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## The Effect of Disability on Unemployment Claim Duration in Kentucky and the Surrounding States

James Tatum

University of Kentucky, jameswtatum@gmail.com

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# The Effect of Disability on Unemployment Claim Duration in Kentucky and the Surrounding States

CAPSTONE PROJECT  
JAMES TATUM

## ABSTRACT

The duration of unemployment insurance claims in Kentucky are over 30% longer on average than unemployment claims in the surrounding states. This study uses a time-series regression to compare data from Kentucky and the surrounding states to find correlations between unemployment insurance claim duration and the percentage of a state's population that reports having at least one disability. No significant correlation was found between a state's population with a disability and unemployment claim duration but there was a significant negative correlation between unemployment claim duration and the total amount of Social Security Disability Insurance and Supplemental Security Income payments people in a state receive.

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## EXECUTIVE SUMMARY

As the United States recovered from the Great Recession of 2007-2008, many states saw high unemployment numbers gradually decline and the duration of Unemployment Insurance (UI) claims diminished. In short, more Americans were able to reenter the workforce after they became unemployed through no fault of their own, and the length of time it took them to reenter the workforce diminished as the economy expanded. In 2018, the UI benefit claims in the seven states surrounding Kentucky had an average duration of 14.3 weeks. Kentucky's average UI benefit claim duration was 18.8, 31.4% longer than the average duration of the surrounding states. Every state included in this research offers a maximum of 26 weeks of unemployment benefits except Missouri (20 weeks). Some UI recipients qualify for fewer weeks of benefits due to uneven earnings or a brief work history (*Introduction to Unemployment Insurance*, 2008).

This research analyzes state-level data from Kentucky and the surrounding states from 2010 to 2018 to determine if the percentage of a state's population that has a disability correlates with change in the duration of unemployment insurance claims. Ultimately no significant correlation was found between a state's population with a disability and unemployment claim duration. There is, however, a significant negative correlation between unemployment claim duration and the amount of Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) payments a state receives. This could indicate that UI claim duration could be shortened by increasing access to SSDI or SSI benefits for people with disabilities or increasing accessibility for people with disabilities to assist them reentering the workforce.

## INTRODUCTION

Unemployment insurance (UI) benefits were instituted to help individuals who lost their jobs through no fault of their own support themselves while searching for their next place of employment. In the United States, the Unemployment Compensation program utilizes state and federal funds to administer UI programs in every state. Each state sets its UI laws according to what best fits its policy goals and Kentucky has similar maximum UI durations as six of the seven states that border it. However, Kentuckians draw unemployment benefits 31.4% longer on average than people collecting UI benefits in the surrounding states.

Table 1									
Average UI Claim Duration (Weeks)									
State	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kentucky	18.4	16.5	19.8	22.0	20.2	18.3	18.8	18.7	18.8
Surrounding States	17.9	16.7	15.7	16.0	15.5	14.5	14.6	14.4	14.3
Illinois	21.3	19.0	18.0	17.9	18.0	16.7	17.1	17.3	16.5
Indiana	16.1	14.8	14.0	15.6	15.2	13.9	13.6	13.2	12.5
Missouri	18.6	16.7	14.9	14.7	14.1	13.1	12.0	12.1	12.3
Ohio	19.9	17.8	16.6	16.5	15.5	14.6	14.8	14.6	14.9
Tennessee	16.6	15.3	15.5	15.0	13.8	13.1	13.1	13.1	15.1
Virginia	15.3	16.8	15.8	16.1	16.1	15.4	15.3	15.5	14.9
West Virginia	17.3	16.2	15.0	15.9	16.1	14.9	16.6	15.1	14.2

(US Department of Labor Employment and Training Administration)

Table 1 shows that early on during the during the recovery from the Great Recession, Kentucky's UI claim duration was comparable to the average of the surrounding states. In 2010, Kentucky averaged 18.4 weeks to the surrounding states 17.9 weeks. In 2011 Kentucky had an average duration of 16.5 weeks, lower than the average of the surrounding states. As the recovery continued in 2012 and beyond, Kentucky was left behind by its neighboring states and since 2015 has had an average

UI claim duration above 18 weeks. In 2018, Kentucky’s neighboring states had an average UI claim duration of 14.3 weeks, a tenth of a week shorter than their 2017 average. Kentucky’s 2018 average duration of 18.8 weeks was a tenth of a week longer than the state’s 2017 average.

These numbers have far-reaching implications. Kentucky’s UI trust fund is unduly strained by this significant difference in duration, and more money is spent on administration to identify, verify, and distribute UI benefits. More importantly, this means that tens of thousands of unemployed Kentuckians are spending, on average, almost five months unemployed, without employer-provided health insurance, earning a maximum of \$502 a week. Table 2 shows the UI benefits in Kentucky and the surrounding states. Some UI recipients qualify for fewer weeks of benefits due to uneven earnings or a brief work history (*Introduction to Unemployment Insurance*, 2008).

Table 2 Unemployment Insurance Benefits by State			
State	Max Weeks	Min Benefit	Max Benefit
Illinois	26	\$51 - \$77	\$471 - \$648
Indiana	26	\$37	\$390
Kentucky	26	\$39	\$502
Missouri	20	\$35	\$320
Ohio	26	\$130	\$443 - \$598
Tennessee	26	\$30	\$275
Virginia	26	\$60	\$378
West Virginia	26	\$24	\$424

(US Department of Labor Employment and Training Administration)

Research indicates that extending UI benefits lengthens periods of unemployment by a small degree, but this does not explain Kentucky's irregularity since the maximum UI benefit durations are 26 weeks for all surrounding states except for Missouri (20 weeks). Further research found that Kentucky consistently lags behind several states in economic development, especially in rural areas. Surprisingly, the loss of manufacturing and mining jobs did not have a significant effect on household income, but both high school education attainment rates and male labor force participation rates were found to have the highest positive correlation to median household income. A 2011 study by Riddell & Song focusing on workforce reentry found a strong correlation between high school graduation and re-employment rates.

After economics and educational attainment, disability is another issue that has affected Kentucky more than all surrounding states except for West Virginia. There has been relatively little research done on unemployment in Kentucky specifically, and the focused work done by Davis and Sanford & Troske mention disability but do not emphasize it. According to the US Department of Labor, the national labor force participation rate of people with disabilities age 16-64 is 33.6%, compared to 77.3% for people without disabilities (*Disability Employment Statistics—Office of Disability Employment Policy—United States Department of Labor*, 2019). According to a February 2020 report from the Bureau of Labor Statistics, unemployment rates across the country were 7.3% for persons with a disability, compared to 3.5% of those without a disability. The significant differences in economic participation between those with and without disabilities shows the need to include disability in research on unemployment.



As seen in table 3, 8.5% to 17% of the population in Kentucky and the surrounding states report having at least one disability.

Table 3 Disability by State, 2018			
State	Population 18-64	With a Disability	Percentage
Kentucky	2,680,290	425,520	15.9%
Illinois	7,890,375	670,858	8.5%
Indiana	4,007,843	475,140	11.9%
Missouri	3,652,489	459,996	12.6%
Ohio	7,030,100	838,090	11.9%
Tennessee	4,032,296	545,168	13.5%
Virginia	5,129,380	483,606	9.4%
West Virginia	1,092,123	186,016	17.0%

(US Census Bureau)

Table 4 Percent of Population Aged 18-64 With At Least One Disability									
State	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kentucky	15.9%	15.7%	15.5%	15.6%	15.6%	15.7%	15.8%	15.9%	15.9%
Surrounding States	11.7%	11.9%	11.8%	11.9%	12.0%	12.1%	12.2%	12.2%	12.1%
Illinois	8.0%	8.2%	8.1%	8.3%	8.4%	8.5%	8.5%	8.6%	8.5%
Indiana	10.9%	11.5%	11.0%	11.3%	11.5%	11.7%	11.8%	11.9%	11.9%
Missouri	12.0%	12.2%	12.2%	12.2%	12.4%	12.6%	12.7%	12.7%	12.6%
Ohio	11.4%	11.5%	11.3%	11.5%	11.6%	11.7%	11.9%	11.9%	11.9%
Tennessee	13.5%	13.8%	13.4%	13.6%	13.7%	13.7%	13.6%	13.6%	13.5%
Virginia	8.9%	9.1%	9.0%	9.0%	9.1%	9.1%	9.2%	9.4%	9.4%
West Virginia	17.2%	17.3%	17.3%	17.2%	17.4%	17.3%	17.4%	17.3%	17.0%

(US Census Bureau)

Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) payments are included as income controls in Model 2 of this research using data from the Social Security Administration (SSA). These two payment programs are intended to replace wages lost due to having a disability. SSDI benefits are paid to

people who cannot work because they have a medical condition that's expected to last at least one year or result in death (Social Security Administration (SSA), 2019). There are several criteria based on age and how long you have paid into Social Security to determine if you qualify for SSDI benefits, and the older you are when you acquire a disability the longer you need to have worked to be covered. SSI benefits are for people who have low income and few assets, and are aged 65 or older, blind, or have a disability (Social Security Administration (SSA), 2017). People with a disability who work can also collect SSI benefits, and the Social Security Administration does not count some income, SNAP benefits, shelter you receive from nonprofit organizations, and most home energy assistance when they determine your eligibility for SSI. In general, SSDI is a wage replacement for workers who acquire a disability while they are part of the workforce and cannot continue working, and SSI is a supplement for people with a disability with low income and few assets who may or may not be working.

This research attempts to find the impact that disability has on the duration of periods of unemployment that Kentuckians experience. If there is a correlation between having a relatively high population with disabilities and the duration of unemployment claims, Kentucky's government can take steps to further assist people with disabilities to reenter the workforce. This can include increasing the accessibility of websites or providing more transportation options.

## LITERATURE REVIEW

This literature review found no research that compares unemployment characteristics between states in this region, and only one study was found that focused on unemployment benefits and their effects in this region of the United States.

Card et al. (2015) focused their research on Missouri before and after the Great Recession. Their study clusters unemployment claims into two groups, Pre-Recession (2003-2007), and Post-Recession (2008-2013). They find that UI benefit duration has a low elasticity before the Great Recession. Changes in UI benefits had a comparatively small effect on UI duration when unemployment was lower before the Recession, with an elasticity of around 0.35. They found that UI durations had an elasticity of 0.65-0.9 after the Great Recession when unemployment was comparatively high. In the pre-recession period, the mean number of weeks claimed is 16.0. In the post-recession period, the mean number of weeks claimed rose to 31.9 weeks. Card et al. (2015) posit several possible explanations for this behavior. Fewer job offers and greater job losses during an economic downturn make it more likely that job seekers will be unemployed in the future, which makes job seekers more sensitive to UI benefit changes. This results in job seekers changing their behavior more easily in a poor job market. Using the same logic, longer potential unemployed spells during economic downturns might make claimants more responsive to changes. Finally, the authors suggest that workers who are unemployed during the recession might have less cash available for expenses and are therefore more responsive to UI generosity (2015).

The Great Recession looms large in unemployment research not only because of the economic turbulence but because of the US government's response, which included increasing extended UI benefits to a new high of 99 weeks. Farber & Valletta (2015) compared the impact of the Great Recession and ensuring extension to a smaller recession that took place in the early 2000's. They found small but statistically significant reductions in the number of individuals exiting unemployment and small

increases in UI benefit duration during both recessions. They estimate that, “an additional month of extended benefits raises unemployment duration by about 0.06 months (2015),” which is slightly less than previous studies conducted in 1985, 1990, and 2000. They estimated that lengthening UI benefits increased unemployment by about 0.4 percentage points during the Great Recession, which had a peak unemployment rate of 10%. This increased duration and percentage of unemployment was caused by a reduction in unemployed workers exiting the labor force, rather than through fewer workers ending unemployment by finding a job. This implies that “the major effect of extended benefits is redistributive, providing income to job losers who otherwise would have exited the labor force earlier” (Farber & Valletta, 2015).

Another factor that affects employment in Kentucky is economic development. Jepsen et al. (2008) found that between 1997 and 2004, Kentucky had an average annual growth in real gross state product (GSP) of 1.6 percent, ranking 43rd among states. Jepsen et al. (2008) conducted an in-depth study of Kentucky’s economic growth and compared it to the relatively faster growth of Alabama, Georgia, North Carolina and Tennessee. The authors found that the study’s stock of “knowledge variables” account for the largest difference in earnings between states. In this study, knowledge variables include the percentage of residents age 25 and older with a high school diploma as their highest education, and residents 25 and older with a bachelor’s degree as their highest level of education. The two other knowledge variables are the per capita stock of patents in a state and per capita federal spending on research and development in a state. College graduates receive lower earnings in Kentucky compared to the other states, and people that migrate into Kentucky tend to be less educated and tend to

move to more rural areas than migrants moving into other states. This migration pattern exacerbates the issue that the slow growth of income in rural areas of Kentucky are almost exclusively responsible for slow income growth in the entire state; the urban areas have grown at a comparable or faster rate than in comparison states. Georgia, North Carolina, and Tennessee have much greater success at spreading economic growth from their urban areas to the surrounding rural areas. Another primary reason Bauer et al. found for slow income growth is the lack of skilled workers in Kentucky and the state's inability to attract more skilled workers.

The pronounced urban/rural divide in Kentucky found by Jepsen et al. was cited in a county-by-county study on Kentucky by Davis (2009). She collected county-level data on more than 20 variables divided into categories labeled "Demographic Variables," "Economic/Business Variables," and "Additional Quality of Life Indicators." According to Davis, this study is one of the first to compare Kentucky counties to one another to quantify differences for further study and development of policy tools. After collecting the counties' attributes, Davis found significant correlation between median household income (her dependent variable), high school education attainment rates, and male labor force participation rates (2009). She also found a negative correlation between median income and individuals in a county lacking health insurance, but a lack of health insurance is mostly due to the prevalence of low-income jobs available in a county, which in turn is an effect of low economic development. In terms of my research, the most interesting conclusion of this study is that the effect of changing industries and the loss of manufacturing and mining jobs in the state were not significantly related to income. Instead, Davis concludes that the most effective way to

reconcile the income gap between urban and rural counties is to initiate economic development policies that improve both high school education attainment rates and male labor force participation rates.

Riddell & Song (2011) illustrate several links between education and unemployment. They found mixed evidence of the relationship between education and unemployment and no evidence of a causal relationship between secondary schooling level and job loss. Their most significant discovery was the positive correlation between high school graduation and re-employment. Riddell & Song found that, “graduating from high school increases the probability of re-employment by around 40 percentage points. An additional year of schooling increases this probability by around 4.7 percentage points (2011).” These impacts are particularly large from high school graduation and the completion of a bachelor’s degree.

According to the Research and Training Center on Disability in Rural Communities (RCT) report on employment disparity among rural Americans with disabilities (2019), employment rose 1.01% among people with disabilities living in metropolitan counties<sup>1</sup> between 2012 and 2017. Employment dropped 0.63% for those living in non-core counties<sup>2</sup>. The RCT report that the high poverty rates and reduced access to health care and specialty services that people with disabilities face are exacerbated by living in a rural area. According to the report, a person with a disability already faces an increased prevalence of poverty and lack of access to medical care and other services, which is exacerbated by living in a rural area.

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<sup>1</sup> Counties with an urban core of 50,000 or more people

<sup>2</sup> Counties with an urban core of less than 10,000 people

Disability can have a strong impact on workers, but the greater economic climate may have an effect on reported disabilities. Rourke O'Brien found that as economic conditions worsen, people are more likely to report a disability (2013). By focusing on the variable of self-reported disability instead of applications for disability benefits, the author theorized that as an economy weakens and labor markets tighten, individual workers may decide to report a disability when they notice the downward trend. O'Brien links the inverse relationship between the economy and reported disability with negative health outcomes workers may experience when they feel stressed about losing their jobs. Workers may also be reporting existing disabilities in preparation for future unemployment.

In conclusion, Kentucky's high UI claim duration may be caused by a lack of economic development in rural areas. Economic development in rural areas could be spurred by policies that improve both high school education attainment rates and male labor force participation rates. Studies have found that increased UI benefit durations keep unemployed workers from leaving the labor market by dropping out. This effect may somewhat alleviate the negative impact of low male labor force participation rates by keeping labor force participation rates higher than they would be with lower UI benefit durations. Increased high school graduation rates and post-secondary education substantially increase re-employment rates and may positively affect economic development while simultaneously reducing the UI claim benefit duration that is so prominent in Kentucky. Furthermore, the relatively low economic development in Kentucky may drive the relatively higher disability claims that Kentucky experiences.

Either workers are afraid of losing their jobs and experience negative health outcomes or have reported existing disabilities to prepare for future unemployment.

## RESEARCH DESIGN

Recognizing the economic impact that having a disability can have on a person, disability may be a contributing factor to the relatively long duration of Kentucky UI claims. Reentering the workforce can be more challenging for a person with a disability, and this can be exacerbated if the person lives in a rural area. Large parts of Kentucky can be defined as rural and Kentucky trails many states in economic development, which may make it even harder for a person with a disability to reenter the workforce in rural areas. The goal of this research project is to determine if having a relatively large population of people with a disability is correlated with the extended periods of unemployment that Kentuckians experience.

**Hypothesis:** Kentucky unemployment claim duration is longer than average due to a higher than average occurrence of disability in the state.

The data collected for this research is from Kentucky and its surrounding states from 2010-2018. Levels of unemployment are inextricably linked to economic conditions and the US was still recovering from the Great Recession in 2010. I had originally planned to collect data from 2012-2018 to attempt to mitigate this effect, but the economic recovery taking place from 2012 onward affected unemployment numbers as well. In this case, I ran the regression controlling for fixed effects to account for this.

Of the states included, West Virginia shares the most economic traits with Kentucky, and shares many of the same problems. Both states have suffered from the



loss of natural resource harvesting, including coal mining. These two states also have the highest disability percentage amongst 18 to 64-year-olds, as shown in table 5. Despite these similarities, West Virginia has a shorter average UI claim duration than Kentucky.

Table 5 Percentage of Population 18-64 with At Least One Disability				
Variable	Mean	SD	Min	Max
Population with a disability	12.4%	2.9%	8.0%	17.4%
With an ambulatory difficulty	6.7%	1.9%	4.1%	10.2%
With a cognitive difficulty	5.3%	1.3%	3.2%	7.5%
With a hearing difficulty	2.6%	0.7%	1.5%	4.2%
With an independent living difficulty	4.5%	1.1%	2.9%	6.4%
With a self-care difficulty	2.2%	0.5%	1.5%	3.2%
With a vision difficulty	2.2%	0.6%	1.2%	3.6%

(US Census Bureau)

The dependent variable for this research is the average UI claim duration over the past 12 months. This variable was collected from the US Department of Labor Employment and Training Administration’s website. The Department of Labor has collected the UI claim duration on the state level for every quarter year since 1971.

The demographic information was collected from the American Community Survey (ACS), administered by the US Census Bureau. This includes the independent variable I have chosen, the percentage of the 18 to 64-year-olds in a state that report having at least one disability. I used the 5-year estimates of the ACS as the 1- and 3-year estimates do not aggregate enough data to reach a suitable sample size to estimate more rural areas (Greiman, 2017). ACS data is collected via long-form survey,

with respondents answering questions about difficulties they may have concerning vision, self-care, independent living, hearing, cognition, or mobility. I felt this was an important feature of this data as looking at the Social Security Administration data for the number of people with a disability only captures those with medically diagnosed disabilities. The ACS captures the number of people who are facing problems or difficulties from a disability regardless of their medical determination.

The ACS provided educational attainment data I used to control for the effect that education has on workforce reentry. I controlled for the percent of the population that is 25-years or older with a high school degree or higher. I included the natural log of median earnings, also taken from the ACS. To control for the political environment of a state, I included the fraction of the state's senate and house that were Democrats. This data was taken from the University of Kentucky Center for Poverty Research's National Welfare dataset.

I included SSDI and SSI payments from the SSA as the income control in Model 2. SSDI benefits are paid to people who can no longer work due to a long-term or terminal disability. According to the SSA factsheet *What You Should Know Before You Apply for Social Security Disability Benefits*, it takes "about 3 to 5 months to get a decision...however, the exact time depends on how long it takes to get your medical records and any other evidence needed to make a decision. (n.d.)," People with a disability often work or try to find work to support themselves while their SSDI claim is being investigated. Also, people already receiving SSDI benefits may decide to reenter the workforce. The person can keep their SSDI benefits as long as they earn \$1,260 a month or less, or \$2,110 a month or less if they are blind (*Substantial Gainful Activity*,

n.d.). There are also many programs available to help people with a disability “test” their ability to reenter the workforce, including a trial work period, where they will not risk losing their SSDI benefits. Additionally, if a person loses their SSDI they can begin receiving disability again immediately as long as they are within a 60-month window. SSI is a means-tested program so recipients may eventually earn too much or accumulate too many assets to continue to receive SSI benefits. SSDI and SSI benefits are utilized by people with disabilities and may affect their decision to attempt to reenter the workforce after losing a job. Persons with disabilities may also be able to hold out for a better employment opportunity if they are receiving SSDI and/or SSI benefits, thus affecting the duration of their UI claim. I collected the total amount of SSDI benefits paid within a state per year, and the total amount of SSI benefits paid to workers within a state per year. This ensures that the data collected accounts for payments made to working-age adults who are receiving disability benefits. It is possible to collect SSDI and SSI benefits at the same time. This can occur if a person receives SSDI but the amount is very low due to a short work history, in which case their low income could be supplemented by SSI benefits.

To control for rurality, I included data from the Census Bureau’s 2010 urban-rural classification data. The data I included from this data set is the percentage of a state’s population that lives in an urban area<sup>3</sup> and the percentage of a state’s area that is considered urban<sup>4</sup>. As this data is available for only one year in the years included and correlates perfectly with the state that is measured, I was not able to include this

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<sup>3</sup> Area with an urban core of 50,000 or more people

<sup>4</sup> Where the population lives in Urbanized Areas (UAs) of 50,000 or more people

variable as a control in my regression models. Instead I isolated the fixed effect that states had on UI claim duration and measured the affect that these two variables had on that fixed effect. This information is included in Model 3 below.

I will use a time-series regression to study the effects that the percentage of a state’s population with at least one disability has on the states’ average UI claim duration. This model will illustrate the decreasing average UI claim duration over time as it compares with the percentage of adults with a disability. This model would be more accurate on a county level, but I felt that the first step should be analyzing these trends over time, and that data is only available at the state level.

Table 6 Summary of Variables				
Variables	Mean	SD	Min	Max
Average UI Duration (Weeks)	15.96	2.15	12.00	22.00
Population 18-64 with any disability	12.4%	2.9%	8.0%	17.4%
Population that is Black or African American	11.6%	4.8%	2.8%	19.2%
Fraction of the House that are Democrats	41.7%	12.5%	25.3%	71.0%
Fraction of the Senate that are Democrats	39.5%	17.7%	15.2%	82.4%
Population with a high school degree or higher	86.5%	2.2%	81.0%	90.1%
Natural log of median earnings	10.30	0.10	10.12	10.54
Total SSDI Payments (1000s)	\$282,962	\$88,150	\$113,579	\$457,720
Total SSI Payments to Workers (1000s)	\$70,281	\$28,337	\$31,995	\$130,981
Total Social Security Payments (Millions)	\$327.42	\$105.29	\$135.61	\$540.49

(See References for full list of data sources)

Model 1 will include Average UI Duration, Population 18-64 with any disability, Population that is Black or African American, Fraction of the House that are Democrats,

Fraction of the Senate that are Democrats, Population with a high school degree or higher, and natural log of median earnings as the income control. Model 2 will substitute Total Social Security Payments as the income control.

$$\text{Model 1: UI Claim Duration}_{i,t} = \alpha_i + \beta \% \text{Population18-64withDisability}_{i,t} + \beta \% \text{RaceBlackorAfricanAmerican}_{i,t} + \beta \text{FractionofHouseDems}_{i,t} + \beta \text{FractionofSenateDems}_{i,t} + \beta \ln \text{MedianEarnings}_{i,t} + \beta \% \text{HighSchoolPlus}_{i,t} + u_i$$

$$\text{Model 2: UI Claim Duration}_{i,t} = \alpha_i + \beta \% \text{Population18-64withDisability}_{i,t} + \beta \% \text{RaceBlackorAfricanAmerican}_{i,t} + \beta \text{FractionofHouseDems}_{i,t} + \beta \text{FractionofSenateDems}_{i,t} + \beta \text{TotalSSDIandSSIPayments}_{i,t} + \beta \% \text{HighSchoolPlus}_{i,t} + u_i$$

## RESULTS

Table 7  
Effect of Variables on UI Claim Duration

VARIABLES	Model 1	RSE	Model 2	RSE
Population 18-64 with any disability (1000s)	-305.1*	(137.6)	-243.9	(140.2)
Percent of population that is Black or African American	63.69	(120.5)	-86.84	(144.3)
Fraction of the House that are Democrats	2.346	(4.166)	-0.238	(3.660)
Fraction of the Senate that are Democrats	-0.219	(4.357)	1.153	(3.666)
Percent of population with a high school degree or higher	-19.08	(51.90)	-5.512	(36.24)
Natural log of median earnings	-3.566	(9.370)		
Total SSDI & SSI Payments (Millions)			-0.0323***	(0.00739)
Observations	72		72	
R-squared	0.495		0.565	
Number of states	8		8	

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Model 1 and Model 2 were tested for heteroskedasticity and I found that there was a possibility of heteroskedasticity. Both models were run with robust estimations to correct for heteroskedasticity. Both models were tested with a Pesaran's test of cross-sectional dependence and the test found no significant evidence of cross-sectional dependence. It was also found that there could be serial correlation in both models, so

the models were clustered at the state level to account for this. Originally Model 2 was run with SSDI and SSI payments separated, but there was a high degree of collinearity found between the two variables, and so they were combined.

## DISCUSSION

Model 1 shows that the percentage of the population with a disability is significant to the 0.1 level with a  $p$ -value of 0.062. In this case we fail to reject the null hypothesis and we do not have evidence that the percentage of 18 to 64-year-olds in a state has a significant effect on the duration of UI claims. We also fail to reject the null hypothesis in Model 2 using total SSDI and SSI payments as the income control, as the percentage of 18 to 64-year-olds in a state is insignificant. We do that the total SSDI and SSI payments are significant to the 0.01 level in Model 2. For every \$1,000,000 in SSDI and SSI payments within a state, the estimated decrease in UI claim duration is 0.0323 weeks, which equals a little over 0.22 days.

While significant, the coefficient is low. As seen in the regression in table 8 below, year and state fixed effects account for almost 80% of the variance in UI claim duration in this dataset. As the US recovered from the Great Recession, UI duration shortened for every state except Kentucky.

Table 8  
Variance Due to State and Year

Variables	Average Duration in the Past 12 Months (Weeks)	Robust Standard Error
2011	-1.300	(0.875)
2012	-1.738**	(0.716)
2013	-1.225	(0.773)
2014	-1.813**	(0.728)
2015	-2.938***	(0.705)
2016	-2.775***	(0.769)
2017	-2.988***	(0.729)
2018	-3.038***	(0.757)
Indiana	-3.656***	(0.286)
Kentucky	1.078	(0.665)
Missouri	-3.700***	(0.511)
Ohio	-1.844***	(0.378)
Tennessee	-3.467***	(0.355)
Virginia	-2.289***	(0.407)
West Virginia	-2.278***	(0.351)
Observations	72	
R-squared	0.799	

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9 shows the results of the regressions that found the effect of urbanization on the fixed effect of states. Model 3 compares the fixed effects found in Model 1, which includes the natural log of median earnings as an income control. Model 4 compares the fixed effects of Model 2 which substituted total SSDI and SSI payments in the state as the income control. The percentage of state population living in an urban area significantly affects UI claim duration in both models. When controlling income with median earnings, a 1% rise in the percentage of the state population living in an urban area is correlated with a 0.87 week (6.09 days) decrease in UI claim duration. When



controlling income with total SSDI and SSI benefits paid in a state, a 1% increase correlates with a decrease of 0.259 weeks (1.813 days).

Table 9 Effect of Urbanization on UI Claim Duration				
Variables	Model 3	SE	Model 4	SE
Percentage of state population living in an urban area	-87.10***	(6.593)	-25.91***	(6.166)
Percentage of the area of a state considered urban	11.54	(29.12)	108.2***	(27.24)
Observations	72		72	
R-squared	0.818		0.225	

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## LIMITATIONS & RECOMMENDATIONS FOR FUTURE RESEARCH

For more accuracy, and to control for economic development disparities between rural and urban locations in the eight states included in this research, I had originally sought average UI claim duration data on the county level. States such as Ohio have been collecting county-level UI claim data since 2000. Kentucky has been collecting UI claim duration data since 2008, but only collected it through local offices until September 2017. There are 63 local offices compared to 120 counties in Kentucky, and no way to separate claims from one county to another if they share the same local office. Many states are now collecting UI claim duration data on the county level and it may be beneficial to analyze unemployment and disability on a more local level in the future. Most of the other variables used are available on the county level.

## CONCLUSION & RECCOMENDATIONS

The significance of the SSDI and SSI payments could indicate that if more people received SSDI/SSI benefits, or if current recipients received higher benefits, UI claim duration would decrease. There could be a population of workers that have a disability that are not currently supported by SSDI and/or SSI benefits. These workers may have a disability that hampers their efforts to reenter the workforce or cannot reenter as fast as workers without a disability, and therefore are unemployed longer than workers who do not have a disability or are more moderately affected by a disability. These workers may have never applied for SSDI/SSI benefits, were not medically diagnosed with a disability, or were not eligible for SSDI/SSI for some other reason. These workers constitute a population that the state of Kentucky could assist in order to decrease their UI claim duration.

Kentucky could increase outreach to people with a disability and provide assistance to assist people with disabilities file a claim to receive SSDI/SSI benefits. Perhaps more education on the conditions that can qualify as a disability may help some workers make the decision to leave the workforce or apply for assistance to stay in the workforce. The state could also decrease the negative effect that a disability may have on a person's ability to work by increasing accessibility, as this would benefit people with a disability who choose not to receive SSDI/SSI benefits and those who were denied SSDI/SSI benefits for another reason. Increasing accessibility includes redoubling efforts to make online resources easier to access and read. People with disabilities can benefit from increased access to free transportation, both to work and to recreational or medical destinations. Many people with disabilities can benefit from

telemedicine provided by mental health counselors. Finally, many people can benefit from increased nursing and home care options.

The relatively high percentage of people with a disability in Kentucky and the significant effect of SSDI/SSI benefits on UI claim duration may indicate that disability hinders Kentucky workers from reentering the workforce more than workers in other states, however West Virginia has a higher percentage of disability and a lower UI claim duration. The relatively high percentage of people with a disability in Kentucky and West Virginia may instead be a symptom of a relatively poor economy due to low economic development in rural areas, where workers are stressed about losing work or are declaring existing disabilities in preparation for losing their job. Table 10 shows the similar rates of urbanization between Kentucky and West Virginia compared to the other states included in the research.

Table 10 Urbanization by State (2013)		
State	Population Living in Urban Areas	Area of State Urbanized
Kentucky	58.4%	3.6%
West Virginia	48.7%	2.7%
Illinois	88.5%	7.1%
Indiana	72.4%	7.1%
Missouri	70.4%	3.0%
Ohio	77.9%	10.8%
Tennessee	66.4%	7.1%
Virginia	75.5%	6.8%

(US Census Bureau)

The non-significance of the percentage of state population aged 18-64 with a disability helps to confirm the findings of previous research that found increased

educational attainment and economic development in rural areas may be the most effective way to help Kentuckians reenter the workforce more quickly. Models 3 and 4 also give weight to these theories, as the greater concentration of population in urban areas could decrease the average UI claim duration. Moving forward, research on the link between disability and unemployment may be more useful when more significant impediments to employment, such as educational attainment and economic development, have been overcome.

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