

Report: Central Oregon Index of Poverty

Honors Thesis Paper

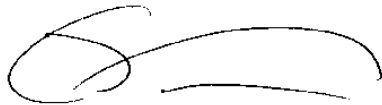
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Approved: _____



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1) Overview

Our client, Scott Cooper, Director of Public Policy for the Partnership to End Poverty, desires a poverty index for the Central Oregon region. In particular, such an index will serve the purpose of assisting policy makers in the counties of Deschutes, Jefferson and Crooks (referred to as District 10 within the state) as they conduct policy with the objective of alleviating poverty. Presently, no index exists to serve this purpose.

The Partnership to End Poverty is an organization in the Central Oregon region that is actively engaged in efforts to reduce poverty in the three-county area. The organization has a vision of a “thriving Central Oregon where all facets of the community help each other and where residents have a fair chance to live free of poverty.” As it stands now, Central Oregon is consistently underperforming economically compared to the rest of the state, with below average per capita incomes, high unemployment, and low levels of educational attainment. Such characteristics can be linked to poverty and should be a cause for concern.

It is our understanding that this poverty index will be used by officers of the Partnership to End Poverty as a complement to the existing Central Oregon Business Index (COBI), as they continue to design and develop a strategic plan to “accomplish the goal of implementing long-term solutions to poverty” in Central Oregon.

In Section 2 of this report, we give a short description of our project, indices and a general overview of poverty. Following this section we will briefly describe several characteristics of the Central Oregon region – population, economic activity and employment opportunities- specific to the individual counties. In Section 4 we will describe the current measures the federal government uses to assess poverty (i.e., Poverty Threshold and Poverty Guideline) as well as discuss the new complementary poverty measure being developed (i.e., the Supplementary Poverty Measure, SPM). We will provide, in Section 5, a short overview of existing knowledge relevant to our index, including the Oregon Index of Leading Indicators (OILI), Healthy Community Index (HCI) and the Central Oregon Business Index (COBI). In Section 6 we will define our model, The Central Oregon Index of Poverty(COIP), according to the various

measures that will contribute to the calculation, pausing to explain the significance of the variables as they relate to poverty. We follow up in Section 7 with a discussion of the formulation the index, as well as seasonal adjustment's we choose to use on several variables in our index. In Section 8 we offer future suggestions and considerations and, finally, present our Central Oregon Index of Poverty in Section 9

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2) Project Description

“It matters little if you have the right to sit at the front of the bus if you can’t afford the bus fare; it matters little if you have the right to sit at the lunch counter if you can’t afford the lunch. So long as Americans are denied the decent wages, and good benefits, and fair treatment they deserve, the dream for which so many gave so much will remain out of reach; that to live up to our founding promise of equality for all, we have to make sure that opportunity is open to all Americans.” – President Barack Obama, Source: McCain-Obama speeches at 99th NAACP Convention Jul 12, 2008

As president Obama alluded to above, Americans dream of a nation with endless opportunities. Unfortunately, when poverty is overlooked and not properly addressed, these opportunities cease to remain. The notion of poverty is universally understood yet hard to define, accurately measure and ultimately reduce. As Amartya Sen, Nobel Prize winner in economics, identified over 30 years ago, two distinct issues must be addressed when measuring poverty: “(i) indentifying the poor among the total population, and (ii) constructing an index of poverty using the available information on the poor” (Sen, 1976).

The Federal Government provides national guidelines and thresholds, incorporating measures such as per capita income, inflation, and consumption habits. However, one could argue that these federal measures are too general and fail to capture variations in a local economy.

The Partnership to End Poverty has recognized this need for local specificity. It is our goal to help the organization, not only identify these appropriate local measures, but provide an apparatus that can track poverty over time, providing feedback on both the potential efficacy of anti-poverty efforts undertaken in Central Oregon and the remaining need for poverty related investments in the community.¹

¹ As described by Partnership To end Poverty, the nine root causes of poverty in their opinion are family history of poverty, chronic poverty, limited economic opportunity, marginal educational training opportunities, racial/cultural isolation and discrimination, weak family structures, weak traditions of civic engagement and limited social capital, limited community awareness and inclusiveness and catastrophic life events.

Indices are common tools used internationally to assess economic trends throughout markets and industries, however, until recently not commonly used to measure poverty. An index is a single number, contributed to by an array of underlying variables. These variables track movements in a particular market, industry or region and explain whether the area of interest is increasing or decreasing in some meaningful way given an established base year. For example, with such an index, one can interpret increases or decreases in the value of the index (e.g., by comparing percentage changes over quarters) as suggestive of increases or decreases in underlying poverty. Common examples of popular indices are the consumer price index (CPI), quantity indices (real GDP) and market performance indices (S&P 500).

Unlike the common examples of the indices above, where the contents of the index for the most part are easy to identify, our index is more subjective as far as the process of determining the variables included. This makes the task more difficult, but the end result more interesting. With that said, our intention for this project is to create an index specific to Central Oregon that tracks the changes in poverty within the region. Although many people claim to care about poverty, little has been done to measure its effects on a regional or local basis. The COIP is a way for the residents of Central Oregon to gauge the effects that poverty has on their community. With this tool available, residents can see if the actions they're taking to reduce poverty are actually working to benefit the region, and if not modify their efforts accordingly.

3) The Region

“1:10 in our region live below the federal poverty line” -Partnership to End Poverty

Located in the heart of Oregon, the three counties of Crook, Deschutes and Jefferson, span 7,825 square miles of territory, with a current population of approximately 208,725.² In the previous decade, Central Oregon exhibited relatively high annual population growth compared to the rest of the state. Unfortunately, annual incomes within the region have not followed a similar trend. Average private-sector wages and per-capita incomes in the region consistently fall short of both the state and national averages despite employment growth in traditionally high-wage paying sectors. Examples of these sectors include education, health care, business, hospitality and other types of manufacturing.³ The economy has historically been contingent upon wood product manufacturing and natural resource extraction for employment; however job cuts in these sectors have been high. Total unemployment in the region remains high as well. Central Oregon has also been deemed a top tourist destination in the state, attracting an array of outdoor enthusiasts.

Relative Populations as of July 1, 2007:

Crook County 25,885

Deschutes County 160,810

Jefferson County 22,030

3.1) Crook County

Crook County is located on the eastern boarder of the Central Oregon region with approximately half of the county’s population living within the city limits of Prineville. Drivers of

² Measurement from OLMIS as of July 1, 2007, exhibiting a 36% population increase from 2000 census (153,558)

³ In 2008 average private sector wages in the region were estimated at \$32,166, 14.7% lower than the state average of \$37,703

the local economy include agriculture, construction, forest products, manufacturing, recreation and tourism. However the largest employers in the region are the industries of trade, transportation, and utilities and wood manufacturing, as stated by the Government of Crook County. Unemployment in Crook County is high relative to the state of Oregon's unemployment rate. Per capita incomes are consistently lower than the state and national averages, along with educational attainment.⁴⁵ As of 2007, Crook County estimates 12.8 percent of the county's total population to be living in poverty.

3.2) Deschutes County

Accounting for over 85.8 percent of District 10's employment, Deschutes County is much larger than its Central Oregon counterparts in terms of economic activity (Anderson, Evans, 2008). With a population of 160,810, Deschutes County is roughly three times more populated than the other two counties combined. The dominant sectors of the local economy include retail trade (accounted for in trade, transportation and utilities), leisure and hospitality, educational and health services, professional and business services and construction. The county's four incorporated cities Bend, La Pine, Redmond and Sisters offer a wide variety of year-round amenities, channeling in revenues via tourism. Central Oregon Community College provides locals with educational opportunities, though few take advantage of its accessibility.⁶ In 2007, the county's average per capita income trailed behind the national average by \$3,558. As of 2000, the local census estimates 9.3 percent of Deschutes County individuals and 6.3 percent of families to be living below federal poverty guidelines.⁷

⁴ In 2007, the county's average per capita income was \$13,457 lower than the national average. The difference has widened over the years, displaying a downward trend. In 1997, the county's average trailed the national average by only \$6,574 (OLMIS).

⁵ In 2000, 80.5% of persons age 25+ were considered high school graduates (or possessed an equivalent degree) while only 12.6% of persons age 25+ had attained a bachelor's degree or higher (OLMIS).

⁶ The local census reports in 2000 only 25% of the population 25+ had attained a bachelor's degree or higher

⁷ The 2000 state average was reported as 11.6% of individuals and 7.9% of families

3.3) Jefferson County

Jefferson County is the smallest county of District 10 in terms of size, population and economic activity. Madras, the largest city in the region, provides an outlet to the popular tourist destination of Lake Billy Chinook. The Warm Springs Forest Product Industry has traditionally been the largest employer in the area, but in recent years, total employment in the wood manufacturing sector has declined significantly.⁸⁹ Though the area is rich in natural resources, the major employment sectors of Jefferson County include government, trade, transportation and utilities and general manufacturing.¹⁰ Annual incomes are below the state and national average and over 10.6 percent of families and 14.6 percent of individuals are below federal poverty guidelines.¹¹ Educational attainment is low relative to state standards, with 76.5 percent of the population who is 25 and above holding high-school diplomas and 13.7 percent holding bachelor's degrees.

⁸ The organization is owned by the Confederated Tribes of the Warm Springs Reservation. The reservation spans four counties including 236,082 acres in the northwestern corner of Jefferson County.

⁹ OLMIS reported that from 2001-2008 total wood manufacturing employment dropped from 1,140 to 710, a 38% decline

¹⁰ Government employment in 2008 totaled 4840, with almost half of the 2,170 local government officials labeled as "Indian Tribal"

¹¹ In 2007, average per capita income was \$13,629 below the national average. The average covered wage was \$9,152 below the state average (OLMIS).

4) Established Measures of Poverty

There are two well established indicators of poverty – the Poverty Threshold and Poverty Guideline – as well as a new supplement to these existing measures to be released by the US Census Bureau in Fall 2011 (i.e., the Supplementary Poverty Measure).

The Poverty Threshold is the official poverty measure of the United States and was first developed in 1963. The measure determines the minimal income a family can survive on, with one-third of the designated income being allocated to food. Each year the poverty threshold is adjusted to keep up with inflation and works in accordance with the CPI. The threshold was calculated to be 3,100 dollars in 1963 and although it has increased since, still signifies the same purchasing power it did 53 years ago for better or worse.

While similar, the Poverty Guideline differs from the Poverty Threshold insofar as it represents a simplification of sorts. The guideline is commonly used as a way to determine which people are financially eligible for state and federal poverty programs such as Head Start, the Food Stamp Program, the National School Lunch Program, the Low-Income Home Energy Assistance Program and the Children's Health Insurance Program. These guidelines are used for the majority of poverty programs across the nation but not all. A departure from this rule is the allocation of Section 8 housing, which is determined by the median income in the area, not the Poverty Guideline.

These statistical measures are developed annually. However, as with most statistically derived measures of poverty, there are shortcomings in how these broad measures can be employed. For example, in determining the Poverty Threshold, one-third of income is assumed to be allocated to food, when this has changed in the last 50 years. Today this proportion is debated because in some cases families spend much more on housing, utilities and transportation than they once did, and less on food. It is estimated that families now spend roughly one-sixth of income on food. Some other critiques include the fact that some people who are deemed eligible and technically under the poverty guideline are truly not, and under state their true income which results in eligibility for many of the federal programs.

Although some argue poverty is overestimated, there are many who believe the opposite. With the system being vastly outdated, there are new expenses in the 21st century that are not taken into account in the current system. When the measures were initially established in 1963, child care was not included in the cost of living because it was assumed that there was a stay-at-home parent in every family. This is not always the case today; with most families having two wage earners in the low income bracket and the costs associated with childcare are still ignored even though times have changed. Transportation costs for some have increased in the last 50 years and it is more expensive to get from place to place than it once was (Willis, 2000). The expenses associated with necessities (e.g., clothes, food, housing) have also grown. In the end, more resources are needed to maintain the same standard of living that people experienced in the past, so in some ways the current measure underestimates poverty.

The biggest issue with the current system is the belief that the number calculated for the Poverty Threshold is a living wage, when in fact it's not. Many of the people above the Poverty Threshold are not living comfortably and truly experiencing hardships and should be considered "poor." There's an immeasurable difference from barely surviving and living comfortably and the current allocation of federal funds for people who are suffering from poverty is insufficient. It is cheaper for the federal government to keep the current obsolete system and, therefore, have little incentive to assist and invest in the future of America.

With the range of concerns on the current measures of poverty and need for new insight in the matter, a group of professionals from the BLS, Census Bureau and Council of Economic Advisors are working together to produce a Supplementary Poverty Measure (SPM) by Fall of 2011, which will coexist with the official Poverty Threshold and Guideline.¹² When we began this project the SPM didn't exist, so the idea of a regional poverty measurement is relatively new and now more relevant with the introduction of the SPM. The SPM is an experimental venture and the creators hope to increase the efficiency of the statistic with more data, new methods and better research as time continues.¹³ This calculated statistic for the SPM will be richer than any previous measures the federal government has provided so it

¹² Information by the Census Bureau: <http://www.prnewswire.com/news-releases/census-bureau-to-develop-supplemental-poverty-measure-86008962.html>

¹³ SPM description, Census Bureau: http://www.census.gov/hhes/www/povmeas/SPM_TWGObservations.pdf

should be a welcomed addition to the set of poverty-relevant indicators. The SPM uses tools such as tax payments, work expenses, morgatage payments, geographic regions and other new and inovative measurements to calculate the statistic, unlike former Poverty Guidelines. It will not be used to determine eligibility for government programs and will be treated more as a macroeconomic statistic that will help predict future economic trends.¹⁴

¹⁴ The SPM will be based on the research done by the National Academies of Science (NAS) on their report from 1995, *Measuring Poverty*.

5) Literature Review

The Central Oregon Index of Poverty is new to the literature, insofar as it pushes in the direction of a better measure of poverty than do existing indices that focus on more-aggregate measures of the overall health of an economy, therefore, our index will differ in several ways. The foundations of forecasting are well established and it is reasonable to consider existing indices as we formulate an index with a focused interest on poverty. Included below are several relevant indices that helped us formulate ideas for our project, these include The Oregon Index of Leading Indicators, The Healthy Community Index and finally the Central Oregon Business Index.

5.1) Oregon Index of Leading Indicators

Since its inception in 2003, the Oregon Index of Leading Indicators has become an important contributor to forecasting changes in economic activity in Oregon. The Oregon Office of Economic Analysis works closely with Governor Ted Kulongoski to construct the Oregon Economic Forecast which uses the OILI as a key component in drafting their report. The Oregon Economic Forecast is distributed four times a year and helps aid different policy makers from state and private organizations make important decisions to cope with future economic conditions. Accompanied by the federal government's business index, The U.S Index of Leading Economic Indicators, these two models help predict future economic growth and decline and are very helpful tools for policy makers, from a national and regional stand point.

The OILI is formatted after the Conference Board's methodology for the U.S Index of Leading Economic Indicators, a seasonally adjusted monthly index of leading indicators. Currently a flat weighting scheme is used in constructing the OILI; however this might change in future revisions of the index. The OILI consists of ten different components chosen for their potential relationship to the business cycle and their ability to predict future economic changes. The ten components include The University of Michigan Consumer Sentiment Index,

total withholdings for Oregon employees, Oregon new-business incorporations, the number of help-wanted ads in The Oregonian, total residential building permits, interest rate spreads, initial unemployment claims, the Institute for Supply Management National Index, semiconductor book-to-bill ratio and the Federal Reserve Bank of Atlanta Dollar Index.

Using this as a complement to our Central Oregon Poverty Index, it will be a helpful tool to analyze our findings. By comparing business indices to our poverty index, we will be able to get preliminary insight as to whether our index is moving in the right direction. Intuitively, one would expect as an economy improves, poverty decreases and business activity increases, suggesting a negative correlation between the two indices.

5.2) Healthy Community Index

The Healthy Community Index is an index that steps away from the traditional “business index” model and looks at societal and economic issues as a whole, to assess the wellness of a community. This index in some respects is a closer representation to the index we were looking to create and includes some similar explanatory variables we think could have correlating factors to poverty such as median housing prices, welfare rates and food stamp distribution. The Healthy Community Index was created for the greater Eugene/Springfield area, however could be applied to almost any community with similar size and qualities. The purpose of this index is not to predict changing economic conditions within the community per se; instead it looks at how the “healthiness” of the community is changing on a monthly basis. They define “healthiness” with a variety of explanatory variables and do a good job of capturing the key components of what makes a healthy and strong community. This model is a good example of an index that doesn’t strictly revolve around business cycles but instead assesses the wellness of a community as a whole and steers away from the traditional “business index” which only includes economic indicators.

The contributors to the Healthy Community Index are average weekly incomes, a housing affordability index, different educational measures, unemployment rates, public safety

measures, air quality, food stamp and welfare rates and finally employer health insurance costs.

5.3) Central Oregon Business Index

The Central Oregon Business Index (COBI) is the current local business index recognized by the Economic Department of Central Oregon as well as the local community. The index tracks business activity changes on a monthly basis and weights model components in accordance to historical trends of the region's economy. The index incorporates the methodology used in the U.S. Composite Leading Index (CLI).¹⁵

COBI references two other composite indices, The Southern Nevada Index of Leading Indicators and the Oregon Index of Leading Indicators, due to economic similarities between Central Oregon and Southern, Nevada and the state of Oregon as a whole. The model evaluation includes no individual indicator series prior 1990 due to changing dynamics of the region. Eight individual data series, starting in 1997, are included in the COBI. These variable are reported on a monthly basis and include corporate fillings, room tax, airport activity, new permanent electrical connections, new claims of unemployment, Oregonian help-wanted ads, total housing units sold and median residential housing days on the market.

Collectively, these three models have given us good background information and insight on the different elements of indices. Although we couldn't find any past literature on "poverty indices" we feel as if we have a strong base to create a successful poverty index for Central Oregon. Our model the COIP contains 10 different explanatory variables that share similar characteristics from the three indices above but differ with a focus towards poverty. In the next section we explain our model in detail and deliver some initial findings and data.

¹⁵ Conference Board Website: http://www.conference-board.org/economics/bci/pressrelease_output.cfm

6) Data

The variables incorporated in our model were used for a variety of reasons including relevance, availability and potential correlating factors to poverty in Central Oregon. After having difficulty finding monthly data for Central Oregon we decided to create a quarterly index and convert the monthly data we had into quarterly measurements. We attained the majority of our data from several different sources including BLS (Bureau of Labor Services), Census, DHS (Department of Human Services), The Oregon Lottery, OLMIS (Oregon Labor Market Information Services) and Central Oregon Association of Realtors. The years covered in our index are 2001 to 2009. The data we have is easily attainable so it shouldn't be difficult to keep the index current and up to date. Some of the variable's we included are used as proxies due to a lack of data in the Central Oregon region but we feel as if they do a sufficient job capturing the true value we initially wanted. There were several variables we would've liked to include but due to insufficient data or lack of quarterly reporting couldn't include them. We will discuss these variables in more detail in Section 9.

Deschutes County is the economic powerhouse and has the largest population in District 10 which makes our index somewhat skewed towards the Bend and Deschutes area. The population of Deschutes is more than three times larger than Crooks and Jefferson jointly, so there is obviously some distortion in our index. Although it could have been beneficial to create an index specific to each county, due to time and data constraints we combined the three counties and created one index for the whole region. However, we feel our index still provides a valid representation of the region, and will do an efficient job forecasting poverty in Central Oregon

Below (Figure 1 – Various Model Components) are the variables we included in our index as well as the other variables for the indices we reviewed and a brief description of the 10 variables included in our index. Additionally, the time series graphs for each variable in our index are included in Section 10 (i.e., Appendix A).

Figure 1 – Various Model Components

<u>OILI</u>	<u>HCI</u>	<u>COBI</u>	<u>COIP</u>
<ul style="list-style-type: none"> University of Michigan Consumer Sentiment Index 	<ul style="list-style-type: none"> Average Weekly Income 	<ul style="list-style-type: none"> Corporate Filings 	<ul style="list-style-type: none"> SNAP (Supplementary Nutrition Assistance Program)
<ul style="list-style-type: none"> Total Withholdings for Oregon Employees 	<ul style="list-style-type: none"> Housing Affordability Index 	<ul style="list-style-type: none"> Room Tax 	<ul style="list-style-type: none"> TANF(Temporary Assistance For Needy Families)
<ul style="list-style-type: none"> Oregon New Business Incorporations 	<ul style="list-style-type: none"> AP Credit Ratio 	<ul style="list-style-type: none"> Airport Activity 	<ul style="list-style-type: none"> Day Care
<ul style="list-style-type: none"> The Oregonian Help Wanted Ads 	<ul style="list-style-type: none"> Higher Education Affordability 	<ul style="list-style-type: none"> New Permanent Electrical Connections 	<ul style="list-style-type: none"> Video Sales
<ul style="list-style-type: none"> Total Residential Building Permits 	<ul style="list-style-type: none"> Dropout Rate 	<ul style="list-style-type: none"> New Claims Unemployment 	<ul style="list-style-type: none"> Traditional Lottery Sales
<ul style="list-style-type: none"> Interest Rate Spreads 	<ul style="list-style-type: none"> Unemployment Rate 	<ul style="list-style-type: none"> Oregonian Help-Wanted Ads 	<ul style="list-style-type: none"> TTU (Trade, Transportation, Utilities)
<ul style="list-style-type: none"> Initial Unemployment Claims 	<ul style="list-style-type: none"> Public Safety 	<ul style="list-style-type: none"> Total Housing Units Sold 	<ul style="list-style-type: none"> Manufacturing
<ul style="list-style-type: none"> Institute for Supply Management National Index 	<ul style="list-style-type: none"> Air Quality 	<ul style="list-style-type: none"> Median Residential Housing Days on Market 	<ul style="list-style-type: none"> NHPC (New Hires of Private Construction)
<ul style="list-style-type: none"> Semiconductor Book-to-Bill Ratio 	<ul style="list-style-type: none"> Food Stamp Rate 		<ul style="list-style-type: none"> Total Unemployment
<ul style="list-style-type: none"> Federal Reserve Bank of Atlanta Dollar Index 	<ul style="list-style-type: none"> Welfare Rate 		<ul style="list-style-type: none"> Average Monthly Earnings

6.1) SNAP (Supplementary Nutrition Assistance Program)

Traditionally known as “food stamps,” the program’s name changed in October of 2008 to SNAP. Although there were no changes in funding for the program, the USDA (United States Department of Agriculture) said the shift reflected, “A new focus on nutrition and putting healthy food within reach for low income households.”¹⁶

For the most part SNAP caseloads increased throughout the entire time period and more than doubled from 2000 to 2008. After analyzing the data it is apparent, that an increase in SNAP distribution is a sign that poverty in the region is increasing. To be eligible for SNAP you have to be under the Poverty Guideline, so as poverty increases (income goes down) more people become eligible for food stamps. We included this variable because of its supposed correlation to an increase in poverty. Other factors influencing the growth in SNAP could be attributed to an increase in awareness that food stamps exist or the overall enlargement of the population in Central Oregon. This variable contributes positively to the index. This data was provided on a monthly basis by the Department of Human Services.

6.2) TANF (Temporary Assistance for Needy Families)

TANF is a program that helps families who are in need of assistance with temporary cash payments with the goal of helping them rise out of poverty and eventually to a self sustaining level. As people become progressively deprived of money this program becomes more relevant and an increase in TANF is associated with more poverty in the region. Along with the financial assistance, the TANF program helps families find employment, housing, child care and assistance with domestic violence. These are all common characteristics of families who suffer from poverty and who are in need of government assistance. As you can see from looking at Figure 3, the TANF distribution increased marginally until approximately 2007. When the recession progressed, during this time period, so did the amount of people receiving payments

¹⁶ Quote from USDA: <http://www.fns.usda.gov/snap/snap.htm>

through the program. There was a large spike in Figure 3 over the final eight quarters, so it's apparent the amount of people under the Poverty Guideline and eligible for this program increased as well. Similarly to our thoughts on SNAP, as poverty rises, more people become eligible for federal poverty programs, in this instance TANF. In essence, as more people fall below the Poverty Guideline in the region, the prevalence of poverty becomes more noticeable. Thus this variable contributes positively to the index. The TANF data was attained from the DHS and was provided on a monthly basis.

6.3) Day Care (Employment Related Day Care and JOBS child care)

The Employment Related Day Care and JOBS child care programs provide low-income working families and individuals with a subsidy for a given child care service. In order to qualify, persons seeking day care assistance must: (1) need childcare to remain employed (2) be within the proposed income limits (currently 185 percent of the federal poverty level). Families can also qualify if they are currently enrolled in the JOBS program.¹⁷ Because qualification guidelines expect individuals and families to be below the Poverty Guideline, we can infer that as daycare caseloads increase, poverty can be expected to rise as well. This variable contributes positively to the COIP. This data was provided on a monthly basis from the Oregon DHS.

6.4) Video Sales

Video sales, refer to the total dollar amount of net sales (all sales after prizes have been paid) from all Video Lottery terminals which include poker and line games. These games can only be sold in establishments that have Oregon Liquor Control Commission licenses (i.e., bars)

¹⁷ JOBS for Oregon's Future (JOBS) is a DHS subsidy program which provides employment training, preparing low-income individuals for an appropriate work environment. Often, this program can mitigate the need for TANF or other forms of welfare assistance.

to sell liquor by the drink. Not only is video gambling an interesting habit to analyze and relate to poverty, but it also serves as a proxy for drinking, or more specifically bar activity in District 10. Both of these habits have some distinct relevance to poverty. Each activity on its own is extremely addictive and, when combined, are even worse and can cause more problems. With this sort of addictive power there is a definite possibility of leaving people addicted, emotionally distraught and in our case eventually poor when constantly participating in these behaviors. Some studies have found that, “The prevalence of alcohol misuse among gamblers, especially among people experiencing gambling problems is high” (Ellery, 2005). Although we would have liked to include some sort of measure corresponding to drinking per capita in the region we think this works as a relevant and efficient proxy.

In Central Oregon total video sales have increased dramatically over the time period we studied. In quarter one of 2001, the beginning of our index, video sales were 3.86 million dollars. By quarter three of 2007, video sales reached a high of 10 million dollars. This is more than 2.5 times larger than the original 2001 number and is a huge increase over an eight year period. As the recession became considerably worse, subsequent to 2007, video sales decreased and ended at 7.3 million dollars by quarter four of 2009. Not only did total video sales increase over the time period we studied but so did the amount of retailers offering video gaming. In quarter one of 2001, 76 different retailers offered video gaming. By quarter four of 2009, this number increased by 39 and reached a total of 115.

Some of the increase in video sales in the region could be due to several different reasons including the large influx in the population as well as the growth and availability of electronic gaming. However, it seems that such a large increase in video sales is out of proportion with the augmentation of the population.

Looking at Figure 5, as the economy expands gambling increases accordingly, but as the economy retracts gambling decreases similarly. This could be because as more people fall below the Poverty Guideline, discretionary spending becomes tighter, and people respond by gambling less. As David Gale of the North American Association of State and Provincial

Lotteries said, “The economy probably has affected lottery sales the way it’s affected all discretionary spending” (Stone). However some argue the opposite and say that the lottery is recession proof. In an article written by Rupal Parekh, he claims that downturns in the economy don’t affect lottery revenues because state lotteries change their marketing and promotional strategies to appeal to people who are strapped for cash. State lottery officials do this by offering cheaper alternatives and catchy taglines to promote their games (Parekh, 2008). At this point in our study, we are unsure how people in poverty respond to gambling during different economic times. Therefore, more research should be conducted in the field of gambling before a definitive answer can be reached. At the moment, the variable contributes positively to the index. We attained this data from The Oregon Lottery’s Headquarters and were provided data on a quarterly basis, which included each counties specific retailers, sales and commissions.

6.5) Traditional Lottery Sales

Traditional lottery sales refer to gross sales (i.e., before prizes have been paid out) of traditional lottery game such as lottery tickets, Power Ball and Keno. These games are found at local convenient stores such as 7-Eleven and other mom and pops throughout the region. The sales for these games don't exhibit the same increase as experienced in video sales but do see some growth over the time period. Traditional lottery sales were 3.3 million dollars in the first quarter of 2001, peaked at more than 3.8 million dollars in the third quarter of 2003 and are currently 3.8 million dollars as of quarter one 2010.

As technology has increased dramatically over the last ten years it may have become more popular and exciting to take advantage of these advancements, making video gambling more attractive and desirable. Yet, we will assume that increases in lottery sales are reflective of underlying economic conditions, and increase when the economy is booming and decrease when the economy is contracting. We believe that traditional lottery sales follow a similar trend to video sales but not to the same extent. Therefore, the variable contributes positively

to the COIP. We attained this data through our resource at The Oregon Lottery and were provided the same quarterly measurements for each counties specific retailers, sales and commissions.

6.6) TTU (Total Jobs in Trade, Transportation, and Utilities)

This variable displays the total of amount of jobs in the industries of trade, transportation and utilities. These are the largest industries in Deschutes and Crooks county (as far as the total amount of jobs in the private sector) and second largest in Jefferson County (manufacturing is number one). Consuming the largest amount of jobs in District 10 collectively, it can be used as a sign in regards to whether the economy is expanding or contracting. As these idustries fall and displace more workers, there is a larger need for government assistance, which is a indication of more poverty in the region.

Overall, the total amount of jobs in these industries have decreased over the last several years. However, TTU has made a surge in the last quarter of 2009 suggesting a possible decrease in unemployment and poverty in the near future and an overall boost in this sector of the economy. We believe, as these industries recover, overall poverty in the region will decrease as well, leading us to believe TTU should contribute negatively to the index. We attained this data on a monthly basis through OLMIS and seasonally adjusted the data due to significant variation in certain months throughout the year.

6.7) Manufacturing

The variable manufacturing refers to the total manufacturing employment in the three counties. Manufacturing, as mentioned in the “The Region” section, has historically been an important economic driver for both Crook and Jefferson County. Although employment in manufacturing for both counties peaked around late 2001 and since has dropped by more than

half, it is still currently the second largest industry for Crooks and the largest for Jefferson. In Deschutes County total manufacturing employment peaked in 2006 and since has dropped by more than half. Annual manufacturing wages for Central Oregon are consistently below the annual state average of all industries, and require a low level of specialized training.

With a decrease in employment opportunities in a dominating economic sector, there is the potential for a high amount of worker displacement. Thus workers may file for unemployment, seek retraining for new employment opportunities, take a lower paying position, or remain jobless. With this said, we believe that as the manufacturing industry continues to decline more workers will become displaced, thus increasing poverty. Manufacturing, therefore, contributes negatively to the COIP. We attained this data from OLMIS and it was reported on a monthly basis.

6.8) NHPC (New Hires of Private Construction)

As described by the OLMIS website new hires of private construction refers to the, “Estimated number of workers who started a job they had not held in the past year and the job turned into a job that lasted at least a full quarter with a given employer.” We used this variable as a proxy for new construction in the Central Oregon region and graphically is quite interesting. As NHPC peaked in District 10 around 2006, at the height of the housing bubble, new hires have dramatically decreased since and have reached a new ten year low for the region. The amount of NHPC jobs for quarter two of 2009 was 621, where as in quarter one of 2000 new hires rested at 1689.

Although this is similar to the rest of America with new construction moving at a slower pace than once before, it has obviously hurt the Central Oregon economy and put many construction workers in a temporary or extended unemployed position. As construction increases new buildings, jobs and opportunities arise and, without this essential part of the economy, Central Oregon has become depressed. As NHPC decreases, poverty acts inversely

and increases, leading us to believe the variable should contribute negatively to the index. We attained our data from OLMIS on a quarterly basis and seasonally adjusted this variable.

6.9) Unemployment

Unemployment in Central Oregon is significantly higher than the rest of the United States. We included this variable because of unemployment's relevance to poverty. As of May, the unemployment rate nationally stood at 9.9 percent, Oregon 11.2 percent, Deschutes 14.1, Jefferson 15.2 and Crooks 17.5. Although the entire United States has been affected by the economic downturn, Central Oregon, has been affected more. From the beginning of 2008 to 2009, unemployment in the region had increased 50 percent and is currently rising. As unemployment rises, the likelihood of people being financially stable decreases. Intuitively, this corresponds to an increase in poverty as unemployment rises. Unemployment contributes positively to the model. After analyzing the p-statistics for each month we found statistically significant differences between the months and proceeded to seasonally adjust the data on that basis. We gathered the data from the BLS on a monthly basis and the statistic signifies the total people unemployed in the three counties.

6.10) Average Monthly Earnings

We included average monthly earnings for its relevance to standard of living. However, it might not be the best representation for the group of people we were targeting, low income earners. This number is artificially inflated towards the high income earners and doesn't necessarily reflect the true earnings of the lower class in Central Oregon. Initially we wanted to include a variable for the 25th percentile wage earners in the Central Oregon region, however we were not provided this data by the local work force agency in Bend. Wages increased significantly during the boom period, experienced in the mid 2000's, but fell after the peak and

even more as the recession worsened. We attained this data on a quarterly basis for each individual county. We then proceeded to average the three counties average monthly wage and compute one number for Central Oregon. Assuming that increases in average monthly earnings lead to lower rates of poverty, this measure will contribute negatively to the COIP index. The data was provided by OLMIS.

7) Methodology

Before compiling individual components into a single index, each variable should be examined for seasonal variation and adjusted if necessary. We found that unemployment, NHPC and TTU had persistent variation that could be attributed to seasonality. This was apparent in the residual plots, as well as the significant P-values, in months that were seasonally affected.

Once seasonal adjustments are made the components need to be condensed into a single index. Our approach to creating the index is similar to that of the Central Oregon Business Index and University of Oregon Index of Economic Indicators, both of which were built upon the methodology used to by the Conference Board to develop the U.S. Leading Index:

Individual components are transformed into symmetric percentage changes, and the resultant series are adjusted to equalize the volatility of the components. This process ensures that a change in a high volatility component is weighted equally to a change in a low volatility component. The adjusted series are summed to create the index, which is rebased to set 1998=100 (Duy, 2010).

Our model differs, in that our base year is set to 2001. Data that was attained on a monthly basis has been converted to quarterly measurements by averaging the three months and aggregating them into a single measurement for the quarter. As mentioned in Section 6, TTU, NHPC and average monthly earnings contribute to the index negatively, while all other variables contribute positively.

8) Future Considerations

Although we feel as if our index captures changes in poverty in the region effectively, there were some variables we would've liked to include but due to a lack of data, time and resources were not able to find them on a quarterly basis or all together. Variables we thought of including but couldn't find were drug/alcohol abuse per capita, crime per capita, median rental prices, a more concise measurement of construction, real quarterly earnings for the 25th percentile wage earners, homelessness, domestic violence, firework sales, people living under the poverty threshold and finally emergency assistance.

While we were able to attain more than half of our data on a monthly basis, due to an inconsistency and lack of monthly measurements for the variables we wanted to include, we decided to change our model into a quarterly index. This increased the amount of variables we were able to include and made it easier for us to construct the COIP. In the future, if possible, we would like to update our model to a monthly index in order to track fluctuations in poverty more closely.

Our recommendations for the Central Oregon region is to start keeping more monthly data on the variables we suggested above as well as other measures that correlate to poverty. Making this data more widely available can only help facilitate further research in Central Oregon. Another recommendation would entail increasing overall awareness in the community for programs such as TANF, SNAP and Daycare especially during times of economic contraction, for reasons mentioned in Section 9. If more people knew about these programs and were assisted in the registration process, it could potentially increase the speed at which people move above the Poverty Threshold.

9) Central Oregon Index of Poverty

Figure 12 is the Central Oregon Index of Poverty over the time period 2001 to 2009. As the US economy regressed in the early 2000s, the COIP displayed an upward trend in poverty until the second quarter of 2003. From late 2003 until 2007 poverty in Central Oregon, on average, stayed relatively consistent, as measured by the COIP. As the housing market crashed and the economy faced the worst recession since the Great Depression, poverty in the region rose dramatically (as displayed by Figure 12), and is still increasing as of quarter four 2009.

Figure 12 – Central Oregon Index of Poverty (COIP)

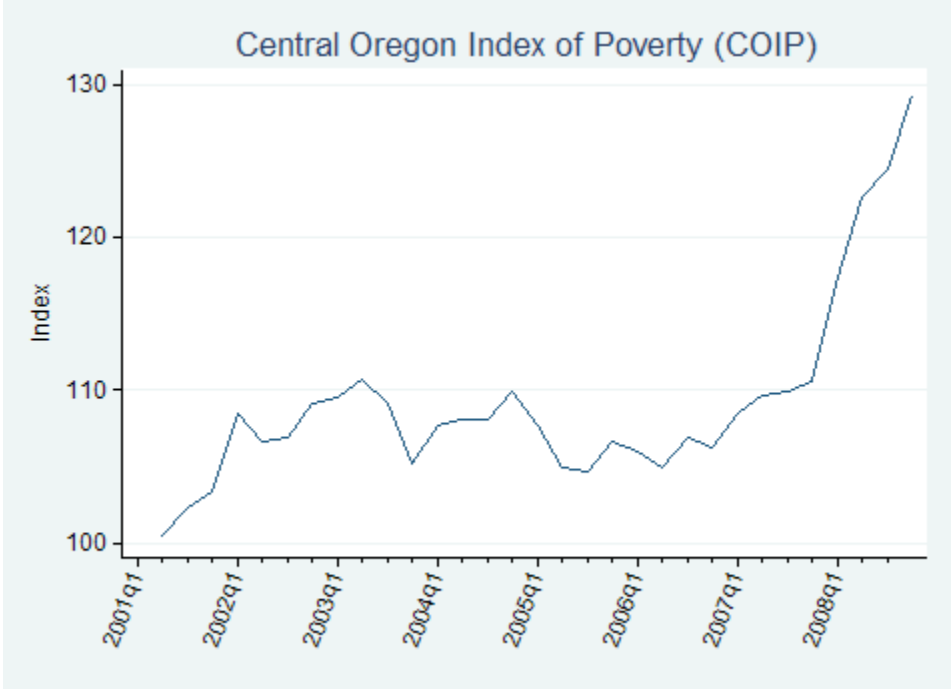


Figure 13 plots the COIP against the University of Oregon’s COBI model. The two indices move for the most part inversely, and even though they’re plotted on different scales the underlying trends shouldn’t be ignored. When contrasting changes in business activity to changes in poverty levels an inverse relationship should be expected. One would infer that as the economy expands and business activity increases, poverty would decline due to more

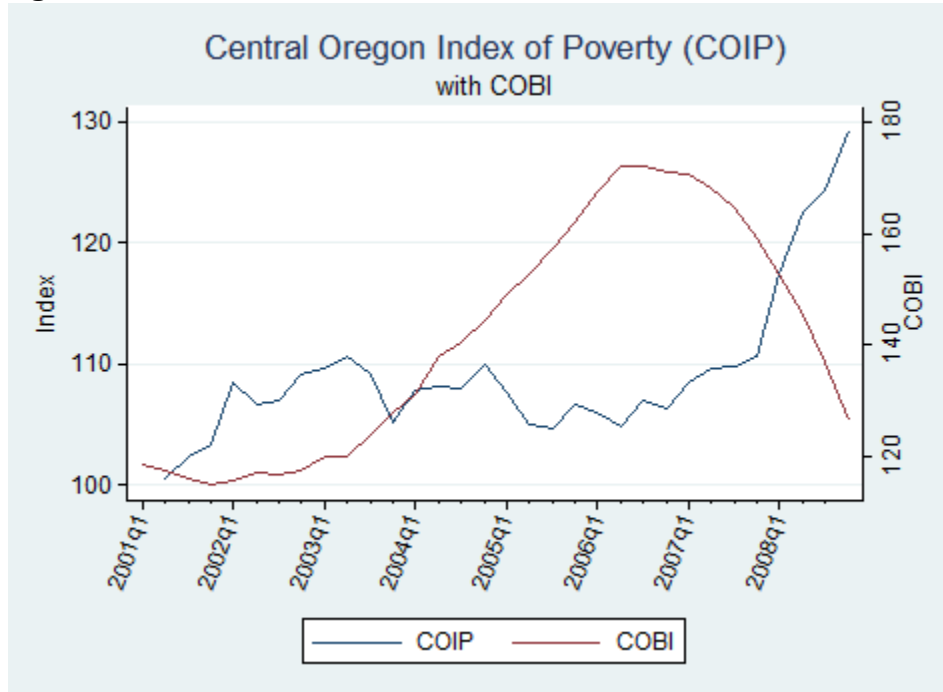
opportunities within the economic sector. However, this may not always be true as economic opportunities may not be available to the same extent for those who experience poverty.

Between the years 2003 and 2007 the Central Oregon region experienced large economic growth (partially attributed to the housing bubble in Deschutes County), exhibited by a large increase in the COBI index. However, during the same time period, the COIP remained relatively stagnant and didn't show the same negative trend in poverty expected from the economic boom. This could be an indication that economic growth does not necessarily produce a significant reduction in poverty. Pro-poor growth is "growth that reduces poverty" (Ravallion, 2004), which is a debated topic in the field of economics. It is thought that growth affects poverty in several different ways depending on the particular economy or region. Inequality in the United States is relatively low compared to the rest of the world and, on this basis, growth affects our nation in a specific way, "High inequality will help protect the poor from the adverse impact of aggregate economic contraction. Low inequality can thus be a mixed blessing for poor people living in an unstable macroeconomic environment; it helps them share in the benefits of growth, but it also exposes them to the costs of contraction" (Ravallion, 2007).

Since The United States has generally low inequality, growth is small for people in poverty during times of expansion while during times of contraction people who are poor experience large downfalls and truly feel the effects of a recession. Looking at Figure 13, one can tell that during the economic expansion between 2003 and 2007 the COIP showed modest decline (i.e., a reduction in poverty). However, when the economy experienced a large contraction in 2007, the COIP skyrocketed, which relates to the quote above in the sense that people who are poor, who live in environments of low inequality, experience high costs in times of contraction. For this reason we believe that our model is an important and effective device in measuring poverty for Central Oregon and should be updated in the future, as opposed to using the inverse of the COBI as a proxy measurement for poverty. A business growth model

doesn't necessarily pick up these small, but important characteristics; therefore, a poverty index is needed to measure poverty of the region effectively.

Figure 13 – COIP with COBI



While people who are financially stable have the ability to take advantages of economic opportunities, during both contractions and expansions, people who are below the Poverty Guideline don't necessarily experience the same luxuries. As described by the World Bank, "The credit constrained poor tend to have high marginal products from investment given their low initial capital endowments, but they are unable to exploit opportunities for investment." (Ravallion, 2007) People under the Poverty Guideline have difficulty retaining capital due to the fact that the majority of their income is spent on necessities. This makes it difficult for people who are in poverty to move above the Poverty Threshold especially during times of economic downturn. For the reasons stated in this section, local governments should monitor changes in poverty during times of expansion, while take a more proactive approach during times of contraction to avoid severe increases in poverty.

10) Appendix A (Figures)

Figure 2 – SNAP (Total Caseloads)

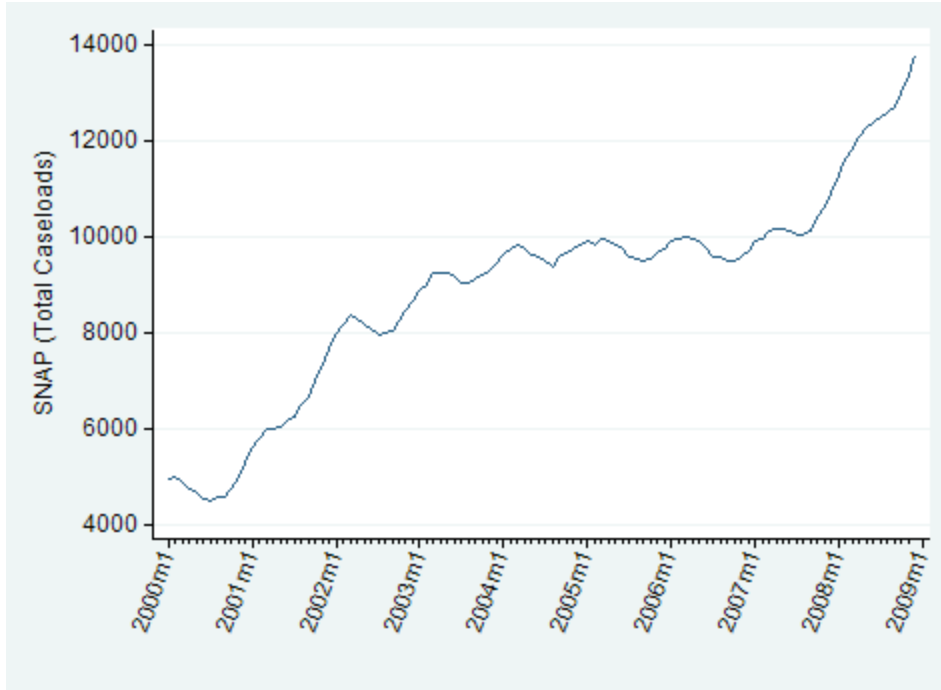


Figure 3 – TANF (Total Caseloads)

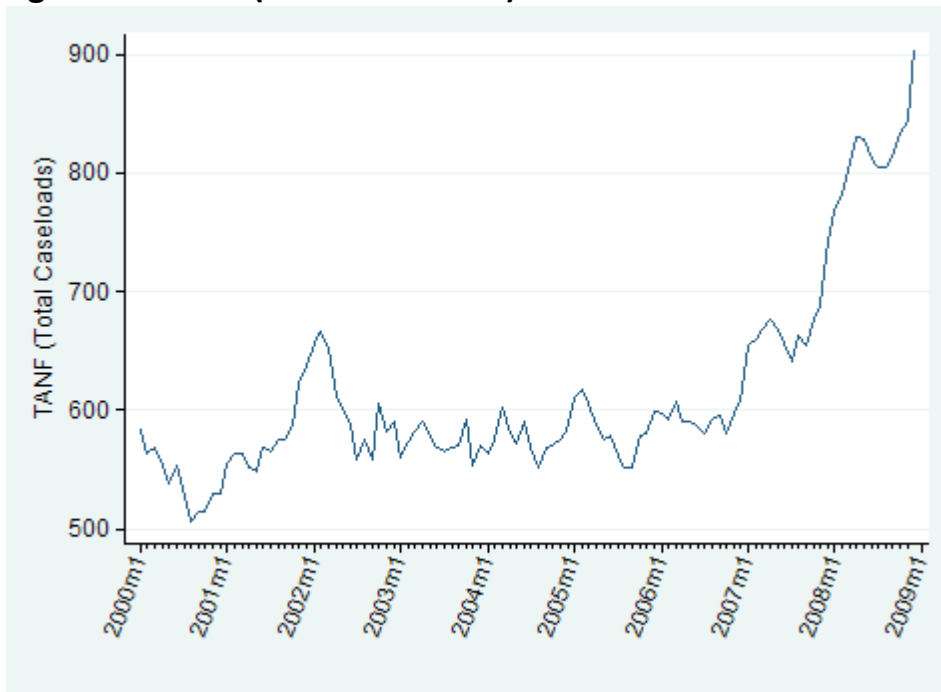


Figure 4 – Day Care (Total Caseloads)

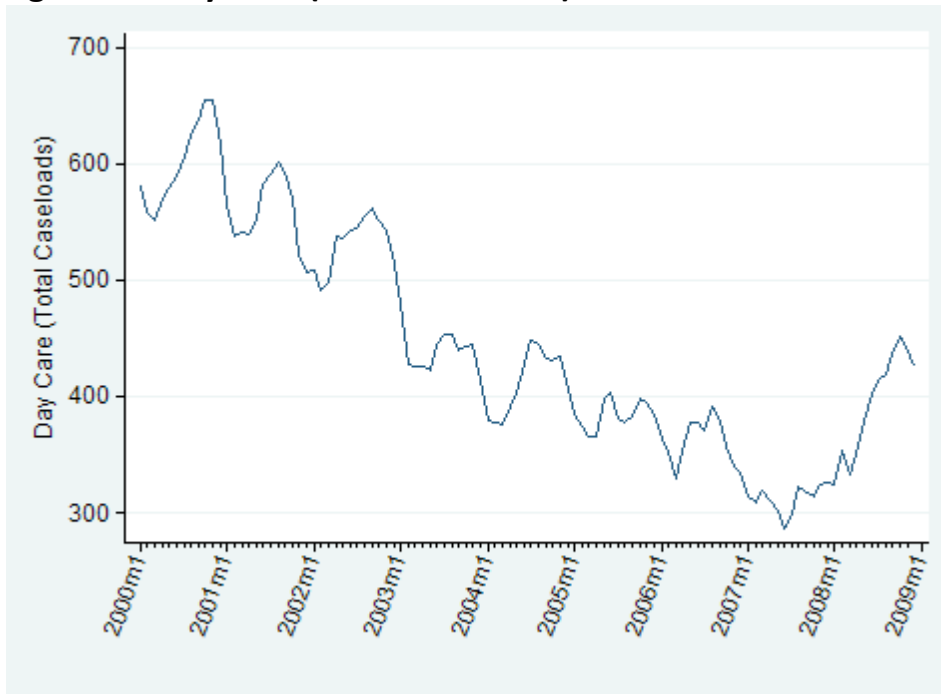


Figure 5 – Video Sales (\$)

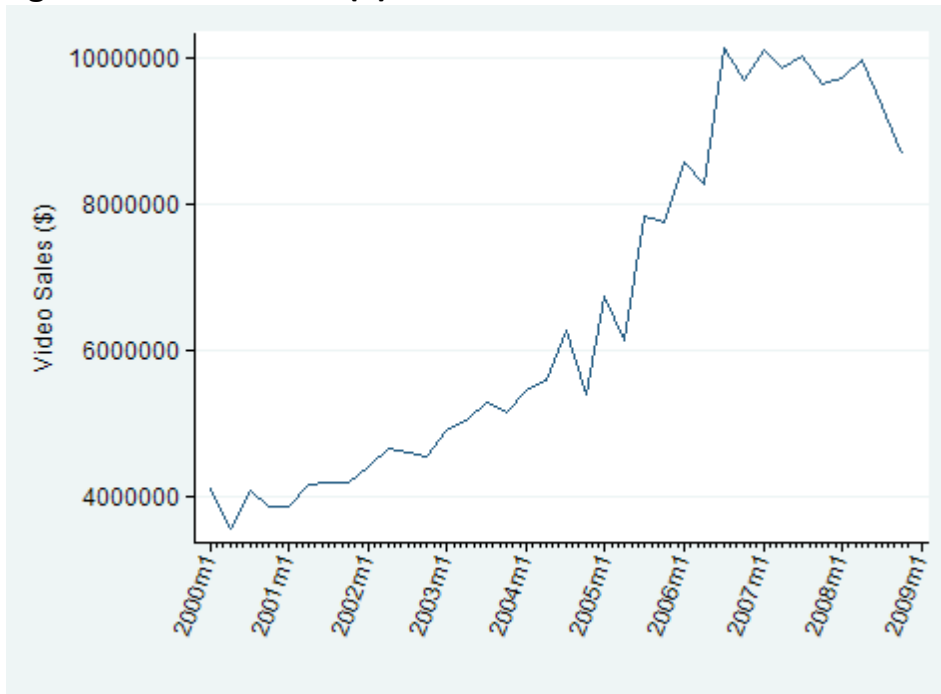


Figure 6 – Traditional Lottery Sales (\$)

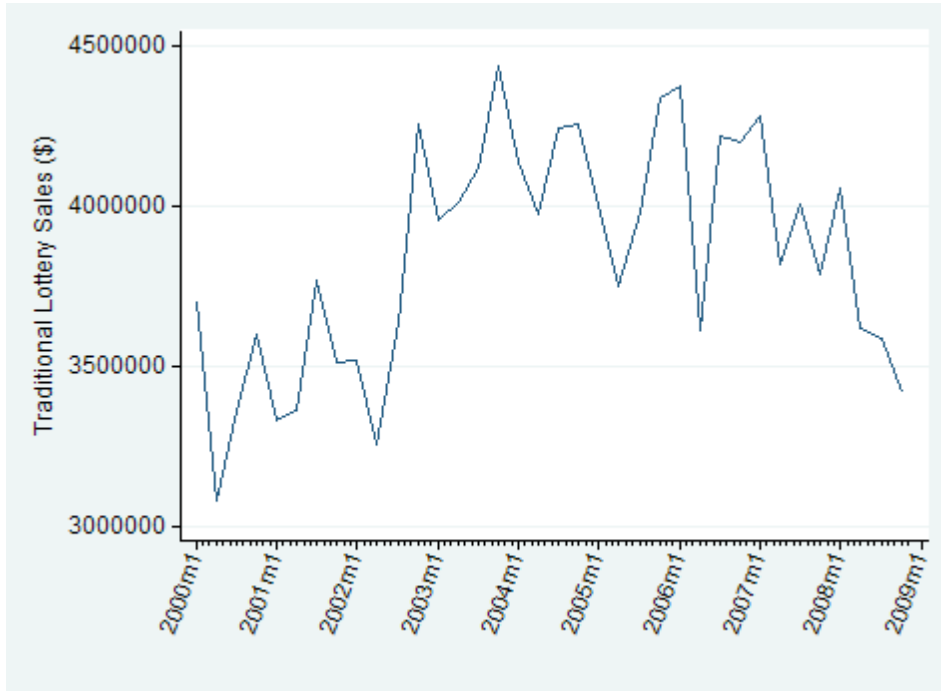


Figure 7 – TTU (Total Jobs)

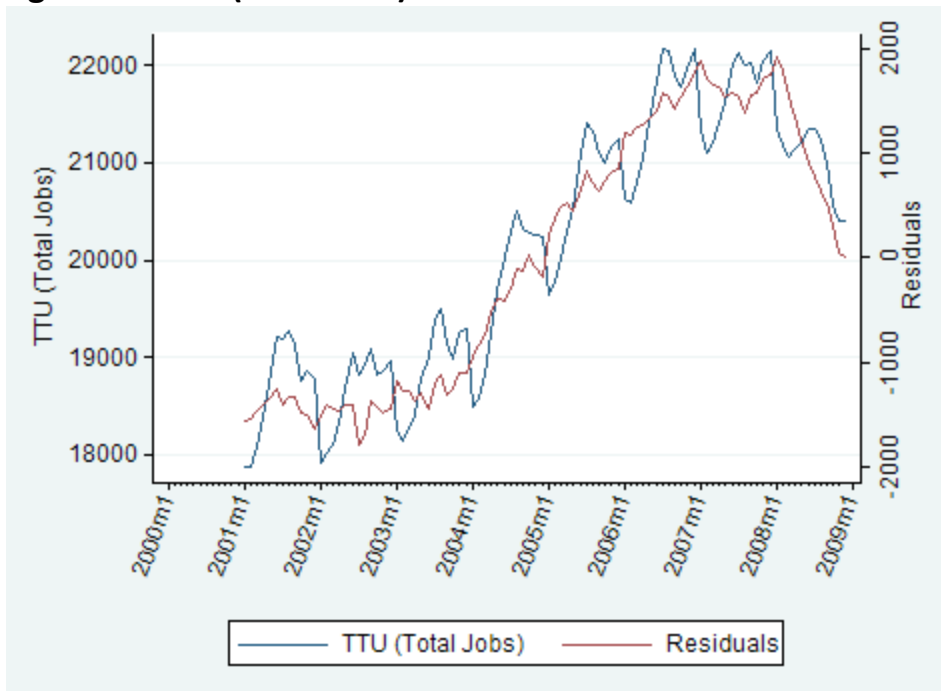


Figure 8 – Manufacturing (Total Jobs)

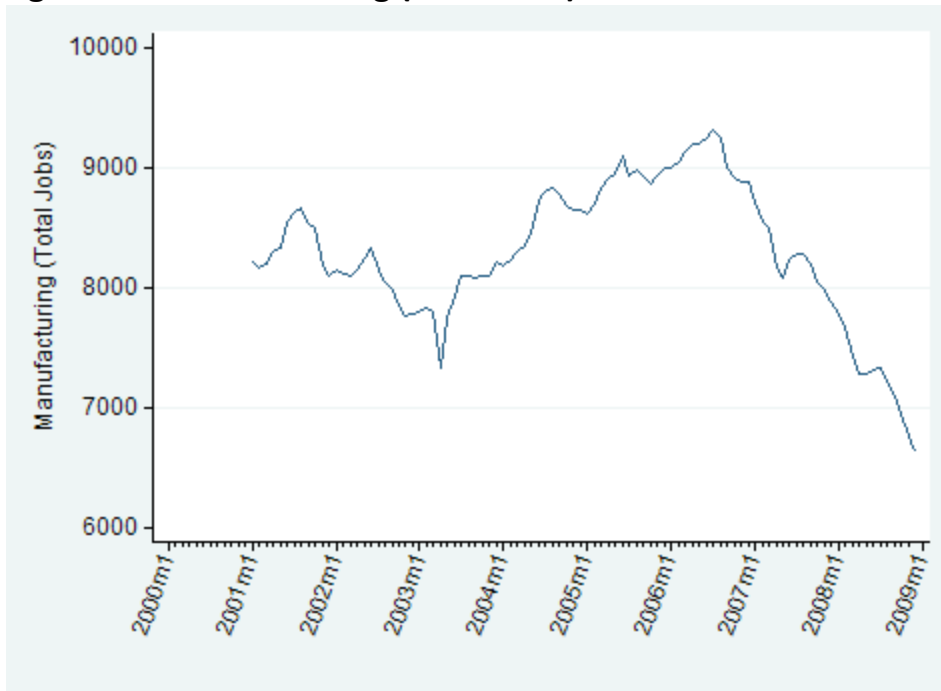


Figure 9 – NHPC (Total Jobs)

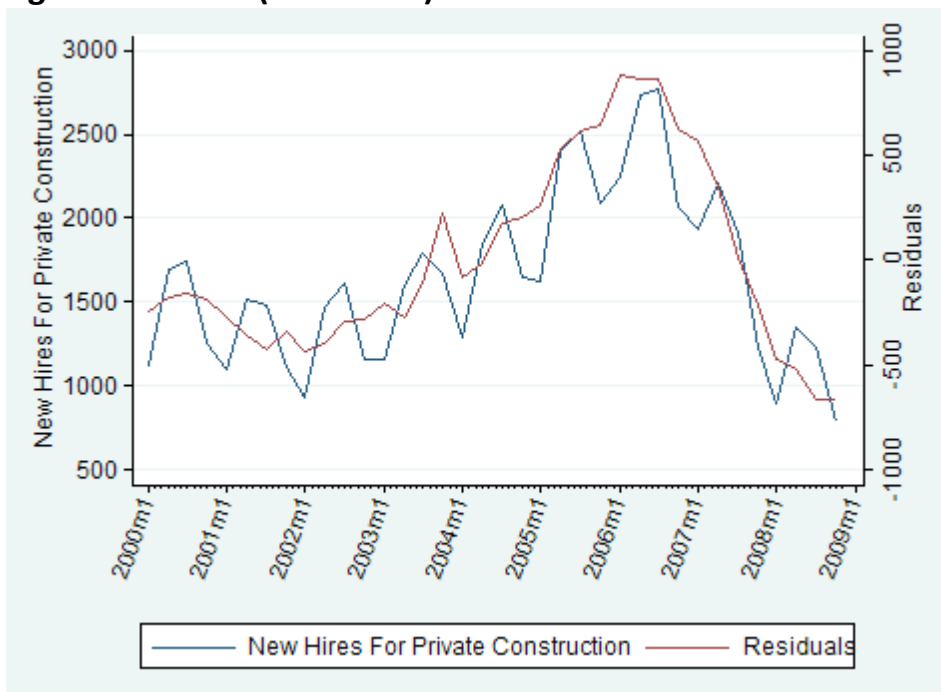


Figure 10 – Total Unemployment

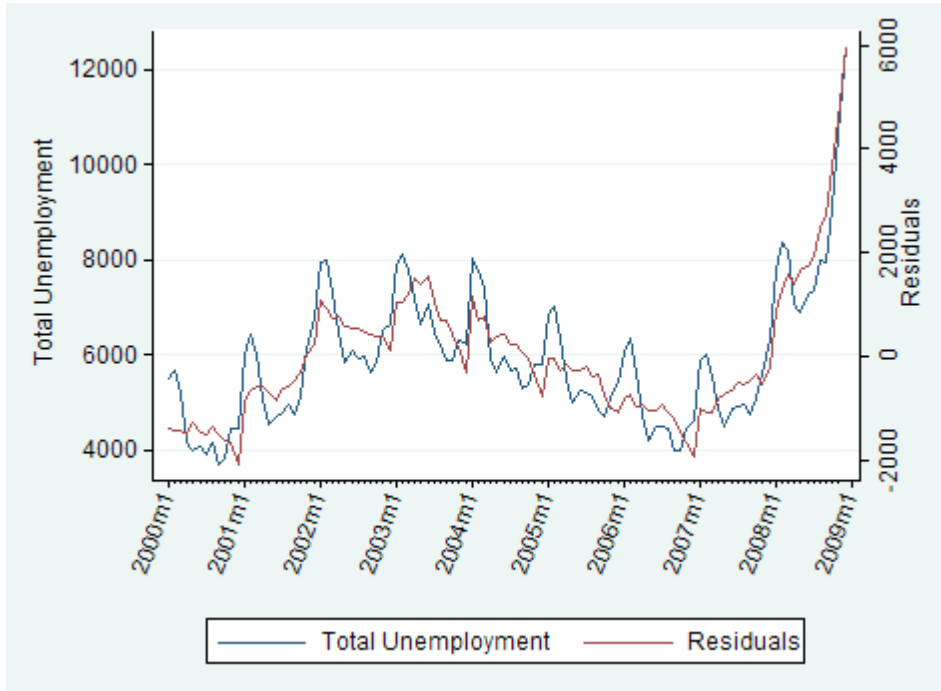
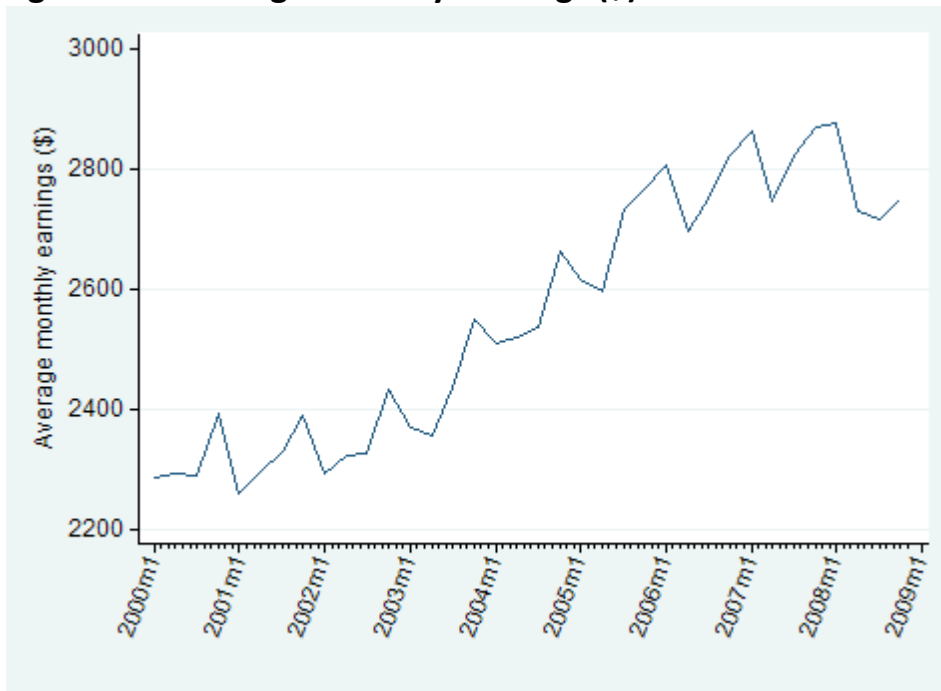


Figure 11 – Average Monthly Earnings (\$)



11) Appendix B (Data Sources)

SNAP	Contact: Jane Sabatino Email: jane.b.sabatino@state.or.us http://www.oregon.gov/DHS/assistance/foodstamps/snap-info.shtml
TANF	Contact: Jane Sabatino Email: jane.b.sabatino@state.or.us http://www.oregon.gov/DHS/assistance/cash/tanf.shtml
Day Care	Contact: Jane Sabatino Email: jane.b.sabatino@state.or.us http://www.oregon.gov/DHS/children/childcare/providers.shtml
Video Sales	Contact: Marlene Meissner Email: marlene.meissner@state.or.us
Traditional Lottery Sales	Contact: Marlene Meissner Email: marlene.meissner@state.or.us
TTU	Oregon Labor Market Information System http://www.qualityinfo.org/olmisj/CES
Manufacturing	Oregon Labor Market Information System http://www.qualityinfo.org/olmisj/CES
New Hires of Private Construction	Oregon Labor Market Information System http://www.qualityinfo.org/olmisj/qwi
Total Unemployment	Bureau of Labor Statistics http://data.bls.gov:8080/PDQ/outside.jsp?survey=la
Average Monthly Earnings	Oregon Labor Market Information System http://www.qualityinfo.org/olmisj/qwi

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