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TRACKING OREGON'S PROGRESS:  
A FOCUS ON INCOME INEQUALITY

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[http://oe.oregonexplorer.info/rural/CommunitiesReporter/top\\_indicators.aspx](http://oe.oregonexplorer.info/rural/CommunitiesReporter/top_indicators.aspx)

The Tracking Oregon's Progress (TOP) Indicator Project uses 90 measures of well-being, grouped into three categories: Healthy Economies, Healthy Communities, and Healthy Environments. Data for these measures are available to access at the county level via an interactive online tool at <http://oe.oregonexplorer.info/rural/CommunitiesReporter/>. Use the tool to access data from 1990 to 2013, compiled from 20 sources.

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# EXECUTIVE SUMMARY

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Inequality in income, consumption, education, and quality of life across populations has become a growing concern in the United States. As the nation's attention shifts toward issues of inequality, it is important to understand the prevalence of inequality in Oregon. However, studying income inequality alone is not sufficient; counties with low income inequality can have high poverty, among other challenges. County and state variations in income inequality are partially due to differences in the population, their earning potential and their access to high-wage work. By examining poverty and inequality together, it is possible to gain a fuller understanding of the economic well-being of communities.

Findings from this study reveal that:

- Oregon has consistently ranked 22nd in the nation for its level of income inequality since the mid-2000s, meaning that just over half of the states in the nation have more income inequality than Oregon.

## INTRODUCTION

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Inequality in income, consumption, education, and quality of life across populations has become a growing concern in the United States. Rising income inequality can signify a lack of economic opportunities for low income workers. If income inequality becomes too high, it can slow down overall economic growth as fewer people have the income needed to purchase goods and services. Inequality levels that create childhood poverty and hunger create an opportunity gap that can threaten the educational achievement of youth and deteriorate the future quality of the workforce and a functioning society (Mohammed, 2014).

However, income inequality measures alone cannot explain differences in overall economic well-being. Poverty rates and income inequality share a complex relationship; combining these two measures provides more insights into the availability of good jobs in an area. For example, while high levels of income inequality most often indicate the presence of poverty, a high poverty

- Within the western region of the U.S., Oregon has above average levels of income inequality.
- Within Oregon, counties vary in levels of income inequality.
- Multnomah, Benton, and Lane counties have consistently high income inequality. High income inequality is not unexpected in urban areas or small counties with large populations of university students.
- Hood River and Morrow counties maintain consistently low levels of income inequality. Low income inequality can indicate that an economy is providing a mix of jobs that support middle income earners, as in the case of Hood River. However, low income inequality can also result from a lack of high wage earners, as in Morrow and other rural counties in the state.

Ultimately, to support the growth of economic vitality in Oregon, counties need jobs that offer a range of wage and salary earnings, and these jobs need to be accessible to people regardless of their current incomes.

area could have low levels of inequality if the area lacks high-income earners. Therefore, it is necessary to examine a variety of economic indicators, such as poverty and income levels, along with measures of income inequality in order to paint a fuller picture of economic well-being.

As the nation's attention shifts toward issues of inequality, it is important to understand if and how income inequality may affect Oregon. In order to understand how Oregon overall and different parts of our state are faring with respect to inequality, this report compares three measures of income inequality. The three measures offer different insights into the concept of income inequality, and as such can reveal how different types of inequality manifest across the state and region. In addition to describing the state of inequality across the region, the report provides some insight into possible explanations for county differences, and emphasizes the need to track poverty along with income inequality.

# EXAMINING OREGON'S INCOME INEQUALITY

The distribution of income and levels of inequality can be measured in many ways. This report focuses on three measures of income inequality: the GINI index, the Modified Palma Ratio, and the Ratio of Mean Annual Income. These three measures provide complementary perspectives on income inequality and are summarized in **Table 1**. The GINI index is one of the most common measures of income inequality. It provides an estimation of the amount of income that would need to be redistributed in order to reach perfect income equality. The Modified Palma Ratio and the Ratio of Mean Annual Income complement the GINI Index by providing insight into how income is distributed and where income is most concentrated. The Modified Palma Ratio examines the share of income held by the highest earning 5 percent of all households to the lowest earning 40 percent. The Ratio of Mean Annual Income, in contrast, examines the income inequality among individuals instead of households. This measure gathers the 20 percent of individuals with the lowest income and compares their average income to the average income of the 20 percent highest earning individuals. Together, these three measures provide different insights into income inequality.

This report uses the American Community Survey (ACS) to examine recent income inequality and poverty during two time periods. The ACS is a relatively new national survey

administered by the U.S. Census Bureau that collects data every month and releases 5-year estimates every year. This report uses the most recent data available, estimates from the 5-year period of 2009 to 2013. These estimates are compared to the oldest available complete set of data, estimates from the 5-year period 2006 to 2010, to discuss recent change in income inequality and poverty. (See the Appendix for more information on the data, measures of income inequality and the time periods used in this report.)

## Oregon's Level of Income Inequality is Slightly Below the National Average

Compared to all other states, Oregon has average levels of income inequality across all three measures utilized in this report. Nationally, Oregon ranks 22nd among the 50 states and Washington D.C., where ranking 1st means having the lowest inequality and ranking 51st means having the highest inequality. Oregon's level of inequality is slightly below the national average (see **Table 2**) on all three income inequality measures. Oregon's GINI Index indicates that 45 percent of all income is unevenly distributed, while nationally, 47 percent of all income is unevenly distributed. The other two measures of income inequality provide insights into where income is concentrated. Oregon's Modified Palma Ratio indicates that the highest earning 5 percent of all households

**Table 1: A Comparison of Inequality Measures**

Measure of Inequality	Calculation	Contribution to Understanding Inequality	Limitations
GINI Index	Measures the difference between a perfectly equal distribution of income and the current distribution of income	Provides an overall understanding of the income distribution by considering the amount of income held by every person	Cannot indicate where income is concentrated among the population
Modified Palma Ratio	Aggregate income of the highest earning 5 percent of households, divided by the aggregate income of the lowest earning 40 percent of households	Provides insight into how concentrated income is among the highest earning households  Compares total income held by the wealthy and the poor	Examines household income, without adjusting for the size of the household  Can misrepresent the overall well-being in areas with 1-person households or large households
Ratio of Mean Annual Income	Mean (average) income of the highest 20 percent of all earners, divided by the mean income of the lowest 20 percent of all earners	Focuses on income earned by individuals  Compares averaged incomes among the wealthy and the poor to provide a relative sense of the difference in well-being	Uses mean income, which can be distorted if there are a few very high (or low) incomes

**Table 2: Oregon Has Less Income Inequality than the Nation**

Measure of Inequality	Oregon Average 2009-2013	Interpretation	National Average 2009-2013
GINI Index	0.45	45 percent of all income in the state would need to be redistributed to achieve perfect income equality.	0.47
Modified Palma Ratio	1.67	The highest earning 5 percent of all households in the state receive \$1.67 of income for every \$1 received by households who are among the lowest earning 40 percent in the state.	1.90
Ratio of Mean Annual Income	13.97	The highest earning 20 percent of all Oregonians received 13.97 times the income of the lowest earning 20 percent of all Oregonians.	15.68

Source: American Community Survey 2009-2013 estimates.

**Table 3: Oregon Has the Fifth Highest Income Inequality Out of the Western States**

State	Rank
California	1
New Mexico	2
Arizona	3
Colorado	4
<b>Oregon</b>	<b>5</b>
Nevada	6
Washington	7
Montana	8
Idaho	9
Hawaii	10
Utah	11
Wyoming	12
Alaska	13

Source: Modified Palma Ratios calculated from the American Community Survey 2009-2013 estimates.

in the state receive \$1.67 in income for every \$1.00 in income received by the lowest earning 40 percent of all households in the state. As measured by the Modified Palma Ratio, this level of income inequality is \$0.23 lower than the national average. Turning to the mean income of high and low earning individuals, the Ratio of Mean Annual Income shows that the highest earning 20 percent of all Oregonians receive 13.97 times the income of the lowest earning 20 percent of Oregonians. In the U.S., the Ratio of Mean Annual Income is 15.68.

Comparing Oregon’s inequality to other states in the western region reveals that Oregon’s income inequality is higher than half of the neighboring U.S. western states, which have some of the lowest rates of inequality in the nation (see **Table 3**). The 13 states of the U.S. west (AK, AZ, CA, CO, HI, ID, MT, NM, NV, UT, WA and WY) have relatively low levels of income inequality as a whole. Alaska and Wyoming have the lowest levels of income inequality in the region and in the nation. Oregon has the fifth highest level of income inequality out of the 13 western states after California, New Mexico, Arizona and Colorado. California has the highest level of inequality for the region and has one of the highest levels of income inequality among all states. Nationally, Washington D.C. has the highest level of inequality.

Oregon has an average level of income inequality that is increasing at slightly faster than the national average. Inequality in Oregon has increased 5.3 percent (with a margin of error of +/-0.6 percent) in Oregon, but the state’s inequality ranking among other states has remained unchanged over the two time periods of study. Nationally, income inequality has increased 4.4 percent (with a margin of error of +/- 0.5 percent) during the same time period, as measured by the Modified Palma Ratio. Income inequality has remained stable in 18 states and increased in all other states. Income inequality is increasing the fastest in New Hampshire, Rhode Island, and New Mexico.

Oregon, like many other states, maintained the same rank consistently across all three measures of income inequality. This suggests that while these three measures are capturing different aspects of income inequality, the three are correlated. These similarities across the three income measures also are present at the county level. Therefore, in order to provide a succinct examination of income inequality within Oregon, the examination of county-level data below will focus on just one of the three income inequality measures, the Modified Palma Ratio.

**Table 4: Oregon Counties Vary in Their Level of Income Inequality**

County	Income Inequality	Change In Inequality
Baker	Moderate	Stable
Benton	High	Stable
Clackamas	Moderate	Stable
Clatsop	Moderate	Stable
Columbia	Moderate	Worsening
Coos	Moderately High	Stable
Crook	Low	Worsening
Curry	Moderate	Stable
Deschutes	Moderate	Worsening
Douglas	Moderate	Worsening
Gilliam	Moderately Low	Stable
Grant	Moderate	Stable
Harney	Moderately Low	Stable
Hood River	Low	Stable
Jackson	Moderate	Stable
Jefferson	Indeterminate	Stable
Josephine	Moderately High	Stable
Klamath	Moderate	Stable
Lake	Indeterminate	Stable
Lane	Moderately High	Worsening
Lincoln	Moderate	Improving
Linn	Low	Stable
Malheur	Moderate	Worsening
Marion	Moderate	Stable
Morrow	Low	Stable
Multnomah	High	Worsening
Polk	Moderate	Stable
Sherman	Moderate	Stable
Tillamook	Moderately Low	Improving
Umatilla	Moderately Low	Stable
Union	Moderately High	Stable
Wallowa	Moderately Low	Stable
Wasco	Moderate	Worsening
Washington	Moderate	Worsening
Wheeler	Moderately Low	Stable
Yamhill	Moderate	Stable
<b>Oregon</b>	<b>Moderate</b>	<b>Worsening</b>

Note: Income inequality as measured by the Modified Palma Ratio.

**Table 5: Oregon’s High and Low Inequality Counties**

Region	Modified Palma Ratio	MOE (+/-)
<b>Highest Income Inequality Counties</b>		
Benton	1.95	0.14
Multnomah	1.96	0.06
Lane	1.79	0.20
<b>Lowest Income Inequality Counties</b>		
Hood River	1.05	0.11
Morrow	1.08	0.14
<b>Oregon</b>	<b>1.67</b>	<b>0.02</b>

Source: American Community Survey 2009-2013 estimates. MOE = margin of error

## Inequality Varies Among Oregon Counties

Income inequality has been relatively stable during the short time span in this study, although some counties have seen statistically significant changes. A majority of counties in the state have a moderate level of inequality and this level has not recently changed (see **Table 4**). Only two counties have statistically improved their income inequality: Tillamook and Lincoln counties. Tillamook County has a below average level of income inequality within the state, while Lincoln County’s level of income inequality is the same as the state average. In contrast, income inequality has increased during this study period in ten counties.

Just as Oregon has below national average levels of inequality as a state, many Oregon counties also have average to below average levels of income inequality compared to all U.S. counties. **Table 5** identifies the Oregon counties with high and low income inequality. Not only do Benton, Multnomah, and Lane counties consistently have high levels of income inequality in the state, they also are among the top 20 percent most unequal of all U.S. counties. Similarly, Hood River and Morrow counties consistently have low levels of income inequality that rank these counties among the 20 percent of U.S. counties with the lowest income inequality. The remaining counties fall in the middle. (These survey-based estimates of income inequality are less accurate for low population counties—see the Appendix for more information.)

Measures of income inequality describe differences in income but cannot provide an indication of standard of living. Using the Modified Palma Ratio, the highest earning 5 percent of all households in Multnomah County earn approximately \$1.96 for every \$1.00 of income earned by the lowest earning 40 percent of all households. The level of income inequality in Hood River is much lower, where the highest earning 5 percent of all households earn approximately \$1.05 for every dollar of income earned by the lowest earning 40 percent of all households. This measure indicates that the gap of income between high and low earning households is smaller in Hood River than in Multnomah, but it does not explain how much income high and low earners are making in either county. For example, Multnomah County might have more households with extremely low incomes, or Hood River's high earning households might make substantially less income than high earning households in Multnomah County. Income inequality measures do not directly address how many people have enough income to meet their needs or if they are living in poverty.

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Examining poverty rates alongside income inequality increases our understanding of income inequality. Counties with moderate levels of income inequality can have either high or low levels of poverty. For example, Malheur County has a moderate level of income inequality, but the county's high poverty levels are concerning. The county has an extreme poverty rate of 11.6 percent (residents in extreme poverty have income that is less than one-half of the poverty level). In addition, childhood poverty rates and total poverty rates are among the highest in the state. In contrast, Clackamas County also has a moderate level of income inequality but has a lower poverty rate than the state average.

### **Benton, Multnomah, and Lane Counties Have High Income Inequality**

Benton, Multnomah, and Lane counties maintain consistently high levels of income inequality in Oregon, and income inequality is increasing in Multnomah County. Benton, Lane, and Multnomah counties each contain one of the state's three largest universities and the latter two counties contain the largest urban areas within the state. Nationally, income inequality tends to be higher in urban counties and in counties with large college populations.

Benton County, home to Oregon State University, has some of the highest inequality in the state. This outcome is likely due to the presence of both high and low wage earners and is not unexpected in small population counties that host universities. The county has a total population of approximately 86,600 people and approximately 20,000 people are attending on-campus classes at Oregon State University (Office of Institutional Research, 2013). While not every student lives on campus or in the county, college students are likely to have lower incomes as they balance educational goals with employment or defer employment with the help of family and friends. The presence of so many low-income college students adds to the presence of other individuals who are not in college but are low-income earners. This amplifies the prevalence of poverty and complicates efforts to understand levels of relative well-being within the county. Benton County

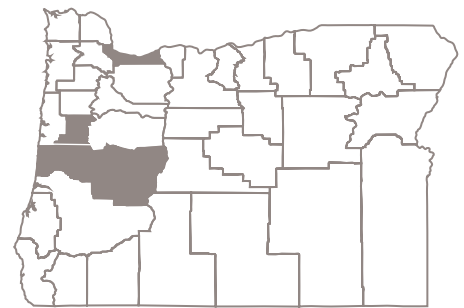


**Table 6: Oregon’s High Inequality Counties are Urban and Host Universities**

Region	Median Household Income	Per Capita Personal Income (U.S.=100 Percent)	Percent of Households Earning <\$10,000	Percent of Households Earning >\$200,000	5 Percent of Households Earn >	Poverty Rate	Child Poverty Rate	Extreme Poverty (Income 50 Percent or Less of Poverty Level)
Benton	\$48,604	91	12.4	3.7	\$183,500	22.5	16.6	12.6
Multnomah	\$52,511	97	8.4	4.5	\$189,526	17.8	24.3	8.2
Lane	\$42,931	82	10.4	2.1	\$149,095	20.0	22.1	10.4
<b>Oregon</b>	<b>\$50,229</b>	<b>89</b>	<b>7.5</b>	<b>3.3</b>	<b>\$170,454</b>	<b>16.2</b>	<b>21.7</b>	<b>7.3</b>

The survey estimates in this table come from the 2009-2013 ACS and have associated margins of error available online at <https://factfinder.census.gov>.

has a lower child poverty rate than either the state or Multnomah or Lane counties, but its overall population poverty rate is higher (see **Table 6**). Benton County also has the highest rate of extreme poverty in the state, with approximately 13 percent of all residents receiving an income that is less than one-half of the total level of income that qualifies a family as living in poverty. It is likely that many of those living in extreme poverty are students for whom this poverty status does not accurately reflect their current quality of life. As the home to a university, Benton County also has a significant share of workers who have highly skilled occupations and therefore command higher wages.



It also is not uncommon to find more income inequality in urban areas than in rural areas. Urban areas and their surrounding regions tend to have a higher percentage of high wage and salary jobs, which can lead to higher income inequality. Therefore, households with high incomes are more likely to be located in urban areas or the surrounding regions close to their places of work. The share of households in Multnomah County that reported an income of over \$200,000 between 2009 and 2013 was approximately 4.5 percent, compared to about 3.3 percent of all Oregon households. As job and population centers, urban areas also have more low paid entry level jobs and service sector jobs. Nationally, metropolitan counties in New York, New Orleans, Atlanta, Washington D.C., and Boston rank as some of the urban areas with the highest levels of income inequality.

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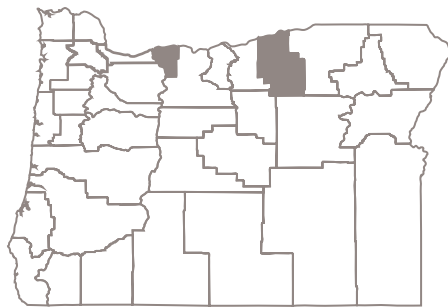
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As an urban area that hosts a university, Lane County’s inequality shares aspects with both Multnomah and Benton counties. Lane County has a much larger non-university economy than Benton County, which dampens the effect of students on overall income inequality. The highest earning 5 percent of all households received \$149,095 or more of income in Lane County, less than the highest earning households in Oregon or in Benton or Multnomah counties. Lane County contains many low income earners, but it has less inequality than Benton or Multnomah counties because its high income earners receive less income. Similarly, the county also has fewer households earning \$200,000 or more. However, like in Benton County, the presence of students may contribute to Lane County also having high levels of extreme poverty.

**Table 7: Oregon’s Low Inequality Counties Have Different Rates of Poverty**

Region	Median Household Income	Per Capita Personal Income (U.S.=100 Percent)	Percent of Households Earning <\$10,000	Percent of Households Earning >\$200,000	5 Percent of Households Earn >	Poverty Rate	Child Poverty Rate	Extreme Poverty (Income 50 Percent or Less of Poverty Level)
Hood River	\$56,725	86	2.8	2.7	\$158,603	11.6	16.4	3.9
Morrow	\$49,940	99	5.6	1.1	\$137,350	18.0	28.4	7.6
<b>Oregon</b>	<b>\$50,229</b>	<b>89</b>	<b>7.5</b>	<b>3.3</b>	<b>\$170,454</b>	<b>16.2</b>	<b>21.7</b>	<b>7.3</b>

The survey estimates in this table come from the 2009-2013 ACS and have associated margins of error available online at <https://factfinder.census.gov>.



### Hood River and Morrow County Maintain Low Levels of Income Inequality

Hood River County has the lowest level of income inequality in Oregon and this has not changed during this study period. Hood River maintains a low level of income inequality through the absence of high and low-income households. The county has fewer than 3 percent of all households earning less than \$10,000 or more than \$200,000 (see **Table 7**). These percentages are far lower than in counties with high levels of income inequality. The majority of households in the county appear to have adequate incomes; the median household income in the county is above the state average. The county also has low poverty rates. As the county continues to grow, income inequality could change if the economy disproportionately creates more low income or high income jobs.

Similar to Hood River County, Morrow County has low income inequality. Morrow County, like Hood River and many of the state’s rural counties, maintains low income inequality through the absence of both extremely high and extremely low wage employment. The income threshold for the highest earning 5 percent of all households is substantially lower than the urban counties with high income inequality, and Morrow County also has the fewest households earning over \$200,000. Most households in the county are earning an average level of income.

However, low income inequality does not always mean low poverty. Unlike in Hood River County, Morrow County’s low income inequality is paired with poverty rates that are not any lower than Multnomah County or the state average. In communities like Morrow County, the sources of income are fairly homogeneous as are the available wage earning jobs. In these places income equality is being achieved through a lack of high paying employment opportunities. Thus, it is necessary to examine both income inequality and poverty to understand the economic health of a community.

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## CONCLUSION

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Oregon has consistently ranked 22nd in the nation for its level of inequality since the mid-2000s, meaning that just over half of the states in the nation have more income inequality than Oregon. Within the western region of the U.S., Oregon has above average levels of income inequality. Within Oregon, Multnomah, Benton, and Lane counties have consistently high inequality while Hood River and Morrow counties maintain consistently low levels of inequality. Differences in an area's population, their earning potential, and their access to high-wage work partially explain these income inequality differences.

Income inequality provides insights into how evenly income is distributed and how much income is concentrated among the highest and lowest earners. Income inequality has increased across the world, nationally, at the state level, and for some counties in Oregon. Rising income inequality can signify a lack of economic opportunities for a population and can become so high it slows down overall economic growth. However, income inequality is not the same as poverty and low income inequality can exist in places with high poverty rates. A county's current and potential future income inequality can be better understood after examining poverty and inequality together.

Though Oregon's level of inequality may not yet seem worrisome given our national position, it is high for our region and has increased over the last few decades. It will be important for statewide and local decision makers to consider policies that offer access to opportunities for all Oregonians. Ultimately, to increase economic vitality in Oregon and to ensure equal opportunity for all of Oregon's children, counties need jobs that offer a range of wage and salary earnings.

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# APPENDIX: DATA SOURCES AND METHODOLOGY

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## Understanding Survey Data

The majority of the data in this report comes from the Rural Community Explorer's TOP Indicators dataset. A common data source for that dataset is the American Community Survey (ACS), which releases five-year-period estimates. The ACS collects data through surveys every month across the state. These surveys are pooled over five years and then released as a five-year-period estimate. The first set of complete population five-year estimates, including group quarters populations, was released in 2010, and represented data collected in 2006, 2007, 2008, 2009, and 2010. Each year, a new dataset is released that drops surveys from the oldest year and incorporates a year of new surveys. In December of 2014, the most recent dataset was released and includes surveys collected from 2009-2013. Both of these five-year period estimates (2006-2010 and 2009-2013) are used in this report.

All data collected from the American Community Survey comes from a sample of the population and is subject to error that can be estimated with a margin of error. These margins of error are used in this report in our calculations of change over time and comparisons across regions.

The relatively recent use of the American Community Survey prevents consistent long term trend analysis and, when two sets of period estimates share the same data years, the Census Bureau advises careful interpretation of change over time. At the end of 2016, the 2011-2015 estimates will be released, for the first time providing two data points that do not share years.

## Choice of Time Periods

The two time periods for the data in this report overlap with the national recession. This report uses data from the 2006-2010 ACS and the 2009-2013 ACS. The national recession officially lasted from December 2007 to June 2009. The first time period, 2006-2010, includes almost two years of data from before the recession, while the last three years capture the start and the end of the recession. The second time period, 2009-2013, officially includes only six months of the recession but captures a period of slow to stagnant recovery nationally and statewide.

## Measures of Income

Most of the data available for measuring inequality is based on income. Unlike other data sources that are based on administrative records, the ACS data relies on self-reported income. On the ACS questionnaire, respondents are asked to identify if they received income from any of six sources and to estimate the total income received in the previous 12 months for each source. When the U.S. Census Bureau conducts the monthly ACS surveys, households are treated as the survey unit, and everyone living within a household is surveyed separately. In the ACS, the Census Bureau defines a household as all people who share a housing unit. The people who live together in a housing unit may or may not be related, which means that household income is different from family income. After collecting all surveys from a single household, the Census Bureau then calculates personal income, family income, and household income.

The ACS asks respondents how much income they received in the previous 12 months from the day they receive their survey. The Census Bureau defines income as the following:

“Total income” is the sum of the amounts reported separately for wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income.

Receipts from the following sources are not included as income: capital gains, money received from the sale of property (unless the recipient was engaged in the business of selling such property); the value of income “in kind” from food stamps, public housing subsidies, medical care, employer contributions for individuals, etc.; withdrawal of bank deposits; money borrowed; tax refunds; exchange of money between relatives living in the same household; gifts and lump-sum inheritances, insurance payments, and other types of lump-sum receipts. (ACS Methodology)

The Census Bureau then aggregates these responses and ranks households to produce aggregate income by

quintile or other share of the population. When income distributions are released to the public, the Census Bureau counts the number of households or families who report income in 10 categories, ranging from less than \$10,000 to \$200,000 or more.

This report narrowly examines inequality by focusing on differences in income alone. The measure of income used in this report most closely approximates current or former employment income. The measures of income inequality used here may overstate income inequality by not taking into account other forms of income support for low income people, including housing subsidies and SNAP or food stamps. However, overall this report likely understates levels of inequality by not capturing income from capital gains. Furthermore, the focus on income ignores relative wealth levels and may distort actual differences in quality of life.

Households can receive more than one type of income. As noted earlier, the income inequality measures used here offer a better examination of inequality of employment or former employment income. Importantly, these inequality measures exclude capital gains from stock investments in their definitions of income. Capital gains from stock investments began to account for an increasing share of income, especially for the wealthiest Americans, in the 1990s (McNichol et al., 2012).

## Measures of Income Inequality

Measuring inequality is not easy, and this approach to measuring inequality through income has some limitations. This report uses self-reported income data including employment income, retirement income, rental property income, dividend or interest payments but not capital gains income, and cash public assistance income but not food stamps or public housing subsidies. The three measures used in this report also have strengths and weaknesses. The GINI index provides an estimate of total income inequality across the entire population, but it cannot address where income is concentrated. The household income measure used by the Modified Palma Ratio focuses on both high and low earning households; it does not distinguish between how many people are living together in a household or if a household has single or multiple earners, nor does it distinguish between people who are related and living together as opposed to those who are

not. The comparison of average incomes in the Ratio of Mean Annual Income creates an understanding of income inequality between the two groups but does not address differences within each group. This report may underestimate income inequality, as the income data does not include income earned from investments in the stock market. Each measure of income inequality provides different insights into inequality and each has its own strengths and weaknesses.

## GINI Index

The GINI ranges from 0, a measure of perfect equality, to 1, a measure of perfect inequality. A rising GINI over time indicates that inequality is increasing. A higher GINI index suggests more income would need to be redistributed to achieve equality. The GINI index is one of the most commonly used measures of income inequality. The Census Bureau began calculating the measure using survey data beginning with the 2006-2010 American Community Survey. The GINI is more sensitive to changes in income distribution among the middle of the distribution than changes in income distribution among the highest or lowest earners.

## Ratio of Mean Annual Income

The Ratio of Mean Annual Income (RMAI) compares the average income of the top 20 percent of the income distribution to the average income of the bottom 20 percent of the income distribution. According to the 2009-2013 ACS estimates, U.S. counties ranged from 6.1 (Morgan County, Utah) to 46.6 (Allendale County, South Carolina). This means that in the U.S. county with the least income inequality, the wealthiest 20 percent of the population have an average income that is 6.1 times as large as the average income of the poorest 20 percent of the people who live in that county. In the most unequal U.S. counties, the highest earning 20 percent of the population have an average income 46.6 times as large as the average income of the 20 percent lowest earning individuals.

## Modified Palma Ratio

The Modified Palma Ratio measures how much total household income of an area is held by the highest earning 5 percent of the population compared to how much income is held by the lowest earning 40 percent of the same population. Within U.S. states and counties, the 2009-2013 Modified Palma Ratio ranges from 0.72 (Yakutat City and

Borough, Alaska) to 4.67 (New York County, New York) at the county level. A lower Modified Palma Ratio indicates a smaller income gap between the wealthiest and the poorest households.

This ratio is a relatively new measure of inequality that tends to be highly correlated with the GINI index. This measure ignores the relative shares of income held by the middle class (41st- 94th percentiles), which is usually the most stable portion of an area's income distribution. It is therefore a stronger measure of what changes are happening at both extremes of an area's income distribution, which are often of greater policy interest.

The original Palma Ratio is a ratio between the share of total income held by the top 10 percent of the income distribution to the share of total income held by the bottom 40 percent. Data limitations from the ACS required this to be altered to the top 5 percent and the bottom 40 percent, thus the Modified Palma Ratio is used here.

In general, it can be assumed that in many households people who live together are sharing an income and therefore the household provides a reasonable assumption of wellbeing. However, the Modified Palma Ratio may underestimate the well-being of an area that has a high percentage of single person households. Similarly, it may overrepresent the well-being of an area with large households. Examining individuals' income can complement this household measure.

**Table 4** utilizes the Modified Palma Ratio to categorize counties by level of income inequality. The income

inequality categories in Table 4 were determined by calculating a county's relative national ranking by quintile:

- High: Counties that fell into the top quintile of counties and were significantly different from the state average and from a majority of counties in the state.
- Moderately High: Counties that were not statistically different from either the counties in the top quintile of most unequal income counties, the state average or from a majority of counties in the state.
- Moderate: Moderate counties had estimates that were statistically different from all High and Low counties.
- Moderately Low: Counties that were not statistically different from either the counties in the bottom quintile of most equal income counties, the state average or from a majority of counties in the state.
- Low: Counties that fell into the bottom quintile of counties and were significantly different from the state average and from a majority of counties in the state.
- Indeterminate: Counties that were not statistically different from a majority of counties in the state, including both high and moderately low counties.

The change category in **Table 4** was determined by comparing each county's 2006-2010 ACS estimate to its 2009-2013 ACS estimate. If the most recent estimate was statistically different and higher, this change was described as worsening income inequality. If there was not a statistically significant difference, the county was assigned "stable".

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