Reassessing the Facts about Inequality, Poverty, and Redistribution

Technical Appendixes

Appendix A: Adjustments for Top 1 Percent of Income

Income data for the 99th percentile and above from Mark Price, Estelle Sommeiller, and Ellis Wazeter, 2016 require some adjustment to improve their comparability with the data from the Census Bureau. Their estimates are based on Internal Revenue Service (IRS) tax filings and include some sources of income that are not counted by the Census Bureau.

One of the biggest differences is that the IRS data include so-called pass-through business income from partnerships and S corporations. Unlike C corporations that pay only part, or even none, of their profits as dividends to shareholders who report the dividends as personal income, all the profits of S corporations and partnerships show up as personal income on the personal tax filings of their owners. S corporation profits that are invested in expansion or held for reserves and working capital are counted as personal income. Almost all this overstatement of income is in the top 1 percent, with the vast majority of it in the top 0.01 percent. The estimates in Table 1 have been adjusted to remove the pass-through effects in the IRS data. The adjustments are based on Faith Guvenen and Greg Kaplan, "Top Income Inequality in the 21st Century: Some Cautionary Notes," National Bureau of Economic Research Working Paper No. 23321, http://www.nber.org/papers/w23321.

Appendix B: Components of CBO Income Estimates

The Congressional Budget Office (CBO) provides the most comprehensive official effort to fill some gaps in the Census Bureau income data, although its work too is incomplete. CBO estimates are constructed as follows:

1. It uses "market income" as the starting point, with the following differences from the Census Bureau money income:

    a. It does not include as market income the few transfer payments that are in the Census total money income.

    b. It adds capital gains, employer-paid health insurance premiums, and payroll taxes. It also adds the share of corporate income taxes borne by workers, estimated at 25 percent of the total corporate tax.

    c. One can legitimately argue that capital gains are not really income, but rather the change in the present value of the future income stream from a capital asset. The CBO inclusion of capital gains, thus, assures that the income estimates at higher levels are, if anything, overstated.

2. Then the CBO sums up both cash and in-kind transfers reported by the survey respondents.

    a. The sum includes all the transfers that the Census Bureau applies.

    b. It also adds some of the major federal in-kind transfers that the Census Bureau excludes, most notably the SNAP (food stamp) program.

    c. It includes transfers associated with Medicaid and CHIP.

    d. Like Census, it does not include EITC as a transfer.

    e. The CBO still excludes many state and federal transfer payments.

3. Next, the CBO subtracts federal taxes

    a. It subtracts individual income taxes and payroll taxes.

    b. It also allocates shares of excise taxes and corporate taxes to the degree that they reduce individual income.

    c. It does not subtract a residual 7 percent of federal taxes.

    d. The CBO treats the EITC as a negative tax. This gives the same after-tax net income as one would get by treating the EITC as a transfer. But its method understates both the size of tax effects and the size of transfers.

> > e. The CBO does not include the effects of state and local taxes.
>
> 4. Finally, market income plus transfers minus taxes equals the net income after transfers and taxes, or spendable income.

Adding Medicare and CHIP is a definite improvement, but the CBO understates the value of these transfers by using a technical manipulation called the fungibility adjustment that reduces the dollar value that the taxpayers pay for indigent health care by about 30 percent. The argument for this adjustment is that if the government pays $5,000 for a household's health care, the care is worth less than that to the household because if it had received $5,000 in cash, it might have spent some of that money on goods or services other than health care.

Of course, at best this adjustment is only an educated guess. That same logic could be applied to food stamps and other programs too. From a policy perspective, this is actually an argument to eliminate all the differentiated indigent aid programs and provide just a single cash grant. For consistency, this method also should have been applied to the value of employer contributions to health insurance because the employee might do something different with the cash value.

The fungibility adjustment also ignores a significant offsetting factor. Medicaid fees paid to doctors and hospitals are set by government regulation and are substantially less than the market rates that everybody else pays. In fact, Medicaid pays less than the hospitals' actual cost. The net result is that the reported Medicaid payments are an understatement of the true value. The understatement is 10 percent compared with cost and 37 percent compared with the prices paid by privately insured and self-pay consumers.[1]

Even using the government payment without the fungibility adjustment would still understate the market value, not the other way around as the government supposes.

There are several other technical differences between the Census Bureau and CBO estimates, including the following: (a) Census sorts households into quintiles according to the official

measure of money income, whereas the CBO sorts them according to before-tax income in most tables and by market income in other cases. Market income is most appropriate for this inquiry into the effects of transfers and taxes on earned income. (b) CBO quintiles contain equal numbers of people, whereas the Census quintiles contain equal numbers of households. In this paper, data are on the CBO basis unless otherwise noted. (c) Because the CBO requires IRS data in addition to the underlying Census data, the most recent CBO data relate to 2013.

Appendix C: Redistribution through Social Security and Medicare

Table A1 contains four different measures of the relationship between Social Security (OASDI) taxes paid over a working life and Social Security benefits received during retirement. These measures are shown for each of four different working-life income streams that are typical of each of the lower four quintiles of earned income. Because Social Security taxes are collected only up to a set maximum earning level each year ($113,700 in 2013), earners in the top fifth will pay the same Social Security taxes and get the same results as shown here for the fourth quintile.

Table A1. Benefits for typical Social Security beneficiaries by earning quintile

	Average quintile during working life			
	Bottom	2nd	3rd	4th
Replacement of final five years (%)	104.1	74.4	50.5	28.0
Number of years before tax and interest are exhausted	6	8	11	19
Benefit/tax ratio	9.8	7.0	5.0	2.9
Return on annuity (%)	20.6	14.4	10.3	4.0

Sources: Calculation method for benefit from U.S. Department of Health and Human Services, *"Section 2," Old Age, Survivors, and Disability Insurance*. "Appendix E: Computing a Retired-Worker Benefit," *Annual Statistical Supplement to the Social Security Bulletin*, 2013. Calculations by author.

The calculations for Table A1 were based on representative earning amounts subject to Social Security taxes during a working life typical of each quintile. In addition to the taxes paid,

the calculations (except for the benefit/tax-ratio) included the interest imputed by the Treasury Department to Social Security balances. Then the regulatory 50-step process was applied to the earnings stream to compute the benefits. The following four statistics were calculated for each of these cases.[2]

- **Replacement of the final five years** calculates benefits paid as a percentage of workers' average annual OASDI-taxed earnings during their last five years of work. The low earners receive benefits that are slightly more than their taxed earnings. Second-quintile workers replace about three-quarters of their taxed earnings with Social Security. Those in the middle replace about half, and top earners replace only 28 percent of their OASDI-taxed earnings.

- **Year tax and interest exhausted** measures how long the OASDI taxes collected during working years plus the imputed interest would be able to continue paying the calculated benefit. Of course, in Social Security the payments do not stop. The money to pay them simply comes from payroll taxes paid by current workers and employers. The lowest earners would exhaust their paid-in capital in six years, while the taxes paid by those in the fourth quintile would continue benefits for 19 years—slightly longer than the average life expectancy for retirement at the federal full retirement age.

- **Benefit/tax ratio** is a simple measure of how much benefit is received, divided by the amount of OASDI tax paid. The lowest earners receive almost 10 times their tax payments, while those in the upper 40 percent get less than three times what they paid.[3]

- **Return on annuity** tells us what percentage of the beneficiaries' taxes plus imputed interest was returned to them each year after starting to draw benefits. Over the period in question, a conservative investment portfolio might have earned between 5 percent and 6 percent in return, so the top two quintiles earned less than they would have with conservative investments. But those from the middle down were making unrealistically high returns of between 10 percent and 20 percent because they were being paid from the taxes of other workers.

Almost half of Social Security beneficiaries have a "base income" level that requires them to pay federal income tax on their benefit. The base income adds otherwise tax-free municipal bonds and half of the Social Security benefit to ordinary taxable income. For persons in the fourth or fifth income quartile during most of their working years, benefits will be taxed as soon as those individuals earn more than $19,000 in other income during retirement. The proportion of the benefit taxed is graduated, up to a maximum of 85 percent.

Table A2 shows the effect of federal and state income taxation on the financial return on Social Security taxes. The first four lines are for cases free of federal income taxes because they have low base income. The remaining lines are for fourth-quintile earners earning $19,000 or more in non–Social Security income after retirement.

Table A2. Return on Social Security after federal and state income tax

OASI-taxes earning quintile	Non–Social Security retirement earnings ($)	Benefit/tax ratio	Return on Social Security annuity (%)
Lowest		9.8	20.6
2nd		7.0	14.4
3rd		5.0	10.3
4th	< 19,000	2.9	4.0
4th	19,100	2.6	2.6
	20,000	2.4	2.1
	32,000	2.1	0.7
	75,000	2.0	0.0
	172,000	1.8	−0.7
	392,000	1.6	−1.7

Source: Computed by author based on IRS and Social Security tables for female beneficiaries and a median state tax rate graduated from 1 percent to 4 percent across income levels for the 14 states that tax it.

The last six lines show metrics for after-tax Social Security benefit for cases with fourth-quintile benefits and illustrative levels of non–Social-Security income. The specific levels of other income were selected to reflect the different tax brackets of the income-tax law. The income levels shown are for all sources of income other than Social Security.

The three lower Social Security benefits also will be taxed if the beneficiaries have enough other income. Many middle-income earners have employer or union retirement plans and even savings that would easily cause degradation of their total after-tax Social Security benefits.

The Social Security formula gives low earners a benefit ratio that is about two times larger than that for a middle earner and more than three times larger than that for a worker in the top two quintiles. Including the effect of federal and state income taxes doubles the differential between the lower and upper income beneficiaries from a factor of three to a factor of six. For above-average beneficiaries, the taxation of benefits quickly diminishes their returns to almost nothing. If they have savings income or continue to work, their return on the annuity value of their Social Security will drop to zero at $75,000 of additional earnings, and above $75,000 their

return on Social Security will be a dead loss. They put in more than they get out, sort of like the last person to join a Ponzi scheme.

Medicare is often characterized as a health plan that seniors have purchased with payroll taxes during their working years and premiums they pay in retirement. In fact, the payroll taxes apply only for Part A, the hospitalization coverage. Parts B and D, medical and drug coverage, are paid for by current premiums charged to beneficiaries and by permanent appropriations from the general fund paid for by income and other taxes.

Redistribution features of Medicare include the following:

- Medicare beneficiaries with above-average incomes pay 3.3 times as much premium for their Medicare Part B coverage as those in the base program. And beneficiaries with low incomes pay no Part B premiums at all.

- For drug coverage, above-average earners pay almost 3 times the base, with the low incomes paying nothing.

- People with incomes as high as 400 percent of the government poverty level are eligible for additional subsidies. For married couples, these subsidies go to households with annual incomes as high as $64,000, encompassing more than 70 percent of households over age 65. These subsidies pay for some or all of the premiums. They also reduce or even eliminate the deductibles and copays.

Figure A1 combines the major redistribution aspects of Social Security and Medicare. It shows the benefit/tax ratio under a range of possible scenarios. A benefit/tax ratio of about five would be equivalent to having invested one's Social Security taxes in a moderately aggressive stock portfolio. Ratios significantly greater than five in the long run are unlikely without some

form of subsidy or fraud—or just dumb luck. Ratios of about three are consistent with investing the tax payments in the lowest-paying, most secure instruments, namely Treasury bonds. Ratios less than three are indicative of opportunity losses as the result of fraud, very bad investment choices, or government compulsion.

Figure A1. Net Social Security benefit/tax ratios after tax and Medicare assessments and transfers
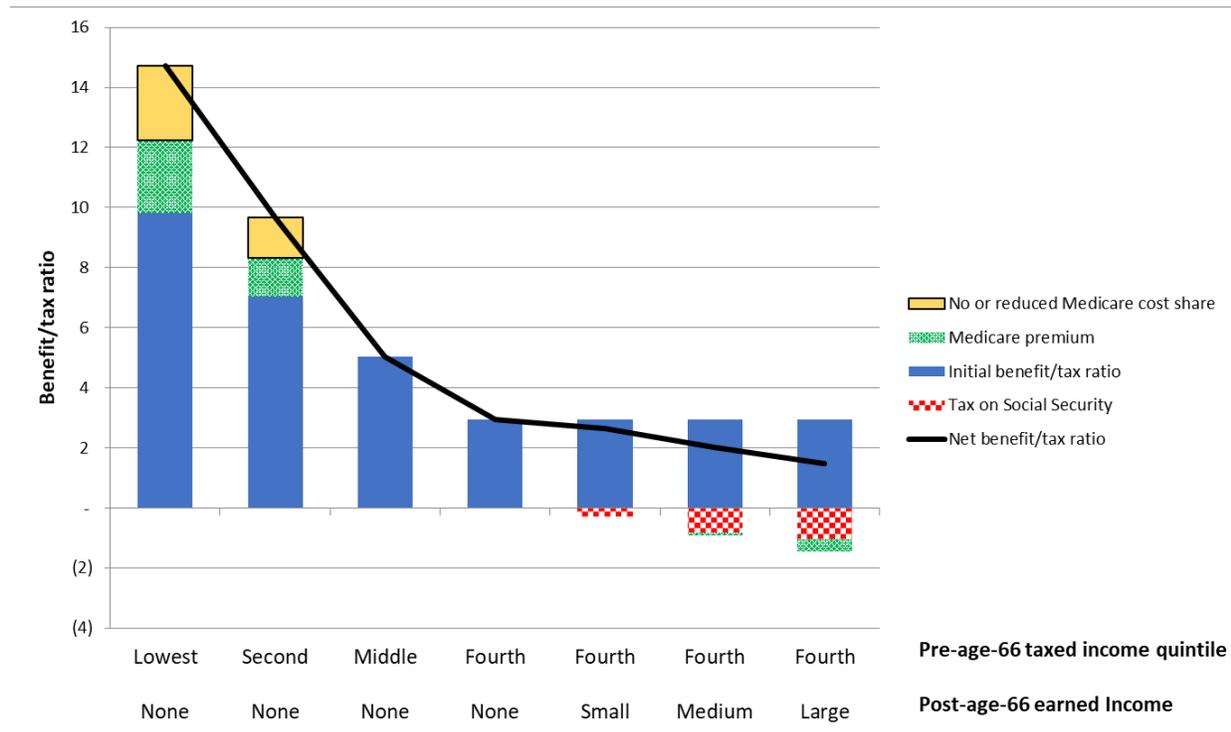
Sources: *For initial benefits*: United States Department of Health and Human Services, "Section 2," Old Age, Survivors, and Disability Insurance. "Appendix E: Computing a Retired-Worker Benefit," Annual Statistical Supplement to the Social Security Bulletin, 2013. Calculations by author. *For tax effects*: computed by author based on IRS and Social Security tables for female beneficiaries and a median state tax rate graduated from 1 percent to 4 percent across income levels for the 14 states that tax it. Medicare premium effects are zero—that is, the base-program values—for the middle and fourth-quintile cases with no significant post-age-66 earnings. The 2014 Part B premium and Part D lowest premium are added to the minimum earnings benefits. The fourth-quintile earnings premium effects are the additional income-related monthly adjustment amounts for the relevant income levels. The benefit value of paying no cost sharing is priced at the base enrollee deductibles, copays, and coinsurance.

The net effect is that beneficiaries with first-quartile earning histories receive almost exactly 10 times more benefit for each dollar paid than those in the fourth and fifth quintiles.

Nevertheless, the mythology continues that Social Security and Medicare are rights, not welfare.

One proposed "reform" is to establish some sort of additional means testing. Policymakers should approach that discussion with the full understanding that these benefits are already a means-tested, highly redistributive program that moves billions of dollars from people with higher income to those with lower income.

Appendix D: Federal Need-based Programs

The following is a list of federal need-based (welfare) programs, assembled using Congressional Research Service (CRS), "Spending for Federal Benefits and Services for People with Low Incomes, FY2008–FY2011," Washington, DC, October 16, 2013. The original list has been rearranged to show which programs are included in the CBO estimates of household income.

At least partially in CBO estimates:

1. Supplemental Security Income
2. Earned Income Tax Credit (refundable component)
3. SNAP (food stamps)
4. Medicaid
5. CHIP
6. Temporary Assistance for Needy Families (TANF) cash aid
7. School Breakfast Program (free/reduced price components)

Not in CBO estimates:

8. Public Housing
9. Section 8 Housing Choice Vouchers
10. Low-Income Home Energy Assistance Program (LIHEAP)
11. Family Planning
12. Consolidated Health Centers
13. Transitional Cash and Medical Services for Refugees

14. Voluntary Medicare Prescription Drug Benefit—Low-Income Subsidy

15. Ryan White HIV/AIDS Program

16. Breast/Cervical Cancer Early Detection

17. Maternal and Child Health Block Grant

18. Indian Health Service

19. Additional Child Tax Credit

20. National School Lunch Program (free/reduced price components)

21. Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

22. Child and Adult Care Food Program (lower-income components)

23. Summer Food Service Program

24. Commodity Supplemental

25. Food Program Nutrition Assistance for Puerto Rico

26. The Emergency Food Assistance Program (TEFAP)

27. Nutrition Program for the Elderly

28. Indian Education

29. Adult Basic Education Grants to States

30. Federal Supplemental Educational Opportunity Grant

31. Education for the Disadvantaged—Grants to Local Educational Agencies (Title I-A)

32. Title I Migrant Education Program

33. Higher Education—Institutional Aid and Developing Institutions

34. Federal Work-Study

35. Federal TRIO Programs

36. Federal Pell Grants

37. Education for Homeless Children and Youth

38. 21st Century Community Learning Centers

39. Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR-UP)

40. Reading First and Early Reading First

41. Rural Education Achievement Program

42. Mathematics and Science Partnerships

43. Improving Teacher Quality State Grants

44. Academic Competitiveness and Smart Grant Program

45. Single-Family Rural Housing Loans

46. Rural Rental Assistance Program

47. Water and Waste Disposal for Rural Communities

48. Public Works and Economic Development

49. Supportive Housing for the Elderly

50. Supportive Housing for Persons with Disabilities

51. Section 8 Project-Based Rental Assistance

52. Community Development Block Grants

53. Homeless Assistance Grants

54. Home Investment Partnerships Program (HOME)

55. Housing Opportunities for Persons with AIDS (HOPWA)

56. Indian Housing Block Grants

57. Neighborhood Stabilization Program

58. Grants to States for Low-Income Housing in Lieu of Low-Income Housing Credit Allocations

59. Tax Credit Assistance Program

60. Indian Human Services

61. Older Americans Act Grants for Supportive Services and Senior Centers

62. Older Americans Act Family Caregiver Program

63. TANF social services

64. Child Support Enforcement

65. Community Services Block Grant

66. Child Care and Development Fund

67. Head Start HHS

68. Developmental Disabilities Support and Advocacy Grants

69. Foster Care

70. Adoption Assistance

71. Social Services Block Grant

72. Chafee Foster Care Independence Program

73. Emergency Food and Shelter Program

74. Legal Services Corporation

75. Supplemental Nutrition Assistance Program (SNAP) (employment and training component)

76. Community Service Employment for Older Americans

77. Workforce Investment Act (WIA) Adult Activities

78. Workforce Investment Act (WIA) Youth Activities

79. Social Services and Targeted Assistance for Refugees

80. Temporary Assistance for Needy Families (TANF) employment and training

81. Foster Grandparents

82. Job Corps

83. Weatherization Assistance Program

Appendix E: Federal Transfer Programs Not Classified as Need-based by the Congressional Research Service

1. Government disability benefits

2. Pension guarantee benefits

3. Student loan subsidies

4. Veterans benefits

5. Federal fellowship grants

6. Lifeline free telephones

7. Compensation for survivors of public safety officers

8. Unemployment benefits for federal employees

9. Compensation of victims of crime

10. Alaska permanent fund benefits

11. Disaster relief benefits

12. Radiation exposure compensation

13. Japanese interns redress benefits

14. Payment of antiterrorism judgments

15. Compensation of victims of September 11

16. Federal education exchange benefits

17. Bureau of Indian Affairs benefits

18. Any other program with less than $100 million in annual spending

Appendix F: Definition, Explanation, and Limitations of Gini Coefficient

The Gini coefficient[4] has been used by some as a measure of income inequality. It is a bit tedious to calculate, but the concept is very simple, as follows:

1. Define no inequality as 0.000. In this case, everybody has exactly the same income. A graph of that situation looks like Figure A2. The diagonal line shows zero inequality because for every increase of a percentage of the population, the amount of income they have increases by the same percentage; thus, 20 percent of the population has 20 percent of the income, 60 percent of the population has 60 percent of the income, and so forth. That can be true only if all incomes are exactly the same.

Figure A2. Graph of zero inequality
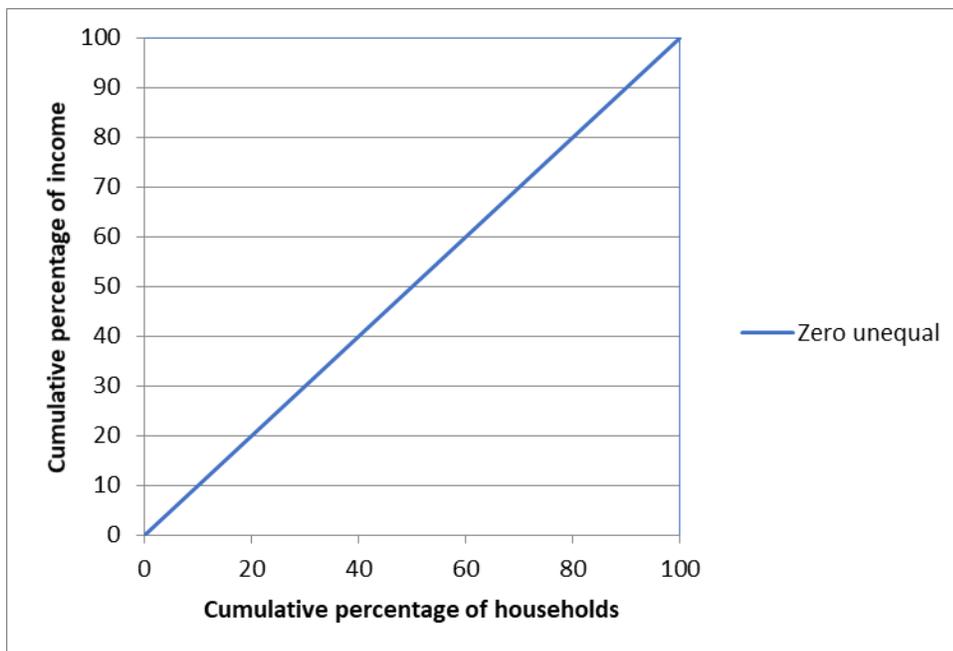
2. Define total inequality as 1.000. In this case, nobody gets any income, except for the one person at the top who gets all the income. Figure A3 illustrates this case. The income line is flat at zero until it reaches the last person who has all the money, at which point the income percentage jumps to 100 percent.

Figure A3. Graph of total inequality
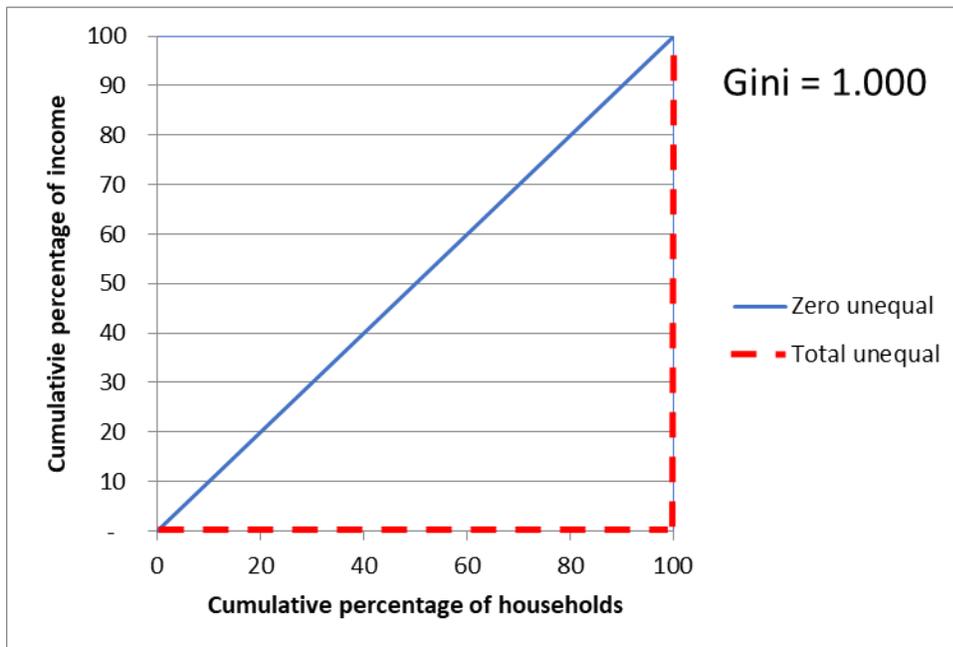
3. Between the two limits of no inequality and complete inequality, the coefficient calculates a proportion unequal—the larger the coefficient, the greater the amount of inequality. For these intermediate cases, one draws a curve that connects all the points defined by the cumulative percent of households that earn a specific cumulative percent of income. This curve is called a Lorenz curve and is illustrated in Figure A4. Note, for example, how the lowest 40 percent of the households have approximately 10 percent of the income and the lowest 80 percent of the households have more than 40 percent of the income. According to Gini, this particular arrangement would be 0.500, or half unequal.

The Gini computation begins by calculating the area of inequality between the line of zero inequality and the Lorenz curve of the actual data. Then the coefficient is computed as the ratio between the area of inequality to the total area under the zero-unequal line. Note how the Gini coefficient will be 0.000 when the area of inequality is zero because the income line would follow the diagonal line of zero inequality. It will be 1.000 when the area of inequality is the entire area under the line.

The Lorenz curve drawn in Figure A4 is a reasonable representation of what a Gini coefficient of 0.500 might look like, but there are an infinite number of different curves that

could give that same value. For example, if half of all households have zero income and the other half of the households each have exactly the same income of any amount, the Gini coefficient also would be 0.500.

Figure A4. Graph of intermediate measure of inequality
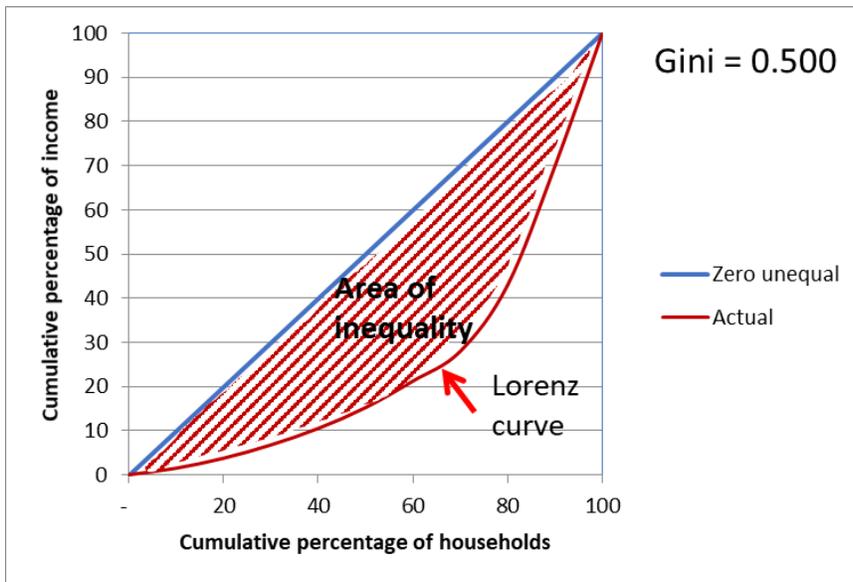
Most of the real-world Gini coefficients lie between the values 0.300 and 0.700. This range is shown in Figure A5. The three curves shown are typical of actual cases, but the curves could each be drawn in an infinite number of different ways and still have the specified Gini value.

Figure A5. Range of real-world Gini Coefficients
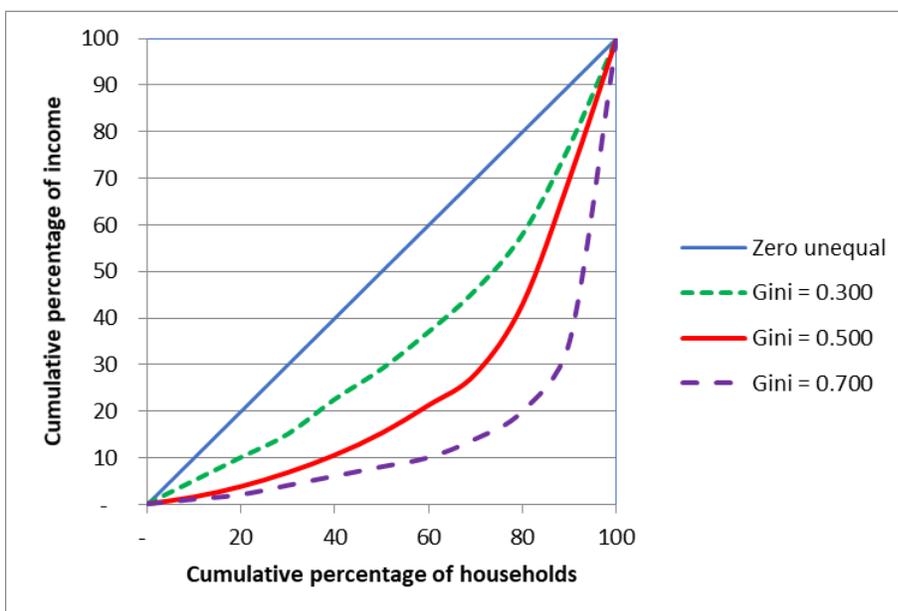
Gini Coefficient for the United States

The Census Bureau calculates the Gini coefficient for the household money income data it collects each year. For 2015, the coefficient was 0.479. If plotted on a cumulative graph, the curve would look similar to that in Figure A4. But what does that tell policymakers that they don't already know from the actual data? It tells them nothing useful, and possibly even misleads.

The Gini coefficient can deceive the mathematically inexperienced because

- The coefficient is not a true statistical parameter. It was not derived from statistical or economic theory and one cannot use any of the standard tools of statistical analysis to evaluate it. It is simply an arbitrary construct.

- A specific Gini coefficient value does not represent a unique distribution. A single value of the coefficient can result from any of an infinite number of different income distributions, many of them radically different from each other.

- Simple structural differences among data sets, such as the number of observations in them, can cause differences in the Gini index that are strictly artifacts of the calculation, not any underlying principle.

Gini Coefficient Deceptions

The thick line in Figure A6 plots the 2015 United States average money income for each income group in 5 percent increments. It is a relatively smooth curve with no major discontinuities. The official Gini coefficient for this curve is 0.479. The other four curves also have the same Gini coefficient, but with very different shapes.

Figure A6. Alternative income distributions for same Gini coefficient (actual 2015 U.S. curve and four hypothetical curves)
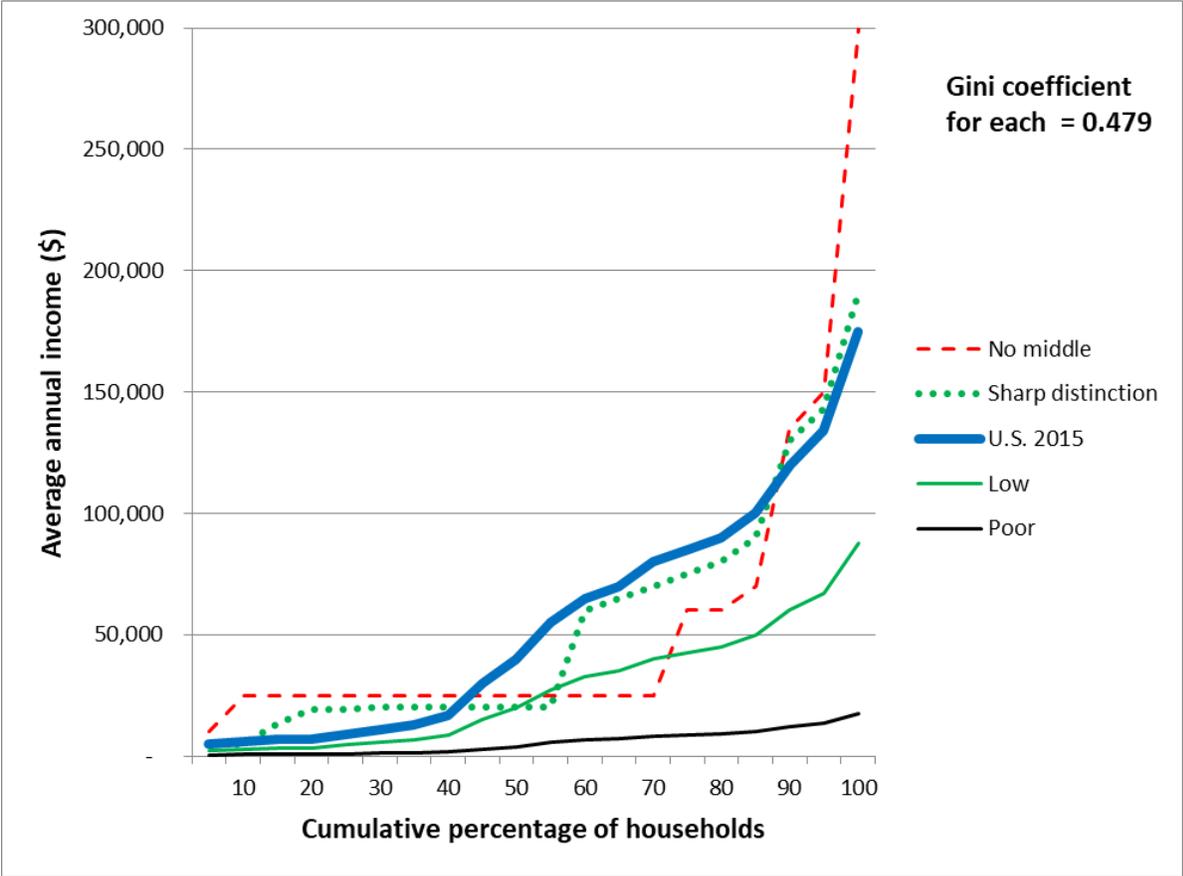
The "no middle" curve has the same Gini coefficient and the same average income as the U.S. 2015 curve. Its shape is similar to that of emerging nations with dominating ruling classes. In this case, 70 percent of the population is at a constant low income and ruling classes have substantially higher incomes. The "sharp distinction" curve is a less extreme version of the "no middle" curve. It also has the same average income and Gini coefficient as the U.S. 2015 curve. It differs from U.S. 2015 in that there is a large incremental step near the middle, indicative of political or social structures like castes in India or educational hierarchies in France that create artificial barriers to people striving to better themselves.

The other two curves, "low" and "poor," have exactly the same Gini coefficient and the same contour as the U.S. 2015 curve, but at half and one-tenth the average U.S. income, respectively. The "low" average income would be in the range for countries like Greece, Saudi Arabia, and South Korea. Examples of the "poor" would be Ecuador, Algeria, and Serbia. But more than 70 countries are even lower than this "poor" level. The very poor have per capita incomes of less than one-hundredth of the United States and include countries like Uganda, Ethiopia, and Liberia. This level of income is so low that it would hardly show on the graph, yet it could still have a Gini coefficient of 0.479.

These graphs suggest that the Gini index is essentially meaningless. The actual distributions of income levels are far more useful.

The Gini coefficient is sensitive to rather arbitrary mechanics in the way it is calculated. In the following simple mathematical simulation, an underlying population income distribution was sampled at four different levels of detail: 40, 20, 10, and 5 data points. As you can see in Table A3, this simple difference in method on exactly the same population changed the Gini coefficient by more than 10 percent.[5]

Table A3. Gini coefficient variation by number of data points

Number of data points	40	20	10	5	Difference
Gini coefficient	0.325	0.317	0.300	0.291	0.034

More data points will always make the coefficient appear to be larger, and hence more unequal. This result is important because the United States has perhaps the largest and most robust income survey in the word. That fact alone will push the estimated U.S. Gini coefficient to be somewhat larger and appear to be more unequal only as a statistical quirk.

The data discussed in the main text of this paper illustrate the practical implications of these various flaws in the Gini calculation. In addition to the implications discussed there, the full CIA data set of most countries in the world also demonstrates just how meaningless the measure is.[6] For example, cross-national comparisons of the Gini coefficients show relationships like the following:

- The United States has greater income inequality than Iran, Uganda, Nigeria, Burundi, Russia, and Turkmenistan.

- Japan is more unequal than Vietnam, India, Uzbekistan, Ethiopia, and Tajikistan.

- Canada and the United Kingdom have more inequality than Egypt.

- France has greater inequality than Pakistan.

One need not have in-depth knowledge about any of these countries to know that such relationships are nonsense. The five Western democracies in the comparisons are without any doubt far more egalitarian than the others. Even the poorest in those five nations have substantially higher standards of living than those in the other countries. If a Gini coefficient cannot meaningfully differentiate between Japan and Ethiopia, how can we hope that it would be able to tell us anything useful about the comparative welfare of the populations of United States and any other Western democracy?

Appendix G: Upward Bias from CPI-U Escalation

Escalating the poverty thresholds by the CPI-U overstates the amount of money needed to maintain the same standard of living implicit in the 1963 poverty benchmark. This excess arises from several well-known economic dynamics. One is item substitution when inflation is not uniform and prices for individual items change at different rates. A hypothetical example of

steak and hamburger in Table A4 illustrates how item substitution causes the CPI-U to overstate

inflation and consequently exaggerate the poverty thresholds.

Table A4. Example of substitution effect

	Base time period			Higher price		Income effect of higher price		Substitution with no income effect	
	Quantity	Price	Expense	Price	Cost	Quantity	Expense	Quantity	Expense
Steak	5.0	$10	$50	$10	$50	1.6	$16	7.0	$70
Hamburger	15.0	$2	30	$4	$60	16.0	$64	10.0	$40
Total			$80		$110		$80		$110

At the base time period, we consume 5 pounds of steak and 15 pounds of hamburger at the

respective prices of $10 and $2 per pound. As a result, we spend $80 for our beef. The "Higher

price" columns show what would happen if the price of hamburger were to double from $2 to $4.

It would cost us $110 to buy the same market basket of beef that originally cost us only $80. If

our income does not increase and if all other prices remain constant, then we must stay within

our $80 available from our income. While we might adjust our consumption of steak and

hamburger in several different ways to stay within our budget, the "Income effect of higher

price" columns show one plausible way to do that. Typically, in this type of scenario, people will

substitute more of the cheaper good and reduce consumption of the more expensive good, even

though the cheaper good is the one whose price went up.

We could have afforded to buy the quantities in the "Income effect" budget under the base

prices, but we chose a different combination with more steak because we preferred more steak

and could afford it. With no increase in income and the rise in hamburger prices, we had to

consume less of something. Our standard of living has fallen.

Now suppose we have a rich uncle who takes pity on us and "makes us whole." He gives us

an additional $30 so that we do not have to give up our steak and can maintain our standard of

living. With our wealthy relative's gift of $30, we now have $110 to spend on beef. In public policy, when government substitutes for the rich uncle, this type of payment is called a cost-of-living adjustment, or keeping "real income" constant.

But a funny thing happens from this adjustment. As documented in the last two columns of Table A4, although we could buy the former base market basket of 5 pounds of steak and 15 pounds of hamburger with our uncle's assistance, most of us probably would not do that. In the base period, we had to give up 5 pounds of hamburger to get 1 pound of steak. Under the new higher hamburger price, we now need to give up only 2.5 pounds—or half as much—hamburger to get a pound of steak, so we can buy more steak and still have enough total meat for our tastes. We are actually better off although our rich relative intended only to make us whole.

You can verify this result further by looking at the cost of the new market basket with 7 pounds of steak and 10 of hamburger under the original set of prices. The new market basket would have cost $90—more than we had available. As a result, our "inflation-adjusted" income increased our standard of living because as rational consumers we changed our consumption to reflect the new relative prices. In effect, the $30 income adjustment provided $20 to make up for the loss of real income and $10 to raise our standard of living.

Obviously, some substitutions are easier and more likely than others. Substituting hamburger for steak is pretty easy, substituting hamburger for tuna fish a little less easy, and substituting hamburger for prescription medication a good deal more remote. But in fact, everyone makes such substitutions every day. Sometimes it takes longer to adjust to a new equilibrium, but we do adjust. When gasoline prices rise, we buy less gasoline and spend more for premium foods that we can consume at home rather than going out to eat. If housing costs rise relative to other costs, we purchase or rent smaller accommodations but devote more of our budget to entertainment

devices to make the smaller accommodations more enjoyable or go out to eat and attend the theater more frequently, depending on our specific preferences to get out of the house.

Government plays the part of the rich uncle when welfare benefits or poverty thresholds are escalated by the CPI-U. These adjustments do not just make the beneficiaries "whole" for price increases, they also improve their standard of living.

The market basket priced for the CPI-U also holds constant the outlets from which prices are collected from one month to the next. Although the outlet sample is updated regularly to include new sellers in the marketplace, the calculations always compare only the same set of outlets between two months. As a result, the significant price reductions that accompanied the retail revolutions of big-box, outlet, club, and internet purchasing are not fully reflected in the CIP-U, thereby adding a second upward bias to the calculations of poverty thresholds.

Over time, the Bureau of Labor Statistics (BLS) has made improvements in the CPI that have reduced some of the biases, but these changes were not applied retrospectively to previously published official historical data. Fortunately, the BLS does publish a separate research series, the CPI-U-RS, that incorporates many of the improvements historically. Several researchers have identified additional biases beyond those addressed by the CPI-U-RS. Bruce Meyer and James Sullivan have integrated the CPI-U-RS with several of these threads of research to create estimates for poverty rates based on a minimum-bias calculation of price change.[7]

The official income estimates are for before-tax income. As taxes were cut on lower-income families over the last half century, the higher spendable incomes from the tax cuts were not reflected in the official estimates of poverty. Meyer and Sullivan also included an adjustment for these tax cuts in their estimates.

Appendix H: Historical Efforts to Use More Inclusive Measures of Income

Historically, attempts to adopt a more inclusive definition of income that included the missing transfer payments have been met with resistance. The argument against those additions has been a policy "principle" promulgated by parts of the executive branch after the initiation of the poverty thresholds. The putative principle claims that because the poverty thresholds are set at three times income, if we counted nonmoney income when classifying families, we would need to reset the thresholds on the basis of the sum of both money and nonmoney income. Doing so would raise the multiplier of the food budget from 3.0 to a somewhat larger number.

Although this principle sounds reasonable on its face, it ignores the fact that there was virtually no nonmoney income from government before 1965 when the thresholds were set, so there would be almost no practical consequence of adding government-based nonmoney income to setting the 1963 thresholds. Furthermore, since the 3.0 multiplier was derived from all families, not just poor ones, the effect of transfers to low-income groups on the multiplier would be diluted further.

Once, in 1984, the Census Bureau began exploring alternatives that might include noncash benefits in the measure, but even the mere investigation was quickly quashed politically and the expert panel to evaluate the possibilities was canceled. Gordon Fisher provides a day-by-day account of this conflict.[8]

Appendix I: Independent Data Demonstrating the Upward Bias in Published Poverty Measures

Food for the Poor

Hunger, malnutrition, and food shortages are rare in the United States, even among the definitionally poor.[9]

- 96 percent of poor parents replied that their children were never hungry at any time during the year because they could not afford food.

- 83 percent of poor families reported that they had enough food to eat.

- 82 percent of poor adults reported that they were never hungry at any time in the prior year owing to lack of money to buy food.

- The average consumption of protein, vitamins, and minerals is statistically indistinguishable between poor and middle-class children. Most poor children's consumption exceeds the recommended minimums. Poor children consume more meat than higher-income children and have average protein intakes that are 100 percent above recommended levels.[10]

- The U.S. Department of Agriculture, Agricultural Research Service conducts periodic surveys of "What We Eat in America." The last one, in 2013–14, reported that for each age group, there was no statistical difference in the calories consumed per person between families with incomes of less than $25,000 and families with incomes more than $75,000.[11]

- Most poor children today are better nourished than typical members of the "Greatest Generation" that fought and won World War II. On average, they are one inch taller and 10 pounds heavier.[12]

These data do show that some poor households are failing to meet some of their nutritional expectations, but most definitionally poor households are adequately fed and nourished. At most, 20 percent of the poor, 2.5 percent of the population, or fewer than 9 million people suffer any hint of hunger, and most of those for only short periods of time. These magnitudes are consistent with the incidence of poverty demonstrated in the main report using the improved income and threshold calculations.

Despite these facts about the relatively small incidence of hunger, some political activists claim that the United States is afflicted with extreme hunger and deprivation. Feeding America is an advocacy organization that generates hunger stories widely used by other advocacy groups. Its headline in early 2017 was "49 million people are hungry in America."[13] Some advocates embellished that to "Right now, over 50 million Americans—including nearly 17 million children -- are struggling with hunger."[14]

The first statement is a patently false distortion of data from a U.S. Department of Agriculture survey, and the second compounds the original falsehood further. The survey counts the number of people who agree with the following statement: "At some time during the past year, I was uncertain of having or being unable to acquire enough food to meet the needs of all household members because the household had insufficient money or other resources for food." This is not a question about hunger and is different from the direct questions about hunger from the Current Population Survey cited earlier.

Rather, this is a question about food insecurity. One can be uncertain or insecure about something without its ever happening. During the 1950s, we were all insecure and uncertain about nuclear war, but it never came. Many people are insecure about their retirement income.

And sometimes people are insecure in their jobs. That insecurity about what might happen is not the same as actually being laid off or getting no pay increase.

A 2013 research study at the Harvard School of Public Health found that getting food stamps did not increase household feelings of food security on the survey.[15] In other words, when a household received an ongoing gift of extra money to buy food, the attitude of people in the household about food security did not improve. This is pretty clear evidence that the food security survey question is not measuring anything about the objective reality of nutrition.

This same fact is reflected in the macro data about food stamps. From 2007 to 2013 the number of people in households who answered that they were insecure about their food at least once increased by 10 million, but over the same time period the number getting food stamps increased by 21 million. This six-year period was during the recovery from the 2008 recession, when general economic conditions were improving (albeit more slowly than usual). The increase in food stamp beneficiaries was not the result of labor market deterioration, but rather was the result of loosened eligibility standards and active recruitment of beneficiaries by the government. Clearly, the measured increase in a feeling of food insecurity was some psychological phenomenon unrelated to economic reality because the objective facts were to the contrary.

There are a small number of people in the United States who experience hunger on occasion. They are most frequently people who suffer from some physical or mental limitation or are children in the care of those people. Those people need their specific underlying limitations addressed, not yet more money taken by government force from their neighbors.

Housing among the Poor

Most poor households are adequately housed, with the following characteristics:[16]

- 42 percent of the official poor own their own home, which on average has three bedrooms, one and a half bathrooms, a garage, and a porch or patio.

- The types of housing for the poor are not substantially different from those of the population as a whole: 49.5 percent live in single-family homes or townhouses, 40.0 percent in apartments, 9.5 percent in mobile homes, and the remainder in miscellaneous other arrangements.

- Only 4 percent of the poor were even temporarily homeless at any time during the year.

- Most of the official poor live in a house or apartment in good repair. Only 1 percent of all housing is classified as "severely inadequate." That proportion is down from 4 percent in 1975.[17]

- The average size of dwellings occupied by the official poor is larger than the average size for a middle-class French, German, or British household.

- Only 7 percent of the poor live in housing that is deemed crowded by government standards, and two-thirds have more than two rooms per person.

Clearly, only a small fraction of the officially poor population has inadequate housing in terms of its size and integrity. These proportions are consistent with the smaller poverty estimates presented in this paper.

The Nicer Things of Life

Most households defined as poor do not live in stark, miserable surroundings bereft of any of life's comforts. Federal statistical surveys show that most definitionally poor households have many creature comforts:[18]

- 88 percent of poor households have air conditioning, compared with only 12 percent of the total population that had air conditioning before the War on Poverty began in 1964.

- Two-thirds have cable or satellite television.

- Three-quarters have a car or truck, and 31 percent have two or more cars or trucks.[19]

- Most have multiple color televisions, one-third with at least one wide, flat-screen set.

- Two-thirds have at least one DVD player, and one-quarter have two or more.

- One-quarter have a digital video recorder.

- More than half of those with children have a video game system such as Xbox or PlayStation.

- 92 percent have a microwave oven.

- 43 percent have internet access.

- Half have a personal computer, and 14 percent have two or more.

These are not the characteristics of households that "lack the most basic resources needed for daily living." Within the total population of poor households, some do lack some of the basics, but most definitionally poor households have assets far beyond the basics, including some that most folks would consider luxuries. These are examples of the expanded consumption that has been incorporated within the definition of poverty by using a biased price adjustment of the poverty thresholds and by not fully counting all the household resources.

One ought not to begrudge the fact that lower-income people today have the benefits of modern life. In fact, we should rejoice at the power of a mostly free economic system that enables even the poorest among us to benefit from prosperity. But clearly government transfers

have enabled standards of living well above the level that would have been considered poor

when the official definitions of poverty were established, and above what most people today

would consider poor. Yet government continues to report these people as being poor.

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[1] American Hospital Association, "Trends Affecting Hospitals and Health Systems," Table 4.4. https://www.aha.org/guidesreports/2016-05-10-chartbook-table-4-4

[2] Research sponsored by the Social Security Administration reached similar conclusions using a different approach. Andrew G. Biggs, Mark Sarney, and Christopher R. Tamborini, "A Progressivity Index for Social Security," Issue Paper No. 2009-01, Washington, DC, January 2009. They conclude, "Results indicate that OASDI lies roughly halfway between a flat replacement rate and a flat dollar benefit for current retirees."

[3] All cases get more than their paid-in taxes as a result of the imputed interest earned from Treasury.

[4] A calculation proposed by Corrado Gini in 1912.

[5] This simulation began with a well-behaved, smooth population curve and systematically reduced the sample size. The result also can be shown algebraically to be a general solution for all distributions. Some practitioners will argue that this observed problem can be overcome by extrapolating the data to estimate points between the actual observations. In a well-behaved, smooth distribution with known properties like the one used here, that might help, but in most cases the structure of the missing data is unknown and extrapolating it depends on selecting a specific model to estimate the missing observations. Such extrapolation will actually make matters worse and create more errors in the estimate.

[6] Central Intelligence Agency, *The World Factbook*, https://www.cia.gov/library/publications/resources/the-world-factbook/rankorder/2172rank.html

[7] Bruce D. Meyer and James X. Sullivan, Winning the War: Poverty from the Great Society to the Great Recession," NBER Working Paper 18718, Cambridge, MA, January 2013.

[8] Gordon M. Fisher, "The Development of the Orshansky Poverty Thresholds and Their Subsequent History as the Official U.S. Poverty Measure," U.S. Census Bureau, Washington, DC, May 1992, partially revised September 1997, p.22, www.census.gov/content/dam/Census/library/working-papers/1997/demo/orshansky.pdf. The author provided some technical papers as background for the 1984 discussion proposals.

[9] Except as otherwise cited, data on food consumption and hunger among the poor are calculated from the U.S. Census Bureau, "Current Population Survey, December 2009, Food Security Supplement," and analysis of the primary source by Robert Rector and Rachel Sheffield, "The War on Poverty after 50 Years," Backgrounder No. 2955, The Heritage Foundation, Washington, September 15, 2014.

[10] Katherine S. Tippett et al., "Food and Nutrient Intakes by Individuals in the United States," U.S. Department of Agriculture, Agricultural Research Service, Washington, September 1995, updated by Robert Rector and Rachel Sheffield, "The War on Poverty after 50 Years," Backgrounder No. 2955, The Heritage Foundation, Washington, September 15, 2014.

[11] U.S. Department of Agriculture, "What We Eat in America," NHANES 2013–2014, Table 3. Nutrient Intakes from Food and Beverages: Mean Amounts Consumed per Individual, by Family Income (in Dollars) and Age, in the United States, 2013–2014.

[12] Robert Rector and Rachel Sheffield, "The War on Poverty after 50 Years," Backgrounder No. 2955, The Heritage Foundation, Washington, September 15, 2014. Historical data from Bernard D. Karpinos, "Current Height and Weight of Youths of Military Age," *Human Biology* 33 (1961), 336–64. Recent data on young males in poverty provided by the National Center for Health Statistics of the U.S. Department of Health and Human Services, based on the second National Health and Nutrition Examination Survey.

[13] Feeding America, www.feedingamerica.org. Accessed February 4, 2017.

[14] The Hunger Site, http://thehungersite.greatergood.com/clickToGive/ths/hunger-in-the-us?link=ctg_ths_hunger-in-the-us_from_home_MegaNav. Accessed February 17, 2018.

[15] James Bovard, "How the Feds Distort Their 'Food Insecurity' Numbers," *Wall Street Journal,* September 4, 2014, A15.

[16] Data on housing of poor households are taken from the U.S. Census Bureau, "American Housing Survey for the United States: 2011," with additional interpretation by Robert Rector and Rachel Sheffield, "The War on Poverty after 50 Years," Backgrounder No. 2955, The Heritage Foundation, Washington, September 15, 2014, except as otherwise noted.

[17] John Quigley and Steven Raphael, "Is Housing Unaffordable? Why Isn't It More Affordable?" *Journal of Economic Perspectives* 18, no. 1 (Winter 2004): 191–214.

[18] Unless noted otherwise, the following list is based on data from the U.S. Department of Energy. Physical amenities in poor households are calculated from the Residential Energy Consumption Survey (RECS), 2009 as summarized and reported by Robert Rector, "How the War on Poverty Was Lost," *Wall Street Journal*, January 8, 2014 and by Robert Rector and Rachel Sheffield, "The War on Poverty after 50 Years," Backgrounder No. 2955, The Heritage Foundation, Washington, September 15, 2014.

[19] U.S. Census Bureau, "American Housing Survey for the United States: 2011."