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North Carolina's "U-Turn" and Alternative Economic Paths of the State's Regions

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Abstract: By some measures, North Carolina's economy has moved in reverse compared to the national economy in recent years. Specifically, two broad measures – North Carolina per capita income relative to national per capita income, and North Carolina per worker earnings relative to national per worker earnings, have declined.

Behind both of these trends are changes in the distribution of jobs in the state. Examining changes in jobs grouped into three categories – High Pay, Middle Pay, and Low Pay – reveals that from 2001 to 2015, North Carolina had a greater percentage increase in High Pay jobs than the nation, a decrease in Middle Pay jobs compared to the nation's increase, and a larger increase in Low Pay jobs than the nation. Collectively, these differences between national and state job trends were responsible for North Carolina's U-turn in relative per capita income and relative per worker earnings.

Yet just as interesting are differences in job distribution changes among North Carolina's regions. Based on comparing High Pay, Middle Pay, and Low Pay jobs, the state's regions were found to coalesce into seven categories. *Extreme Hollowing-Out* describes those regions with large gains in both High Pay and Low Pay jobs and declines or small gains in Middle Pay jobs. *Hollowing-Out* regions follow the same pattern although not as pronounced. Regions in the *Bottoming-Up* category lost or had no gains in the High Pay and Middle Pay categories while adding jobs in the Low Pay category. The *Deflating* regions lost jobs in all three levels, while the *Expanding Middle and Bottom* region had its biggest gains in Middle Pay and Low Pay jobs. One region accomplished a *Reverse Hollowing-Out* by adding Middle Pay jobs at the same time as losing High Pay and Low Pay jobs, and several regions were *Gaining at the Top* by adding a substantial number of High Pay jobs relative to changes in Middle Pay and Low Pay jobs.

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The Turn

One of the frequently used ways to measure the degree of economic progress in any economy is per capita income. Simply measured, *per capita income* is the total personal income in an economy divided by the resident population in that economy.² An alternative – and some say preferred – measure is labor earnings (wages, salaries, proprietors' income) in an economy divided by the number of workers (full-time and part-time workers plus company owners) in the economy. This alternative measure is termed *per worker earnings*.

Often per capita income and per worker earnings for a state or local economy are compared to the same measures for the nation to form *relative per capita income* and *relative per worker earnings*. This is done by dividing the state or local measure by the comparable national measure.

North Carolina's relative per capita income rose throughout most of the 20th century. In 1930 the measure stood at 0.46; in 1940 it was 0.54; in 1950 and 1960 the measure had risen to 0.72; and in 1970 relative per capita income was 0.81³. These improvements reflected the long term economic changes in the state in first moving from a relatively low-skilled agrarian economy to a skilled manufacturing economy and then to an economy with a mix of skilled manufacturing and high-skilled professional jobs.

Recent trends in North Carolina's relative per capita income are shown in Figure 1. Here it can be seen that the state's progress as measured by relative per capita income has first stalled and then reversed. In other words, North Carolina has experienced a "U-turn" in relative per capita income. The state's relative per capita income peaked in 1997 at 0.93 but has since fallen on trend, reaching 0.85 in 2016. The decline has continued past the Great Recession.⁴

Recent trends in North Carolina's relative per worker earnings are depicted in Figure 2.⁵ Although not as dramatic as for relative per capita income, there is still a decline in the measure since 2008 when the state's relative per worker earnings reached 0.96. In 2015 the value was 0.88.⁶

² Personal income is income from all sources, including income from wages, salaries, investment returns, and transfer payments to individuals.

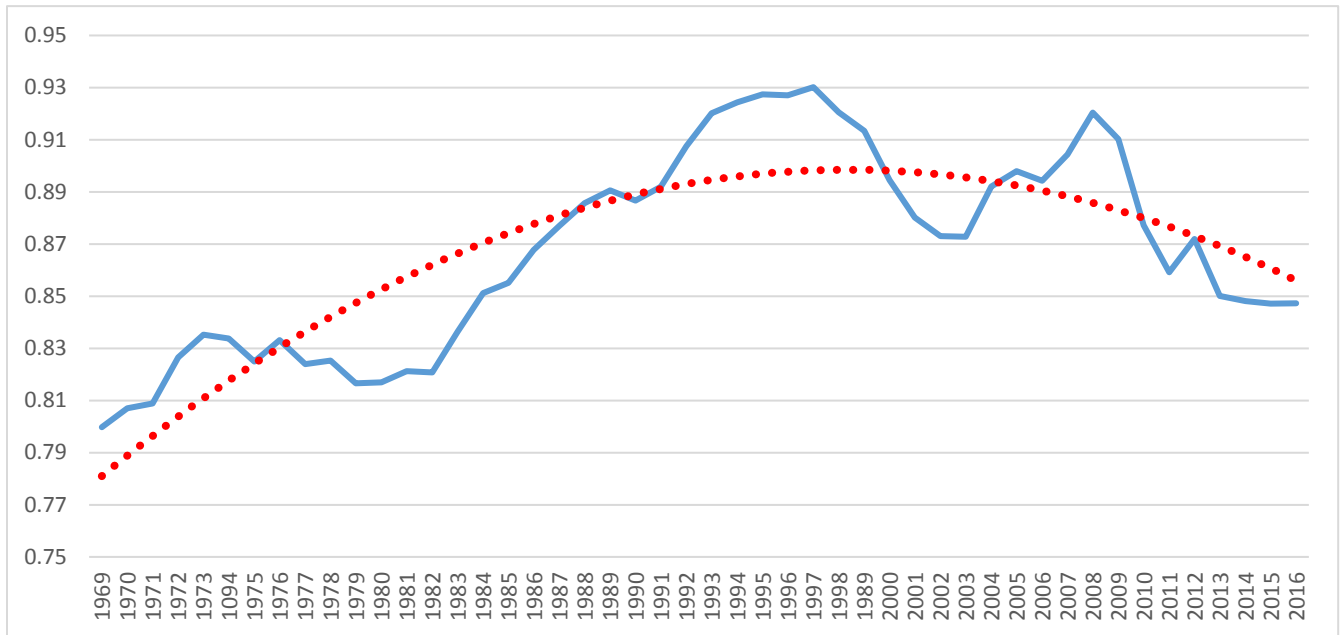
³ After multiplying by 100, the measures give the percentage of North Carolina's per capita income of national per capita income. So, for example, North Carolina's 1970 per capita income was 81% of the national per capita income. The relative measures do not account for potential differences in the purchasing power of dollars between North Carolina and the nation. Recent research shows North Carolina's cost-of-living is approximately 5% less than the national average cost-of-living (Missouri Economic Research and Information Center, *Cost of Living Data Series, First Quarter, 2017*, at www.missourieconomy.org/indicators/cost_of_living).

⁴ The Great Recession officially ended in June 2009 based on calibrations by the National Bureau of Economic Research. However, the job market did not begin improving until early 2010.

⁵ State data for earnings per worker are only available since 1969 and – at the time of the research – until 2015.

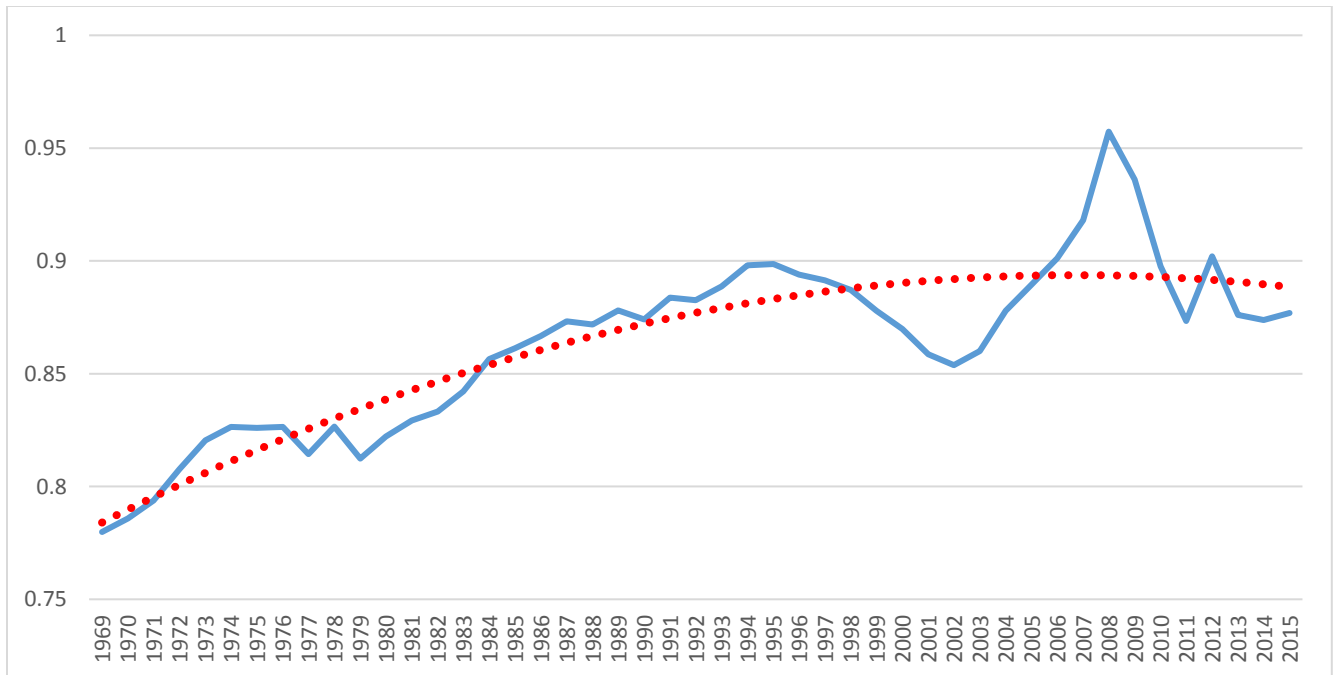
⁶ There could be numerous reasons for differences between North Carolina's relative per capita income and relative per worker earnings. One of the most prominent could be the lower labor force participation rate in the state compared to the nation, which runs almost 1 percentage point under the national rate. Data for relative per worker earnings in 2016 were not available at the time of the analysis.

Figure 1. North Carolina Relative per Capita Income, 1969-2016 (blue is actual data, red is trend line).



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis. Trend line uses a second-degree polynomial.

Figure 2. North Carolina Relative per Worker Earnings, 1969-2015 (blue is actual data, red is trend line).



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis. Trend line uses a second-degree polynomial.

Analysis

Behind the U-turns in both relative per capita income and relative per worker earnings are likely changes in North Carolina's employment composition compared to the nation. Changes in employment composition can be different for the state and the nation. Changes in employment composition can also be different for regions within the state.

To examine regional differences in employment composition in North Carolina, the U.S. Census Bureau's definitions of metropolitan, micropolitan, and rural regions are used (Figure 3). A metropolitan region (termed "metropolitan statistical area" in Figure 3) is a collection of economically and socially interrelated counties with an urban core (city) of 50,000 or more population. A micropolitan region (termed "micropolitan statistical area" in Figure 3) is a collection of economically and socially interrelated counties with an urban core (city) of at least 10,000 but less than 50,000 population. For purposes of this study, counties meeting neither of these conditions are termed rural, although it is important to note that some counties in both metropolitan and micropolitan regions can be "rural" in nature with low population densities. Where metropolitan areas cross state lines, only the North Carolina component counties are used in the analysis.

To investigate these changes in national, North Carolina, and North Carolina regional employment compositions, jobs are grouped into three categories based on average annual salaries. "High Pay" jobs are in the management, professional and technical services, financial services, and information economic sectors. "Middle Pay" jobs include positions in the construction, manufacturing, education, health care, wholesale trade, and transportation industries. "Low Pay" jobs are employment in natural resources, administrative services, leisure and hospitality, retail trade, and other services.⁷

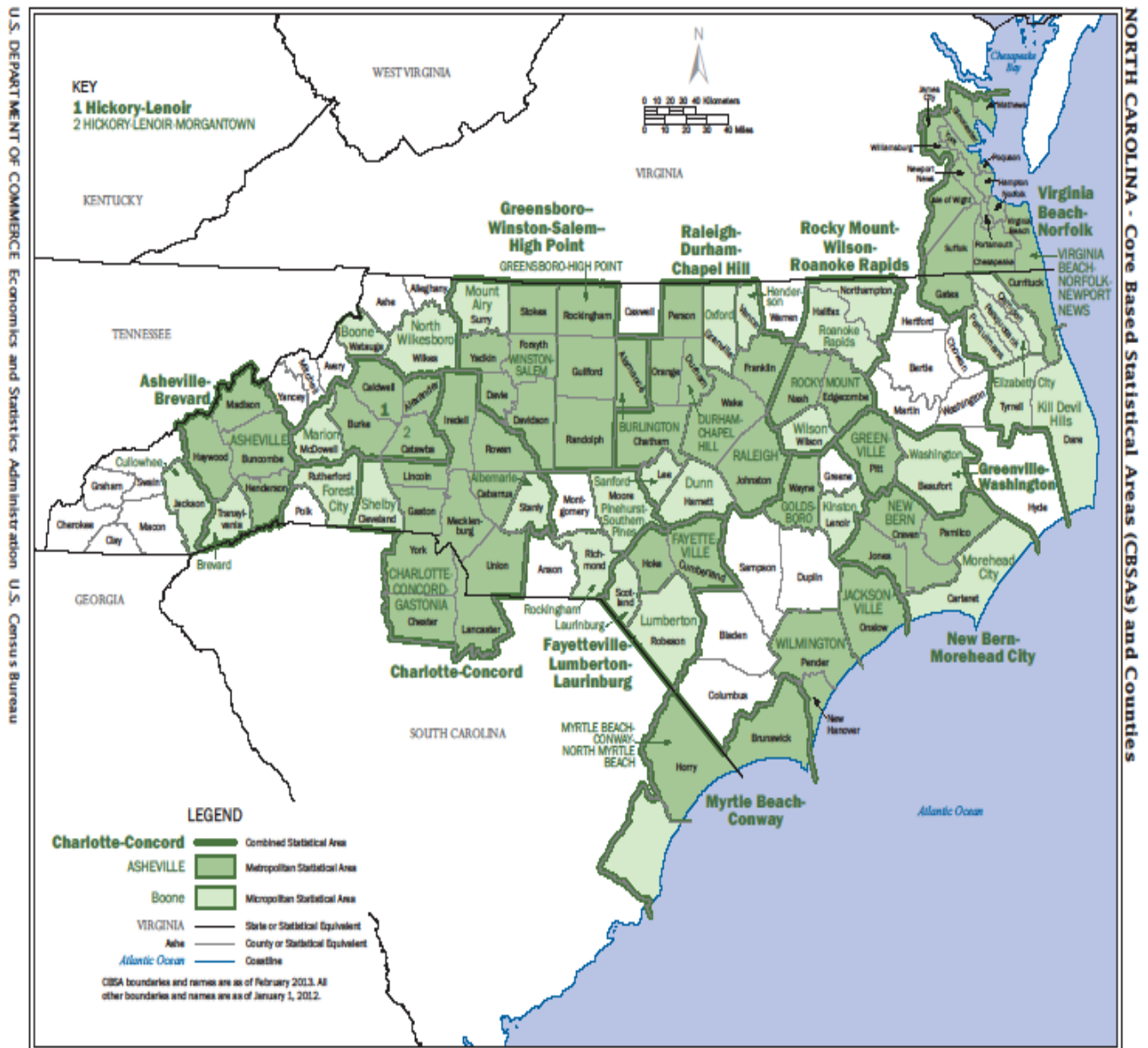
Table 1 shows the percentage change in the number of High Pay, Middle Pay, and Low Pay job categories for the nation, North Carolina, and the state's metropolitan, micropolitan, and rural regions between the years 2001 and 2015. The two years are the earliest and latest available at the time of the analysis.⁸ The year 2001 is close to the peak year in the trend paths (red dotted lines in Figures 1 and 2) for both relative per capita income and relative per worker earnings.

Comparing the first two rows for the U.S. and North Carolina reveals why the U-turn has occurred in the state. Although North Carolina had a gain in High Pay jobs over three times greater than in the nation, the state's gain in Low Pay jobs was almost twice as great as in the nation, and – perhaps most importantly – the state lost over 5% of its Middle Pay jobs while the nation was adding almost 6% to Middle Pay jobs. In aggregate, these changes were enough to create the U-turn in North Carolina's per capita income and per worker earnings relative to the nation.

⁷ The average annual salaries in High Pay jobs range between \$77,000 and \$104,000; in Middle Pay jobs they span \$45,000 to \$69,000; and in Low Pay jobs the range is from \$18,000 to \$35,000. All average salaries are for North Carolina for 2015 and are from the U.S. Bureau of Labor Statistics.

⁸ Data are from the Quarterly Census of Employment and Wages of the U.S. Bureau of Labor Statistics.

Figure 3. North Carolina Census Regions.



Source: U.S Bureau of the Census.

Table 1. Trends in Relative per Worker Income and Labor Market Changes in North Carolina Regions.

Region	Type	High Pay Change	Middle Pay Change	Low Pay Change
U.S.	-	7.5%	5.9%	12.5%
North Carolina	-	25.2%	-5.2%	29.4%
Extreme Hollowing-Out				
Asheville	Metro	31.9%	2.7%	24.5%
Charlotte	Metro	39.0%	1.8%	43.6%
Wilmington	Metro	45.5%	5.8%	31.7%
Winston-Salem	Metro	15.6%	-11.6%	17.7%
Albemarle	Micro	22.2%	-22.7%	23.5%
Kill Devil Hills	Micro	25.0%	-2.3%	14.8%
West	Rural	26.5%	-17.4%	15.8%
Hollowing-Out				
Boone	Metro	10.5%	-6.0%	7.9%
Brunswick	Metro	16.0%	7.5%	61.5%
Durham	Metro	21.6%	13.7%	18.4%
Greenville	Metro	16.7%	-10.1%	8.0%
Fayetteville	Metro	2.0%	-3.4%	17.6%
Hickory	Metro	4.4%	-30.5%	2.0%
Jacksonville	Metro	30.0%	6.2%	32.7%
Raleigh	Metro	40.5%	27.1%	95.3%
Brevard	Micro	16.7%	-26.9%	3.2%
Elizabeth City	Micro	27.3%	-2.4%	9.5%
Mt. Airy	Micro	25.0%	-37.2%	11.4%
Pinehurst	Micro	33.3%	-2.0%	10.1%
Wilson	Micro	5.1%	-11.1%	2.0%
Bottoming-Up				
Burlington	Metro	-47.9%	-14.2%	15.3%
Greensboro	Metro	-3.1%	-10.8%	14.1%
New Bern	Metro	-6.1%	-4.4%	15.8%
Cullowhee	Micro	-12.5%	-22.9%	8.7%
Dunn	Micro	-5.3%	-8.9%	44.6%
Lumberton	Micro	-4.8%	-5.0%	14.9%
Marion	Micro	0.0%	-15.4%	48.4%
Morehead City	Micro	-5.0%	-5.0%	11.5%
Oxford	Micro	-20.0%	-4.2%	41.4%
Rockingham	Micro	-40.0%	-27.3%	2.6%
Sanford	Micro	-20.0%	-17.3%	14.7%
Shelby	Micro	-15.8%	-11.7%	10.5%
Washington	Micro	-8.3%	-19.6%	14.3%
Mountain	Rural	0.0%	-31.0%	11.5%
Northeast	Rural	-16.7%	-14.5%	1.0%
Piedmont	Rural	0.0%	-25.2%	1.8%
Deflating				
Rocky Mount	Metro	-6.3%	-22.6%	-4.1%
Laurinburg	Micro	-37.5%	-44.6%	-26.9%
North Wilkesboro	Micro	-26.2%	-24.6%	-12.1%
Roanoke Rapids	Micro	-16.7%	-4.3%	-7.4%

Table 1 continued.

Region	Type	High Pay Change	Middle Pay Change	Low Pay Change
Expanding Middle and Bottom				
Currituck-Gates	Metro	33.3%	38.1%	60.9%
Reverse Hollowing-Out				
Kinston	Micro	-20.0%	4.8%	-8.9%
Gaining at the Top				
Forest City	Micro	54.5%	-44.6%	3.6%
Goldsboro	Micro	11.1%	-6.6%	-5.0%
Henderson	Micro	62.5%	-19.1%	-26.2%
Downeast	Rural	16.2%	-6.9%	-2.8%

The same changes can be observed adjusting for the differences in total job growth in the nation (7.6% aggregate job growth) and North Carolina (10.5% aggregate job growth) over the 2001-2015 period. Per 1% aggregate job growth, the nation added 1 High Pay job but North Carolina added 2.4. However, per 1% aggregate job growth, the nation added 0.8 Middle Pay jobs while North Carolina lost 0.5 Middle Pay jobs, and the nation added 1.6 Low Pay jobs compared to North Carolina adding 2.8 Low Pay jobs.

The remainder of Table 1 shows changes in High, Middle, and Low Pay jobs in North Carolina's regions, with the regions categorized by similarities in those changes. The first category, *Extreme Hollowing-Out*, includes regions with higher-than-the-nation percentage point gains in both High Pay and Low Pay jobs and a reduction or smaller-than-the-nation gain in Middle Pay jobs. "Hollowing-out" refers to the two ends of the pay distribution (High Pay and Low Pay) increasing while the middle of the pay distribution (Middle Pay) contracts or expands slightly.⁹ For regions in the category, "hollowing-out" has occurred at a significant pace. Interestingly, Charlotte, one of the nation's fastest growing regions, is in this category.

The second category – termed *Hollowing-Out* – is also regions that have had their biggest gains in High Pay and Low Pay jobs and their smallest gains – or losses - in Middle Pay jobs. However, compared to the first category, their changes have not been as extreme. Note in this category the large gains in High Pay and Middle Pay jobs in the Raleigh region – also one of the nation's fastest growing – but also the over 90% gain in Low Pay jobs.

The third category (*Bottoming-Up*) is regions that have lost or had no gain in High Pay and Middle Pay jobs. Their entire gains have been in Low Pay jobs.

Regions in the fourth category – *Deflating* – lost jobs in all three pay categories during the 2001-2015 period. The region in the fifth category – *Expanding Middle and Bottom* – had increases in all three pay classifications, but with the largest gains in the Middle Pay and Low Pay groups. The one region in the sixth category had a gain in Middle Pay jobs combined with

⁹ For both national and international perspectives on hollowing-out, see Ali Alich, "Hollowing Out", *Finance and Development*, International Monetary Fund, December 2016, vol. 53, no. 4.

losses in both High Pay and Low Pay jobs – hence the category is termed *Reverse Hollowing-Out*.

The regions in the seventh category – *Gaining at the Top* – are unusual in having had gains in High Pay jobs, losses in Middle Pay jobs, and losses or a very small gain (in the case of Forest City) in Low Pay jobs.

Figure 4 displays North Carolina’s counties clustered into the seven categories. Most of the *Extreme Hollowing-Out* counties are in the mountain and western piedmont sections of the state, whereas a greater number of the *Hollowing-Out* counties are in the eastern piedmont and coastal plain sections of the state. One explanation for this pattern is the stronger importance of the state’s textile and apparel manufacturing facilities in the mountain and western piedmont areas. Job losses in textile and apparel manufacturing have been large during recent decades and have been a major contributor to middle-paying manufacturing job losses. Research shows that displaced textile and apparel workers have moved to lower paying jobs.¹⁰

There are clusters of the *Bottoming-Up* counties in the mountains, piedmont, and coastal plains geographic areas of the state. However, most of the counties in these clusters are outside of state’s major metropolitan areas (Guilford County, location of Greensboro, is an exception), which suggest an issue – in particular – of keeping High Pay jobs in these counties.

The majority of *Deflating* counties are in a grouping in the northeastern part of the state. They include the Rocky Mount region and the Roanoke Rapids region north of Rocky Mount. This region has been hard hit by declines in both the textile/apparel and tobacco industries. Wilkes County in the northwest and Scotland County in the south-central also have suffered from major job losses in the textile industry.

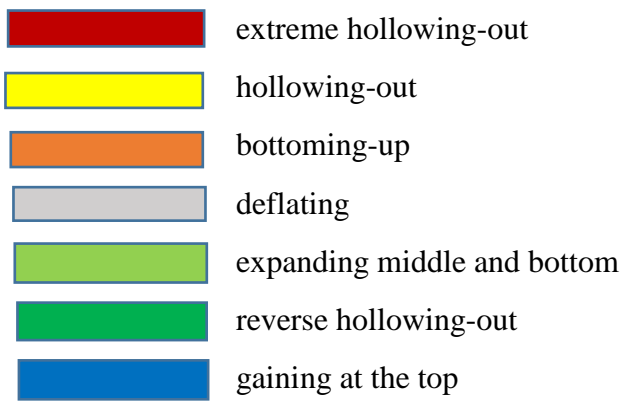
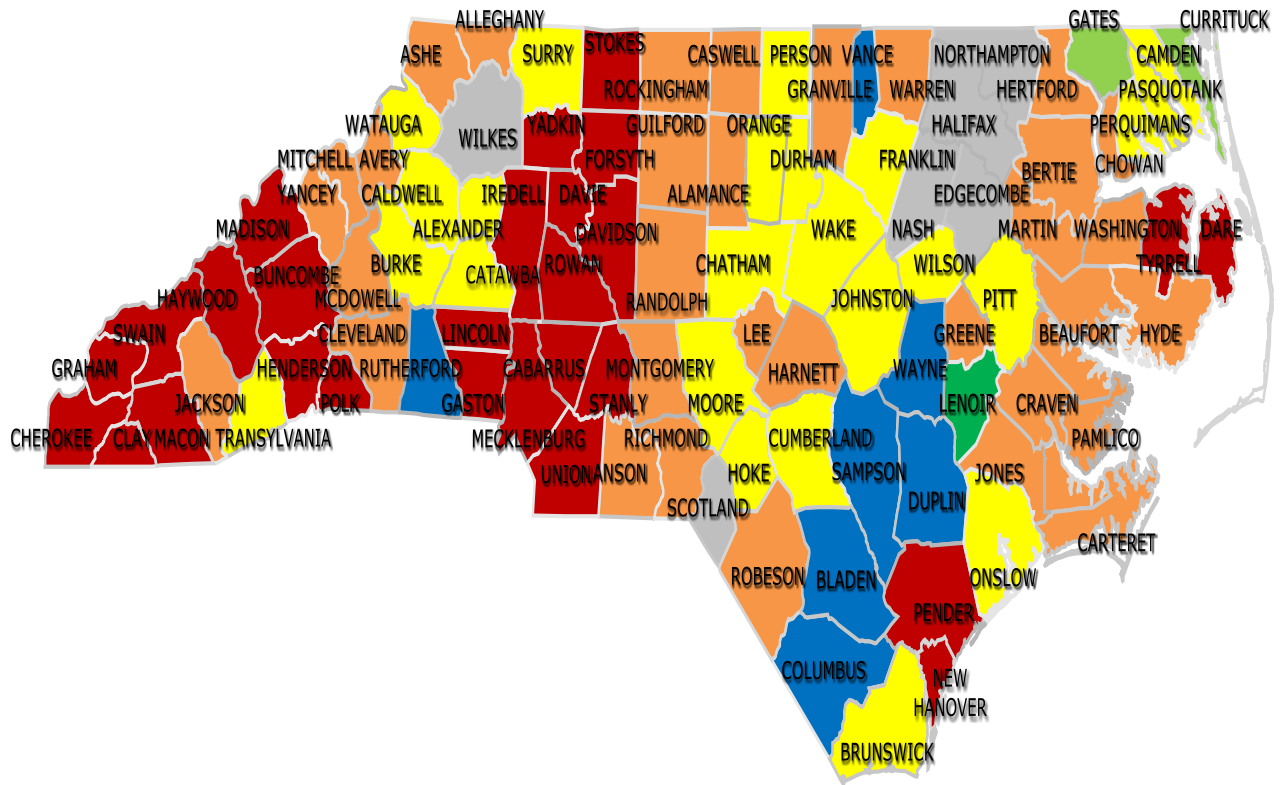
The *Expanding Middle and Bottom* category is composed of counties in the far northeastern section of the state that are linked to the Virginia Beach-Norfolk metropolitan region.

The geographic location of the final two categories, *Reverse Hollowing-Out* and the *Gaining at the Top*, is perhaps the most interesting. Kinston (located in the southeast county of Lenoir) is the one region in the *Reverse Hollowing-Out* category. The *Gaining at the Top* category includes one region in the western part of the state (Forest City, comprised of Rutherford County), one in the northern piedmont area north of Raleigh (Henderson, in Vance County), but most of the category is in the state’s Downeast rural region (Bladen, Columbus, Duplin, and Sampson Counties) plus Goldsboro (Wayne County).

Since the *Reverse Hollowing-Out* and *Gaining at the Top* categories are so against the trends of the other categories, a closer look at the changes within the categories’ regions is warranted.

¹⁰ United States Dept. of Agriculture, Economic Research Service, “U.S. Textile and Apparel Industries and Rural America,” February 16, 2017, at <https://www.ers.usda.gov/topics/crop/cotton-wool/background/us-textile-and-apparel-industries-and-rural-america-asp>.

Figure 4. Location of Categories of Labor Market Changes in North Carolina, 2001-2015.



Kinston's *Reverse Hollowing-Out* has been due to a jump in food manufacturing jobs. For the *Gaining at the Top* regions, the High Pay gains in Forest City resulted from the location of a Facebook data center there, which brought a substantial increase in higher-paying information sector jobs to the region. The Henderson region experienced a large (168%) increase in professional and technical jobs, likely servicing the development of second homes around Kerr Lake. A more than doubling of professional and technical jobs was behind the improvement in the Downeast region, and professional/technical and management job growth led the changes in Goldsboro. However, it should be noted that even after their gains in High-Pay jobs, the percentage of High-Pay jobs in each of the regions was under the percentage for the state in 2015.

Conclusion

The U-turn in the state's relative per capita income and relative per worker earnings during the 21st century can be easily explained. While, on a percentage basis, the state has added more higher-paying jobs than the nation, North Carolina has also added more lower-paying jobs and has lost – rather than gained like the nation – middle-paying jobs. The combination of these changes has been enough to lower North Carolina's per capita income and per worker earnings relative to the nation between 2001 and 2015. As a shortcut, it can be said North Carolina's labor market has “hollowing-out” more than the national labor market.

Yet this hollowing-out has not occurred to the same degree in all of the state's regions, and in some regions it has not occurred at all. This finding reconfirms something what is well-known about the recent economics of the state. While a statewide economic pattern can be identified, there can be – and indeed are – significant differences in the pattern among the state's regions. Some regions have bucked the statewide trend and gained jobs mostly at the top or the middle of the pay scale, while other regions have lost jobs in all pay categories or in the middle and bottom pay scales.

Many of these trends are a result of two factors. First, North Carolina's traditional concentration of both production and employment in the manufacturing sector, a major provider of middle-paying jobs, has declined. As employment has been downsized in this sector – particularly in the last two decades – many regions have experienced major losses of middle-paying jobs.

The second factor is the rapid growth of higher-paying employment, mainly in the state's large urban centers and focused around universities and evolving technology, financial, and science-based firms. Although this trend has been positive for the state's income distribution, it has also attracted complementary lower-paying service sector employment. Usually, the percentage gain in the lower-paying jobs in these regions has been greater than the percentage gain in higher-paying jobs.

Whether the trends in North Carolina's income relative to the nation will continue or abate depends on future labor market trends. Most economists expect manufacturing to continue automating, and many expect automation to expand to other middle-paying occupations in construction, wholesaling, and transportation. If this occurs, then middle-paying positions will continue their relative decline. However, automation is also expected to make inroads in several

clerical, service, and retailing occupations that are typically low-paying. This may cause the job distribution to shift to the top with relative losses in both middle-paying and lower-paying occupations. Yet, this is not necessarily good news if not enough higher-paying jobs are created to absorb the job losses among middle and lower-paying occupations, or if the training of individuals for the newly created jobs is inadequate.¹¹

The expectation is that North Carolina's job distribution will continue to shift in a way to present on-going challenges for the state's labor market and educational and training institutions.

¹¹ For speculation on future job trends in North Carolina, see Michael L. Walden, *North Carolina Beyond the Connected Age: The Tar Heel State in 2050*, The University of North Carolina Press, forthcoming, October 2017.