Joseph J. Sabia
San Diego State University

Thanh Tam Nguyen
San Diego State University

**Employment
Policies**

I N S T I T U T E

THE EFFECTS OF MINIMUM WAGE INCREASES ON MEANS-TESTED GOVERNMENT ASSISTANCE

The Employment Policies Institute (EPI) is a nonprofit research organization dedicated to studying public policy issues surrounding employment growth. In particular, EPI research focuses on issues that affect entry-level employment. Among other issues, EPI research has quantified the impact of new labor costs on job creation, explored the connection between entry-level employment and welfare reform, and analyzed the demographic distribution of mandated benefits. EPI sponsors nonpartisan research that is conducted by independent economists at major universities around the country.

Joseph J. Sabia is an Associate Professor of Economics and Director of Graduate Studies at San Diego State University and a Research Fellow at the Forschungsinstitutzur Zukunft der Arbeit (IZA) in Bonn, Germany. He is a labor and health economist whose recent research examines the poverty effects of minimum wages, the economics of risky health behaviors, labor market discrimination against sexual minorities, and the family well-being effects of war service. Dr. Sabia's work has appeared or is forthcoming in such journals as the Review of Economics and Statistics, Industrial and Labor Relations Review, American Economic Review (Proceedings), the Journal of Health Economics, and the National Tax Journal. Prior to joining San Diego State University, Dr. Sabia held previous faculty appointments at the University of Georgia, American University, and the United States Military Academy at West Point.

Thanh Tam Nguyen is a Research Specialist at San Diego State University. She received her BA and MA in Economics at San Diego State University and is trained as an applied microeconomist. Her research examines the poverty effects of minimum wages, the effect of the business cycle on religiosity, and the health effects of physical education laws. Tam has presented her work at the Western Economic Association and Eastern Economic Association annual conferences. In May 2015, she won an award for "Best Poster" at the Population Association of America meetings. Tam plans to attend a PhD program in the Fall of 2016.

THE EFFECTS OF MINIMUM WAGE INCREASES ON MEANS-TESTED
GOVERNMENT ASSISTANCE

Joseph J. Sabia
Associate Professor
Department of Economics
San Diego State University

Thanh Tam Nguyen
Research Specialist
Department of Economics
San Diego State University

December 2015

Employment Policies

I N S T I T U T E

1090 Vermont Avenue, NW
Suite 800
Washington, DC 20005

THE EFFECTS OF MINIMUM WAGE INCREASES ON MEANS-TESTED GOVERNMENT ASSISTANCE

Table of Contents

THE EFFECTS OF MINIMUM WAGE INCREASES ON MEANS-TESTED GOVERNMENT ASSISTANCE

Executive Summary

One of the more popular contemporary arguments for raising the minimum wage is that it will save taxpayers money. Specifically, proponents of a higher minimum wage have argued that taxpayers "subsidize" employers who provide entry-wage jobs, and that raising the minimum wage could reduce employees' reliance on social safety net programs.

The proof to support such a claim has so far been thin. One 2015 report published in *Industrial Relations* estimated that a higher wage floor reduces taxpayer spending on a social welfare program (the Supplemental Nutritional Assistance Program, or SNAP). However, in its 2014 report on a $10.10 minimum wage, the Congressional Budget Office estimated that the higher minimum wage would, across all programs, have little net effect on the federal budget.

In this study, Dr. Joseph Sabia of San Diego State University, working with graduate student Thanh Tam Nguyen, examines 35 years of government data across a number of different datasets – including the Current Population Survey, the Survey of Income and Program Participation, welfare caseload data, and National

Income and Product Accounts. Their results suggest that, on net, minimum wage increases have little to no ameliorating effect on participation in (or spending on) a range of means-tested programs.

For instance, the authors find that federal and state minimum wage increases have had no measurable impact on the use by working-age adults of SNAP, Medicaid, Temporary Assistance for Needy Families (TANF) and the Women, Infants, and Children (WIC) program. In some specifications, they find evidence of an increase in the use of free and reduced-price lunches (FRPL) and housing subsidies following minimum wage increases. The authors also examine net welfare caseloads and taxpayers' expenditures on those programs. They find no statistically significant evidence that a higher minimum wage has reduced participation in or spending on public programs.

Among specific sub-groups of minimum wage earners – women with less work experience, and young adults without a high school diploma – the authors find evidence that minimum wage increases create winners and losers. For instance, the data suggests some reduction in SNAP enrollment for less-skilled women following a

minimum wage increase, but this reduction is offset by an increase in the use of FRPL among non-white employees and young employees without a high-school diploma.

The authors' results differ from the earlier *Industrial Relations* study on this topic, and they demonstrate that it suffered from methodological problems that call the results into question. For instance, the earlier study's model suggests that, following a minimum wage increase, participation in public programs falls among people who don't have a job. As the jobless have no wages to boost, a mandated wage increase is unlikely to be linked with their participation in a welfare program.

The authors also find that a higher minimum wage—and a $15 minimum wage in particular—is a blunt tool to aid the recipients of these programs. For instance, among those who would be affected by a $15 minimum wage, just 12 percent are SNAP recipients and just 10 percent are Medicaid recipients.

These conclusions suggest that the conventional wisdom on minimum wage increases is wrong: The policy will have little impact on taxpayers, but the impact on less-skilled employees who lose their jobs may be severe.

-Employment Policies Institute

THE EFFECTS MINIMUM WAGE INCREASE ON MEANS-TESTED GOVERNMENT ASSISTANCE

Introduction

"Legislation to raise the minimum wage would elevate many low-wage earners above the income threshold that qualifies them for benefits and should result in reduced welfare spending. That's a tradeoff Republicans could support…Raising the minimum wage might make it possible to legislate fair and sensible improvements." (Minimum Wage and Welfare: The Tradeoff, Schlafly 2014)

Policymakers advocating higher minimum wages have touted their potential to increase earnings among poor individuals and reduce poverty (Clinton 1996; Obama 2013). Increasingly, proponents are also arguing that there is a potentially important spillover effect of such earnings gains: a reduction in low-skilled workers' dependence on means-tested public assistance programs (Courtney 2014; McGovern 2014). If this claim is true, political support for minimum wage increases could widen to include political conservatives, whose policy preferences generally include a reduction in discretionary welfare spending.

The effect of minimum wage increases on public program participation is theoretically ambiguous. If minimum wage hikes increase the earnings of individuals living in poor or near-poor families, earnings gains may render these individuals ineligible for means-tested public programs. Along the same lines, earnings gains among public assistance recipients could reduce benefits received during the phase-out portion of income eligibility. On the other hand, if minimum wage increases cause adverse labor demand effects (Neumark and Wascher 2008; Neumark et al. 2014; Sabia et al. 2014), this may increase eligibility for some individuals, thereby increasing their participation in means-tested programs. Therefore, in the presence of negative employment or hours effects, minimum wage increases may simply redistribute program participation among eligible and near-eligible individuals. Finally, if minimum wage increases are poorly targeted to those eligible for public assistance programs (Sabia and Burkhauser 2010), then they may have little effect on receipt of welfare benefits.

The existing empirical evidence on the effect of minimum wage increases on means-tested public program participation is mixed. Some studies find that higher minimum wages increase welfare caseloads (Page et al. 2005) or decrease the probability of exit from public assistance programs (Brandon 2008; 1995); others find the opposite (Council of Economic Advisors 1999; Turner 1999; West and Reich 2015; 2014), and still others find no net effect of minimum wage increases on net public program participation (Sabia

and Nielsen 2015). Differences in findings across studies may be attributed to differences in (i) sources of identifying variation, (ii) time periods examined (often short windows), and (iii) the particular public program examined.

Many of the studies that have found minimum wage-induced declines in public program participation have used econometric specifications that identify minimum wage effects off of a state-specific linear time trend (CEA 1999;West and Reich 2015; 2014), or use control states that are within the same census divisions (West and Reich 2015; 2014). However, these specifications have received substantial criticism in the minimum wage literature for eliminating potentially valid sources of identifying variation and obscuring adverse employment effects of minimum wages (Neumark et al. 2014a, 2014b). Choosing an empirical specification that eliminates negative employment effects of minimum wages could explain beneficial public assistance effects.

In addition, focusing on short time horizons may be problematic given that (i) minimum wage increases have been found to affect low-skilled employment differently at different phases of the business cycle (Sabia 2014a), and (ii) eligibility for means-tested programs have changed dramatically over time, particularly following the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. PRWORA, as well as state welfare reforms, may affect how well-targeted minimum wages are to poor individuals. Finally, focusing on one specific program may produce results that are not generalizable because there are substantial differences across programs in eligibility requirements related to employment (Moffitt 2003; Social Security Administrations 2012; Wilde 2013) and income (Baicker et al. 2014; Besharov and Call 2009; Grogger 2003; Martha et al. 2012; Neumark and Powers 2003; Yelowitz 2001).

This study comprehensively examines the effect of minimum wage increases on means-tested program participation. Using data from a variety of data sources—including the Current Population Survey (CPS), the Survey of Income and Program Participation (SIPP), the U.S. Department of Health and Human Serices, and the National Income and Product Accounts (NIPA)—from over three decades, we examine the effect of minimum wage increases on participation in six (6) large means-tested public programs: the Supplemental Nutrition Assistance Program (SNAP), Medicaid, the Free and Reduced Price School Nutrition (FRPL) program, Housing Assistance programs (e.g. Section 8 housing), Temporary Assistance for Needy Families (TANF/AFDC), and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC).

We highlight three major findings. First, findings from the most credible empirical specifications suggest that minimum wage increases are largely ineffective at reducing net program participation across a wide set of means-tested public programs. Second, the evidence we uncover is far more consistent with the hypothesis that minimum wage-induced income redistribution—caused by adverse employment effects—results in some near-poor workers exiting the welfare rolls but induces other welfare recipients to remain on the rolls due to limited job opportunities. Finally, we find little evidence that minimum wage hikes reduce welfare caseloads or public expenditures on needs-based public programs. Minimum wages appear least effective during economic downturns. We conclude that minimum wage increases are an ineffective welfare reform policy.

II. Background on Minimum Wages and Means-Tested Programs

The effectiveness of higher minimum wages in reducing public program participation depends on the distribution of earnings and employment effects of minimum wages as well as how well targeted minimum wages are to those who qualify for public assistance. Means-tested program eligibility in the United States depends principally on whether (i) household (or family) income falls below a statutorily prescribed percentage of a household-size adjusted Federal poverty threshold, and (ii) households are sufficiently asset poor. However, there is heterogeneity across states and programs in eligibility requirements and enforcement of those requirements. Below we discuss eligibility for the set of means-tested public programs evaluated in this study, assess how these standards differ across states and time, and evaluate how minimum wages are likely to affect participation.

SNAP. The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, is the largest nutrition assistance program administered by the United States Department of Agriculture (USDA). In 2014, 46.5 million Americans received benefits from SNAP with an average of $125.35 for each person per month in food assistance (USDA 2015a). To qualify for SNAP, an individual must be income poor and, until April 2015, asset poor. For example, in 2005, Federal eligibility for SNAP requires gross (net) monthly household income to be below 130 (100) percent of the Federal poverty threshold (FTP) and permits households to have no more than $2,250 in "countable resources." Other means-tested benefits—such as TANF/AFDC or Supplemental Security Income—are not counted against household income.[1]

Prior to April 2015, states often allowed exemptions to vehicle-related asset requirements. For instance, in 2014, 39 states excluded vehicles from asset tests (US Department of Agriculture 2014). However, in April 2015, the Federal government followed the lead of some states and abandoned asset limits altogether. As the link between asset accumulation and SNAP eligibility has diminished over time, the link between eligibility and employment has grown stronger since the mid-1990s. As part of the Personal Responsibility and Work Opportunity Act (PRWORA) of 1996, individuals ages 18 to 60 without disabilities must be employed or actively seeking work in order to receive SNAP (Social Security Administrations 2012). Thus, SNAP recipients may be more likely to benefit from minimum wage increases because they are more likely to be attached to the labor force.

Medicaid. Jointly administered by the Federal and state governments, the Medicaid program offers free or low-cost health coverage to low-income families. States must provide coverage for "categorically needy" individuals, including recipients of Supplemental Security Income (SSI), families with dependent children receiving cash assistance, poor pregnant women and children, and certain low-income Medicare beneficiaries (Center for Medicaid and CHIP Services 2015). In addition, states can offer coverage for medically needy persons, disabled individuals, and infants and pregnant women whose incomes are above income eligibility limits for mandatory coverage.

Medicaid has gone through various expansions at both the federal and state levels over the last three decades. For example, federal legislation in the late 1980s expanded Medicaid coverage for low-income mothers and dependent children by increasing earnings and child age limits. Between 1979 and 2014, 44 states obtained demonstration waivers from the Federal government—usually waivers granted under Section 1115 of the Social Security Act—often to expand Medicaid eligibility to near poor families and low-income adults without children.

---

[1] However, there is some heterogeneity across states in the age of eligibility as well as eligibility of those with disabilities.

Moreover, beginning in January 2014, the Patient Protection and Affordable Care Act required states that joined Federal health care exchanges to increase Medicaid coverage to individuals and families whose income is at or below 138 percent of the Federal poverty line (Kaiser Family Foundation 2015). As Medicaid has expanded to include more near-poor families, the minimum wage may be better targeted to Medicaid recipients than it once was, but the weak link between Medicaid receipt and employment suggests that there would be a weaker relationship between minimum wages and Medicaid participation than SNAP participation.[2]

Free or Reduced School Lunch Program (FRPL program). The National School Lunch Program is a federally subsidized meal program that provides nutritionally balanced, low-cost or free lunches to children each school day. Children living in households with incomes less than 130 percent of the FPT, or living in households receiving AFDC/TANF or SNAP/Food stamps, are eligible for free or reduced price lunches.[3] Those who live in households with incomes below 185 percent but above 130 percent of the FPT are qualified for reduced price lunch. Federal eligibility requirements for the FRPL program have remained unchanged since modest expansions under the Omnibus Budget Reconciliation Acts of 1980. However, state and local implementation of nutrition standards has widely varied.

While FRPL participation is not linked to employment, the close link between SNAP and FRPL receipt could suggest a closer relationship between minimum wages FRPL receipt than Medicaid receipt. Moreover, because that income eligibility reaches up to 185 percent of the FPT, more workers are eligible for the program; this may also lead to better targeting of the minimum wage to FRPL recipients.

Subsidized Rental Housing. Subsidized rental housing programs provide subsidies to very low-income families, the elderly, and the disabled to help them rent housing in the private market. The largest of these programs is the Housing Choice Voucher program, commonly known as the Section 8 voucher program. Eligibility is based on a family's annual gross income, family composition and citizenship. In order to qualify for rental subsidies, families must have total incomes less than 80 percent of the median county income, with most subsidies going to very low income families with incomes less than 50 percent of the median county income. These eligibility rules generate substantial heterogeneity in eligibility across geographic locations and time, as income limit and maximum subsidies are updated annually. In addition to the Housing Choice Voucher Program, low-income renters may also receive housing assistance via such programs as the Section 8 New Construction and the Substantial Rehabilitation and Loan Management Set-Aside programs.

AFDC /TANF. Temporary Assistance to Needy Families (TANF), formerly Aid to Families with Dependent Children (AFDC), is a program that provides temporary cash assistance to poor families with children. In order to qualify for AFDC/TANF, recipients must meet state-set family structure, income, and asset criteria. Under the 1996 PRWORA, states gained flexibility in designing their own TANF programs within certain federally-set standards, including the enforcement of strict work requirements to qualify for federal aid, and a 60-month lifetime federally-funded benefit limit.

Nonetheless, there are differences across states in the strictness of enforcement of these work requirements. For instance, most states require TANF applicants to search for jobs or register to work as quickly as possible (Falk et

---

[2] While not specifically studying the effect of minimum wage increases on Medicaid receipt, McCarrier et al. (2011) used data from the Behavioral Risk Factor Surveillance System from 1996 to 2007 and found that minimum wage increases were associated with a lower probability of unmet medical needs, but no change in the probability of having insurance.

[3] Foster children are eligible for free and reduced price lunches regardless of foster family income.

al. 2012;). As of July 2014, 19 states mandate job search activities before or at the time of application (Huber et al. 2015). Current TANF recipients are also subject to sanction if they fail to comply with work requirements, which range from partial reduction of benefits for the first noncompliance to a more severe penalty such as lifetime ineligibility for multiple violations (Burke and Falk 2001; Falk et al. 2012).

While the link between TANF and employment was strengthened in the 1990s, during the Great Recession, TANF recipients found it more difficult to meet work requirements. In fiscal year 2009, the average overall work participation rate for all TANF families was 29.4 percent (USDHHS Office of Family Assistance 2011). In response, many states provided benefits for vulnerable families through state-funded programs outside of TANF (Hahn et al. 2012). In addition, states have the flexibility to grant benefit eligibility extensions to certain TANF families when they reach their time limits (Huber et al. 2015). These eligibility criteria include (i) inability to find employment, (ii) provision of care for ill or disabled persons, (iii) provision of child care, (iv) pregnancy, (v) old age, and (vi) domestic violence victimization.[4]

WIC. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) offers short-term food supplements and nutrition education for low-income women (pregnant, postpartum with a child 6 months or less, or breastfeeding with an infant between 6 and 12 months), infants and children up to age five. To be eligible to receive WIC benefits, applicants must (i) have household income below 185 percent of the FPT, or (ii) receive Medicaid, AFDC/TANF or SNAP/food stamps, and (iii) be nutritionally at risk based on the federal guidelines for the program (USDA 2015).[5] While the income criteria are similar across states, different states

have different requirements for proof of income as well as different nutritional standards (Bitler et al. 2003). In 2014, almost 8.3 million people received WIC program benefits, with an average monthly per-person food voucher of $43.65 (USDA 2015).

In summary, differing eligibility standards related to family (or household) income, work requirements, and asset exemptions across states and over time suggest that minimum wages may affect different means-tested public program participation differently. While some programs, such as SNAP are more closely linked to employment requirements, other programs—such as Medicaid, and subsidized rental housing—often lack strong employment requirements and target families that are less likely to be affected by minimum wage increases. Moreover, relatively higher income eligibility standards—such as exist for FRPL and WIC (up to 185 percent of the FPT)—may increase the likelihood that more minimum wage workers are affected by these programs.

Overall Targeting. With the above differences in mind, a necessary condition for eligibility for a wide set of means-tested public programs is living in a household with counted income below 100 to 200 percent of the Federal poverty threshold. How well does the minimum wage target these poor and near poor individuals? First, as Card and Krueger (1995) noted, many poor individuals will not gain from minimum wage increases because they do not work. Sabia, Burkhauser, and Nguyen (2015) find that only about 40 percent of poor individuals are employed. The introduction of work requirements for welfare as part of PRWORA may have improved the targeting of the minimum wage to welfare recipients, but recent weakening of work requirements in the wake of the Great Recession may have diminished it (Falk 2012).

---

[4] See Rowe et al. (2010) for a complete list of state's time limit extensions eligibility requirements.

[5] According to the United States Department of Agriculture, "two major types of nutritional risk are recognized for WIC eligibility: (1) medically-based risks (designated as "high priority") such as anemia, underweight, maternal age, history of pregnancy complications, or poor pregnancy outcomes, and (2) Diet-based risks such as inadequate dietary pattern." (USDA 2010).

Moreover, even among those poor workers who do work, minimum wages may be poorly targeted to households receiving or at risk for receiving public assistance. The difficulty of using the minimum wage to target those in poverty has been well documented in the economics literature for nearly 70 years. In his seminal article on the economics of minimum wage legislation, Stigler (1946) wrote:

"The connection between hourly wages and the standard of living of the family is thus remote and fuzzy. Unless the minimum wage varies with the amount of employment, number of earners, nonwage income, family size, and many other factors, it will be an inept device for combating poverty even among those who succeed in retaining employment. And if the minimum wage varies with all of these factors, it will be an insane device." (Stigler 1946, p. 363)

Indeed, a number of studies have shown that minimum wages are poorly targeted to those living below or near the poverty threshold (Burkhauser, Couch, and Glenn 1996; Burkhauser and Sabia 2007; MaCurdy 2015; Sabia and Burkhauser 2010; Sabia 2014b). Sabia and Burkhauser (2010) show that only 11.3 percent of minimum wage workers live in households with incomes below 100 percent of the household poverty threshold, while 42.3 percent live in households with incomes over 300 percent of the poverty threshold. Moreover, when they examine poor workers, they find that 48.9 percent earn hourly wages above proposed federal minimums and would thus not likely be affected by such hikes. While recent work by Lundstrom (2014) suggests that the target efficiency of the minimum wage may have modestly improved during the Great Recession, the non-poor remain the primary beneficiaries of higher minimum wages.

In addition to poor targeting of minimum wages, the effect of minimum wages on means-tested program participation depends on the magnitude of labor demand effects as well as the distribution of resultant earnings and employment effects across individuals within families. In their comprehensive review of the post-Card and Krueger (1995) literature, Neumark and Wascher (2008) found that the most credible studies that focused on low-skilled labor markets where the minimum wage is most likely to bind (e.g. Campoleiti et al. 2005) found evidence of adverse employment effects, with estimated elasticities ranging from -0.1 to -0.3.[6]

However, following this review, two high-profile studies took aim at the conclusion, targeting the credibility of the parallel trends assumption underlying the two-way fixed effects (difference-in-difference) models typically estimated in the minimum wage literature (Allegretto et al. 2011; Dube et al. 2010). They focus on narrower identifying variation—variation in contiguous counties across state borders (Dube et al. 2010), within census divisions (Allegretto et al. 2011), or off of geographic-specific linear time trends (Allegretto et al. 2011)—and find little evidence of adverse labor demand effects. While intriguing, the results from these studies have been the subject of substantial empirical criticism (Neumark et al. 2014a; 2014b). Convincing work by Neumark et al. (2014a; 2014b) shows that (i) the inclusion of controls for state-specific linear time trends confounds the business cycle, and (ii) states within census divisions do not serve as better counterfactuals for "treatment states" that increase their minimum wages. The consequence of these misspecifications is to obscure negative employment effects of minimum wage increases. And obscuring negative employment effects of minimum wages could result in overstating the aggregate earnings gains to low-skilled

---

[6] Later studies by Thompson (2009) and Sabia, Burkhauser, and Hansen (2015; 2012) also focus on sub-populations for whom the minimum wage is likely to bind and produce a similar pattern of results. Further, Meer and West (2013) find that minimum wage increases may inhibit job creation in expanding establishments.

individuals[7] as well as overstating the public assistance-reducing effects of minimum wages. Together, the poor targeting of higher minimum wages to individuals living in poor (or near-poor) households and the presence of adverse labor demand effects among those who are affected may undermine the goal of decreasing means-tested public program participation.

Minimum Wages and Welfare Participation. The literature on the effect of minimum wages on means-tested public assistance receipt is much thinner than the literature on targeting, employment, or poverty effects of the minimum wage. One set of studies uses individual-level data from the SIPP to estimate the public assistance effects of minimum wage increases. Using data from the 1986 to 1988 panels of the SIPP and employing a difference-in-difference approach, Brandon (1995) finds that higher minimum wages are associated with a reduction in the probability of exit from AFDC. An update of this paper using data from the 1996 to 2004 SIPP produces a similar pattern of results (Brandon 2008). However, Turner (1999) reaches the opposite conclusion when using data from the 1990 and 1991 panels of SIPP. These findings underscore potential heterogeneous effects of minimum wages in short panels (Baker et al. 1999; Page et al. 2005), which may capture different phases of the business cycle (Sabia 2014a) and different programmatic rules that may affect the likelihood that minimum wages bind for AFDC/TANF recipients (Sabia and Nielsen 2015).[8] Over a somewhat longer period prior to the Great Recession (1996 to 2007), Sabia and Nielsen (2015) find little evidence that minimum wages reduced material hardship or net welfare participation in the SIPP using difference-in-difference models that both include and exclude state-specific linear time trends.

A second set of studies has used aggregate state-level data to estimate the effect of minimum wage increases on welfare use. Using data from 1976 to 1998 and a difference-in-difference approach, the Council of Economic Advisers (1999) find that minimum wage increases were associated with a reduction in AFDC caseloads. However, using aggregate state-level data from 1983 to 1996, Page et al. (2005) find just the opposite: a 10 percent increase in the minimum wage is associated with a 1 to 2 percent increase in welfare caseloads. The authors convincingly show that the treatment of state-specific time trends—whether one uses linear versus higher-order state time trends—as well as the time period chosen for the analysis can explain differences in their findings from that of the Council of Economic Advisers.[9] Consistent with Neumark et al. (2014a; 2014b), the pattern of findings suggests that the inclusion of state-specific linear time trends as controls may conflate minimum wage effects with that of the business cycle.

Finally, a new study by West and Reich (2015) examines the effect of minimum wage increases on SNAP participation. Using data from the 1990 to 2012 March CPS and, employing an empirical specification "fully saturated" with controls for state-specific linear time trends and census division-specific year effects, West and Reich (2015) obtain SNAP participation elasticities with respect to the minimum wage of -0.24 and -0.32. Then,

---

[7] Using matched CPS data, Neumark and Wascher (2002) and Neumark et al. (2005), find that minimum wage increases redistribute income among low-skilled workers, consistent with adverse labor demand effects. They conclude that while workers who keep their jobs and do not have their hours significantly reduced experience income gains, those who lose their jobs or have their hours substantially cut experience earnings losses (Neumark and Wascher 2002). Golan et al. (2001) find some evidence of adverse distributional effects and Gundersen and Ziliak (2004) find little evidence of substantial income gains for those living near the poverty threshold. Sabia (2008) finds that less-educated single mothers with children—a population at relatively higher risk for public program receipt—face an income loss due to adverse employment and hours effects from the minimum wage hikes.

[8] This could suggest that the adverse employment effects of minimum wages among single mothers (Sabia 2008) lead to greater government dependence.

[9] While not specifically exploring the effects of minimum wage increases on welfare caseloads, Grogger (2003) and the Council of Economic Advisers (CEA) use the minimum wage as a control variable in estimating the effects of other policies on welfare caseloads. Grogger finds a statistically insignificant positive effect and CEA finds a significant negative effect.

drawing data from the National Income and Product Accounts (NIPA) and an identical identification strategy, they estimate a SNAP expenditure elasticity with respect to the minimum wage of -0.19. West and Reich (2014) find a similar pattern of results when estimating the effect of minimum wage hikes on Medicaid participation using an identical identification strategy.[10] However, given that the specification chosen by West and Reich (2015; 2014) obscures adverse employment effects of the minimum wage, these estimates should be viewed with some degree of skepticism.

Contributions. This study presents the most comprehensive study to date on the effects of minimum wage increases on public assistance receipt. We draw on data from a variety of government data sources over three decades—including two micro-datasets: (i) the Current Population Survey and (ii) the Survey of Income and Program Participation, as well as government data sources with information on welfare caseloads and expenditures, including the National Income and Product Accounts (NIPA) and the U.S. Department of Health and Human Services—to estimate the effect of minimum wage increases on welfare participation and public budgets. Our study is unique in examining the means-tested program participation effects of minimum wage increases across (i) data sources, (ii) identification strategies, (iii) the business cycle, and (iv) public programs. We assess the credibility of empirical specifications commonly employed in this literature and identify our set of preferred policy estimates.

III. Data and Measures

Current Population Survey. First, we use repeated cross-sections of the March Current Population Survey (CPS) from 1980 to 2014 (corresponding to calendar years 1979 to 2013). The March CPS, which has been the workhorse of the minimum wage-poverty literature in the United States (see Sabia and Burkhauser 2010; Sabia, Burkhauser, and Nguyen 2015), allows us to measure participation in several forms of public assistance receipt, including (1) the Supplemental Nutrition Assistance Program (SNAP), formerly the Food Stamp Program (FSP), (2) Medicaid, (3) the Free or Reduced School Lunch Program (FRPL), (4) subsidized rental housing, (5) Temporary Assistance to Needy Families (TANF), formerly Aid to Families with Dependent Children (AFDC), and (6) the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).[11]

For public programs (1) through (4), we focus on working-age individuals ages 16-to-64, following the poverty literature (Sabia and Burkhauser 2010; Sabia and Nielsen 2015). For programs (5) and (6), we follow Moffitt (1999) and Schoeni and Blank (2000), and examine females ages 16-to-54. We then proceed to

---

[10] However, the data organization and regression model in this paper is not identical to West and Reich (2015). In West and Reich (2014), the authors aggregate family-level data to the state-year level and do not weight their regressions.

[11] The relevant questions in the CPS related to these programs are:
(1) SNAP/FSP: "Did (you/anyone in this household) get SNAP (Supplemental Nutrition Assistance Program), food stamps or a food stamp benefit card at any time during [previous year]?"
(2) Medicaid: "At any time in [previous year], was … covered by Medicaid?"
(3) Free or Reduced School Lunch Program: "During [previous year] how many of the children in this household received free or reduced price lunches because they qualified for the federal school lunch program?"
(4) Subsidized rental housing: "Are you paying lower rent because the Federal, State, or local government is paying part of the cost?"
(5) AFDC/TANF: "At any time during [previous year], even for one month, did … receive any CASH assistance from a state or county welfare program such as (State Program Name)?"
(6) WIC: "At any time during [previous year], was… on WIC, the Women, Infants, and Children Nutrition Program for themselves or on behalf of a child?"
The question on WIC receipt is added to the public CPS March starting in 2001 (Bitler et al. 2003).
Respondents in the CPS are queried about SNAP receipt, FRPL receipt, and housing assistance receipt for any individuals in their households. Information about Medicaid, TANF, and WIC receipt is collected for each individual within the household. Our primary analysis is conducted at the individual level.

examine lower-skilled, less-educated individuals who are more likely to receive public assistance and be affected by minimum wage policy: non-whites, younger individuals ages 16-to-29 without a high school diploma, and less-educated (less than high school) single mothers ages 16-to-45 with young children (under age 18).

In Panel I of Table 1A, we show weighted means of public program receipt in the CPS. Trends in means-tested program receipt between 1979 and 2013 are shown in Figure 1. Among those ages 16 to 64 (column 1), we find that over the sample period, 7.7 percent report living a household receiving SNAP, 7.6 percent of individuals report receiving Medicaid, 9.2 percent report living a household that receives free or reduced price lunch, and 1.0 percent report living a household receiving housing assistance. Among women ages 16 to 54, we find that 3.5 percent receive AFDC/TANF, and 4.4 percent receive WIC. As expected, participation rates are lower among workers (column 2) as compared to non-workers (column 3). An examination of participation rates among less-educated populations most likely to receive means-tested public assistance (columns 4 through 6) suggests participation rates that are 2 to 11 times larger among less-educated single mothers, non-whites, and younger high school dropouts relative to the full sample (column 1).

While the March CPS is widely used to study poverty, an important disadvantage of this data source is severe underreporting of means-tested program participation (Wheaton 2008; Wheaton and Giannarelli 2000). For instance, in 2002, self-reported SNAP participation in the March CPS was 39 percent lower than administrative data shows, Medicaid participation was 29 percent lower, and TANF receipt was 46 percent lower (Wheaton 2008). While such measurement error should not produce

biased estimates in the effect of minimum wages on program participation—unless such error is unexpectedly associated with minimum wage changes—we next turn to alternative data sources, which have been documented to more accurately capture public program participation.

Survey of Income and Program Participation. The SIPP is a nationally-representative longitudinal survey of the non-institutionalized, civilian population conducted by the U.S. Census Bureau. We draw data from the 1996-1999, 2001-2003, 2004-2007, and 2008-2013 panels, which correspond to calendar years 1996 to 2013.[12] One important advantage of the SIPP is the relatively short recall period (four months) for respondents to report household composition, income, program participation, and health insurance. This makes the SIPP less prone to error relative to other federal surveys where respondents are required to recall information from as long as a full year prior to the interview. There is also evidence that the SIPP measures true program participation with less error. Compared to the March CPS, the underreporting rate is 22 percent lower for SNAP participation, 9 percent lower for Medicaid participation and 5 percent lower for TANF participation (Wheaton 2008). Another key advantage of the SIPP is that its longitudinal data allow us to (i) explore individual-specific transitions into and out of poverty as well as onto and off of the welfare rolls, and (ii) estimate models that include individual fixed effects.

Using the SIPP, we construct measures of participation in our means-tested public programs.[13] Average monthly participation rates and welfare transition rates are shown in Panel II of Table 1A. When we generate comparable annual measures of program participation for the same states and years in the CPS and SIPP (see Appendix Table 1), we find that participation rates are higher in the SIPP,

---

[12] Following Sabia and Nielsen (2013), we drop data in the 2000 calendar year, for neither the 1996 panel nor the 2001 panel provides adequate overlap in this calendar year.

[13] While the CPS only asks about household receipt of SNAP, the SIPP includes information on individuals' receipt of SNAP.

as expected. National trends in program participation, shown in Figures 2A, are similar to those in the CPS between 1996 and 2013.

Aggregate Welfare Caseloads. In addition to the two microdata sources, we also obtain administrative data on means-tested welfare caseloads between 1980 and 2013. SNAP caseloads are obtained from the Census Bureau-Small Area Income and Poverty Estimates[14], Medicaid caseloads from the Statistical Abstract (Social Insurance and Human Services, and Health and Nutrition, respectively)[15], the FRPL caseloads from the U.S. Department of Agriculture (USDA)[16], and AFDC/TANF caseloads from the Office of Family Assistance (DHHS).[17,18] Consistent state-by-year caseload data on WIC participation and housing subsidy receipt are not available during the 1980 to 2013 period.

In Panel I of Table 1B, we show weighted means of state welfare caseloads per 1,000 individual state residents. Medicaid caseloads are the highest (159.7 per 1,000), followed by the FRPL program (96.8 per 1,000), SNAP (91.1 per 1,000), and AFDC/TANF (31.2 per 1,000). Trends in caseloads are shown in Figure 3. The pattern of findings is similar to CPS and SIPP program participation rates.

Public Program Expenditures. Finally, we draw aggregate state-by-year data on means-tested program expenditures from the National Income and Product Accounts (NIPA). The NIPA data are collected by the Bureau of Economic Analysis and have been used by a number of scholars to study public welfare spending (Aschauer 1989; Hanson 2010;

West and Reich 2015). We draw data from 1980 to 2013 and construct real (in 2013 dollars) per capita expenditures on four programs: SNAP, Medicaid, AFDC/TANF and WIC.[19] In Panel II of Table 1B, we show means of real (2013 dollars) means-tested expenditures per capita. Per-capita spending is highest for Medicaid program ($928.5), followed by SNAP ($126.5), WIC ($112.7) and AFDC/TANF ($104.8). Trends in real expenditures, presented in Figure 4, show that SNAP and Medicaid expenditures increased dramatically since 2000, accelerating during the Great Recession. TANF spending has declined since approximately 1994, just prior to PRWORA.

IV. Empirical Approach

We begin by pooling repeated cross-sectional data from the March 1980 to March 2014 CPS and estimating a difference-in-difference model of the following form via probit:

$$Benefit_{ist} = \beta_0 + \beta_1 MW_{st} + \beta_2 \mathbf{X}_{st} + \beta_3 \mathbf{Z}_{it} + \alpha_s + \tau_t + \varepsilon_{st}, \quad (1)$$

where $Benefit_{ist}$ is an indicator for whether respondent i residing in state s in year t received means-tested public benefits, MW_{st} is the natural log of the higher of the state or federal minimum wage; $\mathbf{X}_{st}$ is a vector of state-specific, time-varying controls including the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit, and key state welfare policies, including whether the state program exempts some or all vehicles from the asset test for SNAP eligibility, the presence of at least one Medicaid Section 1115 demonstration waiver, Medicaid expansions

---

[14] SNAP/food stamp caseloads are available between 1981 and 2012.

[15] We obtain consistent Medicaid caseload data for all states between 1983 and 2013.

[16] National School Lunch program caseloads are available between 1989 and 2013.

[17] AFDC/TANF caseloads are missing in 1984.

[18] Medicaid and National School Lunch program caseloads are collected for the fiscal year.

[19] Data on expenditures on FRPL and housing subsidies over the 1980 to 2013 time period are not available from the NIPA. In the NIPA, WIC expenditures are grouped with expenditures on General Assistance Foster care and adoption assistance, Child Tax Credits, Economic Stimulus Act of 2008 rebates, American Recovery and Reinvestment Act of 2009 (ARRA) Making Work Pay tax credits, Government Retiree tax credits, Adoptive tax credits and Energy Assistance benefits. Estimation excluding WIC benefits in our measure of total expenditures produced a similar pattern of results.

to low-income childless adults[20], the presence of binding work requirements and time limits for TANF receipt, excluding owned home value from asset tests for TANF, and maximum TANF benefit level for a family of three; $\mathbf{Z}_{it}$ is a vector of individual controls including race/ethnicity, marital status, educational attainment, age, family size, and number of children under age 18 living in the household; α_s is a time-invariant state effect; and τ_t is a state-invariant year effects.[21] The means of each of these control variables can be found in Appendix Table 2. The key parameter of interest in equation (1), β_1, is the effect of the minimum wage on means-tested program participation. Given the functional form of the regression, dividing β_1 by the mean of the dependent variable yields the elasticity of means-tested program participation with respect to the minimum wage. Identification of β_1 comes from within-state variation in minimum wages. Of the 1,734 state-by-year cells observed from 1980 to 2013, there were over 400 minimum wage increases initiated by state legislatures. In addition, there were four Federal minimum wage increases (1979-81, 1990-91, 1996-97, and 2007-09), which also generate some state-level minimum wage variation because different states had different initial minimum wages at the time of Federal hikes. One concern with the specification described in equation (1) is the possibility of state-specific time-varying unmeasured heterogeneity confounding our estimate of β_1. Thus, we also experiment with additional controls for state-specific time-varying unmeasured heterogeneity in equation (1), including state-specific linear time trends and census division-specific year effects following West and Reich (2015). However, given that such a specification has been found to obscure adverse employment effects of minimum wages, we hold this model—as well as the model described in equation (1)—up to a number of falsification tests, described below.

We next turn to the SIPP and estimate a model similar to equation (1) except that we exploit the longitudinal nature of the data to estimate transitions onto and off of the welfare rolls, and include both month and individual fixed effects as additional controls. First, we estimate:

$$Benefit_{ismt} = \beta_0 + \beta_1 MW_{smt} + \beta_2 \mathbf{X}_{st} + \beta_3 \mathbf{Z}_{it} + \alpha_s + \pi_m + \tau_t + \theta_i + \varepsilon_{ismt}, \quad (2)$$

where π_m is a vector of month fixed effects and θ_i is a vector of individual fixed effects.[21] The inclusion of individual fixed effects allows us to examine the effects of minimum wages on individual-specific net transitions off of and onto means-tested benefit programs.

In addition, following Sabia and Nielsen (2015), we disaggregate transitions. We condition the sample on those initially (not) receiving some form of means-tested public assistance in the first month of interview of year t and estimate the effect of minimum wage increases on transitions onto (or off of) means-tested public assistance over that calendar year:

$$Transition_{ist} = \beta_0 + \beta_1 MW_{st} + \beta_2 \mathbf{X}_{st} + \beta_3 \mathbf{Z}_{it} + \alpha_s + \tau_t + \theta_i + \varepsilon_{ismt}, \quad (3)$$

where $Transition_{ist}$ is a dummy variable equal to one (1) if the respondent i makes a transition from his or her initial state at any point during the remainder of that calendar year, and 0 otherwise. In equation (3), MW_{st} is then the higher of federal or state minimum wage that persists over calendar year t in state s (and a weighted average of that minimum wage over the year if the minimum wage changes mid-year).

---

[20] Prior to the Affordable Care Act, a number of states—including Arizona, Minnesota, Pennsylvania, Tennessee and Washington—expanded Medicaid coverage to low-income childless adults without the use of a Section 1115 waiver through the use of exclusively state-funded programs.

[21] We estimate equation (2) via linear probability model. In SIPP public-release data, respondents in Maine and Vermont are grouped together and respondents in North Dakota, South Dakota, and Wyoming are grouped together in the 1996 and 2001 panels, prohibiting assignment of state policies and economic data. Therefore, respondents in these states are excluded from all SIPP analyses. In the SIPP regressions, we control for individuals' time-varying demographic characteristics (excluding gender and race), state-specific time-varying controls and program policies used in equation (1), and an indicator for the fourth month of the reference period.

Finally, we draw aggregate state-level data to estimate the effect of minimum wage increases on per-capita state expenditures and caseloads:

$$Caseloads/Expenditures_{st} = \beta_0 + \beta_1 MW_{st} + \beta_2 \mathbf{X}_{st} + \alpha_s + \tau_t + \varepsilon_{st}, \quad (4)$$

where the dependent variable measures the natural log of per capita expenditures, expenditures per enrollee and caseloads per 1,000 individuals.[22] Thus, β_1 can be interpreted as an elasticity of caseloads or expenditures with respect to the minimum wage.

V. Main Results

The main regression results are shown in Tables 2 through 10. The tables show estimates of β_1. Coefficient estimates on the controls are presented in Appendix Tables 3 and 4. Standard errors corrected for clustering on the state are shown in parentheses (Bertrand et al. 2004).

CPS Findings. In Table 2, we present estimates of β_1 from equation (1) using the CPS. Column (1) presents results for the working-age population, column (2) for workers, and column (3) for non-workers. Examining those ages 16-to-64 (column 1), we find no support for the hypothesis that minimum wage increases reduce the probability of means-tested public program receipt. For the SNAP, Medicaid, TANF and WIC programs, the estimated elasticities of program participation with respect to the minimum wage are statistically indistinguishable from zero.[23] For FRPL

and housing subsidy receipt, we estimate *positive* elasticities with respect to the minimum wage of 0.217 and 0.300, respectively, suggesting that higher minimum wages may actually increase public program receipt, perhaps through adverse employment effects.

Among those who are most likely to gain from minimum wage increases—those who are employed, defined as those who report paid employment when welfare receipt is measured—we also find very little evidence that minimum wage increases reduce the probability of welfare receipt. This result could suggest that minimum wages are poorly targeted toward those workers at risk of welfare receipt. Finally, among non-workers (column 3), we find some evidence that minimum wage increases are associated with an increase in the probability of FRPL and housing subsidy receipt. These findings may be explained by (i) non-workers being less likely to find jobs as a result of minimum wage increases and hence are more likely to take up these forms of public assistance, or (ii) new non-workers—those disemployed from minimum wage hikes—being more likely to take-up public assistance than prior non-workers.[24]

One of the concerns with our difference-in-difference estimates is that they may be contaminated by state-specific time-varying unobservables. Therefore, in Table 3, we follow the approach of West and Reich (2015) and add controls for state-specific linear time trends and census-division-specific year effects. The pattern of results in column (1) of Table 3 is starkly different from that in column (1) of Table 2. Consistent with West and Reich (2015), we find that minimum wage increases are associated with sharp

---

[22] In equation (4), we control for the state-by-year share of male individuals, racial composition, average age and state population using data drawn from the Surveillance, Epidemiology and End Results (SEER) database between 1980 and 2013. State-by-year marriage rates, educational attainment, average household size and average number of children under age 18 in households are obtained using data from the CPS March between 1980 and 2014. Other state-specific time-varying controls are identical to those in equation (1).

[23] The precision of our estimates is such that we can rule out negative elasticities smaller than -0.397 for SNAP/food stamp, -0.322 for Medicaid, -0.139 for AFDC/TANF, and -0.157 for WIC. We can also rule out positive elasticities larger than 0.163 for SNAP/food stamp, 0.348 for Medicaid, 0.197 for AFDC/TANF, and 0.021 for WIC.

[24] As noted above, our primary analysis is conducted at the individual-level. However, we also estimate models using the household as the unit of observation. The results, shown in Appendix Table 5 show a generally similar pattern of results as in Table 2. The one exception is Medicaid, where we find a negative participation effect in column (1), but a comparison of findings in columns (2) and (3) suggest that this effect is likely picking up a negative, spurious correlation.

reductions in SNAP participation (row 1, column 1). In addition, we also uncover evidence that minimum wage increases are associated with a reduction in the probability of receiving subsidized housing (row 4, column 1), TANF (row 5, column 1) and WIC (row 6, column 1). Estimated elasticities of program participation with respect to the minimum wage range from -0.091 to -0.400.

How can we reconcile the very different findings in column (1) of Tables 2 and 3? One specification (Table 2) finds no evidence of net welfare participation declines induced by minimum wage hikes, while another (Table 3) suggests large beneficial effects. There are at least two reasons to believe that the West and Reich-preferred model in Table 3 vastly overstates the beneficial effects of minimum wages. First, as Neumark et al. (2014a; 2014b) show, and we further discuss below, including controls for state-specific linear time trends and census division-specific time effects conflates minimum wage variation with the state business cycle, obscuring adverse employment effects of the minimum wage. If adverse employment effects are obscured, this is likely to overstate the beneficial effects of minimum wages.

Second, the West and Reich model fails a key falsification test. When we restrict the sample to employed individuals (Table 3, column 2)—giving the minimum wage its best chance to reduce program participation—we find that the estimated elasticities are uniformly smaller (in absolute magnitude) than for the full working-age sample (column 2 vs. column 1) and are nearly always statistically indistinguishable from zero. Instead, we find that minimum wage increases are associated with large reductions in public program participation for *non-workers* (column 3). Minimum wage increases could only reduce public program participation among *non-workers* if other individuals living in their household are workers who see earnings gains from minimum wage increases, thus increasing household

income and reducing program participation among other household members. But in column (4), when we restrict the sample to non-workers living in households *with only one working-age adult age 18 or older*, we find that in the West and Reich-preferred specification, minimum wage increases are associated with very large declines in means-tested program participation. This result provides strong evidence that the West and Reich-preferred specification fails an important falsification test and greatly overstates the public-benefit effects of higher minimum wages.[25] In contrast, the difference-in-difference specification from equation (1) passes this falsification test (Table 3, column 5).

Moreover, in contrast to results in Table 2, when we allow state-specific time trends to reach the 4th or 5th order polynomial (see Appendix Tables 6 and 7), we find little evidence that minimum wage increases affect net welfare participation. This result is consistent with Neumark et al. (2014a), who find that controlling for higher-order polynomial state trends, in contrast to linear time trends, diminishes the degree to which negative employment effects of the minimum wage are confounded by the business cycle. In summary, the results in Table 3 are consistent with evidence that eliminating credible identifying variation that produces negative employment effects of minimum wage increases (Neumark et al. 2014a; 2014b) overstates reductions in public assistance receipt induced by such hikes.

In Table 4, we use our preferred specification from equation (1) and examine low-skilled sub-populations that have been commonly examined in the minimum wage-poverty literature: non-whites (columns 1), individuals ages 16-to-29 without a high school diploma (columns 2), and single less-educated female heads of households ages 16-to-45 with children under age 18 (columns 3). There is little evidence that minimum wage hikes reduce program

---

[25] An alternative explanation would be sample selection, whereby minimum wage increases induce layoffs of non-poor individuals less likely to be on public assistance. However, the West and Reich-preferred specification has produced very little evidence of adverse employment effects (see Allegretto et al. 2011).

participation among these lower-skilled sub-groups. Only for SNAP is there some evidence of a reduction in program participation among less-skilled women (row 1, column 3).[26] But we also find some evidence that minimum wage increases may increase FRPL receipt among non-white individuals (row 3, column 1) and younger individuals without a high school diploma (row 3, column 2). These results are consistent with a redistribution of public benefits among low-skilled individuals caused by adverse labor demand effects of minimum wage increases. Findings in Appendix Table 9, which control for three years of minimum wage leads, produce a similar pattern of results.

Given the centrality of labor demand effects in explaining our findings, in Table 5, we use March 1980 to March 2014 CPS data to estimate the effect of minimum wage increases on employment, weeks, hours worked, and earnings among our low-skilled sub-groups. We find no evidence that minimum wage increases are associated with net increases in unconditional earnings (row 1). For non-whites and younger less-educated individuals, this result appears to be explained by adverse employment (row 2), and conditional hours (row 3) and weeks (row 4) effects.[27] Thus, the adverse labor demand effects of minimum wage increases appear to result in earnings redistribution that does not generate net declines in means-tested program participation. Note that strong evidence for adverse labor demand effects of the minimum wage using the specification from equation 1 stands in stark contrast to the West and Reich-preferred specification shown in Appendix Table 11, which obscures these adverse employment effects (Neumark et al. 2014a; 2014b).

SIPP Findings. In Table 6, we present estimates from the SIPP. The findings in columns (1) through (3), suggest little evidence that minimum wages are associated with a reduction in the probability of SNAP, Medicaid, TANF, or WIC receipt.[28] In contrast to the CPS results, we do find some evidence that among workers (column 2), minimum wage hikes are associated with small reductions in the probability of FRPL participation.[29] However, consistent with CPS-based results, we continue to find that minimum wage hikes are associated with an increase in subsidized housing receipt (row 4).[30]

The remaining columns (columns 4 through 6) show findings for low-skilled sub-groups. Our results point to little evidence that minimum wage increases reduce means-tested public program receipt, with a few exceptions. For non-whites (column 4), we find some evidence that minimum wage increases are associated with a reduction in FRPL participation, and for 16-to-29 year-olds without a high school diploma (column 5), we find a similar effect for SNAP participation.[31] However, at the same time, we find that for non-whites (column 4), minimum wage increases are associated with an increase in housing assistance and WIC receipt. Together, these findings are again consistent with redistributive effects of minimum wage increases across low-skilled sub-groups and across public programs. In Table 7, we present estimates from equation (3) to allow heterogeneous effects of minimum wages on transitions onto or off of public assistance. Columns (1) through (4) present results for working age individuals and workers, while the remaining columns show results for less-skilled sub-groups. The pattern of findings suggests some evidence of redistributive effects of minimum wage increases. For

---

[26] In Appendix Table 8, we show estimates separately for workers and non-workers for these low-skilled sub-groups. The results continue to suggest little evidence that higher minimum wages are effective at reducing program participation, even among the low-skilled workers.

[27] The summary statistics for labor market outcomes are presented in Appendix Table 10.

[28] The precision of our estimates in column (1) is such that we can rule out negative elasticities smaller than -0.180 for SNAP, -0.166 for Medicaid, -0.249 for FRPL, -0.571 for TANF, and -0.068 for WIC. Moreover, we can rule out positive elasticities larger than 0.140 for SNAP, 0.098 for Medicaid, 0.029 for FRPL, 0.255 for TANF, and 0.282 for WIC.

[29] In the SIPP, employment is defined as having a paid job in at least one week of the reference month.

[30] When we restrict CPS data to the SIPP states and years, our results are qualitatively similar.

[31] Appendix Table 12 presents results for non-workers and workers for our low-skilled sub-groups.

instance, we find that among workers, minimum wage increases are associated with a reduction in the probability that non-Medicaid recipients begin receiving Medicaid. On the other hand, there is evidence that minimum wage increases reduce the probability that less-educated 16-to-29 year-old Medicaid recipients leave the program. To take another example, minimum wage increases are associated with a reduction in the probability that 16-to-29 year-olds not collecting food stamps begin participating in the FSP, but also with a decline in the probability that non-white SNAP recipients exit the program. These results are consistent with the hypothesis that minimum wage increases redistribute earnings among low-skilled individuals via adverse labor demand effects, which we show in Appendix Table 13.

Caseloads and Expenditures. In Table 8, we turn to administrative data and present estimates of equation (4) for welfare caseloads per 1,000 individuals (Panel I), expenditures per capita (Panels II) and expenditures per enrollee (Panel III). We find very little evidence that minimum wage increases are associated with changes in Medicaid, FRPL, or AFDC/TANF caseloads. For means-tested program expenditures, the findings also point to little evidence that minimum wage increases are associated with significant reductions in government spending on SNAP/Food stamp, AFDC/TANF, Medicaid, or WIC, though the magnitude of the effect is largest for Medicaid spending. Again, these results are consistent with redistributive effects of minimum wage increases that do not reduce net participation in or spending on public programs.

Taken together, the results across the CPS, SIPP, and our administrative data sources provide little evidence that minimum wage are associated with net reductions in means-tested program participation or expenditures across a wide set of programs. Only for the SNAP program is there some (inconsistent) evidence of reductions in welfare participation, a finding not surprising given the closer link between SNAP eligibility and employment. Rather, the findings we obtain (i) across low-skilled groups and (ii) using longitudinal data more clearly point to evidence that minimum wage increases redistribute income among low-skilled individuals, leading to welfare exit for some, but greater welfare dependence for others.

VI. Heterogeneity in Effects of Minimum Wages over the State Business Cycle

Given recent work showing that adverse labor demand effects of minimum wage increases may be larger (in absolute magnitude) during economic recessions (Addison et al. 2013; Sabia 2014a), we explore the heterogeneity in the effects of minimum wages on public program participation over the state business cycle.

In Table 9A, we follow Sabia (2014a) and interact our key minimum wage variable with real per capita state GDP growth to capture three phases of the state business cycle: (1) recessions, measured by negative real GDP growth, (2) weak to moderate growth, measured by positive growth not exceeding 2.49 percent, and (3) modest to stronger growth, measured by GDP growth greater than or equal to 2.5 percent. The results suggest that minimum wage increases are associated with increases in FRPL participation (column 3 in Panel I) and subsidized housing receipt (column 4 in Panels I and II) during economic recessions, a time when recent research suggest that the adverse employment effects of minimum wages are larger (Addison et al. 2013; Sabia 2014a). However, minimum wage-induced increases in program participation are smaller during economic expansions, and may actually become negative, consistent with evidence that the employment effects of minimum wages are much smaller during times of stronger economic growth. We see this result particularly in the SIPP sample for Medicaid, where reductions in program participation appear during state economic expansions. These findings are consistent with the hypothesis that the effects of minimum wage increases

on public program participation may be sensitive to the state business cycle.

In Table 9B, we repeat the exercise in Table 9A using our administrative data on welfare caseloads and expenditures. Panel I presents results on caseloads per 1,000 individuals, Panel II on expenditures per capita, and Panel III on expenditures per enrollee. Our results in Table 9B provide little evidence that minimum wage increases reduce welfare caseloads or expenditures across the business cycle. Only for SNAP caseloads is there any evidence of beneficial effects of minimum wage increases and these effects appear concentrated in non-recessionary times.

VII. Targeting of Minimum Wage

Adverse labor demand effects of minimum wage effects are one important reason why minimum wage hikes are ineffective at reducing net means-tested program participation. Poor target efficiency may be another. In Table 10A, we use data across time in the March CPS to show the share of means-tested public assistance recipients who were employed over time. These findings highlight the differences over time and across programs in the link between employment and program participation. First, we find that after a drop in employment rates between 1980 and 1985, the labor force participation among welfare recipients, measured at both the extensive margin (the share of recipients who are employed) and the intensive margin (particularly for weeks worked), grew during the period just prior to PRWORA. This upward trend continued into the early 2000s, with the largest increase among AFDC/TANF and FRPL recipients. However, labor force participation dropped dramatically between 2005 and 2013, a period including the Great Recession. By 2013, employment rates resembled their pre-welfare reform levels.

Second, as we look across welfare programs over time,

we find that recipients of SNAP, FRPL, and WIC were more likely to work than recipients of Medicaid, housing subsidies, and AFDC/TANF. For example, in 2013, 35.4 percent of AFDC/TANF recipients were employed (row 5), while 48.7 percent of SNAP recipients, 58.3 percent of parents of FRPL recipients, and 58.8 percent of WIC recipients were employed (rows 1, 3 and 6), suggesting that higher minimum wages might be better targeted to those receiving SNAP, FRPL, and WIC benefits relative to AFDC/TANF.

But even among workers, minimum wages may be poorly targeted to those receiving public assistance. In Table 10B, we use the March CPS from 2012 to 2014 and present cross-tabulations of the wage distributions of workers by whether they received means-tested public benefits. As a means of evaluating the target efficiency of minimum wages, we examine the proposed Harkin-Miller plan to raise the federal minimum wage from $7.25 to $10.10 per hour, Senator Patty Murray's proposal to raise the minimum wage to $12.00 per hour, and Senator Bernie Sanders's proposal to raise the minimum wage to $15.00 per hour.

First, we find that many workers receiving means-tested public benefits earn wages greater than the proposed $10.10 Federal minimum wage. For example, we find 45.8 percent of employed SNAP recipients, 51.1 percent of employed Medicaid recipients, and 45.8 percent of employed WIC recipients earn wages above $10.10. Second, we examine those who would be directly affected by the Harkin-Miller plan—those earning wages between $7.25 and $10.09 per hour—and examine the share of these individuals receiving public assistance (column 9). The results show that the share of working recipients who would be benefited from this minimum wage increase is very limited. Of those affected by the Harkin-Miller plan, only 16.0 percent are SNAP recipients, 13.1 percent are Medicaid recipients, and 16.4 percent are FRPL recipients would benefit from

the Harkin-Miller plan. The targeting of minimum wage increases to poor families becomes worse at $12.00 and $15.00 minimum wage levels. Of those affected by Sen. Sanders' $15 minimum wage proposal, only 12.0 percent are SNAP recipients, 9.7 percent are Medicaid recipients, and 14.1 percent are FRPL recipients (column 11). The findings using the SIPP produce a similar pattern of results (Table 10C).[32]

VIII. Conclusions

This study provides the most comprehensive study to date on the effect of minimum wage increases on means-tested public programs. Using data from multiple government sources—including the March Current Population Survey, the Survey of Income and Program Participation, the U.S. Department of Health and Human Services, and the National Income and Product Accounts (NIPA)—from over three decades, we estimate the effect of minimum wage increases on a wide set of means-tested public programs. The programs we explore offer a wide range of public assistance to needy Americans and their families, including free to low-cost health coverage (Medicaid), affordable housing (housing subsidies), cash assistance to needy families (AFDC/TANF), as well as nutrition assistance (SNAP, WIC, and FRPL).

Our findings suggest that minimum wage increases are largely ineffective at reducing net participation in public assistance programs or in reducing expenditures on means tested public assistance, particularly during non-expansionary times. These findings are true across public programs, time periods examined, and data sources. Only for the SNAP program is there some (inconsistent) evidence that higher minimum wages reduce program participation.

Our results are far more consistent with a redistribution of means-tested program participation among low-skilled individuals, whereby some near-poor workers are able to remain off of public assistance due to income gains from minimum wage hikes, while others are less likely to exit welfare due to adverse labor demand effects. Finally, we conclude that minimum wages are poorly targeted to those eligible for means-tested benefits. Therefore, the policy objective of alleviating government dependency and reducing government spending is unlikely to be substantially advanced by increases in state or federal minimum wages.

---

[32] Estimates using data on hourly workers presented in Appendix Tables 14A and 14B show a similar pattern of results.

References

Addison, John T., McKinley L. Blackburn, and Chad D. Cotti. 2013. "Minimum wage increases in a recessionary environment." *Labour Economics* 23:30–39.

Allegretto, Sylvia, Arindrajit Dube, and Michael Reich. 2011. "Do Minimum Wages Really Reduce Teen Employment? Accounting for Heterogeneity and Selectivity in State Panel Data." *Industrial Relations* 50(2): 945-964.

Aschauer, David A. 1989. "Is public expenditure productive?" Journal of Monetary Economics 23(2): 177-200.

Baicker, Katherine, Amy Finkelstein, Jae Song, and Sarah Taubman. 2014. "The Impact of Medicaid on Labor Market Activity and Program Participation: Evidence from the Oregon Health Insurance Experiment." *American Economic Review*, 104(5): 322-28.

Baker, Michael, Dwayne Benjamin, and Shuchita Stanger. 1999."The Highs and Lows of the Minimum Wage Effect: A Time-Series Cross-Section Study of the Canadian Law." *Journal of Labor Economics* 17(2): 318-50.

Besharov, Douglas, and Douglas Call. 2009. "The Expansion of WIC Eligibility and Enrollment: Good Intentions, Uncontrolled Local Discretion, and Compliant Federal Officials" AEI Working Paper.

Bitler, Marianne P., Janet Currie, and John Karl Scholz. 2003. "WIC Eligibility and Participation." *Journal of Human Resources* 38: 1139-1179.

Brandon, Peter D. 1995. "An Empirical Analysis of AFDC Exits, Employment, and State-Level Minimum Wages." Center for Demography and Ecology Working Paper No. 95-24. Madison, WI: University of Wisconsin-Madison."

Brandon, Peter D. 2008. "Examining Effects of Minimum Wages on Single Mothers' Exits from Welfare." Employment Policies Institute. Washington DC.

Available at: https://www.epionline.org/wp-content/studies/brandon_07-2008.pdf

Burkhauser, Richard V. and Joseph J. Sabia. 2007. "The Effectiveness of Minimum Wage Increases in Reducing Poverty: Past, Present, and Future." *Contemporary Economic Policy* 25(2): 262-281.

Burkhauser, Richard V., Kenneth A. Couch, and Andrew J. Glenn. 1996. "Public Policies for the Working Poor: The Earned Income Tax Credit versus Minimum Wage Legislation." In Sol W. Polachek (ed.), *Research in Labor Economics*, 15: 65-109.

Card, David and Alan B. Kruger. 1995. "Myth and Measurement: The New Economics of the Minimum Wage," Princeton, NJ: Princeton University Press.

Center for Medicaid and CHIP Services. 2015. "List of Medicaid Eligibility Groups." Available at: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/Downloads/List-of-Eligibility-Groups.pdf

Clinton, Hillary R. 1996. "It Takes a Village: And Other Lessons Children Teach Us." Simon & Schuster, NY, NY.

Congressional Budget Office. 2014. "The Effects of a Minimum-Wage Increase on Employment and Family Income." Retrieved from http://www.cbo.gov/publication/44995

Council of Economic Advisers. 1999. Technical report: The effects of welfare policy and the economic expansion on welfare caseloads: An update. Washington, DC: The White House.

Courtney, Joseph. 2014. "Courtney: Minimum Wage Increase Would Lift Families out of Poverty, Decrease Participation in Nutrition Assistance." Press Releases, Retrieved from: http://courtney.house.gov/press-releases/courtney-minimum-wage-increase-would-lift-families-out-of-poverty-decrease-participation-in-nutrition-assistance/

Dube, Arindrajit, William T. Lester and Michael Reich. 2010. "Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties" *Review of Economics and Statistics* 92(4):945-964.

Falk, Gene. 2012. "Temporary Assistance for Needy Families: Welfare Waivers Congressional Research Services." Available at: http://democrats.edworkforce.house.gov/sites/democrats.edworkforce.house.gov/files/documents/112/pdf/TANF-CRSMemo-9.6.12.pdf

Falk, Gene and Vee Burke. 2012."Temporary Assistance for Needy Families (TANF): Welfare-to-work revisited." Washington, DC: Congressional Research Service.

Golan, Amos, Jeffrey M. Perloff, and Ximing Wu. 2001."Welfare effects of minimum wage and other government policies." CUDARE Working Paper Series 957, University of California at Berkeley, Department of Agricultural and Resource Economics and Policy.

Grogger, Jeffrey. 2003. "The effects of time limits and other policy changes on welfare use, work, and income among female-headed families." *Review of Economics and Statistics* 85(2):394–408.

Gundersen, Craig, and James P. Ziliak. 2004. "Poverty and Macroeconomic Performance Across Space, Race, and Family Structure," Demography 41(1): 61–86.

Hanson, Kenneth. 2010. "*The Food Assistance National Input-Output Multiplier (FANIOM) Model and Stimulus Effects of SNAP.*" ERR-103. U.S. Department of Agriculture, Economic Research Service.

Hahn, Heather, David Kassabian, and Sheila Zedlewski. 2012. "TANF Work Requirements and State Strategies to Fulfill Them." Washington: The Urban Institute. Available at: http://www.acf.hhs.gov/sites/default/files/opre/work_requirements_0.pdf

Huber, Erika, Elissa Cohen, Amanda Briggs, and David Kassabian. 2015. "Welfare Rules Databook: State TANF Policies as of July 2015", Washington, DC: The Urban Institute.

Kaiser Family Foundation. 2015. " Where Are States Today? Medicaid and CHIP Eligibility Levels for Adults, Children, and Pregnant Women as of January 2015." Available at: http://kff.org/medicaid/fact-sheet/where-are-states-today-medicaid-and-chip/

Lundstrom, S. 2014. "Why Did the Target Efficiency of the Minimum Wage Increase in Recent Years?" Working paper, UC-Irvine. Retrieved from http://www.cepp.uci.edu/files/news_events/2014/lundstrom-mw_tar_eff_16.pdf

MaCurdy, Thomas. 2015. "How Effective Is the Minimum Wage at Supporting the Poor?" *Journal of Political Economy* 123(2): 497-545

McCarrier, Kelly P., Frederick J. Zimmerman, James D. Ralston, and Diane P. Martin. 2011." Associations Between Minimum Wage Policy and Access to Health Care: Evidence From the Behavioral Risk Factor Surveillance System 1996–2007." American Journal of Public Health 101(2): 359–367.

McGovern, Jim. 2014. "We Need a Living Wage." End Hunger Now Speech, Retrieved from: http://mcgovern.house.gov/media-center/press-releases/us-rep-jim-mcgovern-end-hunger-now-speech-we-need-a-living-wage

Meer, Jonathan and Jeremy West. 2013 "Effects of the Minimum Wage on Employment Dynamics." NBER Working Paper 19262. Retrieved from http://econweb.tamu.edu/jmeer/Meer_West_Minimum_Wage.pdf

Moffitt, Robert A. 1999. "The Effects of Pre-PRWORA Waivers on Welfare Caseloads and Female Earnings, Income, and Labor Force Behavior." In Sheldon H. Danziger, ed., Economic Conditions and Welfare Reform. Kalamazoo, Mich.: W. E. Upjohn Institute for Employment Research.

Moffitt, Robert A. 2003. "The Temporary Assistance for Needy Families Program," NBER Chapters, in: *Means-Tested Transfer Programs in the United States:* 291-364, National Bureau of Economic Research, Inc.

Neumark, David and Elizabeth T. Powers. 2003. "The Effect of the SSI Program on Labor Supply: Improved Evidence from Social Security Administrative Files." *Social Security Bulletin 65, no. 3: 45-60. EconLit, EBSCOhost* (accessed March 19, 2015).

Neumark, David, Mark Schweitzer and William Wascher. 2005."Minimum wage effects throughout the wage distribution." *Journal of Human Resources*, 39(2): 425-450.

Neumark, David and William Wascher. 2002. "Do Minimum Wages Fight Poverty?" *Economic Inquiry* 40(3): 315-333.

Neumark, David and William Wascher. 2008. "Minimum Wages." MIT Press: Cambridge, MA.

Neumark, David, Ian Salas, and William Wascher. 2014a. "Revisiting the Minimum Wage-Employment Debate: Throwing Out the Baby with the Bathwater?" *Industrial and Labor Relations Review* 67: 608-648.

Neumark, David, J.M. Ian Salas, and William Wascher. 2014b "More on Recent Evidence on the Effects of Minimum Wages in the United States," IZA Journal of Labor Policy, 3(24).

Obama, Barack. 2013. State of the Union address.

Page, Marianne E., Joanne Spetz and Jane Millar. 2005. "Does the minimum wage affect welfare caseloads?" *Journal of Policy Analysis and Management*, 24(2): 273-295.

Sabia, Joseph J. 2014a. "The Effect of Minimum Wages over the Business Cycle." *Journal of Labor Research* 35 (3): 227-245.

Sabia, Joseph J. 2014b. "Minimum Wages: An Antiquated and Ineffective Antipoverty Tool."*Journal of Policy Analysis and Management* 33(4): 1028–1036.

Sabia, Joseph J. and Richard V. Burkhauser. 2010. "Minimum Wages and Poverty: Will a $9.50 Federal Minimum Wage Really Help the Working Poor?" *Southern Economic Journal* 76(3): 592-623.

Sabia, Joseph J., Richard V. Burkhauser and Benjamin Hansen. 2015. "When Good Measurement Goes Bad: New Evidence that New York State's Minimum Wage Reduced Employment." *Industrial and Labor Relations Review*.

Sabia, Joseph J., Richard V. Burkhauser and Thanh Tam Nguyen. 2015. "Minimum Wages, Poverty, and Government Assistance," Working paper, San Diego State University.

Sabia, Joseph J. and Robert Nielsen. 2015. "Minimum Wages, Poverty, and Material Hardship: New Evidence from the SIPP." *Review of Economics of the Household* 13(1): 95-134

Sabia, Joseph J. 2008. "Minimum Wages and the Economic Wellbeing of Single Mothers." *Journal of Policy Analysis and Management* 27: 848-866.

Schoeni, Robert F. and Rebecca M. Blank. 2000. "What Has Welfare Reform Accomplished? Impacts on Welfare Participation, Employment, Income, Poverty, and Family Structure." NBER Working Paper no. 7627.

Social Security Administration. 2012. "Supplemental Nutrition Assistance Program Facts." Available at: http://ssa.gov/pubs/EN-05-10101.pdf

Stigler, George. 1946." The Economics of Minimum Wage Legislation." *American Economic Review* 36(3):358–65.

Tax Policy Center. 2014. "State Minimum Wage Rates:

1983-2014." Retrieved from http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=603

Thompson, Jeffrey P. 2009. "Using Local Labor Market Data to Re-Examine the Employment Effects of the Minimum Wage," *Industrial and Labor Relations Review* 62(3): 343-366.

Turner, M. 1999. "The Effects of Higher Minimum Wages on Welfare Recipiency." Unpublished mimeo, Johns Hopkins University.

U.S. Department of Agriculture. 2015. "SNAP Annual State Level Data". Available at: http://www.fns.usda.gov/pd/supplemental-nutrition-assistance-program-snap

U.S. Department of Agriculture. 2015."Programs and Service." Available at: http://www.fns.usda.gov/programs-and-services

U.S. Government Accountability Office. 2010." Temporary Assistance for Needy Families: Implications of Recent Legislative and Economic Changes for State Programs and Work Participation Rates." GAO-10-525. Washington, DC: U.S. Government Accountability Office. Available at: http://www.gao.gov/products/GAO-10-525

U.S. Department of Health and Human Services, Office of Family Assistance. 2011."Work Participation Rates - Fiscal Year 2009" Available at: http://www.acf.hhs.gov/programs/ofa/resource/wpr2009

U.S. Department of Labor. 2013. "Changes in Basic Minimum Wages in Non-Farm Employment under State Law: Selected Years 1968 to 2013." Available at: http://www.dol.gov/whd/state/stateMinWageHis.htm

West, Rachel and Michael Reich. 2015. "The Effects of Minimum Wages on Food Stamp Enrollment and Expenditures," *Industrial Relations*.

West, Rachel and Michael Reich. 2014. "*A Win-Win for*

Working Families and State Budgets: Pairing Medicaid Expansion and a $10.10 Minimum," Center for American Progress. Available at: http://www.irle.berkeley.edu/research/minimumwage/min-wage-medicaid-report.pdf

Wheaton, Laura and Linda Giannarelli. 2000. "Underreporting of Means-tested Transfer Programs in the March CPS." *American Statistical Association 2000 Proceedings of the Sections on Government Statistics & Social Statistics*, 236-241.

Wheaton, Laura. 2008. "*Underreporting of Means-Tested Transfer Programs in the CPS and SIPP.*" Washington, DC: The Urban Institute. Available at: http://www.urban.org/sites/default/files/alfresco/publication-pdfs/411613-Underreporting-of-Means-Tested-Transfer-Programs-in-the-CPS-and-SIPP.PDF

Wilde, Parke E. 2013. "The New Normal: The Supplemental Nutrition Assistance Program (SNAP)." American Journal of Agricultural Economics 95(2): 325-331.

Yelowitz, Arron. 2001. "*Public Housing and Labor Supply,*" Mimeo, University of Kentucky.

Figure 1. Means-Tested Program Receipt, CPS, 1979-2013
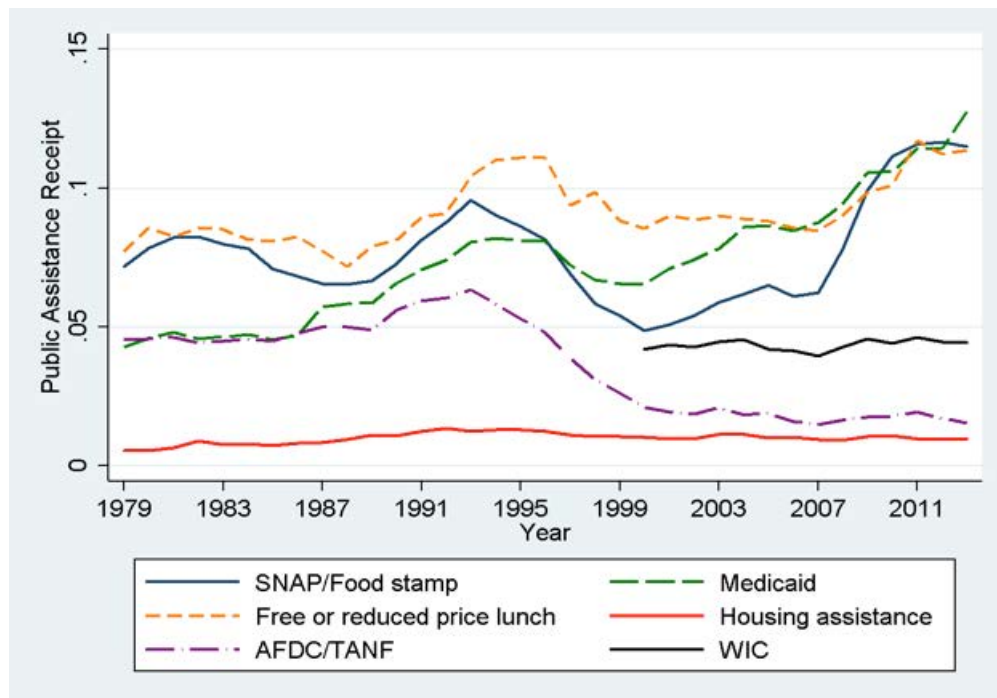
Notes: Figure is created using data drawn from the Current Population Survey March Supplements between 1980 and 2014. SNAP/Food stamp, Medicaid, FRPL and housing assistance receipt rates are obtained from the sample of all individuals ages 16 to 64. WIC and AFDC/TANF receipt rates are obtained from the sample of women ages 16 to 54. Data on WIC receipt are only available between 2001 and 2014.

Figure 2. Means-Tested Program Receipt, SIPP, 1996-2013
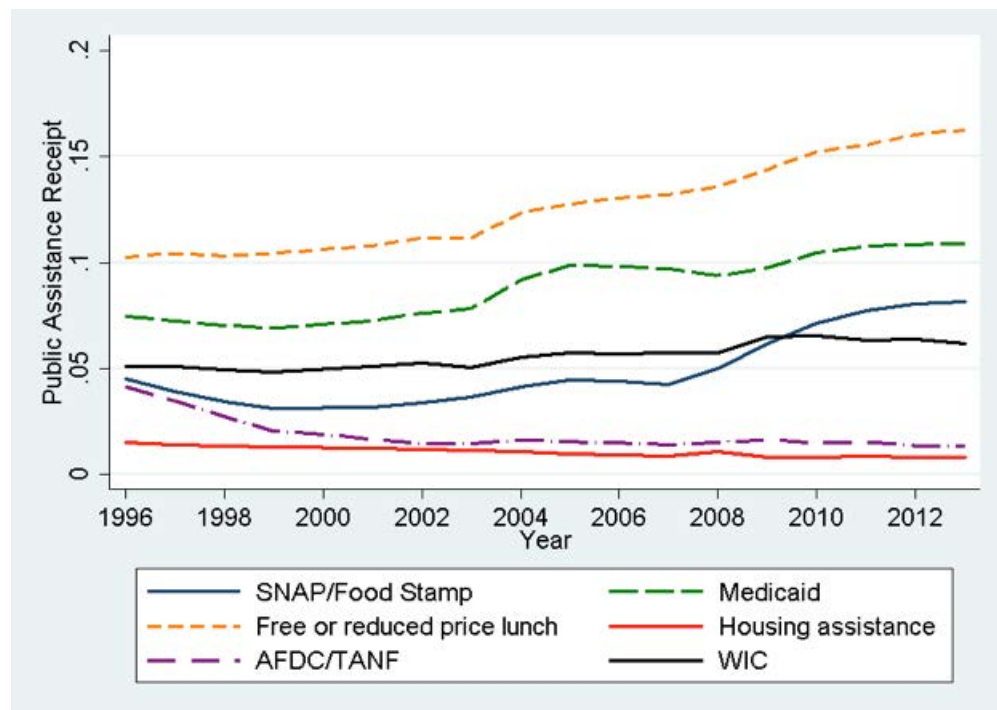
Notes: Figure is created using data drawn from the Survey of Income and Program Participation between 1996 and 2013. SNAP/Food stamp, Medicaid, FRPL and housing assistance receipt rates are obtained from the sample of all individuals ages 16 to 64. WIC and AFDC/TANF receipt rates are obtained from the sample of women ages 16 to 54.

Figure 3. Means-Tested Program Caseloads, 1980-2013
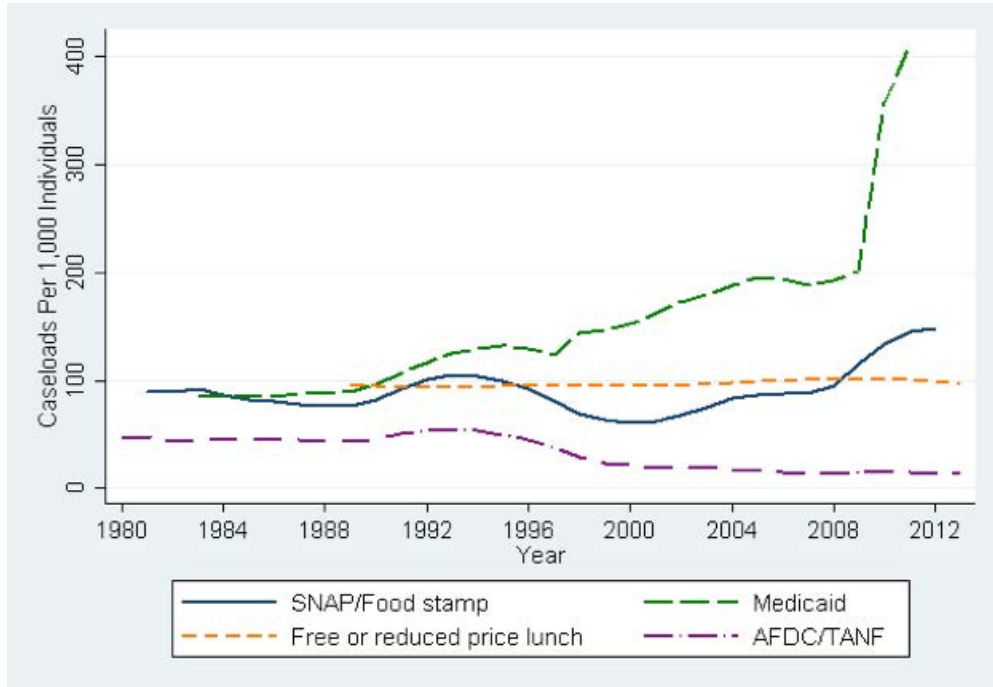
Notes: Figure is created using data drawn from Census Bureau-Small Area Income and Poverty Estimates between 1981 and 2012 (SNAP/food stamp), the Statistical Abstract-Health and Nutrition between 1980 and 2011 (Medicaid), the U.S. Department of Agriculture (FRPL) between 1989 and 2013, and the Office of Family Assistance between 1980 and 2013 (AFDC/TANF).

Figure 4. Means-Tested Program Expenditures, 1980-2013
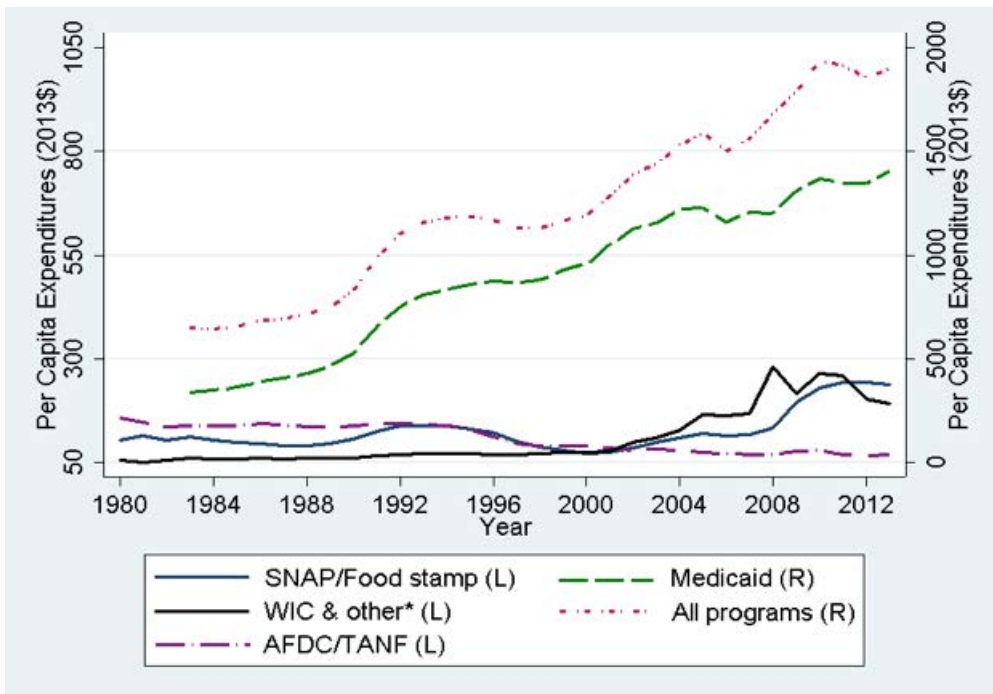
Notes: Figure is created using data drawn from the National Income and Product Accounts between 1980 and 2013.
* In the NIPA, WIC expenditures are grouped with expenditures on General Assistance Foster care and adoption assistance, Child Tax Credits, Economic stimulus Act of 2008 rebates, American Recovery and Reinvestment Act of 2009 (ARRA) Making Work Pay tax credits, Government Retiree tax credits, Adoptive tax credits and Energy Assistance benefits. L: Line refers to the left axis. R: Line refers to the right axis.

Table 1A. Summary Statistics of Program Participation, CPS and SIPP

	Working Ages	Workers	Non-Workers	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1: March CPS 1979-2013						
Public Assistance Measures						
SNAP/Food Stamp	0.077 (0.267) [3,798,071]	0.050 (0.217) [2,943,160]	0.171 (0.376) [954,911]	0.148 (0.355) [1,128,449]	0.174 (0.379) [352,576]	0.611 (0.488) [30,316]
Medicaid	0.076 (0.265) [3,798,071]	0.038 (0.192) [2,943,160]	0.204 (0.403) [854,911]	0.135 (0.342) [1,128,449]	0.183 (0.387) [352,576]	0.545 (0.498) [30,316]
FRPL	0.092 (0.289) [3,798,071]	0.073 (0.259) [2,943,160]	0.159 (0.365) [854,911]	0.200 (0.400) [1,128,449]	0.227 (0.419) [352,576]	0.599 (0.490) [30,316]
Housing Assistance	0.010 (0.1) [3,798,071]	0.006 (0.08) [2,943,160]	0.023 (0.150) [854,911]	0.021 (0.144) [1,128,449]	0.02 (0.14) [352,576]	0.097 (0.295) [30,316]
AFDC/TANF*	0.035 (0.183) [1,679,508]	0.018 (0.134) [1,231,641]	0.081 (0.272) [447,867]	0.069 (0.253) [527,660]	0.075 (0.263) [168,183]	0.406 (0.491) [30,316]
WIC[ab]	0.044 (0.204) [777,444]	0.034 (0.180) [566,271]	0.070 (0.255) [211,173]	0.072 (0.258) [285,331]	0.089 (0.285) [80,817]	0.237 (0.425) [12,628]
Panel II: SIPP 1996-2013						
Public Assistance Measures						
SNAP/Food Stamp	0.049 (0.217) [9,551,775]	0.024 (0.152) [6,779,707]	0.115 (0.319) [2,772,068]	0.087 (0.282) [2,893,801]	0.057 (0.231) [762,746]	0.575 (0.494) [65,559]
Medicaid	0.089 (0.285) [9,551,775]	0.039 (0.193) [6,779,707]	0.218 (0.413) [2,772,068]	0.151 (0.358) [2,893,801]	0.229 (0.42) [762,746]	0.539 (0.498) [65,559]
FRPL	0.127 (0.334) [9,551,775]	0.102 (0.302) [6,779,707]	0.193 (0.394) [2,772,068]	0.267 (0.442) [2,893,801]	0.303 (0.46) [762,746]	0.667 (0.471) [65,559]
Housing assistance	0.010 (0.101) [9,551,775]	0.006 (0.078) [6,779,707]	0.021 (0.145) [2,772,068]	0.021 (0.143) [2,893,801]	0.022 (0.148) [762,746]	0.089 (0.284) [65,559]
AFDC/TANF[a]	0.019 (0.135) [4,133,931]	0.007 (0.082) [2,802,407]	0.044 (0.205) [1,331,524]	0.037 (0.189) [1,356,214]	0.039 (0.193) [361,122]	0.231 (0.422) [65,559]
WIC[ab]	0.056 (0.230) [4,133,931]	0.035 (0.184) [2,802,407]	0.101 (0.302) [1,331,524]	0.102 (0.302) [1,356,214]	0.129 (0.336) [361,122]	0.252 (0.434) [65,559]

	Working Ages	Workers	Non-Workers	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
Transition onto Public Assistance						
SNAP/Food Stamp	0.020 (0.142) [974,035]	0.013 (0.112) [763,275]	0.042 (0.202) [351,210]	0.034 (0.182) [289,181]	0.029 (0.168) [99,294]	0.227 (0.419) [3,788]
Medicaid	0.038 (0.191) [926,640]	0.022 (0.147) [746,544]	0.087 (0.282) [312,529]	0.066 (0.249) [265,727]	0.1 (0.3) [79,420]	0.255 (0.436) [3,820]
FRPL	0.041 (0.198) [885,162]	0.036 (0.185) [695,601]	0.057 (0.232) [312,662]	0.089 (0.284) [228,389]	0.105 (0.306) [71,596]	0.292 (0.455) [2,941]
Housing Assistance	0.005 (0.068) [1,016,134]	0.003 (0.057) [781,545]	0.009 (0.092) [386,963]	0.009 (0.094) [310,704]	0.009 (0.094) [101,995]	0.036 (0.187) [7,399]
AFDC/TANF[a]	0.009 (0.095) [438,113]	0.005 (0.068) [329,319]	0.02 (0.139) [179,729]	0.017 (0.129) [143,420]	0.022 (0.147) [47,906]	0.094 (0.291) [6,290]
WIC[a]	0.022 (0.147) [422,850]	0.015 (0.122) [319,512]	0.039 (0.194) [170,616]	0.039 (0.195) [135,060]	0.059 (0.235) [44,212]	0.096 (0.294) [6,062]
Transition onto Public Assistance						
SNAP/Food Stamp	0.300 (0.458) [54,178]	0.408 (0.492) [24,472]	0.237 (0.425) [40,817]	0.284 (0.451) [28,957]	0.325 (0.468) [5,135]	0.192 (0.394) [4,260]
Medicaid	0.337 (0.473) [101,573]	0.456 (0.498) [41,203]	0.279 (0.448) [79,498]	0.337 (0.473) [52,411]	0.34 (0.474) [25,009]	0.246 (0.431) [4,228]
FRPL	0.311 (0.463) [143,051]	0.335 (0.472) [92,146]	0.278 (0.448) [79,365]	0.281 (0.45) [89,749]	0.301 (0.459) [32,833]	0.19 (0.392) [5,107]
Housing assistance	0.389 (0.487) [12,079]	0.408 (0.492) [6,202]	0.396 (0.489) [8,352]	0.387 (0.487) [7,434]	0.406 (0.491) [2,434]	0.424 (0.495) [649]
AFDC/TANF[a]	0.449 (0.497) [9,392]	0.611 (0.487) [3,999]	0.38 (0.485) [7,913]	0.418 (0.493) [6,040]	0.438 (0.496) [1,704]	0.338 (0.473) [1,758]
WIC[a]	0.349 (0.477) [24,655]	0.393 (0.488) [13,806]	0.313 (0.464) [17,026]	0.33 (0.47) [14,400]	0.332 (0.471) [5,398]	0.345 (0.475) [1,986]

Notes: Weighted means are obtained from data drawn from the Current Population Survey March Supplements between 1980 and 2014, and the Survey of Income and Program Participation between 1996 and 2013. Standard deviations are in parentheses and number of observations in brackets. a Sample in columns (1) through (3) is restricted to women ages 16 to 54. b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

Table 1B. Summary Statistics of per Capita Caseloads and Expenditures

	Mean	Std. Dev	N
Panel I: Caseloads per 1,000 individuals			
SNAP/Food Stamp	91.098	34.306	1,632
Medicaid[a]	159.700	118.078	1,469
Free or reduced price lunch[b]	96.815	20.207	1,275
AFDC/TANF[c]	31.169	20.286	1,683
Panel II: Expenditures per capita (2013$)			
SNAP/Food Stamp	126.456	63.379	1,734
Medicaid[d]	928.481	507.117	1,581
AFDC/TANF	104.826	78.606	1,734
WIC & other[e]	112.721	82.510	1,734
Total of above programs	1,158.131	547.678	1,581

Notes: Weighted means are obtained from data drawn from the Census Bureau—Small Area Income and Poverty Estimates between 1981 and 2012 (SNAP/Food stamp), the Statistical Abstract—Health and Nutrition between 1980 and 2011 (Medicaid), the U.S. Department of Agriculture (FRPL) between 1989 and 2013, the Office of Family Assistance between 1980 and 2013 (AFDC/TANF), and the National Income and Product Accounts (expenditures) between 1980 and 2013.
a Medicaid caseloads are missing for Arizona between 1983 and 1990, and Hawaii in 1997 and 1999.
b National School Lunch Program caseloads are available between 1989 and 2013.
c AFDC/TANF caseloads are missing for 1984.
d Data are consistently available for all states and years between 1983 and 2013.
e WIC expenditures are grouped with expenditures on General Assistance Foster care and adoption assistance, Child Tax Credits, Economic stimulus Act of 2008 rebates, American Recovery and Reinvestment Act of 2009 (ARRA) Making Work Pay tax credits, Government Retiree tax credits, Adoptive tax credits and Energy Assistance benefits.

Table 2. Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt, CPS, 1979-2013

	Working age	Workers	Non-workers
	(1)	(2)	(3)
SNAP/Food stamp	-0.009	-0.002	-0.029
	(0.011)	(0.006)	(0.027)
N	3,798,071	2,943,160	854,911
Medicaid	0.001	0.010	-0.038
	(0.013)	(0.008)	(0.038)
N	3,798,071	2,943,160	854,911
FRPL	0.020***	0.017***	0.036***
	(0.005)	(0.003)	(0.013)
N	3,798,071	2,943,160	854,911
Housing assistance	0.003**	0.001	0.010***
	(0.001)	(0.001)	(0.003)
N	3,798,071	2,943,160	854,911
AFDC/TANF[a]	0.001	0.001	0.007
	(0.003)	(0.001)	(0.009)
N	1,679,508	1,231,641	447,867
WIC[ab]	-0.003	-0.001	-0.010
	(0.002)	(0.002)	(0.006)
N	777,444	566,271	211,173
State & year FE?	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility) , Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54.

b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

Table 3. Robustness of Estimates of Relationship between Minimum Wage Increases and Public Assistance Receipt to Controls for Geographic-Specific Time Trends, CPS, 1979-2013

	Working age	Workers	Non-workers	Non-workers (HH Adult=1[c])	Non-workers (HH Adult=1[c])
	(1)	(2)	(3)	(4)	(5)
SNAP/Food stamp	-0.021***	-0.006	-0.076***	-0.227**	-0.067
	(0.008)	(0.005)	(0.021)	(0.095)	(0.063)
N	3,798,071	2,943,160	854,911	110,365	110,365
Medicaid	-0.008	-0.000	-0.030	-0.206**	-0.086
	(0.009)	(0.005)	(0.024)	(0.087)	(0.071)
N	3,798,071	2,943,160	854,911	110,365	110,365
FRPL	0.003	0.004	0.004	0.037	0.013
	(0.006)	(0.005)	(0.017)	(0.065)	(0.023)
N	3,798,071	2,943,160	854,911	110,365	110,365
Housing assistance	-0.004**	-0.003*	-0.007	-0.050	0.032
	(0.002)	(0.001)	(0.005)	(0.033)	(0.031)
N	3,798,071	2,943,160	854,911	110,365	110,365
AFDC/TANF[a]	-0.008***	-0.003*	-0.017*	-0.258**	0.037
	(0.003)	(0.002)	(0.009)	(0.123)	(0.116)
N	1,679,508	1,231,641	447,867	51,793	51,793
WIC[ab]	-0.004*	0.001	-0.030***	-0.021	0.009
	(0.002)	(0.002)	(0.008)	(0.018)	(0.014)
N	777,444	566,271	211,173	23,872	23,872
State & year FE?	Yes	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes	Yes
State linear time trend?	Yes	Yes	Yes	Yes	No

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54.

b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

c Sample is restricted to households with only one working-age adult age 18 or older.

Table 4. Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt by Low-Skilled Sub-Groups, CPS, 1979-2013

	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)
SNAP/Food stamp	0.001	0.017	-0.193**
	(0.013)	(0.017)	(0.080)
N	1,128,449	352,576	30,316
Medicaid	0.028	-0.038	-0.023
	(0.021)	(0.026)	(0.066)
N	1,128,449	352,576	30,316
FRPL	0.108***	0.091***	0.116
	(0.024)	(0.031)	(0.085)
N	1,128,449	352,576	30,316
Housing assistance	0.003	0.005	0.042
	(0.003)	(0.004)	(0.038)
N	1,128,449	352,576	30,316
AFDC/TANF[a]	0.008	0.002	0.008
	(0.010)	(0.008)	(0.138)
N	527,660	168,183	30,316
WIC[ab]	0.003	0.013	-0.104
	(0.006)	(0.016)	(0.089)
N	285,331	80,817	12,628
State & year FE?	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes

*** significant at 1% level ****** significant at 5% level ***** significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility) , Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54.

b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

Table 5. Estimates of the Relationship between Minimum Wage Increases and Labor Market Outcomes[a], CPS, 1979-2013

	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)
Ln(Earnings)[a]	0.075	-0.630***	1.203
	(0.140)	(0.202)	(0.746)
N	1,080,091	347,330	29,759
Employed	0.024	-0.085***	0.151
	(0.018)	(0.032)	(0.092)
N	1,080,091	347,330	29,759
Ln(Hours) | Employed=1	-0.046**	-0.214***	0.011
	(0.018)	(0.046)	(0.072)
N	750,173	170,024	15,523
Ln(Weeks) | Employed=1	-0.044***	-0.058*	0.076
	(0.013)	(0.032)	(0.129)
N	750,173	170,024	15,523
State & year FE?	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates in rows 1, 3 and 4, and marginal effects from weighted probit estimates in row 2 are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Earnings are unconditional and measured as annual earnings; hours as weekly hours, and weeks as annual weeks.

We take the natural log of 1 for individuals who report zero earnings.

Table 6. Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt, SIPP, 1996-2013

	Working age	Workers	Non-workers	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)	(4)	(5)	(6)
SNAP/Food stamp	-0.001	-0.004	0.006	0.006	-0.045***	-0.027
	(0.004)	(0.002)	(0.009)	(0.007)	(0.013)	(0.098)
N	9,551,775	6,779,707	2,772,068	2,893,801	762,746	65,559
Medicaid	-0.003	-0.005	0.013	-0.008	0.009	0.090
	(0.006)	(0.005)	(0.013)	(0.015)	(0.036)	(0.070)
N	9,551,775	6,779,707	2,772,068	2,893,801	762,746	65,559
FRPL	-0.014	-0.015*	-0.009	-0.036*	-0.005	-0.023
	(0.009)	(0.008)	(0.017)	(0.019)	(0.031)	(0.096)
N	9,551,775	6,779,707	2,772,068	2,893,801	762,746	65,559
Housing assistance	0.006***	0.002	0.016**	0.016***	0.006	-0.004
	(0.002)	(0.002)	(0.007)	(0.005)	(0.009)	(0.053)
N	9,551,775	6,779,707	2,772,068	2,893,801	762,746	65,559
AFDC/TANF[a]	-0.003	-0.000	-0.003	0.001	0.005	0.037
	(0.004)	(0.003)	(0.010)	(0.009)	(0.021)	(0.074)
N	4,133,931	2,802,407	1,331,524	1,356,214	361,122	65,559
WIC[a]	0.006	0.009*	0.004	0.022*	-0.017	-0.023
	(0.005)	(0.005)	(0.011)	(0.011)	(0.043)	(0.074)
N	4,133,931	2,802,407	1,331,524	1,356,214	361,122	65,559
State & year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Month FE?	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE?	Yes	Yes	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates are obtained using data drawn from the Survey of Income and Program Participation between 1996 and 2013. Time-variant individual controls include marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). A dummy for the fourth month of the reference period is included in each regression. Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54 in columns (1) through (4), and women of stated ages in columns (5) and (6).

Table 7. Estimates of the Relationship between Minimum Wage Increases and Transition onto and off of Public Assistance, SIPP, 1996-2013

	Working age		Workers		Non-White		Ages 16-29 without HS		Single Mothers without HS Ages 16-45	
	Transition onto	Transition off of	Transition onto	Transition off of	Transition onto	Transition off of	Transition onto	Transition off of	Transition onto	Transition off of
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SNAP/ Food stamp	0.007	-0.127	-0.002	-0.041	0.016	-0.184*	-0.081***	0.333	-0.111	-0.059
	(0.008)	(0.086)	(0.008)	(0.230)	(0.012)	(0.113)	(0.030)	(0.602)	(0.481)	(0.373)
N	974,035	54,178	763,275	24,472	289,181	28,957	99,294	5,135	3,788	4,260
Medicaid	-0.010	-0.191**	-0.025**	-0.268	-0.012	-0.153	-0.007	-0.471**	-0.420	-0.555
	(0.012)	(0.082)	(0.011)	(0.208)	(0.032)	(0.115)	(0.091)	(0.202)	(0.304)	(0.482)
N	926,640	101,573	746,544	41,203	265,727	52,411	79,420	25,009	3,820	4,228
FRPL	-0.014	0.097	-0.014	0.057	-0.049*	0.121	-0.002	-0.168	0.297	0.036
	(0.014)	(0.157)	(0.013)	(0.164)	(0.025)	(0.174)	(0.066)	(0.276)	(0.622)	(0.399)
N	885,162	143,051	695,601	92,146	228,389	89,749	71,596	32,833	2,941	5,107
Housing Asst.	-0.001	-0.499	-0.004	-0.735	-0.007	-0.495	-0.030*	-1.421**	0.003	-1.257
	(0.005)	(0.366)	(0.006)	(0.735)	(0.010)	(0.463)	(0.017)	(0.652)	(0.110)	(1.864)
N	1,016,134	12,079	781,545	6,202	310,704	7,434	101,995	2,434	7,399	649
AFDC/ TANF[a]	-0.001	-0.045	-0.003	-0.462	0.000	-0.136	0.020	-0.844	0.014	-0.255
	(0.007)	(0.512)	(0.005)	(0.967)	(0.018)	(0.458)	(0.049)	(1.117)	(0.154)	(0.663)
N	438,113	9,392	329,319	3,999	143,420	6,040	47,906	1,704	6,290	1,758
WIC[a]	-0.006	-0.160	-0.007	-0.250	-0.016	-0.292	0.035	-0.237	0.033	0.158
	(0.009)	(0.203)	(0.008)	(0.411)	(0.024)	(0.247)	(0.102)	(0.538)	(0.122)	(0.828)
N	422,850	24,655	319,512	13,806	135,060	14,400	44,212	5,398	6,062	1,986
State & year FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. FE?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. & State controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates are obtained using data drawn from the Survey of Income and Program Participation between 1996 and 2013. Time-variant individual controls include marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54 in columns (1) through (6), and women of stated ages in columns (7) through (10).

Table 8. Estimates of the Relationship between Minimum Wage Increases and Welfare Caseloads and Expenditures, 1980-2013

Panel I: Caseloads					
	SNAP/Food stamp	Medicaid[a]	AFDC/TANF[b]	FRPL[c]	
	(1)	(2)	(3)	(4)	
Ln(MW)	-0.191	0.021	-0.275	0.065	
	(0.125)	(0.258)	(0.443)	(0.054)	
N	1,632	1,469	1,683	1,275	
Panel II: Expenditures per Capita					
	SNAP/Food stamp	Medicaid[d]	AFDC/TANF	WIC & other[e]	All programs
	(1)	(2)	(3)	(4)	(5)
Ln(MW)	-0.168	-0.117	0.041	-0.166	-0.158
	(0.122)	(0.141)	(0.176)	(0.277)	(0.098)
N	1,734	1,581	1,734	1,734	1,581
Panel III: Expenditures per Enrollee[f]					
	SNAP/Food stamp	Medicaid[d]	AFDC/TANF	All programs	
	(1)	(2)	(3)	(4)	
Ln(MW)	0.024	-0.064	0.310	0.081	
	(0.075)	(0.256)	(0.452)	(0.110)	
N	1,632	1,469	1,683	1,419	

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates using data drawn from the Census Bureau—Small Area Income and Poverty Estimates (SNAP/food stamp caseloads) between 1981 and 2012, the Survey of Income and Program Participation between 1996 and 2013, the Statistical Abstract—Health and Nutrition (Medicaid caseloads) between 1980 and 2011, the U.S. Department of Agriculture (FRPL) between 1989 and 2013, the Office of Family Assistance (AFDC/TANF caseloads) between 1980 and 2013, and the National Income and Product Accounts (expenditures) between 1980 and 2013. Controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, gender, racial composition, marriage rates, educational attainment, average age, household size, and average number of children under age 18 in households, the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Medicaid caseloads are missing for Arizona between 1983 and 1990, and Hawaii in 1997 and 1999.

b AFDC/TANF caseloads are missing for 1984.

c National School Lunch Program caseloads are available between 1989 and 2013.

d Medicaid caseloads and expenditures are collected between 1983 and 2013.

e WIC expenditures are grouped with expenditures on General Assistance Foster care and adoption assistance, Child Tax Credits, Economic stimulus Act of 2008 rebates, American Recovery and Reinvestment Act of 2009 (ARRA) Making Work Pay tax credits, Government Retiree tax credits, Adoptive tax credits and Energy Assistance benefits.

f Expenditures per enrollee excludes WIC program because data on WIC caseloads are not available over the sample period.

Table 9A. Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt over the Business Cycle, CPS and SIPP

	SNAP/ Food stamp	Medicaid	FRPL	Housing assistance	AFDC/ TANF[a]	WIC[ab]
	(1)	(2)	(3)	(4)	(5)	(6)
Panel I: CPS (1979-2013)						
MW	-0.012	-0.001	0.020***	0.003**	0.001	-0.001
	(0.011)	(0.013)	(0.004)	(0.001)	(0.003)	(0.002)
MW*GDP growth of 0-2.49%	0.000	0.002	-0.001	0.000	0.001	0.001
	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)
MW*GDP growth of ≥2.50%	-0.002	0.001	-0.004*	0.000	-0.001	-0.002
	(0.003)	(0.004)	(0.002)	(0.001)	(0.001)	(0.002)
N	3,798,071	3,798,071	3,798,071	3,798,071	1,679,508	777,444
Panel II: SIPP (1996-2013)						
MW	0.004	0.005	-0.011	0.005*	-0.005	0.006
	(0.005)	(0.008)	(0.009)	(0.002)	(0.004)	(0.006)
MW*GDP growth of 0-2.49%	-0.007	-0.013**	-0.005	0.000	0.001	0.002
	(0.005)	(0.005)	(0.005)	(0.001)	(0.002)	(0.004)
MW*GDP growth of ≥2.50%	-0.007	-0.013**	-0.004	0.001	0.004	-0.002
	(0.004)	(0.006)	(0.006)	(0.002)	(0.004)	(0.006)
N	9,551,775	9,551,775	9,551,775	9,551,775	4,133,931	4,133,931

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects in Panel I are obtained from weighted probit regressions using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Weighted OLS estimates in Panel II are obtained using data drawn from the Survey of Income and Program Participation between 1996 and 2013. For the CPS estimates, caseload estimates and expenditure estimates, individual controls include gender, racial/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. For the SIPP estimates, time-variant individual controls are similar to those in the CPS estimates excluding gender and race/ethnicity. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). In the SIPP estimates, a dummy for the fourth month of the reference period is included in each regression. Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54.

b Data are only available for the Current Population Survey March Supplements between 2001 and 2014.

Table 9B. Estimates of the Relationship between Minimum Wage Increases and Welfare Caseloads and Expenditures over the Business Cycle

Panel I: Caseloads				
	SNAP/Food stamp	Medicaid[a]	FRPL[b]	AFDC/TANF[c]
	(1)	(2)		
MW	-0.168	0.085	-0.297	0.070
	(0.126)	(0.248)	(0.458)	(0.057)
MW*GDP growth of 0-2.49%	-0.063*	-0.017	0.012	0.013
	(0.032)	(0.107)	(0.099)	(0.016)
MW*GDP growth of ≥2.50%	-0.024	-0.167	0.043	-0.022
	(0.040)	(0.117)	(0.126)	(0.028)
N	1,632	1,469	1,683	1,275

Panel II: Expenditures per Capita					
	SNAP/Food stamp	Medicaid[d]	AFDC/TANF	WIC& other[e]	All programs
	(1)	(2)			
MW	-0.164	-0.127	0.067	-0.266	-0.137
	(0.130)	(0.156)	(0.169)	(0.265)	(0.105)
MW*GDP growth of 0-2.49%	-0.043	0.047	-0.026	0.054	-0.019
	(0.031)	(0.064)	(0.057)	(0.064)	(0.038)
MW*GDP growth of ≥2.50%	0.003	-0.023	-0.050	0.233***	-0.020
	(0.046)	(0.054)	(0.081)	(0.063)	(0.037)
N	1,734	1,581	1,734	1,734	1,581

Panel III: Expenditures per Enrollee[f]				
	SNAP/Food stamp	Medicaid[d]	AFDC/TANF	All programs
	(1)	(2)		
MW	0.017	0.013	0.588	0.166
	(0.072)	(0.272)	(0.514)	(0.131)
MW*GDP growth of 0-2.49%	0.016	-0.050	-0.244	-0.036
	(0.024)	(0.090)	(0.165)	(0.073)
MW*GDP growth of ≥2.50%	0.009	-0.091	-0.319	-0.098
	(0.026)	(0.110)	(0.210)	(0.090)
N	1,632	1,469	1,683	1,419

*** significant at 1% level ****** significant at 5% level ***** significant at 10% level

Notes: Weighted OLS estimates are obtained using data drawn from the Census Bureau—Small Area Income and Poverty Estimates (SNAP/food stamp caseloads) between 1981 and 2012, the Survey of Income and Program Participation between 1996 and 2013, the Statistical Abstract—Health and Nutrition (Medicaid caseloads) between 1980 and 2011, the U.S. Department of Agriculture (FRPL) between 1989 and 2013, the Office of Family Assistance (AFDC/TANF caseloads) between 1980 and 2013, and the National Income and Product Accounts (expenditures) between 1980 and 2013. Controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, gender, racial composition, marriage rates, educational attainment, average age, household size, and average number of children under age 18 in households, the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.
a Medicaid caseloads are missing for Arizona between 1983 and 1990, and Hawaii in 1997 and 1999.
b AFDC/TANF caseloads are missing for 1984.
c National School Lunch Program caseloads are available between 1989 and 2013.
d Medicaid caseloads and expenditures are collected between 1983 and 2013.
e WIC expenditures are grouped with expenditures on General Assistance Foster care and adoption assistance, Child Tax Credits, Economic stimulus Act of 2008 rebates, American Recovery and Reinvestment Act of 2009 (ARRA) Making Work Pay tax credits, Government Retiree tax credits, Adoptive tax credits and Energy Assistance benefits.
f Expenditures per enrollee excludes WIC program because data on WIC caseloads are not available over the sample period.

Table 10A. Labor Market Outcomes of Welfare Recipients, CPS 1979-2013

	1980	1985	1990	1995	2000	2005	2013	1979-2013
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SNAP/Food Stamps								
Employed	51.37	47.72	49.18	50.94	52.78	50.04	48.74	49.65
Hours | Employed	35.25	35.03	35.49	34.95	35.66	35.34	34.46	34.90
Weeks | Employed	31.48	30.96	33.39	35.59	37.26	38.25	40.10	35.63
Medicaid								
Employed	33.71	29.52	37.48	40.44	42.11	42.36	40.18	38.90
Hours | Employed	32.33	32.36	33.35	33.03	33.86	33.82	34.36	33.29
Weeks | Employed	26.85	26.27	29.82	33.01	35.77	38.22	40.78	35.28
FRPL								
Employed	59.28	58.60	61.31	63.27	68.18	61.82	58.32	60.81
Hours | Employed	36.05	36.13	36.67	36.81	37.38	36.96	36.04	36.45
Weeks | Employed	36.75	36.69	38.9	41.15	42.95	42.80	43.71	40.71
Housing assistance								
Employed	49.10	47.27	47.06	51.63	53.09	47.90	45.41	48.49
Hours | Employed	34.56	35.72	34.99	34.80	34.22	33.36	34.39	34.14
Weeks | Employed	32.27	34.38	35.71	37.28	39.56	39.86	38.71	37.48
AFDC/TANF								
Employed	35.69	31.34	36.83	40.94	51.29	43.45	35.38	38.48
Hours | Employed	31.81	31.36	32.86	31.39	32.88	32.43	31.00	31.94
Weeks | Employed	25.55	23.34	25.28	26.94	29.83	31.21	31.62	27.31
WICa								
Employed	-	-	-	-	61.10	55.45	58.83	55.83
Hours | Employed	-	-	-	-	34.53	34.1	34.46	33.59
Weeks | Employed	-	-	-	-	35.24	36.77	41.39	37.37

Notes: Estimates are obtained using data drawn from the Current Population Survey March Supplements in 1980, 1990 and 2014.
Sample is restricted to all individuals ages 16 to 64 for SNAP/Food stamp, Medicaid, FRPL and housing assistance program. And sample is restricted to women ages 16 to 54 for AFDC/TANF and WIC.
a Data are only available for the Current Population Survey March Supplements between 2001 and 2014.

Table 10B. Wage Distribution of Workers by Whether Received Means-Tested Public Assistance, March 2012 - March 2014 CPS

	$0.01-$6.99	$7.00-$7.24	$7.25-$10.09	$10.10-$14.99	$15.00-19.99	$20.00 & over	Total	Percent of all workers	Percent earning more than $7.24 and less than $10.10	Percent earning more than $7.24 and less than $12.00	Percent earning more than $7.24 and less than $15.00
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SNAP/Food Stamps											
No	2.03	0.41	16.46	19.52	18.45	43.14	100.00	93.32	83.98	85.50	88.02
Yes	4.84	1.17	48.22	26.97	10.36	8.45	100.00	6.68	16.02	14.50	11.98
Medicaid											
No	2.04	0.41	16.95	19.75	18.28	42.58	100.00	94.21	86.95	88.09	90.26
Yes	4.79	1.33	42.77	23.83	12.45	14.84	100.00	5.79	13.05	11.91	9.74
FRPL											
No	2.07	0.40	16.69	19.09	18.13	43.62	100.00	90.67	83.62	84.44	85.95
Yes	3.67	1.19	38.57	30.43	15.83	10.32	100.00	9.33	16.38	15.56	14.05
Housing assistance											
No	2.19	0.45	18.25	19.91	17.99	41.21	100.00	99.43	98.62	98.66	98.87
Yes	3.68	1.58	44.74	31.58	11.58	6.84	100.00	0.57	1.38	1.34	1.13
AFDC/TANF											
No	3.18	0.61	22.61	22.32	17.80	33.48	100.00	99.28	98.93	99.11	99.28
Yes	3.13	1.04	58.33	22.92	9.38	5.21	100.00	0.72	1.07	0.89	0.72
WIC											
No	3.11	0.59	22.18	22.26	17.94	33.92	100.00	96.84	97.11	97.31	97.90

Notes: Estimates are obtained using data drawn from the 2014 Current Population Survey March Supplements. Information on workers' individual wage rates and hours worked comes from the outgoing rotation group and are measured in the last week. For workers who report being paid hourly, their wage rate is directly reported from their current job. For those who are not paid hourly, wage rates are calculated as the ratio of weekly earnings to weekly hours in the past week. Wages are in nominal dollars.

Sample is restricted to individuals ages 16 to 64 for SNAP/Food stamp, Medicaid, FRPL and housing assistance program, and women ages 16 to 54 for AFDC/TANF and WIC in columns (1) through (8). In columns (9) through (11), sample is restricted to individuals ages 16 to 64.

Table 10C. Wage Distribution of Workers by Whether Received Means-Tested Public Assistance, SIPP 2013

	$0.01-$6.99	$7.00-$7.24	$7.25-$10.09	$10.10-$14.99	$15.00-19.99	$20.00 & over	Total	Percent of all workers	Percent earning more than $7.24 and less than $10.10	Percent earning more than $7.24 and less than $12.00	Percent earning more than $7.24 and less than $15.00
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SNAP/Food Stamps											
No	2.68	0.50	21.65	20.48	17.34	37.35	100.00	95.45	87.82	88.86	90.98
Yes	6.10	1.59	59.53	23.23	6.57	2.99	100.00	4.55	12.18	11.14	9.02
Medicaid											
No	2.60	0.48	21.71	20.60	17.29	37.31	100.00	95.07	87.69	88.97	91.00
Yes	7.24	1.71	55.52	20.69	8.37	6.48	100.00	4093	12.31	11.03	9.00
FRPL											
No	2.63	0.45	20.39	19.66	17.30	39.57	100.00	86.34	74.81	75.79	78.25
Yes	4.17	1.18	42.59	26.49	13.87	11.71	100.00	13.66	25.19	24.21	21.75
Housing assistance											
No	2.82	0.54	23.33	20.59	16.86	35.86	100.00	99.49	98.87	98.96	99.12
Yes	6.78	2.93	51.73	23.80	9.71	5.05	100.00	0.51	1.13	1.04	0.88
AFDC/TANF											
No	3.68	0.73	28.94	22.44	15.58	28.63	100.00	99.52	99.51	99.51	99.53
Yes	13.62	0.00	45.82	26.01	8.67	5.88	100.00	0.48	0.49	0.49	0.47
WIC											
No	3.53	0.70	27.80	22.42	15.90	29.64	100.00	95.84	95.77	96.13	96.82

Notes: Estimates are obtained using cross-section data drawn from the 2008 Panel of the Survey of Income and Program Participation between January and July of the 2013 calendar year. Hourly wages are self-reported earnings per hour for individuals providing their hourly rates on their current primary job or calculated from monthly earnings and monthly hours otherwise. Wages are in 2013 dollars.

Sample is restricted to individuals ages 16 to 64 for SNAP/Food stamp, Medicaid, FRPL and housing assistance program, and women ages 16 to 54 for AFDC/TANF and WIC in columns (1) through (8). In columns (9) through (11), sample is restricted to individuals ages 16 to 64.

Appendix Table 1. Summary Statistics of Annual Program Participation, CPS and SIPP[c], 1996-2013

	Working Ages	Workers	Non-Work-ers	Non-White	Ages 16-29 without HS	Single Moth-ers without HS Ages 16-45
	(1)	(2)	(3)	(4)	(5)	(6)
Panel I: March CPS 1996-2013						
SNAP/Food Stamp	0.078 (0.268) [1,973,671]	0.051 (0.220) [1,515,510]	0.165 (0.371) [458,161]	0.134 (0.340) [694,073]	0.159 (0.366) [190,968]	0.552 (0.497) [14,707]
Medicaid	0.090 (0.286) [1,973,671]	0.048 (0.214) [,1515,510]	0.225 (0.418) [458,161]	0.138 (0.345) [694,073]	0.209 (0.406) [190,968]	0.477 (0.499) [14,707]
FRPL	0.097 (0.296) [1,973,671]	0.077 (0.267) [1,515,510]	0.159 (0.366) [458,161]	0.191 (0.393) [694,073]	0.233 (0.423) [190,968]	0.598 (0.49) [14,707]
Housing Assistance	0.010 (0.101) [1,973,671]	0.006 (0.080) [1,515,510]	0.023 (0.149) [458,161]	0.020 (0.14) [694,073]	0.019 (0.138) [190,968]	0.090 (0.286) [14,707]
AFDC/ TANF[a]	0.022 (0.146) [869,911]	0.013 (0.115) [635,857]	0.045 (0.206) [234,054]	0.039 (0.194) [318,818]	0.041 (0.199) [90,082]	0.240 (0.427) [14,707]
WIC[ab]	0.044 (0.204) [728,364]	0.034 (0.18) [527,603]	0.069 (0.254) [200,761]	0.072 (0.258) [271,634]	0.088 (0.283) [75,864]	0.234 (0.424) [11,879]
Panel II: SIPP 1996-2013						
SNAP/Food Stamp	0.067 (0.25) [1,028,213]	0.034 (0.182) [787,747]	0.142 (0.349) [395,314]	0.115 (0.319) [318,138]	0.078 (0.268) [104,429]	0.657 (0.475) [8,048]
Medicaid	0.123 (0.329) [1,028,213]	0.058 (0.233) [787,747]	0.275 (0.446) [395,314]	0.207 (0.405) [318,138]	0.299 (0.458) [104,429]	0.644 (0.479) [8,048]
FRPL	0.165 (0.371) [1,028,213]	0.133 (0.34) [787,747]	0.235 (0.424) [395,314]	0.334 (0.472) [318,138]	0.375 (0.484) [104,429]	0.75 (0.433) [8,048]
Housing Assistance	0.012 (0.111) [1,028,213]	0.007 (0.082) [787,747]	0.025 (0.156) [395,314]	0.025 (0.157) [318,138]	0.025 (0.156) [104,429]	0.097 (0.296) [8,048]
AFDC/ TANF[a]	0.028 (0.165) [447,505]	0.011 (0.105) [333,318]	0.059 (0.237) [189,188]	0.054 (0.226) [149,460]	0.057 (0.233) [49,610]	0.297 (0.457) [8,048]

Notes: Weighted means are obtained from data drawn from the Current Population Survey March Supplements between 1996 and 2013, and the individual-by-year Survey of Income and Program Participation between 1996 and 2013.

a Sample in is restricted to women ages 16 to 54 in columns (1) through (4), and women of stated ages in columns (5) and (6).

b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

h Program participation in the SIPP is coded as one (1) if a respondent reported to receive assistance in a program in at least one month of a calendar year, and zero (0) otherwise.

Appendix Table 2. Summary Statistics of Independent Variables

	Mean	Std. Dev	N
Panel I: March CPS 1979-2013			
Minimum Wage	5.045	1.532	3,798,071
Male	0.492	0.500	3,798,071
Race/Ethnicity			
White	0.718	0.450	3,798,071
Black	0.120	0.325	3,798,071
Hispanic	0.113	0.316	3,798,071
Other Races	0.049	0.215	3,798,071
Marital Status			
Married	0.552	0.497	3,798,071
Widowed	0.020	0.139	3,798,071
Divorced	0.093	0.290	3,798,071
Separated	0.025	0.157	3,798,071
Never Married	0.310	0.463	3,798,071
Education Attainment			
Less than high school	0.184	0.388	3,798,071
High school graduates	0.251	0.434	3,798,071
Some College	0.331	0.470	3,798,071
College graduates	0.156	0.363	3,798,071
Advanced Degree	0.078	0.268	3,798,071
Age	38.038	13.530	3,798,071
Number of children under age 18	0.943	1.219	3,798,071
Number of persons in household	3.274	1.587	3,798,071
State-Level Controls			
Average wage rate of prime-age males (2013$)	21.321	2.260	3,798,071
Prime-age unemployment rate	0.053	0.023	3,798,071
Real per capita GDP (2013$)	46,968.97	10,554.33	3,798,071
State refundable EITC rate	0.033	0.091	3,798,071
State Welfare Policies			
SNAP/Food stamp: One-vehicle exemption	0.065	0.239	3,798,071
SNAP/Food stamp: All-vehicle exemption	0.260	0.433	3,798,071
Medicaid: Section 1115 waiver or childless adult expansion	0.403	0.490	3,798,071
TANF: Time limits	0.539	0.369	3,798,071
TANF: Work requirement	0.538	0.494	3,798,071
TANF: Real and personal property limitations (2013$)	3,449.78	5,198.51	3,798,071
TANF: Maximum benefits for family of three (2013$)	610.03	276.03	3,798,071

Panel II: SIPP 1996-2013			
Minimum Wage	6.113	1.150	9,551,775
Male	0.493	0.500	9,551,775
Marital Status			
Married	0.533	0.499	9,551,775
Widowed	0.017	0.130	9,551,775
Divorced	0.105	0.306	9,551,775
Separated	0.023	0.149	9,551,775
Never Married	0.323	0.468	9,551,775
Education Attainment			
Less than high school	0.157	0.364	9,551,775
High school graduates	0.272	0.445	9,551,775
Some College	0.326	0.469	9,551,775
College graduates	0.165	0.371	9,551,775
Advanced Degree	0.081	0.273	9,551,775
Age	38.867	13.537	9,551,775
Number of children under age 18	0.932	1.206	9,551,775
Number of persons in household	3.261	1.617	9,551,775
State-Level Controls			
Average wage rate of prime-age males(2013$)	21.920	2.227	9,551,775
Prime-age unemployment rate	0.052	0.024	9,551,775
Real per capita GDP (2013$)	50,231.11	9575.64	9,551,775
State refundable EITC rate	0.052	0.105	9,551,775
State Welfare Policies			
SNAP/Food stamp: One-vehicle exemption	0.124	0.317	9,551,775
SNAP/Food stamp: All-vehicle exemption	0.467	0.490	9,551,775
Medicaid: Section 1115 waiver or childless adult expansion	0.632	0.482	9,551,775
TANF: Time limits	0.950	0.208	9,551,775

Notes: Weighted means are obtained from data drawn from the Current Population Survey March Supplements between 1980 and 2014, the Survey of Income and Program Participation between 1996 and 2013, and the National Income and Product Accounts between 1980 and 2013.

Appendix Table 3. Estimated Coefficients on Control Variables, CPS, 1979-2013

	SNAP/ Food stamp	Medicaid	FRPL	Housing assistance	AFDC/ TANF[a]	WIC[ab]
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-0.014***	-0.025***	-0.009***	-0.002***	-	-
	(0.000)	(0.001)	(0.000)	(0.000)		
Widowed	0.069***	0.052***	0.038***	0.006***	0.024***	-0.001
	(0.003)	(0.001)	(0.003)	(0.000)	(0.002)	(0.001)
Divorced	0.076***	0.062***	0.048***	0.007***	0.042***	-0.001
	(0.002)	(0.002)	(0.003)	(0.000)	(0.001)	(0.001)
Separated	0.113***	0.098***	0.058***	0.009***	0.071***	0.002***
	(0.004)	(0.003)	(0.004)	(0.000)	(0.002)	(0.001)
Never Married	0.048***	0.053***	0.023***	0.005***	0.023***	-0.003***
	(0.003)	(0.003)	(0.002)	(0.000)	(0.001)	(0.001)
Age	0.003***	0.000	0.005***	0.000***	0.003***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age squared	-0.000***	-0.000	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Black	0.076***	0.057***	0.075***	0.013***	0.022***	0.009***
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Hispanic	0.038***	0.020***	0.082***	0.005**	0.009***	0.014***
	(0.009)	(0.007)	(0.006)	(0.002)	(0.003)	(0.001)
Other Races	0.028***	0.030***	0.040***	0.006***	0.007***	0.003***
	(0.004)	(0.003)	(0.004)	(0.001)	(0.001)	(0.001)
High school graduates	-0.022***	-0.029***	-0.020***	-0.002***	-0.004***	0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Some College	-0.043***	-0.049***	-0.036***	-0.003***	-0.010***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
College graduates	-0.053***	-0.057***	-0.046***	-0.005***	-0.013***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Advanced Degree	-0.049***	-0.052***	-0.042***	-0.005***	-0.011***	-0.009***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Number of persons in household	-0.009***	-0.010***	-0.004***	-0.004***	-0.005***	-0.004***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)

	SNAP/ Food stamp	Medicaid	FRPL	Housing assistance	AFDC/ TANF[a]	WIC[ab]
Number of children under age 18	0.029***	0.023***	0.040***	0.004***	0.010***	0.009***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Prime-age wage rates	-0.032**	0.013	-0.062***	-0.003	-0.007	0.005
	(0.013)	(0.022)	(0.013)	(0.003)	(0.006)	(0.006)
Prime-age unemploy-ment rate	0.013***	0.002	0.005***	0.001	0.002**	0.002***
	(0.002)	(0.003)	(0.002)	(0.000)	(0.001)	(0.001)
Per capita GDP	-0.033***	-0.009	-0.020**	0.000	-0.002	-0.008***
	(0.011)	(0.015)	(0.010)	(0.002)	(0.003)	(0.003)
State refundable EITC rate	0.004	0.016	0.008	0.003	-0.003	0.008**
	(0.009)	(0.011)	(0.005)	(0.003)	(0.004)	(0.004)
SNAP: One-vehicle exemption	0.002	-0.000	-0.002	-0.000	-0.002*	-0.000
	(0.002)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
SNAP: All-vehicle exemption	0.004	0.002	-0.001	0.000	0.000	0.000
	(0.003)	(0.003)	(0.001)	(0.000)	(0.001)	(0.000)
Medicaid: Section 1115 waiver or child-less adult expansion	-0.003	0.002	0.000	0.000	-0.000	-0.001**
	(0.002)	(0.003)	(0.001)	(0.000)	(0.001)	(0.000)
TANF: Time limits	-0.001	-0.000	0.001	0.000	-0.000	-
	(0.003)	(0.003)	(0.002)	(0.001)	(0.001)	
TANF: Work require-ment	0.002	0.004	-0.000	0.001	-0.001	-
	(0.002)	(0.005)	(0.002)	(0.001)	(0.001)	
TANF: Real and personal property limitations	-0.000	0.000	-0.001	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
TANF: Maximum benefits for family of 3	-0.003	0.011*	-0.001	0.000	-0.001	0.002
	(0.003)	(0.006)	(0.003)	(0.001)	(0.002)	(0.002)
N	3,798,071	3,798,071	3,798,071	3,798,071	1,679,508	777,444

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Additional controls include state fixed effects and year fixed effects. Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54.

b Data are only available for the Current Population Survey March Supplements between 2001 and 2014.

Appendix Table 4. Estimated Coefficients on Control Variables, SIPP, 1996-2013

	SNAP/ Food stamp	Medicaid	FRPL	Housing assistance	AFDC/ TANF[a]	WIC[a]
	(1)	(2)	(3)	(4)	(5)	(6)
Widowed	0.019***	0.007**	0.018***	0.000	-0.004	-0.001
	(0.005)	(0.004)	(0.004)	(0.002)	(0.004)	(0.004)
Divorced	0.026***	0.013***	0.024***	0.001	0.005***	-0.006
	(0.003)	(0.003)	(0.003)	(0.001)	(0.002)	(0.003)
Separated	0.039***	0.009***	0.020***	0.001	0.013***	-0.012***
	(0.004)	(0.003)	(0.005)	(0.001)	(0.003)	(0.004)
Never Married	0.012***	0.009***	0.016***	0.001	0.007***	-0.016***
	(0.002)	(0.002)	(0.004)	(0.001)	(0.002)	(0.005)
Age	0.005***	-0.012***	0.001	-0.001***	0.000	0.003*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.002)
Age squared	-0.000***	0.000***	-0.000	0.000***	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
High school graduates	0.008***	-0.028***	-0.020***	0.001	0.006***	0.031***
	(0.001)	(0.003)	(0.003)	(0.001)	(0.001)	(0.003)
Some College	0.004***	-0.033***	-0.017***	0.001	0.005***	0.029***
	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.003)
College graduates	-0.008***	-0.036***	-0.019***	0.001	0.004	0.021***
	(0.002)	(0.003)	(0.005)	(0.001)	(0.002)	(0.004)
Advanced Degree	-0.018***	-0.032***	-0.024***	-0.001	0.007***	0.021***
	(0.003)	(0.004)	(0.005)	(0.001)	(0.003)	(0.005)
Number of persons in household	-0.005***	-0.004***	0.011***	-0.001***	-0.002***	0.002**
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
Number of children under age 18	0.011***	0.013***	0.068***	0.003***	0.006***	0.023***
	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)
Prime-age wage rates	-0.021	0.024	-0.003	-0.005	-0.004	-0.042**
	(0.016)	(0.027)	(0.024)	(0.006)	(0.010)	(0.021)
Prime-age unemployment rate	0.002	0.001	-0.001	-0.000	-0.000	0.001
	(0.002)	(0.003)	(0.002)	(0.001)	(0.001)	(0.002)
Per capita GDP	-0.007	-0.012	-0.038*	0.007	-0.007	-0.023
	(0.018)	(0.019)	(0.021)	(0.008)	(0.011)	(0.021)
State refundable EITC rate	0.023	0.029	-0.007	-0.014	0.003	0.026
	(0.015)	(0.020)	(0.022)	(0.010)	(0.008)	(0.016)
SNAP: One-vehicle exemption	0.001	0.004*	-0.004	-0.000	0.001	0.002
	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)	(0.002)

SNAP: All-vehicle exemption	0.003*	0.001	-0.000	-0.000	0.002**	0.001
	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)	(0.002)
Medicaid: Section 1115 waivers or childless adult expansion	-0.002*	0.003*	-0.002	0.000	0.001	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
TANF: Time limits	-0.002*	-0.005**	-0.004	-0.000	-0.003	0.001
	(0.001)	(0.002)	(0.004)	(0.001)	(0.002)	(0.002)
TANF: Work requirement	0.000	0.003	0.002	0.001	0.001	-0.003*
	(0.001)	(0.003)	(0.003)	(0.001)	(0.002)	(0.002)
TANF: Real and personal property limitations	0.000	0.000	-0.002	0.000	-0.000	0.001
	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)
TANF: Maximum benefits for family of 3	0.002	-0.001	-0.004	0.001	0.003	0.002
	(0.004)	(0.007)	(0.008)	(0.001)	(0.003)	(0.006)
N	9,551,775	9,551,775	9,551,775	9,551,775	4,133,931	4,133,931

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Additional controls include state fixed effects and year fixed effects. Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to women ages 16 to 54.

b Data are only available for the Current Population Survey March Supplements between 2001 and 2014.

Appendix Table 5. Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt at Household Level, CPS, 1979-2013

	Working Age[a]	Employed[b]	Non-Employed[b]
	(1)	(2)	(3)
SNAP/Food stamp	-0.013	-0.004	-0.068
	(0.010)	(0.007)	(0.067)
N	1,349,561	1,268,705	80,856
Medicaid	-0.042*	-0.026	-0.147*
	(0.024)	(0.021)	(0.083)
N	1,349,561	1,268,705	80,856
Free lunch	0.022***	0.023***	0.072*
	(0.005)	(0.005)	(0.040)
N	1,349,561	1,268,705	80,856
Housing Assistance	0.003**	0.002*	0.054***
	(0.001)	(0.001)	(0.015)
N	1,349,561	1,268,705	80,856
AFDC/TANF[c]	0.002	-0.004	0.247
	(0.014)	(0.007)	(0.163)
N	415,553	377,415	38,138
WIC[cd]	-0.012	-0.014	0.060
	(0.012)	(0.012)	(0.059)
N	257,598	241,069	16,529
State & year FE?	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Household controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared) of the household head, household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

a Sample is restricted to households with heads ages 16 to 64.

b A household is considered to be employed if at least one person in the household reports paid employment, and non-employed otherwise.

c Sample is restricted to households with women heads ages 16 to 54.

d Data are only available between 2001 and 2014.

Appendix Table 6. Robustness of Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt Controlling for Fourth-Order Polynomials for State-Specific Trends, CPS, 1979-2013

	Working age	Workers	Non-workers	Non-workers (HH Adult=1c)
	(1)	(2)	(3)	(4)
SNAP/Food stamp	-0.009	-0.003	-0.019	-0.026
	(0.007)	(0.007)	(0.017)	(0.072)
N	3,798,071	2,943,160	854,911	110,365
Medicaid	-0.010	-0.006	0.004	-0.021
	(0.010)	(0.008)	(0.019)	(0.059)
N	3,798,071	2,943,160	854,911	110,365
FRPL	0.010	0.007	0.025	-0.006
	(0.007)	(0.007)	(0.018)	(0.036)
N	3,798,071	2,943,160	854,911	110,365
Housing assistance	0.000	-0.002	0.010	0.003
	(0.003)	(0.002)	(0.007)	(0.036)
N	3,798,071	2,943,160	854,911	110,365
AFDC/TANF[a]	-0.009	-0.004	-0.013	-0.023
	(0.006)	(0.006)	(0.012)	(0.069)
N	1,679,508	1,231,641	447,867	51,793
WIC[ab]	-0.006	0.002	-0.024	0.035
	(0.009)	(0.010)	(0.019)	(0.047)
N	777,444	566,271	211,173	23,872
State & year FE?	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes
State 4th-order polynomial time trends?	Yes	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level
Notes: Weighted OLS estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.
Results are estimated via OLS because probit models fail to converge in most cases.
a Sample is restricted to women ages 16 to 54.
b Data are only available the Current Population Survey March Supplements between 2001 and 2014.
c Sample is restricted to households with only one working-age adult age 18 or older.

Appendix Table 7. Robustness of Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt Controlling for Fifth-Order Polynomials for State-Specific Trends, CPS, 1979-2013

	Working age	Workers	Non-workers	Non-workers (HH Adult=1c)
	(1)	(2)	(3)	(4)
SNAP/Food stamp	-0.010	-0.002	-0.026	-0.036
	(0.007)	(0.007)	(0.017)	(0.077)
N	3,798,071	2,943,160	854,911	110,365
Medicaid	-0.010	-0.007	0.003	-0.026
	(0.009)	(0.007)	(0.019)	(0.054)
N	3,798,071	2,943,160	854,911	110,365
FRPL	0.011	0.007	0.029*	0.009
	(0.007)	(0.007)	(0.016)	(0.039)
N	3,798,071	2,943,160	854,911	110,365
Housing assistance	0.001	-0.002	0.012	-0.001
	(0.003)	(0.003)	(0.008)	(0.040)
N	3,798,071	2,943,160	854,911	110,365
AFDC/TANF[a]	-0.012**	-0.005	-0.024*	-0.069
	(0.003)	(0.006)	(0.012)	(0.074)
N	1,679,508	1,231,641	447,867	51,793
WIC[ab]	-0.007	0.001	-0.030	0.035
	(0.009)	(0.009)	(0.019)	(0.050)
N	777,444	566,271	211,173	23,872
State & year FE?	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes
State 5th-order polynomial time trends?	Yes	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

Results are estimated via OLS because probit models fail to converge in most cases.

a Sample is restricted to women ages 16 to 54.

b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

c Sample is restricted to households with only one working-age adult age 18 or older.

Appendix Table 8. Estimates of Relationship between Minimum Wage Increases and Public Assistance Receipt by Low-Skilled Sub-Groups and Employment, CPS, 1979-2013

	Non-White		Ages 16-29 without HS		Single Mothers without HS Ages 16-45	
	Workers	*Non-workers*	*Workers*	*Non-workers*	*Workers*	*Non-workers*
	(1)	(2)	(3)	(4)	(5)	(6)
SNAP/Food stamp	0.014	-0.005	0.001	0.023	-0.110	-0.116
	(0.011)	(0.026)	(0.022)	(0.025)	(0.085)	(0.088)
N	798,531	329,918	175,270	177,306	16,080	14,236
Medicaid	0.038***	-0.002	-0.012	-0.073*	0.127*	-0.041
	(0.012)	(0.050)	(0.021)	(0.039)	(0.069)	(0.055)
N	798,531	329,918	175,270	177,306	16,080	14,236
FRPL	0.092***	0.152***	0.089***	0.078**	0.150	0.079
	(0.017)	(0.042)	(0.028)	(0.037)	(0.106)	(0.095)
N	798,531	329,918	175,270	177,306	16,080	14,236
Housing Assistance	0.001	0.014	-0.007	0.017**	0.003	0.108*
	(0.002)	(0.009)	(0.004)	(0.008)	(0.041)	(0.057)
N	798,531	329,918	175,270	177,306	16,080	14,236
AFDC/ TANF[a]	0.004	0.025	0.006	-0.005	-0.056	0.167
	(0.004)	(0.028)	(0.009)	(0.010)	(0.088)	(0.180)
N	346,678	180,982	72,737	95,446	16,080	14,236
WIC[ab]	0.001	0.006	-0.000	0.019	-0.103	-0.074
	(0.005)	(0.013)	(0.028)	(0.018)	(0.121)	(0.144)
N	189,845	95,486	31,260	49,557	7,624	5,004
State & year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility) , Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.
a Sample in is restricted to women ages 16 to 54 in columns (1) and (2), and women of stated ages in columns (3) through (6).
b Data are only for available the Current Population Survey March Supplements between 2001 and 2014.

Appendix Table 9. Robustness of Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt Controlling for Three Years of Leads, CPS, 1979-2013

	Working age	Workers	Non-workers	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)	(4)	(5)	(6)
SNAP/Food stamp	-0.014	-0.004	-0.044	-0.016	-0.000	-0.233**
	(0.014)	(0.009)	(0.040)	(0.032)	(0.035)	(0.111)
N	3,709,428	2,878,046	831,382	1,095,016	344,908	29,760
Medicaid	0.008	0.015*	-0.016	0.064**	-0.057	-0.036
	(0.014)	(0.008)	(0.042)	(0.026)	(0.034)	(0.134)
N	3,709,428	2,878,046	831,382	1,095,016	344,908	29,760
FRPL	0.022***	0.017***	0.042**	0.096***	0.121***	0.307***
	(0.007)	(0.005)	(0.021)	(0.028)	(0.040)	(0.111)
N	3,709,428	2,878,046	831,382	1,095,016	344,908	29,760
Housing assistance	-0.001	-0.001	0.001	0.001	0.004	0.050
	(0.002)	(0.001)	(0.005)	(0.005)	(0.006)	(0.063)
	3,580,372	2,783,136	797,236	1,044,699	333,594	28,981
AFDC/TANF[a]	0.004	0.001	0.016	0.014	-0.015	-0.062
	(0.003)	(0.002)	(0.010)	(0.010)	(0.015)	(0.140)
N	1,641,990	1,205,513	436,477	512,827	164,597	29,760
WIC[ab]	-0.001	0.001	-0.008	0.010	0.020	-0.243
	(0.003)	(0.002)	(0.008)	(0.010)	(0.023)	(0.169)
N	739,926	540,143	199,783	270,498	77,231	12,072
State & year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes	Yes	Yes
Three years of leads?	Yes	Yes	Yes	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Marginal effects from weighted probit estimates are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.
a Sample is restricted to women ages 16 to 54 in columns (1) through (4), and women of stated ages in columns (5) through (6).
b Data are only available the Current Population Survey March Supplements between 2001 and 2014.

Appendix Table 10. Summary Statistics of the Labor Market Outcomes[a], CPS and SIPP

	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)
Panel I: March CPS 1979-2013			
Earnings (2013$)	23,146.71 (34,153.28) [1,080,091]	5,236.063 (12,159.44) [347,330]	7,944.093 (15,438.91) [29,759]
Employed	0.692 (0.462) [1,080,091]	0.486 (0.500) [347,330]	0.522 (0.500) [29,759]
Hours | Employed=1	38.33 (10.162) [750,173]	29.002 (13.967) [170,024]	35.424 (10.128) [15,523]
Weeks | Employed=1	44.828 (13.584) [750,173]	31.975 (18.481) [170,024]	38.677 (17.105) [15,523]
Panel II: SIPP 1996-2013			
Earnings (2013$)	1,820.492 (2,688.048) [2,798,979]	421.132 (916.253) [755,827]	680.942 (947.993) [64,300]
Employed	0.642 (0.479) [2,798,979]	0.360 (0.480) [755,827]	0.503 (0.500) [64,300]
Hours | Employed=1	38.331 (9.827) [1,594,349]	29.081 (13.625) [241,956]	35.038 (9.474) [29,479]
Weeks | Employed=1	4.288 (0.604) [1,751,881]	4.161 (0.809) [267,124]	4.217 (0.727) [31,950]

Notes: Weighted means are obtained from data drawn from the Current Population Survey March Supplements between 1980 and 2014, and the Survey of Income and Program Participation between 1996 and 2013. Standard deviations are in parentheses and number of observations in brackets.

In the CPS, earnings are measured as annual earnings; hours as weekly hours, and weeks as annual weeks.

In the SIPP, earnings are measured as monthly earnings; hours as weekly hours, and weeks as monthly weeks.

a Samples exclude self-employed individuals. In the CPS, self-employment is classified using the longest job classification in the previous year. In the SIPP, self-employment is classified using positive income from self-employment.

Appendix Table 11. Robustness of Estimates of the Relationship between Minimum Wage Increases and Labor Force Participation to Controls for Geographic-Specific Time Trends, CPS, 1979-2013

	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)
Ln(Earnings)[a]	0.136	0.366	1.887
	(0.247)	(0.301)	(1.166)
N	1,080,091	347,330	29,759
Employed	0.014	0.038	0.241*
	(0.029)	(0.046)	(0.135)
N	1,080,091	347,330	29,759
Ln(Hours) | Employed=1	-0.002	-0.002	-0.173
	(0.033)	(0.085)	(0.138)
N	750,173	170,024	15,523
Ln(Weeks) | Employed=1	-0.005	-0.013	0.292
	(0.019)	(0.052)	(0.220)
N	750,173	170,024	15,523
State & year FE?	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes
State linear time trend?	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates in rows 1, 3 and 4, and marginal effects from weighted probit estimates in row 2 are obtained using data drawn from the Current Population Survey March Supplements between 1980 and 2014. Individual controls include gender, race/ethnicity, marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (the number of vehicles exempt per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). Standard errors corrected for clustering on the state are in parentheses.

Earnings are measured as annual earnings; hours as weekly hours, and weeks as annual weeks.

[a] We take the natural log of 1 for individuals who report zero earnings.

Appendix Table 12. Estimates of the Relationship between Minimum Wage Increases and Public Assistance Receipt by Low-Skilled Sub-Groups and Employment, SIPP, 1996-2013

	Non-White		Ages 16-29 without HS		Single Mothers without HS Ages 16-45	
	Workers	*Non-workers*	*Workers*	*Non-workers*	*Workers*	*Non-workers*
	(1)	(2)	(3)	(4)	(5)	(6)
SNAP/Food stamp	-0.004	0.017	-0.043*	-0.058**	-0.073	0.020
	(0.005)	(0.012)	(0.024)	(0.022)	(0.145)	(0.058)
N	1,846,470	1,047,331	273,939	488,807	33,203	32,356
Medicaid	-0.016	0.019	-0.052	0.037	0.238**	-0.052
	(0.012)	(0.023)	(0.038)	(0.034)	(0.103)	(0.075)
N	1,846,470	1,047,331	273,939	488,807	33,203	32,356
FRPL	-0.045**	-0.022	-0.028	-0.013	0.102	0.020
	(0.020)	(0.030)	(0.041)	(0.035)	(0.119)	(0.102)
N	1,846,470	1,047,331	273,939	488,807	33,203	32,356
Housing Assistance	0.002	0.041**	-0.001	0.006	-0.011	0.018
	(0.006)	(0.016)	(0.008)	(0.011)	(0.059)	(0.078)
N	1,846,470	1,047,331	273,939	488,807	33,203	32,356
AFDC/TANF[a]	-0.001	0.019	0.000	0.008	0.034	0.078
	(0.009)	(0.017)	(0.019)	(0.026)	(0.068)	(0.117)
N	815,217	540,997	114,212	246,910	33,203	32,356
WIC[a]	0.031**	0.018	-0.137**	-0.005	-0.145	0.030
	(0.013)	(0.020)	(0.055)	(0.038)	(0.109)	(0.101)
N	815,217	540,997	114,212	246,910	33,203	32,356
State & year FE?	Yes	Yes	Yes	Yes	Yes	Yes
Month FE?	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE?	Yes	Yes	Yes	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level
Notes: Weighted OLS estimates are obtained using data drawn from the Survey of Income and Program Participation between 1996 and 2013. Time-variant individual controls include marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). A dummy for the fourth month of the reference period is included in each regression. Standard errors corrected for clustering on the state are in parentheses.
a Sample in is restricted to women ages 16 to 54 in columns (1) and (2), and women of stated ages in columns (3) through (6).

Appendix Table 13. Estimates of the Relationship between Minimum Wage Increases and Labor Market Outcomes, SIPP, 1996-2013

	Non-White	Ages 16-29 without HS	Single Mothers without HS Ages 16-45
	(1)	(2)	(3)
Ln(Earnings)[a]	-0.072	-0.410	0.107
	(0.117)	(0.247)	(0.726)
N	2,798,979	755,827	64,300
Employed	-0.018	-0.075*	0.015
	(0.014)	(0.041)	(0.110)
N	2,798,979	755,827	64,300
**Ln(Hours)	Employed=1**	-0.008	-0.250***	0.003
	(0.013)	(0.061)	(0.099)
N	1,594,349	241,956	29,479
**Ln(Weeks)	Employed=1**	0.056***	0.046	0.054
	(0.020)	(0.033)	(0.052)
N	1,751,881	267,124	31,950
State & year FE?	Yes	Yes	Yes
Month FE?	Yes	Yes	Yes
Individual FE?	Yes	Yes	Yes
Ind. & state controls?	Yes	Yes	Yes

*** significant at 1% level ** significant at 5% level * significant at 10% level

Notes: Weighted OLS estimates are obtained using data drawn from the Survey of Income and Program Participation between 1996 and 2013. Time-variant individual controls include marital status, educational attainment, age (linear and squared), household size, and number of children under age 18 in households. State level controls include the prime-age adult wage rate, prime-age unemployment rate, per capita state GDP, the state refundable EITC credit rate, and state welfare policies for SNAP/food stamp (indicators for vehicle exemptions per household for eligibility), Medicaid (the presence of at least one Section 1115 waiver or childless adult coverage expansions), and AFDC/TANF (the presence of binding work requirements for welfare receipt and time limits for benefits, state limitations on non-home real and personal property, maximum benefits for family of three with no income). A dummy for the fourth month of the reference period is included in each regression. Standard errors corrected for clustering on the state are in parentheses.

Earnings are measured as monthly earnings; hours as weekly hours, and weeks as monthly weeks.

a We take the natural log of 1 for individuals who report zero earnings.

Appendix Table 14A. Wage Distribution by Whether Received Means-Tested Public Assistance for Hourly Workers, March 2012 – March 2014 CPS

	$0.01-$6.99	$7.00-$7.24	$7.25-$10.09	$10.10-$14.99	$15.00-19.99	$20.00 & over	Total	Percent of all workers	Percent earning more than $7.24 and less than $10.10	Percent earning more than $7.24 and less than $12.00	Percent earning more than $7.24 and less than $15.00
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SNAP/Food Stamps											
No	1.62	0.57	25.53	26.21	19.92	26.15	100.00	90.49	83.20	84.47	86.88
Yes	2.76	1.04	53.31	27.49	9.09	6.33	100.00	9.51	16.80	15.53	13.12
Medicaid											
No	1.61	0.54	26.16	26.46	19.57	25.66	100.00	92.23	86.55	87.51	89.68
Yes	3.20	1.43	50.48	24.69	11.36	8.84	100.00	7.77	13.45	12.49	10.32
FRPL											
No	1.70	0.54	26.08	25.74	19.53	26.41	100.00	87.13	83.18	83.81	85.15
Yes	1.93	1.18	43.63	31.17	14.25	7.85	100.00	12.87	16.82	16.19	14.85
Housing assistance											
No	1.72	0.60	27.80	26.28	19.04	24.57	100.00	99.18	98.57	98.61	98.79
Yes	2.52	1.89	49.69	32.08	9.43	4.40	100.00	0.82	1.43	1.39	1.21
AFDC/TANF											
No	2.71	0.78	33.15	27.83	17.25	18.28	100.00	98.98	98.82	98.99	99.18
Yes	2.27	1.14	63.64	21.59	9.09	2.27	100.00	1.02	1.18	1.01	0.82
WIC											
No	2.66	0.76	32.68	27.86	17.50	18.55	100.00	95.78	96.88	97.06	97.64

Notes: Estimates are obtained using data drawn from the 2014 Current Population Survey March Supplements. Information on workers' individual wage rates and hours worked comes from the outgoing rotation group and are measured in the last week. For workers who report being paid hourly, their wage rate is directly reported from their current job. For those who are not paid hourly, wage rates are calculated as the ratio of weekly earnings to usual weekly hours. Wages are in nominal dollars.

Sample is restricted to individuals ages 16 to 64 for SNAP/Food stamp, Medicaid, FRPL and housing assistance program, and women ages 16 to 54 for AFDC/TANF and WIC in columns (1) through (8). In columns (9) through (11), sample is restricted to individuals ages 16 to 64.

Appendix Table 14B. Wage Distribution by Whether Received Means-Tested Public Assistance for Hourly Workers, SIPP 2013

	$0.01-$6.99	$7.00-$7.24	$7.25-$10.09	$10.10-$14.99	$15.00-19.99	$20.00 & over	Total	Percent of all workers	Percent earning more than $7.24 and less than $10.10	Percent earning more than $7.24 and less than $12.00	Percent earning more than $7.24 and less than $15.00
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SNAP/Food Stamps											
No	1.62	0.66	33.66	26.92	18.13	19.01	100.00	93.21	87.23	88.11	90.08
Yes	3.32	1.46	64.32	22.80	6.31	1.79	100.00	6.79	12.77	11.89	9.92
Medicaid											
No	1.58	0.63	33.76	27.11	18.09	18.84	100.00	92.95	87.20	88.31	90.80
Yes	3.82	1.70	61.76	20.65	7.40	4.66	100.00	7.05	12.80	11.69	9.80
FRPL											
No	1.69	0.59	32.77	26.53	18.36	20.06	100.00	81.42	74.31	75.09	77.15
Yes	1.99	1.23	49.14	27.04	12.67	7.93	100.00	18.58	25.69	24.91	22.85
Housing assistance											
No	1.72	0.69	35.69	26.65	17.35	17.89	100.00	99.49	98.85	98.97	99.06
Yes	4.25	3.46	56.92	23.74	8.81	2.83	100.00	0.51	1.15	1.03	0.94
AFDC/TANF											
No	2.69	0.97	42.20	27.31	13.78	13.05	100.00	99.43	99.51	99.51	99.53
Yes	8.33	0.00	56.75	25.40	6.35	3.17	100.00	0.57	0.49	0.49	0.47
WIC											
No	2.57	0.92	41.04	27.58	14.19	13.70	100.00	94.15	95.49	95.81	96.45
Yes	5.15	1.57	61.87	22.91	6.59	1.92	100.00	5.85	4.51	4.19	3.55

Notes: Estimates are obtained using cross-section data drawn from the 2008 Panel of the Survey of Income and Program Participation between January and July of the 2013 calendar year. Hourly wages are self-reported earnings per hour for individuals providing their hourly rates on their current primary job or calculated from monthly earnings and monthly hours otherwise. Wages are in 2013 dollars.

Sample is restricted to individuals ages 16 to 64 for SNAP/Food stamp, Medicaid, FRPL and housing assistance program, and women ages 16 to 54 for AFDC/TANF and WIC in columns (1) through (8). In columns (9) through (11), sample is restricted to individuals ages 16 to 64.

Employment
Policies
INSTITUTE

1090 Vermont Avenue, NW
Suite 800
Washington, DC 20005
www.EPIonline.org
Tel: 202.463.7650
Fax: 202.463.7107