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# THE SOCIAL AND ECONOMIC EFFECTS OF WAGE VIOLATIONS:

**Estimates for California and New York**

**Final Report**

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## EXECUTIVE SUMMARY

### Overview

This report summarizes the results of Eastern Research Group, Inc. (ERG)'s project to estimate the social and economic effects of minimum wage violations in California and New York.<sup>1</sup> This project represented an exploratory effort to determine the appropriate approach and data to use to estimate the impacts of state and federal minimum wage and overtime pay violations; however, data limitations related to overtime pay violations required us to focus only on minimum wage violations. The estimates we developed indicate that minimum wage violations are pervasive in California and New York and are resulting in significant impacts in workers experiencing these violations.

The Fair Labor Standards Act (FLSA) is a cornerstone of U.S. labor policy. The FLSA sets national standards for a minimum hourly wage, maximum hours worked per week at workers' regular rate of pay, the wage premium if the maximum number of hours is exceeded (overtime pay), and limitations on jobs performed and hours worked by those under the age of 18 (child labor). The FLSA also sets recordkeeping requirements for employers. States may enact minimum wage laws that operate in parallel, and the effective minimum wage rate is established by whichever law is more protective of workers.

Failure to comply with the FLSA has implications far beyond the dollar amount of unpaid wages. At the current federal minimum wage of \$7.25 per hour, a full-time employee earns approximately \$15,000 per year. Thus, failure to comply with the minimum wage standards of the FLSA puts a potentially vulnerable population further at risk. Beyond these impacts to individuals, lack of compliance with the FLSA results in lower income and employment tax payments from employers and employees, thus affecting programs like Social Security and Medicare.

After reviewing multiple potential data sources and methods, the Department of Labor (DOL) and ERG agreed that the project should focus on the U.S. Census Bureau's Current Population Survey (CPS)<sup>2</sup> and Survey of Income and Program Participation (SIPP) using data for the federal fiscal year 2011 (FY2011).<sup>3</sup> Based on these two data sources, ERG's approach to estimating the impacts of the wage violations followed a three step approach:

- (1) **Estimate the extent of minimum wage violations.** The first step involves determining when violations occurred among the respondents in the data.<sup>4</sup> We did this by comparing the wages reported by respondents to the state minimum wage, taking into account exemptions under federal and state

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<sup>1</sup> The states of California and New York were chosen due to the large size of their workforces.

<sup>2</sup> The CPS is a survey produced by both the Bureau of Labor Statistics (BLS) and the Census Bureau.

<sup>3</sup> The data used in this analysis are collected in the months of October, 2010 through September, 2011. The fiscal year was used instead of the calendar year so the findings would be in line with the time period used for many social assistance programs considered in the impacts.

<sup>4</sup> These are estimates based on self-reported information and do not represent a formal determination of wage violations based on investigative data.

laws. Focusing on just two specific states allowed ERG to include many of the details of each state's laws in determining when violations occurred. Implementing this approach, however, was complicated by the fact that the data reported by respondents in both the CPS and SIPP required some interpretation and refinement to allow identification of violations. Nevertheless, we expect our approach to provide a reasonable estimate of minimum wage violations in both. We used the sampling weights provided in the CPS and SIPP to extrapolate from the sample in each data source to the population for each state. As part of our analysis, we also characterized the demographics of those who experienced violations and the characteristics of these jobs.

- (2) **Estimate the amount of lost income stemming from those violations.** Once we identified the violations among the respondents, we estimated the amount of lost income stemming from those violations. We did this by estimating the amount that each worker who we estimated experienced a violation would have made if they had been paid the compliant amount. This involved multiplying the amount they should have been paid per hour by the hours worked in violation.<sup>5</sup>
- (3) **Estimate the economic impacts.** Finally, we used the estimated lost income stemming from the violations to determine how lost income impacted individuals, families, and the government. We focused on impacts associated with the poverty rate, tax revenues, and program participation.

The data have some limitations for this analysis; two of which are presented here. First, to estimate minimum wage violations we need to know each respondent's wage as defined by the FLSA/state law, which does not necessarily correspond to the wage reported in the data. Second, overtime pay is not uniquely identified in either data set making it problematic to estimate the level of overtime pay violations. Although we developed a method to adjust for the data issues, the resulting estimates were not considered reliable.

## Minimum Wage Violations

Table ES-1 provides a summary of the estimated extent of minimum wage violations and lost income associated with these violations in California and New York based on the CPS and SIPP data for FY2011. In California, using the CPS data, we estimated there were 372,000 weekly minimum wage violations, representing approximately 3.8 percent of covered, non-exempt jobs. These violations were associated with \$22.5 million in weekly lost income (49.3 percent of the earned income of those experiencing the violations). Using the SIPP data in California, we estimated 334,000 monthly violations, representing 3.5 percent of the jobs covered by the FLSA which are non-exempt.<sup>6</sup> Lost weekly income totaled almost \$28.7 million, which was 70.9 percent of the earned income of those experiencing violations.<sup>7</sup>

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<sup>5</sup> This calculation, however, does not account for whether and how the market would adjust (i.e., demand curve-based adjustment) to a compliant wage.

<sup>6</sup> For example, military service-members on duty and the self-employed are not covered by the FLSA and thus are excluded from this analysis.

<sup>7</sup> The lost income from minimum wage violations is a larger percent of earnings in the SIPP than in the CPS; this is consistent with the raw data differences in earnings. Since the distribution of earnings is lower in the SIPP than in

For New York using the CPS, we estimated a total of 188,000 weekly violations representing 3.5 percent of the covered jobs resulting in \$10.2 million in lost income each week (37.2 percent of the earned income of those who experienced a violation). Using the SIPP data in New York, we estimated 339,000 monthly violations (6.5 percent of covered jobs), resulting in \$20.1 million in weekly lost income (47.5 percent of the earned income of those who experienced a violation).

**Table ES-1: Estimated Extent of Violations and Lost Income Associated with Minimum Wage Violations in California and New York, Using CPS and SIPP Data, FY2011**

Data Source	Extent of Violations		Lost Income	
	Number of Violations	Rate of Violations as a Percentage of Non-Exempt Jobs	Total (\$Millions)	As a Percentage of Worker Income
<b>California</b>				
CPS	372,000 per week	3.8%	\$22.5M per week	49.3%
SIPP	334,000 per month	3.5%	\$28.7M per week	70.9%
<b>New York</b>				
CPS	188,000 per week	3.5%	\$10.2M per week	37.2%
SIPP	339,000 per month	6.5%	\$20.1M per week	47.5%

In general, the industry with the most minimum wage violations is leisure and hospitality.<sup>8</sup> Other industries with a significant share of minimum wage violations are educational and health services and wholesale and retail trade. Violations in New York seem to be slightly more concentrated in the leisure and hospitality industry and the educational and health services industry than in California. We found that violations were generally most prevalent in the service occupations.

We also characterized the demographics of those who experienced minimum wage violations. Younger workers are significantly more likely to be illegally paid below the minimum wage than older workers, although the rates are only statistically significantly different in the CPS. Violation rates tend to be slightly lower for men than women, but are not statistically significantly different from one another. There is a clear relationship between educational attainment and the probability of experiencing a minimum wage violation; the violation rate decreases as education increases.<sup>9</sup>

In California, there were no clear differences in minimum wage violation rates across races (using three race categories: white-only, black-only, and other). In New York, workers in the 'other' category tended to experience higher violation rates but this difference was not statistically significant. Therefore,

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the CPS, the numerator is higher (lost income from wage violations) and the denominator is lower (earnings), which both lead to a higher ratio in the SIPP.

<sup>8</sup> The exception is California in the SIPP.

<sup>9</sup> Only some of the violation rates are statistically significantly different from each other in the four sets of combinations of data set and state.



we cannot identify differences across races in New York. Conversely, Hispanics had a statistically significantly higher minimum wage violation rate than non-Hispanics in both California and New York using the CPS (although not when the SIPP was used).

Table ES-2 summarizes ERG's estimates for a number of impacts that we explored in the CPS and SIPP data:

- **Poverty-related impacts:** to what extent did minimum wage violations lead to families being below the poverty line?
- **Taxes:** what were the impacts of minimum wage violations on the taxes being collected by the federal and state governments?
- **Program participation:** to what extent did minimum wage violations lead to an increased need for families or individuals to rely on social programs?

The estimates in Table ES-2 provide estimates of the impact of minimum wage violations on the poverty rate.<sup>10</sup> Using CPS data we found that minimum wage violations led to 7,000 families in California and 8,000 families in New York being below the poverty line (0.08 percent of families in poverty in California and 0.14 percent in New York).<sup>11</sup> SIPP data resulted in larger estimates of impacts than the CPS. There were an estimated 41,000 families in California and 26,000 families in New York below the poverty line due to minimum wage violations (0.44 percent of families in poverty in California and 0.48 percent in New York); all of which are statistically significantly different from zero. In the CPS, we estimated that there were 31,000 families in California and 19,000 families in New York that experienced a violation and would have remained below the line even with a compliant wage. The same values from the SIPP were 33,000 families in California and 68,000 in New York.

Three types of taxes are estimated: payroll taxes, income taxes (federal and state), and the Earned Income Tax Credit (EITC).<sup>12</sup> Our estimates indicate that minimum wage violations in California reduced payroll taxes by \$167 million in 2010 using the CPS. In New York, the estimated reduction in payroll tax was \$71.0 million in 2010 using the CPS. Minimum wage violations resulted in an estimated \$113 million in lost federal income taxes in 2010 (between the two states). The California state government lost \$14 million and the New York state government lost \$8 million in income tax revenues in tax year 2010 due to minimum wage violations. Finally, minimum wage violations led to workers who had violations losing \$4.5 million in EITC benefits in California and \$1.1 million in EITC benefits in New York in 2010.<sup>13</sup>

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<sup>10</sup> The estimated impact on poverty is based only on the change in earned income and does not take into account any changes in unearned income that may result.

<sup>11</sup> The CPS estimates are not statistically different from zero; therefore, we cannot rule out the possibility that minimum wage violations have no effect on the poverty rate.

<sup>12</sup> EITC in New York state and New York City are included. California does not have a state EITC.

<sup>13</sup> This is because the amount of EITC payment increases as earnings increases (until a threshold is reached and then benefits are reduced).

In terms of program participation, ERG explored a number of programs including energy assistance, housing assistance, Medicaid, school breakfast, school lunches, the Supplemental Nutrition Assistance Program (SNAP), the Temporary Assistance for Needy Families (TANF) program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). However, estimates were only reported if the sample size was large enough to produce reasonably precise estimates. This requires a sufficient number of individuals that both participated in the program and experienced a violation. Based on this criterion, we were only able to develop estimates for school breakfasts, school lunches, SNAP, and WIC.<sup>14</sup> Due to small sample sizes the CPS numbers are generally less reliable than the comparable numbers from the SIPP, as demonstrated by the larger standard errors associated with the CPS estimates.

Minimum wage violations led to \$5.5 million in additional breakfast benefits in California and \$3 million in New York in FY2011. The school lunch program spent an additional \$10.1 million in California and \$4.8 million in New York in FY2011 due to minimum wage violations (SIPP). SNAP benefits were increased by \$0.9 million per month in California and \$2.8 million per month in New York in FY2011.

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<sup>14</sup> Additionally, in terms of data sources, only the SIPP allowed for estimates for all three programs. The CPS data could only be used for school lunch programs and even then could not identify results distinguishable from zero.

**Table ES-2: Summary of Estimated Impacts on Poverty, Taxes, and Program Participation Associated with Minimum Wage Violations in California and New York, FY2011**

Impact category	California	New York
Poverty	<p><u>CPS</u> MW violations led to 7,000 additional families (15,800 individuals and 4,400 children) being under the poverty line</p> <p><u>SIPP</u> MW violations led to 40,800 additional families (88,300 individuals and 26,900 children) being under the poverty line</p>	<p><u>CPS</u> MW violations led to 7,800 additional families (13,400 individuals and 0 children) being under the poverty line</p> <p><u>SIPP</u> MW violations led to 25,600 additional families (54,800 individuals and 14,400 children) being under the poverty line</p>
Payroll Taxes	<p><u>CPS</u> MW violations led to \$167.1 million in lost payroll taxes</p> <p><u>SIPP</u> MW violations led to \$198.3 million in lost payroll taxes</p>	<p><u>CPS</u> MW violations led to \$71.0 million in lost payroll taxes</p> <p><u>SIPP</u> MW violations led to \$144.7 million in lost payroll taxes</p>
Income Taxes	<p><u>CPS</u> MW violations led to \$74.0 million in lost federal income taxes and \$14.4 million in lost state income taxes</p>	<p><u>CPS</u> MW violations led to \$38.7 million in lost federal income taxes and \$8.2 million in lost state income taxes</p>
EITC	<p><u>CPS</u> MW violations led to \$4.5 million in decreased credits</p>	<p><u>CPS</u> MW violations led to \$1.1 million in decreased credits</p>
School Breakfast Programs	<p><u>SIPP</u> MW violations led to \$5.5 million in additional benefits</p>	<p><u>SIPP</u> MW violations led to \$3.0 million in additional benefits</p>
School Lunch Programs	<p><u>CPS</u> MW violations led to \$297,000 in additional benefits</p> <p><u>SIPP</u> MW violations led to \$10.1 million in additional benefits</p>	<p><u>CPS</u> MW violations led to \$0 in additional benefits</p> <p><u>SIPP</u> MW violations led to \$4.8 million in additional benefits</p>
SNAP	<p><u>SIPP</u> MW violations led to \$0.9 million per month in additional benefits</p>	<p><u>SIPP</u> MW violations led to \$2.8 million per month in additional benefits</p>

Note: FY2011 was used to identify workers with minimum wage violations. However, due to data constraints, some impacts reflect calendar year 2010.

### Conclusions Related to Methods and Data Sources

As we noted, the purpose of this work was to perform an exploratory analysis of different methods and data. Thus, this section provides some conclusions related to the methods and data sources used in this analysis.

**The approach of using large national-level datasets to identify violations and extrapolate to a population worked well for minimum wage violations, although there are some limitations to the approach.** We were able to develop estimates of minimum wage violations based on the data elements in both the CPS and SIPP. However, in some cases the data did not support some types of estimates. From

our estimates we were also able to provide population-based estimates by using the sampling weights provided by each data source. Furthermore, we were able to provide a breakdown of the violations by a number of key demographics of those experiencing violations and the characteristics of the jobs. Finally, we were able to take our estimate of violations and develop estimates of lost income and the resulting economic/social impacts of that lost income in terms of impacts on poverty, taxes, and program participation.

Despite the success of the methods for minimum wage violations, there were some drawbacks and limitations to consider in interpreting the estimates we developed. First, both the CPS and SIPP contain some amount of measurement error. There are sophisticated methods of dealing with measurement error and ERG attempted to implement these for the CPS and SIPP analyses. However, none of the approaches we tried were feasible to implement for the data we were using. Instead, we identified places where we would expect measurement error to manifest itself in each data source and we performed sensitivity analyses to determine the likely extent to which measurement error may have affected our estimates. Our basic conclusion from these sensitivity analyses is that measurement error is not likely to have a significant impact on our estimates.

The second caveat is that neither the CPS nor the SIPP contain the exact data elements needed to develop our estimates. To deal with this, it was necessary to make analytical assumptions in processing these data. The assumptions we made contribute to any measurement error in our final estimates. Nevertheless, in our professional judgment, the data were adequate to support reliable estimates of the extent of minimum wage violations and their impacts. In cases where we felt reliable estimates could not be made, we opted to not develop (or report) an estimate.

**Neither data source offers a clear advantage over the other in developing estimates for minimum wage violations.** The two data sources offer some advantages and disadvantages relative to one another (see Section 4). In working with the two sources, we found the content and structure of the SIPP to be more restrictive than that of the CPS. Furthermore, we expected that the SIPP would offer a significant advantage in estimating impacts of violations due to the data elements related to program participation and the panel nature of the data. In reality, these advantages either never materialized or were slight compared to the CPS. For example, although the SIPP contains more information about program participation than the CPS, the SIPP data were still of limited use when estimating the impacts on program participation due to small sample sizes (i.e., the intersection of those experiencing violations and those participating in some programs produced a relatively small number of individuals). Nevertheless, the CPS was even more restrictive in terms of sample size and in terms of program coverage. The SIPP did tend to provide estimates with smaller confidence intervals for minimum wage violation estimates. There were also a number of counterintuitive results generated from the SIPP data. For example, there are more minimum wage violations in New York than California using the SIPP, despite the population of California being almost twice as large.

Using the SIPP data presents some additional concerns. For example, the SIPP is not representative at the state level (discussed in Section 3.2). However, in California and in New York,

summary statistics of demographic characteristics from the CPS and SIPP samples provide similar results. A greater concern is using the SIPP to produce state estimates in smaller states.<sup>15</sup> However, ERG understands that work is being done to make SIPP representative at the state level in the future. Additionally, the SIPP data offer observations on individuals over time. Thus, SIPP data could be used to assess duration of violations in the future.

Thus, our conclusion is that both should be retained and used in future work.

**Neither data source offers a reliable means of estimating overtime pay violations.** For the SIPP, we were unable to develop estimates of overtime pay violations due to data limitations. For the CPS, estimates of overtime pay violations were possible once a number of assumptions were made on the data. The resulting estimates from the CPS, however, were deemed unrealistic. The reason for this unreliability stems from the way in which data are reported in the CPS and SIPP; overtime pay is not reported separately from other sources of income. Thus, assumptions need to be made to separate out overtime pay. This means that is necessary to make an assumption about the level of overtime pay and then use the results from the analytical assumption to estimate when violations occur.

## Recommendations

As noted, DOL and ERG agreed to view this work as an exploratory project to assess potential methods and data that could be used to measure the extent of wage violations. For the most part, we have concluded that the methods and data used were successful in measuring minimum wage violations in California and New York, but sufficient data were not available from the sources we used to estimate overtime pay violations. In this regard, DOL asked ERG to make recommendations on where DOL should consider expanding and building on this work. We see three areas of recommendations in this regard: (1) expanding the scope, (2) expanding the methods, and (3) expanding the intent of the analysis.

### Expanding the scope

This analysis has involved estimating the extent of minimum wage violations and their impacts in California and New York in FY2011. Thus, a first consideration for future work should be to expand the scope of the analysis. This can include two distinct areas. First, the number of years to include in the analysis can be expanded. This report includes primarily estimates for FY2011, with some additional estimates for FY2010 and FY2012 included for comparison. Expanding the analysis to include multiple years is relatively straightforward; the primary complication would involve ensuring changes in federal and state laws over time are captured when determining violations. Expanding the number of years, however, only makes sense if the goal is to determine (historical) trends over time.

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<sup>15</sup> While there are “raking” post-stratification procedures to adjust sample weights to add up to known population totals for the post-stratified classifications, this procedure assumes that these respondents are representative of the post-stratum population. Thus, this procedure will create totals that sum to the state population totals for the characteristics used to adjust the weights, but other characteristics may not be representative. See Lohr (1999) pages 269-271 or Cohen (2008) available [at http://srmo.sagepub.com/view/encyclopedia-of-survey-research-methods/n433.xml](http://srmo.sagepub.com/view/encyclopedia-of-survey-research-methods/n433.xml).

The second expansion involves including additional states and/or regions to the analysis. The current analysis covers two large states (California and New York). Adding in new states would expand the breadth of the estimates. Furthermore, by adding in new states, DOL would be able to compare prevalence and impacts across the states and potentially identify state-specific factors that lead to differences across states.

#### Expanding the methods

Despite the relative success of generating estimates for the extent and impacts of minimum wage violations, further methodological refinements can be made.

First, measurement error is wide-spread in the data. ERG reviewed potential methods for accounting for measurement error and determined we did not have the time or resources to fully implement these methods. Therefore, in this report we account for measurement error through sensitivity analysis. In the future, the potential implications of measurement error could be more directly accounted for in the data by implementing some of the methods we assessed. ***Thus, ERG recommends that DOL consider additional refinements related to measurement error.*** A first step in this regard would be to apply any measurement error adjustments to California and New York and then evaluate the results by comparing the adjusted and unadjusted estimates.

Second, the approaches explored for the overtime pay violations were not successful at generating a reliable estimate. The shortcomings stem from the need to develop assumptions about the data elements in the two sources. ***Thus, ERG recommends that DOL consider alternatives to estimating overtime pay violations if there is continued interest in understanding the extent and impact of those violations.***

Finally, our estimates related to social program participation were limited due to few observations (i.e., the cross-tabulation of those participating in the program and those who experienced a violation in the data sources we used) on which to base estimates. ***Thus, we recommend that simulation or statistical models be explored for estimating impacts on social program participation.***

#### Expanding the intent

ERG views the current form of this analysis as identifying the number of violations and the implications of those violations (lost income, poverty impacts, etc.). Further refinement of this analysis could expand it to be a targeting or priority-setting tool for the Wage and Hour Division (WHD). In project meetings for this analysis, WHD has indicated that tabulations from the CPS Annual Earnings File (also known as the Merged Outgoing Rotations Groups) are factored into its analysis of priority industries.<sup>16</sup> The BLS tabulation is based on CPS data but does not include the refinements we use to include state-level laws or account for exemptions. The analysis we developed, therefore, is a more refined version of the BLS work. ***Thus, ERG recommends that DOL perform an assessment of the extent to which this analysis can be refined into a targeting or priority-setting tool.***

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<sup>16</sup> Available at: <http://www.bls.gov/cps/minwage2012.htm>.

# 1 INTRODUCTION AND BACKGROUND

## 1.1 Introduction

The Fair Labor Standards Act (FLSA), originally enacted in 1938, and frequently expanded and amended since that time, is a cornerstone of U.S. labor policy, setting standards governing the relationship between employer and employee. The FLSA sets national standards for a minimum hourly wage, maximum hours worked per week at the regular rate of pay, premium pay if the weekly standard is exceeded (overtime pay), and limitations on jobs performed and hours worked by those under the age of 18 (child labor). The FLSA also sets recordkeeping requirements for employers. The Department of Labor's (DOL's) Wage and Hour Division (WHD) is responsible for administering and enforcing the FLSA and other laws that protect workers.

State governments can implement labor laws that provide higher floors; 19 states and Washington, D.C. had implemented minimum wages greater than the federal level of \$7.25 per hour in 2013.<sup>17</sup> Thus, employers might be in compliance with the federal law but not in compliance with state law. Additionally, in both California and New York, the salary level required for a worker to be eligible for the white collar exemption to the minimum wage and overtime pay is higher than under the FLSA. Accounting for variation in state labor law adds to the complexity of evaluating compliance with labor laws.

Failure to comply with the FLSA and state labor laws has implications far beyond the dollar amount of unpaid wages. At the current federal minimum wage of \$7.25 per hour, a full-time employee earns approximately \$15,000 per year. Thus, failure to comply with the minimum wage puts a potentially vulnerable population further at risk, reducing worker welfare. Beyond these impacts to individuals, lack of compliance with the FLSA and state labor laws results in potentially lower government revenue (due to lower employment and income tax payments by employees) and higher government expenditures on social support programs (such as the Supplemental Nutrition Assistance Program). Thus, lack of compliance with the FLSA (and state wage laws) can impact DOL's goal of providing a standard of protection to the labor force.

To better understand these impacts, DOL contracted with Eastern Research Group, Inc. (ERG) to estimate the impacts of wage violations. Based on discussions on the project scope, DOL and ERG agreed to focus the study on (1) minimum wage and overtime pay violations and (2) two states, California and New York. However, due to data limitations, ERG was unable to develop valid and reliable estimates of overtime pay violations.

## 1.2 Project Scope and Objectives

The purpose of this study is to provide estimates of the impacts that stem from violations of minimum wage violations of the FLSA and state laws. To do this, ERG used a three-step approach:

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<sup>17</sup> Department of Labor. See: <http://www.dol.gov/whd/state/stateMinWageHis.htm>.

1. Estimated the **extent** of minimum wage violations in California and New York
2. Estimated the amount of **lost wages** stemming from those violations
3. Estimated the **impacts** on the poverty rate, tax revenues, and program participation stemming from these wage violations and lost wages.

Exploratory nature of project: The initial goals of this project were to estimate the number of wage violations, the associated lost wages, and ultimately the impacts of these violations on individuals, families, government, and society. This would include a wide range of potential violations and potential impacts to consider. Therefore, the scope of this project was limited to specific states, types of wage violations, and types of impacts. As this project progressed, and ERG and DOL realized the vast amount of work that could be conducted, the study became more exploratory in nature. Many approaches were considered that are not included in this final report. This report presents the results of our exploration and identifies future work to be conducted on this topic.

Data Sources: Following initial review and assessment of methods and data to use for the project, DOL and ERG agreed to use the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP).<sup>18</sup>

Wage laws: This report considers only minimum wage since these laws were chosen because they were expected to have large monetary impacts on workers and were able to be estimated. As noted, ERG worked to develop a method for estimating the extent of overtime pay violations, but due to data limitations, we were unable to develop valid and reliable estimates of overtime pay violations. Other wage laws considered but not covered in this project included: daily overtime pay laws (under state law); child labor; misclassification of workers as independent contractors; illegal pay deductions, meal break violations, and “off-the-clock” violations. These laws were not considered independently; however, violations of these laws may result in minimum wage violations and thus be considered indirectly. For example, if a worker who earns the minimum wage works off-the-clock, and is not paid for those hours, then the worker will suffer from a minimum wage violation.<sup>19,20</sup>

States: Most states have unique wage laws that are likely to influence the number of wage violations. Therefore, DOL and ERG agreed to limit the analysis to two states in order to be able to incorporate the state laws. California and New York were chosen because they are two of the most populous states and they have relatively broad state labor laws.

Time Frame: This study uses data for the federal fiscal year 2011 (FY2011). Prevalence estimates from the CPS are also presented for FY2010 and FY2012 in order to provide additional context for the

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<sup>18</sup> Available at <http://www.census.gov/cps/> and <http://www.census.gov/programs-surveys/sipp/>.

<sup>19</sup> This minimum wage violation will be captured in our estimates if the worker reports all hours actually worked, not all hours paid. Conversely, if the worker only reports hours paid then a minimum wage violation will not be identified.

<sup>20</sup> Misclassification of workers as independent contractors is difficult to identify. Treatment of independent contractors in this analysis is explained in more detail in Appendix A.



FY2011 estimates. The SIPP estimates only include FY2011 due to project time constraints and the complex nature of the SIPP.

### 1.3 Prior Estimates of Wage Violations

This section provides a brief review of the relevant previous literature. A number of articles have summarized the studies considering the prevalence of labor law violations (McGrath, 2005; National Employment Law Project, 2012; Ruckelshaus, Sugimori, Lal, & Smith, 2006). Therefore, this review focuses on literature relevant to the methodological approach used in our analysis.

In 2008, the National Employment Law Project (NELP) together with researchers at the University of California Los Angeles (UCLA) and the University of Illinois at Chicago (UIC) conducted the Unregulated Work Survey of 4,387 front-line low-wage workers in Chicago, Los Angeles, and New York City. Although many papers have been written by NELP and coauthors on this survey, the most informative is Bernhardt et al. (2009). The authors used a snowballing methodology to attract low-wage workers into the sample who may be missed when using traditional sampling methodologies. They observed widespread violations: 25.9 percent of the sample was not paid the minimum wage and 19.1 percent did not receive overtime pay. These rates are higher than many previous studies because the population considered is front-line low-wage workers. Extrapolating from their sample, they found that lost wages for these workers in Chicago, Los Angeles, and New York City totaled more than \$56.4 million per week.

Over the years, WHD has investigated random samples of establishments within priority industries to estimate the rate of compliance with the provisions of the FLSA. For example, investigations were conducted between 1994 and 1998 (U.S. Department of Labor, 1999), and compliance rates were estimated for 12 industries. During a subsequent round of investigations between 1999 and 2000, additional industries were considered, and some of the same industries were surveyed again to estimate changes in compliance rates (U.S. Department of Labor, 2001). Compliance rates ranged from zero percent in poultry processing in 2000 to 98 percent for pharmacies in Portland, Oregon, in 2000. Back wages owed also varied by industry and geographic location. WHD did not attempt to develop a nationwide estimate.

Finally, large national survey datasets have been used to estimate wage violations. Ashenfelter and Smith (1979) were the first to use a large employment survey to infer minimum wage violations and their paper has since become a seminal work cited for both theoretical and empirical analyses on labor law violations. They used CPS data to estimate the minimum wage compliance rate as the proportion of workers earning exactly the minimum wage divided by the number of workers earning the minimum wage or less.

Other studies have used the CPS to estimate overtime pay violations. These include Ehrenberg and Schumann (1982), Weil and Pyles (2005), and Kahn and Mallo (2007). The CPS does not identify which workers are paid overtime or which workers are exempt from the overtime pay provisions; therefore, both must be inferred in order to estimate overtime pay violations with the CPS. In general, these studies estimated overtime pay by considering which workers work more than 40 hours per week

and which workers are paid 'overtime pay, tips, or commissions' (a combined category in the CPS); however, the exact methodology varies across the studies.

In our method, we first estimated the number of workers impacted by minimum wage violations and the amount of lost wages and then used those estimates to assess the impacts on individuals and families and the government's revenues and expenditures. Several studies have considered the impact of wage violations on government revenues and/or expenditures (Carré & Wilson, 2004; de Silva, Millett, Rotondi, & Sullivan, 2000; Gordon, Glasson, Sherer, & Clark-Bennett, 2012; Leberstein, 2011). However, these studies tend to focus on employee misclassification as independent contractors, which can lead to some types of minimum wage and overtime pay violations.<sup>21</sup> Many studies have considered the impact of the minimum wage on the poverty rate; however, these studies tend to estimate the impact of raising the minimum wage on poverty, rather than estimating the impact of violations on poverty (Burkhauser & Sabia, The Effectiveness of Minimum-Wage Increases in Reducing Poverty: Past, Present, and Future, 2007; Card & Krueger, 1995; Addison & Blackburn, 1999; Neumark & Wascher, 1997; Neumark, Schweitzer, & Wascher, 1998; Neumark, Schweitzer, & Wascher, 2004).

## 1.4 Outline

The following is a brief outline of the remainder of this report:

- **Section 2** provides an overview of the federal and state labor laws that are considered in this report.
- **Section 3** introduces the two data sources used and the advantages to using each.
- **Section 4** details the methods used in the prevalence analysis and presents the estimated violation rates for California and New York based on the two data sets.
- **Section 5** describes the demographics of workers experiencing a violation and select characteristics about these jobs.
- **Section 6** presents the amount of lost wages attributed to minimum wage violations.
- **Section 7** presents the impacts of violations on the poverty rate, tax revenue, and program participation.
- **Section 8** provides ERG's conclusions from the analysis and provides ERG's recommendations for future work.
- **Appendix A** provides more details on the methodology introduced in the report.
- **Appendix B** considers how the prevalence estimates change when specification checks are used to take into account measurement error.
- **Appendix C** includes additional tables not provided in the main text of the report.

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<sup>21</sup> Misclassification of workers as independent contractors can result in minimum wage and/or overtime pay violations which make the relationship between these violations complex.

## 2 RELEVANT FEDERAL AND STATE-LEVEL LABOR LAW REQUIREMENTS

This section presents an overview of the federal and state labor laws that are considered in this report. Estimating violation rates for all labor laws is beyond the scope of this report but there are many different laws and exceptions that apply to just minimum wage laws. Depending on the state, state law can closely resemble federal law or incorporate many different components. The two states we consider in this report, California and New York, tend to have comprehensive labor laws; therefore, many state variations were considered.

### 2.1 Fair Labor Standards Act (FLSA) Minimum Wage Provisions

The FLSA was enacted in 1938 to “raise substandard wages and to give additional compensation for overtime work” to covered, non-exempt employees.<sup>22</sup> The FLSA sets national standards for a minimum hourly wage and maximum hours worked per week before a wage premium must be paid. States can implement stricter standards, and employers must comply with the more protective of the two. The national minimum wage, as set by the FLSA, is currently \$7.25 per hour. The Fair Minimum Wage Act of 2007 increased the minimum wage from \$5.15 to \$7.25 per hour through three incremental steps, reaching the new level in July 2009 (prior to the beginning of the data considered in this report). In essence, estimating compliance with the basic minimum wage is straightforward; one simply compares a worker’s wage to the minimum wage. However, the FLSA exempts some categories of workers from the minimum wage (see Exemptions section below) and permits employers to pay other workers alternative minimum wages.

The FLSA allows tipped employees in certain professions to be paid a cash wage of \$2.13 per hour if the cash wage plus the ‘tip-credit’ is at least the minimum wage. With a minimum wage of \$7.25 per hour the maximum tip credit allowed would be \$5.12 ( $=\$7.25-\$2.13$ ). Therefore, for eligible workers, a violation will occur if the worker either earns less than \$2.13 in direct wages from the employer or less than \$7.25 with tips. Employment survey data are not always clear whether tips are included in the reported wage and it is even less common to have the wage both with and without tips, making identification of wage violations for tipped workers potentially problematic.<sup>23</sup>

The FLSA also allows for the payment of subminimum wages under certain conditions. For example, employees under 20 years of age may be paid \$4.25 per hour during their first 90 consecutive calendar days of employment with an employer (see FLSA Section 6(g)). Additionally, certain student learners, apprentices, messengers, full-time students in select industries, and certain workers with disabilities whose work is impacted by the disability may be paid less than the minimum wage under special certificates issued by the Department of Labor. Messengers and learners may be paid not less than 95 percent of the federal minimum wage and apprentices not less than the amount specified by the apprenticeship program or by the certificate. Student learners may be paid only 75 percent of the federal minimum wage (FLSA Section 14(a)); full-time students in select industries may be paid only 85 percent of the federal minimum wage (FLSA Section 14(b)); and certain workers whose disabilities impact their

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<sup>22</sup> See, e.g., *United States v. Rosenwasser*, 323 U.S. 360 (1945).

<sup>23</sup> The treatment of tipped workers in this report is discussed later with the methodology.

earning or productive capacity may be paid a wage that considers their productivity in proportion to that of experienced workers doing the same type of work in the vicinity (FLSA Section 14(c)).

Other types of minimum wage violations are excluded from consideration because the data does not readily allow their assessment. For example, this analysis does not consider violations involving off-the-clock work, whether workers are forced to work during breaks or to clock out early. Another example involves so-called “unpaid interns” who are owed the minimum wage because they are considered employees under the relevant test.<sup>24</sup> However, since we cannot identify if these duties are met in the data, these potential violations are excluded. Many jobs are either excluded from the FLSA or exempt from the minimum wage and/or overtime pay provisions of the FLSA. Jobs may not be covered under the FLSA or may be subject to the FLSA but exempt from the minimum wage provisions. The FLSA does not apply to certain categories of workers, such as: members of the military; certain unpaid volunteers for nonprofit organizations; the self-employed; the clergy and other religious workers. Additionally, employees of firms with an annual revenue of less than \$500,000 are generally only covered if they are individually engaged in commerce or in the production of goods for commerce. The most common exemptions are included in Section 13(a)(1) of the FLSA and its implementing regulations, which exempt executive, administrative, and professional (EAP) employees, highly compensated employees, and outside sales employees from the minimum wage and overtime pay provisions. Employees are considered exempt under the EAP exemptions if they earn at least \$455 per week coming from a salary (the salary test) and perform specific duties (the duties test).<sup>25</sup> Exemptions are described in more detail in Appendix A.

## 2.2 State Laws in California and New York

### Minimum Wage Laws

California's minimum wage was higher than the federal minimum wage for the entire time period considered (FY2010-FY2012): \$8.00 per hour compared to \$7.25 per hour. A minimum wage violation in California is identified if a worker's wage is less than \$8.00 per hour and he or she is not exempt from the California minimum wage provision. If the worker is exempt from the California minimum wage, but not the FLSA minimum wage, then the wage floor reverts to \$7.25 per hour.<sup>26</sup> New York's minimum wage was equivalent to the federal minimum wage for the time period considered.<sup>27</sup>

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<sup>24</sup> Department of Labor, Wage and Hour Division. 2010. Fact Sheet #71: Internship Programs Under The Fair Labor Standards Act. Available at: <http://www.dol.gov/whd/regs/compliance/whdfs71.htm>.

<sup>25</sup> In some instances a fee basis may be used instead of a salary.

<sup>26</sup> State exemption criteria are discussed later in this section, see "White Collar Exemptions" and "Other Exemptions".

<sup>27</sup> The New York minimum wage increased to \$8.00 per hour as of December 31, 2013 and will increase to \$8.75 per hour December 31, 2014 and \$9.00 per hour December 31, 2015. If the time period considered is extended in future versions of this report then these increases will need to be taken into account.

### Tip Credit

California does not allow employers to count a tip credit towards the minimum wage; all tipped workers must be paid the state minimum wage. New York allows for a tip credit but unlike the FLSA, the level of the credit varies by the industry of employment and the amount of tips received.<sup>28,29</sup>

### White Collar Exemptions

The salary level tests for the executive, administrative, and professional (EAP) exemption are above the FLSA level in both California and New York. In California the salary level is set at \$640 per week throughout the sample period. If a white collar worker earns between the federal level of \$455 per week and the California level of \$640 per week, he or she is not exempt from the state minimum wage provisions and must be paid at least \$8.00 per hour.<sup>30</sup> Conversely, because California's duties test differs from the FLSA, there are some instances where an employee may be subject to the federal provisions but not the state laws.<sup>31</sup> In these instances, the worker must be paid the federal minimum wage but not the higher state minimum wage.<sup>32</sup>

In New York the salary level test for executive and administrative workers was set at \$536.10 per week in 2009 and increased to \$543.75 per week in 2010.<sup>33</sup> If the higher salary levels in New York are not met, but workers meet the federal requirement of \$455 per week, then the worker may be exempt from the FLSA minimum wage provisions but subject to the state minimum wage provisions. The duties test in New York does not differ from the FLSA duties test.

There are a few other distinctions between the California white collar exemptions and the FLSA white collar exemptions. First, the highly compensated employee exemption is not applicable in California; workers earning above \$100,000 per year must still meet the full duties test in order to be exempt. Second, physicians are only exempt in California if they earn at least \$69.13 per hour; federally, physicians are not subject to a salary level test. Finally, hourly computer workers must earn \$33.90 per hour in order to be exempt, compared to \$27.63 federally.

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<sup>28</sup> New York Department of Labor. Available at: <http://www.labor.ny.gov/legal/laws/pdf/hospitality-wage-order/summary-of-hospitality-wage-order.pdf>.

<sup>29</sup> New York's various tip credits are generally taken into account when estimating violations; however, due to data limitations, the applicable tip credit cannot be identified for some workers.

<sup>30</sup> Epstein Becker & Green, P.C., Wage & Hour Defense Blog, (2010), California v. FLSA: Different Tests for the "White Collar Exemptions".

<sup>31</sup> The duties test identifies the on-the-job duties that must be met in order to be classified as exempt. There is a duties test tailored to each of the executive, administrative, and professional exemptions.

<sup>32</sup> The EAP exemption's duties test differs somewhat in California from the FLSA. However, using the current data, we cannot distinguish between the two duties tests and therefore this difference will not be represented in the estimates.

<sup>33</sup> New York Department of Labor. Available at: <http://www.labor.ny.gov/sites/legal/counsel/pdf/executive-employee-overtime-exemption-frequently-asked-questions.pdf>.

### Subminimum Wages

Section 14(c) of the FLSA allows employers, after receiving special certificate, to pay a subminimum wage to workers whose disability impacts their productivity.<sup>34</sup> In California, these certificates are not applicable for employment in private industry; however, the state issues its own certificates to individuals with disabilities.<sup>35</sup>

Section 6(g) of the FLSA also allows workers younger than 20 to be paid less than \$7.25 per hour during the first 90 consecutive calendar days of employment. In California, the exemption expires after the first 160 hours, if this occurs before the 90 day limit is met.<sup>36</sup> The subminimum wage rules identified in Sections 6(g) and 14(c) of the FLSA are not applicable in New York.

### Other Exemptions

Companion workers, although exempt from the minimum wage provisions of the FLSA<sup>37</sup>, are not exempt from the minimum wage in California; however, most companions continue to be exempt from overtime pay in California.

## 2.3 Summary

Table 1 summarizes the legal aspects that are included in our analysis for each state and for each data source we use.

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<sup>34</sup> Employers must apply and be granted a certificate by the Department of Labor in order to make use of the subminimum wage identified in Section 14(c) of the FLSA. More information available at: [http://www.dol.gov/whd/specialemployment/workers\\_with\\_disabilities.htm](http://www.dol.gov/whd/specialemployment/workers_with_disabilities.htm).

<sup>35</sup> We have not identified the number of certificates in California relative to the number issued by DOL and so violations due to the state law are not considered.

<sup>36</sup> Because longitudinal data are not available in the CPS, aggregate hours cannot be calculated. Potentially, this variation could be incorporated in the SIPP data, due to the panel format, but has not been considered at this time.

<sup>37</sup> See FLSA Section 13(a)(15).

**Table 1: Overview of Aspects Included for the CPS, SIPP, and State Level Estimates**

<b>Feature</b>	<b>CPS</b>	<b>SIPP</b>
<b>Years</b>		
Time period	FY2011 (FY2010 & FY2012 for prevalence)	FY2011
<b>Jobs</b>		
Self-employed excluded	Yes	Yes
Unpaid workers excluded [a]	Yes	Yes
Military excluded	Yes	Yes
Workers under age 16 excluded	Yes	Yes
<b>Wages [b]</b>		
Non-hourly wages computed	Yes	Yes
Overtime excluded: hourly jobs	Yes (with assumptions)	Yes
Overtime excluded: non-hourly jobs	Yes (with assumptions)	No
Commissions and tips included	Yes (with assumptions)	Yes
Sensitivity tests performed	Yes	Yes
<b>Minimum Wage Violations [b]</b>		
State minimum wages included		
<i>California</i>	\$8.00 per hour	\$8.00 per hour
<i>New York</i>	\$7.25 per hour	\$7.25 per hour
Subminimum wages included	Yes	Yes
Tip credit included	Yes	No
Additional jobs included	Yes (with assumptions)	Yes (2nd only)
State exemptions included	Yes (when possible)	Yes

[a] Unpaid workers, such as unpaid interns, may suffer from a minimum wage violation if the internship requirements are not met. However, since we cannot identify if these duties are met, these potential violations are excluded.

[b] See Section 4 for more information on data and methodology.



### 3 DATA SOURCES

The extent of minimum wage violations are estimated using the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP). Both data sets are used in order to analyze a wider range of impacts than either individual data set would allow. Both the CPS and the SIPP are nationally representative data sets published by the U.S. Census Bureau and include information on worker and family earnings, demographics, and program participation.

#### 3.1 Current Population Survey (CPS)

The CPS is published jointly by the BLS and the U.S. Census Bureau. The CPS surveys a large, nationally representative sample of the civilian non-institutionalized population 16 years of age and older with a focus on the labor force. The basic monthly survey collects information on employment, unemployment, and demographics. Households are surveyed for four months, excluded from the survey for eight months, included for an additional four months, and then permanently dropped from the sample. During the last months in the sample (month 4 and month 16) respondents complete a supplementary questionnaire in addition to the regular survey; this is generally referred to as the Outgoing Rotation Group (ORG).<sup>38</sup> This supplement contains detailed information on earnings which is necessary to estimate whether a worker is exempt from the minimum wage provisions. Therefore, the sample used in this analysis is limited to workers in the ORG supplement. Data are merged for the 12 monthly ORG supplements in the year.

The Annual Social and Economic Supplement (ASEC), conducted every March, is used to consider family income, program participation, and taxes paid, all of which are not available in the basic data or the ORG supplement. Using these data requires matching respondents in the ORG to respondents in the ASEC.<sup>39</sup> The ASEC contains information on family income, which is important to consider in addition to individual income, because an individual's standard of living is largely based on family income. These data will help to ascertain impacts of violations; for example, family income is necessary for estimating whether a family is in poverty. The ASEC also contains many questions on public assistance that can be used in estimating impacts.

The CPS is a very large sample; each month roughly 60,000 households are interviewed. During FY2011 this represents almost 2 million person-month observations. However, this analysis considers a very specific population: workers with violations in California and New York.<sup>40</sup> Due to the restricted population and data constraints, the number of records ultimately available for analysis is vastly reduced. This results in very small sample sizes in the estimation of the impacts of these wage violations. Figure 1 shows the number of records used in the analysis and the reasons records were dropped. The final number

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<sup>38</sup> These data are also referred to as (1) the Merged Outgoing Rotation Group (MORG) when the 12 months are combined or (2) the earning supplement because the survey includes information on earnings and wages.

<sup>39</sup> The National Bureau of Economic Research (NBER) provides a method for matching consecutive March CPS surveys, which can be modified to match other CPS surveys. Available at: [http://www.nber.org/data/cps\\_match.html](http://www.nber.org/data/cps_match.html).

<sup>40</sup> We chose to focus on two states so that state laws could be given sufficient attention. California and New York were chosen because they are two of the most populous states and they have relatively prolific state labor laws.

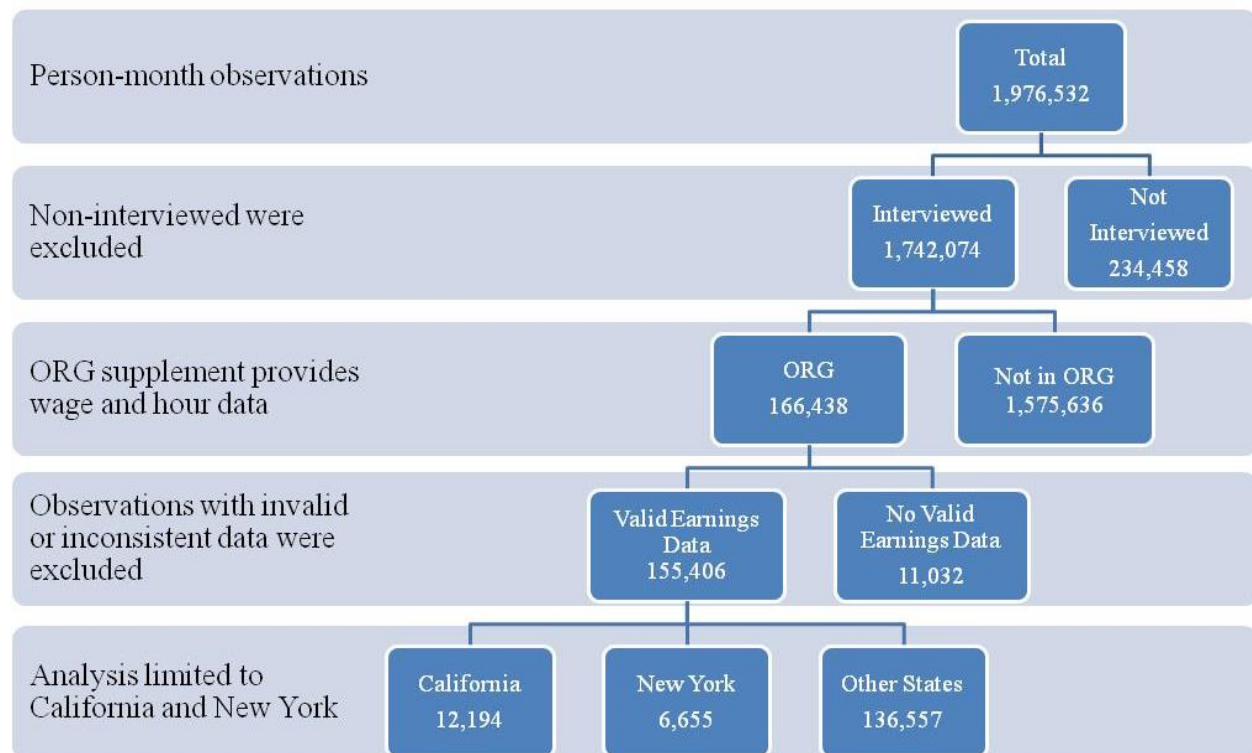


of records available for California is 12,194 and for New York is 6,655. These samples are further restricted when the ORG data is matched to the ASEC data (see Section 7.2). The weights of any dropped observations were re-distributed to the remaining observations to continue to reflect population totals.

Respondents with invalid or inconsistent data were excluded (see the fourth row of Figure 1). This includes respondents with missing vital data, such as hours worked, which is used to calculate hourly wages for non-hourly workers and lost wages if a violation is identified. We also excluded workers with hourly wages below \$1. Although it is possible that these workers do receive less than \$1 an hour, and thus suffer from a minimum wage violation, we believe it is more likely that these very low wages are due to measurement error.<sup>41</sup> This criterion for inclusion was also used in the SIPP data. We assume respondents with no earnings on a job are not actually working and thus exclude jobs with weekly earnings below \$10.

The CPS data includes up to four jobs per worker. The 12,194 sampled workers in California hold a total of 12,587 jobs in a given week. The 6,655 working respondents in New York hold a total of 6,865 jobs. The number of jobs is the unit of analysis for the prevalence estimates (i.e., number of jobs with a violation).

**Figure 1: Flow Diagram of Number of Records in the CPS ORG (Person-Month Observations), FY2011**



<sup>41</sup> Potentially we could see tipped employees earning below \$1 per hour if they do not include tips in their weekly wages; however, in the SIPP wages are supposed to include tips and in the CPS adjustments are made to approximate wages with tips.

### 3.2 Survey of Income and Program Participation (SIPP)

The SIPP collects information on earnings and wages, labor force participation, program participation and eligibility, and demographic characteristics. The goal of the survey is “to measure the effectiveness of existing federal, state, and local programs; to estimate future costs and eligibility for government programs, such as food stamps; and to provide improved statistics on the distribution of income and measures of economic well-being in the country.”<sup>42</sup>

The SIPP is composed of different panels and waves. The 2008 panel began in September 2008 and ran through December 2013. The data are further composed of rotating waves; the reference period of each wave is four months. Each sample household is interviewed every four months, with a quarter of the sample interviewed in any given month. In addition to the basic survey, the SIPP includes topical modules that contain information on “child care, wealth, program eligibility, child support, utilization and cost of health care, disability, school enrollment, taxes, and annual income.”<sup>43,44</sup>

The SIPP also includes a large sample with about 50,000 households interviewed in the 2008 panel. This corresponds to 988,018 person-month records in FY2011, of which 934,129 had a completed interview. However, these initial numbers are greatly reduced due to restricting the sample to first those with a job for at least one week in the month (361,833) and then to those that had valid earnings data (344,054). Figure 2 displays the numbers of records remaining when considering various subsamples. Furthermore, restricting the sample to two states limits the sample to 48,735 records (31,581 records in California and 17,154 records in New York). The SIPP data includes up to two jobs per worker in a month. These 31,581 worker-months in California correspond to 32,849 job-months. These 17,154 worker-months in New York correspond to 17,790 job-months. Job-months are the unit of analysis for the prevalence estimates (i.e., number of job-months with a violation).

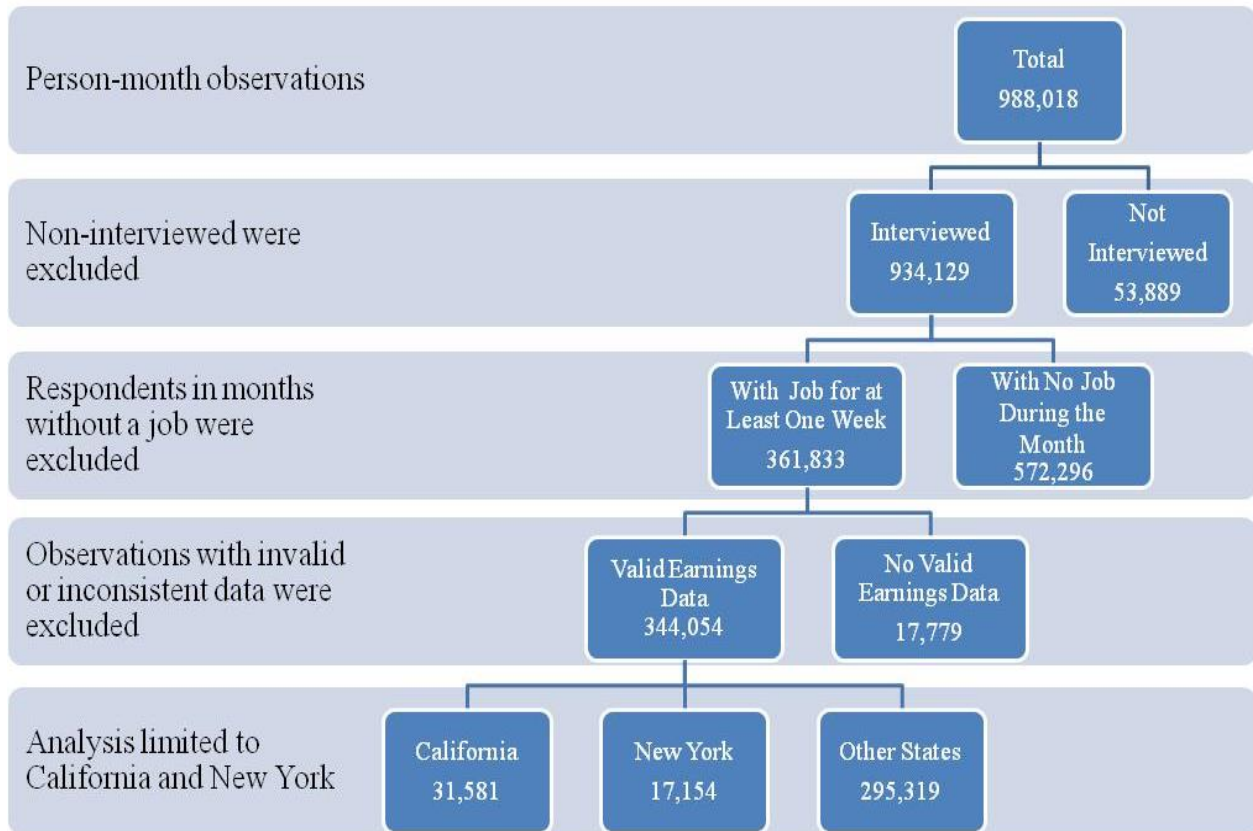
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<sup>42</sup> From the Census’ SIPP overview, available at: <http://www.census.gov/sipp/overview.html>.

<sup>43</sup> From the Census’ SIPP overview, available at: <http://www.census.gov/sipp/overview.html>.

<sup>44</sup> The SIPP data dictionary is available at: <http://smpbff2.dsd.census.gov/pub/sipp/2008/108puw1d.txt>.

**Figure 2: Flow Diagram of Number of Records in the SIPP (Person-Month Observations), FY2011**



### 3.3 Important Differences between the CPS and the SIPP

Both datasets have several advantages and disadvantages. Table 2 summarizes and distinguishes between the two data sources. The following list briefly outlines some of the advantages of the SIPP over the CPS.

1. **Panel data.** The SIPP provides longitudinal data that allows researchers to follow respondents over time; thus the longevity of violations can be assessed with the panel component. Although the CPS is a rotational group design, or ‘pseudo-panel’ it cannot be used to identify the longevity of violations because respondents are only followed for four consecutive months. However, the longevity of violations is not assessed in this report and so this advantage is mostly applicable to future research.
2. **Additional jobs.** The CPS only provides wage information for the respondent’s primary job, so violations occurring on additional jobs can only be inferred (not specifically identified) in the data. The SIPP, however, provides wage information for up to two jobs in each wave of a panel.

3. **Wage variables.** The CPS excludes commissions and tips from the hourly wage variable, which should in general be included in calculating an individual's regular rate of pay; the SIPP, on the other hand, includes these components in the hourly wage.
4. **Time consistency of Impact Variables.** Impacts, such as poverty status, annual tax payments, and program participation all are based on monthly or annual earnings. However, the CPS only has weekly violation rates. Thus we must assume that the violation occurs for an entire year when evaluating changes. The SIPP measures violations, income, and eligibility each month and thus does not need to make this assumption. Therefore when impact estimates are available for the SIPP, these estimates may be preferable to the CPS estimates.
5. **Availability of Impact Variables.** The SIPP has a wider range of program participation variables than the CPS to be used in the impacts analysis (Table 2). This allows more impacts of wage violations to be assessed with the SIPP than with the CPS.

Conversely, the CPS has advantages over the SIPP.

1. **Consistent reporting between hours and earnings.** The SIPP reports earnings *received* during the survey month, rather than earnings *earned* during the month. Therefore, there is a mismatch between reported work hours and reported earnings. For example, if paychecks are received with a delay (e.g., every two weeks), and workers' hours vary between months, then wages computed by dividing earnings by hours will not yield the true wage. The CPS does not suffer from this issue.
2. **Representativeness.** An additional drawback of the SIPP data set is that while it is nationally representative, it was not designed to be representative at the state level (whereas the CPS is). While some researchers have constructed weights by state, these weights are not publicly available. However, comparing the demographic characteristics of the state samples between the CPS and the SIPP provides some justification for using the SIPP to produce estimates for the states of California and New York.<sup>45</sup> Summary statistics describing the weighted distributions by demographic categories of gender, race, ethnicity, age, education level, occupation, and industry of workers in these states are similar for the CPS and the SIPP. The estimated numbers of workers in these categories were not statistically significantly different between the SIPP and the CPS in California and New York. However, using the SIPP to produce estimates for smaller states may be more problematic.

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<sup>45</sup> The Census Bureau states that the 2008 panel of the SIPP data are reliable for state estimates. It also has a list of 20 states, which have a sufficient number of observations to get reliable estimates for small domains. California and New York are included in this list.

**Table 2: Summary and Comparison of the CPS and the SIPP**

Feature	SIPP	CPS [a]
<b>Methodology and Survey Design</b>		
Sample type	Panel	Rotation group design; each household in sample for 8 months over 2-year period
Interview frequency	Every 4 months	Monthly
Sample size	52,000 households (2008 panel)	Roughly 50,000-60,000 households in the basic sample
Representation	Sample representative nationally <i>but not within states</i> [b]	Sample representative both nationally and within states
Measurement error	Yes, common	Yes, common
<b>Prevalence Estimates</b>		
Wage data	Contains usual hourly wage for workers paid by the hour	Contains usual hourly wage for workers paid by the hour (and non-hourly workers who chose to provide hourly)
Computed wages	Compute as monthly earnings received ÷ (usual weekly hours*weeks worked in month)	Compute as usual weekly earnings ÷ usual hours
Minimum wage violations	Can estimate violations for two jobs	Can estimate violations for primary job (can infer for additional jobs)
<b>Impacts</b>		
Job characteristics	Industry, occupation, number of employees (under 25, 25-99, 100+)	Industry, occupation
Worker demographics	Sex, age, race, ethnicity, education, marital status, family formation, citizenship, geography, etc.	Sex, age, race, ethnicity, education, marital status, family formation, citizenship, geography, etc.
Program participation	Data for about 70 cash and in-kind sources collected at each 4- month wave, with monthly reporting for most sources	Data for about 35 cash and in-kind sources in previous calendar year
Taxes	Information on federal and state income taxes; payroll taxes; Earned Income Tax Credit (EITC) [c]	Information on federal and state income taxes; payroll taxes; Earned Income Tax Credit (EITC)

[a] Including the basic monthly survey, the ORG supplement, and the ASEC.

[b] This concern is addressed in detail in above and in Appendix B.

[c] Tax data are available in a topical module (supplement) conducted in select months.

### 3.4 Data Caveats

Several issues common to survey data that lead to estimation error are applicable to both data sets. The most relevant issues are sampling error, general measurement error, non-response, representation of minority populations, and other known data inaccuracies. This section contains a discussion of the issues likely to affect the estimates of the extent of wage violations and the impacts of these violations. Additional details regarding these issues are included in Appendix B. Section 4.3 contains a discussion of the specification tests conducted to provide a rough estimate of the magnitude of these biases.

Measurement error is present in all survey data due to the human error which occurs when respondents provide information. For the prevalence analysis, the greatest concern regarding measurement error relates to the variables for earnings and job information. For impacts, measurement error relating to income and program participation variables is important to consider. Using administrative data, researchers have found that SIPP has an excess of low wage workers and a shortage of high wage workers compared to administrative records; the March CPS has the opposite concern (Roemer, Using Administrative Earnings Records to Assess Wage Data Quality in the March Current Population Survey and the Survey of Income and Program Participation, 2002). This finding indicates that minimum wage violation prevalence estimates may be biased upward using the SIPP and downward using the CPS. Some evidence suggests that program participation may be underreported in both the CPS and the SIPP. For example, Wheaton (2008) identified underreporting of SSI, TANF, the Food Stamp Program (FSP), Medicaid, and the State Children's Health Insurance Program (SCHIP). This may cause a downward bias in measuring the impacts on these programs.

Non-response is often an issue in surveys, and two methods are frequently used to handle this issue: proxy responses and imputation. Although proxy responses and imputed data are used in the data to limit non-response bias, these techniques may add other bias into estimates. Proxy responses generate measurement error because the proxy respondents generally cannot respond as accurately as the targeted respondents themselves could. Proxy responses are more common in the CPS than the SIPP because the CPS allows for proxy responses while the SIPP interviewers make every reasonable attempt to directly interview all respondents in each household (although proxy responses are still permitted). Imputed values may cause error if the populations of respondents whose characteristics are being imputed differ from the population from which the imputed values are drawn. Both data sets impute values for many of the variables, most notably the earnings data.

Even with large-scale surveys, such as the CPS and the SIPP, some minority populations may have too few observations upon which to reliably conduct analyses. For some groups, they may not be represented at all. Of particular concern for this study is how well these data sets capture individuals

working in the informal labor market, since wage violations are expected to be more likely to occur for these workers than those in the formal labor market.<sup>46</sup> Roemer (2002) found that the CPS has a higher level of wages reported from “underground” jobs than does the SIPP. To the extent that these jobs are more or less likely to include violations, the SIPP estimates of prevalence will be more biased than will the CPS estimates.

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<sup>46</sup> Underrepresentation of these workers is one reason why The National Employment Law Project chose to generate their own sample rather than use these data sets to estimate wage violations (Bernhardt, et al., 2009). While the term ‘informal labor market’ does not have a consistent or formal definition, it generally refers to work arrangements that are “partially or fully outside government regulation, taxation, and observation” (see <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALPROTECTION/EXTLM/0,,contentMDK:20224904~menuPK:584866~pagePK:148956~piPK:216618~theSitePK:390615,00.html>).

## 4 PREVALENCE OF WAGE VIOLATIONS

This section presents the methodology for estimating wage violations and the resulting prevalence rates estimated for minimum wage violations. In particular, it includes:

- A discussion of the methodology we use for estimating when wage violations occur based on the two data sources we are using for this analysis (Section 4.1);
- Estimates of the weekly/monthly *minimum wage* violation prevalence rates based on CPS and SIPP data (Section 4.2);<sup>47</sup> and

### 4.1 Methods for Estimating Prevalence of Minimum Wage Violations

This section presents a brief overview of the methodology used to estimate the prevalence of wage violations. In particular it explains how this analysis determines (1) when jobs (i.e., records in the data used) are considered exempt from the wage laws, (2) when minimum wage violations occur, and (3) how the amounts of lost wages stemming from the violations are estimated. Appendix A provides additional details.

#### 4.1.1 Identifying Exemption Status

There are many exemptions from the minimum wage provisions of the FLSA. Thus, a key first step in our analysis is to determine which workers in our data are working in exempt jobs. The actual numbers of jobs exempt from the provisions of the FLSA are unknown and exemption status is neither reported to any central agency nor asked in any survey. To determine both the numbers and types of jobs that are exempt in our analysis, we relied on a methodology developed for the Department of Labor’s 2001 and 1998 “4(d)” reports, both titled “Minimum Wage and Overtime Hours Under the Fair Labor Standards Act,” which estimates a variety of coverage and exemption statistics related to the FLSA.<sup>48</sup>

As mentioned in Section 2.1, the most common exemptions are included in Section 13(a)(1) of the FLSA and its implementing regulations. In particular, they are the executive, administrative, and professional (EAP) and highly compensated employee exemptions. Employees are considered exempt under the EAP exemptions if they earn at least \$455 per week on a salary (or fee) basis (the salary test)

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<sup>47</sup> Violation prevalence rates are estimated per job held (although workers may hold more than one job simultaneously). In the prevalence part of the analysis the unit considered is a single job; in the impacts part of the analysis, the unit considered will be a worker.

<sup>48</sup> This “4(d)” reports were related to Section 4(d)(1) of the FLSA, which requested the Secretary of Labor to report biennially on the status of the nation’s minimum wage law. Those who enacted the FLSA believed that such information would be critical if the law was to meet its primary objective of eliminating “labor conditions detrimental to the maintenance of the minimum standard of living necessary for health, efficiency, and general well-being of workers” (FLSA Section 2(a)). Per the Federal Reports Elimination and Sunset Act of 1995, these reports are no longer required by Congress.



and perform specific duties (the duties test).<sup>49</sup> Identifying whether a job meets the salary basis and salary level tests is relatively straightforward;<sup>50</sup> however, the duties test poses a concern since neither the CPS data nor the SIPP data detail job duties.

Each occupation is assigned a probability representing the odds that a job in that occupation would pass the duties test; that proportion of jobs in the occupation is then considered to pass the duties test.<sup>51</sup> Due to the highly compensated employee exemption, white collar jobs that earn at least \$100,000 a year in salary, bonuses, and fees only have to pass an abbreviated version of the duties test and so a higher probability of exemption is assigned to these jobs. For example, marketing and sales managers who pass the salary level and salary basis tests have between a 90 percent and 100 percent chance of passing the duties test.<sup>52</sup> Therefore, for every 10 marketing and sales managers who pass the salary level and salary basis tests, nine are classified as exempt (using a random number to determine which nine).

#### 4.1.2 Identifying Minimum Wage Violations

A minimum wage violation is identified if the job is subject to the state minimum wage provision (i.e., not exempt) and the worker's hourly wage is less than the state's minimum wage (\$7.25 per hour in New York and \$8.00 per hour in California). The essence of identifying minimum wage violations is thus straightforward: compare the wage paid to the worker to the minimum wage. However, there are five components of this analysis that make it more difficult:

1. exemption status must be estimated (as discussed in the previous section);
2. wages must be estimated for some respondents;
3. the wage must reflect the legally defined wage;
4. alternative minimum wages must be considered; and
5. violations on additional jobs must be estimated.

##### Wages must be estimated for some respondents

In both the CPS and the SIPP, hourly wages are generally not identified for non-hourly jobs and therefore must be computed by dividing earnings by hours. This computation is straightforward to perform but it may add measurement error to the analysis. For example, computing hourly wages involves

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<sup>49</sup> The duties include performing office or non-manual work and the employee customarily performs at least one exempt duty or responsibility of an exempt executive, administrative, or professional employee; see [http://www.dol.gov/whd/regs/compliance/fairpay/fs17h\\_highly\\_comp.pdf](http://www.dol.gov/whd/regs/compliance/fairpay/fs17h_highly_comp.pdf) for additional details.

<sup>50</sup> While this is relatively straightforward with the CPS, SIPP data require some conversions. For non-hourly workers only monthly earnings are available; weekly earnings are calculated as monthly earnings divided by 4.3 (52/12) times the percentage of weeks worked in the month. Salaried workers may provide the same monthly earnings each month, so dividing by the number of weeks worked in the month will result in different weekly earnings depending on the number of weeks in the month. Thus, standardizing each month to have 4.3 weeks provides more consistency in the calculation of weekly earnings for salaried workers. For hourly workers, weekly earnings are calculated as monthly earnings divided by weeks worked for pay during the month.

<sup>51</sup> These probabilities were used by the Department in the 2004 report "Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Outside Sales and Computer Employees; Final Rule".

<sup>52</sup> Marketing and sales managers are classified as Census occupation code 0050.

two variables, earnings and hours, increasing the avenues for error to enter the analysis. Additionally, workers may be more likely to round weekly earnings than hourly wages because the magnitude is larger (and thus the size of the rounding is smaller relative to the amount and may seem less significant to the respondent).

#### The wage must reflect the legally defined wage

A more complicated aspect of the analysis is estimating the appropriate wage from the wage and earnings data provided. The wage used by DOL when determining violations may include or exclude a variety of components that are included in the reported wage.<sup>53</sup> Therefore, the wage in the CPS is adjusted to approximate the FLSA's definition of the regular rate of pay. The wage variable in the SIPP approximates the base wage relatively well and so has not been adjusted.

Estimation of the regular rate of pay in the CPS is briefly described here and details are available in Appendix A. The CPS hourly wage variable excludes OCT (overtime pay, commissions, and tips) and is available only for hourly workers. All workers have a value for weekly earnings which includes all three of these components. Therefore, for hourly workers we have an estimated wage without OCT and with OCT (computed by dividing weekly earnings by hours).<sup>54</sup> These wages can be considered upper and lower bounds on the 'true' wage which should include commissions, exclude overtime pay, and sometimes include tips.<sup>55</sup> For non-hourly workers we only have an estimated wage with OCT. To estimate wages without OCT we subtract the estimated hourly OCT, which is derived from hourly workers in the same industry and occupation and who work similar hours (overtime or no overtime). Clearly this results in a rough estimate, but due to lack of data, it appears to be the best available option.

To approximate the regular rate of pay, reported hourly wage should be adjusted upwards to include commissions and tips and the calculated wages should be adjusted downwards to exclude overtime pay.<sup>56</sup> The estimated weekly OCT can be disaggregated into two components: (1) commissions and tips and (2) overtime pay. Afterwards, the wage with commissions and tips, but without overtime pay can be estimated. The method employed to disaggregate OCT is similar to the method used to estimate

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<sup>53</sup> “The “regular rate” includes an employee’s hourly rate plus the value of some other types of compensation such as bonuses and shift differentials. The only remunerations excluded from the regular rate under the FLSA are certain specified types of payments like discretionary bonuses, gifts, contributions to certain welfare plans, payments made to certain profit-sharing and savings plans, and pay for foregoing holidays and vacations.” Available at: <http://www.dol.gov/whd/regs/compliance/whdfs54.htm>.

<sup>54</sup> Wages with OCT can also be calculated for hourly workers by using an additional wage variable: the amount of weekly overtime pay, commissions, and tips. Wages with OCT are estimated by adding weekly OCT, divided by hours, to the reported wage that excludes OCT. This alternative wage with OCT is used instead of the previously calculated wage if the first method results in the wage with OCT being lower than the wage without OCT

<sup>55</sup> The payment of tips generates an additional concern in the estimation process. For workers for whom an employer may claim the 'tip credit,' tips are excluded from the cash wage but included in the total wage when assessing minimum wage violations. Tipped workers not eligible for the tip credit must be paid the minimum wage while excluding tips.

<sup>56</sup> For the most part, commissions are included in the regular rate of pay and therefore we include estimated commissions when estimating the regular rate of pay. However, in some instances what we consider commissions should be excluded (e.g., discretionary bonuses). Therefore, we must assume that all commissions are applicable; this may cause the estimated regular rate of pay to be biased upwards.

OCT for non-hourly jobs. For workers employed at a job for 40 hours or less in a week, and estimated to be non-exempt, the entire amount of OCT is attributed to commissions and tips (because they should not receive overtime pay).<sup>57</sup> For workers employed more than 40 hours per week we assume the hourly amount of commissions and tips is equivalent to workers employed less than 40 hours per week. The difference between OCT for these two populations of workers is then considered the amount of overtime pay per week.

The methodology used to decompose OCT into overtime pay and commissions and tips has implications for the accuracy of the resulting estimates. For example, the estimated ratio of commissions and tips to OCT clearly contains error; in some instances this ratio exceeds one which should not occur.<sup>58</sup> In these cases the ratio is rounded to one and all OCT is attributed to commissions and tips (and none to overtime pay). This causes base wages to be overestimated (because too little pay is subtracted for overtime) and thus minimum wage violations to be underestimated.

#### Alternative minimum wages must be considered

The FLSA allows tipped employees to be paid a ‘cash wage’ of \$2.13 per hour if the cash wage plus the ‘tip-credit’ is equivalent to the minimum wage. New York also allows a tip-credit but it is somewhat lower than the federal level and varies by occupation. California does not allow for a tip-credit. In the SIPP data one cannot identify whether the employer is contributing the required \$2.13 per hour; one can only identify whether the worker receives the minimum wage when tips are included. This is because wages without tips are not reported. With some manipulation of the CPS data (see above), wages can be estimated with and without commissions and tips. This allows identification of both (1) whether the job pays the minimum wage with tips and (2) whether the job pays \$2.13 per hour without tips (with error because some wages are estimated).

The FLSA also allows for the payment of subminimum wages for select jobs in some instances.<sup>59</sup> For these jobs a violation only occurs if the job is paid below the subminimum wage, not the regular minimum wage. Jobs eligible for the subminimum wage jobs are estimated and then the relevant subminimum wage is used to evaluate the likelihood of a violation, instead of the regular minimum wage.

#### Violations on additional jobs must be estimated

In the SIPP, all information necessary to estimate minimum wage violations is available for up to two jobs. In the CPS, violations cannot be estimated on additional jobs because the dataset does not provide information on earnings for additional jobs. To assess violations on ‘other jobs’ using the CPS, the violation status on primary jobs is applied to the number of additional jobs held. This assumes that the

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<sup>57</sup> Although we do not consider daily overtime in this analysis, it is possible that the weekly amount of OCT includes overtime pay due to daily overtime laws or 7th day laws. Unfortunately, we have no way of identifying if this is included and if so how it impacts our estimates.

<sup>58</sup> This occurs when workers employed less than 40 hours per week earn on average more in OCT per week than workers employed more than 40 hours per week.

<sup>59</sup> The FLSA delineates several subminimum wages for different populations of workers. The amount below the federal minimum wage that these workers may be paid varies depending on the applicable statutory role.

prevalence of violations on additional jobs is similar to primary jobs. Although it is possible that the incidence of violations is higher on additional jobs, we believe this assumption will have a negligible effect on our estimates.<sup>60</sup> Even if we assumed the rate of violations on additional jobs was twice as high as on primary jobs, the total violation rate would only increase by a negligible amount.<sup>61</sup>

### 4.1.3 Confidence Intervals and Small Cell Rule

In order to assess the precision of the estimates, we present 95 percent confident intervals around all estimates.<sup>62</sup> The calculated confidence intervals take into account sampling error but do not account for non-sampling error. For example, the confidence interval does not take into account that wages are estimated for some workers, a form of non-sampling error. Non-sampling error is considered in Appendix B where we discuss how measurement error may impact our results and we perform sensitivity tests. Additionally, the results are extrapolated from the sample in each data source to represent the population in each state, using the appropriate sampling weights.

Confidence intervals take into account the number of observations the estimate is based on; all else equal, the more observations the smaller the interval. However, in this report we also directly take into account sample sizes when determining which estimates to present. *If there are less than ten observations with the relevant violation then we suppress the results.* When considering aggregate numbers of violations and violation rates, this is not a concern. However, in later sections when we estimate characteristics of jobs and workers with violations, lost income from these violations, and impacts based on these violations, this small cell rule will be applicable. A sample size of 10 was chosen based on sampling theory, characteristics of our data, and our goals in this report. Additionally, in the prevalence estimates, we do not report the estimated number of violations, weighted for the population, if it is below 1,000. This is because our estimates are imprecise with these few violations.

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<sup>60</sup> This is confirmed by analyzing the SIPP data for workers holding simultaneous jobs in which we find that the prevalence is roughly twice as large on the ‘second’ job compared to the ‘first’ job.

<sup>61</sup> Roughly 5.6 percent of jobs are additional jobs. As we will see later, the prevalence rate in California is 2.96 percent. Doubling the probability for additional jobs would increase the rate by 0.16 percentage points, making the new rate 3.12 percent.

<sup>62</sup> Survey commands are used in Stata to take into account the sampling design. The confidence intervals are constructed based on the standard errors calculated using the survey (‘svy’) commands in Stata. In the SIPP, the standard errors are adjusted based on the sampling design but they are not adjusted to take into account the panel aspect (repeated observations), since the ‘svy’ command does not include this option. To make some adjustment for repeated observations, the primary sampling unit (PSU) is set to the person identification variable and the strata variable was set as the PSU variable (ghlfsam) in SIPP. SIPP provides replicate weights which could be used to take into account the survey aspect of the data but not the repeated observation component. Estimation using replicate weights involves substantially longer computation times, so only prevalence estimates by industry and occupation were compared. The replicate weights method generally, but not always, produced smaller standard errors than using the ‘svy’ commands. However, it is uncertain how much of the difference in the standard errors using the replicate weights is due to a better accounting of the sampling design versus not taking into account the correlations in the errors due to repeated observations.

## 4.2 Minimum Wage Violations

This section provides our estimates of the number and rate of minimum wage violations in California (Section 4.2.1) and New York (Section 4.2.2) for FY2011. Section 4.2.3 then provides estimates of minimum wage violations in FY2010-FY2012. Three violation rates are presented:

1. The ratio of the number of minimum wage violations to the *total number of jobs*;
2. The ratio of the number of minimum wage violations to the number of jobs *where the worker is covered and not exempt from the minimum wage provision*; and
3. The ratio of the number of minimum wage violations to the number of low-wage jobs.<sup>63</sup>

Note that the CPS data considers the average wage in a week, and thus measures weekly numbers and rates of violations, whereas the SIPP measures the average wage in a month, and thus measures monthly numbers and rates. Therefore, prevalence rates across the two data sets are not strictly comparable.<sup>64</sup>

### 4.2.1 California

Using the CPS, in California there were an estimated 14.3 million jobs held on average in a given week in FY2011, excluding members of the military, the self-employed, and workers under age 16 (Table 3).<sup>65</sup> Out of these jobs, 9.9 million (69.5 percent) were covered by and non-exempt from the minimum wage provisions of the state or the FLSA. Both of these numbers are used as denominators when calculating minimum wage violation rates.

Using the SIPP, the total number of jobs and the number of jobs covered by the minimum wage are estimated for an average month, as opposed to a week in the CPS. Based on the SIPP data there are an estimated 13.6 million jobs held per month in FY2011 (excluding members of the military, the self-employed, and workers under age 16).<sup>66</sup> Of these jobs, an estimated 9.5 million jobs per month (69.8 percent) were subject to the minimum wage provisions of the state or the FLSA. Using the CPS there are somewhat more jobs and jobs subject to the minimum wage provision than when the SIPP is used; however, these estimates are not statistically significantly different.<sup>67</sup> Additionally, the percent of jobs

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<sup>63</sup> There is not a definitive definition of what constitutes ‘low-wage’. In this analysis low-wage is defined as wages below 1.5 times the minimum wage. This was chosen since it corresponds to roughly the poverty level earnings for a full-time worker.

<sup>64</sup> The longer the time period wages are averaged over, the lower the probability a violation is identified; this is because when wages are below the minimum wage during part of the time period, but are above the minimum at other times, the average wage may be above the minimum wage and a violation is not recognized, despite a violation having occurred.

<sup>65</sup> Total numbers of jobs are not included in the tables in order to consolidate the results; these numbers are available upon request.

<sup>66</sup> Recall that the SIPP is not representative at the state level.

<sup>67</sup> There are several reasons the total number of jobs may vary across these data sets: (1) the SIPP is not representative at the state level; (2) the CPS includes up to four jobs whereas the SIPP only includes up to two jobs; and (3) the CPS considers jobs held in a week whereas the SIPP includes jobs held in a month.

covered by the minimum wage provisions is nearly identical across the two samples, 69.5 percent (CPS) and 69.8 percent (SIPP).

Table 3 provides estimates of the number of minimum wage violations for California among all jobs and covered, non-exempt jobs.<sup>68</sup> The CPS data analysis resulted in an estimated 372,000 minimum wage violations per week, representing approximately 2.7 percent of all jobs; 3.8 percent of covered, non-exempt jobs; and 11.8 percent of low-wage jobs in a given week. Using the SIPP data somewhat fewer violations were identified, 334,000 per month, with rates of 2.5 percent (all jobs), 3.5 percent (covered, non-exempt jobs), and 10.9 percent (low-wage jobs).

These estimates reflect extrapolations from our sample in the CPS and SIPP to the population in California. It should be noted, however, that the sample used in each data source resulted in identifying small numbers of violations. For example, among 12,587 jobs in the CPS, we found 157 weekly minimum wage violations in California.<sup>69</sup> For the SIPP, we found a total of 789 monthly violations based on 32,849 job-month records. These values are then used to extrapolate to the population. Despite the small numbers of violations found in the sample, our population estimates are generated using appropriate sampling weights and we also report the 95 percent confidence interval for each estimate.

#### 4.2.2 New York

Violation rates are also presented for New York in Table 3. Using the CPS, there were an estimated 8.3 million jobs held on average in a given week in FY2011 in New York, excluding members of the military, the self-employed, and workers under age 16. Out of these jobs, 5.4 million (65.0 percent) were covered by the minimum wage provisions of the state or FLSA (not included in table).

Using the SIPP, there were an estimated 8.0 million jobs held per month in FY2011 and an estimated 5.2 million jobs per month (65.9 percent) were subject to the minimum wage provisions of the state or the FLSA. The above numbers are very similar regardless of whether the CPS or the SIPP is used. The population is also limited to low-wage jobs, to reflect the population likely to experience these violations.

Table 3 provides estimates of the minimum wage violations in New York for FY2011 among all jobs and covered, non-exempt jobs. There are roughly 188,000 minimum wage violations per week identified in New York with the CPS data; this corresponds to approximately 2.3 percent of all jobs, 3.5 percent of covered, non-exempt jobs, and 11.1 percent of low-wage jobs. Using the SIPP data, we found 339,000 per month. The SIPP rates are 4.3 percent (among all jobs), 6.5 percent (covered, non-exempt jobs), and 19.5 percent (low-wage jobs).

As with the California estimates, the population estimates for weekly minimum wage violations in New York are based on relatively small numbers of violations found in the sample. We found 128 weekly

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<sup>68</sup> In the CPS violations are directly estimated for the primary job and this rate is then applied to additional jobs. In the SIPP violations are directly estimated for up to two jobs per worker per month.

<sup>69</sup> A record represents an individual worker for a given survey period; each of whom can work several jobs and thus have several violations.

wage violations based on 6,865 jobs in the CPS and 789 monthly wage violations based on 17,221 job-month records in the SIPP. Despite the fact that each data source generates small numbers, ERG used appropriate sampling weights to extrapolate to the population estimates presented in Table 3.

**Table 3: Estimated Numbers of and Rates of Minimum Wage Violations, FY2011**

State	Number of Jobs (1,000s) [a]	Number of MW Violations (1,000s)	Violation Rates (%)		
			All Jobs	Covered, Non- Exempt	Low-Wage and Covered, Non- Exempt
<b>CPS (Weekly Estimates)</b>					
California	14,262 (9,847- 18,677)	372 (234- 510)	2.7% (2.2%- 3.2%)	3.8% (3.2%- 4.3%)	11.8% (10.5%- 13.2%)
New York	8,317 (452- 16,181)	188 (17- 358)	2.3% (1.8%- 2.9%)	3.5% (2.9%- 4.1%)	11.1% (8.3%- 13.8%)
<b>SIPP (Monthly Estimates)</b>					
California	13,556 (13,298- 13,815)	334 (276- 392)	2.5% (2.0%- 2.9%)	3.5% (2.9%- 4.1%)	10.9% (9.1%- 12.6%)
New York	7,923 (7,694- 8,152)	339 (274- 404)	4.3% (3.5%- 5.1%)	6.5% (5.3%- 7.7%)	19.5% (16.2%- 22.8%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week whereas the SIPP estimates represent the number of violations occurring in a month.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS and up to two jobs in the SIPP.

#### 4.2.3 Minimum Wage Violations for FY2010 to FY2012

The estimates presented above measuring the extent of minimum wage violations are for FY2011. This section provides estimates of minimum wage violations for FY2010 and FY2012, in addition to the FY2011 estimates presented above (Table 4). Due to the complexity of the SIPP and the amount of data contained in the SIPP, estimating violation rates in other years with the SIPP data was not possible under the scope of this project. Comparing minimum wage violation rates across these three years of data demonstrates relatively consistent estimates. In California there seems to be a slight decrease in violation rates over time; however, the current time period is too short to distinguish whether this is a statistically significant change.



**Table 4: Estimated Weekly Numbers of and Rates of Minimum Wage Violations, using the CPS, FY2010-FY2012**

Year	Number of Jobs (1,000s) [a]	Number of OT Violations (1,000s)	Violation Rates (%)		
			All Jobs	Covered, Non-Exempt	40+ Hours and Covered, Non-Exempt
<b>California</b>					
2010	14,234 (9,797- 18,671)	615 (393- 837)	4.5% (3.9%- 5.0%)	7.7% (6.5%- 8.9%)	92.9% (91.3%- 94.5%)
2011	14,262 (9,847- 18,677)	576 (397- 755)	4.2% (3.9%- 4.5%)	7.0% (6.3%- 7.8%)	91.9% (89.7%- 94.1%)
2012	14,576 (10,121- 19,032)	629 (434- 824)	4.4% (4.0%- 4.9%)	7.5% (6.5%- 8.4%)	92.2% (90.0%- 94.4%)
<b>New York</b>					
2010	8,368 (610- 16,127)	416 (77- 755)	5.1% (4.2%- 6.1%)	9.0% (8.2%- 9.8%)	89.8% (86.9%- 92.8%)
2011	8,317 (452- 16,181)	443 (12- 873)	5.5% (5.1%- 5.9%)	9.6% (8.2%- 11.0%)	90.4% (87.4%- 93.3%)
2012	8,283 (502- 16,064)	460 (54- 867)	5.7% (4.9%- 6.6%)	10.0% (8.3%- 11.8%)	91.8% (91.0%- 92.7%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS.

### 4.3 Sensitivity Analyses

While it is possible to devise error correction mechanisms to adjust for some of the measurement error in the analysis, applying a correction mechanism is very complicated and beyond the scope of this project. Therefore, we apply limited corrections for error in the data and then conduct a sensitivity analysis. Measurement error can sometimes be reduced in the data by excluding outliers.<sup>70</sup> For example, very low or very high reported wages may be indicative of measurement error. However, we cannot exclude all workers with very low wages because the population of interest is these outliers (i.e., workers with wages below the minimum wage). Therefore, we only drop workers with hourly wages below \$1.

We conduct seven sensitivity specifications to address the concerns presented in Section 3.4 and to test the robustness of our estimates to alternative specifications. Appendix B provides additional information on measurement error and additional justification on why these sensitivity analyses were conducted. How these estimates differ from the baseline, both in direction and magnitude, depends on the specification test, data set, and state. Therefore, instead of drawing general conclusions we individually consider the results from each alternative specification. The alternative specifications we explored included:

- Excluding imputed values
- Excluding proxy responses

<sup>70</sup> An outlier is an observation that is distant from other observations.

- Excluding non-hourly workers
- Including workers with wages less than \$1 per hour
- Providing a \$0.25 leeway for minimum wage violations
- Using hourly wages with overtime, tips, or commissions (CPS only)
- Using hourly wages without overtime, tips, or commissions (CPS only)

Tables 5 – 7 summarize the results of these sensitivity analyses. Table 5 provides a summary of how the estimated violation rates change based on the alternative specification for the first five specifications. Table 6 provides a summary of how the last two alter violation rates. Table 7 provides a summary of the percentage change in rates due to all seven alterative specifications.

***Exclude imputed values.*** A potential source of bias in the estimates of the prevalence of wage violations occurs in the inclusion of jobs with imputed wages. Imputed wages introduce additional error that varies depending on the method used. Both the CPS and the SIPP data contain large numbers of imputed wages. We hypothesized that imputed wages may overestimate the minimum wage violation rate because workers suffering from violations may be less likely to disclose their hourly wages and/or earnings. However, the evidence is mixed. Dropping imputed observations generally decreases the point estimates of the minimum wage violation rate estimates (with the exception of New York using the CPS). In California, using the CPS, this decrease is rather large (see Table 7).

***Exclude proxy responses.*** Proxy responses are responses provided by a member of the household on another household member’s behalf. These responses are likely to include more measurement error since proxy respondents are less likely than that member himself to know the true wage, hours, and earnings of another household member. Eliminating proxy responses decreases the minimum wage violation rates (see Table 7).

However, these changes in violation rates may be due to the change in the composition of the sample, rather than the reduction in measurement error. Heads of households are overrepresented amongst respondents and thus non-proxy responses are not representative of the entire population of workers. Since young workers are somewhat more likely to have proxy responses and are more likely to suffer from minimum wage violations (see Section 5), this could explain at least some of the discrepancy. Therefore, we do not think this is a better overall specification.

***Exclude non-hourly workers.*** In this specification, we estimate violation rates including only hourly workers. This population is expected to have less measurement error since hourly wages are directly provided by the respondent and thus do not have to be estimated. When the population is limited to hourly workers, minimum wage prevalence rates fall significantly (see Table 7). However, the characteristics of hourly and non-hourly workers differ significantly and therefore violation rates between these two populations are not comparable. Thus it is uncertain whether the difference in violation rates between these two populations is due to decreased measurement error or a true difference in the violation rate between these two populations.

***Include wages less than \$1 per hour.*** In the report we exclude workers with wages below \$1 per hour from the sample, since we believe these wages are indicative of measurement error.<sup>71</sup> In this specification, we include these workers in the sample to assess the magnitude of this variation on the estimates. In both the CPS and the SIPP, inclusion of these outliers makes very little difference for either the minimum wage prevalence rates (see Table 7). This is because there are very few respondents with wages below \$1 per hour.

***Provide a \$0.25 leeway for minimum wage violations.*** This specification does not count violations for wages within \$0.25 of the minimum wage. For example, in New York, workers with wages above \$7 per hour, but below the minimum wage of \$7.25, are not considered violations. This will account for some of the potential upward bias in the minimum wage violation rate due to measurement error. For example, it may account for the unequal effect of measurement error due to the spike in the earnings distribution at the minimum wage (see bias number 8 in Appendix B). It will also diminish the potential impact of wages being rounded downward to \$7 from \$7.25 per hour. Additionally, we believe it is unlikely that an employer would choose to violate the minimum wage, and undertake the accompanying risks, in order to save less than a quarter of a dollar an hour. The minimum wage violation rates fall in all four cases (both states and both data sets).

In California, the minimum wage violation prevalence rates fall slightly (see Table 7) and in New York the rate are reduced by nearly one-fifth to a quarter (see Table 7 and 9). From this specification test it is still unclear whether these jobs paid within \$0.25 of the minimum wage should be considered violations; that would require future research into the severity of rounding and measurement error. However, two things are apparent. First, this indicates that a significant share of the reported violations is for workers with wages close to the minimum wage. Second, the data indicate that rounding of wages does generate bias. This bias should exist in New York but not California because California has a minimum wage of an “even” \$8.00 per hour. Indeed, the rates in New York change by a larger amount than the rates in California.

***Use hourly wages with overtime pay, commissions, and tips (CPS only).*** In the CPS we attempt to decompose the amount of weekly overtime pay, commissions, and tips into two components: (1) overtime pay and (2) commissions and tips. This allows us to estimate wages including commissions and tips but excluding overtime pay. This methodology involves significant assumptions and thus may introduce bias into the results. Using wages with overtime pay, commissions, or tips eliminates some of this measurement error but will likely result in an underestimate of minimum wage violation rates because wages are overestimated (see Tables 8 and 9). We find that both minimum wage violation rates fall moderately in this specification (see Table 8).

***Use hourly wages without overtime pay, commissions, and tips (CPS only).*** This specification test mirrors the previous specification but uses the wage without overtime pay, commissions, and tips to estimate violation rates. This will result in an overestimate of violation rates (because wages are

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<sup>71</sup> We re-weighted the remaining respondents in order to retain population totals.

underestimated). We find that minimum wage violations increase in this specification by 14.2 percent in California and 43.8 percent in New York.

**Table 5: Sensitivity Analysis of Estimated Rates of Minimum Wage Violations, FY2011**

Data Source	Violation Rates as a Share of All Jobs [a]					
	Baseline Analysis	Without Imputations	Without Proxies	Without Non-Hourly Workers	With Wage <\$1/hour	With \$0.25 Margin
<b>California</b>						
CPS	<b>2.7%</b> (2.2%- 3.2%)	1.7% (1.2%- 2.2%)	1.8% (1.4%- 2.3%)	2.0% (1.6%- 2.4%)	2.8% (2.3%- 3.4%)	2.4% (1.9%- 2.9%)
SIPP	<b>2.5%</b> (2.0%- 2.9%)	2.0% (1.6%- 2.4%)	2.1% (1.6%- 2.6%)	0.7% (0.3%- 1.0%)	2.5% (2.1%- 3.0%)	2.3% (1.9%- 2.7%)
<b>New York</b>						
CPS	<b>2.3%</b> (1.8%- 2.9%)	2.5% (1.3%- 3.6%)	1.7% (1.1%- 2.2%)	1.9% (1.5%- 2.2%)	2.4% (1.8%- 2.9%)	1.7% (1.4%- 2.0%)
SIPP	<b>4.3%</b> (3.5%- 5.1%)	3.7% (2.9%- 4.6%)	3.8% (2.8%- 4.8%)	3.1% (1.9%- 4.4%)	4.5% (3.7%- 5.3%)	3.4% (2.7%- 4.1%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week whereas the SIPP

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs

**Table 6: Bounds on Estimated Rates of Minimum Wage Violations, FY2011**

State	Violation Rates as a Share of All Jobs [a]		
	Wage with OCT [b]	Baseline Analysis	Wage without OCT [b]
<b>Minimum Wage Violations</b>			
California	2.6% (2.1%- 3.1%)	2.7% (2.2%- 3.2%)	3.1% (2.6%- 3.6%)
New York	2.3% (1.7%- 2.8%)	2.3% (1.8%- 2.9%)	3.3% (2.6%- 4.0%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week.

(3) SIPP estimates not presented because cannot estimate alternative wages.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS.

[b] OCT stands for overtime pay, commissions, and tips.

**Table 7: Percent Change in Prevalence Estimates due to Sensitivity Analysis, FY2011**

Data Source	Percent Change in Rates as a Share of All Jobs [a]						
	Without Imputations	Without Proxies	Without Non-Hourly Workers	With Wage <\$1 per hour	With \$0.25 Margin	Wage with OCT [b]	Wage without OCT [b]
<b>California</b>							
CPS	-35.1%	-31.5%	-25.3%	5.0%	-11.1%	-2.0%	14.2%
SIPP	-18.3%	-14.0%	-73.6%	2.5%	-8.0%	--	--
<b>New York</b>							
CPS	6.3%	-28.3%	-19.1%	1.7%	-26.1%	-2.6%	43.8%
SIPP	-12.7%	-11.6%	-26.4%	5.3%	-20.3%	--	--

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week whereas the SIPP estimates represent the number of violations occurring in a month.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS and two jobs in the SIPP.

[b] OCT stands for overtime pay, commissions, and tips.

## 5 DEMOGRAPHICS OF WAGE VIOLATIONS

To better understand the impact of wage violations it is necessary to determine the characteristics of the workers who experience violations. Wage violations are likely to have a larger impact on a family if the worker experiencing the violation is in a low-earning family or is the primary earner in the family. Additionally, some characteristics may be able to proxy for unobservable characteristics that effect impacts such as whether the worker is employed in the formal or the informal labor market. In this section we present characteristics of both the jobs in violation and the workers who hold these jobs. Due to imprecision of the prevalence estimates and the relatively small samples that result when specific demographic characteristics are considered, we believe these estimates should be considered with caution. Considering the confidence intervals is especially important here.

### 5.1 Prevalence by Job Characteristics

Violation rates may vary based on characteristics of the job and the employer. For example, workers in low-wage occupations are more likely to suffer a minimum wage violation than workers in high-wage occupations. Identifying firm characteristics associated with violations may help WHD to better select investigations of firms that statistically are more likely to be violators. This report considers three job characteristics: industry, occupation, and firm size.

#### 5.1.1 Overview of Variables Considered

Both the CPS and the SIPP cover all industries except the military.<sup>72</sup> This report presents violation rates by major Census industry and occupation categories. The data sets include detailed Census industry and occupation codes; however, some detailed industries and occupations do not have enough samples to adequately estimate violations and so these rates are not reported here.<sup>73</sup> Periodically the Census industry and occupation classification systems are updated to reflect changes in the labor market. The Census occupational codes were updated in 2010 from the 2002 codes based on the updated 2010 Standard Occupational Classification (SOC). The SIPP consistently uses the 2002 codes during the time period under consideration but the CPS began using the new classification in January 2011. A crosswalk was used to adjust the CPS occupational codes in 2011 and 2012 to the previous codes. This results in occupation categories consistent across time and data sets. The Census industry codes were updated in 2007 from the 2002 codes.<sup>74</sup> The CPS adopted the 2007 Census codes in 2009 (before our data begins) whereas the SIPP uses 2002 census codes in all relevant years. However, the major industry codes are comparable between these two classification systems and so no adjustments were needed.

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<sup>72</sup> These workers are not subject to the FLSA.

<sup>73</sup> Violation rates by detailed industry and occupation codes are available upon request.

<sup>74</sup> The Census industry codes are derived from the North American Industry Classification System (NAICS) codes. See: <http://www.bls.gov/cps/cpsoccind.htm>.

The SIPP asks workers how many employees work for the firm and their location of work. Responses are presented categorically: less than 25, 25-99, 100 or more employees.<sup>75</sup> The CPS does not have information on the size of the worker's firm. Violation rates are reported for the SIPP by location size to determine whether the occurrence of violations may vary by location size.

This section focuses on violation rates for all workers; rates for covered, non-exempt workers and workers with an increased chance of suffering a violation are not presented here but are available upon request. Some numbers and rates are suppressed due to small sample sizes.

### 5.1.2 Minimum Wage Violations by Job Characteristics

#### Industry

This report considers violation rates across 13 industries; however, some industries are not reported due to small sample sizes (e.g., mining). Figure 3 shows the breakdown of minimum wage violations by industry. The distributions across industries are largely consistent across the two data sets. In general, the industry with the most minimum wage violations is leisure and hospitality (with the exception of California with the SIPP). Other industries with a significant share of minimum wage violations are educational and health services; wholesale and retail trade; and 'other services (except public administration)'.<sup>76</sup> Violations in New York are somewhat more concentrated in the leisure and hospitality industry and the educational and health services industry than in California.

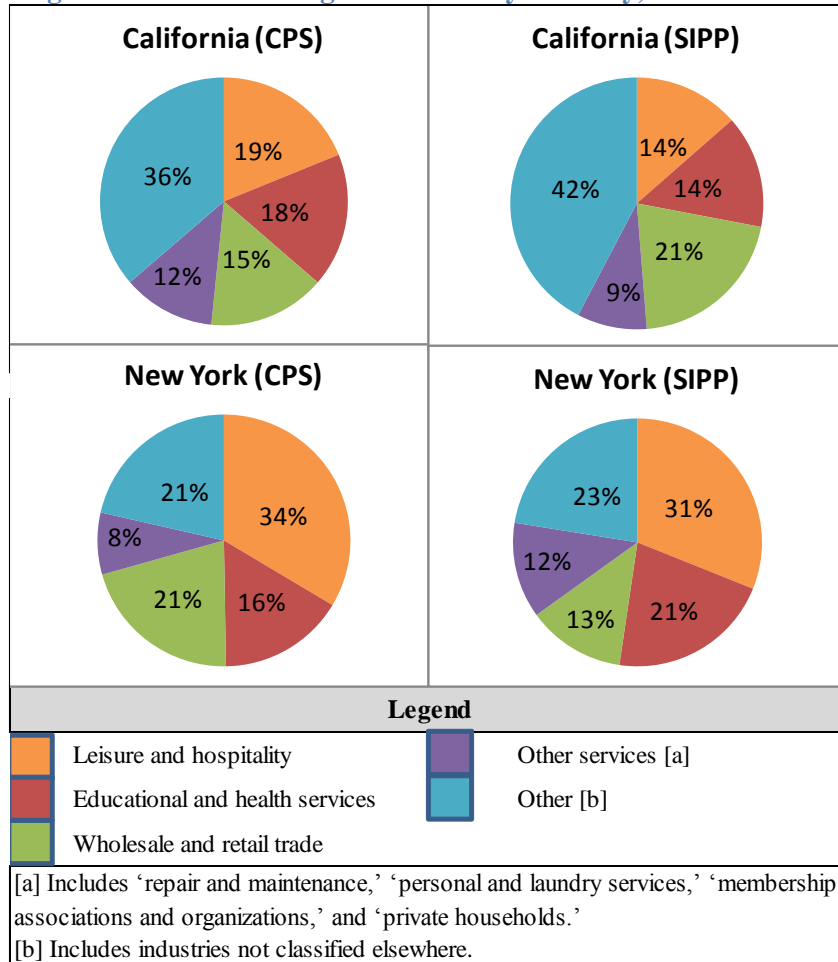
Table 8 presents the violation rates per worker in an industry; this takes into account the size of the industry. These rates should be used if one is interested in identifying the chance that a worker in an industry will experience a violation. Conversely, Figure 3 should be used to determine the frequency of a violation occurring across industries. In general, the conclusions from the prevalence rates mirror the conclusions from the general prevalence. The leisure and hospitality industry and 'other services (except public administration)' industry are the industries where a worker is most likely to experience a violation. However, workers in the educational and health services industry are similarly likely to experience violations than workers in other industries. This industry includes a high number of violations due to the large number of workers employed in the industry.

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<sup>75</sup> The variable used to categorize employer size changed in wave 11 of the SIPP. In waves 11 and later, the number of employees at the worker's location (tempsiz) took on values in eight categories. Unfortunately, these categories could not be collapsed into the exact categories of prior waves. Workers from wave 11 instead were classified into the categories of <26 employees, 26 to 100 employees, and more than 100 employees.

<sup>76</sup> The 'other services (except public administration)' category includes 'repair and maintenance,' 'personal and laundry services,' 'membership associations and organizations,' and 'private households.'

**Figure 3: Minimum Wage Violations by Industry, FY2011**

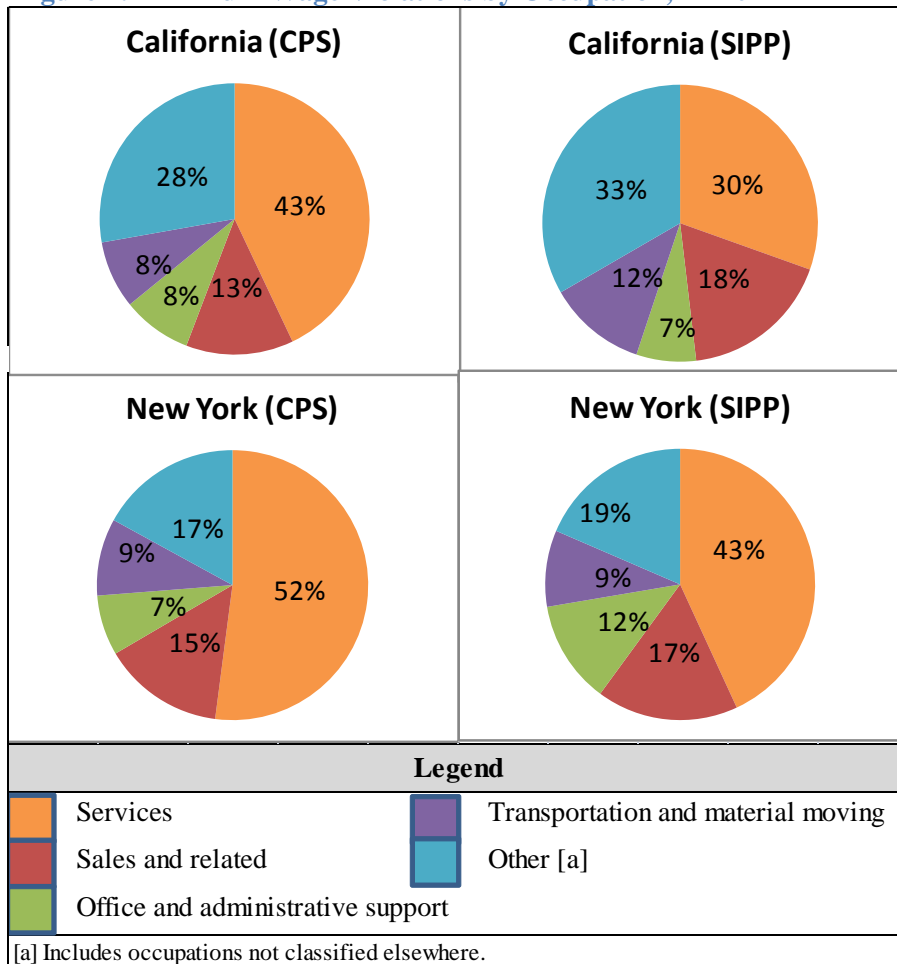


Occupation

Ten occupational categories are considered. As with industries, the prevalence across occupations is shown in a pie chart (Figure 4) and the violation rates are shown in the subsequent table (Table 8). Violations are most commonly found in the services occupations (regardless of state or data set); between 30 percent and 52 percent of violations occur in these occupations. Sales and related occupations also account for a significant share of all minimum wage violations. In addition to having the greatest number of violations, these industries also have high prevalence rates relative to other industries. However, the transportation and material moving industry also has a relatively high prevalence rate (especially for New York with the SIPP), despite having a low number of violations due to being a fairly small industry.



**Figure 4: Minimum Wage Violations by Occupation, FY2011**



Firm Size

Violation rates across three firm size categories are considered: fewer than 25 employees; 25-99 employees, and 100 or more employees (Table 8). Due to data limitations, this analysis is only possible using the SIPP data (the CPS does not have information on firm size). Violation rates fall significantly as the firm size increases in both states. In California, 4.2 percent of jobs in firms with fewer than 25 employees experience a violation. This falls to 1.4 percent in firms with 100 or more employees. In New York the variation is even larger; the rate falls from 7.1 percent to 2.4 percent. Previous empirical research has observed this relationship (Weil, 2005). This correlation may be due to a variety of reasons, including: the possibility that large firms can pay more (wages tend to be higher at larger firms), the greater chance that a large firm will be investigated by the WHD (and thus a large firm has a stronger incentive to comply), and the lower costs of complying for large firms (since regulatory familiarization tends to be a fixed cost it is less expensive, per employee, at large firms).

**Table 8: Estimated Rates of Minimum Wage Violations by Job Characteristics, FY2011**

Census Industry/ Occupation		California		New York	
		CPS	SIPP	CPS	SIPP
Violation Rates: All Jobs [a] (%)					
<b>Total</b>		<b>2.7%</b> (2.2%- 3.2%)	<b>2.5%</b> (2.0%- 2.9%)	<b>2.3%</b> (1.8%- 2.9%)	<b>4.3%</b> (3.5%- 5.1%)
<b>Industry</b>					
1	Agriculture, forestry, fishing, hunting	[b]	1.9% (0.0%- 4.2%)	[b]	[b]
2	Mining	[b]	[b]	[b]	[b]
3	Construction	1.7% (0.7%- 2.7%)	3.3% (1.1%- 5.5%)	[b]	5.2% (1.9%- 8.6%)
4	Manufacturing	2.4% (1.0%- 3.7%)	0.9% (0.3%- 1.5%)	[b]	1.0% (0.1%- 1.8%)
5	Wholesale and retail trade	2.9% (2.2%- 3.7%)	3.7% (2.1%- 5.4%)	3.6% (2.8%- 4.3%)	4.3% (2.1%- 6.4%)
6	Transportation and utilities	2.3% (1.1%- 3.6%)	2.1% (0.8%- 3.5%)	[b]	1.7% (0.0%- 3.4%)
7	Information	[b]	3.0% (0.5%- 5.5%)	[b]	4.0% (0.0%- 9.6%)
8	Financial activities	2.1% (1.1%- 3.2%)	2.9% (1.2%- 4.6%)	[b]	2.2% (0.2%- 4.2%)
9	Professional and business services	1.7% (0.9%- 2.6%)	2.9% (1.6%- 4.2%)	[b]	1.0% (0.0%- 2.3%)
10	Educational and health services	2.1% (1.4%- 2.7%)	1.5% (0.8%- 2.2%)	1.3% (1.0%- 1.6%)	3.2% (1.9%- 4.5%)
11	Leisure and hospitality	5.5% (3.8%- 7.1%)	3.4% (1.8%- 5.1%)	8.6% (6.2%- 10.9%)	14.8% (9.5%- 20.1%)
12	Other services	7.2% (5.2%- 9.2%)	5.6% (2.7%- 8.5%)	4.7% (2.6%- 6.9%)	9.4% (4.7%- 14.1%)
13	Public administration	[b]	0.9% (0.1%- 1.7%)	[b]	1.9% (0.1%- 3.7%)
<b>Occupation</b>					
1	Management, business, and financial	1.0% (0.4%- 1.6%)	1.8% (0.8%- 2.9%)	1.3% (0.8%- 1.8%)	0.6% (0.0%- 1.4%)
2	Professional and related	0.7% (0.4%- 1.0%)	1.1% (0.5%- 1.8%)	[b]	1.6% (0.6%- 2.5%)
3	Services	6.6% (5.4%- 7.7%)	3.8% (2.6%- 5.0%)	5.9% (5.1%- 6.7%)	9.4% (6.6%- 12.1%)
4	Sales and related	3.4% (2.3%- 4.4%)	4.2% (2.4%- 6.0%)	3.1% (2.1%- 4.2%)	7.4% (4.1%- 10.7%)
5	Office and administrative support	1.6% (0.9%- 2.2%)	1.2% (0.6%- 1.8%)	1.2% (0.7%- 1.7%)	3.2% (1.5%- 5.0%)
6	Farming, fishing, and forestry	[b]	2.0% (0.0%- 4.6%)	[b]	[b]
7	Construction and extraction	[b]	3.3% (0.9%- 5.7%)	[b]	4.6% (1.1%- 8.0%)
8	Installation, maintenance, and repair	2.4% (1.0%- 3.8%)	1.5% (0.0%- 3.5%)	[b]	[b]
9	Production	4.4% (2.3%- 6.6%)	2.6% (0.5%- 4.7%)	[b]	1.7% (0.4%- 3.0%)
10	Transportation and material moving	3.8% (2.3%- 5.4%)	4.6% (2.6%- 6.6%)	3.8% (2.2%- 5.4%)	8.4% (3.6%- 13.2%)
<b>Firm Location Size</b>					
	Under 25 employees	N/A	4.2% (3.3%- 5.1%)	N/A	7.1% (5.3%- 8.8%)
	25-99 employees	N/A	1.4% (0.9%- 2.0%)	N/A	3.6% (2.0%- 5.2%)
	100 or more employees	N/A	1.4% (0.9%- 1.9%)	N/A	2.4% (1.5%- 3.3%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week whereas the SIPP estimates represent the number of violations occurring in a month.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS and up to two jobs in the SIPP.

[b] Values suppressed due to fewer than 10 observations.

## 5.2 Prevalence Estimates by Worker Characteristics

Identifying demographic characteristics of the workers suffering from wage violations will help to identify the impacts of violations and further characterize the prevalence of violations. There are a wide range of demographics that could be considered. Eight types of demographics are considered here based on data availability and notable findings. These include:

- Age
- Gender
- Race
- Hispanic ethnicity
- Citizenship
- Full-time status
- Educational attainment
- Annual family income

In Appendix C we also consider violation rates by: marital status, number of children, veteran status, disability status, educational enrollment, metropolitan statistical area (MSA) status, and union coverage status.<sup>77</sup>

Table 9 and Table 10 present the minimum violation rates for the demographics listed above. Several of these demographics are also considered visually in Figure 5. Variation by age, gender, and educational attainment is generally in line with the theoretical predictions, regardless of the data set or state considered. Younger workers are significantly more likely to be illegally paid below the minimum wage than older workers, although the rates are only statistically significantly different in the CPS. Holding aside the relevant legal requirements, a general trend of lower wages for young workers is consistent with economic theory, which suggests that young workers tend to have less human capital and thus have a lower level of productivity. Therefore, the minimum wage floor may be binding for more of these workers than for older workers (and thus violations are more common).<sup>78</sup>

Similarly, violation rates tend to be slightly lower for men than women, but are not statistically significantly different. This variation may be due to a variety of factors, including: differences in the levels of human capital, education, work experience, industry and occupation of employment, or discrimination. There is a clear relationship between educational attainment and the probability of experiencing a minimum wage violation; the violation rate decreases as education increases.<sup>79</sup> Once

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<sup>77</sup> These additional characteristics are considered in the appendix in order to limit this section to the results ERG found to be most interesting.

<sup>78</sup> There are several sections in the FLSA that allow for subminimum wages to be paid to young works; for example, Section 6(g) allows for workers younger than 20 to be paid a youth minimum wage during the first 90 days of employment. However, these exemptions are not commonly used and our methodology tries to take these subminimum wages into account.

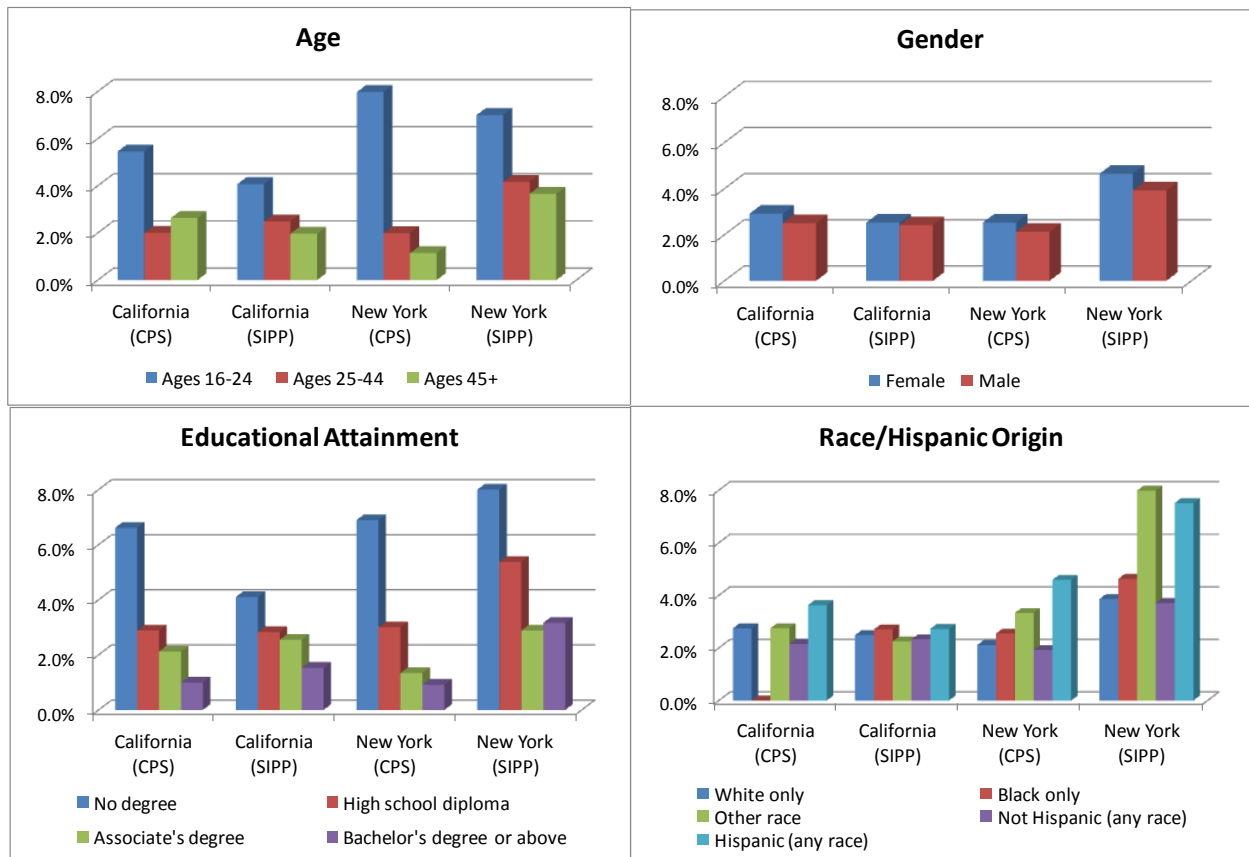
<sup>79</sup> Only some of the violation rates are statistically significantly different from each other in the four sets of combinations of data set and state.

again, this is in line with economic theory because education increases one's earnings potential, reducing the likelihood that a worker's market wage would be below the minimum wage.

We considered variation across races (white-only, black-only, and other) and ethnicities (Hispanic and non-Hispanic). In California, there were no clear differences in minimum wage violation rates across races. In New York, workers in the 'other' category tended to experience higher violation rates but this difference was not statistically significant. Therefore, we cannot distinguish differences across races in either state. Conversely, Hispanics had a statistically significantly higher minimum wage violation rate than non-Hispanics in both California and New York when the CPS was used (although not when the SIPP was used).

We found less variation in minimum wage violation rates across races than previous research. For example, Bernhardt, et al. (2009) found that "among U.S.-born workers, there were significant race differences: African-American workers had a violation rate triple that of their white counterparts." This may be due to differences in the populations considered or differences in the sampling techniques.

**Figure 5: Minimum Wage Violations by Age, Gender, Education, and Race/Hispanic Origin, FY2011**



There is some evidence that immigrants, especially undocumented workers, may be at high risk for wage violations (Bernhardt, et al., 2009).<sup>80</sup> Neither the CPS nor the SIPP inquire whether workers are here legally. However, information is available on citizenship (Table 9). In California, non-citizens are estimated to be approximately 1.6 times more likely to suffer from a minimum wage violation (in the CPS and the SIPP). In New York the rates are higher, 3.1 or 3.0 times more likely (in the CPS and the SIPP, respectively). However, in this report we do not try to disentangle the effects of citizenship (or legality) and other wage determinants (e.g., education, experience, language skills).

Both the CPS and the SIPP strive to accurately represent immigrants; for example by adjusting their sampling methodology and hiring bilingual interviewers. However, there is some evidence of underrepresentation of Hispanics in the CPS (McKay, 1992) and since many immigrants are Hispanic, immigrants may also be underrepresented. If immigrants are underrepresented then this may result in violation rates being biased downward (since violation rates are higher for immigrants). However, simply inflating the number of Hispanics in the sample will not necessarily account for this bias because Hispanic respondents who select into the survey may not be representative of all sampled Hispanics.

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<sup>80</sup> Conversely, Cortes (2004) finds no evidence that immigrants are more likely to suffer from a wage violation.

**Table 9: Estimated Rates of Minimum Wage Violations by Worker Characteristics, FY2011**

Characteristics	California		New York	
	CPS	SIPP	CPS	SIPP
	Violation Rates: All Jobs [a] (%)			
<b>Total</b>	<b>2.7%</b> (2.2%- 3.2%)	<b>2.5%</b> (2.0%- 2.9%)	<b>2.3%</b> (1.8%- 2.9%)	<b>4.3%</b> (3.5%- 5.1%)
<b>Age</b>				
16-24	5.5% (4.3%- 6.6%)	4.1% (2.4%- 5.8%)	8.0% (6.7%- 9.3%)	7.0% (4.4%- 9.6%)
25-44	2.0% (1.6%- 2.4%)	2.5% (1.9%- 3.1%)	2.0% (1.1%- 2.9%)	4.2% (2.9%- 5.4%)
45 and over	2.6% (1.9%- 3.3%)	2.0% (1.4%- 2.5%)	1.1% (0.8%- 1.5%)	3.7% (2.5%- 4.8%)
<b>Gender</b>				
Female	2.9% (2.3%- 3.6%)	2.5% (1.9%- 3.2%)	2.5% (1.9%- 3.1%)	4.7% (3.6%- 5.7%)
Male	2.5% (2.0%- 3.0%)	2.4% (1.9%- 3.0%)	2.1% (1.5%- 2.8%)	3.9% (2.7%- 5.1%)
<b>Race</b>				
White only	2.7% (2.1%- 3.4%)	2.5% (2.0%- 3.0%)	2.1% (1.2%- 3.0%)	3.9% (3.0%- 4.8%)
Black only	[b] ( - )	2.7% (0.6%- 4.8%)	2.5% (1.8%- 3.3%)	4.6% (2.5%- 6.7%)
Other	2.8% (1.9%- 3.6%)	2.3% (1.3%- 3.2%)	3.3% (2.6%- 4.1%)	8.0% (4.6%- 11.4%)
<b>Hispanic</b>				
No	2.2% (1.8%- 2.5%)	2.3% (1.8%- 2.8%)	1.9% (1.7%- 2.1%)	3.7% (3.0%- 4.4%)
Yes	3.6% (2.7%- 4.6%)	2.7% (2.0%- 3.5%)	4.6% (3.7%- 5.5%)	7.5% (4.1%- 10.9%)
<b>Citizen</b>				
No	4.2% (2.7%- 5.7%)	3.6% (2.4%- 4.9%)	5.7% (3.8%- 7.5%)	11.2% (6.1%- 16.3%)
Yes	2.4% (2.0%- 2.7%)	2.3% (1.8%- 2.7%)	1.9% (1.6%- 2.1%)	3.7% (3.0%- 4.5%)
<b>Employed Full-Time [b]</b>				
No	5.7% (4.8%- 6.7%)	3.6% (2.6%- 4.6%)	5.5% (4.5%- 6.6%)	9.0% (6.6%- 11.4%)
Yes	1.9% (1.4%- 2.4%)	2.2% (1.7%- 2.6%)	1.7% (1.1%- 2.3%)	2.8% (2.1%- 3.6%)
<b>Educational Attainment</b>				
No degree	6.6% (4.7%- 8.6%)	4.1% (2.5%- 5.7%)	6.9% (5.0%- 8.8%)	8.0% (3.5%- 12.5%)
High school diploma	2.9% (2.5%- 3.3%)	2.8% (2.1%- 3.6%)	3.0% (2.4%- 3.6%)	5.4% (4.0%- 6.8%)
Associate's degree	2.1% (1.4%- 2.8%)	2.5% (1.6%- 3.5%)	1.3% (0.4%- 2.3%)	2.9% (1.6%- 4.1%)
Bachelor's degree or above	1.0% (0.7%- 1.3%)	1.5% (0.9%- 2.1%)	0.9% (0.6%- 1.3%)	3.2% (1.9%- 4.4%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week whereas the SIPP estimates represent the number of violations occurring in a month.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS and up to two jobs in the SIPP.

[b] Full-time is defined as working 35 hours or more a week at a job.

Table 10 considers the distribution of violations across annual family income categories in the SIPP. The CPS is not included in this analysis because the CPS sample including family income is too small to legitimately estimate rates. Seven income ranges are considered: under \$20,000; \$20,000 to \$34,999; \$35,000 to \$49,999; \$50,000 to \$74,999; \$75,000 to \$149,999; and \$150,000 and over. The higher the family income, the lower the violation rate. Logically this makes sense because minimum wage violations occur amongst low-wage workers who tend to reside in low-income families. This indicates that a minority of minimum wage violations occur in high-income households (which could exist if teenagers in well-off families generally suffered from minimum wage violations).

**Table 10: Prevalence of Minimum Wage Violations by Annual Family Income, SIPP, FY2011**

Annual Family Income	California		New York	
	Violations (1,000s)	Violation Rates: All Jobs [a] (%)	Violations (1,000s)	Violation Rates: All Jobs [a] (%)
Under \$20,000	106 (75- 138)	9.7% (7.1%- 12.3%)	121 (81- 161)	19.7% (14.2%- 25.3%)
\$20,000 to \$34,999	59 (41- 77)	3.7% (2.5%- 4.8%)	52 (28- 75)	5.5% (3.1%- 8.0%)
\$35,000 to \$49,999	39 (21- 56)	2.2% (1.2%- 3.2%)	38 (19- 56)	3.7% (2.0%- 5.5%)
\$50,000 to \$74,999	62 (38- 85)	2.2% (1.4%- 3.1%)	48 (27- 69)	3.2% (1.8%- 4.6%)
\$75,000 to \$149,999	48 (29- 67)	1.1% (0.6%- 1.5%)	57 (34- 80)	2.0% (1.2%- 2.8%)
\$150,000 and over	20 (7- 34)	1.1% (0.4%- 1.9%)	24 (7- 41)	2.2% (0.6%- 3.8%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The SIPP estimates represent the number of violations occurring in a month.. CPS estimates are not presented due to small sample sizes.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to two jobs in the SIPP.

## 6 DIRECT IMPACTS OF WAGE VIOLATIONS: LOST INCOME

The direct impact of wage violations is that workers receive lower wages than stipulated under federal and state law. This section provides estimates of the lost earnings associated with the violations estimated in Section 4. The first section considers the impact of wage violations on income, assuming all workers experiencing wage violations worked the same hours but were paid in compliance with the minimum wage and overtime provisions. The second part of this section expresses the estimates of lost income in the context of family income.

### 6.1 Lost Income

This section presents lost wages associated with violations, without adjustments for labor market effects of full compliance.<sup>81</sup> The hourly amount of lost wages for a minimum wage violation is estimated as the difference between the minimum wage and the wage earned by the worker who experiences a violation (i.e., the noncompliant wage). For both the CPS and the SIPP we have information on the hourly wage or we were able to impute an hourly wage from total hours and income.

Table 11 contains the estimates of lost income due to minimum wage violations in California and New York, based on the CPS and SIPP data. Lost income is expressed as a total amount per week, an average amount per week for workers experiencing a violation, and the amount of the violation as a share of the worker's earned income.

In California, total weekly lost wages due to minimum wage violations are estimated to be \$22.5 million in the CPS and \$28.7 million in the SIPP. Per worker with a minimum wage violation, this equates to \$63 or \$86 per week in lost wages in the CPS and the SIPP, respectively. In New York, the estimated total weekly lost income amounts are \$10.2 million in the CPS and \$20.1 million in the SIPP. These correspond to \$55 and \$59 per worker per week in the CPS and SIPP. In both states, the SIPP tends to estimate higher quantities of lost wages. This finding is consistent with the earnings distributions in the raw data; the SIPP data contain an earnings distribution that is more skewed toward lower earnings than the earnings distribution of the CPS data.

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<sup>81</sup> Adjustments for potential labor market effects of full compliance are not considered.



**Table 11: Estimated Weekly Lost Wages Due to Minimum Wage Violations, FY2011**

State	Lost Income [a]		
	Total (\$millions)	Per Week for Workers with a Violation (\$)	As Share of Worker's Earned Income
<b>CPS</b>			
California	\$22.5 <i>(\$13.7- \$31.2)</i>	\$63 <i>(\$56- \$70)</i>	49.3% <i>(35.6%- 63.0%)</i>
New York	\$10.2 <i>(\$0.0- \$20.4)</i>	\$55 <i>(\$48- \$63)</i>	37.2% <i>(30.0%- 44.4%)</i>
<b>SIPP</b>			
California	\$28.7 <i>(\$21.7- \$35.6)</i>	\$86 <i>(\$73- \$99)</i>	70.9% <i>(54.6%- 87.2%)</i>
New York	\$20.1 <i>(\$15.5- \$24.7)</i>	\$59 <i>(\$50- \$69)</i>	47.5% <i>(35.9%- 59.2%)</i>

Notes:

- (1) Point estimates and 95 percent confidence intervals (in parentheses).
- (2) Overtime pay estimates for the SIPP are not displayed.

[a] Estimated amount of lost wages owed for any given week in FY2011. SIPP

## 6.2 Violations' Impacts on Family Income

The previous section considered lost wages per worker and as a share of the worker's income. This section takes into account the impact on total annual family income. Family income is presented in a variety of ways:

1. As the total decrease in annual median family income (per family with a violation)
2. As the amount of weekly wages lost due to violations by annual family income categories.
3. As a graph of the frequency distributions of annual family income with and without violations.

Table 12 demonstrates how median annual family incomes decrease due to minimum wage violations. The estimated decreases in median family incomes are presented for families with minimum wage violations. The change in income is also presented as a share of total annual family income.

**Table 12: Impact of Minimum Wage Violations on Median Family Income, FY2011**

State (Data Source)	Families With Violations		
	Number of Families (1,000s)	Decreases in Median Family Income [a]	
		\$	%
California (CPS)	300 (130- 467)	\$2,260 (\$0- \$15,230)	4.8%
California (SIPP)	307 (280- 334)	\$400 (\$0- \$5,010)	0.7%
New York (CPS)	130 (0- 302)	\$10,750 (\$0- \$28,120)	24.2%
New York (SIPP)	319 (287- 351)	\$160 (\$0- \$5,350)	0.3%

Note: Point estimates and 95 percent confidence intervals (in parentheses). Total number of families rounded to closest ten thousand and income rounded to closest \$10.

[a] Change from full compliance

Table 13 considers lost wages by annual family income categories in the SIPP (the CPS sample with annual family income is too small to present estimates). For minimum wage violations the amount per family is greatest in the lowest family income category (under \$5,000), but otherwise no trend is clear.

**Table 13: Estimated Total Weekly Lost Wages and Lost Wages Per Violation Due to Minimum Wage Violations, by Distribution of Annual Family Income, SIPP, FY2011**

Annual Family Income	California		New York	
	Total (\$1,000) [a]	Per Violation (\$)	Total (\$1,000) [a]	Per Violation (\$)
Under \$20,000	\$10,526 (\$5,662- \$15,390)	\$99 (\$71- \$127)	\$8,280 (\$5,178- \$11,381)	\$69 (\$53- \$84)
\$20,000 to \$34,999	\$4,751 (\$2,559- \$6,944)	\$81 (\$57- \$104)	\$2,694 (\$1,353- \$4,034)	\$52 (\$35- \$69)
\$35,000 to \$49,999	\$3,294 (\$1,463- \$5,125)	\$85 (\$61- \$110)	\$1,653 (\$624- \$2,682)	\$44 (\$21- \$67)
\$50,000 to \$74,999	\$4,697 (\$2,592- \$6,803)	\$76 (\$54- \$99)	\$3,509 (\$1,278- \$5,741)	\$73 (\$40- \$105)
\$75,000 to \$149,999	\$3,907 (\$2,123- \$5,691)	\$81 (\$55- \$107)	\$2,728 (\$1,347- \$4,110)	\$48 (\$32- \$64)
\$150,000 and over	\$1,481 (\$366- \$2,596)	\$73 (\$34- \$112)	\$1,238 (\$112- \$2,365)	\$52 (\$16- \$88)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

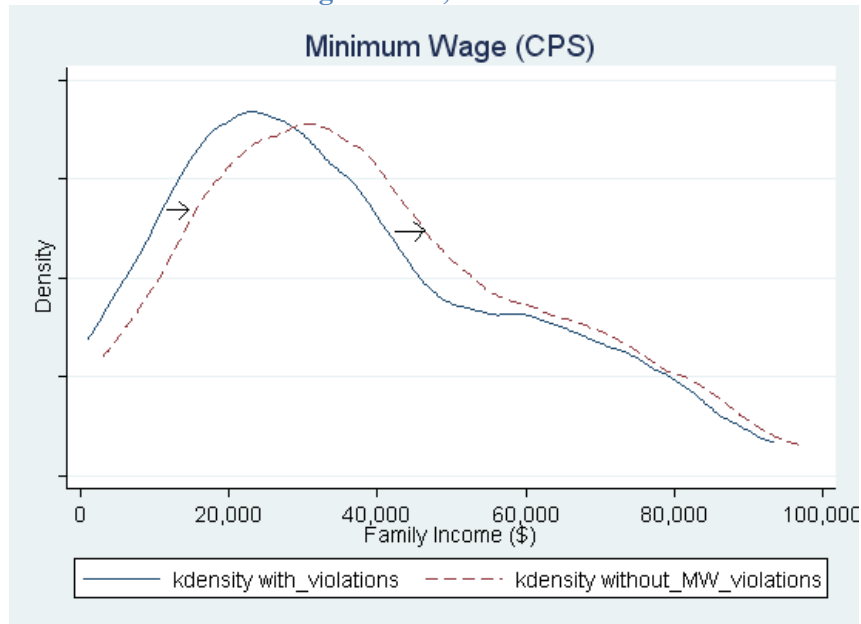
(2) Estimated amount of lost wages owed for any given week in FY2011. SIPP data estimates lost wages per month; for comparability with other estimates the SIPP estimates have been divided by 4.3 to get the amount of lost wages per week.

(3) CPS estimated not presented due to small sample sizes.

[a] Rows may not add to total due to suppressed values.

Lastly, we present smoothed frequency distributions of annual family income with and without violations (Figure 6). When violations are eliminated (family income gains lost wages) these distributions shift to the right; indicating fewer families at the low-end of the distribution. These figures demonstrate graphically the same relationships seen numerically in the previous tables.

**Figure 6: Frequency Distributions of Family Income with and Without Violations Using the CPS, FY2011**



Note: Kernel density used to smooth curves

## 7 INDIRECT IMPACTS OF WAGE VIOLATIONS

Minimum wage violations result in millions of dollars in lost wages for workers each year (as discussed in Section 6). Examining the demographic characteristics of the workers experiencing violations (Section 5) provides an indication of the expected types and levels of impacts from wage violations. These violations have implications far beyond the dollar amount of unpaid wages. Roughly 50 percent of minimum wage workers are adults 25 or older trying to support themselves and possibly a family.<sup>82</sup> At the current federal minimum wage of \$7.25 per hour, a full-time employee earns approximately \$15,000 per year. Thus, failure to comply with the minimum wage standards of the FLSA puts a vulnerable population further at risk, reducing worker welfare and increasing poverty rates. Increased income due to the elimination of wage violations may be partially offset by decreased government assistance from social support programs and higher tax burdens. However, the extent to which the workers experiencing wage violations are non-citizens or are workers in the informal labor market will influence the level of these offsets. This section contains a description of the estimation methods and results of the impacts of wage violations on poverty, taxes, and government assistance program participation.

### 7.1 Data Caveats in Estimating Impacts

To estimate the impacts of minimum wage violations on individuals and families using the CPS, it is necessary to incorporate the Annual Social and Economic Supplement (ASEC). The ASEC is conducted each March and asks respondents about annual family income, taxes, program participation, and more. However, a major drawback to using the ASEC is that it restricts the sample size (Figure 7). Since the supplement is only conducted in March, only one-third of workers interviewed in a year will complete the supplement, *reducing the total sample size available for our analysis by two-thirds*.<sup>83,84</sup> An additional consequence is that the workers who are matched are interviewed only between March and June. Therefore, if violation rates differ significantly over the year then the estimates may not represent annual figures.<sup>85</sup> Instead, the impacts will be limited to violations occurring between March and June.

Poverty status, annual tax payments, and program participation all are based on monthly or annual earnings. In the CPS we have only weekly violation rates. Thus we must assume that the violation occurs for an entire year when evaluating changes. The SIPP measures violations, income, and eligibility each month and thus does not need to make this assumption. Therefore when estimates are available for the SIPP, these estimates may be preferable to the CPS estimates.

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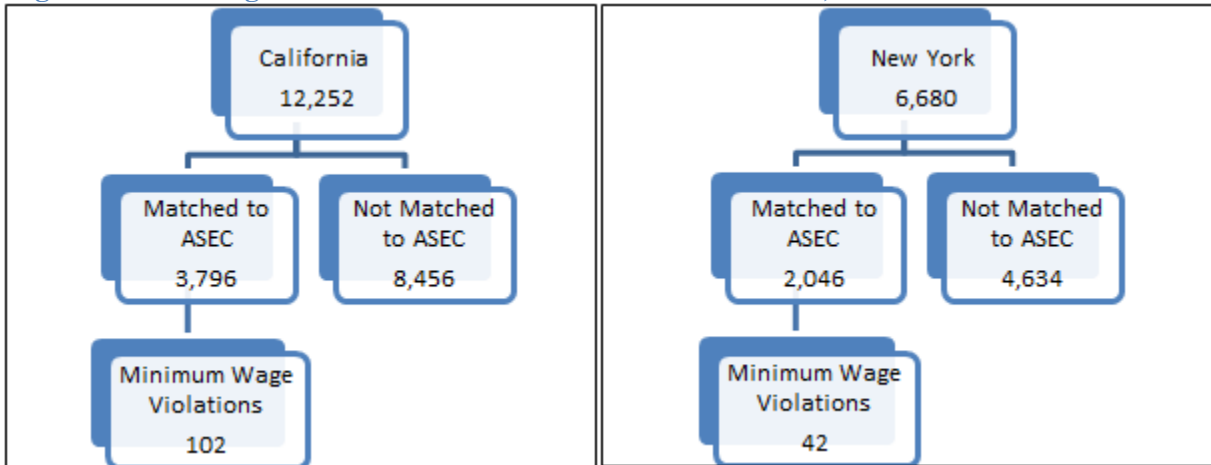
<sup>82</sup> Bureau of Labor Statistics. Available at: <http://www.bls.gov/cps/minwage2012.pdf>. The BLS publication does not provide information on which workers are trying to support a family.

<sup>83</sup> Additionally, some observations will be dropped because the worker cannot be matched between the ORG and the ASEC.

<sup>84</sup> The methodology used to match workers is roughly based on methodology devised by the NBER. See: [http://www.nber.org/data/cps\\_match.html](http://www.nber.org/data/cps_match.html).

<sup>85</sup> An analysis of the data demonstrates some evidence of a cyclical nature to violations.

**Figure 7: Flow Diagram of Number of Records in the CPS ASEC, FY2011**



## 7.2 Impacts on Poverty

Violations of the minimum wage reduce worker's incomes and may potentially result in an increase in the poverty rate. The poverty rate is a widely-used measure of the percent of the population whose incomes are too low to support a basic standard of living. The poverty threshold is also used to determine eligibility for many public support programs, such as Women, Infants, and Children (WIC) and the Low Income Home Energy Assistance Program (LIHEAP) in some states. Many papers have considered the impact of the minimum wage on the poverty rate (Card & Krueger, 1995; Addison & Blackburn, 1999; Neumark & Wascher, 1997; Neumark, Schweitzer, & Wascher, 1998; Neumark, Schweitzer, & Wascher, 2004). Some of these studies find evidence that increasing the minimum wage has poverty-reducing effects for certain groups or certain time periods.

### 7.2.1 Methods

The CPS ASEC and the SIPP both identify the poverty threshold for a family and consequently whether the family is in poverty. Since the ASEC reflects income for the previous calendar year (2010) and violations are identified by current income (March through June) it is possible that the poverty status identified in the data may not be relevant during the time period for which violations are assessed. However, we assume that poverty status in 2010 is an appropriate proxy for poverty status in FY2011. The SIPP estimates poverty rates monthly.

We estimate the poverty rate based on annual family income with and without estimated lost wages attributed to minimum wage violations. If family income without lost wages is below the poverty threshold identified for the family, but family income with lost wages is above the threshold, then we attribute the poverty status to the wage violation. Since we know the ratio of family income to the poverty threshold, we can also assess the size of the poverty gap (the difference between family income and the poverty threshold). It should be noted that some of the poverty estimates are based on very few observations and thus it is crucial to take into account the size of the confidence interval.

## 7.2.2 Estimates

Table 14 present the change in the number of families, individuals, and children in poverty due to minimum wage violations. Changes in poverty rates are also estimated (but not included in the table). All poverty estimates are limited to families with a member employed during the reference period (weekly in the CPS and monthly in the SIPP). For changes in the numbers of families, individuals, and children below 125 percent, 150 percent, and 200 percent of the poverty level see Appendix C.

Without violations, the poverty rate in California is estimated at 8.6/7.7 percent (CPS/SIPP) and in New York at 6.2/6.7 percent (CPS/SIPP).<sup>86</sup> Minimum wage violations are associated with an increase of 0.1 and 0.4 percentage points in the poverty rate depending on the state and data set. Using the CPS data, we estimated that 7,000 families in California and 8,000 families in New York would be above the poverty line if not for minimum wage violations. For the California families, these estimates include 16,000 individuals, 4,000 of which are children. In New York, the families are estimated to include 13,000 individuals, however, the number of children in those families could not be estimated from CPS data due to small sample sizes.<sup>87</sup> Using the SIPP data, we estimated a total of 41,000 families (88,000 individuals including 27,000 children) in California and 26,000 (55,000 individuals including 14,000 children) would be above the poverty line if not for violations.

In addition to the families that would have been above the poverty line if not for the minimum wage violations, there are a number of families that experienced a violation and would have remained below the poverty line even if they were paid a compliant wage.<sup>88</sup> In other words, families that were driven further below the poverty line due to the violation. In the CPS, we estimated that there were 31,000 families in California and 19,000 families in New York that experienced a violation and would have remained below the line even with a compliant wage. The same values from the SIPP were 33,000 families in California and 68,000 in New York.

In general the SIPP estimates a larger impact of minimum wage violations on poverty than the CPS. This is consistent with the SIPP earnings distribution being more skewed toward low values than is the CPS earnings distribution, which leads to greater lost income from minimum wage violations. Greater lost income corresponds to a greater likelihood of having an impact on poverty rates.

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<sup>86</sup> These rates are not directly comparable with the official poverty estimates because we only consider families with a worker. For poverty rates by state see:

<http://www.census.gov/hhes/www/poverty/data/incpovhlth/2011/tables.html>.

<sup>87</sup> The families identified in the data as potentially becoming impoverished happened to not have any children. If the sample was larger there would likely be some children included.

<sup>88</sup> The values in this paragraph are not presented in a table.

**Table 14: Impact of Minimum Wage Violations on the Number of Families, Individuals, and Children in Poverty, FY2011**

State (Data Source)	Families with Violations (1,000s)						
	Number of Families	Increase in Numbers in Poverty [a]			Percent Increase in Numbers in Poverty [a]		
		Families	Individuals	Children [b]	Families	Individuals	Children
California (CPS)	300 (130- 467)	7 (0- 20)	16 (0- 30)	4 (0- 10)	22.9%	10.8%	8.5%
California (SIPP)	307 (280- 334)	41 (31- 51)	88 (64- 113)	27 (15- 39)	125.1%	70.7%	55.6%
New York (CPS)	130 (0- 302)	8 (0- 23)	13 (0- 30)	0 [c]	40.6%	31.6%	0.0%
New York (SIPP)	319 (287- 351)	26 (17- 34)	55 (39- 71)	14 (8- 21)	37.4%	27.8%	18.3%

Note: Point estimates and 95 percent confidence intervals (in parentheses). Total number of families rounded to closest ten thousand.

[a] Change from full compliance

[b] Due to data restrictions, children in the family whose parents do not work will not be captured.

[c] No families with overtime pay violations would be in poverty under full compliance. Therefore, since the denominator would be zero we cannot calculate a percent change.

### 7.3 Impacts on Taxes

Wage violations may result in less tax revenue for the government through lower income tax and payroll taxes. In this section we only consider taxes paid by the worker and thus directly influenced by changes in income.<sup>89</sup> We consider three types of taxes: payroll taxes, income taxes (federal and state), and Earned Income Tax Credit (EITC) receipts. The reported estimates of lost tax revenue may be biased upward since it is possible that some workers being paid less than the minimum wage are in the informal economy and workers in the informal economy are less likely to pay taxes and less likely to have payroll taxes paid on them.

#### 7.3.1 Methodology

Payroll taxes include the Federal Insurance Contributions Act (FICA) taxes (social security and Medicare taxes), and the Federal Unemployment Tax Act (FUTA) tax. We estimate the change in FICA Social Security and Medicare taxes paid by both the employee and the employer since it is not clear how much is paid by both parties once wages are adjusted to account for the tax. The Social Security portion of the FICA tax is currently equal to 12.4 percent of income (generally 6.2 percent paid each by the employee and the employer) and the Medicare portion of the FICA tax is currently equal to 2.9 percent (1.45 percent paid each by the employer and the employee). The employee portion of FICA Social Security taxes was temporarily reduced to 4.2 percent for the calendar years 2011 and 2012. This will make the estimated lost payroll taxes smaller in FY2011 than in most other fiscal years. This impacts the CPS and the SIPP payroll tax estimates since the CPS data includes 2010 tax information whereas the SIPP is calculated based on FY2011 earnings data. Hence, the FICA Social Security rate used is higher in

<sup>89</sup> For example, corporate income tax is excluded.

the CPS than in the SIPP. Since this tax is set at a fixed rate the amount paid will increase in proportion to increases in wages.<sup>90</sup> We do not consider FUTA since it is directly paid by the employer and this section focuses on taxes paid by employees (although some economists argue that FUTA is indirectly paid by the worker).

Income taxes are considerably more complicated to calculate. Rates vary by taxable income amount, which is a function of deductions and filing status. In the CPS there is substantial information available on taxes, including: federal marginal tax rates, adjusted gross income (AGI), the amount of taxable income, and the amounts of federal and state income taxes paid. We estimate increased family income tax payments by multiplying the amount of lost wages by the marginal income tax rate (the marginal rates for state income tax are estimated based on taxable income). For example, if a family has \$1,000 of lost wages in a year due to a minimum wage violation and the family's marginal tax rate is 10 percent, then we estimate that \$100 of income tax revenue is lost.<sup>91</sup> This analysis does not take into account any potential changes in a family's income tax bracket. If eliminating a wage violation moves a family's income into a higher tax bracket, our estimates will underestimate lost income tax revenues.

The federal EITC is a tax credit, which means that if the worker qualifies for the credit then he or she can use it to offset taxes owed. Thus, the EITC can potentially result in a negative tax liability (i.e., a payment by the government). The size of the credit is based on the amount of earned income; the total credit increases until a certain income is reached, then plateaus, and then begins to be reduced. Therefore, unlike the other taxes considered, violations may increase or decrease the amount of EITC earned. In addition to the federal EITC, states may implement a state EITC. New York state and New York City EITCs are included but California does not have a state EITC.

Income taxes and EITC were not estimated for the SIPP data because the data provide small sample sizes (less than 10 percent of the month-job observations with violations have usable tax data) and likely suffer from response bias.<sup>92</sup> While tax simulation programs are available to estimate income taxes and EITC, applying these to the SIPP data was beyond the scope of this project.

### 7.3.2 Estimates for Payroll Taxes

Table 15 presents the impact of minimum wage violations on payroll taxes for the 2010 tax year. Average family payroll taxes are estimated based on incomes with and without minimum wage violations. For the CPS, estimates are fairly comparable across California and New York. Minimum wage violations decreased employee payroll taxes by between \$540 and \$650 (depending on the state and data set).

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<sup>90</sup> Social Security taxes only apply on income up to \$113,700 in 2013 and so the fixed relationship between income and Social Security taxes only holds until this salary threshold is reached. <http://www.irs.gov/taxtopics/tc751.html>.

<sup>91</sup> Families' federal marginal tax rates are provided; families' state marginal rates had to be estimated.

<sup>92</sup> SIPP data on taxes are available roughly every two years in the Taxes Topical Module, which is conducted between January and April.



**Table 15: Impact of Minimum Wage Violations on Payroll Taxes, TY2010**

State (Data Source)	Families With Violations		
	Number of Families (1,000s)	Decrease in Annual Payroll Taxes [a][b]	
		\$	%
California (CPS)	300 (130- 467)	\$560 (\$400- \$710)	8%
California (SIPP)	307 (280- 334)	\$650 (\$590- \$700)	11%
New York (CPS)	130 (0- 302)	\$540 (\$450- \$640)	7%
New York (SIPP)	319 (287- 351)	\$450 (\$410- \$500)	8%

Note: Point estimates and 95 percent confidence intervals (in parentheses).

Rounded to closest tens.

[a] Change from full compliance

[b] Includes both the employee's and the employer's shares of FICA Social Security and Medicaid taxes. In the CPS these data represent tax year 2010. In the SIPP they represent FY2011.

### 7.3.3 Estimates for Income Taxes

Table 16 presents federal and state income taxes paid with and without minimum wage violations. This table is limited to the CPS since the SIPP is not used to estimate income taxes. In the 2010 tax year, the average family in California paid \$8,620 in federal income taxes and \$8,480 in New York. State income tax payments per family were somewhat lower in California than New York (\$2,730 versus \$3,620; also based on CPS data). Minimum wage violations decreased federal income tax payments by \$250 and \$290 per family with a minimum wage violation in California and New York, respectively. Additionally, state income tax payments were decreased by \$50 and \$60 per family with a minimum wage violation (California and New York, respectively).

**Table 16: Impact of Minimum Wage Violations on Annual Income Tax Revenues, TY2010**

State (Data Source)	Families With Violations				
	Number of Families (1,000s)	Decrease in Federal Income Taxes [a]		Decrease in State Income Taxes [a]	
		\$	%	\$	%
California (CPS)	300 (130- 467)	\$250 (\$150- \$340)	4%	\$50 (\$20- \$70)	3%
New York (CPS)	130 (0- 302)	\$290 (\$200- \$390)	6%	\$60 (\$40- \$80)	3%

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses). Rounded to closest tens.

(2) Change in income taxes cannot be adequately assessed in the SIPP.

[a] Change from full compliance

Table 17 provides total estimated tax revenues from the elimination of minimum wage violations using the CPS. For violations in California and New York, the federal government lost an estimated \$351 million in income taxes in 2010. The California government lost \$14 million and the New York government lost \$8 million in 2010.

**Table 17: Impact of Minimum Wage Pay Violations on Total Tax Revenue, TY2010**

State	Reduction in Total Tax Revenue (\$Millions)			
	Federal Taxes			State Income Taxes
	Income Taxes	Payroll Taxes [a]	Total	
California	\$74 (\$65- \$83)	\$167 (\$153- \$181)	\$241 (\$221- \$261)	\$14 (\$12- \$17)
New York	\$39 (\$0- \$48)	\$71 (\$62- \$80)	\$110 (\$95- \$125)	\$8 (\$6- \$10)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) Change in income taxes cannot be adequately assessed in the SIPP.

[a] Includes both the employee's and the employer's shares of FICA Social Security and Medicaid taxes.

### 7.3.4 Earned Income Tax Credit (EITC)

Based on CPS data, in California there are an estimated 89,920 families that include both a worker experiencing a minimum wage violation and a family member receiving EITC (Table 18). These families received on average \$2,580 in EITC (based on reported values in CPS). There are fewer families with minimum wage violations receiving EITC in New York, largely explained by the state's smaller population. In New York 28,440 families received an average of \$2,570 in EITC. Minimum wage violations cause these families to receive on average \$50 less in credits in California and \$40 less in New York. If those estimated minimum wage violations had not occurred, \$4.5 million less in EITC tax credits would have been paid in California and \$1.1 million less in New York in tax year 2010.

**Table 18: Impact of Minimum Wage Violations on Annual EITC Expenditures, TY2010**

State (Data Source)	Families with Violations and EITC Receipt [a]				
	Increase in EITC Eligibility [a]		Decrease in EITC Amount Per Family [a]		Decrease in Total EITC Amount [a]
	Number	%	\$	%	\$Millions
California (CPS)	2,630 (0- 7,780)	3%	\$50 (\$10- \$100)	2%	\$4.5 (\$0.0- \$10.2)
New York (CPS)	0 [b]	0%	\$40 (\$20- \$60)	2%	\$1.1 (\$0.0- \$3.1)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses). Change per family rounded to closest tens.

(2) Change in EITC cannot be adequately assessed in the SIPP.

[a] Change from full compliance

[b] No family in the sample gained eligibility. Confidence Intervals cannot be assessed.

## 7.4 Participation in Government Assistance Programs

### 7.4.1 Overview and Methods

Reduced earnings due to violations may be partially offset by increases in social assistance. In general, eligibility for government benefits is conditional on an income test. There are many different social assistance programs in the U.S.; each tends to have its own eligibility requirements and benefit levels. In addition, eligibility and benefits often vary by state and/or family size. We estimate changes in participation for the following programs: subsidized school lunches, subsidized school breakfasts (SIPP only), Supplemental Nutrition Assistance Program (SNAP), and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). We estimate the potential number of families whose Medicaid eligibility may be impacted by minimum wage violations (SIPP only).<sup>93</sup>

Both the CPS and the SIPP include information on program participation. We evaluate the change in eligibility for the program and the amount of benefits that could be attributed to lost income from wage violations. We determine the benefit amount per worker with a violation and then aggregate benefits to the family level (adding all benefits lost due to wage violations for all members of the family). First, we estimate the level of benefits for families with a violation. Second, we estimate the level of benefits received if the family had received the amount of lost wages from any wage violations. The SIPP is our preferred data set for considering changes in program participation and program receipts. The SIPP has more information on participation and will include less measurement error because the SIPP contains monthly measures of violations, income, and eligibility.<sup>94</sup>

Several programs were considered but not included because sample sizes were too small. Table 19 includes sample size estimates for each program considered and indicates for which programs estimates are presented. Sample sizes are small because we are considering a very specific population: families with a wage violation who receive benefits. Additionally, small sample sizes may be partially attributed to potential underreporting. Some evidence suggests that program participation may be underreported in both the CPS and the SIPP. For example, Wheaton (2008) identified underreporting of SSI, TANF, the Food Stamp Program (FSP), Medicaid, and the State Children's Health Insurance Program (SCHIP). This may cause a downward bias in estimates of the impacts of wage violations on program participation.

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<sup>93</sup> This is the estimate of the number of families that include at least one worker with a minimum wage violation and at least one member with Medicaid coverage. Due to the numerous different categories of eligibility, and the lack of some necessary information to determine eligibility, estimates of eligibility changes were deemed too unreliable to generate.

<sup>94</sup> Program participation eligibility is often based on monthly or annual earnings. In the CPS we only have weekly violation rates. Thus we must assume that the violation occurs for an entire year when evaluating changes in program participation.

**Table 19: Number of Records with Program Participation and Violations, FY2011**

Data Source	State	Program	Participating Families/ Households [a]	Minimum Wage			Overtime Pay		
				Violations	Both Participating & Violation	Estimated?	Violations	Both Participating & Violation	Estimated?
CPS	CA	Energy Assistance	66	86	3		156	2	
	NY		27	38	0		105	0	
SIPP	CA		464	760	34		--	--	
	NY		276	746	11		--	--	
CPS	CA	Housing Assistance	49	86	4		156	3	
	NY		54	38	1		105	2	
SIPP	CA	[b]	492	760	31		--	--	
	NY		694	746	55		--	--	
CPS	CA	Medicaid	191	86	8		156	7	
	NY		151	38	9		105	12	
SIPP	CA		4,860	764	247		--	--	
	NY		2,497	747	262		--	--	
CPS	CA	School Breakfast	N/A	86	N/A		156	N/A	
	NY		N/A	38	N/A		105	N/A	
SIPP	CA		3,193	760	143	✓	--	--	
	NY		1,071	746	126	✓	--	--	
CPS	CA	School Lunch	558	86	26	✓	156	29	✓
	NY		253	38	10	✓	105	24	✓
SIPP	CA		3,992	760	189	✓	--	--	
	NY		1,607	746	156	✓	--	--	
CPS	CA	SNAP	144	86	10		156	5	
	NY		84	38	2		105	6	
SIPP	CA		714	760	50	✓	--	--	
	NY		811	746	97	✓	--	--	
CPS	CA	SSI	62	86	3		156	2	
	NY		26	38	1		105	1	
SIPP	CA		198	760	11		--	--	
	NY		105	746	18		--	--	
CPS	CA	TANF	29	86	1		156	0	
	NY		7	38	1		105	1	
SIPP	CA		382	760	13		--	--	
	NY		124	746	9		--	--	
CPS	CA	WIC	126	86	8		156	5	
	NY		21	38	1		105	2	
SIPP	CA		603	760	38		--	--	
	NY		281	746	44		--	--	

[a] The CPS and the SIPP (Medicaid) use number of families and the rest of SIPP uses households.

[b] The sample sizes in the SIPP are sufficient to be displayed; however, housing assistance is a combination of three variables which creates uncertainty of which programs apply. Therefore, strong assumptions would be necessary to estimate a change in eligibility for housing assistance.

## 7.4.2 School Breakfasts and Lunches

In order to qualify for free lunches or breakfasts, the student must reside in a family with total income below 130 percent of the poverty level. Students in families with income below 185 percent of the poverty level are eligible to receive reduced-price lunches and breakfasts. The CPS includes information on participation in the National School Lunch Program (NSLP). Information is not available for state programs or breakfast programs. Conversely, the SIPP has information on both the NSLP and the School Breakfast Program (SBP).

The CPS includes data on the number of children in the household receiving school lunches and the monetary value of subsidized school lunches. The SIPP includes the number of children in the household receiving school lunches, the number of children in the household receiving school breakfasts, and whether these meals were free or reduced-price. Family income with and without lost wages is used to assess the change in the number of families receiving free or reduced-price lunches or breakfasts. Adding lost wages to family income raises some families above 185 percent of the poverty threshold. In these instances, students in the family may no longer qualify for subsidized lunches or breakfasts. If receipt of lost wages raises the family's income above 130 percent of the poverty level (but remains below 185 percent) then the family should transition from free lunches/breakfasts to subsidized lunches/breakfasts.

Next, we assess the change in monetary value of benefits. In the CPS we aggregate the reported monetary value for families who no longer receive benefits and the change in benefit level for families who transition from free to reduced-price lunches (using the change in the reimbursement rate of \$0.40 per lunch). The SIPP does not provide an estimate of the monetary benefit of school lunches and breakfasts. Therefore, the calculation of the value of benefits was annualized based on 180 school days per year. The dollar value assigned for each meal was the respective reimbursement rate for the meal (in the 2010-2011 school year, schools were reimbursed \$2.72 per free lunch, \$2.32 per reduced-price lunch, \$1.48 per free breakfast, and \$1.18 per reduced-price breakfast).

However, in both data sets, a non-trivial number of respondents indicate receiving school lunches or breakfasts despite having family income above 185 percent of the federal poverty level. Impacts on the NSLP and SBP were estimated using two methods that attempt to avoid overestimating the impact of wage violations on these programs due to lost eligibility. The first method recoded NSLP and SBP receipt to zero if family income without the lost income from wage violations was greater than 185 percent of the federal poverty threshold. Thus, changes in eligibility and benefit receipt due to adding back lost wages from wage violations were only measured for respondents who were initially eligible for benefits based on their recorded family income. The second method assumed some respondents would receive NSLP or SBP benefits if their family income exceeded the limit for eligibility after adding lost wages. Which respondents were designated as eligible was randomly assigned with the same probability as occurs in the original data. The following tables present results for the second method because we believe these are more realistic. The first method is included in Appendix C.

Based on the SIPP data, minimum wage violations increase annual lunch benefits in California by an average of \$150 per family and in New York by \$80. In the CPS, however, we encountered a small sample size issue; namely, when we identified the intersection of those with violations and those in the

programs, there were almost no families. The information contained in each survey on school lunches differ across the two data sets which may explain some of this discrepancy. For example, the CPS gives the market value of school lunch benefits whereas this is estimated in the SIPP (in which we assume benefits are received every school day).<sup>95</sup>

**Table 20: Impact of Minimum Wage Violations on Subsidized School Lunches and Breakfasts, CY2010 (CPS)/FY2011 (SIPP)**

State (Data Source)	Families with Violations and Receipt			
	Increase in Families Eligible [a]		Increase in Annual Amount per Family [a]	
	#	%	\$	%
<b>School Lunches</b>				
California (SIPP)	10,210 <i>(3,770- 16,650)</i>	18%	\$150 <i>(\$90- \$220)</i>	21%
New York (SIPP)	7,460 <i>(1,820- 13,090)</i>	14%	\$80 <i>(\$20- \$130)</i>	12%
<b>School Breakfasts</b>				
California (SIPP)	7,860 <i>(1,060- 14,660)</i>	19%	\$110 <i>(\$50- \$170)</i>	28%
New York (SIPP)	7,630 <i>(1,840- 13,430)</i>	19%	\$60 <i>(\$20- \$100)</i>	17%

Notes:

- (1) Point estimates and 95 percent confidence intervals (in parentheses). Rounded to closest
  - (2) The CPS estimates benefits for the 2010 calendar year. The SIPP estimates benefits for the
- [a] Change from full compliance

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<sup>95</sup> The SIPP records whether any of the children in a household “usually get the lunch that their school provides”, since the first day of the first reference month. If the response is yes, the respondent is asked how many children usually receive a complete school lunch and if the lunches were free or reduced price. The same set of questions is asked for school breakfasts. Thus, receipt is determined monthly with the benefit amount measured in annual terms.

Table 21 considers the aggregate difference in government expenditure on subsidized school lunch and breakfast programs due to wage violations. Since the number of families receiving benefits and the amount of benefits vary significantly across data sets, the total change in expenditures also varies significantly. We estimated that California spent an estimated \$10.1 million dollars on school lunches and an estimated \$5.5 million on school breakfasts in FY2011 due to minimum wage violations (based on SIPP data) and the New York government spent an estimated \$4.8 million dollars on school lunches and an estimated \$3.0 million on school breakfasts in FY2011 due to minimum wage violations (based on SIPP data).

**Table 21: Aggregate Impact of Minimum Wage Violations on School Breakfast and Lunch Programs, FY2011 (in \$1,000s)**

State (Data Source)	Increase in Total Annual Amount \$1,000s [a]
<b>School Lunches</b>	
California (SIPP)	\$10,091 <i>(\$4,344- \$15,839)</i>
New York (SIPP)	\$4,750 <i>(\$1,342- \$8,158)</i>
<b>School Breakfasts</b>	
California (SIPP)	\$5,531 <i>(\$1,732- \$9,329)</i>
New York (SIPP)	\$2,984 <i>(\$895- \$5,073)</i>

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates benefits for the 2010 calendar year. The SIPP estimates benefits for the 2010-2011 school year, which roughly corresponds to the FY2011.

[a] Change from full compliance

### 7.4.3 Supplemental Nutrition Assistance Program (SNAP)

The Supplemental Nutrition Assistance Program (SNAP), commonly known as food stamps, is one of the largest financial assistance programs in the U.S. Using the SIPP, we estimate the change in expenditure on SNAP due to wage violations in California and New York. The CPS has information on receipt of SNAP benefits, but the sample size is too small to adequately estimate changes in benefits.

Since lost wages due to minimum wage violations reduce earned income, families with workers experiencing a minimum wage violation may experience increased SNAP benefits. We directly estimate the impact of wage violations on SNAP benefits and then estimate eligibility based on whether benefits are positive.<sup>96</sup> This is because the eligibility requirements for this program are particularly complex,

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<sup>96</sup> Eligibility is determined based on the benefit level, once benefits reach zero (due to income being high enough) the worker becomes ineligible. Determining eligibility based on benefits being reduced to zero may underestimate

especially for the gross income requirement and its deductions.<sup>97</sup> We use 80 percent of lost income to represent the change in net income (since 20 percent of earned income can be deducted). The marginal rate at which SNAP benefits are reduced (as income increases) is 30 percent. Additional benefits can then be estimated as 80 percent times 30 percent of these lost wages.<sup>98</sup>

In California there are an estimated 15,742 families with minimum wage violations and receiving SNAP benefits. Because of minimum wage violations these families receive an extra \$54 in SNAP benefits annually. In New York there are 39,409 families receiving an additional \$71 in benefits.

**Table 22: Impact of Minimum Wage Violations on SNAP Benefits, SIPP, FY2011**

State (Data Source)	Families with Minimum Wage Violations and SNAP Receipt				
	Increase in Families Eligible for SNAP [a]		Increase in Monthly SNAP Amount Per Family [a]		Increase in Total Monthly SNAP Amount (1,000s) [a]
	\$	%	\$	%	\$
California (SIPP)	3,509 (0- 8,440)	29%	\$54 (\$40- \$69)	25%	\$858 (\$367- \$1,349)
New York (SIPP)	559 (0- 1,415)	1%	\$71 (\$47- \$94)	23%	\$2,779 (\$965- \$4,592)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) Change in SNAP benefits cannot be adequately assessed in the CPS.

[a] Change from full compliance

#### 7.4.4 Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutrition assistance and services to low-income pregnant and postpartum women and to infants and children up to age five who are found to be at nutritional risk.<sup>99</sup> Using the SIPP, we estimate the gain of eligibility based on the lost wages from a wage violation lowering a family’s income to below the eligibility level of 185 percent of the federal poverty income guidelines.<sup>100</sup> However, as was the case with the school lunch and breakfast programs, a non-trivial number of families report receiving WIC benefits despite reporting family income that is greater than 185 percent of the poverty level. Designating all families with income above the income eligibility ceiling as ineligible will overestimate the impact of

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the impact on SNAP benefits received. However, to the extent that the formula to reduce benefits corresponds to the income eligibility, this underestimate may be minimal or even non-existent.

<sup>97</sup> Examples include: dependent care can be deducted when needed for work, training, or education and excess shelter costs that are more than half of the household’s income after the other deductions. For complete eligibility and benefits information, see [http://www.fns.usda.gov/snap/applicant\\_recipients/eligibility.htm](http://www.fns.usda.gov/snap/applicant_recipients/eligibility.htm).

<sup>98</sup> Since the amount of SNAP benefits cannot be less than zero, the resulting amount of SNAP benefits received after adding lost wages to households’ incomes was set to zero if the reduction calculated was greater than the current amount received.

<sup>99</sup> While the WIC program offers various benefits, only the nutrition assistance has a straightforward monetary value assigned. This is likely what is recorded in the SIPP as the “Amount ... received from WIC payments in this month.”

<sup>100</sup> The CPS was not used to develop WIC impact estimates because the sample sizes were insufficient to produce reliable estimates. Additionally, the CPS only includes information on WIC participation, not the level of benefits.



wage violations on WIC receipt. Thus, we again use two methods to estimate the change in eligibility and benefits.

The first method recodes all families with wage violations to having no benefits if their income (excluding the lost income from wage violations) is greater than the eligibility ceiling. Estimates using this method are included in Appendix C. The second method assumes that some families with violations and WIC receipt would receive WIC benefits in full compliance, despite having a family income greater than 185 percent of the poverty level. Which families with wage violations receive WIC benefits under full compliance was randomly assigned with a probability equal to the observed rate of receipt when family income is above the income eligibility ceiling. Using this method, minimum wage violations lead to an additional 6,278 families (a 62 percent increase) in California and an additional 1,952 families (a 16 percent increase) in New York being eligible for WIC (Table 23). The average increase in monthly benefits for families with minimum wage violations is \$23 in California and \$10 in New York.

**Table 23: Impact of Minimum Wage Violations on WIC Eligibility, FY2011**

State (Data Source)	Families with Violations			
	Increase in Families Eligible [a]		Increase in Monthly Amount Per Family [a]	
	#	%	\$	%
California (SIPP)	6,278 (393- 12,163)	62%	23 (5- 42)	61%
New York (SIPP)	1,952 (0- 4,826)	16%	10 (0- 26)	15%

Notes:

- (1) Point estimates and 95 percent confidence intervals (in parentheses). Rounded to closest tens.
- (2) The CPS does not have large enough samples to present results.

[a] Change from full compliance

#### 7.4.5 Medicaid

Medicaid is another program of interest as it is likely to be impacted by wage violations,<sup>101</sup> since it covers low-income families. In the SIPP, there are a sufficient number of observations with wage violations that are covered by Medicaid but the sample sizes are too small in the CPS. The SIPP only includes information concerning Medicaid participation, with no estimates of the dollar value of the benefits. This analysis could potentially estimate the increase in Medicaid coverage due to wage violations, but many assumptions would need to be made due to the lack of data available to determine eligibility and the complex rules and different categories of eligibility.<sup>102</sup> Instead, we present the number of families with violations receiving Medicaid (Table 24).

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<sup>101</sup> ERG has made no adjustments in eligibility for changes related to the Affordable Care Act (ACA). The ACA, will, however, alter eligibility in the future.

<sup>102</sup> For example, eligibility varies across demographic groups so that requirements are different for children (and vary by age of the child) than for parents. Thus, eligibility must be determined on a person level. This could potentially be evaluated but would require assumptions and a significant time investment. For example eligibility requirements differ for pregnant women, which is not identified in the data, and so we would have to make an

**Table 24: Impact of Minimum Wage Violations on Medicaid Coverage and Numbers Covered by Medicaid, FY2011**

State (Data Source)	Families with Minimum Wage Violations			
	Medicaid Coverage Rate [a]	Average Monthly Numbers Covered by Medicaid (1,000s)		
		Families	Individuals	Children
California (SIPP)	31.0% (27.0%- 34.9%)	95 (81- 109)	216 (179- 254)	119 (95- 144)
New York (SIPP)	34.5% (29.6%- 39.4%)	110 (91- 129)	261 (211- 311)	118 (89- 147)

Note: Point estimates and 95 percent confidence intervals (in parentheses).

[a] Coverage, in this context, refers to a family with at least one member covered by Medicaid.

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assumption whether women are pregnant. Additionally, states have the flexibility to cover other groups (optional eligibility groups). See <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Eligibility/Eligibility.html> and <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/Downloads/List-of-Eligibility-Groups.pdf> for more information.

## 8 CONCLUSIONS AND RECOMMENDATIONS

This report has documented ERG's approach to estimating the social and economic impact of violations of minimum wage requirements in California and New York. In this section we summarize our conclusions based on the data analysis, our conclusions related to the method and data employed, and finally we provide recommendations for future work.

### 8.1 Conclusions Related to Violation Prevalence Rates and Lost Income

The estimates we developed indicate that minimum wage violations are pervasive in California and New York and are resulting in significant impacts in workers experiencing these violations. In this section, we summarize the key findings from our analysis based on the CPS data.<sup>103</sup>

In California using CPS data, we found an estimated 372,000 weekly minimum wage violations, representing 3.8 percent of jobs subject to minimum wage requirements and 11.8 percent of low wage workers. These violations were most prominent in the leisure and hospitality industry and the services occupations. The violations led to an estimated \$22.5 million in total weekly lost income for those experiencing the violations (unadjusted for market conditions). This lost income represented \$63 per week for those experiencing a violation, which corresponds to 49.3 percent of those workers' incomes. Using the SIPP data in California, we estimated 334,000 monthly violations, representing 3.5 percent of the covered jobs. Lost weekly income totaled almost \$29 million.

For New York using the CPS, we estimated a total of 188,000 weekly minimum wage violations representing 3.5 percent of the covered jobs and resulting in \$10.2 million in lost income each week (37.2 percent of the income of those who experienced a violation). Using the SIPP data in New York, we estimated 339,000 monthly violations (6.5 percent of covered jobs), resulting in \$20.1 million in weekly lost income.

### 8.2 Conclusions Related to Violations' Impacts

Minimum wage violations are associated with increases in the number of families and individuals in poverty. Using CPS data, we found that minimum wage violations decreased family income to below the poverty line for 7,000 families in California and 8,000 families in New York. Using the SIPP data, we estimated that 41,000 families in California and 26,000 families in New York were reduced to below the poverty line due to minimum wage violations. Furthermore, using the CPS, we found an additional 31,000 families in California and 19,000 families in New York that experienced a violation and would have remained below the line even with a compliant wage. The same values from the SIPP were 33,000 families in California and 68,000 in New York.

Minimum wage violations also had large impacts on tax revenues. Minimum wage violations resulted in an estimated \$113 million in lost federal income taxes (in the two states) and an estimated \$238 million in lost federal payroll taxes in tax year 2010. We also estimated that the California

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<sup>103</sup> In this section we focus in the CPS data results based on our discussion below related to CPS relative to SIPP.

government lost \$14 million in tax revenues and the New York government lost \$8 million in 2010 due to minimum wage violations.

Minimum wage violations led to \$5.5 million in additional student breakfast benefits in FY2011 in California and \$3.0 million in New York. The school lunch program spent an additional \$10.1 million in California and \$4.8 million in New York due to minimum wage violations in FY2011. Total monthly SNAP benefits were increased by \$857,900 in California and \$2.8 million in New York due to minimum wage violations.

### 8.3 Conclusions Related to the Method and Data

As noted in the introduction, this project was considered to be an exploratory analysis. As such, the methods and data we employed should be assessed.

**The approach of using large national-level datasets to identify violations and extrapolate to a population worked well, although there are some limitations to the approach.** We were able to develop estimates of minimum wage violations based on the data elements in both the CPS and SIPP; however, in some cases the data did not support some types of estimates. From our estimates we were also able to provide population-based estimates by using the sampling weights provided by each data source. Furthermore, we were able to provide a breakdown of the violations by a number of key demographics of those experiencing violations and the characteristics of the jobs. Finally, we were able to take our estimate of violations and develop estimate of lost income and the resulting economic/social impacts of that lost income in terms of impacts on poverty, taxes, and program participation.

Despite the success of the methods for minimum wage violations, there were some drawbacks and limits to consider in interpreting the estimates we developed. First, both the CPS and SIPP contain some amount of measurement error. There are sophisticated methods of dealing with measurement error and ERG attempted to implement these for the CPS and SIPP analyses. However, none of the approaches we tried were feasible to implement for the data we were using. Instead, we identified places where we would expect measurement error to manifest itself in each data source and we performed sensitivity analyses to determine the likely extent to which measurement error may have affected our estimates. Our basic conclusion from these sensitivity analyses is that measurement error is not likely to have a significant impact on our estimate.

The second caveat is that the neither the CPS nor the SIPP contain the exact data elements needed to develop our estimate. To deal with this, it was necessary to make analytical assumptions in processing these data. The assumptions we made only contribute to any measurement error in our final estimates. Nevertheless, in our professional judgment, the data were adequate to support reliable estimates of minimum wage violations. In cases where we felt reliable estimates could not be made, we opted not to develop (or report) an estimate.

**Neither data source offers a clear advantage over the other in developing estimates for minimum wage violations.** The two data sources offer some advantage and disadvantages relative to one another (see Section 4). In working with the two sources, however, we found that content and structure of the SIPP to be more restrictive than that of the CPS. A substantial limitation of the SIPP data is that they

are not representative within each state. Furthermore, we expected that the SIPP would offer a significant advantage in estimating impacts of violations due to the data elements related to program participation and the panel nature of the data. In reality, these advantages either never materialized or were slight compared to the CPS. For example, although the SIPP contains more information about program participation than the CPS, the SIPP data were still of limited use when estimating the impacts on program participation due to small sample sizes (i.e., the intersection of those experiencing violations and those participating in some programs produced a relatively small number of individuals). Nevertheless, the CPS was even more restrictive in terms of sample size and in terms of program coverage. The SIPP did tend to provide estimates with smaller confidence intervals for minimum wage violation estimates. Additionally, there were a number of counterintuitive results generated from the SIPP data. For example, using the SIPP there are more minimum wage violations in New York than California; despite the population of California being almost twice as large. The CPS data, however, tended to result in larger confidence intervals for the resulting estimates. Thus, in cases where both generated an estimate, the SIPP tended to produce more precise estimates.

**Neither data source offers a reliable means of estimating overtime pay violations.** For the SIPP, we were unable to develop estimates of overtime pay violations due to data limitations. For the CPS, estimates of overtime pay violations were possible once a number of assumptions were made on the data. The resulting estimates from the CPS, however, were deemed unrealistic (e.g., a 90 percent violation rate among those working more than 40 hours per week).

## **Future Work**

As noted, DOL and ERG agreed to view this work as an exploratory project to assess potential methods and data that could be used to measure the extent of wage violations. For the most part, we have concluded that the methods and data used were successful in measuring minimum wage violations in California and New York. In this regard, DOL asked ERG to make recommendations on where DOL should consider expanding and building on this work. We see three areas of recommendations in this regard: (1) expanding the scope, (2) expanding the methods, and (3) expanding the intent of the analysis.

### Expanding the scope

This initial analysis has involved estimating the prevalence and impacts of minimum wage violations in California and New York in fiscal year 2011. Thus, a first consideration for future work should be to consider expanding the scope of the analysis. This can include two distinct areas. First, the number of years to include in the analysis can be expanded. This report includes primarily estimates for FY2011, with some additional estimates for FY2010 and FY2012 included for comparison. Expanding the analysis to include multiple years is relatively straightforward; the primary complication would involve ensuring changes in federal and state laws over time are captured in the coding used to determine violations. Expanding the number of years, however, only makes sense if the goal is to determine (historical) trends over time.

The second expansion involves adding in additional states and/or regions to the analysis. The current analysis covers two large states (California and New York). Adding in new states would expand the breadth of the estimates. Furthermore, by adding in new states, DOL would be able to compare

prevalence and impacts across the states and potentially identify state-specific factors that lead to differences across states.

#### Expanding and further refining the methods

Despite the relative success in generating estimates of the prevalence and impacts of minimum wage violations, further methodological refinements can be made.

First, measurement error is widespread in these data. ERG reviewed potential methods for accounting for measurement error and determined we did not have the time or resources to fully implement these methods. Therefore, in this report we account for measurement error through sensitivity analysis. In the future, the potential implications of measurement error could be more directly accounted for in the data by implementing some of the methods we assessed. ***Thus, ERG recommends that DOL consider additional refinements related to measurement error.*** A first step in this regard would be to apply any measurement error adjustments to California and New York and then evaluate the results by comparing the adjusted and unadjusted estimates.

Second, the approaches explored for the overtime pay violations were not successful at generating a reliable estimate. The shortcomings stem from the need to develop assumptions about the data elements in the two sources. ***Thus, ERG recommends that DOL consider alternatives to estimating overtime pay violations if there is continued interest in understanding the extent and impact of those violations.***

Finally, our estimates related to social program participation were limited by the fact that we had few observations (i.e., the cross-tabulation of those participating in the program and those who experienced a violation in the data sources we used) on which to base estimates. ***Thus, we recommend that simulation or statistical models be explored for estimating impacts on social program participation.***

#### Expanding the intent

ERG views the current form of this analysis as identifying the number of violations and the implications of those violations (lost income, poverty impacts, etc.). A more expansive refinement of this analysis would expand the analysis to be a targeting or priority-setting tool for the Wage and Hour Division (WHD). In project meetings for this analysis, WHD has indicated that tabulations from the CPS Annual Earnings File (also known as the Merged Outgoing Rotation Groups) are factored into its analysis of priority industries.<sup>104</sup> The BLS tabulation is based on CPS data but does not include the refinements we use to include state-level laws or exemption status. The analysis we developed, therefore, is a more refined version of the BLS work. ***Thus, ERG recommends that DOL perform an assessment of the extent to which this analysis can be refined into a targeting or priority-setting tool.***

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<sup>104</sup> <http://www.bls.gov/cps/minwage2012.htm>.

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## APPENDICES

### Appendix A: Detailed Methodology

#### A.1 Exemption algorithm

The numbers of jobs exempt from the minimum wage and/or overtime pay<sup>105</sup> provisions of the FLSA are unknown and thus must be estimated. To determine both the numbers and types of jobs that are exempt, a methodology was developed based on the methodology for the Department of Labor’s 2001 and 1998 “4(d)” reports, both titled “Minimum Wage and Overtime Hours Under the Fair Labor Standards Act,” which estimates a variety of coverage and exemption statistics related to the FLSA, and the 2004 revisions to the white collar exemptions.<sup>106,107</sup> This methodology is much more extensive than previous studies that use survey data to estimate wage violations. For example, many of the other studies focus on the common white collar exemptions and do not account for the more obscure exemptions, such as the provision for employees processing maple sap into sugar. If these other exemptions are not considered the violation rate will be overestimated. Due to the many exemptions delineated in the FLSA, the methodology for estimating exempt jobs is rather complex. The methods used are outlined below.<sup>108</sup>

Jobs may be: (1) exempt from the FLSA, (2) subject to the FLSA but exempt from the minimum wage provision, (3) subject to the FLSA but exempt from the overtime pay provision, (4) subject to the FLSA but exempt from both the minimum wage and overtime pay provisions, or (5) subject to the FLSA and subject to both the minimum wage and overtime pay provisions. First, jobs that are likely exempt from the FLSA are identified. This includes jobs held by: members of the military; unpaid volunteers; the self-employed; the clergy and other religious workers; most federal employees; some employees of firms with annual revenue less than \$500,000; and employees of firms not engaged in interstate commerce.

Among jobs subject to the FLSA there are many exemptions to the minimum wage or overtime pay requirements. The most common exemptions are included in Section 13(a)(1) of the FLSA, which includes the executive, administrative, and professional (EAP) exemption; the highly compensated employee exemption; the outside sales worker exemption; and the computer worker exemption (which is also defined under Section 13(a)(17)). The methodology for identifying these workers is based primarily

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<sup>105</sup> As discussed in the main body of the report, ERG has focused the results on minimum wage violations. However, the methods we developed for estimating exemption status apply to both minimum wage and overtime pay requirements.

<sup>106</sup> The 4(d) reports were related to Section 4(d)(1) of the FLSA, which requested the Secretary of Labor to report on the status of the nation's minimum wage law. Per the Federal Reports Elimination and Sunset Act of 1995, these reports are no longer required by Congress.

<sup>107</sup> Federal Register, (2004). “Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Outside Sales and Computer Employees; Final Rule” Volume 69, Number 79, Page 22121-22274.

<sup>108</sup> More information is available upon request.

on the approach outlined in the Department's report describing the 2004 changes to the FLSA exemptions.<sup>109</sup>

Jobs are considered exempt under the EAP exemption if they are salaried (the salary basis test), earn at least \$455 a week (the salary level test), and are employed in specific occupations (the duties test). Identifying whether a job meets the salary basis and salary level tests is relatively straightforward;<sup>110</sup> however, the duties test poses a concern since neither the CPS data nor the SIPP data detail job duties. Thus, each occupation is assigned a probability representing the odds that a job in that occupation would pass the duties test.<sup>111</sup> That proportion of jobs in the occupation is then considered to pass the duties test.

Workers who do not qualify for the EAP exemption due to the duties test may still qualify for exemption under the highly compensated employee exemption. This provision requires only an abbreviated version of the duties test if the worker earns at least \$100,000 a year in salary, bonuses, and fees at the job. Computer jobs that are paid hourly with a rate of at least \$27.63 an hour may qualify for exemption (salaried computer workers may qualify for the EAP exemption). Jobs that may qualify for 37 additional exemptions and four subminimum wage provisions are also identified. Because these exemptions are less wide-spread, they are not detailed in this document.

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<sup>109</sup> Federal Register, (2004). "Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Outside Sales and Computer Employees; Final Rule" Volume 69, Number 79, Page 22121-22274.

<sup>110</sup> While this is relatively straightforward with the CPS, SIPP data require some conversions. Only monthly earnings are available for non-hourly workers so weekly earnings are calculated as monthly earnings divided by 4.3 (52/12). For hourly workers, weekly earnings are calculated as monthly earnings divided by weeks worked for pay during the month.

<sup>111</sup> These probability codes represent an earlier occupational classification scheme (the 1990 Census Codes). Therefore, an occupational crosswalk was used to map the previous occupational codes to the 2002 Census Occupational Codes which are used in the MORG 2002 through 2010 data. If the new occupation is comprised of more than one previous occupation then the new occupation's probability category is the weighted average of the previous occupations' probabilities, rounded to the closest category code. The SIPP provides 2002 Census occupational codes in all years and thus a crosswalk was not needed.

Table A1 presents the number of jobs that are estimated to be covered by and non-exempt from the minimum wage and overtime pay. These are the jobs that may potentially have violations.

**Table A1: Estimated Numbers of Covered, Exempt Jobs, FY2011**

Data Source	All Jobs (1,000s) [a]	Covered, Non-Exempt MW		Covered, Non-Exempt OT	
		Jobs (1,000s)	Percent	Jobs (1,000s)	Percent
California					
CPS	14,260 (9,850- 18,680)	9,920 (6,800- 13,040)	70%	8,190 (5,560- 10,810)	57%
SIPP	13,560 (13,300- 13,810)	9,460 (9,170- 9,750)	70%	7,770 (7,490- 8,050)	57%
New York					
CPS	8,320 (450- 920)	5,400 (690- 10,120)	65%	--	--
SIPP	7,920 (7,690- 8,150)	5,220 (4,980- 5,470)	66%	--	--

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses). Rounded to closest tens.

(2) The CPS estimates represent the number of jobs worked in a week whereas the SIPP estimates represent the number of jobs worked in a month.

(3) Overtime pay estimates using the SIPP are not presented because they were deemed unreliable.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS and up to two jobs in the SIPP.

## A.2 Computation of Regular Rate of Pay

The definition of wage in the data sets is not identical to the definition of wage used in the FLSA and by state wage laws. In the FLSA, overtime pay is excluded from the base wage but commissions and tips, which are earned on a regular basis, are included in the base wage.<sup>112</sup> The wage variable in the SIPP approximates the base wage relatively well and so has not been adjusted. In the CPS the wage variable is adjusted to better approximate the base wage.

### A.2.1 SIPP

In the SIPP, hourly wages are not supposed to include overtime pay but appear to include commissions and tips (based on data analysis, although this could not be verified with the Census Bureau). Therefore, the SIPP wage variable for hourly jobs is treated as if it includes the ideal components: commissions and tips but not overtime pay. However, some measurement error may be incorporated into the wage variable because the SIPP questionnaire inquires about the ‘regular hourly pay rate’, which can be subjective.<sup>113</sup> If jobs in occupations that tend to receive tips or commissions exclude these earnings from their reported wage, then the wage used in the analysis will be biased downward. Based on an analysis of the data, this is not a significant concern; there is not significant bunching of wages at \$2.13 per hour (the required wage without tips).<sup>114</sup>

<sup>112</sup> <http://www.dol.gov/compliance/topics/wages-commissions.htm>.

<sup>113</sup> SIPP 2008 Data Dictionary available at <http://www.census.gov/sipp/dictionaries/108puw1d.txt>.

<sup>114</sup> This is less of an issue in the two states analyzed in this report- California and New York. California does not allow for tipped workers to receive a lower cash wage; all workers must receive at least the California minimum

For non-hourly jobs in the SIPP, only monthly earnings are recorded, which includes all three components: overtime pay, commissions, and tips. Therefore, violations for non-hourly jobs will likely be underestimated due to the inclusion of overtime earnings, which causes wages to be overstated. Furthermore, tipped wage violations cannot be identified for tipped jobs because wages without commissions and tips are not reported.

### A.2.2 CPS

In the CPS, the hourly wage variable excludes OCT (overtime pay, commissions, and tips) but the weekly earnings variable includes all three components. Thus, estimating minimum wage violations is more difficult in the CPS than in the SIPP because the wage variable must be adjusted to reflect the base wage. Reported hourly wage must be adjusted upwards to include commissions and tips; conversely, calculated wages (computed by dividing earnings by hours) must be adjusted downwards to exclude overtime pay. The methods used to estimate wages have four stages.

As described below, the first is the same for both hourly and non-hourly jobs but the second and third methods apply to these individual populations. This approach is loosely based on the methodology developed by the Center for Economic and Policy Research (CEPR), a nonprofit, nonpartisan research center located in Washington, D.C. (Schmitt, 2003).<sup>115</sup>

1. In the first stage, weekly earnings, including OCT, are divided by hours worked to estimate hourly wages with OCT. This methodology is applicable to both hourly and non-hourly jobs since weekly earnings are reported for all jobs. Afterwards, we have two wage variables:
  - a. Wages with OCT for all workers
  - b. Wages without OCT for hourly workers

However, the base wage is somewhere between these two wages (with commissions and tips but without overtime pay).

2. In the second stage, we adjust the above estimates of wages with OCT for inconsistencies (for hourly workers). To do so, an additional wage variable is used: the amount of weekly overtime pay, commissions, and tips.<sup>116</sup> Wages with OCT are estimated by adding weekly OCT, divided by hours, to the reported wage that excludes OCT. This alternative wage with OCT is used instead of the wage calculated in part 1, if the first method results in the wage with OCT being lower than the wage without OCT.<sup>117,118</sup>

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wage. In New York, state law allows tipped workers to receive a cash wage that is less than the minimum wage but the level varies by type of worker and in all cases is set higher than \$2.13 per hour.

<sup>115</sup> CEPR's website can be viewed at: <http://www.cepr.net/>.

<sup>116</sup> Variable named PEERN. This variable is only available for hourly workers.

<sup>117</sup> This approach is loosely based on the methodology developed by the Center for Economic and Policy Research (CEPR), a nonprofit, nonpartisan research center located in Washington, D.C. (Schmitt, 2003).<sup>117</sup> Our approach is slightly different than CEPR's method which replaces all wages with OCT with the higher of the two estimates. That method may bias the wage upwards and so for this report only clearly inconsistent values have been replaced.

3. Based on the above procedures, estimates of wages with and without OCT for hourly jobs have been estimated. However, for non-hourly jobs, only wages with OCT have been estimated. To estimate wages without OCT, hourly OCT must be estimated and then subtracted from the wage with OCT. Hourly OCT is estimated as the average hourly amount of OCT earned in a week in an industry occupation category. OCT is estimated separately for workers who work overtime at a job and for workers who do not. The wage without OCT is then estimated as the wage with OCT minus estimated hourly OCT. Clearly this results in a rough estimate, but due to lack of data, it appears to be the best available option.
4. Ideally, the wage variable would include commissions and tips but not overtime pay. Unfortunately, due to data limitations, one cannot distinguish between overtime pay and commissions/tips to either: (1) add commissions and tips to wages without OCT or (2) subtract overtime pay from wages with OCT. The estimate the base wage commissions and tips must be separated from overtime pay. The method employed is very similar to the method used to estimate OCT for non-hourly jobs (step 3). For workers employed 40 hours or less by an employer at a job in a week, and estimated to be non-exempt, the entire amount of OCT is attributed to commissions and tips. For workers employed more than 40 hours per week, and non-exempt, the ratio of commissions and tips to OCT must be estimated. This ratio is calculated as average OCT for jobs worked less than 40 hours per week (in an industry and occupation) to OCT for jobs worked more than 40 hours. This ratio is used to decompose OCT into the two components: commissions and tips and overtime pay.

The methodology used to decompose OCT into overtime pay and commissions and tips has implications for the validity of both the minimum wage and overtime pay violations estimates. For example, the estimated ratio of commissions and tips to OCT clearly contains error; in some instances this ratio exceeds one which should not occur.<sup>119</sup> In these cases the ratio is rounded to one and all OCT is attributed to commissions and tips (and non to overtime pay). This causes base wages to be overestimated (because too little pay is subtracted for overtime) and thus minimum wage violations to be underestimated. This methodology also impacts overtime pay estimates; since overtime pay is estimated as zero for all jobs in industry-occupation categories where the ratio is estimated to be one or greater, any non-exempt job in this industry-occupation category with more than 40 hours per week will be considered a violation. Clearly, this overestimates the true number of overtime pay violations.

### A.3 Identifying Lost Wages

Lost wages can be estimated on an hourly, weekly, monthly, or annual basis for both a single job and for the entire population. The hourly amount of lost wages for a minimum wage violation is estimated as the difference between the minimum wage and the wage that best reflects the definition of wage in the

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<sup>118</sup> Wages with OCT computed by dividing earning by hours should, by definition, be equal to or larger than the reported wage, which does not include OCT. However, due to reporting error, this relationship does not always hold.

<sup>119</sup> This occurs when workers employed less than 40 hours per week earn on average more in OCT per week than workers employed more than 40 hours per week.

FLSA. In the SIPP data, this is measured as the difference between the minimum wage and the only wage estimate (wages with commissions and tips for hourly jobs and calculated hourly wages including overtime, commissions, and tips for non-hourly jobs) for jobs including violations. For the CPS, the ideal estimate of hourly lost wages is similarly measured as the difference between the minimum wage and estimated wages excluding overtime but including commissions and tips for jobs with violations. The overtime premium paid is subtracted from 0.5 the normal wage; this represents the average amount of underpayment per hour of violation.

In the CPS, hourly lost wages are then converted to a weekly basis by multiplying the amount a job's worker is owed in lost wages per hour by the number of applicable hours. For the minimum wage violation hourly lost wages are multiplied by the total number of hours worked at that job per week. Additionally, when these estimated lost wages are aggregated for all jobs with a violation, the total amount of lost wages in the population can be estimated.

The CPS earnings and hours variables reflect values for the week prior to the survey response. Thus, the CPS estimate is conceptually consistent since it estimates the weekly amount of lost wages and weekly violation rates. However, the SIPP data results in estimated monthly and annual violation rates. Therefore, adjustments must be made for the estimated lost wages to be comparable with the CPS. For the SIPP estimated monthly lost wages are divided by 4.3 to estimate average weekly lost wages.

Annual SIPP estimates are calculated by multiplying the average monthly lost wages by 12.<sup>120</sup> One way to interpret this is to assume each violation persists for the entire year. Another, more plausible, interpretation is that the sample of violations is representative of other jobs in other weeks. That is, if another sample was selected, similar results would be produced, even though the affected individuals would differ.

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<sup>120</sup> This method takes into account whether the worker responded in all months. The SIPP adjusts monthly weights for non-responses, so averaging the monthly amounts and converting to an annual level by multiplying by 12 calculates a representative annual value.



## **Appendix B: Estimation Error**

A significant concern when determining the validity of our estimates is the degree of error in the data. Measurement error in particular is likely to be a significant concern as it has been demonstrated to be common in the CPS and the SIPP. Additionally, in this analysis many assumptions and calculations were made which add additional error. This appendix considers potential explanations for error in the analysis and presents specification tests to attempt to identify the significance of these errors on our estimates. In Section B.1 we review previous literature on measurement error in the CPS and the SIPP. In Section B.2 we consider potential sources of error identified in our data. Finally, in Section B.3 we use sensitivity analysis to identify the potential impacts of measurement error or biases in our estimates.

### **B.1 Literature Review of Measurement Error in the CPS and the SIPP**

The main vehicle for detecting reporting errors has been to match the CPS or SIPP data to an independent source of administrative data. In particular, Social Security Administration's Detailed Earnings Record (DER) has been used to detect discrepancies between self-reported and administratively collected data. Comparing self-reported earnings with administrative data allows for estimates of the biases that occur when analyzing self-reported data. Different studies of matched data have shown a variety of possible errors in records.

Using administrative data, researchers have found that SIPP has an excess of low wages and a shortage of high wages compared to administrative records; the March CPS has the opposite concern (Roemer, Using Administrative Earnings Records to Assess Wage Data Quality in the March Current Population Survey and the Survey of Income and Program Participation, 2002). This finding indicates that minimum wage violation prevalence estimates may be biased upward using the SIPP and downward using the CPS (Table B1). Roemer also found that the CPS has a higher level of "underground" wages reported than does the SIPP. To the extent that these jobs are more or less likely to include violations, the SIPP estimates of prevalence will be more biased than will the CPS estimates. Bollinger (1998) found that workers with low earnings tend to underestimate earnings. Bollinger and Hirsch (2007) found that proxy responses tend to be 1 to 2 percent lower than self-reports from the same individuals.

Another possible source of error in both the CPS and SIPP data is imputation of unreported data. Both data sets include imputed earnings data by using a method commonly referred as "hot deck". This method assigns data to missing values by using records with similar characteristics. The set of characteristics include age, race, gender, usual hours, occupation, and educational attainment. Based on the number of categories for each characteristic, this deck has several thousand possible combinations, or "cells".

At least one study (Hirsch & Schumacher, 2000) identifies potential bias due to earnings imputation in the CPS. However, this bias is only present in regression models where some of the model parameters affect earnings but are not included in the "hot deck". However, since hot deck imputation performs well in approximating overall variable distribution, it should not affect the estimate of wage violations.

**Table B1: Measurement Error in the CPS-ORG's and the SIPP's Earnings and Wage Data and Potential Impacts on Minimum Wage Violation Estimates**

Measurement Error Type	Evidence	Bias on MW	Citation
Random error in reported wages/earnings	Does not cause a bias if the distribution of workers is smooth, but the distribution has a spike at the MW.	Violations <u>overestimated</u> .	Ashenfelter & Smith (1979)
Nonrandom error in reported wages/earnings	Workers with high earnings tend to underestimate earnings.	No impact; high earners unlikely to be paid below the MW.	Bollinger (1998); Bound & Krueger (1991); Bound et al. (1994);
	Workers with low earnings tend to overestimate earnings.	Violations <u>underestimated</u> .	
	Bunching of wages at \$7/hr; may indicate rounding down from \$7.25/hr. [a]	Violations <u>overestimated</u> .	Roemer (2002)
	SIPP tends to under-report earnings compared with administrative data and the CPS over-reports earnings	Violations <u>overestimated</u> in SIPP <u>underestimated</u> in CPS	
Proxy-respondents [b]	Proxy responses tend to be 1-2% lower than self-reports from the same individuals.	Violations <u>overestimated</u> .	Bollinger & Hirsch (2007)
Non-response of wages/earnings	Non-response highest among those in the top percentiles of earnings.	No impact; top of distribution almost entirely exempt from MW.	Bollinger & Hirsch (2007); Bollinger & Hirsch (2010)
Earnings imputed by the BLS [c]	Compresses earnings distribution.	Violations <u>underestimated</u> .	Hirsch & Schumacher (2000)
Wages imputed as earnings ÷ hours	Workers with high earnings tend to underestimate earnings.	No impact; high earners unlikely to be paid below the MW.	Bollinger (1998); Bound & Krueger (1991); Bound et al. (1994);
	Workers with low earnings tend to overestimate earnings.	Violations <u>underestimated</u> .	
	Salaried workers tend to underestimated hours worked; increases imputed wages.	Violations <u>underestimated</u> .	

[a] This is not an inherent bias in the data; rather, it is due to the fact that the current minimum wage has a cent value less than 50 cents (the point at which one generally rounds down).

[b] In the CPS, the head of household reports weekly earnings and wages for all members of the household. While the SIPP interviewers attempt to obtain responses from each household member, proxy responses are possible.

[c] When weekly earnings are missing, the BLS imputes values based on a predicted earnings equation. This occurs for roughly 1/3 of the sample in the CPS and 17 percent of the SIPP sample.

## B.2 Relevant Error in the CPS and the SIPP

In this analysis, relevant measurement error may come from three sources: the reported wage for hourly workers, the weekly/monthly earnings for non-hourly workers, and hours worked for all workers. In the CPS, respondents are asked “(EXCLUDING overtime pay, tips and commissions)(What/what) is (your/his/her) hourly rate of pay on (this/(your/his/her) MAIN) job?” The SIPP question is less specific in what the respondent should include: “What is...’s regular hourly pay rate at...’s job with...’s employer?” For hourly workers, the CPS question is likely to illicit more consistent responses. For hours worked, the CPS asks “How many hours (do/does) (name/you) usually work per week at this rate?” The SIPP contains a similar question: “During the weeks you worked for this employer, how many hours per week did ... usually work at all job-related activities?” Thus, the CPS wage data for hourly workers are likely to contain less measurement error than the SIPP hourly wage data, while the measurement error is likely to be more similar between the CPS and SIPP for hours worked.

Although the CPS may have less measurement error than the SIPP concerning wages for the reason identified above, there are other reasons why the direction or magnitude of measurement error may differ between the CPS and the SIPP. For example, the CPS is likely to have lower recall bias since the reference period is the previous week.<sup>121</sup> Conversely, since the SIPP are panel data, people may feel more involved with the survey and answer more thoughtfully. Additionally, the SIPP can better impute missing values due to the availability of previous data for the respondents.

One way to check for potential differences in the raw data is to compare summary statistics. Because wage data are the primary determinant of whether a minimum wage violation exists, wage distributions are compared between the two samples. Using the CPS data, an estimated 3.8 percent of jobs earn below \$7.25 per hour, not accounting for exemption status and excluding OCT. Using the SIPP data, an estimated 4.5 percent earn below the federal minimum wage, not taking into account exemptions but including commissions and tips for all jobs and additionally overtime pay for non-hourly jobs. These statistics indicate that either the SIPP may place too much weight on low-wage jobs or the CPS may place too little weight on these jobs (which has also been found in previous literature, see Section B.1). Therefore, it is reasonable that the number of violations in the SIPP data may exceed the number of violations in the CPS data.

We consider in detail the potential impacts of certain types of measurement error, sampling error, and error due to our assumptions. Many of these biases will be considered in the specification tests. The causes of potential bias include

1. Sampling error
2. Representativeness of the data
3. Imputed wages and proxy responses
4. Computation of wages

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<sup>121</sup> The SIPP conducts interviews every four months, so the reference period varies but may be up to 4 months prior to the interview. However, SIPP interviewers are trained to prompt respondents to check their pay stubs for accuracy which will lessen the recall bias.

5. The SIPP earnings variable represents earnings received during a month, not earned during a month
6. Reported wages may not align with base wages
7. The SIPP data cannot identify tip credit violations
8. Measurement error around the minimum wage will bias violation rates upwards

## 1. Sampling Error

The CPS and the SIPP are both representative samples of the population the U.S.; however, even with large samples these data still have a certain amount of random error (sampling error). Both the CPS and the SIPP documentation acknowledge this limitation and discuss usage of confidence intervals.<sup>122,123</sup> Although the CPS and the SIPP are large, roughly 60,000 households in the CPS and 14,000 to 36,700 interviewed households in the SIPP, when the sample is limited to only California or New York the sample sizes fall significantly, potentially magnifying the effects of sampling error. Sampling error is not included in the confidence intervals and we have no basis for identifying the magnitude or direction of this potential bias. That being said, these two surveys are very widely used and highly regarded and so we believe this bias should be small.

Sampling error due to underrepresentation of the “underground economy” may be especially important in this analysis. Workers employed illegally, or “off the books”, may be less likely to be included in the interviewed sample because they are less likely to have a stable address and may be less likely to participate in the survey. Additionally, even if these workers participate in the survey, they may be less likely to be honest about their employment; increasing measurement error. This concern is especially relevant to our analysis because this population of workers is more likely to suffer from a wage violation than the general populace.<sup>124</sup> Researchers have found that both the CPS and the SIPP tends to under-report marginal or irregular jobs when compared with administrative data (Abraham, Haltiwanger, Sandusky, & Spletzer, 2009; Roemer, 2002).

## 2. Representativeness

The CPS is representative at the state level but the SIPP is not.<sup>125</sup> The current SIPP estimates do not include any additional adjustments for state level representativeness. This difference is likely to be less important in larger states, like California and New York, than in smaller states. However, the U.S. Census Bureau makes post-stratification adjustments to the weights in the 2008 SIPP panel to correct for departures from known national and state population totals, so the SIPP data are reliable for general state estimates.<sup>126</sup> Weighted summary statistics of workers by age, gender, race, ethnicity, education level,

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<sup>122</sup> See <http://www.census.gov/srd/papers/pdf/rr93-6.pdf>.

<sup>123</sup> See <http://www.bls.gov/gps/notescps.htm>.

<sup>124</sup> Underrepresentation of these workers is one reason why The National Employment Law Project chose to generate their own sample rather than use these data sets to estimate wage violations (Bernhardt, et al., 2009).

<sup>125</sup> See “Comparison of SIPP with Other Surveys” available at <http://www.census.gov/sipp/vs.html>.

<sup>126</sup> The adjustments for state level controls are based on the demographic groups by (1) age and sex, (2) Hispanic origin, and (3) race (black alone and all other groups combined). More details are available at:

occupation, and industry are similar between the CPS and the SIPP for California and New York. A concern with this analysis is that the subset of workers with wage violations within each state is too small to produce reliable estimates. The Census Bureau lists 20 states (including California and New York) that have enough observations in the SIPP to get reliable estimates for small domains.<sup>127</sup> However, this may still be a potential source of error in the SIPP estimates. Additionally, this will be a greater concern if future analyses are conducted that include other states.

### **3. Imputed Wages and Proxy Responses**

Another source of bias in the estimates of the prevalence of wage violations occurs in the inclusion of jobs with imputed wages. Both the CPS and the SIPP data contain large numbers of imputed wages.<sup>128</sup> The CPS uses hot deck imputation while the SIPP uses statistical imputation (hot deck), previous wave imputation, or logical imputation (derivation). The estimates in this report are based on both reported and imputed wage and earnings data.

Similarly, some responses are provided by another member of the household on the respondent's behalf. These responses are likely to include more error since other household members are less likely to know the true wage, hours, and earnings of another household member than that member himself. The previously reported estimates do not account for bias due to proxy responses; however, this is considered in the following sensitivity analyses.

### **4. Computation of hourly wages**

Hourly wages for hourly jobs are provided in both surveys but not for non-hourly workers.<sup>129</sup> Therefore, hourly wages generally have to be computed in both data sets for non-hourly worker. In general, the mere act of calculating values introduces additional error into the analysis. Additionally, since we compute the hourly wage by dividing earnings by hours worked this compounds the effects of measurement error since there are now two sources of error (earnings and hours). In one of the specification tests, we exclude non-hourly workers because their wages must be computed. Additionally, in the CPS, the amount of weekly 'overtime pay, commissions, and tips' is not provided for non-hourly workers and must be estimated to determine both the hourly wage with commissions and tips, but without overtime pay.

Inconsistent reporting of earnings between the two data sets may cause computed wages to differ somewhat in the two data sets. In the CPS, wages are computed using weekly earnings and in the SIPP, using monthly earnings. The longer the time period that wages are averaged over, the less likely a violation will be identified. This is because when wages are below the minimum wage during part of the time period, and are above the minimum wage at other times, the average wage may be above the

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<http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

<sup>127</sup> Email correspondence with Mahdi Sundukchi at the U.S. Census Bureau.

<sup>128</sup> In the CPS, about 35 percent of wages are imputed while about 17 percent of wages and earnings are imputed in the SIPP.

<sup>129</sup> Although in the CPS non-hourly workers who prefer to report earnings hourly are given this option.

minimum wage and a violation will not be recognized, despite a violation having occurred. Therefore, other things equal, violations should be somewhat less likely to be identified in the SIPP data than the CPS data. However, this is a small concern since most jobs' wage rates do not change within a given month.

#### **5. The SIPP earnings variable represents earnings received during a month, not earned during a month**

In the SIPP data there is a mismatch between when work hours are reported to be performed and when the earnings from said work are reported. For example, if a worker is paid twice a month on a job, one of the two paychecks received in a given month will reflect work performed in the previous month. For workers who work the same number of hours each month, at the same rate of pay, this reporting inconsistency does not impact the results. However, for workers whose hours or wages vary between months, or for workers who recently began or ended a job, this inconsistency will result in a bias in incorrect identification of violations and the amount of lost wages. This is particularly likely in months when respondents have started a new job or were on leave without pay in the prior month since there is generally a lag in receiving earnings from hours worked. Thus, despite working in the current month, respondents receive only a portion of their regular monthly earnings if they did not work in the previous month.<sup>130</sup>

We do not correct for this in our results or account for the bias with a specification test. Potentially, we could exclude workers who have recently begun a new job and re-estimate violation rates. This correction is not currently included for two reasons: (1) to identify the first month of employment on a job would require additional manipulation of the SIPP data beyond the scope of this project and (2) this specification would not take account of bias for workers whose hours vary monthly. The SIPP questionnaire is currently undergoing revisions that will be incorporated in the next panel. One revision being considered is to alter the earnings question to represent earnings paid during a month. This would eliminate this bias in the future.

#### **6. Reported wages may not align with base wages**

In the CPS data, the base wage is estimated by separating expected overtime pay from expected commissions and tips (and then only including commissions and tips). As explained in Appendix A, this method may cause two biases in the estimated base wage, and consequently bias the violation rate; although the direction is not known. In the SIPP data, workers with jobs paid hourly report their regular hourly pay rate; wages do not need to be adjusted and thus should not be biased based on OCT. For workers with non-hourly jobs in the SIPP, overtime pay is incorrectly included in the wage estimate; however, since there is no estimate of the amount of overtime pay received in the SIPP, wages cannot be adjusted for this component. Therefore, the base wage will be somewhat overestimated and the violation rate will be underestimated. Since this bias is more pronounced for non-hourly workers, the specification test that excludes non-hourly workers may eliminate much of this bias.

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<sup>130</sup> The current redesign of the SIPP, the 2014 Panel, will correct for this inconsistency.

## **7. The SIPP data cannot identify tip credit violations**

In the SIPP data, there is only one hourly wage estimate available: wages with commissions and tips. Therefore, in this dataset a violation is identified if the wage is less than \$7.25 per hour. Unfortunately, due to data limitations, one cannot confirm that the employer is contributing the \$2.13 direct wage that he is required to pay for tipped employees. This results in a small downward bias in the number of minimum wage violations because the number of tipped jobs earning less than \$7.25 per hour is fairly small.

## **8. Error around the minimum wage will bias violation rates upwards**

Measurement error is a larger concern when identifying minimum wage violations for workers with wages close to the minimum wage than for workers with wages far from the minimum wage. This is because when close to the minimum wage, a small change in the wage can result in identification (or non-identification) of a violation. Measurement error will simultaneously cause some jobs to incorrectly be classified as violations and some to incorrectly be classified as non-violations. However, the magnitude of the former is larger than the latter because there are more workers slightly above the minimum wage than slightly below. This will bias the minimum wage violation rates upwards. One way to consider the magnitude of this potential bias is to only identify a violation if it is at least a given distance from the minimum wage. For example, in a specification test we exclude violations with wages within \$0.25 of the minimum wage.

Another source of error that may bias minimum wage violation rates is the rounding of wages and earnings. Research has demonstrated that there is a tendency for workers to round wages and earnings when reporting these values (Bollinger & Hirsch, 2010; Bollinger, 1998; Bound & Krueger, 1991).<sup>131</sup> In the CPS there is significant bunching at \$7 per hour in New York.<sup>132</sup> If respondents sometimes report wages rounded to the closest dollar, then jobs paid the minimum wage of \$7.25 may be incorrectly considered violations. Rounding of wages could bias the violation rates upward when the minimum wage is somewhat above a rounded dollar, rather than below (e.g., \$7.75 per hour). The rounding bias should not exist in California since the minimum wage is exactly \$8.00 per hour.

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<sup>131</sup> This may be especially pronounced for non-hourly workers whose wages are computed by dividing earnings by hours.

<sup>132</sup> Some of this may be due to rounding but some is likely also attributable to employers preferring to pay round wages.

## **Appendix C: Other Tables for Demographics and Impacts**



**Table C1: Estimated Rates of Minimum Wage Violations by Additional Worker Characteristics, FY2011**

Characteristics	California		New York	
	CPS	SIPP	CPS	SIPP
Violation Rates: All Jobs [a] (%)				
<b>Total</b>	<b>2.7%</b> (2.2%- 3.2%)	<b>2.5%</b> (2.0%- 2.9%)	<b>2.3%</b> (1.8%- 2.9%)	<b>4.3%</b> (3.5%- 5.1%)
<b>Marital Status</b>				
Married	2.1% (1.7%- 2.5%)	2.0% (1.6%- 2.5%)	1.5% (1.1%- 1.9%)	3.4% (2.4%- 4.4%)
Widowed, divorced, separated	2.8% (1.9%- 3.7%)	2.4% (1.3%- 3.6%)	2.1% (1.3%- 2.9%)	3.9% (2.0%- 5.9%)
Never Married	3.7% (2.7%- 4.7%)	3.2% (2.3%- 4.2%)	3.6% (2.6%- 4.6%)	5.8% (4.2%- 7.4%)
<b>Number of Children</b>				
0	3.1% (2.5%- 3.7%)	2.5% (2.0%- 3.1%)	2.5% (1.9%- 3.1%)	4.1% (3.1%- 5.0%)
1	2.4% (1.5%- 3.3%)	2.5% (1.7%- 3.4%)	2.8% (1.4%- 4.2%)	3.6% (2.0%- 5.1%)
2	2.1% (1.5%- 2.8%)	2.3% (1.2%- 3.5%)	1.2% (0.5%- 2.0%)	7.0% (3.8%- 10.2%)
3 or more	1.1% (0.3%- 2.0%)	2.2% (1.0%- 3.3%)	[b]	2.3% (0.5%- 4.1%)
<b>Veteran Status</b>				
No	2.7% (2.2%- 3.3%)	2.5% (2.0%- 2.9%)	2.4% (1.8%- 3.0%)	4.4% (3.6%- 5.2%)
Yes	1.9% (1.0%- 2.9%)	2.6% (0.0%- 5.1%)	[b]	2.2% (0.0%- 4.8%)
<b>Disability</b>				
No	2.6% (2.1%- 3.2%)	2.4% (2.0%- 2.8%)	2.4% (1.8%- 2.9%)	4.1% (3.3%- 4.9%)
Yes	4.6% (2.1%- 7.0%)	3.5% (1.1%- 6.0%)	[b]	8.3% (2.3%- 14.3%)
<b>Educational Enrollment</b>				
No	2.6% (2.1%- 3.1%)	2.4% (2.0%- 2.8%)	2.1% (1.6%- 2.7%)	4.1% (3.3%- 4.9%)
Yes	6.5% (4.1%- 8.8%)	3.1% (1.7%- 4.5%)	7.8% (5.0%- 10.6%)	6.0% (3.4%- 8.5%)
<b>MSA Status</b>				
MSA	2.7% (2.2%- 3.2%)	3.7% (2.5%- 4.8%)	2.4% (1.7%- 3.1%)	5.5% (3.1%- 8.0%)
Non-MSA	[b]	2.2% (1.2%- 3.2%)	[b]	3.7% (2.0%- 5.5%)
<b>Union Coverage</b>				
No	3.0% (2.4%- 3.6%)	2.8% (2.3%- 3.3%)	3.0% (2.2%- 3.7%)	5.2% (4.2%- 6.3%)
Yes	1.2% (0.7%- 1.7%)	1.2% (0.5%- 1.8%)	0.6% (0.3%- 0.8%)	1.6% (0.7%- 2.4%)

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses).

(2) The CPS estimates represent the number of violations occurring in a week whereas the SIPP estimates represent the number of violations occurring in a month.

[a] Excludes members of the military, the self-employed, and workers under 16. Includes up to four jobs per worker in the CPS and up to two jobs in the SIPP.

[b] Values suppressed due to fewer than 10 observations.

**Table C2: Impact of Minimum Wage Violations on Annual EITC Expenditures: Alternative Method, FY2011**

State (Data Source)	Families with Violations and EITC Receipt [a]				
	Increase in EITC Eligibility [a]		Decrease in EITC Amount Per Family [a]		Decrease in Total EITC Amount [a]
	Number	%	\$	%	\$Millions
California (CPS)	2,630 (0- 7,780)	3%	\$20 (-\$10- \$50)	1%	\$2.1 (\$0.0- \$4.9)
New York (CPS)	0 [b]	0%	\$40 (\$20- \$60)	2%	\$1.1 (\$0.0- \$3.1)

Notes:

- (1) Point estimates and 95 percent confidence intervals (in parentheses). Change per family rounded to closest tens.
- (2) Change in EITC cannot be adequately assessed in the SIPP.
- (3) Some respondents report receiving more than the maximum credit; in this method, credits are limited to the maximum (given the number of children). This method and the method used in the main body of the report are explained in Section 7.2.4.

[a] Change from full compliance

[b] No family in the sample gained eligibility. Confidence Intervals cannot be assessed.

**Table C3: Impact of Minimum Wage Violations on School Lunches and Breakfasts: Alternative Method, CY2010 (CPS)/FY2011 (SIPP)**

State (Data Source)	Families with Violations and Receipt			
	Increase in Families Eligible [a]		Increase in Annual Amount per Family [a]	
	#	%	\$	%
<b>School Lunches</b>				
California (CPS)	0 [c]	0%	\$0 [c]	0%
California (SIPP)	3,145 (0- 7,200)	7%	\$132 (\$16- \$249)	16%
New York (CPS)	0 [c]	0%	\$0 [c]	0%
New York (SIPP)	1,795 (0- 4,026)	4%	\$28 (\$0- \$57)	4%
<b>School Breakfasts</b>				
California (SIPP)	2,686 (0- 6,642)	8%	\$97 (\$18- \$177)	22%
New York (SIPP)	1,795 (0- 4,026)	5%	\$22 (\$0- \$45)	5%

Notes:

(1) Point estimates and 95 percent confidence intervals (in parentheses). Rounded to closest tens.

(2) The CPS estimates benefits for the 2010 calendar year. The SIPP estimates benefits for the 2010-2011 school year, which roughly corresponds to the FY2011.

(3) A non-trivial number of respondents indicate receiving school lunches or breakfasts despite having family income above the upper threshold. In this method, we recoded current NSLP and SBP receipt to zero if family income was greater than the threshold. This method and the method used in the main body of the report are explained in Section 7.3.2.

[a] Change from full compliance

**Table C4: Impact of Minimum Wage Violations on WIC Receipt: Alternative Method, FY2011 (SIPP)**

State (Data Source)	Families with Violations			
	Increase in Families Eligible [a]		Increase in Monthly Amount Per Family [a]	
	#	%	\$	%
California (SIPP)	1,975 (0- 4,225)	23%	11 (0- 24)	21%
New York (SIPP)	0 (0- 0)	0%	0 (0- 0)	0%

Notes:

- (1) Point estimates and 95 percent confidence intervals (in parentheses). Rounded to closest
- (2) The CPS does not have large enough samples to present results.
- (3) This method recodes all families with wage violations to having no benefits if their income (excluding the lost income from wage violations) is greater than the eligibility ceiling.

[a] Change from full compliance