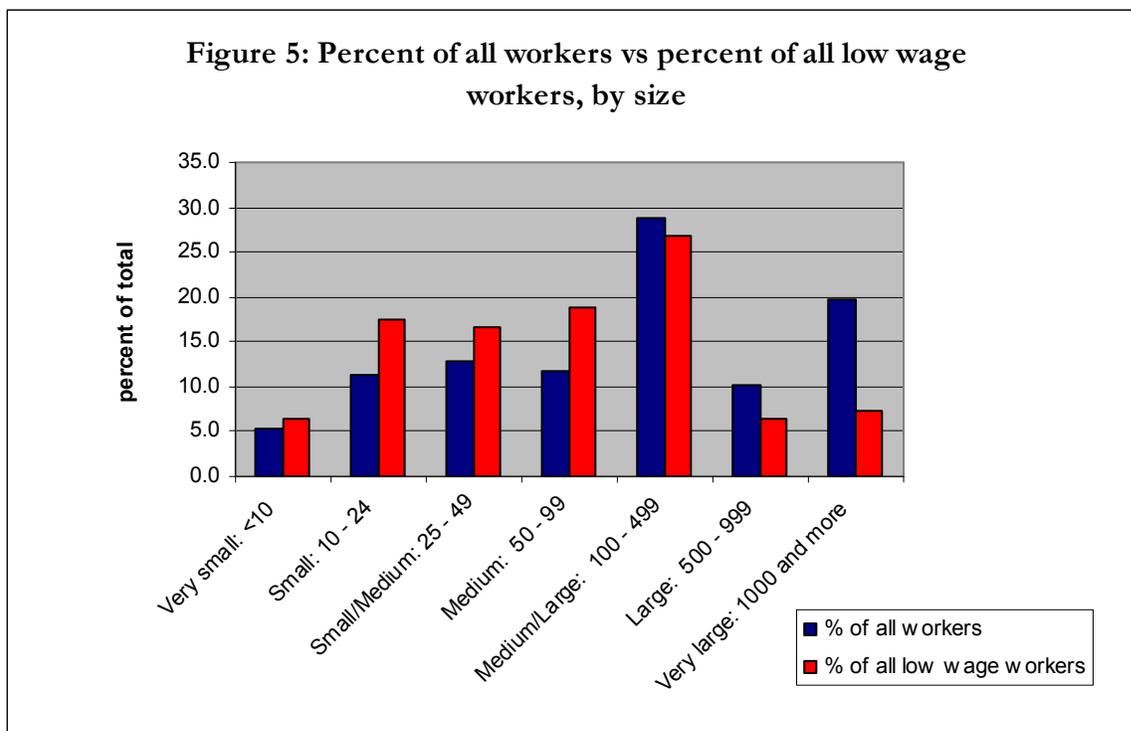
¹⁵ I define ‘service-related’ as including professional services, finance, and communications; accommodations and food services, business and personal services, and health and social services.

¹⁶ California State Economic Development Department data, see <http://www.edd.ca.gov>.

¹⁷ See footnote 8.

Additionally, there are a disproportionately large number of low wage workers in retail (15 percent of the low wage workforce in comparison to 10 percent of the overall workforce). Business and personal services, manufacturing, and health and social services also employ a significant share of low wage workers, but the fraction of total low wage workers is less than the fraction of all workers in each of these industries. Twelve percent of the affected workers are employed in the manufacturing industry. Manufacturing is a mobile industry, which means that employers might respond to a minimum wage increase by relocating outside of California. Low wage workers in manufacturing are heavily concentrated in the apparel industry, which has been shrinking over time for various reasons, including outsourcing. The number of workers in this industry is expected to continue to decline, even without a higher minimum wage. For this reason, the potential of relocation due to the minimum wage increase is less of a concern.

Figure 5 summarizes the portion of total workers and low wage workers by size. Not surprisingly, the majority of employees work in large firms with at least 100 employees, and almost 30 percent are in establishments with at least 500 employees. Low wage workers are disproportionately employed in smaller establishments. Fifty-nine percent of low wage workers are employed in establishments with fewer than 100 employees, as compared to 41 percent of workers overall. Low wage workers are underrepresented in firms with more than 500 employees. This suggests that the negative effect of a minimum wage increase might be stronger for small business owners. I explore this possibility in the next section.



How an increase in minimum wage would affect businesses

As discussed above, the cost estimates in this section represent the cost to employers *if they did not adjust their employment levels in response to the increased minimum wage*. While it is unlikely that an establishment will incur significant cost increases without adjusting its behavior in any way, there are a variety of mechanisms for adjustment, only one of which is reduced employment. For example, a business owner facing a one percent increase in overall costs could afford to raise prices one percent if the demand for his product is inelastic enough. The mechanisms utilized will depend on the

characteristics of the establishments that potentially face the largest cost increases. The estimates provided below are useful in identifying these characteristics. The next section of the paper explores the mechanisms of adjustment most likely employed by the establishments facing the greatest potential loss.

Cost increases are expressed in a variety of ways. I provide cost increases in terms of overall operating cost increases and wage bill increases. The calculation to determine operating cost increases (described above) relies on self-reported information on labor as a percentage of total costs. Employers might not know the breakdown of their operating costs, and as a result, this figure might be misreported. Calculating the wage bill does not require this piece of information, and thus it is likely more accurate. The operating cost increase is important, though, because it represents the overall cost increase in production. This overall cost increase is what employers will consider when deciding how, if at all, they will change their behavior in response to the minimum wage increase.

Wage bill and operating cost increases were calculated in two ways, first considering direct wage effects only and second considering both direct and indirect effects. Both estimates are provided because the presence and extent of indirect wage effects are largely unknown. While most firms will adhere to mandated increases, the evidence on indirect effects is mixed.

Effect on wage bill

The average establishment would experience about a one and a half percent increase wage bill due to an increase in the minimum wage. The increase attributed only to direct wage effects is about 20% lower than the increase resulting from both direct and indirect effects (1.5 percent vs. 1.8 percent). This is likely overestimating the extent of indirect effects for many establishments. Table 6 summarizes the percentage of establishments that would experience a variety of levels of wage bill increases. Thirty five percent of all establishments have no low wage workers, so a new minimum wage has no effect on their wage bill. More than half of employers would face wage bill increases less than one percent.

Table 6: If \$7.75 minimum wage, percent of establishments that would experience increases in labor costs of no more than...				
	no increase	1 percent	3 percent	5 percent
Direct	34.8	61.8	79.5	91.5
Direct and indirect	34.8	59.0	78.0	87.7

Source: Computed from UCB 2003 California Establishment Survey

Table 7 summarizes wage increases by industry. Given the findings reported in the previous section, it is not surprising that the accommodations and food services establishments face, by far, the largest wage bill increase (5.7 percent taking into account direct and indirect effects). Establishments in the retail industry also face a greater than average increase. Establishments in all other industries face a wage bill increase of less than one percent, even when indirect effects are considered. Excluding establishments in the accommodation and food services industry, the average increase in wage bill significantly drops to 1.0 percent when direct and indirect effects are considered.

Figure 7: Average percent increase in wage bill, by industry		
Industry	Direct only	Direct and indirect
construction	0.2	0.3
manufacturing	0.7	0.8
wholesale	0.8	1.0
retail	2.2	2.8
transportation & utilities	1.1	1.3
professional services, finance, communications	0.3	0.4
accommodation & food service	4.9	5.7
business & personal services	1.1	1.4
health and social services	0.9	1.1
all firms	1.5	1.8

Source: Computed from UCB 2003 California Establishment Survey

Figure 6 below approximates a sampled distribution of wage bill increases in individual establishments.¹⁸ The plot shows that the largest concentrations of firms face increases of less than half a percent. Again, this reinforces the fact that most establishments can expect to see very small increases in wage bill, and few firms will experience large increases.

Figure 6: Frequency distribution of wage bill increase

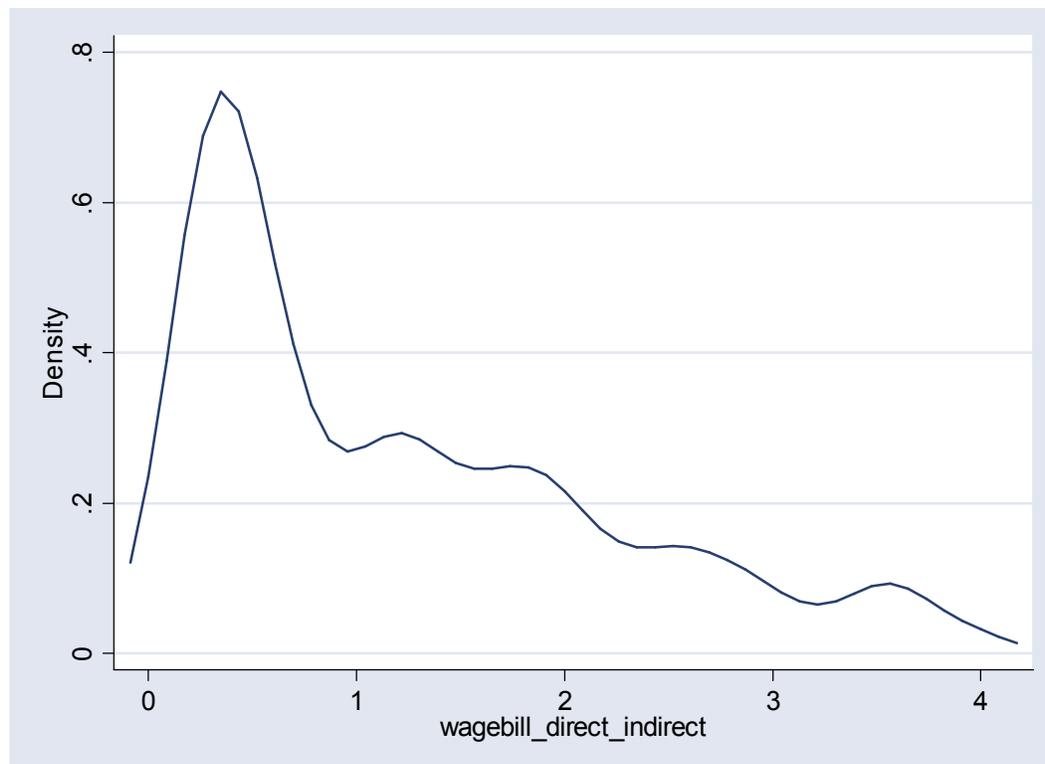


Table 8 presents wage bill data by establishment size. Establishments with fewer than 100

¹⁸ Wage bill distribution was approximated with a kernel density plot, Gaussian bandwidth = .2

employees face wage bill increases more than twice as much as establishments with more than 100 employees. As hypothesized in the previous section, it is likely that a minimum wage increase will negatively affect small business owners more than it will affect large business owners.

Table 8: Average percent increase in wage bill, by size		
Size	Direct only	Direct and indirect
Very small: <10	1.4	1.7
Small: 10 – 24	1.9	2.2
Small/Medium: 25 – 49	1.3	1.5
Medium: 50 – 99	1.6	1.9
Medium/Large: 100 – 499	0.7	0.9
Large: 500 – 999	0.4	0.5
Very large: 1000 and more	0.2	0.3
all firms	1.5	1.8
Source: Computed from UCB 2003 California Establishment Survey		

Operating Costs

Operating cost increases indicate the total increase in cost that an employer will face due to the minimum wage increase. Labor cost, or wage bill, as a percent of total costs varies by establishment, so the relative operating cost increases among establishments might differ from the relative labor cost increases.

Overall, the increases in operating costs to firms are quite modest in most firms. The average establishment will experience an increase in operating costs of 0.6 percent due to direct effects and 0.7 percent when indirect effects are considered. As Figure 7 shows, the majority of firms appear to face increases less than half that much.¹⁹

¹⁹ Operating cost distribution was approximated with a kernel density plot, Gaussian bandwidth = .1

Figure 7: Frequency distribution of operating cost increase

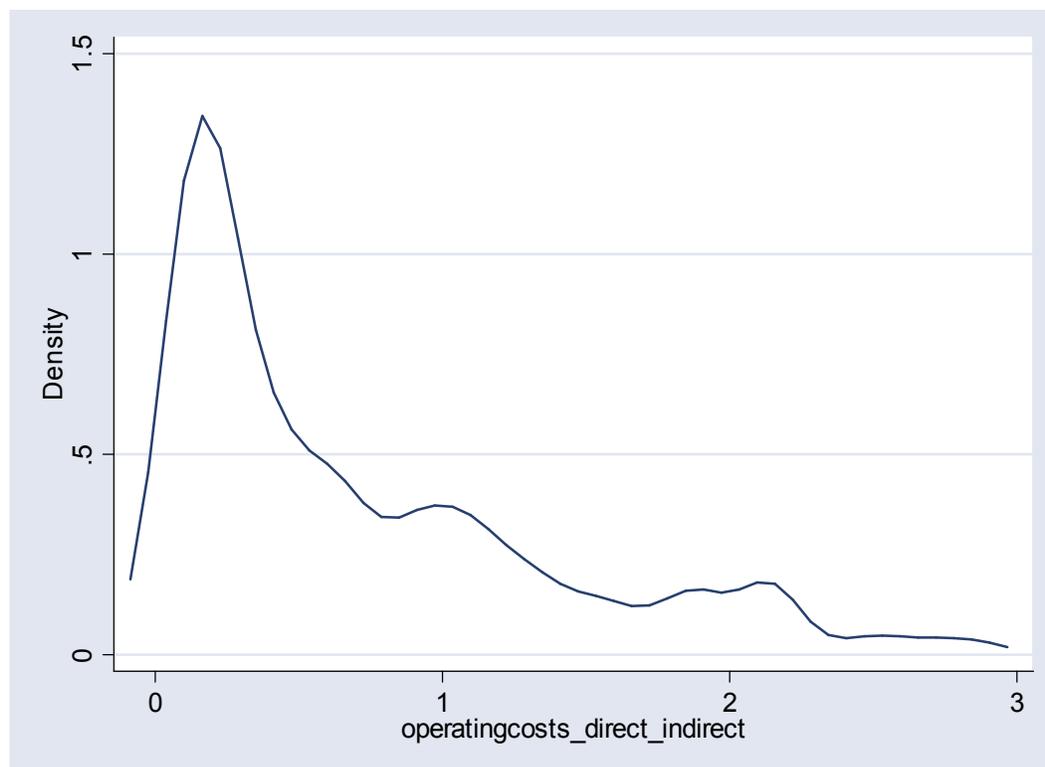


Table 9: If \$7.75 minimum wage, percent of establishments that would experience increases in operating costs of no more than...

	no increase	1 percent	3 percent	5 percent
Direct	34.3	81.4	96.2	98.6
Direct and indirect	34.3	77.6	93.8	98.5

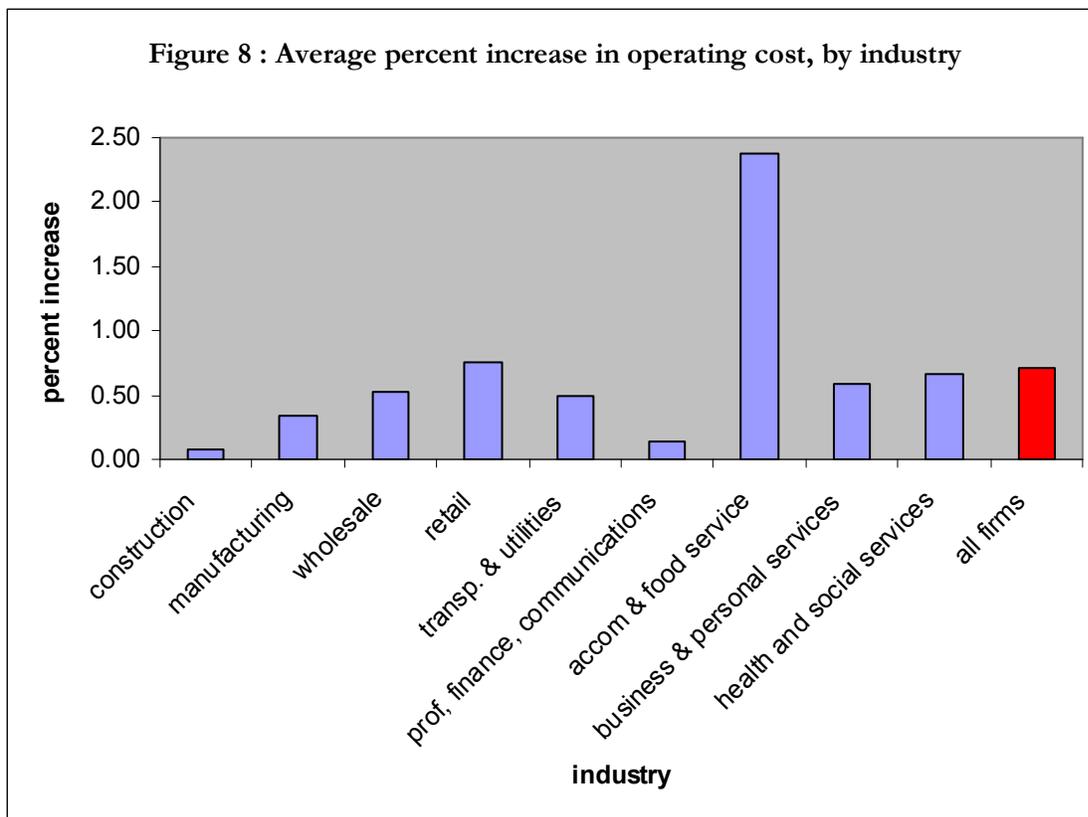
Source: Computed from UCB 2003 California Establishment Survey

Table 9 shows that almost 99 percent of establishments face overall cost increases that are less than five percent and almost 94 percent of them face increases that are less than three percent. This provides further evidence that a minimum wage increase disproportionately affects certain establishments.

Figure 8 summarizes the increase in operating costs due to direct and indirect effects at the industry level. Establishments in the accommodations and food services industry are by far the hardest hit by the minimum wage increase. The owner of the average establishment in every other industry faces increases in operating costs of much less than one percent, even when considering potential indirect effects. The owner of the average accommodation and food service establishment, though, faces a 2.4 percent increase in operating costs. Excluding establishments in the accommodation and food services industry, the average increase in operating costs significantly drops to 0.4 percent when direct and indirect effects are considered, compared to 0.7 percent overall.

As mentioned above, certain establishments, and more generally certain industries, tend to allocate a larger portion of their total costs to labor than others. For example, the average employer in the health and human services industry and the business and personal services industry reported spending between 50 and 60 percent of his total costs on labor. In comparison, the average

employer in a retail establishment spends only 34 percent. This difference is reflected when the relative wage bill changes are compared to the relative operating cost changes. Although the wage bill in retail increases by twice as much as the wage bill in health and social services and business and personal services, the differential in operating costs is far reduced (about 0.75 percent in retail versus about 0.65 percent in those service industries).



The accommodations and food services cost increases relative to other industries are so striking that they warrant further examination. Sixty six percent of workers in the accommodations and food services industry are employed in restaurants and bars. More specifically, sixty two percent of workers in this industry work in restaurants. The number of drinking establishments in the survey is quite small, so I examine restaurants only here. Tables 10 and 11 summarize the findings for restaurants. Though they employ only six percent of the total workforce, restaurants alone employ one out of every four low wage workers.

	% of all establishments	% of all workers	% of low wage workers
SIC 5812: Eating places	9.0	6.2	24.9

Source: California Establishment Survey

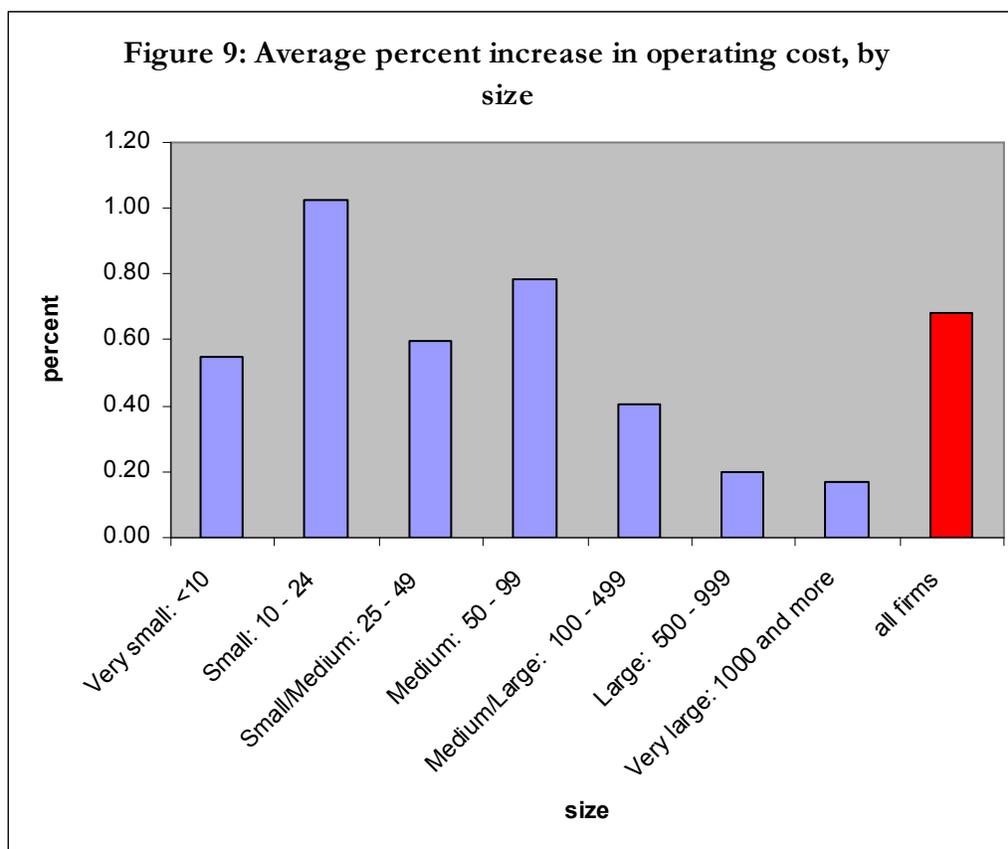
Restaurant owners face the largest cost increases by far compared to business owners in any other industry. Restaurant owners could see over a percent increase in their wage bill and almost a three percent increase in their overall operating costs. There is a lot of evidence that shows that the cost increase for limited service restaurants (fast-food restaurants) is particularly high compared to full service restaurants. The data does not permit this degree of disaggregation, but it seems likely that this is the case.

Table 11: SIC 5812: Eating places--cost increases				
	% wage bill increase		% operating cost increase	
	Direct only	direct and indirect	direct only	direct and indirect
SIC 5812: Eating places	5.5	6.5	2.3	2.7

Source: California Establishment Survey

Tipped workers are largely employed in the accommodations and food services industry. If the data were available, it would have been interesting to examine the extent to which workers receiving direct and indirect wage increases are tipped. Since tips often go unreported, despite laws that require otherwise, this is a difficult area to explore. A better understanding of the average tipped worker could provide a framework from which to reevaluate the minimum wage policies regarding tipped workers, which could significantly reduce costs to the accommodations and food services industry.

Finally, Figure 9 shows again that smaller firms face higher increases in operating costs than larger firms.



How California employers might adjust to a minimum wage increase

A statewide minimum wage increase would unambiguously increase labor costs for firms with workers currently making less than \$7.75, holding all else constant. Economic theory predicts that, in order to remain competitive, establishments will not absorb the extra costs. It is therefore necessary to consider how firms will respond to the increased labor costs. The cost increase projections in this analysis suggest that firms in certain industries will be harder hit than those in other industries. The mechanisms establishments employ to compensate for the effects the policy will likely vary by industry and other characteristics. A variety of factors will influence how a

business owner will react. These include the price elasticity of consumer demand, the percentage of the workforce making below the proposed minimum, the opportunities for workers to improve skills and training as pay increases and turnover decreases; the proportion of labor costs in overall operating costs; the ease of substituting nonlabor and labor inputs; the mobility of the firm; and competition within and outside of the area. The mechanisms by which firms might adjust to higher labor costs include:

- reducing profits,
- reducing employment,
- raising prices,
- increasing productivity,
- relocating to a state with a lower minimum wage, or
- closing the business entirely.

The data presented here indicate that most establishments face very modest cost increases, which means they will make only minor adjustments, if any, to the new minimum wage law. Establishments in the accommodations and food services industry, however, face potential costs many times higher than establishments in other industries. Since businesses in the accommodations and food services industry face an extremely local and inelastic demand, they should be able to pass a large portion of the cost increases on to consumers through price increases.

Price effects. Most of the research on price effects has focused in the food services industry, specifically in restaurants. With the costs faced by employers so heavily concentrated in the accommodations and food services industry, and more specifically in eating and drinking establishments, price increases are the most likely response.

Though the Card and Krueger study on the fast-food industry in New Jersey and Pennsylvania is best known for its findings on employment effects (discussed below), the landmark paper also addressed price effects. The findings regarding price effects were somewhat mixed and not as striking as those on employment effects, but overall they suggest a 10 percent minimum wage increase raises prices by up to four percent.

Aaronson, French, and MacDonald found that restaurant prices unambiguously rise after minimum wage increases were enacted.²⁰ Not surprisingly, the price increases were larger for establishments that were more likely to pay the minimum wage. At establishments that tend not to pay their workers the minimum wage, they found much smaller price increases. The findings suggest that restaurant prices rise proportionally to the modest increases in operating costs faced by employers following a minimum wage increase. Stated alternatively, if a restaurant owner faces a one percent increase in operating costs due to the new minimum wage, he might respond by raising his prices by one percent. They find that increases are higher in the fast-food industry than in full-service restaurants. Finally, Aaronson found that these price increases are concentrated in the quarter surrounding the month during which the minimum wage increase is enacted.

²⁰ Aaronson, Daniel, Eric French, and James MacDonald. "The Minimum Wage, Restaurant Prices, and Labor Market Structure." Working paper, Federal Reserve Bank of Chicago, 2004.

The body of research on price effects is largely in consensus. Most studies conclude that a ten percent increase in minimum wage raises food prices by no more than four percent and overall prices by no more than 0.4 percent. Given the existing research, it is possible that California restaurants could pass the entire cost increases onto their consumers. On average, restaurants might raise their prices just under 3 percent. In real terms, this means that a cheeseburger that cost \$8.00 before the minimum wage increase might cost \$8.24 after the increase. Research shows that such small price increases in the restaurant and also in the hotel industry will not affect consumer demand.²¹

In the San Francisco minimum wage study, Dube, Naidu, and Reich found a 6.2 percent rise in prices in San Francisco limited-service restaurants as compared to the East Bay, which was statistically significant at the 5 percent level. In full-service restaurants, they found a 2.2 percent rise in prices, but it was not statistically significant. They find that the price change is not proportional to the fraction of workers affected by the minimum wage. In sum, while prices in limited-service restaurants rose more in San Francisco than they did in the East Bay, they did not rise more in affected restaurants versus unaffected restaurants within San Francisco. These findings are consistent with the competitive theory but not with the monopsonistic theory, which are further discussed below.

Other mechanisms of adjustment

While price effects are certainly the most likely response to the minimum wage increase, individual establishments will react to the minimum wage in their own ways, which might include some of the following alternate mechanisms. None of these mechanisms will likely be utilized by a large enough portion of establishments to have a significant net effect on the California economy.

Employment effects. One obvious way for an employer to avoid increases in operating costs is to reduce the size of his workforce. An employer can do this by reducing the number of workers he employs or by reducing the number of hours worked. The minimum wage debate has focused on the potential for employment loss. Prior to 1995, economists largely agreed that instituting a minimum wage resulted in some loss of employment. The textbook competitive model suggests that employment loss is inevitable. If a minimum wage is introduced (or increased in this case) beyond the market-clearing wage in a competitive labor market, the marginal cost of hiring a worker increases. In response, firms will decrease labor until they reach the point where the marginal revenue product of labor is again equated to marginal cost. In doing so, they will demand a level of labor less than the supply of low wage workers, and employment will decline.

In 1995, Card and Krueger called into question what was previously an almost universally held belief. In their study of the fast-food industry in New Jersey and Pennsylvania, they found that employment was not affected by the new minimum wage law in New Jersey. If there is no employment effect or a slight positive effect, as Card and Krueger find, the low wage labor market must not be a competitive one. An alternative explanation is that firms are wage setters. If firms act in this way, as monopsonies, increasing the minimum wage can actually cause employment to rise. Although the monopsony model does offer a competing theoretical framework that could explain how employers react to the minimum wage, empirical evidence does not support the theory in its entirety either.

²¹ Kiefer, Kelly, and Burdett, "Menu Pricing: An Experimental Approach," *Journal of Business and Economic statistics*, 1994, 12(3), 329-337.

Since Card and Krueger published their paper, an active debate has ensued among economists on the presence and extent of the employment effect. David Neumark, currently at the Public Policy Institute of California, continues to find a small negative employment effect. He estimates that a ten percent increase in the minimum wage will result in a one to two percent decrease in employment. Furthermore, he finds that the distributional effects are most severe for low wage non-teen workers. Fuchs, Poterba, and Krueger (1998) found little consensus among labor economists in the top 40 economics departments in the United States. With Card at one end of the academic spectrum and Neumark at the other, elasticity estimates range from 0 to 2.2 given a ten percent increase in the nominal minimum wage.

In sum, there is still a healthy debate on the issue of the employment effect. While Card and Krueger's paper was certainly extremely significant, the extent of replies to their work suggest that "[the paper's] lasting contribution may well be to show that we just don't know how many jobs would be lost if the minimum wage were increased...and that we are unlikely to find out by using more sophisticated methods of inference on the existing body of data. What is needed is more sophisticated data" (Kennan 1995).

Despite the debate, policy analyses continue to project potential employment effects. The Employment Policies Institute, a non-partisan research organization in Washington, DC, published a study on the effects of the proposed California minimum wage in August 2004. The authors estimated potential job loss assuming an employment elasticity of 0.22 and a minimum wage of \$7.75. They used the Current Population Survey to compute the fractional wage gain for each worker and applied this figure to the elasticity and weighted by affected worker. The report suggests that up to 18,610 jobs could be lost as a result of this minimum wage increase. Jeffrey Woods of the California State Division of Labor Statistics and Research applied the same methodology to project the potential job loss resulting from the last minimum wage increase in California. His projections were significantly higher than the actual job loss that occurred. He found a small decrease in payroll hours, but no significant employment loss, which implies that workers kept most (but not all) of the 2001 minimum wage increase, and firms paid for the majority of the increase by some other method than in reducing employment.

In the recent IIR study on the effects of the San Francisco minimum wage on the restaurant industry, the authors found no employment effect in both limited service and full service restaurants. Since the food service industry will be the hardest hit if the state minimum wage is increased, we might see similar patterns statewide. The employment effect might be minimized in the food services industry because employers will likely pass costs on to consumers, which was discussed above.

Increasing productivity. It is possible that California establishments could increase productivity to compensate for the increased costs. Some research suggests that higher pay would reduce turnover and absenteeism, which in turn could reduce training costs and administrative duties.²² Many economists do believe such behavior is likely if a firm chooses to pay efficiency wages, or wages in excess of the competitive wage, but the extent to which this would translate to minimum wage increases is unclear. Even in the cases of efficiency wages, it is uncertain why more firms would not choose to pay more if these benefits do exist. The IIR San Francisco restaurant study did not find a significant turnover effect. Appendix E summarizes the initial findings regarding rates of turnover, hours of training, and vacancy rates in low wage firms. The research indicates that low wage firms

²² Bernstein, Jared and John Schmitt, "Making Work Pay: The Impact of the 1996-97 Minimum Wage Increase," Washington DC: Economic Policy Institute, 1998.

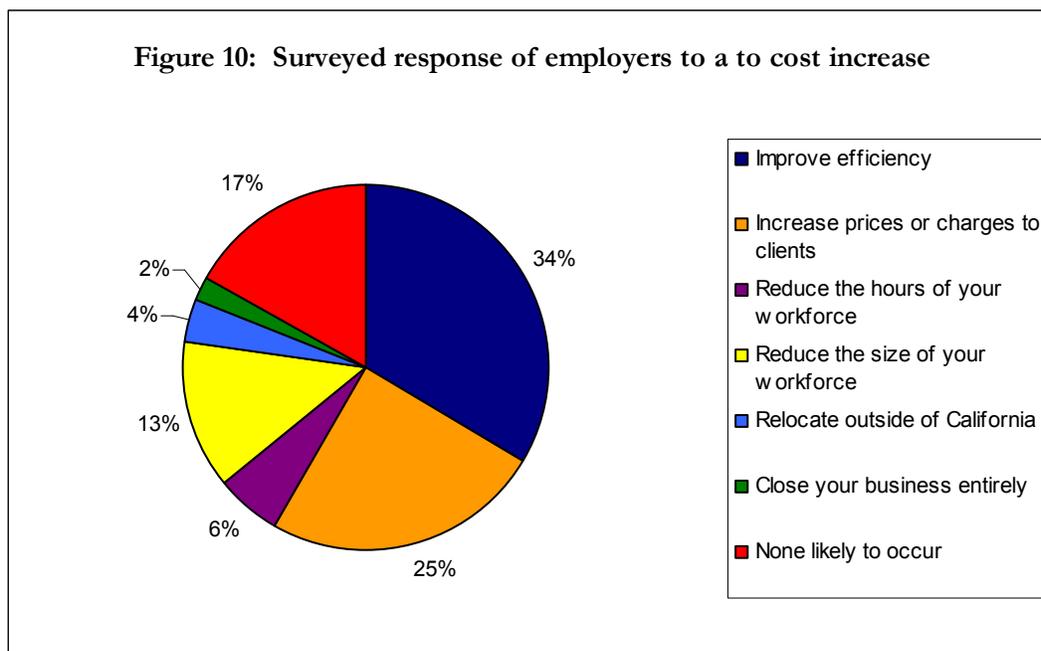
have higher rates of turnover, which suggests they have room to increase efficiency, but it remains unclear how an increased minimum wage provides a mechanism to do so. Overall, it seems unlikely that increased productivity will compensate for much of the increased operating costs.

Relocating to a state with a lower minimum wage. Establishments in mobile industries might decide to move out of California in response to the cost increases. Most retail and service businesses, particularly those in accommodations and food services and health and human services, rely on a very localized customer base, and relocation is not an option for these businesses. The cost increases in mobile industries are so small that relocation is unlikely for these firms. In addition, as discussed above, most low wage workers in manufacturing are in the apparel industry, which has been diminishing over time regardless of the minimum wage increase.

Closing the business entirely. If cost increases are high enough, employers might react by closing the business entirely. The cost increases reported here are probably not high enough to warrant such an extreme response. This is particularly true since the businesses hit hardest are those that can most easily pass the increases on to consumers.

Surveyed response of establishment to a five percent cost increase

The survey asked employers the following question, “Suppose the overall cost of doing business for all establishments in California increased by five percent. Which would be your single most likely response to the increase?” Figure 10 summarizes the responses.



The largest proportion of employers said they would improve efficiency. This response is somewhat surprising given the discussion above. The employers were not asked any follow up questions, so it is unclear how employers intend to increase efficiency. Almost one in four employers said they would increase prices. Twenty three percent said they would either reduce the size or hours of their workforce, and almost 17 percent said they would have no response to such an increase. The potential cost increase to almost all of the firms is significantly less than five percent, and there is little known about the extent to which such questions on projected behavioral responses reflect

reality. The IIR conducted a similar survey of San Francisco establishments prior to the citywide minimum wage. In that survey, the most likely response among employers in eating and drinking establishments was to increase prices, and as discussed previously, this was the most pronounced response in the restaurant industry according to the IIR follow-up study. Price increase was also the most likely response by eating and drinking establishments in this survey.

Conclusion

The proposed minimum wage increase would unambiguously raise the wages of 1.65 million Californians who are currently earning less than \$7.75 per hour and likely also raise the wages of an additional number of workers currently earning \$7.75 per hour or just over through indirect effects. While proponents of the minimum wage bill exalt these wage increases, more cautious evaluators of the minimum wage fear that the operating cost increases incurred by employers will be significant enough to warrant action that would hurt the California economy, such as reduced employment or relocation out of California. This analysis finds that the cost increases to businesses are very modest, except in the accommodations and food services industry. Since businesses in the accommodations and food services industry face an extremely local and inelastic demand, they should be able to pass the cost increases on to consumers through price increases. The cost increases in other industries are small enough that only minor adjustments are necessary. These findings should allay some concerns expressed by the minimum wage's harshest critics.

Appendix A: California Establishment Survey Design and Weights

The sample for the California Survey of Establishments was a stratified random sample, based on the Dun and Bradstreet database of establishments for California. The sample includes business and non-profit establishments with five or more employees. Government agencies, public schools or universities, and agriculture, forestry, and fishing industries were excluded from the sampling frame.

Within each size category, Dunn and Bradstreet drew a random sample of eligible establishments. The larger establishments were sampled at progressively higher rates. The sampling fractions ranged from .97 percent for the category with the smallest establishments to 100.0 percent for the category with the largest establishments.

A total of 2,806 establishments were sampled, of which 2,200 met the eligibility criteria for the study. Interviews were completed at 1,080 establishments.

Since the establishments were sampled with different sampling fractions, weights were calculated to compensate for those differences. The calculations of those weights are described below.

1. *Establishment weight (estabwt and estabwtn)*

Establishments in various size categories were sampled at different rates, in order to increase the proportion of large establishments in the sample. This weight compensates for oversampling, by weighting each case inversely proportional to the relative sampling fraction. The non-response adjusted version of the weight compensates for differential response rates within the 7 D&B size categories used for sampling.

2. *Worker weight (workrwt and workrwn)*

The worker weight is created by multiplying the establishment weight for each case by the number of employees in the establishment, and then rescaling so the weighted number of cases is equal to the actual number. The non-response adjusted version was created by multiplying the number of employees by the non-response adjusted version of the establishment weight.

Appendix B: Construction of Wage Distribution

The questions asked to establishments concerning the wage distribution of employees read:

What proportion of your workforce is paid between \$6.75 and \$9.00 per hour?

- A. none
- B. less than 25%
- C. 25% to 50%
- D. 51% to 75%
- E. more than 75% but less than all
- F. all of them

The same question was asked for the following wage brackets:

\$9.01 to \$11.00; \$11.01 to \$15.00; \$15.01 to \$20.00; \$20.01 to \$30.00; over \$30.00

I constructed the wage distribution for each firm using the midpoint of percentage of reported workers. I assumed that the \$6.75 to \$9.00 wage bin captured all low wage workers, even those making less than the mandated \$6.75 minimum wage since the survey did not offer a lower alternative.

Analysis of the impact of a minimum wage increase required further disaggregation of lowest wage bin. I applied the wage distribution of workers by industry from the 2003 Current Population Survey to the \$6.75 to \$9.00 wage bin to construct the following wage bins:

Under \$6.75; \$6.75 to \$7.25; \$7.25 to \$7.75; \$7.75 to \$8.25; \$8.25 to \$8.75; \$8.75 to \$9.00.

The industry level was chosen because there is large variation in wage distributions across industries. The CES identifies industry by SIC codes and the CPS identifies industries by detailed industry code. In order to merge the information, I identified nine major industry groupings and assigned SIC codes and DTINDS codes to each in a consistent manner summarized below.

	Primary SIC codes	Detailed industry code
Construction	15, 16, 17	4
Manufacturing	20 through 39	5 through 20
Wholesale	50, 51	21
Retail	52 through 57, 59	22
Transportation and utilities	40 through 47, 49	23, 24
Prof, finance, and communications	48, 60 through 67, 78, 81, 87	25 through 37
Accommodations and Food	58, 70, 79, 84	44, 45, 46

Services		
Business and personal services	72, 73, 75, 76, 86	47, 48, 49
Health and human services	80, 83	41, 42, 43

Wages were computed from the Current Population Survey by dividing the average weekly earnings by usual hours, so that both individuals who are paid hourly and salaried workers have 'wages.' Finally, I aged all of the data using the change in distribution from 2003 to 2004 in the Current Population Survey.

Appendix C: Calculating the Wage Bill and Operating Costs

Wage bill

To construct the wage bill, I relied on answers to survey questions about proportions of part time and full time workers and the wage distribution of workers. As discussed above, the low-end of the wage distribution was constructed using Current Population Survey Data. See Appendix B for a detailed explanation. Workers were divided into eleven wage bins, the lowest “under \$6.75” and the highest “over \$30.00.” The midpoint of each wage bin served as an estimate of the average wage for the bin. An average wage was calculated for each firm. The average wage was multiplied by the total number of hours worked by all employees assuming a 40 hour work week for full time employees and a 20 hour work week for the part time employee. To calculate the wage bill under a \$7.75 minimum wage, I applied a \$7.75 wage to each of the three bins of workers under \$7.75. The lowest wage bin is “under \$6.75,” which represents the portion of workers making less than the current \$6.75. This method brings the wage of these workers up to \$7.75, which might not be the case since their employers currently pay less than minimum wage. For this reason, the wage bill might be slightly overstated. The portion of workers in this bin is small across industries.

$$avewage = (\%under\$6.75) * \$6.50 + (\%\$6.75 - \$7.24) * \$7.00 \dots (\%\$20.01 - \$30.00) * \$25 + (over\$30) * \$50$$

$$avewage MW = (\%under\$6.75) * \$7.75 + (\%\$6.75 - \$7.24) * \$7.75 \dots (\%\$20.01 - \$30.00) * \$25 + (over\$30) * \$50$$

$$totalwagebill = averagewage * (2000hours * fulltimeemployees) + (1200hours * parttimeemployees)$$

$$pctwagebillincrease = \frac{totwagebill \$7.75 \text{ min wage} - totwagebill \$6.75 \text{ min wage}}{totwagebill \$6.75 \text{ min wage}}$$

To consider indirect wage effects, I assume that workers earning \$7.75 before the wage increase will make fifty percent of the minimum wage increase (50 cents) and the effect will phase out 100 percent above the minimum wage increase at \$8.75. In other words, the average wage of the group of workers who were earning between \$7.75 and \$8.75 per hour prior to the new minimum wage increases from \$8.25 per hour to \$8.75 per hour. This estimates the second kind of indirect effect that I describe. I do not estimate the first kind of indirect effect.

$$\text{old average wage} = \frac{\$7.75 + \$8.75}{2} = \$8.25$$

$$\text{new average wage} = \frac{(\$7.75 + 0.5 * 100\% \text{ of min wage increase}) + (\$8.75 + 0\% \text{ of min wage increase})}{2}$$

$$= \frac{\$8.25 + \$8.75}{2} = \$8.50$$

Operating costs

To estimate the increase in operating costs, I used the answer to a survey question that asked employers to report their labor cost as a percentage of overall costs, and applied this percentage to wage bill increases. This figure may be overstated. The average restaurant reports that over 40 percent of its overall costs are labor costs, but 10-K company reports, the Economic Census for Accommodations and Food Services, and the IRS Statistics on Income Bulletin all provide an estimate between 30 and 35 percent.²³

$$pctoperating\ cost\ increase = pctwagebillincrease * pctlabor$$

²³ See footnote 17 in Aaronson, French, and MacDonald “The Minimum Wage, Restaurant Prices, and Labor Market Structure,” working paper, Federal Reserve Bank of Chicago, 2004.

Appendix D: Characteristics of low wage establishments

A minimum wage increase is an example of a shock that unexpectedly increases costs for establishments. The findings in this report show that the extent of the cost increase is, not surprisingly, largely a function of the percentage of low wage workers employed and to a lesser extent a function of the percentage of total costs spent on labor. This final section examines whether low wage firms have unique characteristics. Specifically, I examine vacancy rates, turnover rates, hours of training spent on new employees, and health care.

Each measure was tested in two ways. For example, consider the vacancy rate. First, I tested whether the vacancy rate differed in businesses with greater than 30 percent of their workforce making less than \$7.75 per hour and businesses with no low wage workers controlling for firm size and industry. Second, I tested whether vacancy rate is a function of the extent to which a business' workforce is composed of low wage workers, controlling for firm size and industry. Stated alternatively, I tested whether the percentage of low wage workers the business employed affected the businesses vacancy rate.

Regression Equations

$$vacancy_e = \beta_0 + \beta_1 wage_{under775}_e + \beta_2 small_e + \beta_3 medium_e + \sum_{i=1}^7 \beta_i industry_e + e_e$$

$$turnover_e = \beta_0 + \beta_1 wage_{under775}_e + \beta_2 small_e + \beta_3 medium_e + \sum_{i=1}^7 \beta_i industry_e + e_e$$

$$newtraining\ hours_e = \beta_0 + \beta_1 wage_{under775}_e + \beta_2 small_e + \beta_3 medium_e + \sum_{i=1}^7 \beta_i industry_e + e_e$$

$$health\ coverage\ rate_e = \beta_0 + \beta_1 wage_{under775}_e + \beta_2 small_e + \beta_3 medium_e + \sum_{i=1}^7 \beta_i industry_e + e_e$$

In each case, I am interested in β_1 , which can be interpreted as the effect a one percent increase in the proportion of the workforce that makes under \$7.75 has on the outcome variable of interest.

Vacancy. Even if an employment effect is a consequence of the minimum wage increase, it is possible that workers would not lose their jobs. How is this possible? If low wage firms have large numbers of vacancies, employers could choose to eliminate unfilled job spots rather than fire any of their existing workforce. Both tests suggest that vacancy rates are not significantly different in low wage firms than in firms without low wage workers. These findings do not rule out the possibility that low wage firms will eliminate unfilled positions, but they do not support the theory that low wage firms have higher levels of vacancies than other firms. The average vacancy rate is just over three percent.

Turnover. Increased efficiency or productivity is another commonly cited response to a minimum wage increase. In the California Establishment Survey, the average employer said that increasing efficiency was his most likely response to a cost increase. In the minimum wage debate, some proponents suggest that increasing the wage will reduce turnover, which would increase efficiency because investments in training would payoff more and the lag associated with job transition would be eliminated. If this is the case, it is likely that low wage firms have higher levels of turnover than firms without low wage employees. The data confirms this. The average business with no low wage workers has a turnover rate of 24 percent, and the average low wage business has a 47 percent turnover rate. The percentage of low wage workers employed by a business had a significant effect on the turnover rate when controlling for size and industry.

Hours spent training new employees. Low wage firms spend significantly less time training new employees. This may be a function of high turnover, as firms are unwilling to invest in training when they do not expect workers to stay for a long period of time. The effect, though in the expected direction, is not significant when controlling for size and industry, which might suggest that time spent on training is more a function of the type of establishment rather than the type of worker.

Health care. With the rising costs of health care, health insurance is a crucial benefit for workers. The health insurance coverage rate is significantly lower in firms with higher proportions of low wage workers. Health insurance coverage rate is defined as the eligibility rate, which is the percent of employees in the firm that are eligible to enroll in the health insurance plan, multiplied by the take-up rate, which is the percent of eligible employees that are enrolled in the plans. Low wage firms have significantly lower rates of health care coverage. These findings hold up under all variations in specifications.

Table 12: Effect of low wage workforce on vacancy rate, turnover rate, new employee training hours, and health care coverage rate				
	Explan. Variable: Percent of workforce under 775			
Outcome variable	coefficient	standard error	observations	R-squared
Vacancy	0.0151	0.0444	1013	0.03
Turnover	0.3949	0.1690	992	0.05
new employee training hours	-10.1029	38.6901	973	0.06
health care coverage rate	-0.9068	0.1406	921	0.36

This final portion of the analysis is not as expansive as necessary to draw any definite conclusions, but it does suggest some potential areas for further research. Turnover is significantly higher in low wage firms, and proponents of the minimum wage claim turnover would be reduced if the wage was higher. The health care results are the most striking, although probably the least surprising. Living wages, though limited in scope, in some cases require employers to pay more if they do not offer health care options. Whether in wage legislation or elsewhere, health care accessibility for low wage workers is a problem in California.

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