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# State Specific Poverty Thresholds Adjusted For Cost Of Living Differences

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STATE SPECIFIC POVERTY THRESHOLDS ADJUSTED FOR COST OF LIVING  
DIFFERENCES

by

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## ABSTRACT

While poverty is undoubtedly one of the most widely used domestic indicators of social wellbeing, its measurement has a critical shortcoming. Using national poverty thresholds ignores the potential differences in the cost of living across states. States use the national poverty threshold when conducting poverty research and assessing community demographics. Theoretically price level differences between states could mean that, if poverty thresholds were adjusted for cost-of-living by state, the adjusted poverty rate could be different than the official poverty rate. Using data specific to individual states that can be found in the Census Bureau's American Community Survey, geographically specific thresholds have been constructed for all fifty states, using the Bishaw Index and the Bureau of Economic Analysis Regional Price Parities. These have been used to allow for constructing cost-of-living differences in constructing national poverty rates and poverty rates within states.

## TABLE OF CONTENTS

Abstract .....	iii
List of Tables .....	v
Chapter 1: Introduction .....	1
Chapter 2: Literature Review .....	3
Chapter 3: Data and Empirical Methods .....	12
Chapter 4: Results .....	17
4.1: Poverty Measures .....	17
4.2: Regressions and Policy .....	22
Chapter 5: Conclusion .....	34
References .....	36

## LIST OF TABLES

Table 4.1 Summary of Poverty Rates by Division.....	18
Table 4.2 Descriptive Statistics – Means and Standard Deviations.....	24
Table 4.3 National Poverty Rate Dependent Variable with Unmodified Independent Variables .....	25
Table 4.4 Bishaw Index Poverty Rate Dependent Variable with Unmodified Independent Variables .....	26
Table 4.5 Regional Price Parity Poverty Rate Dependent Variable with Unmodified Independent Variables .....	28
Table 4.6 Bishaw Index Poverty Rate Dependent Variable and Bishaw Index Modified Independent Variables .....	30
Table 4.7 Regional Price Parity Poverty Rate Dependent Variable with Regional Price Parity Modified Independent Variables .....	32

## CHAPTER 1

### INTRODUCTION

As poverty is often used as an indicator for social well-being, the accuracy of its measurement is vital to being able to identify those that truly need government services. Currently, the only poverty measure recognized by the federal government is that which uses the national thresholds calculated by the US Census Bureau. These thresholds establish a minimum income level for families adjusted for family size and for the cost of inflation annually. Additional poverty measures have been proposed such as the Supplemental Poverty Measure (SPM), but the U.S. Census Bureau measures based on the national poverty thresholds are the official measures, and are used in measuring poverty in each state. Logic would tell us that states have wide variations in cost-of-living, which could mean significant differences as to what constitutes levels of income that would make households considered “impoverished”.

Adjusting for geographic differences in cost of living between states could significantly impact the measure of poverty in that state. In states that see a significantly lower cost of living, the adjusted threshold would be lower than the national threshold and subsequently less people would be considered impoverished. Likewise, in states with higher costs of living, the adjusted threshold would be higher than the national and would lead to more people in that state being classified as impoverished. These cost of living adjustments will come from a measure of median rents using the Bishaw Index and the Bureau of Labor Statistics Regional Price Parities.

This work is an expansion upon a previously completed analysis in which geographic-specific thresholds for the State of Florida were constructed. In that analysis, the conclusion was that the proportion of households considered impoverished under the geographic-specific thresholds, which were at the time constructed only using a measure of median rents, was statistically significantly different from the proportion of households considered impoverished under the national thresholds. In this paper, that analysis will be extended to assess if the same result holds true for all fifty states with cost of living adjustments that come from a measure of median rents using the Bishaw Index and the Bureau of Economic Analysis Regional Price Parities.

## CHAPTER 2

### LITERATURE REVIEW

The literature surrounding many of the topics pertaining to poverty is extensive. Much of the literature pertains to addressing the importance and history of the national poverty threshold, critiquing the idea of a poverty threshold in general, or suggesting modifications to the current poverty threshold calculation. The first category of poverty literature speaks towards the initial intent of the measure and reiterates its critical importance in society while the remaining two categories drive the discourse surrounding poverty and push policymakers to consider alternatives. Another topic that is important to this discussion but that is rarely found in academic texts is the relative prevalence of poverty across individual states. This information is most often reported in news articles and drives the entire premise of this paper. For states that have a higher cost-of-living, there are many articles about residents struggling to “make ends meet” and subsequently also more articles during the years of the Great Recession which likely exacerbated the problem.

The poverty measurement currently in use in the United States was developed by Mollie Orshansky in the 1960s to assess the impact and risks of a low economic status. This measurement was different from others produced around the same time because it used the Department of Agriculture’s food plan measure of cost per family rather than the more commonplace budget calculations of that time (Fisher, 1992). This threshold was calculated by using the food plan costs created by the Department of Agriculture in 1963,

using those food plans to establish a standard cost of an adequate diet, and multiplying that value by 3 to account for other non-food expenditures. Orshanky determined that for any income level, not just lower-income populations, a third of a families' budget was to be spent on food. In a 1964 report by the Council of Economic Advisors, initially a single poverty threshold was proposed for all household sizes, but that has since been modified. Further modifications were added in the following years that allowed non-food household expenditures to be adjusted using the consumer price index (CPI), a process that is still followed today. These national thresholds are compared to gross before-tax income, and are adjusted for family size and age of family members leading to a total of forty-eight threshold values. These threshold values are used in family income reports in the Current Population Survey to calculate the official poverty statistics each year.

On the subject of price-level and cost-of living variations US Department of Health, Education and Welfare (1976) stated,

“There may be cost-of-living differences between regions, and among urban, suburban, and rural areas, but the extent and nature of these differences is difficult to identify accurately. Existing sources of data which are both accurate at the state and local level and available on a timely basis cannot provide a reliable proxy measure of poverty. Because cost-of-living differences across areas are not satisfactorily measured by existing data and because there is no agreement on the methodology for making such an adjustment, no geographic adjustment in the poverty threshold is made in the report.” (US Department of Health, Education, and Welfare, 1976)

Poverty is a universal indicator of social well-being. This extensive use makes the accuracy of its calculation vital. Domestically, the national poverty thresholds are used for a variety of social programs to determine program enrollment eligibility and changing the calculation of the threshold would thereby change the potential enrollment in certain programs. The current calculation of the US Census Bureau's poverty thresholds does not take into account geographic variations in cost-of-living between states (Renwick, 2011). In order for poverty alleviation policies and programs to effectively target the populations they were designed for, those populations must be accurately identified. By using geographic-specific poverty thresholds that allow for regional cost-of-living adjustments, a more accurate picture of domestic poverty can be presented that will aid policymakers' goals.

In 2010, the Census Bureau began reporting an additional poverty measurement that would take the place of the many other experimental measures. This measure, known as the Supplemental Poverty Measure (SPM), has not replaced the official thresholds but rather provides a modification to the official thresholds based on recommendations from the National Academy of Sciences (NAS). The SPM has several marked differences from the national thresholds including measurement units, threshold adjustments, and resource measure. The SPM considers co-resident unrelated children, foster children, unmarried partners, and their children as a part of the family unit. The threshold is calculated using the average expenditures on food, clothing, shelter, and utilities (FCSU) for every two-child family unit in the 30<sup>th</sup> to 36<sup>th</sup> spending percentile multiplied by 1.2. This is estimated to be the cost of necessities plus "a little bit more". The measure of income considered for the family unit is also modified under the SPM where instead of using gross before-tax

cash income, the SPM additionally uses noncash benefits minus taxes, child support paid to another family, out of pocket medical expenses, and work expenses to get a more accurate representation of a family's disposable income (Renwick & Fox, 2016). The SPM does include geographic adjustments for housing costs but does not attempt to capture non-housing geographic variation in cost of living.

One important consideration in poverty literature is the distinction between absolute and relative poverty. Absolute poverty is defined as a fixed standard of the income needed to meet the basic needs of a family maintained to keep a constant purchasing power over time, whereas relative poverty is generally a cutoff point that pertains to the distribution of income in a nation (Feng & Nguyen, 2014). For example, one standard for relative poverty is fifty percent of the median income in a nation. There is division among scholars as to what measure more accurately depicts the true state of poverty in a nation, or in a geographic region. Internationally, most countries assess poverty using an absolute threshold and the United States is no exception. Within America, a recent investigation conducted by the UN monitor on extreme poverty strives to highlight some of the driving forces behind the wide variation in income distribution and to “demonstrate that no country, however wealthy, is immune from human suffering induced by growing inequality (Pilkington, 2017).” This investigation speaks to the state of relative poverty in America while addressing how it relates to the measure of absolute poverty utilized by the federal government. The UN Special Rapporteur determined that poverty in America was systemic and as one of the world's wealthiest nations we are not harnessing our wealth to effectively address the problem of poverty. In his report, Alston (2017) said, “...today's United States has proved itself to be exceptional in far more problematic ways that are shockingly at odds

with its immense wealth and its founding commitment to human rights. As a result, contrasts between private wealth and public squalor abound... In the economy of the twenty-first century, only a tiny percentage of the population is immune from the possibility that they could fall into poverty as a result of bad breaks beyond their own control.”

Another important distinction when considering poverty in America is the difference between the poverty thresholds and poverty guidelines. Poverty thresholds are the values calculated by the US Census Bureau for official poverty population figures. According to the Office of the Assistant Secretary for Planning and Evaluation (2017), poverty guidelines are calculated by the Department of Health and Human Services primarily for determining eligibility for different federal social programs. Guidelines were initially established because the official thresholds for each year are not released until much later in the year. These guidelines are used for administrative purposes and are simplified estimates of the poverty thresholds for that year. These guideline values are calculated using the weighted average poverty thresholds from the two previous years. These values equalize the differences between adjacent family size figures so that for each family size, there is a single poverty guideline income level. For example, in 2015 the first person in a household’s guideline income was \$11,770 and each additional household member added \$4,160 to that value. The poverty guidelines also specify different standards for the 48 contiguous states, Hawaii, and Alaska. Programs from the Departments of Health and Human Services, Agriculture, Energy, and Labor all use the poverty guidelines to determine eligibility. For any adjustment of the poverty thresholds, enrollment in these programs would also be impacted.

The final topic that must be addressed is the comparative state of poverty in America. Domestically, states such as New Hampshire and Maryland have some of the lowest poverty rates while Mississippi and Louisiana claim the highest poverty rates (WorldAtlas 2017). Relative to their own costs-of-living however, this may not be the case. Maryland has the sixth highest cost-of-living nationally and New Hampshire ranks thirteenth, while Mississippi has the lowest cost-of-living and Louisiana the nineteenth (Missouri Economic Research and Information Center 2017). This could mean that while Maryland has one of the lowest official poverty rates in the nation, the depth of poverty is more severe than reported due to high costs-of-living. For example, an article released in the Baltimore Sun in January 2017 reported that one fourth of families in Maryland with incomes above the poverty line, still cannot afford basic essentials based on a United Way “basic survival budget” calculation (Campbell 2017). Consequently, the magnitude of poverty in Louisiana may not be as drastic as previously thought, because of considerably lower costs of living. This is, of course, a nuanced issue but cost-of-living variation could play a major role when considering the nature of poverty in a state.

Though the use of poverty thresholds in policy is practically universal, in theory there is much more debate on whether the measure is consistent and reliable, or merely arbitrary. Laderchi, Saith, and Stewart (2003) find that the different approaches to poverty, including monetary, capability, social exclusion and participatory create vastly different definitions of what is classified as poverty and thereby lead to different calculations of the number of impoverished people in a region. Laderchi et al conclude their findings by stating that, “identification and targeting of the poor with combined methods should be

more widely adopted, reflecting the concerns for a broad characterization of poverty which are currently part of the development discourse.”

One such project that aimed to identify the impoverished population in a new way was conducted by the Institute for Research on Poverty (IRP) in Wisconsin. The goal of this project was to provide the state of Wisconsin with a “nuanced picture of economic hardship (Smeeding & Thornton, 2016, p.?)”. State researchers then used this work to measure the success of state-level “safety net” programs that were designed to lift people out of poverty. Another project is that of Trudi Renwick at the US Census Bureau. Since 2009, Renwick has constructed and conducted analyses on geographic-specific poverty thresholds using ACS data. Renwick focuses her analysis on modifying the SPM to include non-housing related geographic variations in cost of living. Using regional price parities and a median rents index, Renwick constructed geographic-specific thresholds for each state and certain metropolitan areas across the nation. Her 2014 paper analyzes this data for 2009 to 2011 and her 2017 update provides details for 2015.

This work diverges from Renwick’s by utilizing the aggregate regional price parities (explanation in next section) as well as the Bishaw Index for median rents whereas Renwick used separate unpublished and unattainable RPP that included only rent, food, and apparel. This unique RPP was used to maintain consistency with the SPM calculations. This paper also diverges from Renwick by modifying the standard national poverty thresholds instead of the SPM to highlight the effects of geographic variation in cost of living. Additionally, this paper analyzes the years 2008 to 2015 individually and proceeds to work to establish a relationship between the adjusted poverty thresholds and different

state-level policies such as the minimum wage, Temporary Assistance for Needy Families (TANF) benefits, and unemployment compensation.

Much has been said on the topic of state-level policy decisions and their impact on poverty. For this analysis, minimum wage, TANF, and unemployment insurance are of particular relevance. Concern is given to these policies specifically because they tend to be the policies with which policymakers intend to help lift people out of poverty. These are also often some of the more highly publicized social programs, leading to a wide variety of opinions regarding their effectiveness. Addison and Blackburn (1998) used state-level minimum wage changes from 1983-96 and found a poverty-reducing effect for older junior high dropouts and teenagers. Their results support the claim that 1990s increases in minimum wage led to reductions in poverty while the 1980 minimum wage increases did not lead to reductions in poverty for the specific populations that were studied. In a 2010 paper Sabia and Burkhauser (2010) assessed whether increasing minimum wage to \$9.50 would help the working poor). Using a fixed effects estimation, Sabia and Burkhauser determined that the 2003-2007 minimum wage increases had little impact on state poverty rates. Because of this, they also claim that further increasing the minimum wage to \$9.50 would have little impact on vulnerable populations. This is explained by the low number of workers impacted by the change that are considered “poor” and the potential for adverse employment effects from minimum wage increases. In a 2000 National Bureau of Economic Research working paper, Schoeni and Blank (2000) found that an increase in TANF benefits led to a significant decline in poverty. However, this result was not robust to including fixed state and year effects. This analysis was conducted using the Current Population Survey responses for adult women from 1977 to 1999. Prior to 1996 the

estimations used state welfare waivers since the TANF policies were not enacted until then. A 1984 paper by Ellwood and Summers found that while only 25% of unemployment insurance funds go to people who would otherwise be considered poor, 75% of those that did receive benefits were lifted out of poverty by the benefits. Vroman (2010) in a report for the Urban Institute found that, during the great recession, increasing unemployment benefits did lead to a reduction in poverty rates.

## CHAPTER 3

### DATA AND EMPIRICAL METHODS

This analysis will be conducted using the United States Census Bureau American Community Survey (ACS) one-year estimates, using the housing survey subset for all fifty states and Washington DC. This is data collected from over 3.5 million households each year to gather information about social, economic, housing, and demographic qualities of the participants. To ensure consistency, all vacant homes, as well as institutional and noninstitutional group quarters have been eliminated from the data sets. The data for each state has been collected from the years 2008 to 2015 and will be aggregated again at the end of the process to draw a more accurate picture of the changing cost-of-living differences across America over time.

Regional price parities data from the Bureau Economic Analysis (BEA) and median rent data taken from the ACS one-year estimates will also be used. The specific median rents used to construct this index were the median rent of a noninstitutional two-bedroom housing unit. This was decided due to the possible difference in the quality of the median housing units in each state. For a state with a larger urban population, the median rent could represent a studio apartment, while in a state with a larger rural population, the median rent may represent the rent of a family home. The median rents will be used in the Bishaw Index which weights the median rents in a geographic area and creates an index. The Bishaw index is as follows:

$$\left( .44 * \frac{\text{Local Median Gross Rent}}{\text{National Median Gross Rent}} + .56 \right) * \text{National Threshold}$$

$$= \text{Geographic Threshold}$$

This index was proposed by Bishaw (2009) who constructed the weights based on a National Academy of Sciences report that stated that 44 percent of cost-of-living variation fluctuates with housing costs, but the remaining 56 percent varies with other non-rent related expenditures. To capture additional cost-of-living differences, regional price parities (RPPs) will also be used to construct additional thresholds. RPPs are measures constructed by the BEA to measure price level differences across states. The all-items measure was chosen for this analysis because it includes prices for all consumption goods and services, including rents. RPPs are generally presented as a percentage of the overall national price level. For example, if a state had an RPP value of .97 then that state's price level would be considered 97% that of the national price level which was measured as 1.0. The RPP thresholds were created simply by multiplying the state RPP for that year by the national poverty threshold in the corresponding year.

The income measure used for comparison to the poverty thresholds was the family income measure in the ACS data. This measure sums all of the income from family members over 15 years of age. This is pre-tax income that includes earnings, unemployment compensation, workers' compensation, Social Security, Supplemental Security Income, public assistance, veterans' payments, survivor benefits, pension or retirement income dividends, rents, royalties, income from estates, trusts, educational assistance, alimony, child support. This measure of income excludes capital gains or losses, noncash benefits (e.g. food stamps and housing subsidies), and tax credits. This is consistent with the measure of income used to calculate the official poverty statistics.

For each state and year, the ACS datasets will be disaggregated by number of persons per household ( $np$ ). After the data has been separated, three new variables will be created for each family:  $natpov$ ,  $bishpov$  and  $rpppov$ . These refer to the national thresholds and the thresholds created using the Bishaw Index and the all-items RPP respectively. Poverty-status variables are created as dummy variables in which families are assigned a one if their family income ( $fincp$ ) was less than the national poverty threshold for  $natpov$  and a zero otherwise. Similarly, the families are assigned a one if their income falls under the geographic-specific threshold income level for  $bishpov$  and  $rpppov$  and a zero otherwise. Once these dummy variables are created, the data will be collapsed down to state means by year in order to continue with regression.

In addition to looking at whether the difference between the geographic-specific thresholds are statistically significantly different from the national thresholds, this paper will also use these thresholds in regressions with other state-level policy choices such as minimum wage, TANF benefits, and unemployment compensation. The goal of that analysis is to see how changes in state policy could impact poverty rates. In particular I estimate regressions of the form:

$$(1) Poverty Rate_{i,t} = \beta_0 + \beta_1 minwage_{i,t} + \beta_2 TANF_{i,t} + \beta_3 UC_{i,t} + \gamma_s + \varepsilon_{i,j}$$

$$(2) Poverty Rate_{i,t} = \beta_0 + \beta_1 minwage_{i,t} + \beta_2 TANF_{i,t} + \beta_3 UC_{i,t} + \gamma_s + \gamma_y + \varepsilon_{i,j}$$

$$(3) Poverty Rate_{i,t} = \beta_0 + \beta_1 minwage_{i,t} + \beta_2 TANF_{i,t} + \beta_3 UC_{i,t} + \gamma_s + \gamma_y + \theta_s * T + \varepsilon_{i,j}$$

$$(4) Poverty Rate_{i,t} = \beta_0 + \beta_1 minwage_{i,t} + \beta_2 TANF_{i,t} + \beta_3 UC_{i,t} + \beta_4 minwage_{i,t-1} +$$

$$\beta_5 TANF_{i,t-1} + \beta_6 UC_{i,t-1} + \gamma_s + \varepsilon_{i,j}$$

$$(5) Poverty Rate_{i,t} = \beta_0 + \beta_1 minwage_{i,t} + \beta_2 TANF_{i,t} + \beta_3 UC_{i,t} + \beta_4 minwage_{i,t-1} +$$

$$\beta_5 TANF_{i,t-1} + \beta_6 UC_{i,t-1} + \gamma_s + \gamma_y + \varepsilon_{i,j}$$

$$(6) \text{Poverty Rate}_{i,t} = \beta_0 + \beta_1 \text{minwage}_{i,t} + \beta_2 \text{TANF}_{i,t} + \beta_3 \text{UC}_{i,t} + \beta_4 \text{minwage}_{i,t-1} + \beta_5 \text{TANF}_{i,t-1} + \beta_6 \text{UC}_{i,t-1} + \gamma_s + \gamma_y + \theta_s * T + \varepsilon_{i,j}$$

Where  $\gamma_s$  are state effects,  $\gamma_y$  are year effects, and  $\theta_s * T$  is a specific state-trend interaction term. Year effects were added to the models instead of a linear trend to account for possible recessionary impacts that may have occurred during the years of the Great Recession. A state-trend interaction term was added in order to control for the unique policy tendencies of each state over time. Specifications (1)-(3) assess the contemporaneous relationship between the policy terms and poverty rates. Specifications (4)-(6) employ the use of lags to assess the impact of the previous periods' policy on the current period poverty. This was included because policy changes will rarely lead to contemporaneous changes in poverty. It is likely that the effect of a policy change may not be realized until the next period. Specification (1) and (4) in each table refer to fixed effects estimation. Specification (2) and (5) refer to panel regression using fixed effects that also includes year-effects. Specification (3) and (6) refer to a panel regression using fixed effects with year effects and state-year interaction terms. Each of specifications use standard errors that are robust to heteroskedasticity.

TANF and unemployment compensation terms were chosen due to their importance as public assistance programs, while minimum wage was selected due to the frequently-made claim that changes in minimum wage legislation would alleviate poverty for vulnerable populations. TANF was created in 1996 by President Bill Clinton, as a temporary financial assistance program for eligible low-income families. Colloquially, TANF is known as “welfare”. Data for TANF benefits were collected from the Welfare Rules Database, the same source used by the Green Book produced by the Committee on

Ways and Means for the US House of Representatives (The Urban Institute, 2018). The specific measure used for this analysis is the maximum monthly benefit for a family of three with no income. Unemployment compensation, also known as unemployment benefits or unemployment insurance, are a form of public assistance made to individuals who are unemployed often conditional on their continuing to search for jobs in the interim. Unemployment compensation data were collected from the US Department of Labor Employment and Training Administration, specifically from the annual Significant Provisions of the State Unemployment Insurance Laws tables (US Department of Labor, 2017). The measure used for this analysis is the maximum weekly benefit amount without dependents' allowances. Minimum wage data was collected from the US Department of Labor Wage and Hour Division (US Department of Labor, 2018). When a range was provided due to special consideration for varying size firms or different industry allowances, the lowest value was used.

## CHAPTER 4

### RESULTS

The goal of this analysis is two-fold, to evaluate the importance of the choice between the modified poverty thresholds and the national threshold and to assess the relationship between poverty measures using the various thresholds and the state-level policy choices. Of particular interest is the relationship between minimum wage, TANF benefits, unemployment compensation, and poverty. While there is some evidence that increasing the minimum wage does have a negative effect on poverty for portions of the population, on net studies have shown that increasing the minimum wage does not reduce poverty. This relationship will be assessed to see if the inclusion of geographic specific poverty impacts the previously stated conclusion.

#### 4.1 POVERTY MEASURES

As these poverty rates are calculated using ACS survey data, there is a possibility for survey response bias in the measures. Families with income below the poverty threshold may be unwilling to answer the survey or may inflate their income artificially in their response. To that end, the poverty rates presented may be lower than the official poverty rates for each state at that time. The poverty rates by census division are can be found in Table 4.1. There is a clear pattern to the relationship between division and the poverty rates. In each year for Divisions One, Two, and Nine both the Bishaw and RPP Poverty rates are above the rate using the national thresholds. For all other divisions, the Bishaw and RPP poverty rates are lower than the poverty rate using the national thresholds. Divisions One

**Table 4.1 Summary of Poverty Rates by Division**

Division	Year											
	2008			2009			2010			2011		
	Official	Bishaw	RPP									
<b>1 – New England</b>	0.056 (0.016)	0.059 (0.012)	0.058 (0.013)	0.059 (0.012)	0.063 (0.008)	0.062 (0.01)	0.065 (0.016)	0.069 (0.013)	0.067 (0.013)	0.071 (0.017)	0.075 (0.013)	0.073 (0.014)
<b>2 – Mid-Atlantic</b>	0.069 (0.017)	0.074 (0.016)	0.078 (0.022)	0.073 (0.016)	0.079 (0.016)	0.082 (0.021)	0.080 (0.017)	0.087 (0.018)	0.091 (0.023)	0.086 (0.018)	0.095 (0.02)	0.098 (0.026)
<b>3 – East North Central</b>	0.079 (0.012)	0.073 (0.011)	0.072 (0.011)	0.086 (0.011)	0.080 (0.01)	0.079 (0.011)	0.095 (0.013)	0.087 (0.011)	0.087 (0.010)	0.100 (0.014)	0.096 (0.012)	0.096 (0.013)
<b>4 – West North Central</b>	0.070 (0.014)	0.060 (0.012)	0.059 (0.011)	0.070 (0.014)	0.060 (0.012)	0.059 (0.011)	0.080 (0.014)	0.069 (0.011)	0.068 (0.009)	0.085 (0.018)	0.074 (0.017)	0.074 (0.015)
<b>5 – South Atlantic</b>	0.082 (0.022)	0.081 (0.016)	0.080 (0.017)	0.090 (0.024)	0.890 (0.017)	0.088 (0.018)	0.100 (0.027)	0.099 (0.02)	0.096 (0.019)	0.108 (0.032)	0.106 (0.024)	0.104 (0.023)
<b>6 – East South Central</b>	0.117 (0.023)	0.099 (0.019)	0.098 (0.017)	0.126 (0.02)	0.108 (0.016)	0.106 (0.013)	0.138 (0.023)	0.120 (0.019)	0.120 (0.017)	0.148 (0.022)	0.128 (0.018)	0.127 (0.017)
<b>7 – West South Central</b>	0.114 (0.007)	0.100 (0.106)	0.099 (0.009)	0.118 (0.007)	0.104 (0.01)	0.103 (0.008)	0.129 (0.003)	0.115 (0.009)	0.114 (0.007)	0.143 (0.005)	0.127 (0.012)	0.126 (0.01)
<b>8 - Mountain</b>	0.081 (0.024)	0.076 (0.022)	0.078 (0.022)	0.088 (0.021)	0.083 (0.021)	0.085 (0.02)	0.103 (0.027)	0.095 (0.025)	0.099 (0.028)	0.116 (0.035)	0.109 (0.035)	0.111 (0.033)
<b>9 - Pacific</b>	0.077 (0.016)	0.089 (0.021)	0.086 (0.019)	0.082 (0.015)	0.094 (0.023)	0.092 (0.019)	0.091 (0.021)	0.105 (0.028)	0.100 (0.025)	0.110 (0.026)	0.127 (0.035)	0.12 (0.031)
<b>National Std. Deviations</b>	0.024	0.020	0.020	0.024	0.021	0.021	0.027	0.024	0.024	0.032	0.029	0.028

States are divided into the following divisions: 1: New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), 2: Mid-Atlantic (New Jersey, New York, and Pennsylvania), 3: East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin), 4: West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota), 5: South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, District of Columbia, and West Virginia), 6: East South Central (Alabama, Kentucky, Mississippi, and Tennessee), 7: West South Central (Arkansas, Louisiana, Oklahoma, and Texas), 8: Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming), 9: Pacific (Alaska, California, Hawaii, Oregon, and Washington)

Table 4.1 cont

Division	Year											
	2012			2013			2014			2015		
	Official	Bishaw	RPP									
<b>1 – New England</b>	0.068 (0.011)	0.073 (0.008)	0.070 (0.009)	0.067 (0.015)	0.071 (0.013)	0.069 (0.013)	0.067 (0.016)	0.071 (0.011)	0.069 (0.013)	0.059 (0.015)	0.063 (0.013)	0.062 (0.012)
<b>2 – Mid-Atlantic</b>	0.087 (0.019)	0.095 (0.022)	0.097 (0.026)	0.085 (0.016)	0.094 (0.021)	0.096 (0.024)	0.085 (0.015)	0.093 (0.02)	0.095 (0.024)	0.078 (0.015)	0.086 (0.019)	0.087 (0.023)
<b>3 – East North Central</b>	0.100 (0.015)	0.093 (0.014)	0.092 (0.014)	0.097 (0.089)	0.090 (0.011)	0.089 (0.012)	0.092 (0.013)	0.085 (0.012)	0.084 (0.012)	0.087 (0.014)	0.080 (0.013)	0.080 (0.013)
<b>4 – West North Central</b>	0.082 (0.017)	0.073 (0.015)	0.072 (0.014)	0.083 (0.019)	0.073 (0.015)	0.073 (0.014)	0.080 (0.017)	0.070 (0.014)	0.070 (0.013)	0.073 (0.014)	0.062 (0.011)	0.063 (0.01)
<b>5 – South Atlantic</b>	0.103 (0.027)	0.103 (0.022)	0.100 (0.021)	0.102 (0.026)	0.102 (0.018)	0.099 (0.019)	0.098 (0.026)	0.098 (0.017)	0.095 (0.017)	0.092 (0.022)	0.092 (0.014)	0.088 (0.014)
<b>6 – East South Central</b>	0.148 (0.031)	0.124 (0.024)	0.123 (0.024)	0.140 (0.03)	0.122 (0.025)	0.120 (0.024)	0.135 (0.025)	0.117 (0.02)	0.115 (0.019)	0.127 (0.022)	0.108 (0.018)	0.107 (0.017)
<b>7 – West South Central</b>	0.139 (0.002)	0.124 (0.008)	0.123 (0.006)	0.133 (0.003)	0.118 (0.008)	0.118 (0.004)	0.129 (0.004)	0.114 (0.007)	0.112 (0.004)	0.121 (0.007)	0.108 (0.004)	0.107 (0.002)
<b>8 - Mountain</b>	0.113 (0.034)	0.106 (0.033)	0.107 (0.032)	0.110 (0.036)	0.103 (0.033)	0.105 (0.033)	0.105 (0.033)	0.097 (0.030)	0.099 (0.031)	0.095 (0.035)	0.088 (0.034)	0.090 (0.033)
<b>9 - Pacific</b>	0.106 (0.029)	0.122 (0.036)	0.118 (0.013)	0.100 (0.030)	0.114 (0.034)	0.110 (0.031)	0.100 (0.028)	0.117 (0.032)	0.111 (0.030)	0.088 (0.020)	0.101 (0.026)	0.097 (0.023)
<b>National Std. Deviations</b>	0.031	0.028	0.027	0.030	0.027	0.026	0.028	0.025	0.024	0.027	0.024	0.023

States are divided into the following divisions: 1: New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), 2: Mid-Atlantic (New Jersey, New York, and Pennsylvania), 3: East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin), 4: West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota), 5: South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, District of Columbia, and West Virginia), 6: East South Central (Alabama, Kentucky, Mississippi, and Tennessee), 7: West South Central (Arkansas, Louisiana, Oklahoma, and Texas), 8: Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming), 9: Pacific (Alaska, California, Hawaii, Oregon, and Washington)

and Two comprise the Northeast Region Census designation. Generally regarded as a region with a high cost of living, this area is home to many densely populated urban cities and so this result is largely unsurprising. Similarly, Division Nine: Pacific is in the West Region Census designation and is also regarded as a division with a higher cost of living. Another pattern emerges when the Bishaw poverty rates are compared to the RPP rates. In Divisions Two and Eight the Bishaw-adjusted poverty rate was lower than the RPP-adjusted rate. Division Four Bishaw-adjusted rates are above the RPP in every year except 2011, 2013, and 2015. For every other division, the Bishaw-adjusted rates are higher than the RPP in every year. This result is persistent across all of the years for this analysis. Division Two: Mid-Atlantic and Eight: Mountain are quite diverse in terms of demographics and geography, so more research would be necessary to determine how these divisions specifically differ from the others. Additional research would also be beneficial to determine why Division Four: West North Central in some years has Bishaw-adjusted rates higher than RPP rates and in others lower. The standard deviation of the three poverty rates are also presented in Table 4.1. For each year, across all states, the standard deviation for the adjusted poverty rates is lower than that of the official rate.

National poverty rates are presented graphically in Figure 4.1. This figure shows that, for every year, the percentage of families nationally considered impoverished by the Bishaw Index modified poverty threshold is everywhere higher than the percentage of families considered impoverished by the national threshold while the percentage of families considered impoverished by the regional price parity modified threshold is everywhere lower than the national threshold.

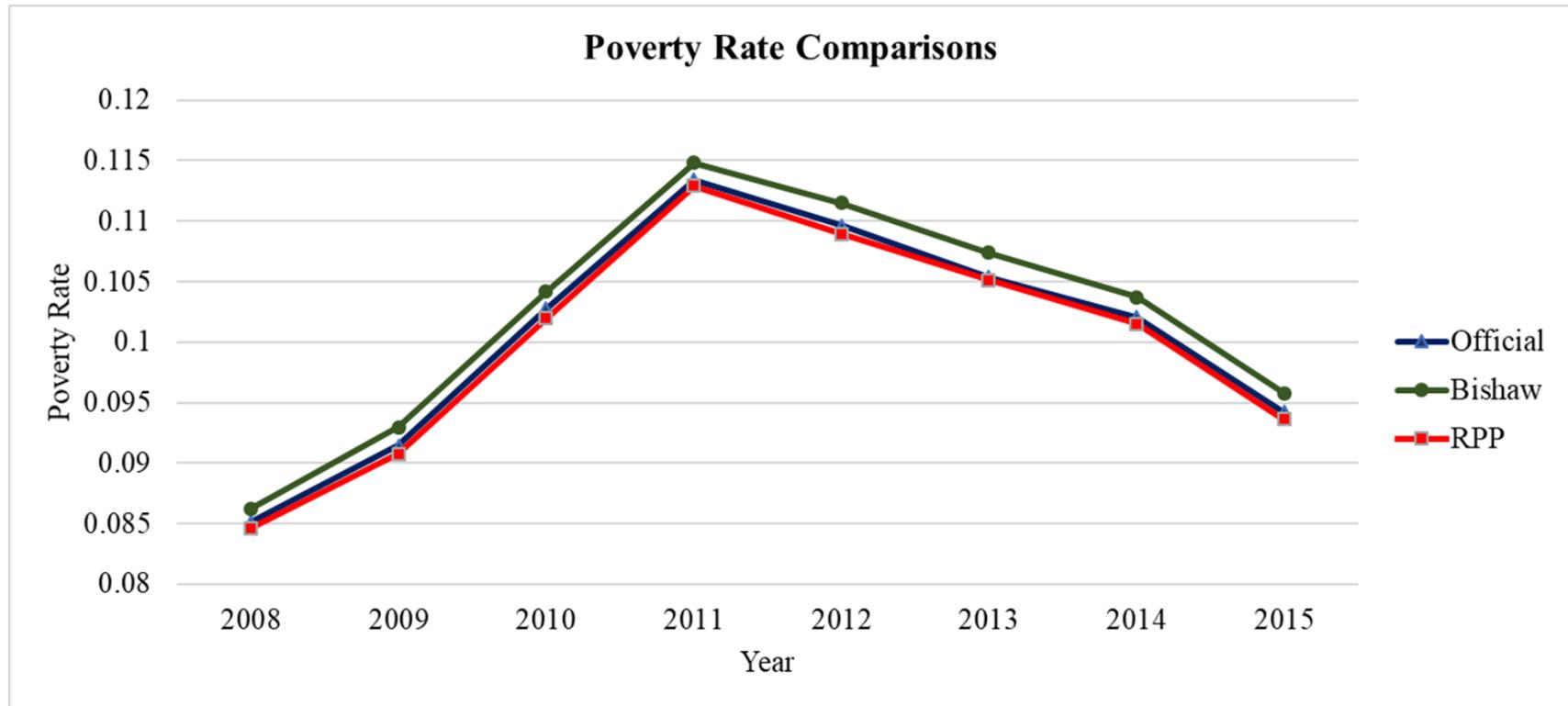


Figure 4.1 Poverty Rate Comparison Over Time

Graphically, there does appear to be a difference between the two modified thresholds and the national threshold. To test this claim statistically, each state's poverty rate needed to be weighted by its population size compared to the national population. Weights were created for each state and each year that were essentially the ratio of a state's population to the nation's population for that year. A weighted paired t-test was conducted at the national level to assess the initial claim and found that for all years, the neither the Bishaw Index poverty rate nor the RPP poverty rate was statistically different from the national poverty rate at the 10% level. Another paired t-test was conducted at a state level and across all years the Bishaw-adjusted rate was found to be significantly different from the official rate at the 10% level for every state except Nevada. Likewise, the RPP-adjusted poverty rate was found to be significantly different from the official rate at a 10% level for every state except Illinois and Vermont. This is an example of a phenomenon known as the Simpson's paradox. This occurs when a specific trend or result is consistent across different groupings of data, but once the data is aggregated the trend or result reverses. Also known as the amalgamation paradox, this is a result commonly found in social science statistics. In the above results, the modified poverty rates and the official poverty rates were found to differ significantly at the state level but the significance was no longer evident at a national level.

#### 4.2 REGRESSION ANALYSIS AND POLICY

Descriptive statistics for the regression analysis can be found in Table 4.2. The first set of models presented in Table 4.3 use the national poverty threshold as the dependent variable with the unadjusted policy terms as the independent variables. In specification (1), the only policy terms that were significant were minimum wage and unemployment

benefits. Both terms were positive and significant at the 5% level. In specifications (2) and (3) that added year effects and state-year interactions, none of the policy terms were statistically significant. Throughout each specification TANF benefits, while insignificant, remained negative, unemployment compensation remained positive, and minimum wage was positive in (1) and (3) but negative in (2). When lagged terms were added to the model in specification (4) current period TANF benefits were negative and significant at the 1% level while lagged minimum wage and unemployment compensation were both positive and significant at the 5% level. When year effects and state-year interaction effects were added in specifications (5) and (6) respectively, none of the policy terms retained their significance at the 10% level.

Table 4.4 presents the regression results from a model that uses the Bishaw Index modified poverty rates as the dependent variable with the unmodified policy terms as the independent variable. In the first regression without time or state-time interactions, minimum wage and unemployment benefits were both found to be positive and significant while TANF was negative but statistically insignificant. Once time effects and state-time interactions were taken into consideration, the policy terms lost their significance. In (2) the minimum wage term both lost its significance and changed sign, but this reversed again in (3). In specification (4), current minimum wage and TANF benefits were both negative and statistically significant at the 10% and 1% levels respectively. Current unemployment compensation was insignificant but also negative. Lagged minimum wage was the only of the lagged policy terms to be considered significant and it was positively correlated with the poverty rate. Once year effects were added, in specification (5), none of the policy

**Table 4.2 Descriptive Statistics – Means and Standard Deviations**

	Year							
	2008	2009	2010	2011	2012	2013	2014	2015
<i>natpov</i>	0.085 (0.02)	0.0914 (0.022)	0.0103 (0.024)	0.113 (0.028)	0.1096 (0.026)	0.105 (0.025)	0.102 (0.024)	0.0943 (0.022)
<i>bishpov</i>	0.086 (0.02)	0.093 (0.023)	0.104 (0.026)	0.115 (0.0294)	0.111 (0.029)	0.107 (0.0273)	0.104 (0.0256)	0.0958 (0.0234)
<i>rpppov</i>	0.085 (0.02)	0.091 (0.02)	0.102 (0.0239)	0.113 (0.0276)	0.109 (0.027)	0.105 (0.025)	0.101 (0.024)	0.0936 (0.0221)
<i>minwage</i>	6.37 (1.19)	6.73 (1.22)	7.10 1.09	7.13 (1.10)	7.17 (1.13)	7.21 (1.15)	7.43 (1.13)	7.70 (1.25)
<i>tanf</i>	426.46 (160.67)	434.93 (163.09)	437.21 (163.30)	430.87 (164.22)	430.98 (163.39)	433.74 (164.84)	437.31 (166.35)	443.27 (169.14)
<i>uc</i>	381.22 (85.79)	395.75 (87.73)	403.25 (91.96)	403.47 (92.51)	409.12 (95.98)	415.94 (100.46)	419.12 (102.85)	424.63 (106.44)

**Table 4.3 National Poverty Rate Dependent Variable with Unmodified Independent Variables**

Independent Variables	Specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Constant</b>	0.0673*** (0.0235)	0.0963*** (0.013)	1.1326 (2.016)	0.128*** (0.0185)	0.102*** (0.016)	3.37 (2.785)
<b>Minimum Wage</b>	0.0038** (0.014)	-0.000321 (0.00074)	0.00084 (0.00081)	-0.003 (0.0019)	0.00008 (0.00089)	0.00026 (0.00086)
<b>TANF</b>	-0.0058 (0.0059)	-0.0033 (0.0033)	-0.0012 (0.003)	-0.015*** (0.0048)	-0.0007 (0.0043)	-0.0007 (0.004)
<b>Unemployment Benefits</b>	0.0063** (0.00298)	0.0002 (0.00133)	0.00052 (0.0022)	-0.001 (0.0069)	-0.0038 (0.0036)	-0.0029 (0.0026)
<b>Lagged Minimum Wage</b>	-	-	-	0.004** (0.0018)	-0.00099 (0.000725)	0.0001 (0.0012)
<b>Lagged TANF</b>	-	-	-	0.002 (0.003)	-0.0047* (0.0024)	-0.0052 (0.0032)
<b>Lagged Unemployment Benefits</b>	-	-	-	0.015** (0.0062)	0.0074 (0.0046)	0.0045 (0.0038)
<b>Year Effects?</b>	No	Yes	Yes	No	Yes	Yes
<b>State-Trend Effects?</b>	No	No	Yes	No	No	Yes
<b>R<sup>2</sup>-Overall</b>	0.019	0.257	0.157	0.209	0.18	0.0292

\*\*\* indicates significance at the 0.01 level, \*\*indicates significance at the 0.05 level, \*indicates significance at the 0.10 level  
 Standard errors (in parentheses) are robust to heterogeneity.  
 TANF and Unemployment Benefits are measured in hundreds of dollars

**Table 4.4 Bishaw Index Poverty Rate Dependent Variable with Unmodified Independent Variables**

Independent Variables	Specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Constant</b>	0.059** (0.024)	0.087*** (0.0136)	1.52 (2.144)	0.117*** (0.0197)	0.091*** (0.019)	3.69 (2.84)
<b>Minimum Wage</b>	0.0036** (0.00114)	-0.00044 (0.0006)	0.0004 (0.0008)	-0.0031* (0.002)	0.00006 (0.0008)	-0.00006 (0.0009)
<b>TANF</b>	-0.0054 (0.0059)	-0.0028 (0.0032)	-0.0017 (0.0032)	-0.015*** (0.0047)	-0.0004 (0.0043)	-0.0008 (0.0042)
<b>Unemployment Benefits</b>	0.0075** (0.0029)	0.0013 (0.0013)	0.0019 (0.0019)	-0.0098 (0.0069)	-0.0036 (0.0037)	-0.0029 (-0.0021)
<b>Lagged Minimum Wage</b>	-	-	-	0.00417** (0.0017)	-0.001 (0.0008)	-0.00004 (0.0011)
<b>Lagged TANF</b>	-	-	-	0.0029 (0.0028)	-0.0041* (0.0022)	-0.0054* (-0.0031)
<b>Lagged Unemployment Benefits</b>	-	-	-	0.015** (0.0064)	0.0082* (0.0049)	0.0062 (-0.0044)
<b>Year Effects?</b>	No	Yes	Yes	No	Yes	Yes
<b>State-Trend Effects?</b>	No	No	Yes	No	No	Yes
<b>R<sup>2</sup>-Overall</b>	0.002	0.1302	0.219	0.054	0.048	0.0365

\*\*\* indicates significance at the 0.01 level, \*\*indicates significance at the 0.05 level, \*indicates significance at the 0.10 level  
 Standard errors (in parentheses) are robust to heterogeneity.  
 TANF and Unemployment Benefits are measured in hundreds of dollars

terms were significant but all of the terms were negative with the exception of current minimum wage and lagged unemployment compensation. In specification (6), only one term in the model was statistically significant. Lagged TANF had a significant negative relationship with poverty rates when state-year interactions and year effects were added to the model. Numerically this means that when maximum weekly TANF benefits increases by \$1, the poverty rate decreases by 0.000054 percentage points, or if maximum weekly TANF benefits were to increase by \$100 the poverty rate would decrease by 0.0054 percentage points.

In Table 4.5 the model presented is one with the RPP modified poverty rate as the dependent variable and the unmodified policy terms as the independent variables. In specification (1) without additional fixed effects, both minimum wage and unemployment compensation were positive and statistically significant at the 5% and 1% level respectively. TANF benefits were negative but statistically insignificant and thus cannot be concluded to be different from zero. In specification (2) which added year-effects, none of the policy terms were found to be significant. Once state-year interactions were added in specification (3) none of the policy terms retained their significance and only TANF had a negative relationship with the poverty rate. When lagged terms were added to the initial specification, in specification (4), contemporaneous minimum wage and TANF benefits were both negative and statistically significant at the 10% and 1% levels respectively. Current period unemployment compensation was negative but insignificant. Lagged minimum wage and unemployment benefits were both significant and positive at the 5% level. Once year-effects were added, the only significant term that remained was lagged unemployment compensation. That term also maintained its positive relationship with

**Table 4.5 Regional Price Parity Poverty Rate Dependent Variable with Unmodified Independent Variables**

Independent Variables	Specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Constant</b>	0.061*** (0.0225)	0.087*** (0.0116)	1.38 (1.9)	0.117*** (0.018)	0.089*** (0.0165)	3.75 (2.61)
<b>Minimum Wage</b>	0.0033** (0.0014)	-0.0005 (0.00073)	0.00057 (0.00082)	-0.0032* (0.002)	0.000006 (0.00087)	0.00004 (0.00098)
<b>TANF</b>	-0.0058 (0.0056)	-0.0032 (0.0029)	-0.0016 (0.0029)	-0.015*** (0.0044)	-0.0004 (0.0037)	-0.0007 (0.0039)
<b>Unemployment Benefits</b>	0.0075*** (0.0029)	0.0017 (0.0014)	0.0024 (0.002)	-0.00795 (0.0061)	-0.0017 (0.0029)	-0.00084 (0.0024)
<b>Lagged Minimum Wage</b>	-	-	-	0.0041** (0.0017)	-0.00091 (0.0008)	-0.000014 (0.0012)
<b>Lagged TANF</b>	-	-	-	0.0031 (0.0027)	-0.0039* (0.002)	-0.0048* (-0.0028)
<b>Lagged Unemployment Benefits</b>	-	-	-	0.0013** (0.0052)	0.0062* (0.0035)	0.0037 (-0.0027)
<b>Year Effects?</b>	No	Yes	Yes	No	Yes	Yes
<b>State-Trend Effects?</b>	No	No	Yes	No	No	Yes
<b>R<sup>2</sup>-Overall</b>	0.0003	0.1271	0.2189	0.0561	0.05	0.0464

\*\*\* indicates significance at the 0.01 level, \*\*indicates significance at the 0.05 level, \*indicates significance at the 0.10 level  
 Standard errors (in parentheses) are robust to heterogeneity.  
 TANF and Unemployment Benefits are measured in hundreds of dollars

poverty rates. In specification (6) when state-year interaction effects were included in the model, the only policy term that was found to be significant was TANF benefits at the 10% level. The term also maintained its previously negative relationship with the poverty rate.

Table 4.6 contains regression results from models that use the state poverty rate as measured with the Bishaw Index modifications as the dependent variable with Bishaw Index adjusted independent variables. The results of this model estimate were very similar to that of the unmodified independent variable results presented in Table 4.4. In specification (1), minimum wage and unemployment benefits are seen to have a positive significant relationship to the poverty rate. This would imply that as the minimum wage or unemployment benefit payout was raised, the poverty rate would increase. In numeric terms, when minimum wage increases by \$1 it leads to an increase in the poverty rate by 0.0034 percentage points. TANF benefits were found to have a negative relationship with the poverty rate but this term cannot be concluded to be statistically significantly different from zero. In specifications that added year and state-year interactions, (2) and (3), none of the policy terms were shown to be significantly different from zero but they all retained the same sign as the initial regression. In specification (4) current period minimum wage and TANF benefits were found to be negative and statistically significant while lagged minimum wage and unemployment insurance were positive and significant. In specification (5) with year effects included, none of the current period policy terms were statistically significant but lagged TANF and unemployment insurance were both statistically significant at the 10% level. TANF had a significant negative impact on poverty rate while unemployment compensation had a significant positive relationship with the poverty rate. In specification (6) the only term that remains significant, other than the

**Table 4.6 Bishaw Index Poverty Rate Dependent Variable and Bishaw Index Modified Independent Variables**

Independent Variables	Specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Constant</b>	0.055** (0.021)	0.079*** (0.013)	0.71 (2.07)	0.0996 (0.02)	0.0766*** (0.0171)	2.0085 (2.91)
<b>Minimum Wage</b>	0.0034** (0.0015)	-0.00027 (0.0007)	0.0006 (0.00086)	-0.0028* (0.0015)	0.0003 (0.0008)	0.0003 (0.00096)
<b>TANF</b>	-0.0048 (0.0053)	-0.0017 (0.0028)	-0.0007 (0.0031)	-0.0093* (0.0051)	0.0019 (0.0038)	0.0019 (0.0039)
<b>Unemployment Benefits</b>	0.0082** (0.0031)	0.0018 (0.0016)	0.0029 (0.0019)	-0.0085 (0.0061)	-0.0034 (0.0036)	-0.0016 (0.0016)
<b>Lagged Minimum Wage</b>	-	-	-	0.0037** (0.0015)	-0.0011 (0.0008)	-0.0002 (0.0012)
<b>Lagged TANF</b>	-	-	-	0.00104 (0.0029)	-0.0039* (0.0018)	-0.005* (0.0029)
<b>Lagged Unemployment Benefits</b>	-	-	-	0.0147** (0.0061)	0.0087* (0.0049)	0.0067 (0.0046)
<b>Year Effects?</b>	No	Yes	Yes	No	Yes	Yes
<b>State-Trend Effects?</b>	No	No	Yes	No	No	Yes
<b>R<sup>2</sup>-Overall</b>	0.0033	0.0878	0.2446	0.0162	0.0064	0.069

\*\*\* indicates significance at the 0.01 level, \*\*indicates significance at the 0.05 level, \*indicates significance at the 0.10 level  
Standard errors (in parentheses) are robust to heterogeneity.  
TANF and Unemployment Benefits are measured in hundreds of dollars.

constant, is lagged TANF. Numerically this means that with every \$100 increase in maximum TANF benefits there is a reduction in poverty by 0.005 percentage points.

Table 4.7 contains the regression results from models that use the regional price parity adjusted poverty rates as the dependent variable with the regional price parity adjusted policy terms as the independent variables. Similar to the results from the Bishaw Index model, in the RPP specification that did not include time or state-time interaction (1), both minimum wage and unemployment benefits were positive and statistically significant at the 5% level while TANF benefits was negative but insignificant. For the RPP specification that took time effects into consideration, minimum wage and unemployment compensation lost their significance. This relationship is maintained when the state-time interaction is included. In specification (4) current period minimum wage and TANF are negative and significant, while lagged minimum wage and unemployment compensation are positive and significant. With the addition of year effects in specification (5) the only significant terms other than the constant is lagged TANF benefits and unemployment compensation. These terms are significant at the 10% level. With state-year interaction effects added in specification (6) the only significant term was lagged TANF benefits. This term is negative and also significant at the 10% level.

One caution with these results is the possibility of simultaneity. It is quite possible that there is a higher minimum wage, TANF benefits, and unemployment compensation in more progressive or urban states. States with a higher urban population are often also states that have higher poverty due to increased population density. In the future it may be beneficial to identify an instrumental variable to use in the regressions to attempt to mitigate the possible impact of simultaneity.

**Table 4.7 Regional Price Parity Poverty Rate Dependent Variable with Regional Price Parity Modified Independent Variables**

Independent Variables	Specifications					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Constant</b>	0.0668*** (0.0224)	0.0901*** (0.0108)	1.604 (1.774)	0.1186*** (0.0185)	0.0911*** (0.0148)	4.369* (2.535)
<b>Minimum Wage</b>	0.0031** (0.0015)	-0.0007 (0.0009)	0.0004 (0.0009)	-0.0034* (0.0019)	-0.00003 (0.001)	-0.00004 (0.0011)
<b>TANF</b>	-0.0067 (0.0057)	-0.0036 (0.0028)	-0.002 (0.0008)	-0.0014*** (0.0043)	-0.00005 (0.0035)	-0.0006 (0.0036)
<b>Unemployment Benefits</b>	0.0077** (0.003)	0.0017 (0.0015)	0.0021 (0.0023)	-0.0082 (0.006)	-0.002 (0.0029)	-0.0011 (0.0028)
<b>Lagged Minimum Wage</b>	-	-	-	0.0042** (0.0017)	-0.0011 (0.0009)	-0.00008 (0.0012)
<b>Lagged TANF</b>	-	-	-	0.0018 (0.003)	-0.0044* (0.0022)	-0.0059* (0.0032)
<b>Lagged Unemployment Benefits</b>	-	-	-	0.0013*** (0.0048)	0.0066* (0.0033)	0.0036 (0.0024)
<b>Year Effects?</b>	No	Yes	Yes	No	Yes	Yes
<b>State-Trend Effects?</b>	No	No	Yes	No	No	Yes
<b>R<sup>2</sup>-Overall</b>	0.0001	0.1111	0.2118	0.0364	0.0379	0.0337

\*\*\* indicates significance at the 0.01 level, \*\*indicates significance at the 0.05 level, \*indicates significance at the 0.10 level  
Standard errors (in parentheses) are robust to heterogeneity.  
TANF and Unemployment Benefits are measured in hundreds of dollars.

These results are mostly consistent with the results of Sabia and Burkhauser (2010). In their work, Sabia and Burkhauser determined that minimum wage increases were an overall poor mechanism for reducing poverty. The results from the above analysis show that once appropriate year and state-trend effects are included in the model, minimum wage no longer has a significant impact on poverty. This paper does diverge from the conclusions of Renwick (2014). In that work, Renwick found that her item-specific RPP adjustment was significant for more states than her median-rent adjusted thresholds. This was, of course, compared to the SPM and not the official poverty measures.

## CHAPTER 5

### CONCLUSION

The regression results show that there is a similar pattern of behavior among the state-driven policy choices and national and modified poverty thresholds. Most of the specifications had similar magnitude, sign patterns, and significance whether it used modified or unmodified terms. This is a positive outcome from a policy perspective as it means that the nature of the modified threshold poverty rates remains consistent with the standard national poverty rate. What is perhaps interesting to note though, is that there was no statistically significant difference between the Bishaw Index modified poverty rate nor the RPP modified poverty rate and the official rate at a national level. At a state level, we do see significant differences for a majority of states. For some states this means that ultimately the number of people considered impoverished is different from what the official national poverty thresholds would capture. This could have lasting implications for families who may not currently be considered impoverished but would be considered impoverished under the adjusted thresholds. This could mean that families would be eligible for benefits or assistance, when previously they were not. However, some divisions see that their adjusted poverty rates are, in fact, lower than the official rate and that more families are considered impoverished than actually should be, if cost-of-living difference were taken into account.

Ultimately, more work could be done to assess the impact of adjusting poverty thresholds to account for cost of living adjustments such as gathering more annual data to look back further than 2008, but much of the drawback to that process is attempting to gather the historical data for regional price parities by state. The results of this analysis show that the modified poverty thresholds respond similarly to the national thresholds when faced with policy changes which confirms that modification would not typically lead to a different return on these policy changes. Even still, it can be concluded from this analysis that adjusting for cost of living differences would make a statistically significant difference in who was considered to live below the poverty threshold in the United States.

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