Employment Equity in Southern States: Detailed Methodology

Prepared by PolicyLink and the USC Program for Environmental and Regional Equity
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Unless otherwise noted, data and analyses presented in the five briefs on employment equity in the South (Georgia, Alabama, Louisiana, Mississippi, and North Carolina) are the product of PolicyLink and the USC Program for Environmental and Regional Equity (PERE). Aside from the full-employment analysis (described in more detail below), these analyses primarily use data from the 2015 5-year American Community Survey (ACS) microdata from the Integrated Public Use Microdata Series (IPUMS).[1]

General Notes

Race/ethnicity
Unless otherwise noted, race/ethnicity is categorized using six mutually exclusive groups, based on individual responses to questions about race and Hispanic origin in the census survey, as follows: non-Hispanic White, non-Hispanic Black, Latino, non-Hispanic Asian or Pacific Islander, non-Hispanic Native American, and non-Hispanic Other or multiracial. "People of color" refers to all people who do not identify solely as non-Hispanic White.

Full-time workers
Full-time workers referenced in these briefs are persons who reported working at least 50 weeks and 35 hours per week during the year prior to the survey in which they were included.

Dollar values
Dollar values are reported in 2015 dollars, except those pertaining to the results of the "full employment for all" analysis outlined below, which are in 2016 dollars.

Civilian noninstitutional population
The civilian noninstitutional population, for which labor force statistics are reported in these briefs, refers to all persons not employed in the armed forces and not living in group quarters. Group quarters include institutions and other group-living arrangements that are owned or managed by an entity or organization providing housing and/or other services for the residents (e.g., dormitories and prisons).

Full Employment for All

The full-employment-for-all analysis in these briefs primarily uses the 2015 IPUMS 5-Year ACS microdata and pooled monthly Current Population Survey (CPS) data for 2011-2015 and 2016, downloaded from the National Bureau of Economic Research, to estimate the economic impacts of achieving full employment for all in 2016, as measured by unemployment and labor force participation rates for the population ages 16 or older. Estimates were generated for Alabama, Georgia, Louisiana, Mississippi, North Carolina, and the regions in these states that are among the 150 largest metropolitan statistical areas in the United States (based on 2010 population and using the December 2003 Metropolitan Area definitions from the Office of Management and Budget), which are as follows:

- Alabama: Birmingham-Hoover, AL; Huntsville, AL; Mobile, AL; Montgomery, AL
- Georgia: Atlanta-Sandy Springs-Marietta, GA; Augusta-Richmond County, GA-SC; Savannah, GA
- Louisiana: Baton Rouge, LA; New Orleans-Metairie-Kenner, LA; Shreveport-Bossier City, LA
- Mississippi: Jackson, MS
- North Carolina: Charlotte-Gastonia-Concord, NC-SC; Durham, NC; Fayetteville, NC; Greensboro-High Point, NC; Hickory-Lenoir-Morganton, NC; Raleigh-Cary, NC; Winston-Salem, NC.

While full employment generally refers to an unemployment rate of somewhere between 4 percent and 5.5 percent for the labor force as a whole, full employment *for all* specifies that every race/ethnicity and gender group reaches full employment.

Economists typically characterize the economy in the year 2000 as a full-employment economy because the unemployment rate reached 4 percent for the first time since 1970. Despite having reached "full employment" in 2000, the United States has never achieved full employment for all. While Black workers experienced employment gains and the Black/White gap in employment began to narrow during the economic prosperity of the late 1990s, Black unemployment remained twice as high as White unemployment (7.6 percent compared with 3.5 percent) in 2000.

For this analysis, we created a "full employment for all" economic scenario for the year 2016 using unemployment and labor force participation benchmarks based on the full-employment economy of the year 2000, with labor force participation rates adjusted downward to reflect the aging of the population that has occurred since then. These benchmarks included an unemployment rate of no more than 4.0 percent and labor force participation rates of at least 71 percent for men and 57 percent for women, with benchmarks adjusted for age to reflect the different age structure of each racial/ethnic and gender group. For example, young workers have consistently higher unemployment rates; therefore, groups with higher shares of young workers have higher unemployment rates under the full-employment scenario.

The rates of unemployment and labor force participation that we defined as consistent with a full-employment economy were assigned to each of 12 groups defined by race/ethnicity and gender to estimate gains in the number of workers and subsequent gains in aggregate income and other measures including GDP, taxes, and the number of people lifted out of poverty.

It is important to note that the full-employment scenario did not result in lower employment rates for any group. If a group's age-specific rate of labor force participation or employment already surpassed the relevant age-adjusted benchmark, it remained unchanged in the full-employment scenario.

Detailed Methodology

Estimating the 2016 Baseline Scenario

The full-employment-for-all analysis relies primarily on ACS microdata files from IPUMS for the years 2011-2015. A five-year sample was used to achieve a sufficient sample size to generate reliable estimates for states and metropolitan regions (and for particular groups defined by race/ethnicity and gender within each geography). To most accurately state the size of the gains, we first adjusted unemployment and labor force participation rates by race/ethnicity, gender, and age (using 14 age groups) in each state and metropolitan region to reflect changes seen nationally between the 2011-2015 average and 2016, according to data from the CPS.

This was necessary because the 2011-2015 pooled ACS dataset — which has a large enough sample size to accurately estimate rates of labor force participation and unemployment by race/ethnicity, gender, and age within states and regions — is not very current, and we know that unemployment has generally fallen and labor force participation has generally risen in subsequent years. The CPS is more current and provides information on how labor force participation and unemployment by race/ethnicity, gender, and age have changed in recent years, but its much smaller sample size means that trends it reveals are only accurate at the national level. Even though the national trends are bound to vary across states and regions, without reliable data on actual shifts at the regional level, we determined that making a crude adjustment based on national data was better than no adjustment — particularly to avoid overstating the regional gains.

In order to adjust the rates of labor force participation and employment across individuals included in the 2011-2015 ACS microdata to 2016 levels, we calculated the number of persons who would join or leave the labor force and employment by race/ethnicity, gender, and age group, and made random assignments to move individuals in/out of the labor force and employment in order to achieve the estimated 2016 rates for each group.

Estimating earned income values for 2016 in the 2011-2015 ACS microdata was a bit more complicated. It is important to note that income in the ACS is derived from the year prior to the survey whereas labor force status is based on the time at which the survey was conducted. For the few cases that were randomly assigned from being employed to unemployed, estimated 2016 earned income was set to zero; for those that were randomly assigned from being unemployed to employed, estimated 2016 income was set to the sum of the individual's earned income as reported in the 2011-2015 ACS microdata (with all values adjusted for inflation to reflect 2016 dollars) and the average value for their group defined by race/ethnicity, gender, and age. Once 2016 earned income was estimated, it was used to estimate total personal, family, and household income in 2016 by combining it with the original values of all other income sources found in the 2011-2015 ACS microdata (also adjusted for inflation to reflect 2016 dollars).

Estimating the Full-Employment-for-All Scenario

With 2016 baseline rates of unemployment and labor force participation by race/ethnicity, gender, and age group in place, we then estimated gains in employment and earned income in moving from the 2016 baseline to a full-employment economy as defined by meeting particular targets, or benchmarks, for employment and labor force participation rates based on an examination of historical data. While the concept of full employment has traditionally focused on the unemployment rate, we note that as unemployment falls, labor force participation tends to rise as discouraged workers re-enter the labor force. Thus, we incorporate a rise in labor force participation into the definition of full employment. We based the benchmarks on the year 2000, which is arguably the last time the nation experienced a full-employment economy. Using labor force statistics from 2000, we assume an unemployment rate of 4.0 percent (or an employment rate of 96.0 percent), and labor force participation rates of 71.4 percent for males and 57.1 percent for females. Note that because labor force participation varies by gender, both currently and historically, we assume that this pattern holds under the full-employment-for-all scenario — hence the separate target labor force participation rates for males and females. Furthermore, because the population in 2016 was older than that in 2000, we age-adjusted these rates as well by weighting the 2000 rates for each age group by their 2016 population and recalculating the total rates for males and females. This is why our labor force participation benchmarks for males and females are slightly lower than the actual rates observed in 2000 (71.4 and 57.1 percent versus 74.8 and 59.9 percent, respectively).

Employment and labor force participation rates also vary substantially by age, and we assume these patterns hold under the full-employment-for-all scenario as well. In other words, rather than assuming that workers of all ages reach the full-employment benchmarks noted above (which reflect averages for the population ages 16 or older), we calculated and applied age-adjusted benchmarks for 14 different age groups. To calculate age-adjusted benchmarks, we first computed the ratios of the employment and labor force participation benchmarks under full employment for all noted above to their corresponding national average levels, estimated for 2016 using the 2011-2015 ACS microdata (for the population ages 16 or older). We then multiplied this ratio by the estimated 2016 employment and labor force participation rates for each of the 14 different age groups to get age-adjusted benchmarks. Because age distributions vary by race/ethnicity, the final rates we estimated for employment and labor force participation under full employment for all also vary by race/ethnicity (and gender, to a lesser degree) and will not match our benchmarks exactly.

With age-specific benchmarks in place, the next step was to calculate the number of new labor force participants and newly employed under the full-employment-for-all scenario by race/ethnicity, gender, and age group compared with the 2016 baseline estimates. We then implemented the increases in the 2011-2015 ACS microdata by making random assignments to move individuals into the labor force and employment until the benchmarks were achieved for each group. It is important to note that in instances where a group's estimated age-specific rate of labor force participation or employment for 2016 already surpassed the relevant age-adjusted benchmark, it was left unchanged in the full-employment-for-all scenario — that is, nobody was projected to lose employment when moving from the 2016 baseline estimates to full employment.

Similar to the approach we followed in making our 2016 baseline estimates, earned income under the 2016 full-employment-for-all scenario was estimated for those who were randomly moved from being

unemployed to employed by adding the average earned income for their particular group (defined by race/ethnicity, gender, and age) to their actual earned income as reported in the 2011-2015 ACS microdata (with all values adjusted for inflation to reflect 2016 dollars). Earned income derived under the full-employment-for-all scenario was then used to estimate total personal, family, and household income in 2016 by combining it with the original values of all other income sources found in the 2011-2015 ACS microdata. The resulting income values were then compared with the 2016 baseline values to estimate the increase in aggregate personal, family, and household income under the full-employment-for-all scenario.

Estimating Gains in Tax Revenues, Poverty, and GDP

Increased tax revenues at the federal, state, and local levels were estimated by applying tax rates for different sections of the income distribution to estimated family incomes under the 2016 baseline scenario and the full-employment-for-all scenario, calculating tax revenues under each scenario, and determining the difference. The federal tax rates were taken from *Who Pays Taxes in America in 2015?* by Citizens for Tax Justice, which reports rates for eight percentile groupings: one group for each of the bottom four quintiles, a group for the 81st through 90th percentile, a group for the 91st through 95th percentile, a group for the 96th through 99th percentile, and a group for the top 1 percent of taxpayers. To estimate federal tax revenues under each scenario, we organized families nationally into the same eight percentile groups using the appropriate measure of family income and multiplied the corresponding tax rates by family income. The state and local rates were drawn from Appendix A of a report by the Institute on Taxation and Economic Policy, *Who Pays? A Distributional Analysis of the Tax Systems in All 50 States*. For all 50 states and the District of Columbia, this report lists combined state and local taxes as a share of family income for seven percentile groupings: one group for each of the bottom four quintiles, a group for the 81st through 95th percentile, a group for the 96th through 99th percentile, and a group for the top one percent of taxpayers. To estimate combined state and local tax revenues under each scenario, we organized the families within each state into the same seven percentile groups using the appropriate measure of family income and multiplied the corresponding tax rates by family income. It is important to note that in each report, the income measures used to group taxpayers into percentiles and to derive the tax rate (taxes as a share of income) include both gross income that is subject to taxes and gross income that is exempt, making it comparable to family income estimated using the ACS microdata.

Increased Social Security and Medicare contributions were calculated by applying standard contribution rates to estimated increases in earned income under the full-employment-for-all scenario. The IRS reports that the current Social Security tax rate is 12.4 percent and the Medicare tax rate is 2.9 percent (including contributions from both employers and employees).

To estimate the number of people who would be brought out of poverty under the full-employment-for-all scenario, we derived the poverty threshold for each family in the 2011-2015 ACS microdata by dividing total family income by the *POVERTY* variable included in the IPUMS version of the ACS microdata that was used for the analysis (and then multiplying by 100). The POVERTY variable expresses total family income as a percentage of the federal poverty threshold for each individual family (which depends on family size and composition). Using the poverty thresholds for each family, we estimated the number of people living in poverty under both the 2016 baseline and full-employment-for-all scenarios and the calculated the difference (i.e., the number of people lifted out of poverty under full

employment for all). For families with no income reported in the 2011-2015 ACS microdata, we were unable to derive a poverty threshold. With no threshold for comparison to the increase in income under full employment for all, it was simply assumed that nobody from such families was lifted out of poverty under the full-employment-for-all scenario even if a family member gained employment. Therefore, our estimates of the number lifted out poverty under full employment for all may be slightly understated.

Finally, to estimate GDP gains under the full-employment-for-all scenario, we calculated the percentage increase in total (aggregate) personal income between the 2016 baseline and full-employment-for-all scenarios, and assumed that GDP would rise by the same percentage. However, because 2016 GDP was not publicly available for metropolitan regions and states at the time of the analysis, we first had to estimate it for lower levels of geography. To do so, we adjusted an estimate of 2014 GDP for each region from the U.S. Bureau of Economic Analysis (BEA) upward to reflect real national GDP growth calculated using BEA data from 2014 and 2016 (annual averages). Therefore, the 2016 baseline estimates reported may differ from estimates reported elsewhere. The national GDP estimate in 2016 that is reported here may also differ from estimates reported elsewhere for other reasons: 1) national GDP reported here is equal to the sum of the GDP by state; 2) GDP by state excludes federal expenditures on personnel stationed abroad and on military structures and military equipment located abroad (except office equipment), while these are typically included in national GDP; and 3) GDP by state and national GDP have different revision schedules. It is worth noting that our estimates of the gains in GDP under the full-employment-for-all scenario are likely to be conservative, as they do not take into consideration the "multiplier effect" of rising income.

[1] Steven Ruggles, Katie Genadek, Ronald Goeken, Josiah Grover, and Matthew Sobek. Integrated Public Use Microdata Series: Version 7.0 [dataset]. Minneapolis: University of Minnesota, 2017. https://doi.org/10.18128/D010.V7.0.