

WHO PAYS TAXES AND WHO RECEIVES GOVERNMENT SPENDING? AN
ANALYSIS OF FEDERAL, STATE AND LOCAL TAX AND SPENDING
DISTRIBUTIONS, 1991-2004

by

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ABSTRACT

While the U.S. tax system is progressive, the distribution of government spending makes the overall fiscal system more progressive than is apparent from tax distributions alone. Using a microdata model we estimate the distribution of federal, state and local taxes and spending between 1991 and 2004. We find households in the lowest quintile of income received roughly \$8.21 in federal, state and local government spending for every dollar of taxes paid in 2004, while households in the middle quintile received \$1.30, and households in the top quintile received \$0.41. Overall, tax payments exceeded government spending received for the top two quintiles of income, resulting in a net fiscal transfer of between \$1.031 trillion and \$1.527 trillion between quintiles. Both taxes and spending appear to have large distributional effects on households, and these effects have grown since 1991. The results suggest tax distributions alone are an inadequate measure of progressivity, and policymakers should examine both tax and spending distributions when judging the overall fairness of policy toward income groups.

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I. Introduction and Summary of Results

A. Motivation for the Study

The question of who bears the burden of taxes is central to modern tax debates. Tax distributions showing which households stand to gain or lose from tax changes dominate the politics of tax policy at all levels of government. If politics is the process of deciding “who gets what, when and how,”¹ tax distributions supply lawmakers with the most basic information about who gains and loses from the nation’s tax policies.

However, while tax distributions are common the distribution of government spending is often ignored. Just as taxes fall more heavily on some households than others, government spending clearly does not flow to households equally. Transfer programs such as aid to needy families, veterans’ benefits and Social Security explicitly target particular groups and not others, while spending ostensibly designed to provide general benefits such as public schools, airports and highways are routinely utilized by some households more than others.

From the standpoint of overall fairness, tax distributions alone capture only half the fiscal picture. Both taxes *and* spending affect the economic position of households. And once taxes and spending are considered together, even the most regressive tax systems can be made progressive overall simply by channeling the proceeds of tax collections toward low-income households. From this standpoint, the current practice of judging the fairness of policy based on tax distributions alone is clearly inadequate.²

¹ Lasswell (1936).

² The inadequacy of tax distributions alone has a long history in the literature. For example see Steuerle (2003), p. 1187: “Unfortunately, these comparisons [of only tax distributions] are incomplete. To know the effect of tax changes on the distribution of income, it is necessary to take into account what the government does with the money.”; Steuerle (1995), p. 259: “Expenditures are almost inevitably progressive—even more progressive than what is implied in a typical tax-rate structure by itself.... Accordingly, assessing progressivity and incentives by looking at the tax system *per se* is simply inadequate.”; Devarajan and Hossain (1995), p. 1: “[E]ven if a tax is regressive, the overall impact of increasing it may not be, if the revenue raised is spent in a progressive manner.”; Gillespie (1963), p. 123: “[T]he ‘regressive’ image of

Two recent trends in tax policy have brought the deficiencies of conventional tax distributions into stark relief. First is the rapid growth of tax expenditures and targeted credits in recent decades, which have blurred many traditional lines between taxes and spending. Policymakers routinely implement social and economic policies through the tax system—most prominently aid to low-income families and subsidies to business—which were traditionally achieved through direct spending in previous generations. As social spending programs continue to be expanded to cover both sides of the fiscal ledger, tax distributions alone become an increasingly misleading measure of overall progressivity.

Secondly, in coming decades federal lawmakers face a looming crisis of growing entitlement spending that will require difficult tradeoffs between taxes and spending. While tax distributions are widely available, no federal agency currently produces a comprehensive distributional analysis of spending. This information gap leaves policymakers to face stark budget tradeoffs with no scientific, quantitative knowledge of spending distributions—leaving open the possibility that entitlement reform may be unduly swayed by anecdote and misperceptions about the fiscal system.

The goal of this study is to broaden the analysis of tax distributions to include a distributional analysis of federal, state and local government spending programs. The combined figures provide an overall gauge of fiscal progressivity at the federal, state and

state-local finances ... based on allowance for the tax side of the picture only, undergoes considerable change when net effects are considered.”; Tucker (1953), p. 518: “A progressive tax system, no matter how high the rate of progression, would not bring about a redistribution of income if the proceeds of taxes were spent in such a way as to increase the income ... of taxpayers in the same proportion as the taxes they paid.”; Shirras and Rostas (1943), p. xii: “[Tax burden] estimates relate solely to the burden placed on the citizen by the finances of the state; they take no notice of the advantage he derives. Before any judgments in equity are entered, both sides must be considered;” and Kendrick (1930), p. 277: “[W]henver the dependence of any particular expenditure on the revenue yielded by a particular tax can be determined, an examination of the effect of this expenditure on the supply curve of the tax object is a necessary step in the analysis of the incidence of this tax.”

local levels and supply policymakers with an analytical framework for assessing the impact of overall fiscal policy on households in various income groups.

The remainder of the paper is organized as follows. First, we briefly summarize the literature. Section I presents an overview of the methodology and summarizes the key findings. Section II provides a detailed narrative of tax distributions. Section III provides a similar narrative of spending distributions. Section IV explores which taxes and spending are most redistributive. Finally, section V outlines several limitations and caveats of the methodology. Alternative presentations of results, a detailed discussion of the income concept, and all technical allocation methods are attached as Appendices A, B and C.

B. Previous Literature

There is a large previous literature on fiscal incidence with early studies dating to the 1940s. Applied research often follows economic and social trends, so it is not surprising that interest in measuring income redistribution grew following the 1930s enactment of federal welfare, unemployment insurance, Social Security, and various expansions of the progressive federal income tax.

Two early studies included Charles Stauffacher's (1941) study of the United States from 1930-39, and Tibor Barna's (1945) study of the United Kingdom for 1937. Both studies identified substantial income redistribution with Stauffacher concluding that the lowest income group received 27 percent of federal spending between 1930-39, while paying 5 percent of federal taxes. Barna's conceptual framework—first developed as a doctoral candidate at the London School of Economics under Nicholas Kaldor—was influential and today serves as the essential framework for fiscal incidence studies conducted by the British government.³

Following a partial attempt by Findley Weaver (1950) to replicate Barna's study, several studies in the 1950s expanded on the early work. Jonathan Adler (1951), Rufus Tucker

³ See Glennerster (2006), and Central Statistical Office (1990).

(1953), Alan Peacock (1954), Alfred Conrad (1954), and A. M. Cartter (1955) filled gaps in the theoretical underpinnings of fiscal incidence and began a trend away from inconsistent patchworks of data sources and toward the use of broad-based survey data. For the first time, a general pattern of findings emerged, most notably that the combined distribution of government spending and taxes is much more redistributive than is apparent from tax distributions alone.

In the mid-1960s, two major studies established an approach that would be widely replicated in the following decades. W. Irwin Gillespie (1965) and George A. Bishop of the Tax Foundation (1967) published extensive studies of U.S. taxes and spending for 1960 and 1961-65, respectively. Gillespie sharply criticized previous literature for its limited scope and inadequate incidence analyses. Bishop similarly departed from previous literature, basing tax and spending allocations on a single, consistent household survey—the relatively new Consumer Expenditure Survey from the Bureau of Labor Statistics—and developing a broad income concept rooted in the framework of the National Income and Product Accounts.⁴

The Gillespie and Bishop studies prompted a large response. By 1970, fiscal incidence studies began attracting attention from scholars outside the narrow confines of public finance. Political scientists Brian Fry and Richard Winters (1970) used Bishop's 1967 results to measure the impact of fiscal redistribution on voting patterns. In a celebrated 1970 essay, University of Chicago economist George Stigler outlined “Director’s Law of Public Income Redistribution,” citing Bishop’s estimates as suggestive of politically-driven redistribution toward middle-income groups at the expense of politically unpopular upper-income groups and politically impotent lower-income groups.

By 1970, the rising popularity of fiscal incidence studies began attracting criticisms.⁵ A seminal article from Henry Aaron and Martin McGuire (1970) criticized early studies for

⁴ See Bishop (1966).

⁵ It should be noted that studies of tax incidence pre-date studies of overall fiscal incidence, and attracted similar criticisms much earlier. See for example Prest (1955).

allocating government spending without explicitly accounting for households' utility-based valuations of the goods provided by government.⁶ The article along with follow-up work from Shlomo Maital (1973, 1975) split future research into two camps. On the one hand was the traditional “cost of service” approach that measured spending benefits as dollar amounts provided by the state. On the other was the so-called “behavioral” approach—largely confined to academic circles—that attempted to allocate spending based on knowledge of all individual utility functions throughout the economy.

In a series of responses Geoffrey Brennan (1976) challenged the behavioral approach, primarily objecting to the extremely high information requirements it would impose on researchers. Since knowledge of utility functions throughout the economy is largely unavailable, attempts to introduce arbitrary ones stood on questionable theoretical grounds and were likely to add substantial complexity to empirical work without any corresponding reduction in the arbitrariness that characterized the incidence assumptions of early studies.

Despite ongoing controversy, fiscal incidence grew throughout the 1970s and 1980s with nearly all contributions following some variant of the Gillespie-Bishop “cost of service” approach. Major studies included Morgan Reynolds and Eugene Smolensky (1974, 1977), Kenneth V. Green et al. (1976), Tax Foundation (1981), Edward Kienzle (1982), Jorge Martinez-Vazquez (1982) and Norman Gemmell (1985). The findings of this second wave of studies were broadly consistent with earlier work, finding that U.S. taxes were flat or mildly progressive while government spending was sharply progressive, resulting in a highly progressive overall system.

Throughout the 1990s, improvements in data and computing power enhanced the technical sophistication of fiscal incidence studies. This trend was anticipated a decade earlier by a landmark 1981 study by Patricia Ruggles and Michael O’Higgins, which

⁶ See Section III under the heading “Symmetry Between Tax Burdens and Government Spending” for a detailed discussion of the inconsistency of applying this critique to only spending distributions but not tax distributions.

made use of an early microdata model, an approach that would later come to dominate the field. Along with rising technical sophistication came a decline in traditional studies modeled after Gillespie, Bishop and others. Interest also shifted away from the concept of income redistribution as authors grew hesitant about attributing the dollar value of all government spending, including expenditures on nonrivalrous and nonexcludable public goods, to households as “Haig-Simons” income.⁷ Research instead focused on the narrower questions of who pays taxes and who utilizes government spending programs.

The 1990s also witnessed a rise in the popularity of “benefit incidence analysis,” largely pioneered by researchers at the World Bank. This approach focused narrowly on the distributional impact of education, health and transfer spending programs. Benefit incidence analyses typically do not estimate economy-wide tax burdens and spending distributions but instead provide detailed estimates of whether poverty-reducing programs—particularly in developing countries—reach their intended recipients. Much of this literature is summarized in Thomas Selden and Michael Wasylenko (1992), Dominique van de Walle (1996), Peter Lanjouw and Martin Ravallion (1998), Shantayanan Devarajan and Shaikh Hossain (1998), Florencia Castro-Leal et al. (1999), Lanjouw et al. (2000) and Davoodi et al. (2003). In general, benefit incidence studies find spending on health, education and transfer payments to be strongly progressive, while finding mixed results on tax progressivity.⁸

Although U.S. government agencies such as the Congressional Budget Office do not currently produce fiscal incidence estimates, similar agencies in the United Kingdom, Australia and elsewhere have long done so. Ann Harding et al. (2004) present the most recent estimates of combined tax and spending distributions for Australia in 2001-02, and Caroline Lakin (2003) produces similar estimates in the United Kingdom for the same time period. These studies typically combine features of classic fiscal incidence studies—such as measures of overall income redistribution—with features of modern benefit

⁷ See Rosen (2002) p. 336-40, for a detailed discussion of the concept of Haig-Simons income.

⁸ See Johannes, Tabi Atemnkeng et al. (2006) p. 10.

incidence studies such as the omission of government spending programs for which the incidence is controversial.

Since 2000 there appears to be some renewed interest in fiscal incidence studies. Dimitri B. Papadimitriou (2006), H. Immervoll et al. (2005) and Edward Wolff and Ajit Zacharias (2004) each provide new estimates of fiscal incidence for the United States and European Union member states. Additionally, renewed interest in the fiscal impact of U.S. immigration has prompted research comparing household tax burdens and spending benefits for U.S. residents compared to foreign immigrants.⁹

Despite a half-century of literature, the methodology of modern fiscal incidence studies remains largely unsettled. Unlike tax distribution studies that enjoy some measure of consensus among public finance economists, no standard methodology of fiscal incidence studies has emerged to fill the void left by the decline of early Gillespie-Bishop style studies from the 1960s.

The current study proposes a methodology of estimating fiscal incidence that is broadly consistent with what has emerged as the general practice in tax distribution studies from the Congressional Budget Office and others in recent years. We estimate spending and tax distributions on a similar methodological basis, treating taxes and spending as conceptually symmetrical, while acknowledging the limitations of both.¹⁰

To encourage standardization and replication of our results, all definitions of taxes, spending and comprehensive household income are derived from the accounting framework of the National Income and Product Accounts as listed in Appendix C. The following section provides an overview of the current study's approach and summarizes the key findings.

⁹ For example, see Smith and Edmonston (1997).

¹⁰ See Section V for discussion of the study's limitations and caveats.

C. Overview of the Current Study

1. The Framework of Fiscal Incidence

The current study estimates tax and spending distributions within the following stylized framework. Initially, households earn market-based incomes from productive activity throughout the economy. Federal, state and local governments then levy taxes, withdrawing resources from households. Finally, governments return resources to households through various spending programs. Once the full effect of taxes and spending is accounted for, the result is the after-tax, after-spending distribution of household resources that is directly observable throughout the economy. This combined impact of taxes and spending on households is referred to as the “net fiscal incidence” of government tax and spending policy.

This framework can be expressed mathematically as a relationship between households’ initial market incomes and the amount of resources that governments redistribute between households through taxes and spending. That is,

$$\textit{Household Market Incomes} + (\textit{Government Spending} - \textit{Tax Burdens}) = \textit{Household Resources After Taxes and Spending},$$

where the term *(Government Spending – Tax Burdens)* represents households’ net fiscal incidence. Broadly speaking, a household’s fiscal incidence can be interpreted as the amount of resources redistributed to it from other households in the economy through government tax and spending policy. If a household’s fiscal incidence is positive, it receives more government spending than it pays in taxes. A negative fiscal incidence implies a household pays more taxes than it receives back in government spending.

An Illustration

Table 1 provides a numerical illustration of the framework of fiscal incidence for a simple two-household economy. In line 1, households earn market-based incomes from productive activity. In line 2, the government levies a 40 percent tax on household market

income. In lines 3-4, the government supplies households with two spending programs—one transfer program and one general spending program that provides a service equally to households.

Once tax burdens and government spending received are accounted for, line 5 displays households’ after-tax, after-spending resources. Finally, line 6 summarizes the combined impact of tax burdens and government spending on household resources, which this study refers to synonymously as “fiscal incidence” or “fiscal redistribution.” For simplicity, Table 1 assumes a balanced budget.

Table 1. The Framework of Fiscal Incidence

Line		Household A	Household B	Economy-Wide Total
1	Market Income Before Taxes and Government Spending	\$50,000	\$100,000	\$150,000
2	Less: Tax Burden	(\$20,000)	(\$40,000)	(\$60,000)
	Plus: Government Spending Received			
3	Transfers	\$25,000	\$5,000	\$30,000
4	Other Spending	\$15,000	\$15,000	\$30,000
5	Equals: Market Income Plus Government Spending Minus Taxes	\$70,000	\$80,000	\$150,000
6	Net Fiscal Incidence	\$20,000	(\$20,000)	\$0

Source: Tax Foundation

Both households in Table 1 pay the same taxes as a percentage of income. But because Household A receives a disproportionate share of government spending, the overall fiscal system is progressive. Household A pays \$20,000 in taxes but receives \$40,000 of government spending in return, resulting in a net fiscal incidence of positive \$20,000. In contrast, Household B pays \$40,000 in taxes but receives just \$20,000 of government spending in return, resulting in a net fiscal incidence of negative \$20,000.

Taken together, the interaction of taxes and government spending in Table 1 flatten the distribution of household income considerably, redistributing \$20,000 of resources from Household B to Household A—a fact not apparent from analyzing the tax system in Table 1 in isolation.

As this example makes clear, an exclusive focus on tax progressivity can lead to misleading conclusions about the fairness of overall policy. Perhaps most importantly, it

conceals from view cases in which tax policy and spending policy can be combined to produce better public policy than either in isolation.

2. Definition of Tax Burdens and Government Spending Received

In general, the true burden of taxes is larger than the dollar amount of tax revenues. Even well-designed tax policies reduce the efficiency of the economy by distorting prices, wages and incomes from their optimal levels, and these inefficiencies—known to economists as “excess burdens”—represent real tax burdens to society.¹¹ Once the full behavioral effects of taxation are taken into account, the true burden of taxation on the economy is typically much larger than the initial economic incidence suggests, and these total economic burdens may follow a very different distributional pattern from that of the initial tax incidence measured in tax distribution studies.¹²

Similarly, the true benefits of government spending may deviate sharply from dollar amounts recorded in government budgets. Government spending on wasteful activities provides society with fewer benefits than budget amounts would suggest. In contrast, government spending on useful activities—such as public goods like national defense, environmental protection and the courts—may represent “profitable” government enterprises that benefit households more than their budgetary cost. In general, economists teach that there is no necessary relationship between dollar amounts recorded in government budget documents and the real economic impact of government taxes and spending on households.

Unfortunately, it is difficult to observe the excess burden of taxes or excess benefits of government spending.¹³ Instead, tax distribution studies are typically constrained to

¹¹ One possible exception may be so-called Pigouvian taxes, which aim to reduce negative externalities. In theory such taxes may not cause excess burdens once gains from reduced externalities are accounted for.

¹² See Entin (2004) for a thorough discussion of the relationship between initial tax incidence, final economic burden, and the impact of taxation on savings, capital accumulation and productivity throughout the economy.

¹³ However, it should be noted that there is a large literature attempting to quantify these excess burdens of taxation. For a classic treatment, see Harberger (1964). For a more modern example, see Feldstein (1999).

measuring only the distribution of dollars of tax revenues, and dollars of government spending budgets. In the current study we follow this more limited but conventional approach. Tax burdens represent dollar amounts collected by governments, and government spending received represents dollar outlays by governments to provide services to households.

As discussed in Section III, this study does not attempt to measure households' utility-based valuations of tax burdens or government spending received. While tax dollars collected from different households are identical from the standpoint of government revenues, economic theory suggests one dollar of taxes will be valued more highly by some households than others. Some value the loss of income highly—that is, they have what economists call a high “marginal utility” of income—while others place a low value on it. Similarly, dollars of government spending may appear identical in government budgets, but they will be valued highly by some households and not at all by others.

An ideal study of tax and spending distributions would explore how government policies affect the *economic welfare* of households. That is, they would study how one dollar of taxes or government spending affects the “utility” of different households. However, in practice researchers have little knowledge about households' preferences or how they value tax burdens and government spending programs. Instead, they are constrained to valuing taxes at the dollar amount collected from households and valuing government spending at the budgetary amount provided in return.

This study follows the conventional approach of tax distribution studies and values tax burdens as dollar amounts of tax collections. Similarly, we value government spending as dollars of budgetary outlays. This approach does not address how much households benefit from government spending or how much their economic welfare is lowered by taxes. Instead it addresses tax and spending distributions from the standpoint of policymakers crafting policy: Which households provide governments with more dollars

of tax revenue? Which households do governments supply with more dollars of government spending?¹⁴

Because government budgets do not typically balance and because governments collect revenue from non-tax sources as well, tax burdens in this study do not necessarily equal government spending received in a given period. Although taxes and government spending must equal over the long-run, the current study does not make adjustments to bring them into balance in any single period.¹⁵

Throughout the current study, we use the terms “progressive” and “regressive” in the following way. A tax is progressive if the effective tax rate—that is, tax burden as a percentage of comprehensive household income—rises as we move from lower-income groups to higher-income groups. With spending programs, the logic is reversed. A government spending program is progressive if the spending received as a percentage of household income rises as we move from upper-income groups to lower-income groups. Broadly speaking, the terms progressive and regressive can thus be thought of as “favorable toward lower-income groups” and “favorable toward upper-income groups,” respectively.

3. Definition of Household Income

Just as individuals can be said to have different heights depending on the way they are measured, one household can have many different incomes depending on the way income is defined. In the current study, we make use of two distinct measures of household income. One is a simple concept that is used to group households into easily-understood quintiles. The other is more abstract and is appropriate for the purposes of economic analysis, such as expressing taxes or spending as a percentage of income. This section

¹⁴ Some previous studies have attempted to measure households’ utility-based valuations of spending benefits. For example see Aaron and McGuire (1970). However, these attempts have rarely recognized the inconsistency of measuring household utility on the spending side but not the tax side as well.

¹⁵ For an alternative presentation of this study’s results on a balanced-budget basis, see Appendix A.

explains the rationale behind these two income concepts and how each is used in the study.

When analyzing tax burdens or government spending received, there are many ways to organize households into a distribution. For example, tax burdens can be presented by age, household size, level of educational attainment, sex, ethnicity, or any other characteristic of households. The choice between these is arbitrary as it only affects the way final results are presented in tables, not the actual economic analysis.

In this study we categorize households by income. This presentation was chosen to illustrate to lawmakers, journalists and others the distribution of taxes and government spending across households with different levels of income. To help communicate the key results of this study to lay audiences, we use a simple and widely understood income concept when ordering households into income groups: household cash money income, as defined by the U.S. Census Bureau.¹⁶

Cash money income consists of wages and salaries, self-employment income and other market-based income, as well as government cash transfer payments like Social Security payments, unemployment compensation and welfare. This definition of income is consistent with most lay audiences understanding of their own income, allowing lawmakers, journalists and other non-economists to easily locate themselves within the study's distributional tables.

Table 3 presents the basic definitions of these quintiles of household cash money income for Calendar Year 2004. Each quintile contains roughly equal numbers of people, and thus unequal numbers of households.

¹⁶ See U.S. Census Bureau, "Current Population Survey: 2006 Annual Social and Economic (ASEC) Supplement" available at www.census.gov/cps/.

Table 3. Definitions of Quintiles of Household Cash Money Income Used in the Current Study, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004					
	U.S. Total	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Lower Bound of Household Cash Money Income	na	na	\$23,700	\$42,305	\$65,001	\$99,502
Number of Individuals	291,166,198	58,217,357	58,246,236	58,414,918	58,058,486	58,229,201
Number of Households	113,475,724	30,377,708	24,520,544	21,249,055	19,265,699	18,062,718

Source: Tax Foundation

While simple concepts of income like cash money income are useful for grouping households into easily understood quintiles, they are not an appropriate measure of households' total economic income. Households receive income from many non-cash sources as well, such as unrealized capital gains and implicit rental income from home ownership. A household's full economic income is generally much broader than cash money income alone.

For this reason, whenever taxes or spending are expressed as a percentage of household income, it is important to use a much broader definition of income that better reflects a household's true economic ability to pay taxes. While there is nothing in economic theory that *requires* that taxes or spending be expressed as a percentage of income—particularly since many taxes are not based on income to begin with, such as sales and property taxes—it is an arbitrary convention that is followed in most tax distribution studies, and the current study follows that convention.

When dividing taxes or spending by household income in order to express households' "ability to pay," it is important to attribute all taxes and all income to households. Because all taxes in the economy are assumed to be borne by households, it becomes important to also attribute to household all the income in the economy that is available to pay those taxes. Expressing tax burdens as a percentage of narrow income concepts like cash money income does not provide a sound measure of a household's true ability to pay taxes, and thus may overstate true effective tax rates by a large amount.

For this reason, tax distribution studies have traditionally used broader definitions of income when comparing taxes to income. These broad income concepts generally have two features. First, they include households' productive market income such as wages and salaries, interest income, and so on. Second, they include the value of government transfer payments received by households, such as Social Security, unemployment compensation and welfare payments. Since many low-income households rely heavily on government transfer payments, and any broad income concept that does not account for transfers risks greatly overstating the apparent tax burden of low-income households.¹⁷

In this study, we also use a broad income concept whenever taxes or spending are expressed as a percentage of income. This income concept consists of each household's market income from productive activity plus the value of all net government transfer payments received. In the aggregate, this broad income concept is equal to the nation's Net National Product (NNP) as defined by the National Income and Product Accounts (NIPA). As outlined in previous Tax Foundation studies, NNP provides the most appropriate measure available of the economy's total productive income that is free to pay taxes in any given year.¹⁸ Table 4 below presents the derivation of the total amounts of comprehensive household income received by each income group for 2004.¹⁹

Table 4. Total Comprehensive Household Income Received by Each Quintile of Household Cash Money Income, Calendar Year 2004 (Amount in Billions of Dollars)

In Billions of Dollars	Quintiles of Household Cash Money Income, Calendar Year 2004					
	Total	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Household Market Income (NNP)	\$10,323	\$416	\$1,042	\$1,592	\$2,354	\$4,918
Plus: Value of Government Transfers Received						
Federal Transfers	\$1,254	\$538	\$302	\$184	\$125	\$105
State and Local Transfers	\$221	\$108	\$47	\$30	\$20	\$15
Less: Cost of Government Transfers to Others						
Cost of Federal Transfers	\$1,254	\$33	\$104	\$176	\$279	\$662
Cost of State and Local Transfers	\$221	\$17	\$27	\$36	\$50	\$91
Equals: Household Comprehensive Income (Market Income Plus Net Transfers)	\$10,323	\$1,013	\$1,261	\$1,594	\$2,171	\$4,284

¹⁷ Careful readers will note that the common practice of counting government transfers as income without subtracting them from the income of other households results in double-counting of government transfers on an economy-wide basis. See Appendix B for a complete discussion of the double-counting problem with the income definition used in many tax distribution studies.

¹⁸ See Tax Foundation (1957), Tax Foundation (1967) and Tax Foundation (1989).

¹⁹ For a complete discussion of the income concept employed in this study, see Appendix B.

Source: Tax Foundation

4. Time Period and Allocation Methods

The current study primarily analyzes tax burdens and government spending for Calendar Year 2004, the most recent year for which the household survey data used in this study are available. Estimates for 2000, 1995 and 1991 are presented as well, and changes in distributional patterns are analyzed. The year 1991 was chosen as the earliest year out of necessity rather than preference. Prior to that year, key survey variables used in this study were not available in public microdata files, making 1991 the earliest year the current methodology could be consistently employed.

All figures for tax collections and government spending are drawn from the National Income and Product Accounts from the U.S. Department of Commerce's Bureau of Economic Analysis. Functional spending categories at both the federal and state-local level are supplemented with federal budget information from the White House's Office of Management and Budget and the U.S. Health and Human Services Department's Centers for Medicare and Medicaid Services when necessary.

In this study, we do not adjust official figures for tax collections and government spending to bring them into exact balance. In general, taxes do not equal government spending in any given year because of government deficit spending and non-tax revenues—for example, the proceeds of government-operated lotteries.²⁰ While a full discussion of the issues surrounding non-tax revenue and deficit-financed spending is beyond the scope of this paper, Appendix A presents the study's results on a balanced-budget basis as well. That is, we illustrate how the study's results would differ if government taxes and spending were forced into balance each year through simple across-the-board tax increases.²¹

²⁰ See Hansen (2004).

²¹ See Appendix A for a presentation of results on balanced-budget basis.

Allocation of Taxes and Government Spending

Tax burdens are estimated using conventional tax distribution methods, which make various assumptions about the economic incidence of taxes and allocate them to households using statistical survey data. Government spending by households is estimated in a similar way in this study. We employ a three-step “cost of service” approach that is conventional in most spending distribution studies:²²

- First, household survey data is used to identify which households are most likely to use government services. From this, each household’s annual program usage or “utilization rate” is estimated;
- Second, the government’s total cost of providing each type of government spending is derived from official budgetary totals; and
- Third, each household’s estimated annual utilization rate—that is, a household’s use of a program as a percentage of the total use by all households—is multiplied by the total cost to the government of that service, yielding the amount of government spending that is “received” by each household.

All tax burdens and government spending are allocated using a microdata model based on the U.S. Census Bureau’s “Current Population Survey” and supplemented with household expenditure data from the “Consumer Expenditure Survey” from the U.S. Bureau of Labor Statistics.²³

Because individuals often pool their economic resources inside households to make joint economic decisions, the unit of analysis in the current study is households. The U.S. Census Bureau defines a household as “all the people who occupy a housing unit.” Houses, apartments and single rooms within houses are counted as households whenever

²² See for example studies by the Australian Bureau of Statistics [Harding (2004)] and the United Kingdom’s Office for National Statistics [Lakin (2003)].

²³ For a complete discussion of this study’s allocation methods, see Appendix C.

they are intended to serve as separate living quarters. Households include all related family members, as well as unrelated people living in a housing unit.

Because household size varies considerably, quintiles are adjusted to contain equal numbers of individuals and therefore unequal numbers of households. All results are presented in quintiles of household cash money income.²⁴ Because of top-coding limitations in the data sources used, the current study does not present results for top 1 percent, 5 percent or 10 percent of households, as such narrow groupings may produce statistically invalid results.

²⁴ For alternative presentation of results in quintiles with equal numbers of households, see Appendix A.

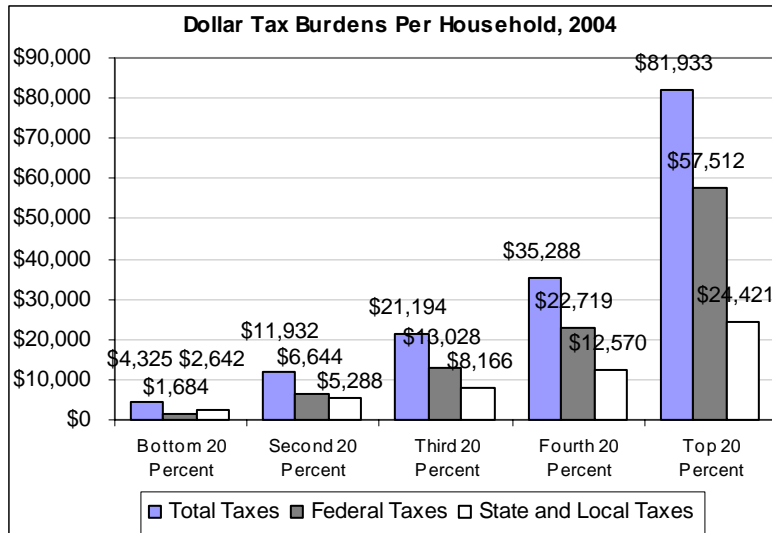
D. Summary of Major Findings

The following section summarizes the basic findings of the study. First, the distribution of tax burdens is presented. Second, it is contrasted with the distribution of government spending. Third, tax and spending distributions are combined to provide an overall measure of fiscal progressivity. Finally, changes in the distribution of taxes and government spending between 1991 and 2004 are discussed.

1. The Distribution of Tax Burdens

The dollar amounts of tax burdens for each quintile are listed in Figure 1. As expected, dollar tax burdens are substantially larger for upper-income households than lower-income households. Federal taxes make up a larger portion of the tax bill of households in the top four income quintiles. In contrast, state and local taxes make up the largest portion of the total tax burden faced by households in the lowest-income quintile. Overall, these findings are broadly consistent with previous tax distribution studies.

Figure 1. Federal, State and Local Dollar Tax Burdens Per Household, Calendar Year 2004

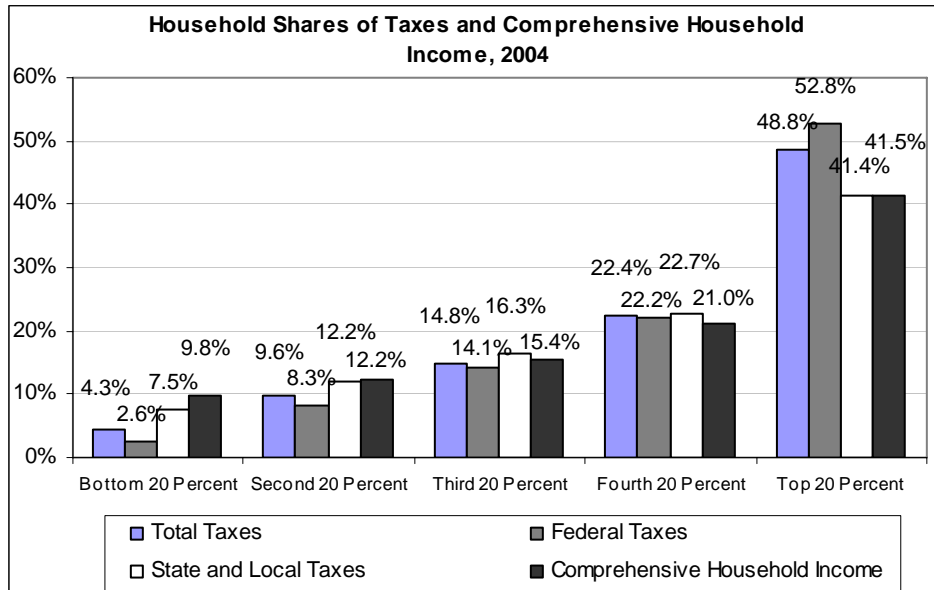


Source: Tax Foundation

Figure 2 presents the share of tax burdens borne by each income group, as well as their share of comprehensive household income. Overall, the total tax burden is borne disproportionately by the top two quintiles, which together pay 71.2 percent of the nation's total tax bill despite earning 62.5 percent of total comprehensive household

income. In contrast, the bottom three quintiles earn roughly 37.4 percent of comprehensive income but pay just 28.7 percent of total taxes.

Figure 2. Share of Taxes Compared with Share of Comprehensive Household Income, Calendar Year 2004

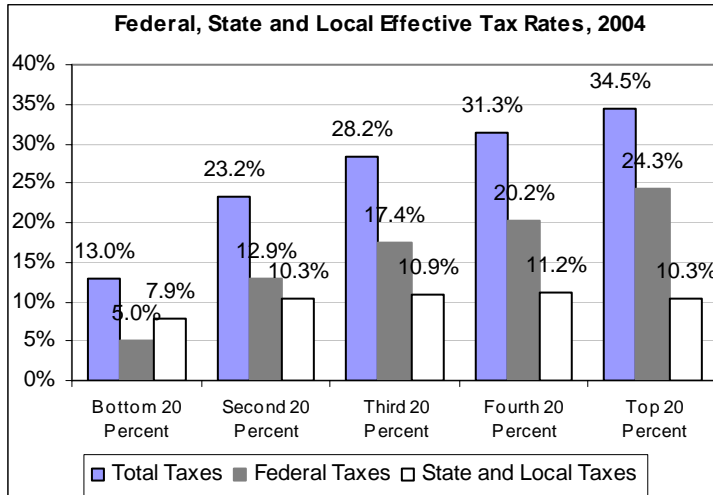


Source: Tax Foundation

Another way to present tax burdens is as a percentage of comprehensive household income, or “effective tax rates.” Figure 3 presents federal, state and local effective tax rates. Overall the distribution of effective tax rates is progressive, and rises across all income quintiles. Total effective tax rates range from 13.0 percent on the bottom quintile to 34.5 percent on the top quintile.

Federal taxes are more progressive than state and local taxes, largely due to their heavy reliance on progressive individual income and corporate income taxes. State and local effective tax rates show mixed progressivity, rising over the first four quintiles but falling between the fourth and fifth quintiles. Heavy reliance on sales and property taxes—neither of which are based on household income—largely explains the relatively flat overall distribution of state and local effective tax rates.

Figure 3. Federal, State and Local Effective Tax Rates, Calendar Year 2004



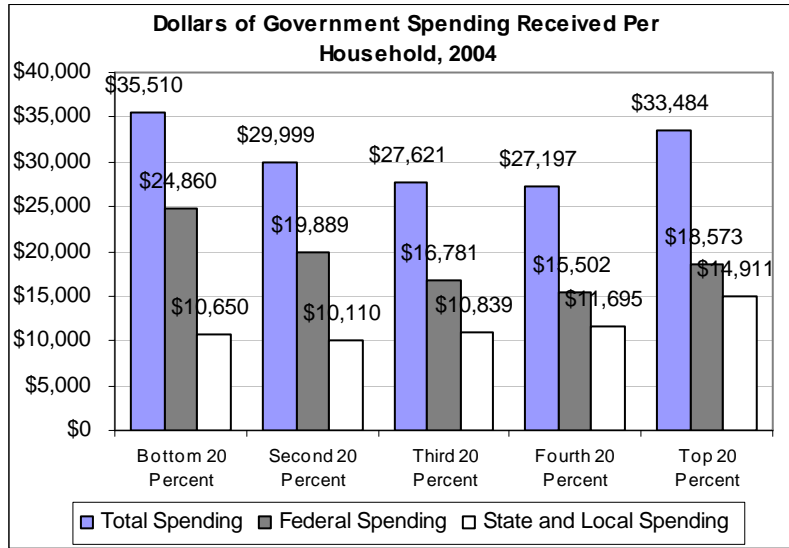
Source: Tax Foundation

It should be noted that organizing households on bases other than quintiles of cash money income containing equal numbers of individuals can affect the apparent progressivity of taxes. For a wide range of alternative presentations of this study’s basic results, see Appendix A.

2. The Distribution of Government Spending

Figure 4 present the dollar amounts of government spending received per household. Households in the lowest income quintile are targeted with the largest amount of total government spending, at \$35,510 per household in 2004. In contrast, households in the fourth income quintile receive the least total government spending per household at \$27,197. Households in top income quintile receive the second highest government total government spending per household, at \$33,484.

Figure 4. Federal, State and Local Government Spending Received Per Household, Calendar Year 2004



Source: Tax Foundation

In general, federal government spending is more sharply tilted toward lower-income households, due to the large amount of federal transfer payments to lower-income households through Social Security, Medicare and Medicaid. State and local spending is generally more flatly distributed across income groups with the largest dollar amounts targeted at the highest income quintile. This is largely due to high state and local government spending on programs that are disproportionately used by middle- and upper-income households. These include public education that is heavily utilized by upper-income groups with the largest total numbers of children enrolled in public elementary and secondary schools, highways that are disproportionately used by upper-income households with the most vehicles, and interest payments on government debt that disproportionately fall on upper-income households who hold government bonds.²⁵

Note that the government spending amounts in Figure 4 include government spending on public goods such as environmental protection, public health, and national defense, as well as spending on private goods and transfer payments. Because of the nonrivalrous and nonexcludable nature of public goods, in the current study spending on public goods

²⁵ For an alternative presentation of results that excludes interest payments on debt, or that allocates them on an alternative basis, see Appendix A.

is allocated equally to U.S. households.²⁶ Because the inclusion of these public goods has sometimes been controversial in previous studies, Table 5 presents the figures both with and without public goods.

As can be seen from the table, the exclusion of public goods does not change the overall distribution of government spending, but reduces the amount of government spending received per household in every quintile by an equal amount. In 2004, total government spending on public goods was roughly \$8,150 per household—\$6,059 in federal spending and \$2,090 in state and local spending.

Table 5. Federal, State and Local Government Spending Received Per Household With and Without Public Goods, Calendar Year 2004

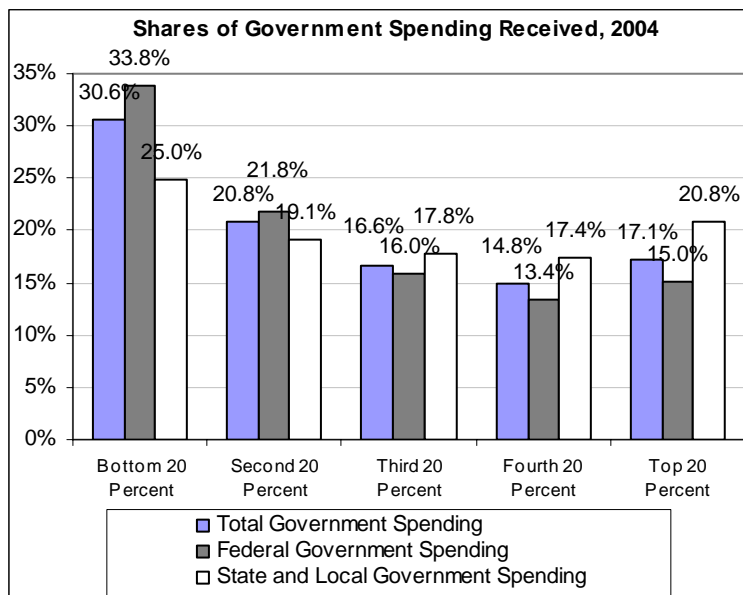
	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Government Spending	\$35,510	\$29,999	\$27,621	\$27,197	\$33,484
Excluding Public Goods	\$27,361	\$21,849	\$19,471	\$19,047	\$25,335
Federal Government Spending	\$24,860	\$19,889	\$16,781	\$15,502	\$18,573
Excluding Public Goods	\$18,801	\$13,830	\$10,722	\$9,443	\$12,514
State and Local Government Spending	\$10,650	\$10,110	\$10,839	\$11,695	\$14,911
Excluding Public Goods	\$8,560	\$8,019	\$8,749	\$9,605	\$12,821

Source: Tax Foundation

Figure 5 presents the share of government spending received by each income quintile. Households in the two lowest income quintiles receive the largest shares of total government spending, together accounting for 51.4 percent of total spending. This result is largely driven by spending on government transfer payments to elderly households—many of whom reside in the lower income quintiles—and other government aid to low-income households. Households in the fourth quintile receive the smallest share of total government spending, at 14.8 percent.

²⁶ See Appendix A for an illustration of how an alternative allocation of public goods affects the study’s results. See also Section III under the headings “Including Public Goods” and “Allocating Public Goods” for a detailed discussion of the treatment of public goods in the current study.

Figure 5. Shares of Government Spending Received, Calendar Year 2004



Source: Tax Foundation

Table 6. Government Spending Shares With and Without Public Goods, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Spending	30.6%	20.8%	16.6%	14.8%	17.1%
Excluding Public Goods	31.9%	20.6%	15.9%	14.1%	17.6%
Federal Spending	33.8%	21.8%	16.0%	13.4%	15.0%
Excluding Public Goods	36.9%	21.9%	14.7%	11.8%	14.6%
State and Local Spending	25.0%	19.1%	17.8%	17.4%	20.8%
Excluding Public Goods	24.5%	18.6%	17.6%	17.5%	21.9%

Source: Tax Foundation

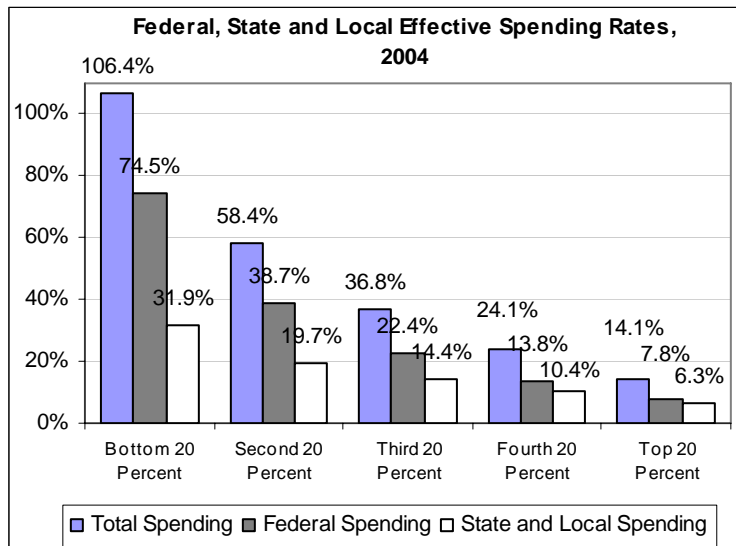
Overall, federal spending shares are greater than state and local spending shares for households in the bottom two income quintiles. In contrast, state and local spending shares are greater than federal spending shares for households in the top three income quintiles. Table 6 presents household shares of government spending received both with and without spending on public goods.

An alternative way to present government spending received is to express it as a percentage of comprehensive household income—“effective spending rates”—which can be compared on a consistent basis with effective tax rates.

Figure 6 presents effective spending rates for federal, state and local government spending. As with effective tax rates, effective spending rates are progressive across all income groups from the highest to the lowest income quintile. Total effective spending rates range from 14.1 percent for the top quintile to 106.4 percent for the bottom quintile.

Both federal and state and local government effective spending rates are steadily progressive across the income scale. As expected, federal government spending is somewhat more progressive than state and local government spending due to the large amounts of federal government transfers targeted at the lowest income quintiles. Table 7 presents effective spending rates both with and without government spending on public goods.

Figure 6. Effective Government Spending Rates (Government Spending Received as a Percentage of Comprehensive Household Income), Calendar Year 2004



Source: Tax Foundation

Table 7. Effective Government Spending Rates With and Without Public Goods, 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Government Spending	106.4%	58.4%	36.8%	24.1%	14.1%
Excluding Public Goods	82.0%	42.5%	26.0%	16.9%	10.7%
Federal Government Spending	74.5%	38.7%	22.4%	13.8%	7.8%
Excluding Public Goods	56.4%	26.9%	14.3%	8.4%	5.3%
State and Local Government Spending	31.9%	19.7%	14.4%	10.4%	6.3%
Excluding Public Goods	25.7%	15.6%	11.7%	8.5%	5.4%

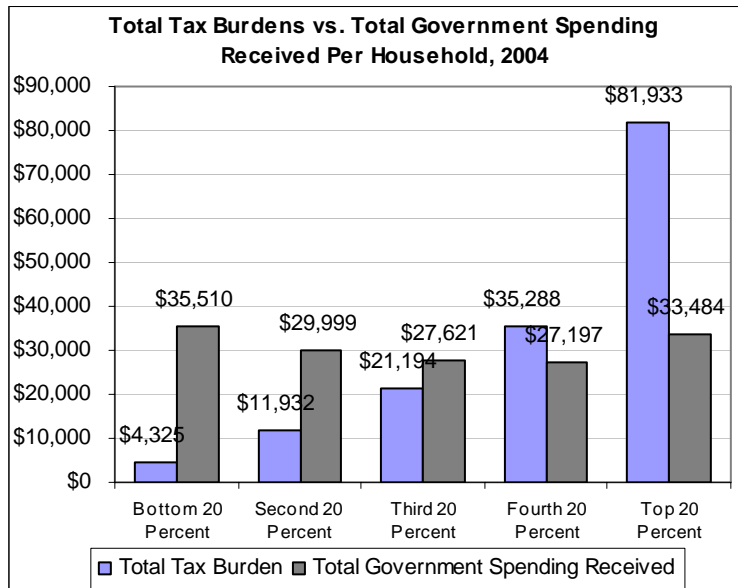
Source: Tax Foundation

3. The Combined Distribution of Taxes and Government Spending: Net Fiscal Incidence

When tax and spending distributions are combined, the progressivity of the overall fiscal system is considerably greater than is apparent from tax distributions alone. Figure 7 and Table 8 present the average dollars of federal, state and local taxes paid per household, along with total government spending received per household. These figures are then combined in Figure 8 and Table 9, which present total government spending received minus total taxes paid per household—what this study refers to as the “net fiscal incidence” of government tax and spending policy.

As is clear from the figures, the combined impact of taxes and government spending gives a dramatically different view of the impact of fiscal policy on households than is apparent from analyzing tax distributions alone.

Figure 7. Total Tax Burdens Per Households Compared to Government Spending Received Per Household, Calendar Year 2004



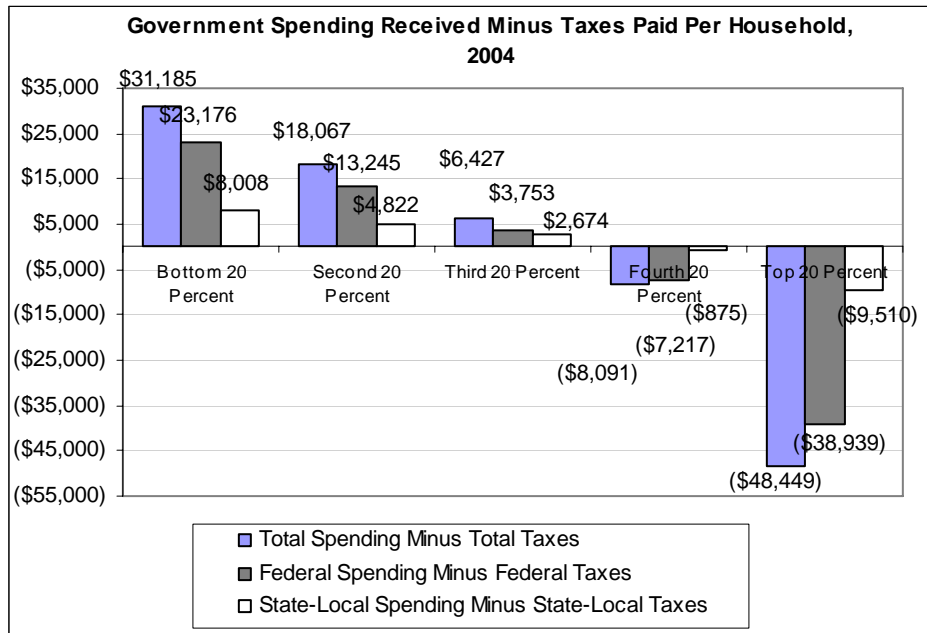
Source: Tax Foundation

Table 8. Total Tax Burden Per Household Compared to Government Spending Received Per Household, With and Without Public Goods, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Tax Burden	\$4,325	\$11,932	\$21,194	\$35,288	\$81,933
Total Government Spending Received	\$35,510	\$29,999	\$27,621	\$27,197	\$33,484
Excluding Public Goods	\$27,361	\$21,849	\$19,471	\$19,047	\$25,335

Source: Tax Foundation

Figure 8. Net Fiscal Incidence: Government Spending Received Per Household Minus Taxes Paid Per Household, Calendar Year 2004



Source: Tax Foundation

Table 9. Net Fiscal Incidence Per Household With and Without Public Goods, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Government Spending Minus Total Taxes	\$31,185	\$18,067	\$6,427	(\$8,091)	(\$48,449)
Excluding Public Goods	\$23,035	\$9,917	(\$1,723)	(\$16,241)	(\$56,598)
Federal Government Spending Minus Federal Taxes	\$23,176	\$13,245	\$3,753	(\$7,217)	(\$38,939)
Excluding Public Goods	\$17,117	\$7,186	(\$2,306)	(\$13,276)	(\$44,998)
State-Local Government Spending Minus State-Local Taxes	\$8,008	\$4,822	\$2,674	(\$875)	(\$9,510)
Excluding Public Goods	\$5,918	\$2,731	\$583	(\$2,965)	(\$11,600)

Source: Tax Foundation

In Figure 8 when all federal, state and local government spending and taxes are accounted for, the bottom three quintiles of income receive on average more dollars of government spending than they pay in total taxes. In contrast, households in the top two quintiles pay more in total taxes than they receive in government spending. Households in the bottom quintile receive an average of \$31,185 more in government spending than they pay in taxes, while households in the top quintile pay \$48,449 more in taxes than they receive in government spending.

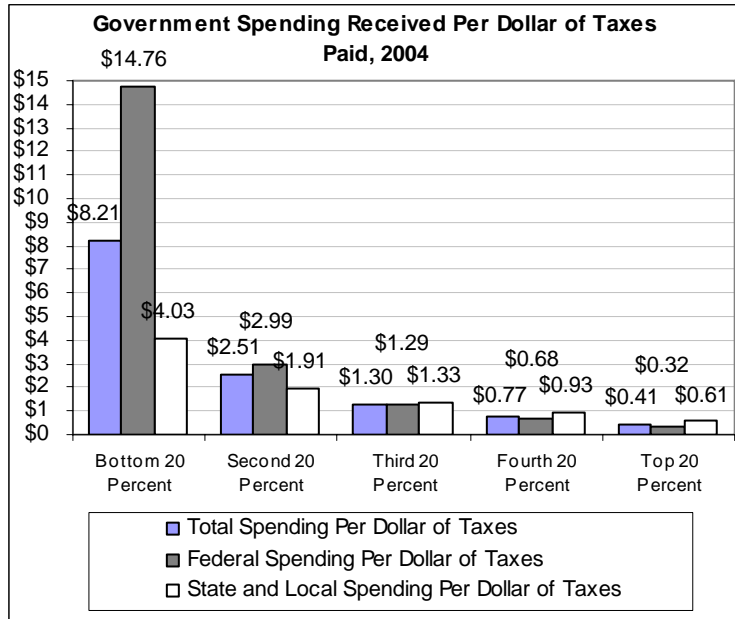
In the aggregate, households in the top two income quintiles pay roughly \$1.031 trillion more in total taxes than they receive in government spending. In contrast, households in the bottom three quintiles receive roughly \$1.527 trillion more in government spending than they pay in total taxes. The difference between the two figures of approximately \$496 billion represents the amount that federal, state and local government spending exceeded tax revenues in Calendar Year 2004. Depending on what assumption is made about which households receive the most non-tax-revenue-financed government spending, between roughly \$1.031 trillion and \$1.527 trillion of fiscal resources were redistributed downward from the two highest-income quintiles to the three lowest-income quintiles through federal, state and local tax and spending policy in 2004.²⁷

One final way of comparing household tax burdens to government spending received is by asking the following question: “For every dollar of taxes paid, how much government spending is targeted at households in return?” Figure 9 and Table 10 presents government spending received by households per dollar of tax burden paid.

For every dollar of tax burden, households in the bottom three quintiles receive more than one dollar of government spending, while households in the two top quintiles receive less than one dollar. Overall, households in the bottom quintile receive \$8.21 in government spending for every dollar of tax, while households in the third quintile receive \$1.30, and households in the top quintile receive \$0.41.

²⁷ It should be noted that this figure consists only of fiscal transfers *between* quintiles, not *within* quintiles. For a full discussion of this issue, see Section IV.

Figure 9. Government Spending Received Per Dollar of Taxes Paid, 2004



Source: Tax Foundation

Table 10. Government Spending Received Per Dollar of Taxes Paid With and Without Public Goods, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Spending Per Dollar of Taxes	\$8.21	\$2.51	\$1.30	\$0.77	\$0.41
Excluding Public Goods	\$6.33	\$1.83	\$0.92	\$0.54	\$0.31
Federal Spending Per Dollar of Taxes	\$14.76	\$2.99	\$1.29	\$0.68	\$0.32
Excluding Public Goods	\$11.17	\$2.08	\$0.82	\$0.42	\$0.22
State and Local Spending Per Dollar of Taxes	\$4.03	\$1.91	\$1.33	\$0.93	\$0.61
Excluding Public Goods	\$3.24	\$1.52	\$1.07	\$0.76	\$0.52

Source: Tax Foundation

Overall, the ratio of federal government spending received to federal taxes is considerably more unequal across income groups than state and local spending and taxes, indicating that federal tax burdens are less linked to federal spending across income groups than is state and local taxes and spending. Households in the bottom quintile receive \$14.76 of federal spending per dollar of federal taxes, compared to \$0.32 for the top quintile. In contrast, households in the lowest quintile receive \$4.03 in state and local spending per dollar of state and local taxes, while households in the top quintile receive \$0.61.

4. Changes in Taxes and Spending Over Time: 1991-2004

An analysis of tax and spending distributions since 1991 reveals subtle changes in the distribution of tax burdens and government spending over time. Table 11 presents the share of total taxes paid by each quintile between 1991 and 2004.

Over that period, the only income group whose share of total taxes increased was the highest income quintile. Their share of total taxes paid increased from 46.4 percent in 1991 to 48.8 percent in 2004 after reaching a peak of 50.6 percent in 2000. In contrast, the share of taxes paid by households in the middle three quintiles each fell between 1991 and 2004. The only quintile with an essentially unchanged share of the nation's total tax burden during that period was the lowest income quintile. Their share remained steady at 4.3 of total taxes in every year.

Table 11. Share of Total Taxes Paid, Calendar Years 1991-2004

	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	46.4%	49.0%	50.6%	48.8%
Fourth 20 Percent	23.1%	22.0%	21.7%	22.4%
Third 20 Percent	16.1%	15.2%	14.4%	14.8%
Second 20 Percent	10.0%	9.5%	9.1%	9.6%
Bottom 20 Percent	4.3%	4.3%	4.3%	4.3%

Source: Tax Foundation

Table 12 shows the share of government spending received by each quintile between 1991 and 2004. Nearly all changes in the shares of total government spending received since 1991 have occurred in the top and bottom income quintiles. Since 1991 the bottom quintile's share of government spending has risen from 27.4 percent to 29.3 percent, while the shares of government spending received by the three middle quintiles have remained largely unchanged with only slight movements. In contrast, the share of government spending received by households in the top quintile fell from 19.8 percent in 1991 to 17.9 percent in 2004.

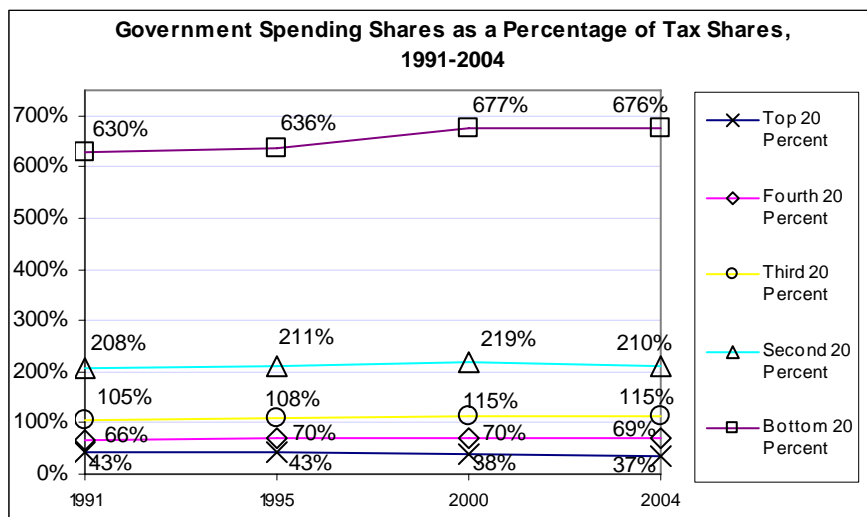
Table 12. Share of Total Government Spending Received, Calendar Years 1991-2004

	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	19.8%	21.0%	19.5%	17.9%
Fourth 20 Percent	15.2%	15.5%	15.2%	15.6%
Third 20 Percent	16.9%	16.4%	16.5%	17.0%
Second 20 Percent	20.7%	20.0%	20.0%	20.3%
Bottom 20 Percent	27.4%	27.1%	28.8%	29.3%

Source: Tax Foundation

When the ratio of government spending shares to tax shares is plotted over time, the result shows whether a quintile's share of taxes or share of government spending is growing faster over time. If the ratio is rising, a quintile's spending share is growing faster than its tax share. If the ratio is falling, a quintile's tax share is outpacing its share of government spending over time. Figure 10 presents the ratio of government spending shares to household tax shares between 1991 and 2004.

Figure 10. Ratio of Government Spending Shares to Tax Shares, Calendar Years 1991-2004



Source: Tax Foundation

Since 1991, the share of government spending received by the bottom four quintiles grew faster than their share of taxes with households in the bottom quintile enjoying the largest gains. Since 1991, the top quintile is the only group whose share of taxes grew faster than its share of government spending. By this measure, the overall fiscal system became somewhat more favorable toward households in the four lowest quintiles between 1991 and 2004, and somewhat less favorable toward households in the top quintile. In the remainder of this study, we analyze each of these trends in the distribution of tax burdens and government spending in detail.

II. The Distribution of Tax Burdens

The question of who pays taxes and who does not has long dominated tax policy debates. While tax debates sometimes center on the distribution of taxes by geography or age, by far the most commonly debated tax distribution is by income groups. Are taxes progressive or regressive with respect to household income? The following section outlines the current study's approach to estimating the distribution of taxes across income groups, and provides new estimates of federal, state and local tax burdens for quintiles of household cash money income between 1991 and 2004.

A. Tax Incidence and Excess Burdens

In general, the real economic burden of taxes is larger than the dollar amount of revenue collected. In addition to tax collections, taxes generally result in what economists refer to as “excess burdens” in the form of tax compliance costs, as well as various efficiency losses in the marketplace known as “deadweight losses.” Additionally, because distortionary taxation affects savings and capital accumulation throughout the economy, the true burden of taxation is not only much larger than the initial economic incidence, but these final economic burdens may follow a very different distributional pattern than initial tax incidence alone.²⁸

An ideal study of tax burdens would measure the true burdens of taxation, including the full loss of economic well-being by households, not only the initial incidence of the dollars of revenue collected by governments. However, data limitations make it difficult to incorporate measures of excess burdens into tax distribution studies, and for that reason we follow the conventional approach among distributional studies and examine only the initial economic incidence of taxes.

Throughout the study, the term “tax burden” refers only to this initial incidence of taxes, and is assumed to be equal to the dollar amounts of tax revenue collected by governments each period. That is, within the economist's supply-and-demand framework for taxation

²⁸ See Entin (2004).

we measure only the “rectangle” of government revenue and ignore the “Harberger triangle” of deadweight losses and any other excess burdens that result from distortionary taxation.²⁹

B. Assumptions of Tax Incidence

The question of who bears the burden of taxes cannot be answered by only examining who remits tax payments to governments. Instead, tax distributions must analyze the economic incidence of taxes once all tax-shifting behavior in the marketplace is taken into account. An ideal study of tax distributions would rigorously develop these incidence assumptions by examining the relative price elasticities of supply and demand in each market subject to taxation.³⁰ Unfortunately, data for such comparisons is largely unavailable in practice. Instead, researchers must piece together economic theory and empirical evidence into a plausible set of assumptions about the true economic burden of taxes.

In the current study we employ conventional tax incidence assumptions that provide, on whole, a reliable estimate of the distribution of federal, state and local tax burdens. While the economic incidence of some minor taxes may be less certain than others, the incidence of the major taxes that make up the vast majority of federal, state and local tax collections—such as individual income, sales and payroll taxes—are largely uncontroversial.

Table 13 presents the full list of federal, state and local taxes included in the current study and their Calendar Year 2004 amounts. The refundable portions of all tax credits, such as the Earned Income Tax Credit (EITC) and the Child Tax Credit are categorized as government spending in the current study, and are excluded from all tax burden estimates. For a complete list of tax incidence assumptions, see Appendix C. For

²⁹ See Harberger (1964).

³⁰ Economists define the price elasticity of demand as the sensitivity of the quantity demanded of any good to changes in its price. In general, individuals with high elasticities of supply or demand tend to bear a smaller portion of tax burdens, as they have more close substitutes for the taxed good.

alternative presentations of results, including alternative assumptions about the incidence of corporate income taxes, see Appendix A.

Table 13. Federal, State and Local Taxes Allocated in the Current Study, Calendar Year 2004

Federal Taxes	Calendar Year 2004 Amount
Payroll Taxes (Contributions for Government Social Insurance)	\$802,200,000,000
Individual Income Taxes	\$801,400,000,000
Corporate Income Taxes	\$244,500,000,000
Estate and Gift Taxes	\$24,600,000,000
Gasoline Excise Taxes	\$24,200,000,000
Customs Duties, Etc.	\$23,300,000,000
Air Transport Excise Taxes	\$12,100,000,000
Other Excise Taxes	\$10,400,000,000
Diesel Fuel Excise Taxes	\$9,200,000,000
Alcoholic Beverages Excise Taxes	\$8,400,000,000
Tobacco Excise Taxes	\$7,100,000,000
Total Federal Taxes	\$1,967,400,000,000
State and Local Taxes	
Property Taxes	\$329,800,000,000
General Sales and Gross Receipts Taxes	\$254,200,000,000
Individual Income Taxes	\$225,100,000,000
Other Taxes on Production and Imports	\$48,200,000,000
Corporate Income Taxes	\$43,100,000,000
Gasoline Excise Taxes	\$33,800,000,000
Other Excise Taxes	\$29,300,000,000
Public Utilities Taxes	\$21,600,000,000
Insurance Receipts Taxes	\$14,600,000,000
Personal Motor Vehicle License Taxes	\$13,600,000,000
Tobacco Excise Taxes	\$12,300,000,000
Motor Vehicle Licenses on Production & Imports	\$7,600,000,000
Severance Taxes	\$6,900,000,000
Special Assessments Taxes	\$6,500,000,000
Personal Property Taxes	\$5,700,000,000
Estate and Gift Taxes	\$5,700,000,000
Alcoholic Beverages Excise Taxes	\$4,600,000,000
Other Personal Taxes	\$4,100,000,000
Total State and Local Taxes	\$1,066,700,000,000

Source: U.S. Commerce Department's Bureau of Economic Analysis; Tax Foundation

C. Expressing Taxes Relative to Income

A basic issue when presenting tax burdens is how dollar amounts of taxes should be expressed when comparing taxes between different households. The most common way is to present tax burdens as a percentage of household income. This presentation is generally chosen as a way to relate taxes to some measure of a household's ability to pay taxes. Although this way of presenting tax burdens is controversial—as it implicitly endorses a normative theory of tax fairness known as “ability to pay” and rejects

alternative theories such as “benefits received”³¹—it is conventional among tax distribution studies, and the current study follows this convention.

As explained in detail in Section I and Appendix B, it is important to choose a proper income measure when expressing effective tax rates. Income measures must be sufficiently broad to capture all forms of market-based income throughout the economy but must also account for the heavy reliance of low-income households on government transfer payments. In the current study, we employ a broad household income concept that consists of households’ market incomes—which in the aggregate equals Net National Product as measured by the U.S. Commerce Department’s Bureau of Economic Analysis—plus the value of all net government transfers received by households. This broad household income concept is used whenever effective tax rates are presented.³²

³¹ See Thorndike and Ventry (2002).

³² See Appendix B for a complete discussion of the income concept employed in the current study.

D. Detailed Tax Distribution Results

The following section presents detailed tables of the tax burden by income quintile in the United States. Tax burdens, tax shares and effective tax rates are presented first. Then we present the distribution of each type of federal, state and local tax. Finally, we present trends in U.S. tax distributions between 1991 and 2004.

1. Effective Tax Rates and Burdens

The overall tax system is progressive, and has remained so between 1991 and 2004. Table 14 presents household effective tax rates, and Table 15 presents average dollars of household tax burdens. Federal effective tax rates are generally much more progressive than taxes at the state and local level.³³ Overall state and local effective tax rates show slight progressivity over the first four quintiles and slight regressivity between the fourth and fifth quintiles. This pattern remained constant for all four time periods analyzed.

Table 14. Federal, State and Local Effective Tax Rates (Taxes as a Percentage of Comprehensive Household Income), Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Taxes	12.97%	23.21%	28.25%	31.32%	34.55%
Federal Taxes	5.05%	12.92%	17.37%	20.16%	24.25%
State and Local Taxes	7.92%	10.29%	10.88%	11.16%	10.30%

Source: Tax Foundation

Table 15. Average Dollar Tax Burdens Per Household, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Taxes	\$4,325	\$11,932	\$21,194	\$35,288	\$81,933
Federal Taxes	\$1,684	\$6,644	\$13,028	\$22,719	\$57,512
State and Local Taxes	\$2,642	\$5,288	\$8,166	\$12,570	\$24,421

Source: Tax Foundation

The following two tables examine the tax burden of various federal, state and local taxes in detail. Table 16 and Table 17 present average effective tax rates for each type of tax examined in the current study and the dollar amounts of tax burden for each type of tax.

³³ Note that the refundable portions of the Earned Income Tax Credit and the Child Tax Credit are classified as government spending programs in this study, and are not included in estimates of federal tax burdens.

As expected, Table 16 shows that effective tax rates for state and local general sales taxes are regressive over the top three quintiles of income, while both federal and state-local income taxes are strongly progressive throughout. Effective tax rates for tobacco taxes, alcohol taxes, customs duties and other excise taxes are regressive across all income groups.

Table 17 shows that the dollar amount of state and local tax burdens are greater than federal tax burdens only for households in the bottom income quintile. For all other quintiles, federal taxes make up a larger portion of households' total tax bills than state and local taxes. Looking at the two largest federal taxes in Table 17—individual income taxes and payroll taxes—households in the bottom quintile pay over five times more in payroll taxes (including both employee and employer contributions) than in income taxes. Only for the top quintile do federal income taxes exceed payroll taxes.

This result is largely driven by two factors. First, most income earned by the bottom four quintiles of income is taxed at the relatively low 10 percent and 15 percent federal income tax rates. Second, much of the income earned by households in the top quintile was above the 2004 cap on Social Security payroll taxes of \$87,900, limiting their payroll tax liabilities.

One notable result from Table 17 is that at the federal level, households in the bottom quintile on average pay more dollars of corporate income taxes than in individual income taxes.

Table 16. Average Effective Tax Rates by Type of Tax, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Tax Burden	12.97%	23.21%	28.25%	31.32%	34.55%
Federal Taxes					
Income	0.51%	2.78%	4.96%	7.08%	12.34%
Payroll	2.75%	7.11%	9.05%	9.53%	7.79%
Corporate Income	0.81%	1.94%	2.31%	2.57%	2.78%
Gasoline	0.21%	0.27%	0.27%	0.25%	0.21%
Alcoholic Beverages	0.10%	0.10%	0.10%	0.09%	0.06%
Tobacco	0.15%	0.13%	0.10%	0.06%	0.02%
Diesel Fuel	0.03%	0.07%	0.09%	0.10%	0.10%
Air Transport	0.06%	0.10%	0.11%	0.13%	0.13%
Other Excise	0.13%	0.13%	0.12%	0.11%	0.07%
Customs, Duties, etc.	0.29%	0.29%	0.27%	0.25%	0.17%
Estate & Gift	0.00%	0.00%	0.00%	0.00%	0.57%
Total Federal	5.05%	12.92%	17.37%	20.16%	24.25%
State and Local Taxes					
Income	0.22%	1.13%	1.79%	2.31%	3.03%
Corporate Income	0.14%	0.34%	0.41%	0.45%	0.49%
Personal Property	0.05%	0.07%	0.07%	0.06%	0.05%
Motor Vehicle License	0.20%	0.21%	0.18%	0.14%	0.07%
Other Personal Taxes	0.02%	0.04%	0.04%	0.04%	0.04%
General Sales	2.56%	2.91%	2.92%	2.85%	1.94%
Gasoline	0.29%	0.37%	0.38%	0.35%	0.29%
Alcoholic Beverages	0.06%	0.05%	0.05%	0.05%	0.03%
Tobacco	0.26%	0.23%	0.17%	0.10%	0.04%
Public Utilities	0.37%	0.32%	0.27%	0.21%	0.12%
Insurance Receipts	0.20%	0.20%	0.18%	0.15%	0.09%
Other Selective Sales	0.36%	0.36%	0.34%	0.31%	0.21%
Motor Vehicle (Business)	0.03%	0.06%	0.07%	0.08%	0.09%
Severance	0.07%	0.08%	0.08%	0.07%	0.06%
Property	2.88%	3.45%	3.44%	3.41%	3.00%
Special Assessments	0.06%	0.07%	0.07%	0.07%	0.06%
Other Production Taxes	0.16%	0.38%	0.46%	0.51%	0.55%
Estate & Gift	0.00%	0.00%	0.00%	0.00%	0.13%
Total State and Local	7.92%	10.29%	10.88%	11.16%	10.30%

Source: Tax Foundation

Table 17. Average Dollar Tax Burdens by Type of Tax Per Household, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Tax Burden	\$4,325	\$11,932	\$21,194	\$35,288	\$81,933
Federal Taxes					
Income	\$171	\$1,431	\$3,720	\$7,973	\$29,257
Payroll	\$917	\$3,656	\$6,788	\$10,737	\$18,470
Corporate Income	\$271	\$999	\$1,734	\$2,894	\$6,597
Gasoline	\$69	\$138	\$202	\$286	\$493
Alcoholic Beverages	\$34	\$52	\$75	\$102	\$141
Tobacco	\$51	\$67	\$73	\$68	\$59
Diesel Fuel	\$10	\$38	\$65	\$109	\$248
Air Transport	\$22	\$51	\$81	\$147	\$312
Other Excise	\$43	\$66	\$89	\$124	\$177
Customs, Duties, etc.	\$96	\$147	\$200	\$279	\$396
Estate & Gift	\$0	\$0	\$0	\$0	\$1,362
Total Federal	\$1,684	\$6,644	\$13,028	\$22,719	\$57,512
State and Local Taxes					
Income	\$75	\$583	\$1,341	\$2,598	\$7,197
Corporate Income	\$48	\$176	\$306	\$510	\$1,163
Personal Property	\$16	\$36	\$49	\$69	\$108
Motor Vehicle License	\$66	\$106	\$134	\$156	\$175
Other Personal Taxes	\$8	\$19	\$32	\$48	\$99
General Sales	\$853	\$1,498	\$2,188	\$3,211	\$4,606
Gasoline	\$97	\$192	\$283	\$399	\$689
Alcoholic Beverages	\$19	\$28	\$41	\$56	\$77
Tobacco	\$87	\$116	\$126	\$118	\$102
Public Utilities	\$123	\$167	\$199	\$234	\$280
Insurance Receipts	\$66	\$105	\$131	\$166	\$223
Other Selective Sales	\$121	\$185	\$252	\$350	\$498
Motor Vehicle (Business)	\$8	\$31	\$54	\$90	\$205
Severance	\$22	\$40	\$57	\$79	\$139
Property	\$961	\$1,773	\$2,580	\$3,839	\$7,104
Special Assessments	\$19	\$35	\$51	\$76	\$140
Other Production Taxes	\$53	\$197	\$342	\$571	\$1,300
Estate & Gift	\$0	\$0	\$0	\$0	\$316
Total State and Local	\$2,642	\$5,288	\$8,166	\$12,570	\$24,421

Source: Tax Foundation

2. Tax Shares

Table 18 presents the share of each type of tax that is borne by each quintile. Overall, nearly 53 percent of the total federal tax burden is borne by the top 20 percent of households. Nearly two-thirds of the federal individual income tax is paid by the highest quintile, while just 15 percent of tobacco taxes are paid by that quintile.

Taxes that appear to fall most heavily on households in the lower-income quintiles include tobacco taxes, public utilities taxes, and motor vehicle licenses. Estate taxes and individual income taxes are borne most heavily by households in upper-income quintiles. Section IV presents a more formal examination of which taxes fall most heavily on upper

and lower income groups, and calculates what are known as “Suits Indexes” for each type of tax.

Table 18. Tax Shares by Type of Tax, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Tax Burden	4.3%	9.6%	14.8%	22.4%	48.8%
Federal Taxes					
Income	0.6%	4.4%	9.9%	19.2%	65.9%
Payroll	3.5%	11.2%	18.0%	25.8%	41.6%
Corporate Income	3.4%	10.0%	15.1%	22.8%	48.7%
Gasoline	8.7%	13.9%	17.8%	22.8%	36.8%
Alcoholic Beverages	12.3%	15.0%	18.9%	23.3%	30.4%
Tobacco	21.6%	23.1%	21.8%	18.5%	15.0%
Diesel Fuel	3.4%	10.0%	15.1%	22.8%	48.7%
Air Transport	5.4%	10.4%	14.3%	23.3%	46.5%
Other Excise	12.5%	15.5%	18.3%	23.0%	30.7%
Customs, Duties, etc.	12.5%	15.5%	18.3%	23.0%	30.7%
Estate & Gift	0.0%	0.0%	0.0%	0.0%	100.0%
Total Federal Taxes	2.6%	8.3%	14.1%	22.2%	52.8%
State and Local Taxes					
Income	1.0%	6.3%	12.7%	22.2%	57.7%
Corporate Income	3.4%	10.0%	15.1%	22.8%	48.7%
Personal Property	8.6%	15.6%	18.3%	23.4%	34.1%
Motor Vehicle License	14.7%	19.1%	21.0%	22.1%	23.2%
Other Personal Taxes	5.7%	11.6%	16.5%	22.5%	43.7%
General Sales	10.2%	14.5%	18.3%	24.3%	32.7%
Gasoline	8.7%	13.9%	17.8%	22.8%	36.8%
Alcoholic Beverages	12.3%	15.0%	18.9%	23.3%	30.4%
Tobacco	21.6%	23.1%	21.8%	18.5%	15.0%
Public Utilities	17.2%	18.9%	19.6%	20.9%	23.4%
Insurance Receipts	13.7%	17.7%	19.1%	22.0%	27.6%
Other Selective Sales	12.5%	15.5%	18.3%	23.0%	30.7%
Motor Vehicle (Business)	3.4%	10.0%	15.1%	22.8%	48.7%
Severance	9.7%	14.3%	17.5%	22.2%	36.4%
Property	8.9%	13.2%	16.6%	22.4%	38.9%
Special Assessments	8.9%	13.2%	16.6%	22.4%	38.9%
Other Production Taxes	3.4%	10.0%	15.1%	22.8%	48.7%
Estate & Gift	0.0%	0.0%	0.0%	0.0%	100.0%
State and Local Total	7.5%	12.2%	16.3%	22.7%	41.4%

Source: Tax Foundation

3. Composition of Tax Burdens

Table 19 and Figure 11 present a slightly different view of tax shares. They illustrate which taxes are most burdensome for households in each income quintile.

Previous studies from the Congressional Budget Office and others have demonstrated that households in the bottom income quintile pay a larger fraction of their total tax burden in payroll taxes than in federal individual income taxes. This study confirms that

finding. However, Table 19 and Figure 11 go a step further, illustrating what fraction of each quintile's total tax burden is made up by each type of federal, state and local tax.

As seen in Table 19, federal income taxes make up roughly 4 percent of the total tax burden faced by households in the bottom quintile, while state and local general sales taxes make up nearly 20 percent. In contrast, federal income taxes represent an enormous burden to households in the top quintile, while state and local general sales taxes are paltry in comparison. For households in the middle income quintile, the single largest component of their total tax bill is the federal payroll tax, which makes up nearly one-third of their total annual tax burden.

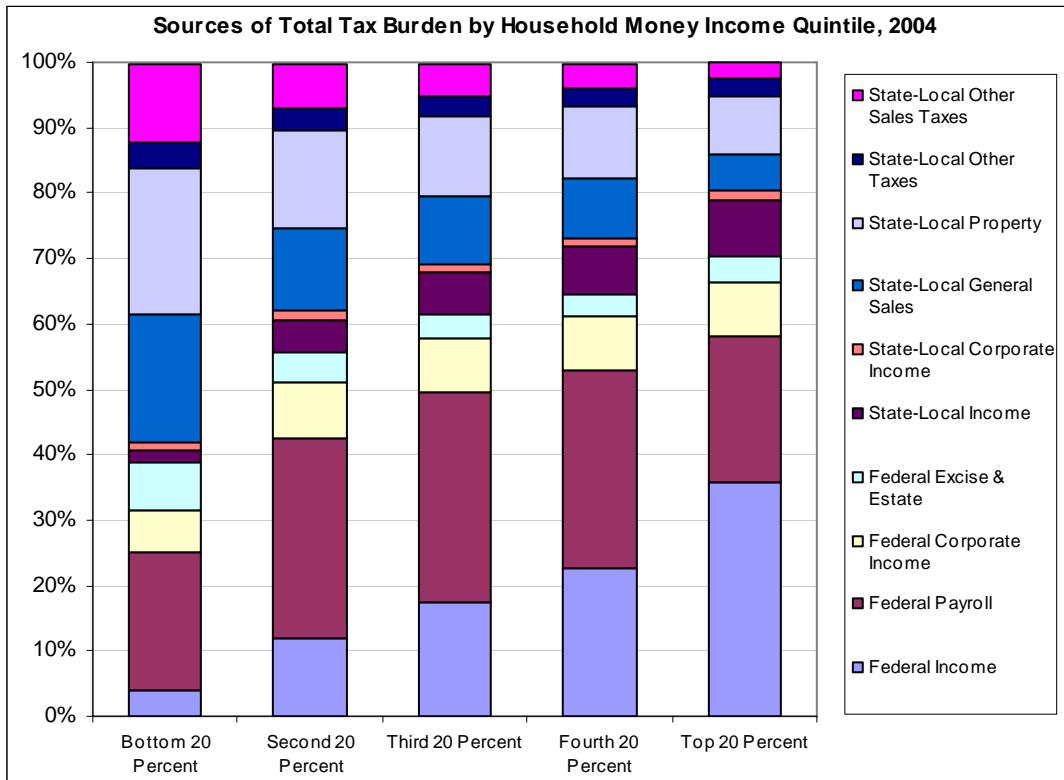
In general, state and local taxes are the most burdensome to households in lower-income quintiles, while federal taxes are the most burdensome for households in the middle and upper-income quintiles.

Table 19. Fraction of Each Quintile's Total Tax Burden Accounted for By Each Type of Tax, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Tax Burden	100%	100%	100%	100%	100%
Federal Taxes					
Income	4.0%	12.0%	17.6%	22.6%	35.7%
Payroll	21.2%	30.6%	32.0%	30.4%	22.5%
Corporate Income	6.3%	8.4%	8.2%	8.2%	8.1%
Gasoline	1.6%	1.2%	1.0%	0.8%	0.6%
Alcoholic Beverages	0.8%	0.4%	0.4%	0.3%	0.2%
Tobacco	1.2%	0.6%	0.3%	0.2%	0.1%
Diesel Fuel	0.2%	0.3%	0.3%	0.3%	0.3%
Air Transport	0.5%	0.4%	0.4%	0.4%	0.4%
Other Excise	1.0%	0.6%	0.4%	0.4%	0.2%
Customs, Duties, etc.	2.2%	1.2%	0.9%	0.8%	0.5%
Estate & Gift	0.0%	0.0%	0.0%	0.0%	1.7%
Total Federal Taxes	38.9%	55.7%	61.5%	64.4%	70.2%
State and Local Taxes					
Income	1.7%	4.9%	6.3%	7.4%	8.8%
Corporate Income	1.1%	1.5%	1.4%	1.4%	1.4%
Personal Property	0.4%	0.3%	0.2%	0.2%	0.1%
Motor Vehicle License	1.5%	0.9%	0.6%	0.4%	0.2%
Other Personal Taxes	0.2%	0.2%	0.1%	0.1%	0.1%
General Sales	19.7%	12.6%	10.3%	9.1%	5.6%
Gasoline	2.2%	1.6%	1.3%	1.1%	0.8%
Alcoholic Beverages	0.4%	0.2%	0.2%	0.2%	0.1%
Tobacco	2.0%	1.0%	0.6%	0.3%	0.1%
Public Utilities	2.8%	1.4%	0.9%	0.7%	0.3%
Insurance Receipts	1.5%	0.9%	0.6%	0.5%	0.3%
Other Selective Sales	2.8%	1.6%	1.2%	1.0%	0.6%
Motor Vehicle (Biz)	0.2%	0.3%	0.3%	0.3%	0.3%
Severance	0.5%	0.3%	0.3%	0.2%	0.2%
Property	22.2%	14.9%	12.2%	10.9%	8.7%
Special Assessments	0.4%	0.3%	0.2%	0.2%	0.2%
Other Production Taxes	1.2%	1.7%	1.6%	1.6%	1.6%
Estate & Gift	0.0%	0.0%	0.0%	0.0%	0.4%
Total State and Local Taxes	61.1%	44.3%	38.5%	35.6%	29.8%

Source: Tax Foundation

Figure 11. Fraction of Each Quintile’s Total Tax Burden Accounted for By Each Type of Tax, Calendar Year 2004



Source: Tax Foundation

4. Changes in Tax Distributions, 1991-2004

While tax distributions for a single time period can be illuminating, it is also useful to place them in context by analyzing how the distribution of taxes has changed over time. The following tables analyze changes in federal, state and local tax burdens for four different calendar years: 1991, 1995, 2000 and 2004.

Changes in Effective Tax Rates

Table 20 presents changes in effective tax rates between calendar years 1991 and 2004. As is clear from the table, effective tax rates have fallen across the board between 2000 and 2004. This result is primarily caused by two factors. First, federal income taxes were significantly reduced in both 2001 and 2003, resulting in lower federal effective tax rates for all quintiles. Second, incomes for many households in the top quintile have fallen sharply since 2000 due to the collapse of the late-1990s stock market boom. This decline followed a general increasing trend in effective tax rates throughout the 1990s, which was

largely the result of rapidly growing incomes throughout the 1990s, resulting in rising federal tax burdens.

At the state and local level, effective tax rates fell for both the lowest and highest income quintiles between 1991 and 2004 but increased slightly for the three middle quintiles. Households in the second quintile faced the largest increase in state and local effective tax rates over the period, which rose from 9.6 percent to 10.3 percent.

Table 20. Average Effective Tax Rates, Calendar Years 1991-2004

Total Effective Tax Rates	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	36.5%	36.5%	39.6%	34.5%
Fourth 20 Percent	32.3%	33.8%	35.5%	31.3%
Third 20 Percent	29.1%	30.7%	31.7%	28.2%
Second 20 Percent	23.3%	24.4%	26.3%	23.2%
Bottom 20 Percent	13.7%	13.5%	15.5%	13.0%

Federal Effective Tax Rates	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	25.7%	26.1%	29.3%	24.3%
Fourth 20 Percent	21.4%	22.7%	24.6%	20.2%
Third 20 Percent	18.6%	19.8%	20.9%	17.4%
Second 20 Percent	13.6%	14.3%	15.8%	12.9%
Bottom 20 Percent	5.6%	5.6%	6.6%	5.0%

State and Local Effective Tax Rates	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	10.8%	10.4%	10.3%	10.3%
Fourth 20 Percent	10.9%	11.1%	10.9%	11.2%
Third 20 Percent	10.5%	10.9%	10.8%	10.9%
Second 20 Percent	9.6%	10.1%	10.5%	10.3%
Bottom 20 Percent	8.1%	7.9%	8.9%	7.9%

Source: Tax Foundation

Changes in Effective Tax Shares

Table 21 shows changes in the share of taxes paid by different income quintiles between 1991 and 2004, and Table 22 shows changes in the share of comprehensive household income earned by each group.

The share of taxes paid by the highest income quintile has risen since 1991 but fallen since 2000, a trend that has largely been driven by the growing share of comprehensive income earned by that quintile. For households in the bottom quintile, the share of total taxes paid has remained essentially unchanged at 4.3 percent of income between 1991

and 2004. For households in the middle quintile, their share of total taxes has fallen since 1991 along with its share of total income.

Table 21. Tax Shares, Calendar Years 1991-2004

Percentage of Total Tax Paid	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	46.4%	49.0%	50.6%	48.8%
Fourth 20 Percent	23.1%	22.0%	21.7%	22.4%
Third 20 Percent	16.1%	15.2%	14.4%	14.8%
Second 20 Percent	10.0%	9.5%	9.1%	9.6%
Bottom 20 Percent	4.3%	4.3%	4.3%	4.3%

Percentage of Federal Taxes Paid	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	49.5%	52.3%	54.1%	52.8%
Fourth 20 Percent	23.3%	22.1%	21.7%	22.2%
Third 20 Percent	15.6%	14.7%	13.7%	14.1%
Second 20 Percent	8.9%	8.3%	7.9%	8.3%
Bottom 20 Percent	2.7%	2.6%	2.6%	2.6%

Percentage of State and Local Taxes Paid	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	40.4%	42.2%	42.2%	41.4%
Fourth 20 Percent	22.9%	21.9%	21.9%	22.7%
Third 20 Percent	17.0%	16.4%	16.4%	16.3%
Second 20 Percent	12.1%	11.9%	11.9%	12.2%
Bottom 20 Percent	7.6%	7.6%	7.6%	7.5%

Source: Tax Foundation

Changes in Comprehensive Household Income

Table 22 shows the share of comprehensive household income earned by each income quintile between 1991 and 2004. Households in the top income quintile earned approximately 41.5 percent of comprehensive household income—which consists of both market-based income and the net value of government transfer payments—in 2004, while paying 48.8 percent of total taxes. In contrast, households in the bottom quintile earned 9.8 percent of comprehensive household income, while paying 4.3 percent of total taxes, illustrating the overall progressivity of total U.S. effective tax rates.

Table 22. Shares of Comprehensive Household Market Income Plus Net Transfers, Calendar Years 1991-2004

Share of Comprehensive Household Market Income Plus Net Transfers	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	38.7%	42.0%	43.1%	41.5%
Fourth 20 Percent	21.8%	20.4%	20.6%	21.0%
Third 20 Percent	16.8%	15.5%	15.3%	15.4%
Second 20 Percent	13.0%	12.2%	11.7%	12.2%
Bottom 20 Percent	9.7%	9.9%	9.3%	9.8%

Source: Tax Foundation

III. The Distribution of Government Spending

While there is a large literature on the distribution of taxes across income groups, few modern studies apply the logic of distributional analysis to the spending side of government policy. This section describes the current study's approach to estimating government spending distributions, and provides detailed estimates for federal, state and local government spending categories for 1991, 1995, 2000 and 2004.

A. Overview of Methods

The current study analyzes government spending at two levels: federal spending and combined state and local spending. Within those levels, government spending is grouped by functional category rather than by department budget.³⁴ That is, government spending on the broad category "national defense" is analyzed rather than the separate budgets of the Department of Defense, the Department of Homeland Security, and so on.

These functional government spending categories can then be broadly classified into four conceptual types: public goods, private goods, quasi-private goods and transfer payments. Each is briefly discussed below.

1. Types of Government Spending

Public Goods

Public goods represent services that are valued by households but would not likely be provided in sufficient amounts by private markets alone. They are among the most basic functions of government and are defined by two characteristics. First, it is difficult to prevent those who do not pay from using them. And second, one person's usage does not

³⁴ This study makes use of broad functional categories of government spending derived from the Bureau of Economic Analysis' National Income and Product Accounts, Table 3.16. These functional categories differ from those used by the Office of Management and Budget and are not strictly comparable. See Appendix C for a technical discussion of the categorization of government spending in this study.

reduce the amount left for others. Economists refer to these two characteristics as “nonexcludability” and “nonrivalrous consumption.”

Although there is controversy in practice about which government services represent pure public goods,³⁵ common examples in theory include national defense, environmental protection, and publicly-shared research and development. Of the roughly \$3.53 trillion of total government spending in 2004, the current study categorizes approximately 26.2 percent as public goods. Table 23 lists the federal, state and local government spending categorized as public goods in this study and their estimated amounts.

Table 23. Government Spending Classified as Public Goods, Calendar Year 2004

Item	Calendar Year 2004 Amount
Federal	
General Public Service	
Executive and Legislative	\$57,400,000,000
Tax collection and financial management	\$12,400,000,000
Other	\$0
National defense	\$487,400,000,000
Public order and safety	
Law courts	\$6,900,000,000
Prisons	\$4,700,000,000
Economic affairs	
Space	\$15,300,000,000
Other economic affairs	
Natural resources	\$17,200,000,000
Housing and community services	
Disaster relief	\$19,874,000,000
Health	
Other miscellaneous	\$66,387,000,000
Total Federal	\$687,561,000,000
State and Local	
General Public Service	
Executive and Legislative	\$18,400,000,000
Tax collection and financial management	\$33,400,000,000
Other	\$73,450,000,000
Public order and safety	
Law courts	\$34,900,000,000
Prisons	\$59,500,000,000
Economic affairs	
Natural resources	\$9,300,000,000
Misc. Health	\$8,261,000,000
Total State and Local	\$237,211,000,000
Total Federal, State and Local	\$924,772,000,000
Percentage of Total Government Spending	26.2%

Note: Totals may not add due to rounding.

³⁵ See for example Cowen (1988). For an early theoretical defense of public goods as a market failure see Samuelson (1954).

Source: Tax Foundation, Bureau of Economic Analysis, Office of Management and Budget, Centers for Medicare and Medicaid Services

Private and Quasi-Private Goods

Government spending on private goods consists of goods and services that are supplied to households by the state but which are not public goods as defined above. In theory, private goods may be supplied by private markets rather than governments. However in practice governments commonly supply them to satisfy the demands of voters, redistribute income, or otherwise intervene in regular market outcomes. Common examples of private goods include public schools, public transportation and highway construction and maintenance.

In addition, some government spending programs such as police and fire protection do not fit the criteria for public goods—both are clearly rivalrous and excludable in practice³⁶—yet appear to accrue equally to households in the absence of more detailed data on households’ utilization rates for these services. In the current study, these items are classified as “quasi-private goods.” They represent government spending that could theoretically be allocated to households based on utilization rates, but for which there is little data available to do so. They include fire protection, police, public parks, water provision and libraries. Approximately 32 percent of total government spending in 2004 was classified as private or quasi-private goods, which is listed in Table 24.

³⁶ See Carlson (2005), and Weicher (1971).

Table 24. Government Spending Classified as Private and Quasi-Private Goods, Calendar Year 2004

Item	Calendar Year 2004 Amount
Federal	
General Public Service	
Interest payments	\$111,694,000,000
Public order and safety	
Police	\$24,900,000,000
Fire	\$300,000,000
Economic affairs	
Transportation	
Highways	\$800,000,000
Air	\$16,200,000,000
Water	\$9,600,000,000
Transit and railroad	\$2,000,000,000
Other economic affairs	
General economic and labor affairs	\$16,900,000,000
Agriculture	\$23,500,000,000
Energy	\$13,800,000,000
Postal service	\$0
Recreation and culture	\$4,700,000,000
Education	
Elementary and secondary	\$33,100,000,000
Higher	\$20,100,000,000
Other	\$14,100,000,000
Total Federal	\$291,694,000,000
State and Local	
General Public Service	
Interest payments	\$91,800,000,000
Public order and safety	
Police	\$70,050,000,000
Fire	\$26,750,000,000
Economic affairs	
Transportation	
Highways	\$85,900,000,000
Transit and railroad	\$400,000,000
Other economic affairs	
General economic and labor affairs	\$11,100,000,000
Agriculture	\$5,100,000,000
Energy	\$0
Other	\$0
Recreation and culture	\$21,100,000,000
Education	
Elementary and secondary	\$407,800,000,000
Higher	\$83,800,000,000
Libraries and other	
Libraries	\$8,000,000,000
Other	\$26,600,000,000
Total State and Local	\$838,400,000,000
Total Federal, State and Local	\$1,130,094,000,000
Percentage of Total Government Spending	32.0%

Note: Totals may not add due to rounding.

Source: Tax Foundation, Bureau of Economic Analysis, Office of Management and Budget, Centers for Medicare and Medicaid Services

Transfer Payments

Government transfer payments consist of dollar amounts of income directly transferred from one household to another by government. Strictly speaking, these expenditures are private goods. However, they differ in that they are supplied at their cash value to households rather than in-kind. Common examples include Social Security payments, unemployment compensation, and cash aid to needy families. Quasi-transfers such as Medicare, Medicaid, and housing assistance are also classified as transfers in the current study, due to their economic similarity to pure transfer payments.

Approximately 41.8 percent of total government spending in 2004 is classified as transfer payments in this study, as outlined in Table 25.

Table 25. Government Spending Classified as Transfer Payments, Calendar Year 2004

Item	Calendar Year 2004 Amount
Federal	
Housing and community services	
Other Housing Assistance	\$23,126,000,000
Health	
Medicaid	\$170,892,000,000
Medicare	\$312,803,000,000
Veteran's health benefits and services	\$27,718,000,000
Income security	
Disability	\$113,700,000,000
Retirement	\$418,100,000,000
Welfare and social services	\$127,500,000,000
Other	\$60,500,000,000
Total Federal	\$1,254,339,000,000
State and Local	
Housing and community services	\$1,250,000,000
Health	
Medicaid	\$119,339,000,000
Income security	
Disability	\$17,833,000,000
Welfare and social services	\$46,733,000,000
Unemployment	\$35,633,000,000
Total State and Local	\$220,789,000,000
Total Federal, State and Local	\$1,475,128,000,000
Percentage of Total Government Spending	41.8%

Note: Totals may not add due to rounding.

Source: Tax Foundation, Bureau of Economic Analysis, Office of Management and Budget, Centers for Medicare and Medicaid Services

While the lines between public goods, private goods and transfers are clear in theory, in practice they are not. Most public goods have private-good attributes, and many private

goods closely resemble transfers. The lines between them are often unclear, and the classifications in the current study ultimately reflect the judgment of the authors.

2. Identifying the Recipients of Government Spending

In popular discussion it is often argued that the beneficiaries of government spending are those who receive dollars of government payments. For example, California, New York and Virginia are commonly assumed to benefit most from national defense spending because of the large number of defense contractors located in those areas. Similarly, residents of the District of Columbia are often assumed to benefit highly from federal spending, as it is the location of many federal installations such as the U.S. Congress, the White House and dozens of federal administrative agencies. Data from the U.S. Census Bureau's "Consolidated Federal Funds Report" are often cited in support of this approach, which shows the geographic location of recipients of federal government payments.

However, this common approach relies on a misunderstanding of the difference between what economists call the *legal incidence* of government spending and the *economic incidence*. The legal incidence of government spending is received by those who legally receive payments from federal, state and local governments, such as a contractor paid to build an interstate highway. But the economic incidence is received by those who utilize final government services. In the case of interstate highways, the economic incidence accrues primarily to drivers who are supplied with the services of roadways, not government contractor paid to build those roads.

This distinction between the legal and economic incidence of government spending turns on the difference between *inputs* and *outputs* of government spending. The basic purpose of government spending is to provide households with valuable outputs of goods and services—such as pollution controls to improve the environment, armies to provide protection from foreign nations, and courts to adjudicate disputes and maintain the rule of law. These represent the outputs of government spending.

However, government spending also makes use of inputs, such as labor, land and machinery, similar to firms that supply goods and services in the private marketplace. For example, the U.S. Supreme Court requires inputs of building maintenance, security services, parking facilities, salaries of court employees and others. These represent the inputs of government spending.

If the goal of government spending were simply to employ civil servants or maintain idle buildings, the popular notion of measuring the distribution of government spending by the flows of input payments would be reasonable. However, this is not the case. Policymakers crafting spending programs clearly aim to supply valuable outputs to households, not simply to make payments to inputs such as defense contractors, road builders or police officers.

While the flow of dollars to factor inputs of government services may be useful for administrative purposes within governments, the proper measure of government spending distributions is *the flow of final government outputs supplied to households by the state*. This study follows that approach.

3. The Cost of Service Approach

There are two basic ways of identifying who “receives” government spending. One is to identify which households receive the most personal enjoyment—what economists call “utility”—from government spending, and allocate dollar amounts to them. Under this approach, if one household receives twice the personal enjoyment from national defense than another, it is assumed to receive twice the government spending regardless of what was intended by policymakers. In the literature, this is referred to as the “behavioral” approach and seeks to answer the question of which households receive the highest subjective value from government services.³⁷

An alternative approach is to examine which households are targeted with more or less government spending by policymakers, regardless of how much they value it. This

³⁷ See for example Aaron and MacGuire (1970); Maital (1973); and Maital (1975).

approach corresponds to the methodology of tax distribution studies, which measure dollars of tax burdens rather than household valuations of them. Under this method, two students receiving a government-provided hot lunch are assumed to receive identical government spending regardless of the personal enjoyment they receive from the meal. This is referred to as the “cost of service” approach, and answers the question, “On behalf of which households do governments incur the costs of spending programs?”³⁸

The current study follows the latter cost of service approach for two main reasons. First, since tax distributions follow a cost of service approach—that is, they measure dollars of tax burdens and not their effects on household utility—consistency requires that spending distributions follow a similar approach. Second, the demanding information requirements of the behavioral approach, such as detailed knowledge of all household preferences, makes it impractical to implement in an empirical study. As a result, the current study does not attempt to measure households’ utility-based valuations of taxes and government spending, and instead examines from which households tax dollars are taken and to which households policymakers supply government services in return.

4. Symmetry Between Tax Burdens and Government Spending

Many previous studies of government spending distributions have failed to recognize the basic symmetry between tax burdens and government spending received.³⁹ Studies that have followed a cost of service approach on the tax side—attributing dollar amounts of taxes to households—have not treated government spending consistently.

For example, government spending on items such as air pollution control have often been allocated not equally to households based on the equal cost of providing non-rivalrous and non-excludable clean air to households, but on the basis of proxies for utility such as household income, wealth, financial assets, property, and various other methods. Yet

³⁸ For a discussion of this “cost of service” approach, see Greene et al. (1976), p. 14.

³⁹ For example, see Selden and Wasylenko (1992), Luc De Wulf (1975), and Aaron and McGuire (1970) for criticisms of spending distributions that fail to recognize similar problems with conventional tax distributions.

these same studies have not treated tax burdens in a consistent way, allocating taxes based on proxies for household's valuations of the lost income from taxes.⁴⁰

Just as households derive different amounts of utility from an identical amount of government spending, households do not suffer the same loss in utility from a reduction in household income from taxes. This symmetry may be difficult to appreciate in modern tax systems based purely on dollar amounts, but it is obvious in older systems of in-kind taxation such as those requiring a portion of labor or agricultural output.⁴¹ In such a system, different households clearly will place different values on an in-kind tax burden of, say, one bushel of wheat. Similarly, they will not all value one bushel of wheat provided by a government spending program the same. Any consistent study of tax and spending distributions must therefore measure either the effect of both on household utility or neither. Many previous studies have been inconsistent in this respect.⁴²

In practice, this symmetry between the effect of taxes and government spending on household utility has long been recognized by policymakers. The proliferation of tax credits as substitutes for direct expenditures in recent decades has increasingly blurred the lines between taxes and government spending. For example, the expanding reach of the refundable portion of the Earned Income Tax Credit (EITC) has effectively transformed what was once a federal welfare expenditure into an equivalent federal tax refund. Just as

⁴⁰ Some early authors recognized this basic symmetry between individuals' utility-based valuations of tax burdens and spending benefits. See for example Conrad (1954), p. 190. However, this insight has been largely overlooked by more recent authors.

⁴¹ For example, U.S. Confederate states relied heavily on in-kind taxation during the Civil War period, including a 10 percent in-kind tax on various agricultural products enacted in 1863. See *Journal of the Confederate Congress*, Volume 3 (December 28, 1863) p. 492, available at <http://memory.loc.gov/ammem/amlaw/lwcc.html>. The example of in-kind taxes may seem exotic, but it remains relevant to modern tax systems as all tax systems ultimately rely on the implicit threat of in-kind taxation through asset forfeiture if taxes go unpaid.

⁴² The authors are unable to locate any instance in the previous literature on fiscal incidence where it was suggested that criticisms of spending distributions for not accounting for household utility also be applied equally to tax distribution studies. Because no contemporary tax distributions take household utility into account, this criticism does not appear to have been persuasive to other researchers.

policymakers recognize the symmetrical impact of taxes and government spending on household well-being, it is important for studies of tax and spending distributions to treat them symmetrically as well.

For these reasons, this study follows a cost of service approach for both tax and spending distributions, and does not attempt to impute household utility for either. Although this cost-of-service approach has inherent limitations compared with a more theoretically pure study of household personal satisfaction from government spending, it provides much more information to policymakers about the overall equity of the fiscal system than tax distributions alone.

5. Allocating Government Spending Amounts

The current study allocates government spending to households by combining the likelihood that a given household will utilize a government program with the government's total cost of supplying the service. This approach has been described as a "cost-of-service" approach and is conventional in fiscal incidence studies conducted by official government statistical agencies in Australia and the United Kingdom, as well as studies of "benefit incidence" conducted by the World Bank.⁴³

Government spending received by households is estimated in three basic steps:

- First, household survey data is used to identify which households are most likely to use various government programs, and their annual program use is estimated;
- Second, the total cost to government of providing various programs is estimated from official budgetary totals; and

⁴³ See for example Walle (1996), Lakin (2003), Harding (2004), Lanjouw (2001), Johannes et al. (2006), Immervoll (2005), and Devarajan and Hossain (1995).

- Third, households' estimated annual program utilization rate or share of total usage is multiplied by the government's cost of providing services, yielding the amount of government spending attributed to individual households.

In some cases, the incidence of government spending is assumed to fall directly on households. For example, expenditures on higher education are assumed to primarily be targeted toward current enrollees of colleges and universities. In other cases, the incidence of government spending is assumed to fall on households indirectly through businesses throughout the economy. For example, a portion of expenditures on road spending is allocated directly to households based on estimated road use, while the remainder is allocated indirectly to households through the effect of road expenditures supplied to businesses, similar to the way business taxes are attributed to households. Just as the current study attributes all taxes in the economy to households, it also attributes all government spending to households.⁴⁴

Including Public Goods

Allocating public goods presents special problems for spending distribution studies. In theory once they are provided by government, one person's use of them does not reduce the amount left for others, and they are simultaneously supplied to all households. This is in stark contrast to transfer payments and private goods in which some households' usage necessarily leaves less for others.

These unique features of public goods have led to some controversy in the literature about the proper method of allocating them. Researchers face two basic questions when considering the treatment of public goods in spending distributions. First, should government spending on public goods be counted at all? And second, if so, how should government spending on public goods be allocated among households?

⁴⁴ A full discussion of the incidence assumptions and the bases of allocation used in the current study can be found in Appendix C.

Some previous studies exclude public goods entirely.⁴⁵ However, such an omission is hard to defend from a cost of service approach. Spending on public goods is among the most basic functions of government and is often cited as *the* justification for the social legitimacy of organized government to begin with.⁴⁶ In a cost-of-service framework, excluding public goods gives the impression that defense, environmental protection and disaster relief represent pure budgetary waste and accrue to households no more than if dollars spent on them disappeared from the economy altogether.

Lawmakers authorizing budget outlays for public goods clearly intend to supply services to households, and the omission of public goods does not appear to have any justification within a cost-of-service framework. For this reason, the current study includes public goods in its spending distributions. However, because the allocation of public goods has been controversial in previous studies, all government spending results are presented both with and without public goods.

Allocating Public Goods

Just as government spending on private goods is allocated based on a household's likelihood of program usage, spending on public goods is allocated on a similar basis. But because public goods are nonrivalrous and nonexcludable goods, they differ from other types of government spending in a critical way.

One household's utilization of a public good does not reduce the amount left for others. And because they are simultaneously provided to households equally, in theory the likelihood of program utilization for public goods is uniform for all households and equal

⁴⁵ For example see Selden and Wasylenko (1992) for a review of several studies that exclude public good expenditures.

⁴⁶ See Barzel (2002). See also Gemmell (1985), p. 335, for a criticism of the unreliability of expenditure incidence studies from the United Kingdom due to them not allocating a large portion of government spending.

to one.⁴⁷ A consistent cost-of-service framework therefore requires that government spending on public goods be allocated uniformly to whatever unit of analysis is chosen for the study. In the present study the unit of analysis is households. As a result, public goods are allocated equally to households.⁴⁸

As an illustration of this approach, consider a government spending program that provides a classic public good: public fireworks displays. One household's enjoyment of fireworks displays does not reduce the amount left for others. And because the state cannot easily restrict access to viewers on rooftops and elsewhere, these expenditures clearly qualify as a public good.

How should such government spending be allocated to households? The cost-of-service approach requires that spending be allocated to whom governments supply spending resources, as evidenced by households' program use. Because firework displays fit the criteria for public goods, households are equally likely to utilize the program. Government spending on them would therefore be allocated on an equal basis to households. The current study follows this approach.

As noted above, some previous studies of spending distributions have employed alternative allocations for public goods based on household income, wealth, or other proxies for household utility. Within the cost-of-service approach of this study, there does not appear to be any theoretical basis for these alternative allocations. Instead, results are presented both with and without public goods to illustrate their impact on the final results. Additionally, Appendix A presents an illustration of how an alternative allocation of public goods—specifically, by allocating them on the basis of household net wealth instead—affects the study's basic findings.

⁴⁷ Denzau and Mackay (1976), p. 69, argue that under pure public goods all individuals' benefit shares are equal to 100 percent, implying a probability of program use of 1. For an alternative approach that similarly concludes that equal allocation of public goods spending is most appropriate, see Brennan (1976).

⁴⁸ See Appendix A for an illustration of how an alternative allocation of public goods affects the study's results.

B. Detailed Government Spending Distributions

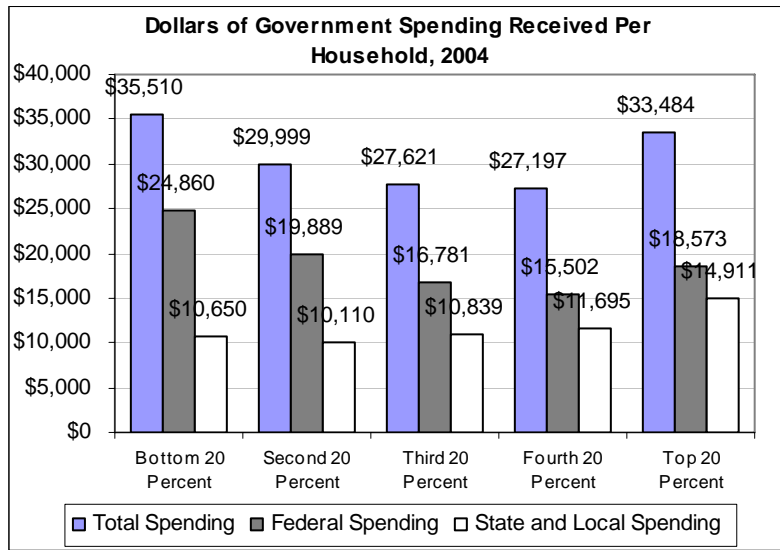
The overall distribution of government spending is summarized in Figure 12, Table 26, Figure 13 and Table 27 below. These two figures and two accompanying tables present dollars of government spending received by each quintile as well as government spending received as a percentage of comprehensive household income, both with and without public goods.

Figure 12 shows that households in the lowest income quintile are targeted with the largest amount of total government spending. Households in the fourth income quintile receive the least total government spending per household. Households in the top income quintile receive the second highest total government spending per household.

In general, federal government spending is more sharply tilted toward lower-income households due to the large amount of federal transfer payments to lower-income households through Social Security, Medicare and Medicaid. State and local spending is generally more flatly distributed across income groups with the largest dollar amounts targeted at the highest income quintile. This is largely due to high state and local government spending on programs that are disproportionately used by middle- and upper-income households. These include public education—upper-income groups generally have more school-age children—highways that are disproportionately used by upper-income households with the most vehicles, and interest payments on government debt that disproportionately fall on upper-income households who hold government bonds.⁴⁹

⁴⁹ For an alternative presentation of results that excludes interest payments on debt, or that allocates them on an alternative basis, see Appendix A.

Figure 12. Federal, State and Local Government Spending Received by Each Quintile, Calendar Year 2004



Source: Tax Foundation

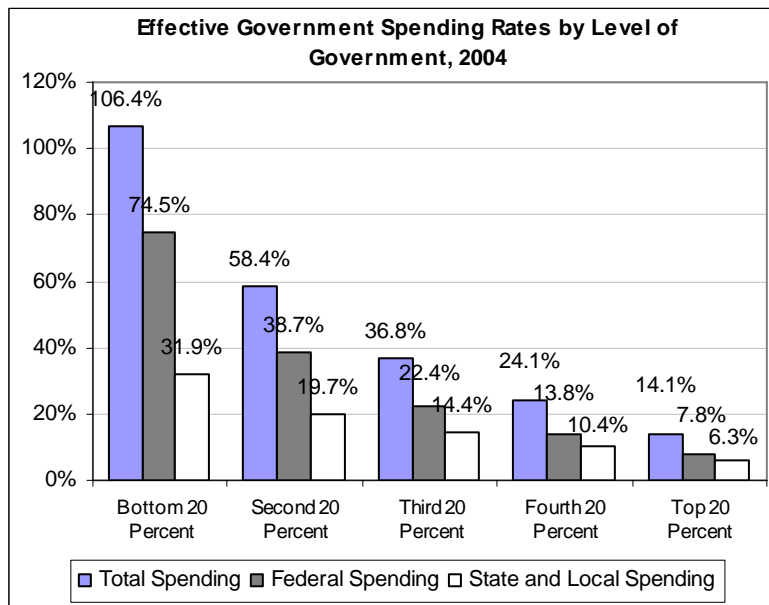
Table 26. Federal, State and Local Government Spending Received With and Without Public Goods, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Government Spending	\$35,510	\$29,999	\$27,621	\$27,197	\$33,484
Excluding Public Goods	\$27,361	\$21,849	\$19,471	\$19,047	\$25,335
Federal Government Spending	\$24,860	\$19,889	\$16,781	\$15,502	\$18,573
Excluding Public Goods	\$18,801	\$13,830	\$10,722	\$9,443	\$12,514
State and Local Government Spending	\$10,650	\$10,110	\$10,839	\$11,695	\$14,911
Excluding Public Goods	\$8,560	\$8,019	\$8,749	\$9,605	\$12,821

Source: Tax Foundation

As illustrated in Figure 13, total government spending is strongly progressive across all income groups when expressed as a percentage of comprehensive household income. Households in the bottom quintile received government spending dollars equal to 106.4 percent of their comprehensive household income, while households in the top quintile faced effective spending rates of just 14.1 percent. Federal government spending overall is somewhat more progressive than state and local spending.

Figure 13. Federal, State and Local Effective Spending Rates (Government Spending Received as a Percentage of Comprehensive Household Income), Calendar Year 2004



Source: Tax Foundation

Table 27. Federal, State and Local Effective Spending Rates With and Without Public Goods, Calendar Year 2004

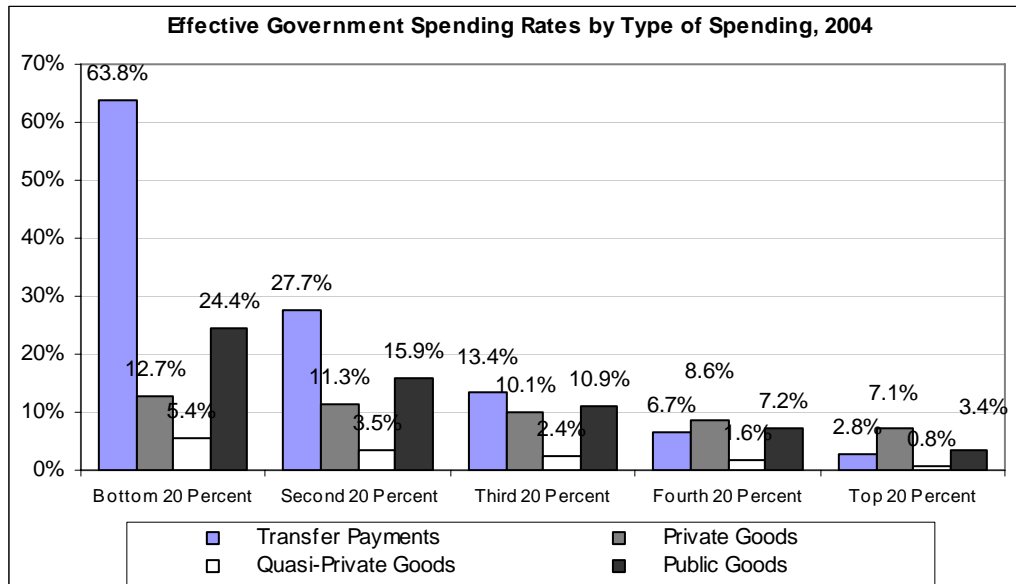
	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Government Spending	106.4%	58.4%	36.8%	24.1%	14.1%
Excluding Public Goods	82.0%	42.5%	26.0%	16.9%	10.7%
Federal Government Spending	74.5%	38.7%	22.4%	13.8%	7.8%
Excluding Public Goods	56.4%	26.9%	14.3%	8.4%	5.3%
State and Local Government Spending	31.9%	19.7%	14.4%	10.4%	6.3%
Excluding Public Goods	25.7%	15.6%	11.7%	8.5%	5.4%

Source: Tax Foundation

1. Effective Government Spending Rates by Type

Figure 14 presents the distribution of total effective government spending rates by type of government spending. Each of the four broad categories of government spending—transfer payments, private goods, quasi-private goods and public goods—are distributed progressively in total. Transfer payments are by far the most sharply progressive type of government spending, while private goods are only slightly progressive. Because public goods accrue in equal dollar amounts to households, when measured as a percentage of income they give the appearance of being progressively distributed across income groups due to the lower amounts of income earned by lower-income quintiles.

Figure 14. Effective Government Spending Rates by Type of Government Spending, Calendar Year 2004



Source: Tax Foundation

Table 28 presents a detailed breakdown of effective spending rates both by type and level of government. As is clear from the table, there is considerable variation in the degree of progressivity of government spending by level of government and type of spending.

Overall government spending of every type is distributed progressively, and within these overall totals every type of state and local spending is also distributed progressively except for one type: federal private goods. Federal private goods have an effective spending rate of 1.8 percent for the bottom quintile and 2.6 percent for the top quintile. This result is driven by the large amounts of spending in this category that primarily accrue to upper-income households, such as interest payments on federal debt, highways, airports, agriculture spending and others.

Table 28. Effective Government Spending Rates by Level of Government, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Spending					
Transfer Payments	63.8%	27.7%	13.4%	6.7%	2.8%
Private Goods	12.7%	11.3%	10.1%	8.6%	7.1%
Quasi-Private Goods	5.4%	3.5%	2.4%	1.6%	0.8%
Public Goods	24.4%	15.9%	10.9%	7.2%	3.4%
Total	106.4%	58.4%	36.8%	24.1%	14.1%
Federal Spending					
Transfer Payments	53.1%	24.0%	11.5%	5.8%	2.4%
Private Goods	1.8%	2.0%	2.1%	2.2%	2.6%
Quasi-Private Goods	1.4%	0.9%	0.6%	0.4%	0.2%
Public Goods	18.2%	11.8%	8.1%	5.4%	2.6%
Total	74.5%	38.7%	22.4%	13.8%	7.8%
State and Local Spending					
Transfer Payments	10.7%	3.7%	1.9%	0.9%	0.3%
Private Goods	10.9%	9.3%	8.0%	6.4%	4.5%
Quasi-Private Goods	4.0%	2.6%	1.8%	1.2%	0.6%
Public Goods	6.3%	4.1%	2.8%	1.9%	0.9%
Total	31.9%	19.7%	14.4%	10.4%	6.3%

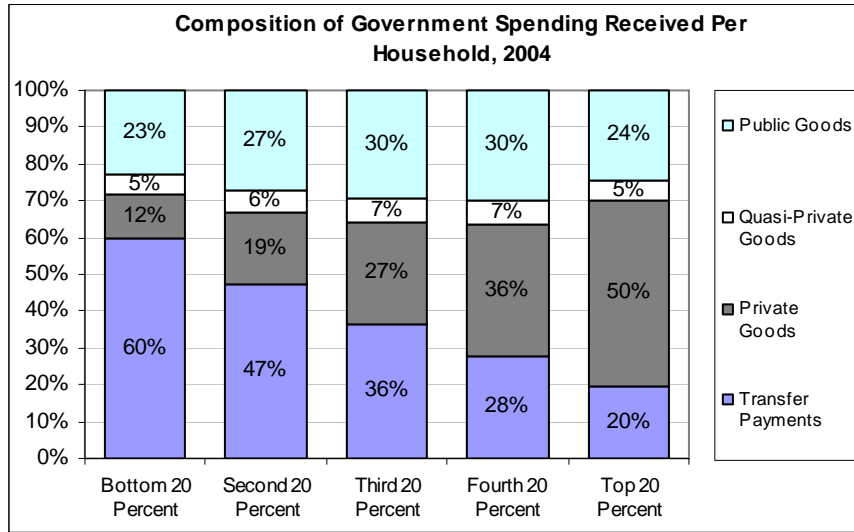
Source: Tax Foundation

2. Composition of Government Spending Received

Figure 15 shows the importance of various government spending types to each quintile, as measured by the percentage of each dollar of government spending received from public goods, private goods and transfer payments.

As expected, transfer payments such as public assistance, Medicaid and Social Security dominate the government spending received by lower-income quintiles. Transfers make up 60 percent of government spending received by households in the bottom quintile, compared to 20 percent for households in the top quintile. In contrast, private goods such as roads, airports and higher education that are disproportionately utilized by affluent households dominate the government spending received by the upper quintiles. Private goods make up only 12 cents of every government spending dollar received by households in the bottom quintile but 50 cents for households in the top quintile.

Figure 15. Composition of Total Government Spending Received Per Household, Calendar Year 2004



Source: Tax Foundation

Public goods such as environmental protection, courts and defense make up a similar proportion of government spending received by each quintile ranging from 23 percent for the bottom quintile to 30 percent for the middle and fourth quintiles. Similarly, quasi-private goods such as fire protection, police and public parks make up between five and seven cents of every government spending dollar received by each quintile.

Table 29 presents the dollar amounts of government spending received by households in each quintile, broken down by level of government and type of spending.

Table 29. Composition of Government Spending Received Per Household, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Spending					
Transfer Payments	\$21,294	\$14,223	\$10,078	\$7,562	\$6,625
Private Goods	\$4,250	\$5,809	\$7,577	\$9,669	\$16,894
Quasi-Private Goods	\$1,816	\$1,816	\$1,816	\$1,816	\$1,816
Public Goods	\$8,150	\$8,150	\$8,150	\$8,150	\$8,150
Total	\$35,510	\$29,999	\$27,621	\$27,197	\$33,484
Federal Spending					
Transfer Payments	\$17,724	\$12,314	\$8,660	\$6,502	\$5,795
Private Goods	\$604	\$1,043	\$1,590	\$2,469	\$6,247
Quasi-Private Goods	\$472	\$472	\$472	\$472	\$472
Public Goods	\$6,059	\$6,059	\$6,059	\$6,059	\$6,059
Total	\$24,860	\$19,889	\$16,781	\$15,502	\$18,573
State and Local Spending					
Transfer Payments	\$3,569	\$1,909	\$1,418	\$1,060	\$830
Private Goods	\$3,646	\$4,767	\$5,987	\$7,200	\$10,647
Quasi-Private Goods	\$1,344	\$1,344	\$1,344	\$1,344	\$1,344
Public Goods	\$2,090	\$2,090	\$2,090	\$2,090	\$2,090
Total	\$10,650	\$10,110	\$10,839	\$11,695	\$14,911

Source: Tax Foundation

At the federal level, the largest dollar amounts of government spending are received by households in the lowest quintile, who receive an average of \$24,860 of federal spending. This is primarily due to the large size and steeply pro-poor distribution of federal transfer payments, which average \$17,724 per household for the bottom quintile. Households in the fourth quintile receive the fewest dollars of federal spending at \$15,502. In dollar terms the largest amounts of federal transfer payments are received by lower-income households, while the largest dollar amounts of private goods are received by upper-income households.

At the state and local level, transfers such as state Medicaid and welfare payments drive the pro-poor distribution of transfer payments, while the strongly pro-rich distribution of private goods spending is primarily driven by government interest payments on debt that accrue mostly to upper-income holders of state and local bonds and education funding which primarily benefits parents in the top three quintiles who have the largest numbers of children enrolled in public schools.

3. Dollars and Shares of Government Spending Received

Tables 30 and 31 provide a complete listing of the dollar amounts of all federal, state and local government spending received by households in Calendar Year 2004, respectively. For a complete discussion of the incidence assumptions and statistical methods used to estimate spending distributions in this study, see Appendix C.

Table 30. Detail of All Federal Government Spending Received Per Household, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Federal Spending					
General Public Service					
Executive and Legislative	\$506	\$506	\$506	\$506	\$506
Tax collection and financial management	\$109	\$109	\$109	\$109	\$109
Interest payments	\$159	\$327	\$572	\$1,067	\$3,662
Other	\$0	\$0	\$0	\$0	\$0
National defense	\$4,295	\$4,295	\$4,295	\$4,295	\$4,295
Public order and safety					
Police	\$219	\$219	\$219	\$219	\$219
Fire	\$3	\$3	\$3	\$3	\$3
Law courts	\$61	\$61	\$61	\$61	\$61
Prisons	\$41	\$41	\$41	\$41	\$41
Economic affairs					
Transportation					
Highways	\$2	\$5	\$7	\$9	\$16
Air	\$29	\$69	\$109	\$196	\$417
Water	\$85	\$85	\$85	\$85	\$85
Transit and railroad	\$5	\$10	\$14	\$24	\$47
Space	\$135	\$135	\$135	\$135	\$135
Other economic affairs					
General economic and labor affairs	\$17	\$69	\$131	\$209	\$437
Agriculture	\$7	\$80	\$148	\$249	\$741
Energy	\$44	\$80	\$114	\$159	\$278
Natural resources	\$152	\$152	\$152	\$152	\$152
Postal service	\$0	\$0	\$0	\$0	\$0
Housing and community services					
Disaster relief	\$175	\$175	\$175	\$175	\$175
Other	\$613	\$137	\$40	\$12	\$4
Health					
Medicaid	\$3,151	\$1,494	\$962	\$584	\$378
Medicare	\$4,262	\$3,321	\$2,205	\$1,557	\$1,387
Veteran's health benefits and services	\$116	\$235	\$270	\$385	\$293
Other miscellaneous health	\$585	\$585	\$585	\$585	\$585
Recreation and culture	\$41	\$41	\$41	\$41	\$41
Education					
Elementary and secondary	\$225	\$277	\$321	\$343	\$335
Higher	\$117	\$127	\$174	\$213	\$313
Other	\$124	\$124	\$124	\$124	\$124
Income security					
Disability	\$484	\$882	\$1,271	\$1,277	\$1,426
Retirement	\$4,780	\$4,676	\$3,346	\$2,435	\$2,226
Welfare and social services	\$2,929	\$1,064	\$384	\$171	\$54
Other	\$1,390	\$505	\$182	\$81	\$26
Total Federal Spending	\$24,860	\$19,889	\$16,781	\$15,502	\$18,573

Source: Tax Foundation

Table 31. Detail of State and Local Government Spending Received Per Household, Calendar Year 2004

	Quintiles of Household Cash Money Income, Calendar Year 2004				
	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
State and Local Government Spending Received					
General public service					
Executive and legislative	\$162	\$162	\$162	\$162	\$162
Tax collection and financial management	\$294	\$294	\$294	\$294	\$294
Interest payments	\$130	\$269	\$470	\$877	\$3,010
Other	\$647	\$647	\$647	\$647	\$647
Public order and safety					
Police	\$617	\$617	\$617	\$617	\$617
Fire	\$236	\$236	\$236	\$236	\$236
Law courts	\$308	\$308	\$308	\$308	\$308
Prisons	\$524	\$524	\$524	\$524	\$524
Economic affairs					
Transportation					
Highways	\$246	\$488	\$718	\$1,014	\$1,751
Transit and railroad	\$1	\$2	\$3	\$5	\$9
Other economic affairs					
General economic and labor affairs	\$11	\$45	\$86	\$137	\$287
Agriculture	\$2	\$17	\$32	\$54	\$161
Energy	\$0	\$0	\$0	\$0	\$0
Natural resources	\$82	\$82	\$82	\$82	\$82
Other	\$0	\$0	\$0	\$0	\$0
Housing and community services	\$33	\$7	\$2	\$1	\$0
Other Health	\$73	\$73	\$73	\$73	\$73
Recreation and culture	\$186	\$186	\$186	\$186	\$186
Medicaid	\$2,200	\$1,043	\$672	\$408	\$264
Education					
Elementary and secondary	\$2,769	\$3,417	\$3,953	\$4,226	\$4,123
Higher	\$487	\$528	\$725	\$886	\$1,306
Libraries and other					
Libraries	\$70	\$70	\$70	\$70	\$70
Other	\$234	\$234	\$234	\$234	\$234
Income security					
Disability	\$76	\$138	\$199	\$200	\$224
Welfare and social services	\$1,074	\$390	\$141	\$63	\$20
Unemployment	\$186	\$330	\$404	\$389	\$322
Total State and Local Spending	\$10,650	\$10,110	\$10,839	\$11,695	\$14,911

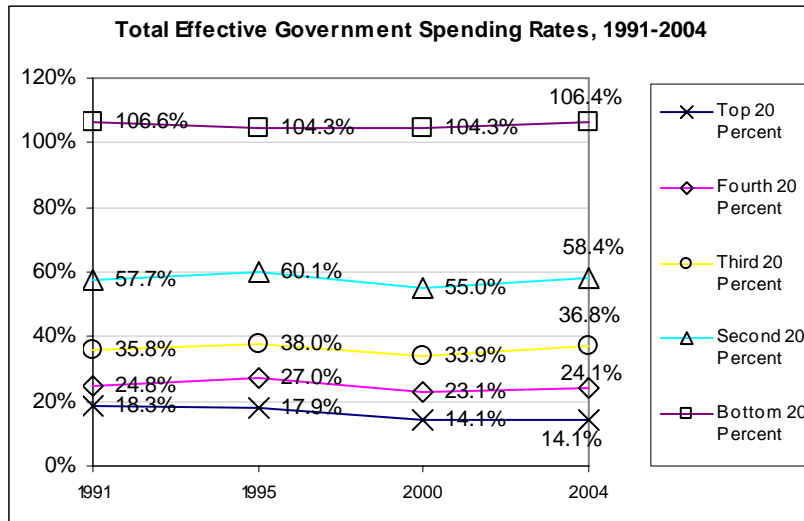
Source: Tax Foundation

4. Changes in Government Spending Over Time: 1991-2004

Figure 16 presents total effective government spending rates between 1991 and 2004. During that period, total government spending as a percentage of comprehensive household income increased for households in the second and third quintiles. Effective spending rates decreased for households in the top two quintiles indicating they have received a shrinking amount of government spending as a percentage of income since 1991. Effective spending rates for the lowest income quintile were roughly the same in

2004 as in 1991, falling slightly from 106.6 percent of comprehensive household income to 106.4.

Figure 16. Total Effective Government Spending Rates, 1991-2004



Source: Tax Foundation

Table 32 presents changes in federal effective spending rates between 1991 and 2004. During that time, households in the bottom quintile witnessed a substantial increase in federal spending as a percentage of comprehensive household income, which rose from 73 percent to 74.5 percent. In contrast, households in the top quintile witnessed their effective federal spending rate fall from 11.2 percent to 7.8 percent. Effective spending rates did not substantially change between 1991 and 2004 for households in the middle three quintiles, falling slightly for the second and fourth quintiles, and rising slightly for the third quintile.

Table 32. Federal Effective Government Spending Rates, 1991-2004

	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	11.2%	11.6%	8.2%	7.8%
Fourth 20 Percent	14.3%	16.2%	12.8%	13.8%
Third 20 Percent	22.0%	23.9%	20.0%	22.4%
Second 20 Percent	38.8%	40.8%	35.4%	38.7%
Bottom 20 Percent	73.0%	72.9%	72.1%	74.5%

Source: Tax Foundation

Table 33 presents state and local effective spending rates over time. In contrast to federal spending rates, state and local spending rates fell between 1991 and 2004 for households in the top quintile and the bottom quintile. Only households in the second and third quintiles witnessed their effective state and local spending rates increase during the period. State and local effective spending rates on the fourth quintile were largely unchanged throughout the period.

Table 33. State and Local Effective Government Spending Rates, 1991-2004

	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	7.0%	6.3%	6.0%	6.3%
Fourth 20 Percent	10.5%	10.8%	10.2%	10.4%
Third 20 Percent	13.8%	14.1%	13.8%	14.4%
Second 20 Percent	18.9%	19.3%	19.5%	19.7%
Bottom 20 Percent	33.7%	31.5%	32.1%	31.9%

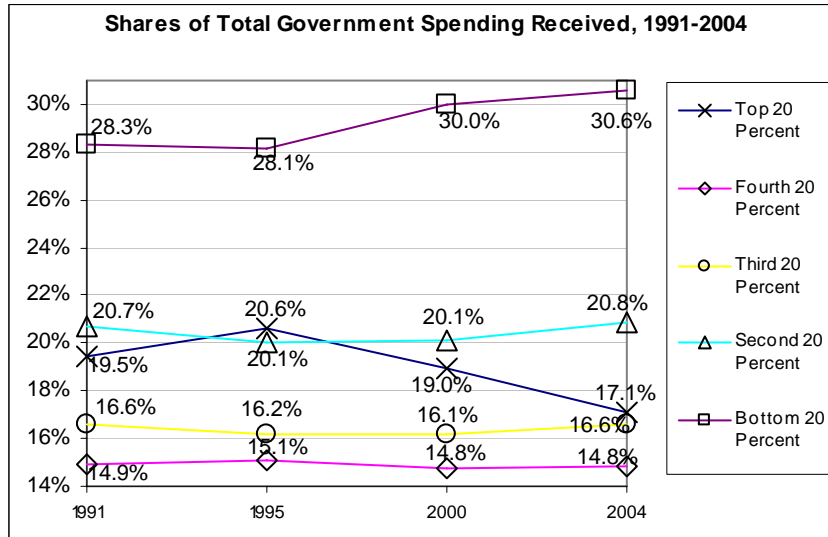
Source: Tax Foundation

Changes in Government Spending Shares Over Time

Figure 17 presents the share of total government spending received by each quintile between 1991 and 2004. The most dramatic changes in government spending shares over the time period occur in the top and bottom quintiles.

Between 1991 and 2004, the share of total government spending received by households in the top quintile fell from 19.5 percent to 17.1 percent in 2004. In contrast, the share of government spending received by households in the bottom quintile grew from 28.3 percent to 30.6 percent. The government spending shares for the second, third and fourth quintiles stayed relatively constant between 1991 and 2004.

Figure 17. Total Government Spending Shares, 1991-2004



Source: Tax Foundation

Tables 34 and 35 present the shares of federal and state-local government spending received by each quintile, respectively. In 2004, federal spending shares remained essentially unchanged from their 1991 levels for households in the middle three quintiles. However, the share of federal spending received by the bottom quintile jumped sharply from 30.3 percent to 33.8 percent. At the same time, the share of federal spending received by households in the top quintile dropped equally sharply from 18.7 percent in 1991 to 15 percent in 2004.

Table 34. Federal Government Spending Shares, 1991-2004

	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	18.7%	20.3%	17.6%	15.0%
Fourth 20 Percent	13.4%	13.8%	13.1%	13.4%
Third 20 Percent	15.9%	15.4%	15.3%	16.0%
Second 20 Percent	21.7%	20.7%	20.7%	21.8%
Bottom 20 Percent	30.3%	29.8%	33.3%	33.8%
Total	100.0%	100.0%	100.0%	100.0%

Source: Tax Foundation

At the state and local level a similar trend occurred. Overall, the distribution of shares of state and local government spending was much more stable between 1991 and 2004 than federal spending shares. During that period, the share of state and local government spending received by households in the top quintile fell slightly from 20.9 percent to 20.8 percent. At the same time, the share of government spending to households in the bottom

quintile rose slightly from 24.9 to 25 percent. State and local spending shares were unchanged for the third quintile. Spending shares increased slightly for the second quintile from 18.9 percent to 19.1 percent, and fell slightly for the fourth quintile from 17.5 percent to 17.4 percent.

Table 35. State and Local Government Spending Shares, 1991-2004

	Calendar Year			
	1991	1995	2000	2004
Top 20 Percent	20.9%	21.2%	21.3%	20.8%
Fourth 20 Percent	17.5%	17.6%	17.5%	17.4%
Third 20 Percent	17.8%	17.6%	17.6%	17.8%
Second 20 Percent	18.9%	18.8%	19.0%	19.1%
Bottom 20 Percent	24.9%	24.9%	24.7%	25.0%
Total	100.0%	100.0%	100.0%	100.0%

Source: Tax Foundation

The following section discusses which federal, state and local taxes and government spending were most and least unequally distributed across income groups between 1991 and 2004.

IV. Measuring Overall Fiscal Progressivity: Suits Indexes

Just as taxes fall more heavily on some households than others, government spending does not flow to all households equally. As a result, to answer the question of how much aid is targeted at lower-income households through the U.S. fiscal system we must look beyond traditional tax distributions to assess the inequality of government spending distributions as well.

One way to quantitatively measure the progressivity of overall fiscal policy is to calculate what are known as “Suits Indexes” for both taxes and government spending. Suits Indexes are a standardized measure of how unequally a tax or government spending program is distributed across income groups and whether it falls mostly on low- or high-income households.

Suits Indexes range from -1 to 1. An index of zero represents a distributionally neutral tax or spending program whose dollars fall on all quintiles equally. A negative index means lower-income quintiles are mostly affected, while a positive index means upper-income quintiles are mostly affected. The further an index value is from zero, the more unequally distributed is a tax or government spending program. An index value of 1 represents a perfectly unequal distribution that falls entirely on the top quintile, while an index of -1 represents a distribution that falls entire on the bottom quintile.⁵⁰

⁵⁰ For a detailed explanation of Suits Index calculations, see Suits (1977). Mathematically the index is calculated as $s_x = 1 - 2 \cdot \int_0^{100} T_x(y) dy$, where s_x is the Suits Index for tax x , y is the cumulative percentile of household income, and $T_x(y)$ is the cumulative percentage of tax burden borne by that income percentile. In practice, researchers rarely have access to continuous functions of $T_x(y)$ and rely on a few discrete values instead. Because the current study presents results in quintiles, we estimate index values as

$$s_x = 1 - \left(\frac{1 + 2(T_{x1} + T_{x2} + T_{x3} + T_{x4})}{5} \right),$$

where $T_{x1} \dots T_{x4}$ represent the cumulative percentage of tax burdens or spending benefits borne by quintiles one through four. These estimates range from -0.8 to 0.8.

To avoid confusion with the terms “progressive” and “regressive”—which is used in previous sections to describe the progression of effective tax or government spending rates—this section uses the terms “pro-poor” and “pro-rich” to describe Suits Index results. Taxes that fall heavily on upper-income households have an index above zero and are described as “pro-poor.” Taxes that fall heavily on lower-income households have a negative index value and are described as “pro-rich.” Conversely, government spending that falls mostly on the top quintiles has a positive index value and is described as “pro-rich,” while government spending that mostly is targeted at lower-income quintiles has a negative index value and is described as “pro-poor.”

A. Suits Index Results

Table 36 presents overall Suits Indexes for federal, state and local taxes and government spending programs for Calendar Years 1991-2004. Overall, total taxes are strongly pro-poor as measured by the Suits Index. Total taxes had an index value of 0.41 in 2004, up from 0.39 in 1991. This illustrates that the nation’s overall tax system has become somewhat more favorable toward lower-income quintiles since 1991 as the share of total taxes paid by upper-income quintiles has grown during that period.

Federal taxes were much more pro-poor than state and local taxes. Federal taxes had an index value of 0.46 for 2004, making them substantially more pro-poor than state and local taxes which had an index value of 0.31. While federal tax burdens have shifted more toward upper-income quintiles since 1991, the Suits Index for state and local taxes was unchanged between 1991 and 2004.

Table 36. Suits Indexes for Taxes and Government Spending, 1991-2004

Item	Calendar Year			
	1991	1995	2000	2004
Total Taxes	0.39	0.41	0.42	0.41
Federal Taxes	0.43	0.45	0.47	0.46
State and Local Taxes	0.31	0.32	0.32	0.31
Total Government Spending	-0.09	-0.08	-0.11	-0.13
Excluding Public Goods	-0.09	-0.08	-0.11	-0.14
Federal Government Spending	-0.13	-0.10	-0.16	-0.18
Excluding Public Goods	-0.14	-0.11	-0.17	-0.22
State and Local Government Spending	-0.04	-0.03	-0.03	-0.04
Excluding Public Goods	-0.02	-0.02	-0.02	-0.03

Source: Tax Foundation

On the spending side, federal government spending is more tilted toward lower-income quintiles than is state and local spending. Federal government spending had a strongly pro-poor Suits Index of -0.18 in 2004. Since 1991, federal government spending has become more sharply tilted toward lower-income quintiles. State and local spending was only slightly tilted toward lower-income quintiles with an index value of -0.04 for 2004.

Since 1991, the distribution of both total taxes and total government spending have become more pro-poor. However, nearly all of this increase in the pro-poor distribution of taxes and government spending has been driven by changes at the federal level, as the distribution of state and local taxes and government spending has remained largely unchanged since 1991.

Complete Suits Index Results

Tables 37 and 38 present all Suits Indexes for federal, state and local taxes and government spending programs between 1991 to 2004. Among all taxes, the only tax with a negative index value—indicating that the burden falls primarily on lower-income quintiles—was tobacco excise taxes. The tax with the most positive Suits Index—indicating that the burden mostly fell on upper-income quintiles—was estate and gift taxes, which the current study attributes fully to members of the highest income quintile.

On the spending side, agriculture spending has the most strongly pro-rich distribution with an index value of 0.50. Similarly, interest payments on debt which primarily accrue to upper-income holders of government securities has a strongly pro-rich distribution of 0.48. In contrast, welfare and social services is strongly pro-poor with an index value of -0.62. Housing subsidies has the most strongly pro-poor distribution of any government spending category with an index value of -0.70.

Because lower-income quintiles contain larger numbers of households than upper-income quintiles, spending on public goods appears slightly pro-poor. For an alternative

presentation of results in quintiles with equal numbers of households that corrects for this issue, see Appendix A.

Table 37. Suits Indexes for Federal, State and Local Taxes, 1991-2004

Item	Calendar Year			
	1991	1995	2000	2004
Federal Taxes				
Individual Income Taxes	0.54	0.56	0.57	0.58
Contributions for Government Social Insurance	0.35	0.36	0.35	0.36
Corporate Income Taxes	0.40	0.44	0.44	0.41
Gasoline Excise Taxes	0.25	0.28	0.27	0.26
Alcoholic Beverages Excise Taxes	0.17	0.21	0.16	0.18
Tobacco Excise Taxes	-0.03	-0.04	-0.06	-0.07
Diesel Fuel Excise Taxes	0.40	0.44	0.44	0.41
Air Transport Excise Taxes	0.33	0.37	0.34	0.38
Other Excise Taxes	0.17	0.17	0.16	0.18
Customs Duties, Etc.	0.17	0.17	0.16	0.18
Estate and Gift Taxes	0.80	0.80	0.80	0.80
Total Federal Taxes	0.43	0.45	0.47	0.46
State and Local Taxes				
Individual Income Taxes	0.50	0.53	0.52	0.52
Corporate Income Taxes	0.40	0.44	0.44	0.41
Personal Property Taxes	0.21	0.22	0.21	0.24
Personal Motor Vehicle Licenses	0.10	0.08	0.08	0.08
Other Personal Taxes	0.31	0.34	0.34	0.35
General Sales Taxes	0.23	0.21	0.18	0.22
Gasoline Sales Taxes	0.25	0.28	0.27	0.26
Alcoholic Beverages Excise Taxes	0.17	0.21	0.16	0.18
Tobacco Excise Taxes	-0.03	-0.04	-0.06	-0.07
Public Utilities Taxes	0.04	0.04	0.03	0.06
Insurance Receipts Taxes	0.12	0.12	0.09	0.13
Other Selective Sales Taxes	0.17	0.17	0.16	0.18
Motor Vehicle Licenses on Production & Imports	0.40	0.44	0.44	0.41
Severance Taxes	0.24	0.25	0.25	0.24
Property Taxes	0.27	0.29	0.29	0.28
Special Assessments Taxes	0.27	0.29	0.29	0.28
Other Taxes on Production and Imports	0.40	0.44	0.44	0.41
Estate and Gift Taxes	0.80	0.80	0.80	0.80
Total State and Local Taxes	0.31	0.32	0.32	0.31

Source: Tax Foundation

Table 38. Suits Indexes for Federal, State and Local Government Spending, 1991-2004

Item	Calendar Year			
	1991	1995	2000	2004
Federal Spending				
General Public Service				
Executive and Legislative	-0.10	-0.10	-0.11	-0.11
Tax collection and financial management	-0.10	-0.10	-0.11	-0.11
Interest payments	0.37	0.40	0.44	0.48
Other	-0.10	0.00	0.00	0.00
National defense	-0.10	-0.10	-0.11	-0.11
Public order and safety				
Police	-0.10	-0.10	-0.11	-0.11
Fire	-0.10	-0.10	-0.11	-0.11
Law courts	-0.10	-0.10	-0.11	-0.11
Prisons	-0.10	-0.10	-0.11	-0.11
Economic affairs				
Transportation				
Highways	0.25	0.28	0.27	0.26
Air	0.33	0.37	0.34	0.38
Water	-0.10	-0.10	-0.11	-0.11
Transit and railroad	0.26	0.30	0.28	0.32
Space	-0.10	-0.10	-0.11	-0.11
Other economic affairs				
General economic and labor affairs	0.37	0.40	0.39	0.40
Agriculture	0.35	0.27	0.56	0.50
Energy	0.24	0.25	0.25	0.24
Natural resources	-0.10	-0.10	-0.11	-0.11
Postal service	0.25	0.00	0.00	0.00
Housing and community services				
Disaster relief	-0.10	-0.10	-0.11	-0.11
Other	-0.70	-0.68	-0.70	-0.70
Health				
Medicaid	-0.57	-0.52	-0.50	-0.48
Medicare	-0.34	-0.34	-0.35	-0.33
Veteran's health benefits and services	-0.04	0.09	0.13	0.08
Other miscellaneous health	-0.10	-0.10	-0.11	-0.11
Recreation and culture	-0.10	-0.10	-0.11	-0.11
Education				
Elementary and secondary	-0.06	-0.04	-0.02	-0.02
Higher	0.22	0.14	0.12	0.10
Other	-0.10	-0.10	-0.11	-0.11
Income security				
Disability	0.05	0.17	0.01	0.09
Retirement	-0.28	-0.27	-0.28	-0.27
Welfare and social services	-0.66	-0.56	-0.58	-0.62
Other	-0.66	-0.56	-0.58	-0.62
Total Federal Spending	-0.13	-0.10	-0.16	-0.18
State and Local Spending				
General public service				
Executive and legislative	-0.10	-0.10	-0.11	-0.11
Tax collection and financial management	-0.10	-0.10	-0.11	-0.11
Interest payments	0.37	0.40	0.44	0.48
Other	-0.10	-0.10	-0.11	-0.11
Public order and safety				
Police	-0.10	-0.10	-0.11	-0.11
Fire	-0.10	-0.10	-0.11	-0.11
Law courts	-0.10	-0.10	-0.11	-0.11
Prisons	-0.10	-0.10	-0.11	-0.11
Economic affairs				
Transportation				
Highways	0.25	0.28	0.27	0.26
Transit and railroad	0.26	0.30	0.28	0.32
Other economic affairs				
General economic and labor affairs	0.37	0.40	0.39	0.40
Agriculture	0.35	0.27	0.56	0.50
Energy	0.00	0.00	0.00	0.00

Item	Calendar Year			
	1991	1995	2000	2004
Natural resources	-0.10	-0.10	-0.11	-0.11
Other	0.00	0.00	0.00	0.00
Housing and community services	-0.70	-0.68	-0.70	-0.70
Other Health	-0.10	-0.10	-0.11	-0.11
Recreation and culture	-0.10	-0.10	-0.11	-0.11
Medicaid	-0.57	-0.52	-0.50	-0.48
Education				
Elementary and secondary	-0.06	-0.04	-0.02	-0.02
Higher	0.22	0.14	0.12	0.10
Libraries and other				
Libraries	-0.10	-0.10	-0.11	-0.11
Other	-0.10	-0.10	-0.11	-0.11
Income security				
Disability	0.05	0.17	0.01	0.09
Welfare and social services	-0.66	-0.56	-0.58	-0.62
Unemployment	0.01	0.07	-0.03	0.00
Total State and Local Spending	-0.04	-0.03	-0.03	-0.04

Source: Tax Foundation

The Impact of Age and Inter-Quintile Redistribution

When interpreting the Suits Index results in this section, it is important to keep in mind two limitations. First, old age insurance programs such as Social Security and Medicare may appear more redistributive toward lower-income quintiles in a single period than over an entire lifetime.⁵¹ Second, Suits Indexes only measure the inequality of tax burdens and government spending between quintiles, not within quintiles. As a result, Suits Indexes may fail to capture large amounts of fiscal redistribution taking place between households in the same quintile. In the current study, we do not examine within-quintile fiscal redistribution.

⁵¹ See Appendix A for an illustration of the results with and without Social Security, Medicare and payroll taxes, and for an illustration of fiscal incidence between income groups when the age of household head is controlled for.

V. Limitations and Caveats

Several limitations should be kept in mind when interpreting the results of the current study. These limitations are briefly discussed below.

A. Problems of Single-Period vs. Lifetime Analysis

Estimates of tax and spending distributions at a single point in time may fail to capture changes in tax burdens and government spending received over the course of a lifetime. For example, old-age insurance programs such as Social Security and Medicare typically result in high payroll taxes in youth, and large government transfer payments in old age. This temporal mismatch between taxes paid and government spending received gives the appearance of large amounts of fiscal redistribution in any single year. And because the proportion of government budgets devoted to age-based transfer payments has risen sharply in recent years, this temporal mismatch has grown over time and is projected to continue to do so in the coming decades.

Appendix A explores the impact of household age on the current study's results by (1) presenting all figures with and without Social Security, Medicare and payroll taxes, and (2) controlling for age and exploring fiscal incidence within age groups. We find that when age is controlled for there still remains substantial fiscal redistribution between income groups at each age level.⁵²

B. Redistribution by Factors Other than Income

Tax and government spending distributions are presented only on the basis of household cash money income. However, income is not the only basis upon which taxes and government spending may be distributed. Taxes and government spending may be distributed by age, geography, household size, educational attainment, lifestyle choices and other factors as well. No attempt is made to control for non-income forms of fiscal

⁵² See Appendix A for a full discussion of the impact of age on tax burdens and government spending received by households.

redistribution. Instead, analysis of these alternative distributions of taxes and government spending will be presented in forthcoming Tax Foundation studies.

Additionally, it should be noted that taxing and government spending are not the only ways governments affect the distribution of income in the economy. Housing regulations, business subsidies, eminent domain, wage and price controls, trade barriers and various other policies similarly affect the distribution of resources available to households. This study does not examine government income redistribution through these non-fiscal policies.⁵³

C. Positive and Negative Externalities

The current study allocates only budgetary amounts of tax burdens and government spending to households. No attempt is made to value possible negative or positive externalities arising from government tax and spending policies.⁵⁴

D. Uncertainty of Incidence Assumptions

The current study relies on estimates of the economic incidence of taxes and government spending from the literature as a guide whenever possible. However, all assumptions regarding the economic incidence of taxes and government spending are subject to uncertainty. In particular, some portion of the economic incidence of various taxes and government spending falls on residents of foreign countries which would be excluded from an ideal study of U.S. tax and spending distributions. Similarly, some portion of foreign taxes and government spending accrue to U.S. households. However, aside from government interest expense for debt held by foreigners, insufficient data were available to allow for an adjustment of tax and government spending totals to reflect domestic versus foreign incidence of taxes and government spending.

⁵³ See Luc de Wulf (1975), p. 96-97; Dominique van de Walle (1996), p. 12; and Martinez-Vasquez (2004), p. 25.

⁵⁴ See Luc De Wulf (1975), p. 83; and Selden and Wasylenko (1992), p. 7.

E. Statistical Error in Surveys

The current study makes extensive use of survey data on household income, expenditures and demographic characteristics to impute tax burdens and government spending to households. To the extent that households do not correctly report their household characteristics in statistical surveys, the allocations reported in the current study will be inaccurate. Additionally, all surveys are subject to sampling error, and because the current study combines data from more than one survey, it is impossible for the authors to construct statistically valid confidence intervals for results. Every effort has been made to use only authoritative statistical sources from federal government agencies in the current study.

Appendix A. Sensitivity of Results to Alternative Presentations

As with all distributional studies, results from the current study may be presented in many alternative ways. To illustrate the sensitivity of the study's basic results to alternative presentations, this section explores the following scenarios:

- Employing an alternative assumption about the incidence of corporate income taxes;
- Controlling for the impact of old-age insurance programs by (1) presenting results excluding payroll taxes and Social Security and Medicare spending; and (2) presenting fiscal incidence by age group;
- Presenting results in quintiles with equal numbers of households rather than equal numbers of individuals; and
- Controlling for the impact of government interest payments on debt by (1) presenting results excluding government spending on interest payments, (2) presenting results using an alternative allocation of government interest payments, and (3) presenting results on a balanced-budget basis with taxes adjusted to equal government spending in every period;
- Allocating public goods and quasi-private goods on the basis of household net wealth rather than equally to households.

A. Alternative Assumption of Corporate Tax Incidence

The incidence of the corporate income tax has long been controversial in tax policy. Because the current study is an empirical work, we have relied on empirical guidance on tax incidence whenever possible. Corporate income taxes were allocated according to recent estimates of corporate tax burdens in an open-economy framework from a 2006 Congressional Budget Office working paper, "International Burdens of the Corporate Income Tax," by William C. Randolph.⁵⁵ In that study, roughly 70 percent of the corporate tax burden was found to be borne by labor, while 30 percent fell on owners of

⁵⁵ See Randolph (2006).

capital. The current study makes use of this 70-30 split as the allocator for all business taxes.

In this section, we examine the sensitivity of the study's results to a common alternative assumption of corporate tax incidence—that 100 percent of corporate tax burdens are borne by owners of capital. This assumption has its origins in the traditional closed-economy analysis of corporate tax burdens that precludes capital flight to other nations,⁵⁶ although some open-economy models have found similar results.⁵⁷ The Congressional Budget Office has historically relied on this assumption, as do other research groups such as the Urban Institute-Brookings Institution's Tax Policy Center.

Table 39 presents the basic results of the current study under two alternative assumptions of corporate tax incidence. Assumption A is the assumption used throughout the current study, which allocates business taxes 70 percent to labor and 30 percent to owners of capital. Assumption B assumes that 100 percent of business taxes fall on owners of capital. As in the body of the paper, effective tax rates are expressed as a percentage of comprehensive household income.

⁵⁶ See Harberger (1962).

⁵⁷ See Gravelle (1998).

Table 39. Sensitivity of Results to Alternative Corporate Tax Incidence Assumption, Calendar Year 2004

		Quintiles of Household Cash Money Income, Calendar Year 2004				
		Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Effective Tax Rate	Assumption A	13.0%	23.2%	28.2%	31.3%	34.5%
	Assumption B	13.5%	23.2%	27.1%	30.7%	35.2%
Federal Effective Tax Rate	Assumption A	5.0%	12.9%	17.4%	20.2%	24.3%
	Assumption B	5.3%	12.9%	16.8%	19.9%	24.6%
State and Local Effective Tax Rate	Assumption A	7.9%	10.3%	10.9%	11.2%	10.3%
	Assumption B	8.2%	10.3%	10.3%	10.8%	10.6%
Effective Federal Corp. Income Tax Rate	Assumption A	0.8%	1.9%	2.3%	2.6%	2.8%
	Assumption B	1.0%	1.9%	1.8%	2.3%	3.1%
Effective Property Tax Rate	Assumption A	2.9%	3.4%	3.4%	3.4%	3.0%
	Assumption B	3.0%	3.4%	3.1%	3.2%	3.2%
Share of Market Income Plus Net Transfers	Assumption A	9.8%	12.2%	15.4%	21.0%	41.5%
	Assumption B	9.8%	12.2%	15.4%	21.0%	41.5%
Share of Total Tax Burden	Assumption A	4.3%	9.6%	14.8%	22.4%	48.8%
	Assumption B	4.5%	9.6%	14.2%	22.0%	49.7%
Share of Federal Tax Burden	Assumption A	2.6%	8.3%	14.1%	22.2%	52.8%
	Assumption B	2.7%	8.3%	13.6%	21.9%	53.5%
Share of State and Local Tax Burden	Assumption A	7.5%	12.2%	16.3%	22.7%	41.4%
	Assumption B	7.8%	12.2%	15.4%	22.0%	42.6%
Household Fiscal Incidence	Assumption A	\$31,185	\$18,067	\$6,427	(\$8,091)	(\$48,449)
	Assumption B	\$31,036	\$18,067	\$7,188	(\$7,452)	(\$49,777)
Ratio of Total Spending to Total Taxes	Assumption A	\$8.21	\$2.51	\$1.30	\$0.77	\$0.41
	Assumption B	\$7.91	\$2.51	\$1.35	\$0.78	\$0.40

Source: Tax Foundation

Under the alternative assumption that corporate tax burdens fall 100 percent on owners of capital, the total effective tax rate rises for households in the highest income quintile and the lowest income quintile. This result is largely due to the high rates of stock holdings by upper-income households in the top quintile as well as by elderly individuals, many of whom reside in the lowest income quintiles.

The largest change in effective tax rates under the alternative assumption of corporate tax incidence is in the third income quintile, whose total effective tax rate falls from 28.2 percent to 27.1 percent. Overall these results illustrate that altering the assumption of corporate tax incidence has a fairly small impact on the results and does not alter any of the main conclusions drawn in the current study.

B. Excluding Social Security, Medicare and Payroll Taxes

One of the limitations of the current study is that it presents only snapshots of government spending and taxes in single years. As a result, it may fail to capture important aspects of government social insurance programs such as Social Security and

Medicare. These programs are designed to levy high tax burdens in youth and return large amounts of government spending in old age. Because of the temporal mismatch between taxes and government spending, such programs appear highly redistributive in the current study. However, over a lifetime these programs typically result in significantly less income redistribution than appears in a single period.

Table 40 presents the results of the current study with and without Social Security and Medicare spending, as well as the payroll taxes designed to fund them. While this exercise is theoretically questionable due to the fungibility of tax dollars and the tenuous linkage between payroll taxes and old-age benefits, it is useful as an illustration of the sensitivity of the study's basic results to age-based types of redistribution.

Table 40. Sensitivity of Results to the Exclusion of Social Security, Medicare, and Payroll Taxes, Calendar Year 2004

Quintiles of Household Cash Money Income, 2004	Fiscal Incidence, Original Presentation			Fiscal Incidence, Excluding Social Security, Medicare, and Payroll Taxes		
	Net Fiscal Incidence Per Household	Share of Total Spending Received	Ratio of Spending to Tax Burden	Net Fiscal Incidence Per Household	Share of Total Spending Received	Ratio of Spending to Tax Burden
Top 20 Percent	(\$48,449)	17.1%	\$0.41	(\$33,592)	19.3%	\$0.47
Fourth 20 Percent	(\$8,091)	14.8%	\$0.77	(\$1,346)	16.0%	\$0.95
Third 20 Percent	\$6,427	16.6%	\$1.30	\$7,664	16.8%	\$1.53
Second 20 Percent	\$18,067	20.8%	\$2.51	\$13,725	19.3%	\$2.66
Bottom 20 Percent	\$31,185	30.6%	\$8.21	\$23,060	28.7%	\$7.77

Source: Tax Foundation

Households in the bottom quintile receive significantly more in government spending than they pay in total taxes under both scenarios. When Social Security, Medicare and payroll taxes are included households in the bottom quintile receives \$8.21 in government spending for every dollar of tax paid. When they are removed, those households receive \$7.77 for every dollar of tax. In contrast, the ratio of government spending received to tax paid by households in the top income quintile rises from \$0.41 to \$0.47 when these programs are removed.

As is clear from Table 40, the inclusion of Social Security, Medicare and payroll taxes has a noticeable impact on the overall level of redistribution through taxes and

government spending but does not significantly affect the basic trends identified by the study.

Fiscal Incidence over a Lifetime

One common criticism of single-period analyses of taxes and spending is that they fail to capture important changes in household fiscal incidence over a lifetime. For example, households make large tax payments in youth to old-age programs such as Social Security and Medicare and receive large government transfer payments in return later in life. By design, these programs give the appearance of large amounts of fiscal redistribution in any given year, which may be less prevalent when taxes and government spending are measured over a lifetime.

To illustrate the impact of age on estimates of household tax burdens and government spending received, Table 41 presents the basic results of this study both by age and household cash money income.

As expected, the elderly generally receive more government spending than they pay in taxes. Households in the 65 and over age group at every level of income receive more government spending than they pay in taxes. In contrast, a large number of households in the peak earnings years of age 45 to 64 pay more in taxes than they receive in government spending. However, as households move between each of these age groups over a lifetime, there remains substantial disparities in fiscal incidence within every age group. For example, even within the 65 and over age group, the ratio of government spending to taxes ranges widely from \$18.91 for the lowest incomes to \$1.14 for the highest income group.

This suggests that while age has an important impact on the study's results, the basic trends we identify occur within every age group even as households move from youth into old age.

Table 41. Sensitivity of Results to the Age and Income of Household Head, Calendar Year 2004

Age of Household Head	Household Cash Money Income	Ratio of Total Spending to Tax Burden	Ratio of Federal Spending to Federal Taxes	Ratio of State-Local Spending to State-Local Taxes	Net Fiscal Incidence Per Household	Total Effective Tax Rate
Under 25	\$0-10k	\$20.07	\$35.93	\$12.64	\$44,796	8.0%
	10k-20k	\$5.86	\$6.02	\$5.70	\$29,194	21.4%
	20k-30k	\$3.07	\$2.53	\$3.77	\$20,622	27.9%
	30k-40k	\$2.02	\$1.48	\$2.78	\$14,040	31.5%
	40k+	\$0.99	\$0.68	\$1.60	(\$230)	34.3%
25-34	\$0-10k	\$18.84	\$44.97	\$9.90	\$50,939	7.4%
	10k-20k	\$6.40	\$7.36	\$5.50	\$32,495	16.8%
	20k-30k	\$2.93	\$2.61	\$3.34	\$19,311	25.1%
	30k-40k	\$1.74	\$1.38	\$2.24	\$10,429	29.9%
	40k-50k	\$1.25	\$0.94	\$1.74	\$4,626	31.1%
	50k-70k	\$0.88	\$0.62	\$1.32	(\$3,055)	32.9%
	70k+	\$0.43	\$0.29	\$0.73	(\$30,779)	36.9%
35-44	\$0-10k	\$14.75	\$37.76	\$7.48	\$41,520	9.3%
	10k-20k	\$7.00	\$8.33	\$5.71	\$33,316	15.0%
	20k-30k	\$3.36	\$3.27	\$3.47	\$22,608	21.9%
	30k-40k	\$2.07	\$1.83	\$2.41	\$14,629	26.4%
	40k-50k	\$1.35	\$1.04	\$1.82	\$6,267	29.5%
	50k-70k	\$0.99	\$0.72	\$1.46	(\$192)	30.6%
	70k+	\$0.44	\$0.29	\$0.78	(\$34,988)	35.1%
45-54	\$0-10k	\$10.99	\$32.30	\$4.82	\$30,335	11.6%
	10k-20k	\$6.52	\$9.02	\$4.29	\$29,563	14.7%
	20k-30k	\$2.73	\$3.05	\$2.31	\$16,643	22.8%
	30k-40k	\$1.75	\$1.77	\$1.72	\$10,425	26.3%
	40k-50k	\$1.35	\$1.27	\$1.48	\$6,288	27.4%
	50k-70k	\$0.94	\$0.86	\$1.09	(\$1,494)	30.2%
	70k+	\$0.40	\$0.31	\$0.59	(\$38,882)	34.7%
55-64	\$0-10k	\$9.47	\$29.90	\$3.74	\$23,155	12.9%
	10k-20k	\$6.78	\$12.89	\$2.89	\$27,567	14.1%
	20k-30k	\$3.10	\$4.57	\$1.64	\$18,776	21.5%
	30k-40k	\$1.96	\$2.47	\$1.26	\$12,292	24.7%
	40k-50k	\$1.34	\$1.55	\$1.01	\$5,896	27.6%
	50k-70k	\$1.10	\$1.21	\$0.91	\$2,362	28.0%
	70k+	\$0.46	\$0.44	\$0.51	(\$34,152)	33.1%
65+	\$0-10k	\$18.91	\$103.00	\$4.44	\$28,420	6.8%
	10k-20k	\$13.64	\$53.25	\$2.66	\$33,292	8.0%
	20k-30k	\$6.88	\$16.57	\$1.49	\$36,052	11.8%
	30k-40k	\$5.23	\$10.55	\$1.26	\$36,063	13.8%
	40k-50k	\$3.61	\$6.31	\$1.07	\$33,315	16.8%
	50k-70k	\$2.72	\$4.17	\$0.94	\$31,841	19.4%
	70k+	\$1.14	\$1.33	\$0.77	\$7,562	24.4%

Source: Tax Foundation

C. Quintiles with Equal Numbers of Households

Results in the current study are presented in quintiles of household cash money income containing equal numbers of individuals, and unequal numbers of households. Because large households tend to cluster in the upper-income quintiles, when quintiles are adjusted to contain equal numbers of individuals the number of households shrinks in the top quintiles and grows in the lower quintiles. As a result, any expenditures allocated

equally to households—such as public goods—will appear to accrue disproportionately to lower-income quintiles simply because they contain larger numbers of households.

To illustrate the impact of this effect, Table 42 presents the basic results of the study in both quintiles with equal numbers of people as well as with equal numbers of households. Assumption A presents results in quintiles with equal numbers of individuals as is done throughout this study. Assumption B presents results with equal numbers of households instead.

Table 42. Sensitivity of Results to Quintiles with Equal Numbers of Individuals and Quintiles with Equal Numbers of Households, Calendar Year 2004

		Quintiles of Household Cash Money Income, Calendar Year 2004				
		Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Number of Households	Assumption A	30,377,708	24,520,544	21,249,055	19,265,699	18,062,718
	Assumption B	22,695,175	22,698,769	22,688,243	22,698,137	22,695,399
Total Effective Tax Rate	Assumption A	13.0%	23.2%	28.2%	31.3%	34.5%
	Assumption B	10.9%	20.2%	26.5%	30.4%	34.4%
Total Tax Burden Per Household	Assumption A	\$4,325	\$11,932	\$21,194	\$35,288	\$81,933
	Assumption B	\$3,322	\$9,170	\$17,090	\$29,846	\$74,261
Total Effective Spending Rate	Assumption A	106.4%	58.4%	36.8%	24.1%	14.1%
	Assumption B	117.1%	70.3%	44.1%	27.5%	15.0%
Total Spending Received Per Household	Assumption A	\$35,510	\$29,999	\$27,621	\$27,197	\$33,484
	Assumption B	\$35,749	\$31,952	\$28,437	\$26,971	\$32,430
Ratio of Spending/Taxes	Assumption A	\$8.21	\$2.51	\$1.30	\$0.77	\$0.41
	Assumption B	\$10.76	\$3.48	\$1.66	\$0.90	\$0.44
Net Fiscal Incidence Per Household	Assumption A	\$31,185	\$18,067	\$6,427	(\$8,091)	(\$48,449)
	Assumption B	\$32,427	\$22,782	\$11,347	(\$2,874)	(\$41,831)
Suits Index for Total Taxes	Assumption A	0.41				
	Assumption B	0.49				
Suits Index for Total Spending	Assumption A	-0.13				
	Assumption B	-0.03				
Suits Index for Public Goods Spending	Assumption A	-0.11				
	Assumption B	0.00				

Source: Tax Foundation

As is clear from Table 42, presenting results with equal numbers of households rather than individuals generally has a relatively small impact on the basic results of the study. Effective tax rates and government spending rates remain progressive throughout, and the net fiscal incidence of the top two quintiles remains negative.⁵⁸

⁵⁸ Effective tax rates are lower for every income group under Assumption B because presenting results with equal numbers of households reduces the number of economic units spread across the five quintiles from 290 million individuals to roughly 113 million households. This clusters many high-income individuals

As illustrated at the bottom of Table 42 presenting quintiles with equal numbers of households has an effect on the Suits Index results that measure the inequality of taxes and government spending across groups. Total taxes appear more pro-poor, while total spending appears less pro-poor, when presented in quintiles with equal numbers of households.

As explained in Section IV, because public goods are allocated on a per-household basis, the Suits Index for public goods appears slightly pro-poor when presented in quintiles with equal numbers of individuals. As illustrated in the bottom two rows of Table 42, when presented in quintiles with equal numbers of households this pro-poor appearance of public goods disappears.

D. Alternative Treatments of Interest Expenses and Government Debt

In this section we present two alternatives regarding the treatment of government interest expenses. First, we exclude them as a government spending program. Second, we allocate them on the basis of the distribution of all other government spending programs, on the theory that interest payments on debt represent a government input rather than an output. Finally, we explore how the results of the current study are affected if we control for the existence of large and persistent budget deficits and surpluses by forcing taxes and spending to equal each other in each calendar year.

Excluding Government Interest Payments

In the current study, we assume that dollars of government interest payments on debt accrue to holders of federal, state and local government bonds. As a result, the vast majority of government spending on interest payment accrues to households in the highest income quintiles.

into the top quintile who otherwise would reside in the lower four quintiles. This shifting between quintiles has the effect of reducing average incomes and tax burdens in all of the five quintiles.

Table 43 presents the basic results of the study both with and without government interest payments on debt. Excluding interest payments significantly reduces the share of total government spending received by the top 20 percent of households. Specifically, their share falls by over 2.5 percentage points, from 17.13 percent of spending to 14.56 percent of total spending received. As a result of this large decline in the share of spending flowing to the top quintile, the share of government spending received by the bottom three quintiles each rises when interest payments are excluded.

Table 43. Sensitivity of Results to the Exclusion of Government Interest Payments on Debt, Calendar Year 2004

Quintiles of Household Cash Money Income, 2004	Fiscal Incidence, Original Presentation			Fiscal Incidence, Excluding Interest Expenses		
	Net Fiscal Incidence Per Household	Share of Total Spending Received	Ratio of Spending to Tax Burden	Net Fiscal Incidence Per Household	Share of Total Spending Received	Ratio of Spending to Tax Burden
Top 20 Percent	(\$48,449)	17.13%	\$0.41	(\$55,121)	14.56%	\$0.33
Fourth 20 Percent	(\$8,091)	14.84%	\$0.77	(\$10,036)	14.63%	\$0.72
Third 20 Percent	\$6,427	16.63%	\$1.30	\$5,385	16.98%	\$1.25
Second 20 Percent	\$18,067	20.84%	\$2.51	\$17,472	21.67%	\$2.46
Bottom 20 Percent	\$31,184.76	30.56%	\$8.21	\$30,895.94	32.16%	\$8.14

Source: Tax Foundation

Excluding interest expenses significantly reduces the ratio of spending to tax for the top quintile, while leaving the ratios for the bottom four quintiles relatively unchanged. Similarly, excluding interest expenses as a government spending program reduces the net fiscal incidence of the top income quintile by more than \$6,600 per household, while having only a modest impact on the net fiscal incidence of the bottom four quintiles.

Treating Interest Payments as an Input into Spending in Previous Periods

Current government payments for interest expense are the result of deficit spending from previous years. As a result, some argue that interest expenses in the current period do not constitute government spending on final outputs in the current period. Instead, it is argued that they represent an *input* into government spending in previous periods, and should therefore be allocated on the basis of the current periods' distribution of overall government spending.

In the current study, we do not follow this approach for two reasons. First, this approach assumes that government debt from past periods was used to fund government spending

that mirrors the current distribution of government spending, which may or may not be the case. Because it is impossible to trace which government debt funded which type of government spending in which previous period, it is unclear which distribution of government spending would be the proper one to use to allocate interest expenses in this way.

Second, this approach deviates from this study’s explicit single-period methodology. If it is true that government interest payments today represent inputs into other types of government spending that occurred in previous periods, the correct treatment of government interest payments would be to *exclude them entirely as an expenditure in the current period*, as is illustrated in the previous section. To allocate them in the current period would be to count previous period government spending in the current period, introducing a time-inconsistency into the current study’s single-period approach.

Because government interest payments on debt represent a large transfer of economic resources from current taxpayers to holders of government debt, the current study allocates interest payments as a government spending output in the current period. However, to illustrate the impact of this approach, Table 44 allocates all government interest payments on the basis of non-interest government spending in the current period. Assumption A illustrates the study’s current method, while Assumption B presents the alternative method of allocating interest expenses.

Table 44. Sensitivity of Results to Allocating Interest Payments on the Basis of All Non-Interest Government Spending in the Current Period, Calendar Year 2004

		Quintiles of Household Cash Money Income, Calendar Year 2004				
		Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Share of Total Interest Spending	Assumption A	4.31%	7.17%	10.88%	18.41%	59.23%
	Assumption B	32.16%	21.67%	16.98%	14.63%	14.56%
Share of Total Spending	Assumption A	30.56%	20.84%	16.63%	14.84%	17.13%
	Assumption B	32.12%	21.66%	16.99%	14.65%	14.59%
Share of Federal Spending	Assumption A	33.81%	21.83%	15.96%	13.37%	15.02%
	Assumption B	35.36%	22.61%	16.23%	13.11%	12.69%
Share of State and Local Spending	Assumption A	24.96%	19.12%	17.77%	17.38%	20.78%
	Assumption B	26.53%	20.03%	18.29%	17.30%	17.85%
Household Fiscal Incidence	Assumption A	\$31,185	\$18,067	\$6,427	(\$8,091)	(\$48,449)
	Assumption B	\$32,998	\$19,251	\$7,028	(\$8,452)	(\$53,429)
Ratio of Total Spending to Total Taxes	Assumption A	\$8.21	\$2.51	\$1.30	\$0.77	\$0.41
	Assumption B	\$8.63	\$2.61	\$1.33	\$0.76	\$0.35

Source: Tax Foundation

As is clear from the table, while this alternative allocation has a large effect on the distribution of interest spending, it does not dramatically alter the basic trends in net fiscal incidence and spending-to-tax ratios identified in the current study.

Controlling for Government Budget Deficits

There has been considerable attention in macroeconomics in recent years regarding the economic impact of government budget deficits. To what extent do economic actors change behavior today in response government budget deficits and the prospect of higher future taxes to fund them?

While early work from Milton Friedman (1957) on the so-called “permanent income hypothesis” and from Albert Ando and Franco Modigliani (1963) on the “life-cycle theory” of income made important contributions in this area, Robert J. Barro’s later work (1974) specifically addressed the relationship between current taxes and government budget deficits. Specifically, Barro begins with the observation that government spending must be paid for either in higher taxes today or in the future, but not never. From this starting point, he explores to what extent current budget deficits simply cause households to spend less today in anticipation of higher future taxes.

If households are aware that today’s deficit spending will lead to tomorrow’s tax increases, Barro argues they will save more today to pay future taxes tomorrow. But if households save more today for future taxes, it is effectively as if those future tax hikes have already taken place. As a result, under these restrictive assumptions there is what is known as a “Ricardian equivalence” between deficit-financed spending and spending that is simply paid for with higher taxes today.

To illustrate the current study’s results under the assumption that government budget deficits simply represent higher future taxes, Table 45 brings government spending and taxes into balance in Calendar Year 2004 by assuming that budget deficits are financed by across-the-board tax increases instead. That is, we illustrate the impact of treating

deficit spending as a tax on households in the current period rather than a tax delayed until future periods. For the purposes of this illustration we assume that governments can only close the gap between current government spending and current taxes through direct and indirect taxation. We ignore all government non-tax revenue sources, such as the proceeds of state-run lotteries.

Table 45. Sensitivity of Results to Treating Budget Deficits as a Current-Period Tax Increase, Calendar Year 2004

Quintiles of Household Cash Money Income, 2004	Fiscal Incidence, Original Presentation			Fiscal Incidence, Deficit as a Tax		
	Net Fiscal Incidence Per Household	Share of Total Taxes Paid	Ratio of Spending to Tax Burden	Net Fiscal Incidence Per Household	Share of Total Taxes Paid	Ratio of Spending to Tax Burden
Top 20 Percent	(\$48,449)	48.78%	\$0.41	(\$61,489)	48.60%	\$0.35
Fourth 20 Percent	(\$8,091)	22.41%	\$0.77	(\$13,872)	22.41%	\$0.66
Third 20 Percent	\$6,427	14.84%	\$1.30	\$2,906	14.88%	\$1.12
Second 20 Percent	\$18,067	9.64%	\$2.51	\$16,029	9.70%	\$2.15
Bottom 20 Percent	\$31,185	4.33%	\$8.21	\$30,388	4.41%	\$6.93

Source: Tax Foundation

Table 45 illustrates that allocating budget deficits as a current tax has a large impact on the results. Because of the progressive overall distribution of tax burdens, closing the budget deficit through tax increases alone substantially increases the total tax burden faced by upper-income quintiles. Households in the top quintile witness a drop in their already negative net fiscal incidence of more than \$13,000, and the ratio of government spending received to taxes paid falls sharply for every income group.

Table 46 presents balanced-budget figures similar to Table 45 for each year analyzed in the current study, illustrating the impact of government budget deficits and surpluses on the current study's basic findings over time.

Table 46. Sensitivity of Results to Treating Budget Deficits as a Current-Period Tax Increase, Calendar Years 1991-2004

	Calendar Year	Quintiles of Household Cash Money Income, Calendar Year 2004				
		Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Total Effective Tax Rate	1991	16.69%	27.99%	34.86%	38.54%	43.42%
	1995	16.00%	28.59%	35.87%	39.47%	42.57%
	2000	16.02%	25.73%	30.47%	33.80%	37.14%
	2004	15.35%	27.17%	32.94%	36.45%	40.05%
Federal Effective Tax Rate	1991	6.46%	15.83%	21.63%	24.86%	29.79%
	1995	6.40%	16.42%	22.69%	26.05%	30.00%
	2000	5.65%	13.58%	17.95%	21.14%	25.18%
	2004	5.73%	14.67%	19.71%	22.89%	27.53%
State and Local Effective Tax Rate	1991	10.23%	12.16%	13.23%	13.68%	13.63%
	1995	9.61%	12.17%	13.18%	13.42%	12.56%
	2000	10.37%	12.15%	12.52%	12.66%	11.96%
	2004	9.62%	12.50%	13.23%	13.56%	12.51%
Household Net Fiscal Incidence	1991	\$18,366	\$9,858	\$468	(\$9,695)	(\$33,152)
	1995	\$21,783	\$11,828	\$1,155	(\$9,820)	(\$41,605)
	2000	\$24,637	\$13,012	\$2,291	(\$10,633)	(\$50,228)
	2004	\$30,388	\$16,029	\$2,906	(\$13,872)	(\$61,489)
Ratio of Total Government Spending to Total Taxes	1991	\$6.39	\$2.06	\$1.03	\$0.64	\$0.42
	1995	\$6.52	\$2.10	\$1.06	\$0.68	\$0.42
	2000	\$6.51	\$2.14	\$1.11	\$0.68	\$0.38
	2004	\$6.93	\$2.15	\$1.12	\$0.66	\$0.35

Source: Tax Foundation

E. Alternative Allocations of Public Goods and Quasi-Private Goods

The current study allocates spending on public goods such as national defense, environmental protection and general health expenditures equally to households. As outlined in Section III, it is important to note that this does not answer the question of how much households *benefit* from government spending in the sense of increased personal utility. Instead, this study quantifies only which households are *supplied* with government spending by lawmakers. We do not address the question of how much households value what they are supplied by the state.

We follow this approach for two reasons. First, measuring who subjectively “benefits” from government spending requires knowledge of each household’s preferences for the goods and services supplied by governments. Unfortunately, this knowledge is largely unavailable to researchers. Second, consistency requires that either taxes and government spending both be estimated on a utility basis, or neither. Just as some households value government services more than others, it is unlikely that all households suffer an identical loss of utility from a given amount of taxation. Because modern tax distribution studies

from the Congressional Budget Office and others do not estimate tax burdens on a utility basis, this study follows that approach on both the tax and spending sides.

However, because public goods make up a substantial portion of government budgets, it is useful to illustrate how the results of this study change if public goods are allocated on some other basis than equally to households. Table 47 presents the study’s basic results on the assumption that government spending on public goods is instead distributed on the basis of household wealth.⁵⁹ As noted above, there appears to be no theoretical basis for this alternative allocation without explicit knowledge of household utility functions and without treating tax burdens in a similar fashion, but they are presented here as an illustration for the sake of transparency only.

In Table 47, Assumption A presents results on the assumption used throughout this study that public goods are supplied equally to households. Assumption B assumes public goods are distributed on the basis of household net worth.

Table 47. Sensitivity of Results to Allocating Spending on Public Goods on the Basis of Household Wealth Rather than Equally to Households

		Quintiles of Household Cash Money Income, Calendar Year 2004				
		Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Share of Total Government Spending	Assumption A	30.6%	20.8%	16.6%	14.8%	17.1%
	Assumption B	24.9%	17.1%	14.5%	16.6%	27.0%
Household Net Fiscal Incidence	Assumption A	\$31,185	\$18,067	\$6,427	(\$8,091)	(\$48,449)
	Assumption B	\$24,583	\$12,642	\$2,830	(\$4,906)	(\$29,147)
Ratio of Total Spending to Total Taxes	Assumption A	\$8.21	\$2.51	\$1.30	\$0.77	\$0.41
	Assumption B	\$6.68	\$2.06	\$1.13	\$0.86	\$0.64
Ratio of Federal Spending to Federal Taxes	Assumption A	\$14.76	\$2.99	\$1.29	\$0.68	\$0.32
	Assumption B	\$11.85	\$2.39	\$1.08	\$0.79	\$0.57
Ratio of State-Local Spending to State-Local Taxes	Assumption A	\$4.03	\$1.91	\$1.33	\$0.93	\$0.61
	Assumption B	\$3.39	\$1.65	\$1.21	\$1.00	\$0.81

Source: Tax Foundation

As is clear from the table, distributing public good spending on the basis of household wealth has a significant impact on the share of government spending received by each quintiles and generally shifts the distribution of government spending more toward upper-income quintiles who have larger net household wealth. However, the general

⁵⁹ Household wealth is defined as mean household net worth in this illustration as measured by the Federal Reserve Bank’s “Survey of Consumer Finances.” For a detailed description of that survey, see <http://www.federalreserve.gov/pubs/oss/oss2/about.html>.

patterns identified in this study in household fiscal incidence and the ratio of government spending received to total taxes paid are not substantially altered by this alternative allocation of public goods.

Table 48 presents a second illustration showing the impact on the results of allocating both spending on public goods and what this study refers to as “quasi-private” goods on the basis of household net worth rather than equally to households. As discussed above, there appears to be little theoretical justification for such an allocation in the absence of data on household utilization rates for quasi-private goods such as police protection and fire protection, but it is presented here for the sake of transparency.

In Table 48, Assumption A presents the key results of the study with both public goods and quasi-private goods allocated equally to households. Assumption B assumes these items are distributed on the basis of household net worth.

Table 48. Sensitivity of Results to Allocating Spending on Public Goods and Quasi-Private Goods on the Basis of Household Wealth Rather than Equally to Households

		Quintiles of Household Cash Money Income, Calendar Year 2004				
		Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Share of Total Government Spending	Assumption A	30.6%	20.8%	16.6%	14.8%	17.1%
	Assumption B	23.6%	16.2%	14.0%	17.0%	29.2%
Household Net Fiscal Incidence	Assumption A	\$31,185	\$18,067	\$6,427	(\$8,091)	(\$48,449)
	Assumption B	\$23,111	\$11,433	\$2,028	(\$4,195)	(\$24,845)
Ratio of Total Spending to Total Taxes	Assumption A	\$8.21	\$2.51	\$1.30	\$0.77	\$0.41
	Assumption B	\$6.34	\$1.96	\$1.10	\$0.88	\$0.70
Ratio of Federal Spending to Federal Taxes	Assumption A	\$14.76	\$2.99	\$1.29	\$0.68	\$0.32
	Assumption B	\$11.62	\$2.34	\$1.07	\$0.79	\$0.59
Ratio of State-Local Spending to State-Local Taxes	Assumption A	\$4.03	\$1.91	\$1.33	\$0.93	\$0.61
	Assumption B	\$2.98	\$1.48	\$1.14	\$1.04	\$0.94

Source: Tax Foundation

As is clear from the table, the alternative allocation of public goods and quasi-private goods generally shifts the distribution of spending toward upper-income quintiles. However, as with Table 47, the general trends in household fiscal incidence and the ratio of government spending received to taxes paid identified elsewhere in this study remain intact even when these items are distributed on the strongly pro-rich basis of household wealth.

Appendix B. The Comprehensive Household Income Concept

It is important for tax distribution studies to use a broad measure of household income. In tax distribution studies, it is assumed that all taxes are ultimately borne by households—including personal taxes such as income and sales taxes, as well as indirect business taxes such as corporate income taxes which are legally paid by firms but are economically borne by households. Because all taxes in the economy are attributed to households, it becomes important to also attribute to households as income all the resources in the economy that are available to pay those taxes.

Although productive activity is the source of all economic resources available to pay taxes for the economy as a whole, from the standpoint of particular households there are two basic sources of income: market income and government transfer payments that shift market income from other households to them. Common sources of household income from transfer payments includes Social Security payments, veterans' benefits, and welfare payments targeted at low-income households.

While government transfers cannot increase the amount of economy-wide income that is available to pay taxes, from the standpoint of individual households, government transfers can be an important source of income. Many low-income households in the economy rely heavily on transfer payments and have very low market incomes. As a result, any household income measure that relies solely on market incomes without accounting for the importance of government transfer payments will tend to sharply overstate the tax burden faced by low-income households.

To solve this problem, most tax distribution studies employ a broad definition of household income that begins with some measure of market income and adds to it the value of government transfer payments received by households. However, broad income concepts that simply add government transfer payments to household market income face a key limitation: the double-counting of income on an economy-wide basis.

A. The Double-Counting Problem

Prior to the 1990s, many tax distribution studies relied on broad income concepts that began with an economy-wide aggregate measure of income, and then attributed that aggregate measure to households using various statistical techniques. However, the practice of tax distribution studies has changed dramatically in recent decades. In most modern studies, the traditional approach of utilizing a comprehensive household income measure that in total is equal to some aggregate measure of the economy’s output has largely gone out of fashion.

Most modern tax distribution studies—including those from the Congressional Budget Office, the U.S. Treasury’s Office of Tax Analysis, the Joint Committee on Taxation and various think tanks—do not begin with an economy-wide aggregate when constructing broad income concepts. Instead, they typically piece together various types of household income, component-by-component, in an attempt to broadly approximate households’ “Haig-Simons” income.⁶⁰ Table 49 summarizes the components that are pieced together into the broad household income definitions used by the three federal government agencies that conduct tax distributions.

Table 49. Components of the Income Definitions Used by the Congressional Budget Office, the U.S. Treasury and the Joint Committee on Taxation

Congressional Budget Office	U.S. Treasury	Joint Committee on Taxation
Wages and salaries	Wages and salaries	Adjusted gross income
Self-employment income	Self-employment income	Tax-exempt interest
Rental income	Employer-provided fringe benefits	Employer’s contributions to health and life insurance
Interest and dividends	Employer’s share of social insurance taxes	Employer’s share of social insurance taxes
Realized capital gains	Net interest income	Workers’ compensation
Cash transfer payments	Pretax corporate profits	Nontaxable Social Security benefits
Retirement benefits	Real accruals of non-stock capital gains	Medicare (Insurance value)
In-kind benefits	Pension and benefits from individual retirement accounts	Alternative minimum tax preference items
Taxes paid by businesses (employer’s share of social insurance taxes and corporate income taxes)	Real earnings on retirement and life insurance assets	Excluded income of U.S. citizens living abroad
Employee contributions to 401(k) retirement plans	Imputed rent from owner-occupied housing	
	Cash transfer payments	

Source: Congressional Budget Office

⁶⁰ See Rosen (2002) p. 336-40, for a detailed discussion of the concept of Haig-Simons income.

As is clear from Table 49, most tax distribution studies use an income concept that begins with a household's market income—such as wages, rental income, interest income and so on—and adds in the value of various government transfer payments those households receive. For example, the Congressional Budget Office counts as income the value of government-provided healthcare received through Medicare and Medicaid, in addition to households' market income.⁶¹ Similarly, the U.S. Treasury adds the value of government cash transfer payments to market income to arrive at total family income.⁶²

While it is important for any broad concept of income to account for the large amount of transfer payments received by low-income households, there is a major drawback to broad income concepts that piece together market and non-market incomes without ever reconciling them with a larger economy-wide aggregate. When the value of government transfer payments is simply added to a household's income without subtracting off an identical value from any other household's income, it results in the double-counting of income on an economy-wide basis.

Table 50 illustrates the conceptual problem with the double-counting of government transfers. In line 1, households earn market income from productive activity such as wages and salaries, dividends and interest payments. In line 2 government transfer payments such as Social Security payments, welfare payments, and veteran's benefits are added to household income. This results in the household income measure in line 3, which broadly corresponds to the definition of income employed in the tax distribution studies from the CBO, the U.S. Treasury and the JCT.

⁶¹ See U.S. Congressional Budget Office (2001), Chapter 2.

⁶² See Cronin (1999).

Table 50. The Problem of Double-Counting when Transfers Are Counted as Household Income

Line	Item	Household A	Household B	Economy-Wide Total
1	Market Income Before Taxes and Spending Plus: Government Spending	\$50,000	\$100,000	\$150,000
2	Transfers	\$20,000	\$10,000	\$30,000
3	Equals: Market Income Plus Transfers	\$70,000	\$110,000	\$180,000
5	Tax Burden	(\$20,000)	(\$40,000)	(\$60,000)
6	Effective Tax Rate on Market Income	40%	40%	40%
7	Effective Tax Rate on Market Income Plus Transfers	29%	36%	33%
8	Amount Effective Tax Rates Understated by Double-Counting	-11%	-4%	-7%

Note: Assumes a proportional 40 percent tax rate on market income, and one income transfer program.

Source: Tax Foundation

As is clear from Table 50, the standard practice of adding to household market income the value of government transfer benefits, without subtracting them elsewhere, clearly results in a definition of income that exceeds what is possible for the economy in the aggregate. The \$30,000 of transfers added to household market income in line 2 does not represent new production in the economy. Every transfer payment must reduce the income of another household in the economy by at least the same amount. However, the definition of income in line 3 only counts additions to household income from transfers, not subtractions.

In the aggregate, this results in an economy-wide income base that is larger than total economy-wide income. Lines 6, 7 and 8 illustrate how this double-counting of income understates the total economy-wide tax burden. Despite having a flat 40 percent rate, the tax in Table 50 appears progressive when compared to market incomes plus transfers. On an economy-wide basis, this definition of income understates total tax burdens by 7 percentage points.

This problem of double counting in many widely-used income concepts has been recognized by the Congressional Budget Office and others. For example, the CBO explains its double-counting of 401(k) contributions in its definition of household income—they are counted both when originally earned and when withdrawn—as follows:

“In the face of conflicting arguments about when to count retirement funds as income, the Congressional Budget Office (CBO) includes in its income measure both voluntary contributions to individual retirement accounts and 401(k) accounts and withdrawals from those and other accounts during retirement. Although that approach clearly double-counts contributions over a lifetime, omitting either of the measures would understate the resources available to workers or retirees.”⁶³

In the current study, we develop a broad income concept specifically designed to avoid this double-counting problem. Ideally a broad income measure should achieve three basic goals. First, it should reflect the productive market incomes households have available to pay taxes. Second, it should account for the large amount of government transfer payments received by low-income households. And third, it should not suffer from the “fallacy of composition.” That is, it should not double-count income and should equal in the aggregate some larger measure of the economy’s output available to pay taxes in a given year.

As outlined in previous Tax Foundation studies, the most appropriate measure of the total economy-wide market income that is available to pay taxes in most years is equal to Net National Product (NNP) as defined by the National Income and Product Accounts.⁶⁴ NNP consists of the nation’s Gross Domestic Product, less the annual amount of capital depreciation that the economy as a whole must set aside to maintain its current capital stock. Because NNP includes the retained earnings of U.S. corporations, it also implicitly includes the value of all stock-related capital gains throughout the economy. In the long run, stock capital gains—which account for the majority of capital gains in most years—represent increases in the present value of expected future corporate earnings and

⁶³ Congressional Budget Office (2001), p.21.

⁶⁴ See Tax Foundation (1957), Tax Foundation (1967) and Tax Foundation (1989).

therefore are fully reflected in NNP as measured by the national income accounts.⁶⁵ In the current study, this measure is taken to be the aggregate amount of productive market income of all households in the economy available to pay taxes.

Once the nationwide distribution of market income is established, it is adjusted to reflect the importance of government transfers to low-income households in two steps. First, the amount of federal, state and local government transfer payments received is added to each household's market income. Second, to avoid double counting transfer incomes the cost of those transfer payments is subtracted from household incomes based on the distribution of the tax burden at the level of government at which the transfers are made.

For example, once federal transfer payments are added to household incomes, the total amount is then subtracted from all household incomes based on the distribution of federal tax burdens. Because federal tax dollars are fungible—that is, it is not possible to identify which federal taxes fund transfer payments and which do not—transfers are distributed on the basis of all federal taxes.

The result is a comprehensive household income measure that counts all forms of market income in the economy, accounts for the importance of government transfer payments to low-income households, and does not double-count transfer income on an economy-wide basis. Conceptually this income concept can be expressed as,

$$\textit{Household Market Incomes} + (\textit{Government Transfer Payments} - \textit{Tax Cost of Government Transfer Payments}) = \textit{Comprehensive Household Market Income Plus Net Transfers}.$$

⁶⁵ For example, see Piketty and Saez (2006), p. 9: “In our approach, capital gains serve as a way of counting corporate income. After all, retained earnings are reflected in the stock prices and will be part of our income definition when capital gains are realized on those stocks. In the long-run and in the aggregate, realized capital gains on corporate stock reported on individual tax returns are of comparable magnitude to retained earnings from corporations estimated in national accounts.”; see also Cronin (1999), p. 8: “Accrued capital gains on corporate stock also represent a change in net worth and an addition to income. Stock gains are included in GDP (and FEI) as part of pre-tax corporate profits.”

B. Technical Allocation of Comprehensive Household Income to Households

In the current study, the comprehensive household income concept is constructed in three steps. First, Net National Product is decomposed into the 43 allocable categories listed in Table 51. These components of the nation's market income are then allocated to households inside the U.S. Census Bureau's "Current Population Survey" based on Census Bureau data and data from the "Consumer Expenditure Survey" from the U.S. Bureau of Labor Statistics. This represents the distribution of market income throughout the economy.

Second, household amounts of federal, state and local government transfer payments received are added to household market incomes. This total represents an economy-wide distribution of market income plus government transfers. Finally, the total cost of federal, state and local government transfer payments is distributed to households on the basis of the distribution of tax burdens that is established in Section II of the current study.

Table 51 lists the 43 components of NNP allocated to households as productive market income, the statistical allocator used, and the 2004 amount. The amounts of government transfer payments allocated to households are listed in Section III of this study, and the distribution of tax burdens used to allocate the cost of transfer payments is given in Section II. The derivation and final amount of comprehensive market income plus net transfers for each quintile is listed in Table 52.

Table 51. Components of Net National Product Allocated to Households, Calendar Year 2004

NIPA Table	Component	Statistical Allocator	Calendar Year 2004 Amount
2.1	Wage and salary disbursements	Wages and Salaries (CPS)	5,392,100,000,000
2.1	Employer contributions for employee pension and insurance funds	If Receives a Private Pension, Wages and Salaries (CPS)	866,100,000,000
2.1	Employer contributions for government social insurance	FICA taxes (CPS)	407,100,000,000
2.1	Plus: Proprietors' income with inventory valuation and capital consumption adjustments		
2.1	Farm	Farm Income (CPS)	36,200,000,000
2.1	Nonfarm	Non-Farm Self-Employment Income (CPS)	874,900,000,000
2.1	Plus: Rental income of persons with capital consumption adjustment	Half Rental Income, Half Returns to Home Equity (CPS)	127,000,000,000
1.7.5	Plus: Corporate profits with inventory valuation and capital consumption adjustments	Dividend and Net Capital Gains Income (CPS)	1,182,600,000,000
3.5	Plus: Taxes on production and imports		
3.5	Federal		
3.5	Excise Taxes		
3.5	Gasoline	Half Gas and Oil (CEX), half Business Tax Allocator	24,200,000,000
3.5	Alcoholic beverages	Alcoholic Beverages (CEX)	8,400,000,000
3.5	Tobacco	Tobacco and Smoking Related Products (CEX)	7,100,000,000
3.5	Diesel Fuel	Business Tax Allocator	9,200,000,000
3.5	Air transport	Half Airline Transportation (CEX), half Business Tax Allocator	12,100,000,000
3.5	Crude oil windfall profits tax	Half Gas and Oil (CEX), half Business Tax Allocator	0
3.5	Other	Expenditures (CEX)	10,400,000,000
3.5	Customs Duties	Expenditures (CEX)	23,300,000,000
3.5	Other	Expenditures (CEX)	0
3.5	State and Local		
3.5	Sales taxes		
3.5	State		
3.5	General	Taxable General Sales (CEX)	204,600,000,000
3.5	Gasoline	Half Gas and Oil (CEX), half Business Tax Allocator	33,800,000,000
3.5	Alcoholic beverages	Alcoholic Beverages (CEX)	4,600,000,000
3.5	Tobacco	Tobacco and Smoking Related Products (CEX)	12,300,000,000
3.5	Public utilities	Utilities, Fuels and Public Services (CEX)	10,500,000,000
3.5	Insurance receipts	Insurance Expenditures (CEX)	14,600,000,000
3.5	Other	Expenditures (CEX)	19,500,000,000
3.5	Local		
3.5	General	Taxable General Sales (CEX)	49,600,000,000
3.5	Public utilities	Utilities, Fuels and Public Services (CEX)	11,100,000,000
3.5	Other	Expenditures (CEX)	9,800,000,000
3.5	Property taxes	Half Housing Expenditures (CEX), half Business Tax Allocator	329,800,000,000
3.5	Motor vehicle licenses	Business Tax Allocator	7,600,000,000
3.5	Severance taxes	Half Energy Allocator (CEX) (= Natural Gas, Electricity, Fuel Oil and Other Fuels, Gas and Motor Oil), half Business Tax Allocator	6,900,000,000
3.5	Special assessments	Half Housing Expenditures (CEX), half Business Tax Allocator	6,500,000,000
3.5	Other taxes	Business Tax Allocator	48,200,000,000
3.13	Less: Subsidies	Business Tax Allocator	44,700,000,000
1.7.5	Plus: Net interest and miscellaneous payments on assets	Interest income (CPS)	485,100,000,000
7.7	Plus: Business current transfer payments (net)		
7.7	Payments to persons (net)		
7.7	Insurance payments to persons by business		
7.7	Automobile insurance	Vehicle insurance (CEX)	15,400,000,000

NIPA Table	Component	Statistical Allocator	Calendar Year 2004 Amount
7.7	Medical malpractice insurance	Health Care Expenditures (CEX)	6,000,000,000
7.7	Net insurance settlements	Life and Other Personal Insurance (CEX)	-10,300,000,000
7.7	Donations by corporate business to nonprofit institutions serving households	Households (CPS)	11,600,000,000
7.7	Other	Households (CPS)	5,500,000,000
7.7	Payments to government (net)	Households (CPS)	49,800,000,000
7.7	Payments to the rest of the world (net)	Households (CPS)	7,500,000,000
1.7.5	Plus: Current surplus of government enterprises	Households (CPS)	-5,000,000,000
1.7.5	Plus: Wage accruals less disbursements	Wages and Salaries (CPS)	-15,000,000,000
1.7.5	Plus: Statistical discrepancy	Households (CPS)	66,600,000,000
	Equals: Net National Product		10,322,600,000,000

Source: Tax Foundation

Table 52. Derivation of Comprehensive Household Income in the Current Study, Calendar Year 2004 (Dollar Figures in \$ Billions)

In Billions of Dollars	Quintiles of Household Cash Money Income, Calendar Year 2004					
	Total	Bottom 20 Percent	Second 20 Percent	Third 20 Percent	Fourth 20 Percent	Top 20 Percent
Household Market Income (NNP)	\$10,323	\$416	\$1,042	\$1,592	\$2,354	\$4,918
Plus: Value of Government Transfers Received						
Federal Transfers	\$1,254	\$538	\$302	\$184	\$125	\$105
State and Local Transfers	\$221	\$108	\$47	\$30	\$20	\$15
Less: Cost of Government Transfers to Others						
Cost of Federal Transfers	\$1,254	\$33	\$104	\$176	\$279	\$662
Cost of State and Local Transfers	\$221	\$17	\$27	\$36	\$50	\$91
Equals: Household Market Income Plus Net Transfers	\$10,323	\$1,013	\$1,261	\$1,594	\$2,171	\$4,284

Source: Tax Foundation

Appendix C. Technical Allocation Methods and Assumptions

The current study employs five main statistical sources: the U.S. Census Bureau's "Current Population Survey" (CPS), the "Consumer Expenditure Survey" (CEX) from the U.S. Bureau of Labor Statistics, the National Income and Product Accounts (NIPAs) maintained by the U.S. Commerce Department's Bureau of Economic Analysis (BEA), the historical budget tables maintained by the Office of Management and Budget (OMB), and calendar-year figures for Medicare and Medicaid expenditures from the U.S. Health and Human Services Department's Centers for Medicare and Medicaid Services (CMS). The following section describes the technical methods employed in the current study in detail.

A. Adjustments to Tax and Government Spending Data

All totals for tax and government spending amounts are drawn from the National Income and Product Accounts (NIPA) compiled by the U.S. Commerce Department's Bureau of Economic Analysis (BEA). Four adjustments were made to the spending totals listed in NIPA Table 3.16, "Government Current Expenditures by Function."

First, because state governments play an important role in unemployment insurance programs, unemployment spending was re-classified as state-local government spending rather than federal spending. Second, two of the broad functional categories for Health and for Housing and Community Services listed in NIPA Table 3.16 were subdivided using detailed budget data to allow a finer allocation of spending totals to households.

The first step was to construct a data crosswalk between the BEA's functional spending categories and those used by the Office of Management and Budget. At the federal level, the BEA's Health category was subdivided into Medicare, Medicaid, veteran's health services and all other health spending. Medicare, Medicaid and veteran's health services totals were drawn from calendar year data from the Centers for Medicare and Medicaid Services, and the remainder of the BEA's Health category was classified as other health spending. Also at the federal level, the BEA's Housing and Community Services

category was sub-divided into disaster relief—which this study treats as a public good—and other housing assistance which is assumed to be supplied primarily to low-income households who benefit from government housing assistance. This division was done using figures from the Office of Management and Budget’s historical budget tables. At the state level, the BEA’s Health category was similarly divided into Medicaid spending and all other health spending using figures for state Medicaid spending from the Centers for Medicare and Medicaid Services.

Because the current study attempts to match government spending to the level of government at which taxes are levied to fund it, federal grants-in-aid to state and local governments were re-classified as federal spending rather than state and local spending. These totals for federal government grants in aid are derived from figures in NIPA Table 3.16. In Calendar Year 2004, approximately \$349.7 billion of federal grants-in-aid to states—primarily for federal Medicaid grants, welfare and education—was re-classified as federal government spending.

Finally, because the current study is concerned with the overall fiscal incidence of U.S. residents only, data from the U.S. Department of Treasury’s Office of Debt Management was used to adjust downward the amount of federal interest expense allocated to households. In calendar year 2004, approximately 49.4 percent of federal debt was held by foreign and international sources. This portion of interest expense was not allocated to U.S. residents. In theory, international incidence adjustments of this type would be made to all tax and spending totals—both for the portion of U.S. taxes and spending that falls on foreigners, and for the portion of foreign taxes and spending that falls on U.S. residents—but lack of data did not allow for further adjustments in the current study.

B. Incidence Assumptions and Statistical Allocators

Various assumptions about the economic incidence of taxes and government spending were employed in the current study. Whenever possible, empirical research on economic incidence was used as guide. Tables 53, 54, 55 and 56 outline the full list of allocated

taxes and government spending categories, incidence assumptions for each, and the statistical allocator used to impute totals to households.

Table 53. Federal Taxes, Incidence Assumptions, and Statistical Allocators

Federal Taxes	Incidence Theory	Statistical Allocator
Individual Income Taxes	Assumed to fall on individual income earners	Federal Income Tax Liability, Before Credits (CPS)
Contributions for Government Social Insurance	Assumed to fall entirely on workers earning wages and salaries	FICA taxes (CPS)
Corporate Income Taxes	Assumed to fall 70 percent on wages and salaries, 30 percent on owners of capital ⁶⁶	Business Tax Allocator
Federal Excise Taxes – Gasoline	Assumed to fall 50 percent on consumers of gasoline, and 50 percent on the same allocation as the corporate income tax	Half Gas and Oil (CEX), half Business Tax Allocator
Federal Excise Taxes -- Alcoholic Beverages	Assumed to fall on consumers of alcoholic beverages	Alcoholic Beverages (CEX)
Federal Excise -- Tobacco	Assumed to fall on consumers of tobacco products	Tobacco and Smoking Related Products (CEX)
Federal Excise -- Diesel Fuel	Assumed to follow the same allocation as the corporate income tax	Business Tax Allocator
Federal Excise -- Air Transport	Assumed to fall half on consumers of airport services, and half on the same allocation as the corporate income tax.	Half Airline Transportation Expenditures (CEX), half Business Tax Allocator
Federal Excise -- Crude Oil Windfall Profits Tax	Assumed to fall 50 percent on consumers of gasoline, and 50 percent on the same allocation as the corporate income tax	Half Gas and Oil (CEX), half Business Tax Allocator
Federal Excise -- All other Excises	Assumed to fall on consumers in proportion to their total consumption expenditures	Expenditures (CEX)
Federal Customs Duties, etc.	Assumed to fall on consumers in proportion to their total consumption expenditures	Expenditures (CEX)
Estate and Gift Taxes	Assumed to fall on members of the highest income group	Top 1 percent of household cash money incomes (CPS)

Source: Tax Foundation

⁶⁶ Follows the empirical estimate of the economic incidence of the corporate income tax in an open economy from William Randolph, “International Burdens of the Corporate Income Tax,” CBO Working Paper 2009-09 (August 2006).

Table 54. State and Local Taxes, Incidence Assumptions, and Statistical Allocators

State and Local Taxes	Incidence Theory	Statistical Allocator
Individual Income Taxes	Assumed to fall on individual income earners	State Income Tax liability before credits (CPS)
Corporate Income Taxes	Assumed to fall 70 percent on wages and salaries, 30 percent on owners of capital ⁶⁷	Business Tax Allocator
Personal Property Taxes	Assumed to fall on payers of personal property taxes.	Other Personal Taxes (CEX)
Personal Motor Vehicle Licenses	Assumed to fall on owners of automobiles	Number of vehicles in consumer unit (CEX)
Other State and Local Personal Taxes	Assumed to be proportional to total household money income.	Household Cash Money Income (CPS)
General Sales Taxes	Assumed to fall on consumers in proportion to their expenditures on taxable goods and services	Taxable General Sales (CEX) = Expenditures Less: Food at Home, Housing (except for "Other Lodging"), Utilities, Fuels and Public Services, Gas and Motor Oil, Public Transportation, Healthcare, Education, Cash Contributions, Personal Insurance and Pensions.
Gasoline Excise Taxes	Assumed to fall 50 percent on consumers of gasoline, and 50 percent on the same allocation as the corporate income tax (see above)	Half Gas and Oil (CEX), half Business Tax Allocator
Alcoholic Beverages Excise Taxes	Assumed to fall on consumers of alcoholic beverages	Alcoholic Beverages (CEX)
Tobacco Excise Taxes	Assumed to fall on consumers of tobacco products	Tobacco and Smoking Related Products (CEX)
Public Utilities Taxes	Assumed to fall on consumers of public utility services	Utilities, Fuels and Public Services (CEX)
Insurance Receipts Taxes	Assumed to fall on consumers of insurance services	Insurance Expenditures Allocator (CEX) = Vehicle Insurance + Housing Maintenance, Repairs, Insurance, etc. + Life and Other Personal Insurance + Health Insurance
Other Selective Sales Taxes	Assumed to fall on consumers in proportion to their total consumption expenditures	Expenditures (CEX)
Motor Vehicle Licenses on Production & Imports	Assumed to follow the same incidence as the corporate income tax	Business Tax Allocator
Severance Taxes	Assumed to fall half on consumers of energy, and half on the same incidence as the corporate income tax	Half Energy Allocator (CEX) (= Natural Gas, Electricity, Fuel Oil and Other Fuels, Gas and Motor Oil), half Business Tax Allocator

⁶⁷ Follows the empirical estimate of the economic incidence of the corporate income tax in an open economy from William Randolph, "International Burdens of the Corporate Income Tax," CBO Working Paper 2009-09 (August 2006).

State and Local Taxes	Incidence Theory	Statistical Allocator
Property Taxes	Assumed to fall 50 percent on individual homeowners and renters, and 50 percent on the same allocation as the corporate income tax	Half Housing Expenditures (CEX), half Business Tax Allocator
Special Assessments Taxes	Assumed to fall 50 percent on individual homeowners and renters, and 50 percent on the same allocation as the corporate income tax	Half Housing Expenditures (CEX), half Business Tax Allocator
Other Taxes on Production and Imports	Assumed to follow the same allocation as the corporate income tax	Business Tax Allocator
Estate and Gift Taxes	Assumed to fall on members of the highest income group	Top 1 percent of household cash money incomes (CPS)

Source: Tax Foundation

Table 55. Federal Government Spending, Incidence Assumptions, and Statistical Allocators

Federal Spending	Type	Incidence Theory (If Not Attributed Uniformly to Households)	Statistical Allocator
General public service			
Executive and legislative	Public	na	Households (CPS)
Tax collection and financial management	Public	na	Households (CPS)
Interest payments	Private	Spending utilized by domestic holders of Treasury securities.	Interest income (CPS)
Other	Public	na	Households (CPS)
National defense	Public	na	Households (CPS)
Public order and safety			
Police	Quasi-Private	na	Households (CPS)
Fire	Quasi-Private	na	Households (CPS)
Law courts	Public	na	Households (CPS)
Prisons	Public	na	Households (CPS)
Economic affairs			
Transportation			
Highways	Private	Spending utilized by users of road infrastructure (half to individual drivers directly, and half to individuals indirectly through firms that utilize road infrastructure as an input).	Half Gasoline and Motor Oil (CEX), half Business Tax Allocator (CPS)
Air	Private	Spending utilized by users of airport services (half to individual airport users directly, and half to individuals indirectly through firms that utilize road infrastructure as an input).	Half Air Transportation (CEX), half Business Tax Allocator (CPS)
Water	Quasi-Private	na	Households (CPS)
Transit and railroad	Private	Spending utilized by users of mass transportation and railroads (half to individual transit users directly, and half to individuals indirectly through firms that utilize transit as an input).	Half Non-Airline Public Transportation (CEX), half Business Tax Allocator
Space	Public	na	Households (CPS)
Other economic affairs			
General economic and labor affairs	Private	Spending utilized by those earning wages and salaries.	Wage and Salary Income (CPS)
Agriculture	Private	Spending utilized by those with farm income.	Farm Self-Employment Income (CPS)
Energy	Private	Spending utilized by those who use energy resources (half to individual energy users directly, and half to individuals indirectly through firms that utilize energy as an input).	Half Energy Allocator (CEX) (= Natural Gas, Electricity, Fuel Oil and Other Fuels, Gas and Motor Oil), half Business Tax Allocator
Natural resources	Public	na	Households (CPS)

Federal Spending	Type	Incidence Theory (If Not Attributed Uniformly to Households)	Statistical Allocator
Postal service	Private	Spending utilized by those using the Postal Service (half to individuals directly, and half to individuals indirectly through firms using postal services as an input).	Half Postage and Stationary (CEX), half Business Tax Allocator
Housing and community services			
Housing and community services - Disaster relief	Public	na	Households (CPS)
Housing and community services - Other	Transfer	Spending utilized by lower-income groups targeted by public housing and community development.	Public Housing Project (CPS) + Reduced Rent Subsidies (CPS)
Health			
Health - Medicaid grants	Transfer	Spending utilized by recipients of Medicaid payments.	Person Market Value of Medicaid (CPS)
Health - Medicare	Transfer	Spending utilized by recipients of Medicare payments.	Person Market Value of Medicare (CPS)
Health - Veteran's benefits and services	Transfer	Spending utilized by recipients of military pensions and other benefits.	Veteran's Benefit Income (CPS)
Health - Other miscellaneous	Public	na	Households (CPS)
Recreation and culture	Quasi-Private	na	Households (CPS)
Education			
Elementary and secondary	Private	Spending utilized primarily by families with school-age children who attend public elementary and secondary schools.	Number of children enrolled in public elementary or secondary schools in household (CPS)
Higher	Private	Spending utilized primarily by current higher-education students and their families.	College or university students in household (CPS)
Other	Quasi-Private	na	Households (CPS)
Income security			
Disability	Transfer	Spending utilized by recipients of income security payments.	Disability Income (CPS)
Retirement	Transfer	Spending utilized by Social Security payment recipients.	Social Security Income (CPS)
Welfare and social services	Transfer	Spending utilized by recipients of income security payments.	Public Assistance Income (CPS)
Other	Transfer	Spending utilized by recipients of income security payments.	Public Assistance Income (CPS)

Source: Tax Foundation

Table 56. State and Local Government Spending, Incidence Assumptions, and Statistical Allocators

State and Local Spending	Type	Incidence Theory (If Not Attributed Uniformly to Households)	Statistical Allocator
General public service			
Executive and legislative	Public	na	Households (CPS)
Tax collection and financial management	Public	na	Households (CPS)
Interest payments	Private	Spending utilized by those with some form of interest income.	Interest income (CPS)
Other	Public	na	Households (CPS)
Public order and safety			
Police	Quasi-Private	na	Households (CPS)
Fire	Quasi-Private	na	Households (CPS)
Law courts	Public	na	Households (CPS)
Prisons	Public	na	Households (CPS)
Economic affairs			
Transportation			
Highways	Private	Spending utilized by users of road infrastructure (half to individual drivers directly, and half to individuals indirectly through firms that utilize road infrastructure as an input).	Half Gasoline and Motor Oil (CEX), half Business Tax Allocator
Transit and railroad	Private	Spending utilized by users of mass transportation and railroads (half to individual transit users directly, and half to individuals indirectly through firms that utilize transit as an input).	Half Non-Airline Public Transportation (CEX), half Business Tax Allocator

State and Local Spending	Type	Incidence Theory (If Not Attributed Uniformly to Households)	Statistical Allocator
Other economic affairs			
General economic and labor affairs	Private	Spending utilized by those earning wages and salaries.	Wage and Salary Income (CPS)
Agriculture	Private	Spending utilized by those with farm income.	Farm Self-Employment Income (CPS)
Energy	Private	Spending utilized by those who use energy resources (half to individual energy users directly, and half to individuals indirectly through firms that utilize energy as an input).	Half Energy Allocator (CEX) (= Natural Gas, Electricity, Fuel Oil and Other Fuels, Gas and Motor Oil), half Business Tax Allocator
Natural resources	Public	na	Households (CPS)
Other	Quasi-Private	na	Households (CPS)
Housing and community services	Transfer	Spending utilized by lower-income groups targeted by public housing and community development.	Public Housing Project (CPS) + Reduced Rent Subsidies (CPS)
Other Health	Public	na	Households (CPS)
Medicaid	Transfer	Spending utilized by recipients of Medicaid payments.	Person Market Value of Medicaid (CPS)
Recreation and culture	Quasi-Private	na	Households (CPS)
Education			
Elementary and secondary	Private	Spending utilized primarily by families with school-age children who attend public elementary and secondary schools.	Number of children enrolled in public elementary or secondary schools in household (CPS)
Higher	Private	Spending utilized primarily by current higher-education students and their families.	College or University Students in Household (CPS)
Libraries and other			
Libraries	Quasi-Private	na	Households (CPS)
Other	Quasi-Private	na	Households (CPS)
Income security			
Disability	Transfer	Spending utilized by recipients of income security payments.	Disability Income (CPS)
Welfare and social services	Transfer	Spending utilized by recipients of income security payments.	Public Assistance Income (CPS)
Unemployment	Transfer	Spending utilized by recipients of unemployment compensation.	Unemployment Income (CPS)

Source: Tax Foundation

C. Technical Allocation Details

Aggregate values for tax burdens, government spending, and comprehensive household income were imputed to individual households within microdata files of the U.S. Census Bureau's Annual Social and Economic (ASEC) March Supplement. Because income figures in the ASEC correspond to the previous calendar year, the 2005 file was utilized for the 2004 analysis in the current study.

Using a syntax provided courtesy of Jean Roth of the National Bureau of Economic Research, the complete 2005 ASEC was parsed into an SPSS file. A second syntax coded by Tax Foundation economists was then run, which allocates the values of federal, state and local taxes, government spending, the 43 components of Net National Product, and various summary data on various household expenditures from the CEX to households.

Quintiles were created on the basis of household cash money income. Within the file, this variable is coded as “htotval” and consists of the sum of all earned income such as wage and salaries, interest and rental income as well as unearned income such as government transfers received by households. Taxes and government spending were then attributed to these quintiles based on household characteristics.

Household comprehensive income is calculated as the sum of that household’s share of each of the 43 allocated components of Net National Product, plus the value of all government transfers received, less the cost of financing total government transfers through taxes. As a final step, the syntax generates multiple presentations of results based on different definitions of income quintiles. These presentations were categorized as equal numbers of individuals vs. equal numbers of households, and broad vs. narrow household income measures.

The final decision to present results on the basis of household cash money income with equal number of persons was chosen largely for the purposes of clarity when presenting results to non-technical audiences such as policymakers, journalists and the general public. When placing themselves into an income category, most non-economists would likely choose based on a definition of income that broadly corresponds with the measure of cash money income used in the current study.

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