Louisiana Distribution of Income – Lorenz Curve
(as measured by Federal Adjusted Gross Income, State Tax Year 2017)

An accompanying graph depicts the distribution of income in the state, as measured by federal adjusted gross income for tax year 2017. Income distribution is depicted here through a Lorenz Curve[1], a common tool for picturing the overall observed distribution of income relative to a theoretical absolute of perfectly equal income distribution. In this type of depiction the diagonal represents absolute or perfectly equal income distribution. All along the diagonal the cumulative percentage of tax returns[2] (measured along the horizontal axis) is exactly the same as the cumulative percentage of income[3] (measured along the vertical axis). The curved line is the observed cumulative distribution of income reflected in Louisiana tax returns for the 2017 tax year. All along a curved line that lies below the diagonal the cumulative percentage of income will be less than the cumulative percentage of tax returns. For example, 25% of returns would reflect 25% of the income if income were equally distributed. However, we actually observe that the lowest 25% of the returns reflect only about 4% of the income[4]. In the graph, this observed inequality of income distribution is described at various points along the curved line from the perspective of the bottom cumulative percentage of returns and the corresponding highest cumulative percentage of returns.

A similar graph is provided for the United States as a whole; for tax year 2016, the latest data available as of this writing. While difficult to see visually, the U.S. graph depicts a somewhat more unequal distribution of income than in Louisiana (federal adjusted gross income or tax return income). The two distributions can be readily compared by calculating the Gini coefficient[5] for each; the ratio of the area between the diagonal and observed curved line to the entire area beneath the diagonal. The Gini coefficient summarizes the entire Lorenz Curve into a single value. In effect, the graphs show that observed inequality of income distribution in the state is 56.23% of perfect income inequality, while the U.S. graph shows that observed inequality of income distribution in the nation is 59.15% of perfect income inequality[6]. Based on these depictions and calculations, Louisiana is similar to the nation as a whole in its distribution of income.[7]

A significant qualification to this analysis should be made here. The true degree of income inequality in the state and the nation is actually less than indicated here. Broader concepts of income and households used by specialists in the field result in actual Louisiana and U.S. level Gini coefficient estimates that are significantly lower than those calculated here; 0.482 for the U.S. in 2016 and 2017, and 0.499 and 0.494 for Louisiana in those same years[7]. Also noteworthy is the fact that in the Census analysis the Louisiana Gini coefficient is higher than the U.S. coefficient (0.499 & 0.494 vs 0.482), implying greater income inequality in the state that in the nation as a whole, while the opposite result occurs when considering the narrower tax data concepts. In that analysis the Louisiana Gini at 0.5623 is less than the U.S. Gini at 0.5915, implying less income inequality in the state than in the nation as a whole. While the different concepts of income and households utilized can generate opposing results with respect to the absolute positions of more or less income inequality, both analyses generate state level results close to national level results, and the Census analysis points out that Louisiana Gini is

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not statistically different from the U.S. Gini. Thus, while the tax data analysis generates results somewhat farther apart than the Census analysis[8], it seems likely that both analyses point out that Louisiana is largely similar to the nation as a whole with respect to overall income inequality.

[1] Developed by the American economist Max Otto Lorenz in 1905.

[2] Each tax return can be a proxy for a household, and the number of resident tax returns reflected in this analysis (1,746,229) is roughly the same as the total number of households in the state estimated by the U.S. Census Bureau by an annually updated five-year average for 2013-2017 of 1,737,645.

[3] The income concept employed here is federal adjusted gross income (FAGI). This concept is narrower than what would be employed by specialists in income distribution, but is readily available from the Legislative Fiscal Office personal income tax simulation model.

[4] The farther out to the right the curved line occurs the more unequal is the distribution of income. Perfectly unequal income distribution would be depicted by an observed line running straight along the bottom horizontal axis and straight up the right vertical axis. Only one tax return would have all the FAGI.

[5] Developed by the Italian statistician Corrado Gini in 1912.

[6] The farther out to the right the curved line occurs the closer to 1.0 is the Gini coefficient; the more the area between the diagonal and the observed curved line becomes the entire area under the diagonal; the more the observed line becomes a straight line along the bottom axis and up the right axis; the more the observed distribution approaches perfect income inequality.

[7] See a brief report, "Household Income 2017, American Community Survey Briefs, U.S. Census Bureau, September 2018 at https://www.census.gov/library/publications/2018/acs/acsbr17-01.html.

[8] The tax data analysis generates a Louisiana Gini coefficient that differs from the U.S. level Gini coefficient by about 5%, while the Census analysis difference is about 2.5% to 3.5%. In addition, the tax data analysis is a more casual analysis working with limited sets of data of different sizes. The Gini coefficient levels and differences generated by the utilized Louisiana and U.S. level tax data contains considerably fewer data observations than the Census analysis, and the Louisiana tax data has substantially more data observations within it than does the utilized U.S. level tax data.

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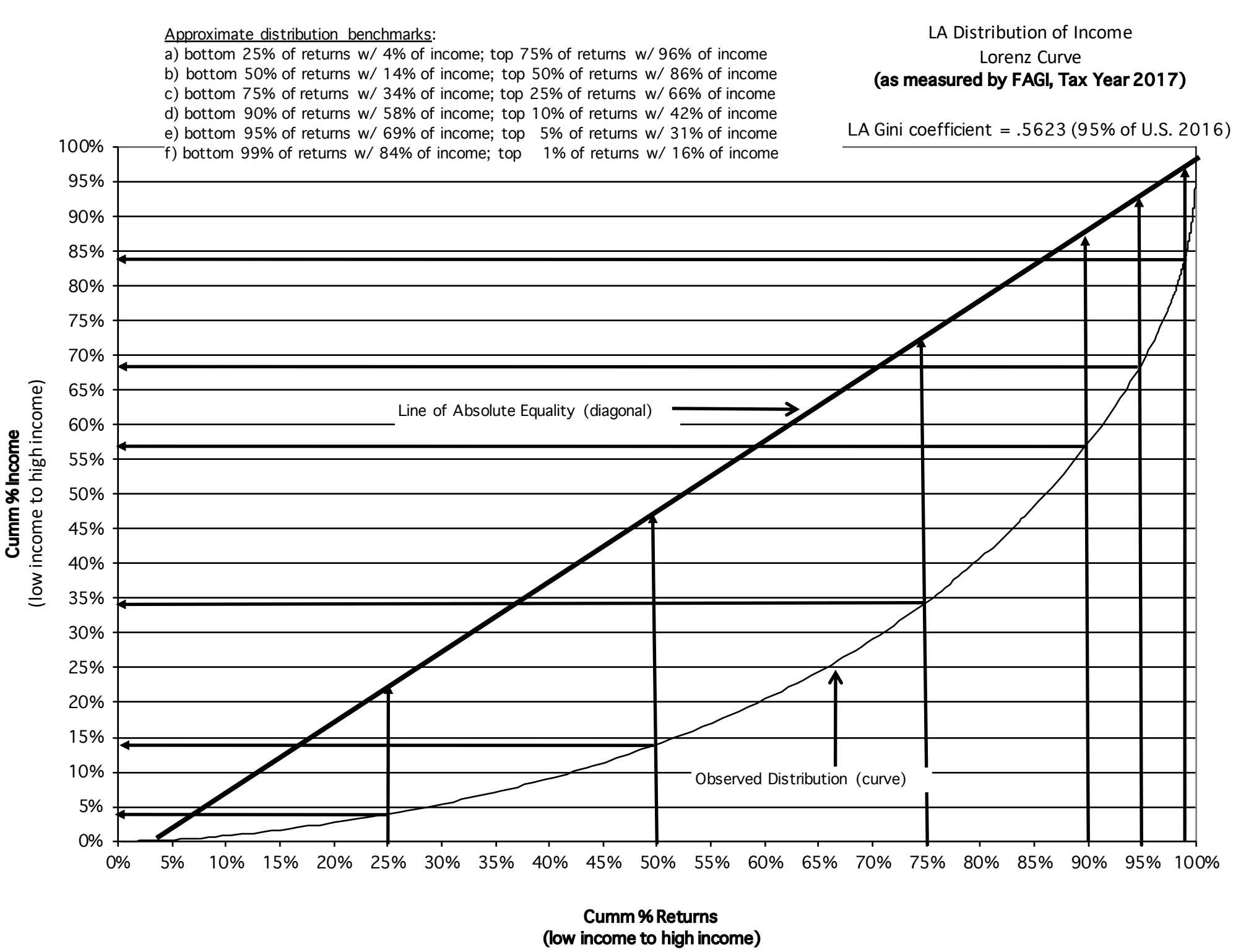
Approximate distribution benchmarks:
a) bottom 25% of returns w/ 4% of income; top 75% of returns w/ 96% of income
b) bottom 50% of returns w/ 14% of income; top 50% of returns w/ 86% of income
c) bottom 75% of returns w/ 34% of income; top 25% of returns w/ 66% of income
d) bottom 90% of returns w/ 58% of income; top 10% of returns w/ 42% of income
e) bottom 95% of returns w/ 69% of income; top 5% of returns w/ 31% of income
f) bottom 99% of returns w/ 84% of income; top 1% of returns w/ 16% of income
LA Distribution of Income
Lorenz Curve
(as measured by FAGI, Tax Year 2017)
LA Gini coefficient = .5623 (95% of U.S. 2016)
Line of Absolute Equality (diagonal)
Observed Distribution (curve)
Cumm % Income
(low income to high income)
Cumm % Returns
(low income to high income)
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
65%
70%
75%
80%
85%
90%
95%
100%

U.S. Distribution of Income
Lorenz Curve
(as measured by FAGI, Tax Year 2016)

Approximate distribution benchmarks:

a) bottom 25% of returns w/ 3% of income; top 75% of returns w/ 97% of income
b) bottom 50% of returns w/ 13% of income; top 50% of returns w/ 87% of income
c) bottom 75% of returns w/ 31% of income; top 25% of returns w/ 69% of income
d) bottom 90% of returns w/ 54% of income; top 10% of returns w/ 46% of income
e) bottom 95% of returns w/ 66% of income; top 5% of returns w/ 34% of income
f) bottom 99% of returns w/ 81% of income; top 1% of returns w/ 19% of income