2019 Minnesota Tax Incidence Study

(Using November 2018 Forecast)

An analysis of Minnesota's household and business taxes

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March 1, 2019

The *Tax Incidence Study* is available on the Department of Revenue's website at
www.revenue.state.mn.us/research_stats/Pages/Tax_Incidence_Studies.aspx

DEPARTMENT OF REVENUE

March 1, 2019

To the Members of the Legislature of the State of Minnesota:

I am pleased to transmit to you the fifteenth Minnesota Tax Incidence Study undertaken by the Department of Revenue in response to Minnesota Statutes, Section 270C.13 (Laws of 1990, Chapter 604, Article 10, Section 9; Laws of 2005, Chapter 151, Article 1, Section 15).

This version of the incidence study report builds on past studies and provides new information regarding tax incidence. Previous studies have estimated how the burden of Minnesota state and local taxes was distributed across income groups from a historic perspective. This study does that by displaying the burden of state and local taxes across income groups in 2016. It includes over 99 percent of Minnesota taxes paid, those paid by business as well as those paid by individuals. The study addresses the important question: "Who pays Minnesota's taxes?"

The report also estimates tax incidence across income groups for Minnesota state and local taxes for 2021. By forecasting incidence into the future, it is possible to give policymakers a view of the state and local tax system that reflects tax law changes enacted into law to date. Studies that concentrate only on history would not reflect the most recent changes to Minnesota's tax system. The 2021 projections also reflect the impact of the forecast for economic growth and expected changes in the distribution of income on the tax system. This version of the 2021 projections is based on the November 2018 economic forecast from the Department of Management and Budget.

The information presented here can be used to evaluate Minnesota's tax system. It should also be valuable in considering any future changes in Minnesota's tax structure.

Minnesota Statutes, Section 3.197, specifies that a report to the Legislature must include the cost of its preparation. The approximate cost of preparing this report was $105,000.

Sincerely,

Cynthia Bauerly
Commissioner

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Executive Summary

This study reports the distribution of calendar year 2016 Minnesota state and local taxes in relation to taxpayer income, along with projections for calendar year 2021. It answers the question, "Who pays Minnesota's state and local taxes?" The major objective is to provide taxpayers and policymakers with important information on the equity or fairness of the overall distribution of Minnesota taxes. This is the fifteenth biennial tax incidence study prepared in response to the statutory requirement enacted in 1990.

The report estimates 1) how the total Minnesota state and local tax burden on Minnesota households varies by income range, and 2) how the burden of each component of the overall state and local tax system is distributed across Minnesota households. Aggregating the impact of each component yields an estimate of the distribution of the total state and local tax burden.[1]

The estimates include taxes with an initial impact on businesses, such as the corporate franchise tax and the sales tax on business purchases, as well as taxes imposed directly on households. The initial impact of taxes imposed on Minnesota households and businesses is discussed first. The analysis then proceeds to estimate the final incidence of taxes on Minnesota households, after taxes imposed on businesses have been shifted to those who bear the final burden.

The report:

- Analyzes $32.0 billion in taxes collected in 2016, a total that represents over 99 percent of all state and local taxes.
- Identifies the shares paid initially by households (64.2 percent by Minnesota residents and 3.8 percent by nonresidents) and the share paid initially by business (32.0 percent).
- Estimates the extent to which the business taxes are shifted to consumers (in higher prices) or labor (in lower wages), rather than being borne by owners of capital (in lower rates of return). Also estimates the extent to which the ultimate burden is "exported" to nonresident owners of capital or nonresident consumers.
- Calculates average household tax burden by income range. That burden consists of taxes imposed directly on households, such as the income tax or consumer sales tax, plus the household share of taxes initially imposed on business but shifted to households, the ultimate payers. Income is defined to include all forms of cash income, both taxable and nontaxable.
- Presents results by population decile, each decile including one-tenth of all households (the lowest-income 10 percent in the 1st decile and highest-income 10 percent in the 10th decile).
- Projects the 2016 results forward to 2021, accounting for the effects of both law changes and economic growth on the mix and level of state and local taxes.

[1] Throughout this study, the phrase "tax burden" refers to the burden of Minnesota's state and local taxes on Minnesota residents. The study includes no analysis of either federal taxes or taxes imposed in other states.

Conclusions of the research are:

- Of the total $32.0 billion in 2016 taxes, 84.3 percent of the burden ultimately falls on Minnesota residents ($27.0 billion). The remaining $5.0 billion of the tax burden is "exported" to nonresident consumers or nonresident owners of capital.
- In 2016, the state and local tax burden on Minnesota households averaged 12.2 percent of income, up from 12.0 percent in 2014.
- The local tax share of tax revenue rose from 28.1 percent in 2014 to 28.6 percent in 2016 and is projected to rise to 30.6 percent in 2021. The state tax share fell from 71.9 percent in 2014 to 71.4 percent in 2016 and is projected to fall to 69.4 percent in 2021.
- The share of state and local revenue derived from taxes on income was 38.6 percent in both 2014 and 2016 and is projected to rise to 39.5 percent in 2021. The property tax share rose from 30.1 percent in 2014 to 30.5 percent in 2016 and is projected to rise to 31.5 percent in 2021. The consumption tax share fell between 2014 and 2016, from 31.3 percent to 30.9 percent, and is projected to fall to 29.0 percent in 2021.
- The business tax share of total tax revenue fell from 34.2 percent in 2014 to 32.0 percent in 2016 and is projected to fall to 31.4 percent in 2021.
- After allowing for the shifting of business taxes, the Minnesota tax system in 2016 remained regressive (as it had been in 2014). The full-sample Suits index, a measure of the progressivity or regressivity of a tax or tax system, rose (toward zero) from -0.029 in 2014 to -0.026 in 2016. This change reflects a decrease in overall regressivity.
- Minnesota's refundable income tax credits and property tax refunds for homeowners and renters substantially reduce overall regressivity. In their absence, the 2016 Suits index would fall from -0.026 to -0.051.
- Total Minnesota income is expected to grow by 25.4 percent between 2016 and 2021. Tax receipts and tax burdens on Minnesotans are each forecast to grow more slowly (at 19.3 and 19.7 percent), so the overall effective tax rate is projected to fall from 12.2 percent to 11.6 percent of income. Effective tax rates fall in every decile.
- The full-sample Suits index is projected to rise (toward zero) from -0.026 in 2016 to -0.018 in 2021.

The fifteen biennial tax incidence studies cover a 29-year period. Comparison with earlier reports provides some historical context for the results of the current study. *Figures E-1* and *E-2* below show how effective tax rates and Suits indexes have changed over time. The effective tax rate is the ratio of tax burden to total household income. For the Suits index, positive values reflect progressivity and negative values show regressivity. To allow comparability to earlier studies, *Figure E-2* shows population-decile Suits indexes as well as the more accurate full-sample Suits indexes, which were not reported until tax year 2004. *Chapter 1* provides further explanation for these trends.

Figure E-1
Effective Tax Rates, All Minnesota Taxes[2]

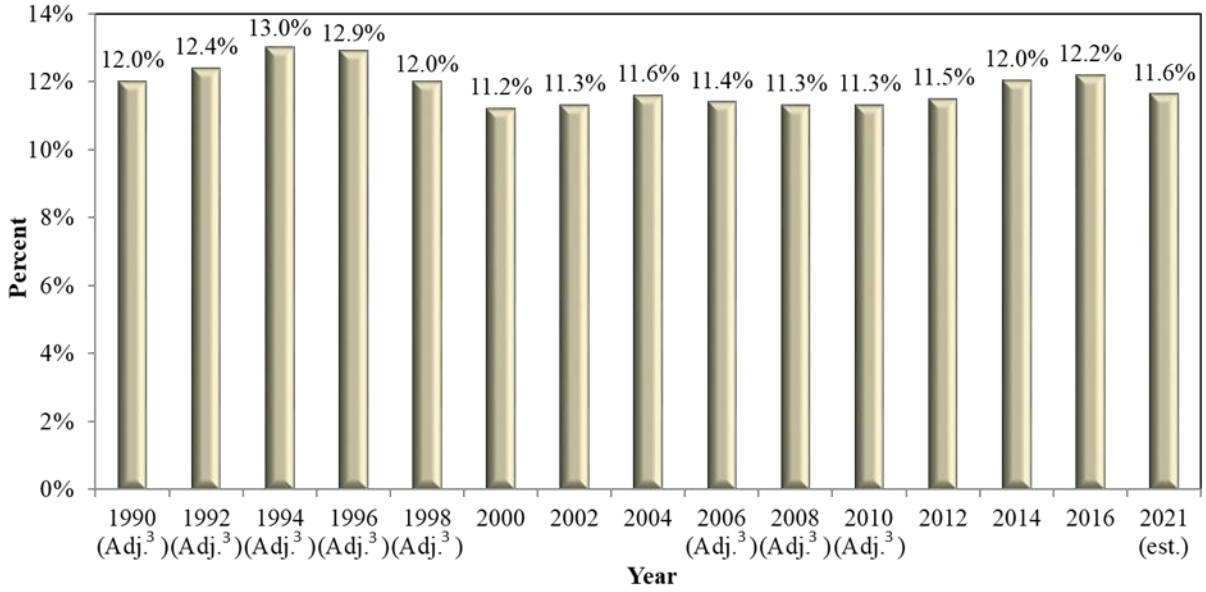
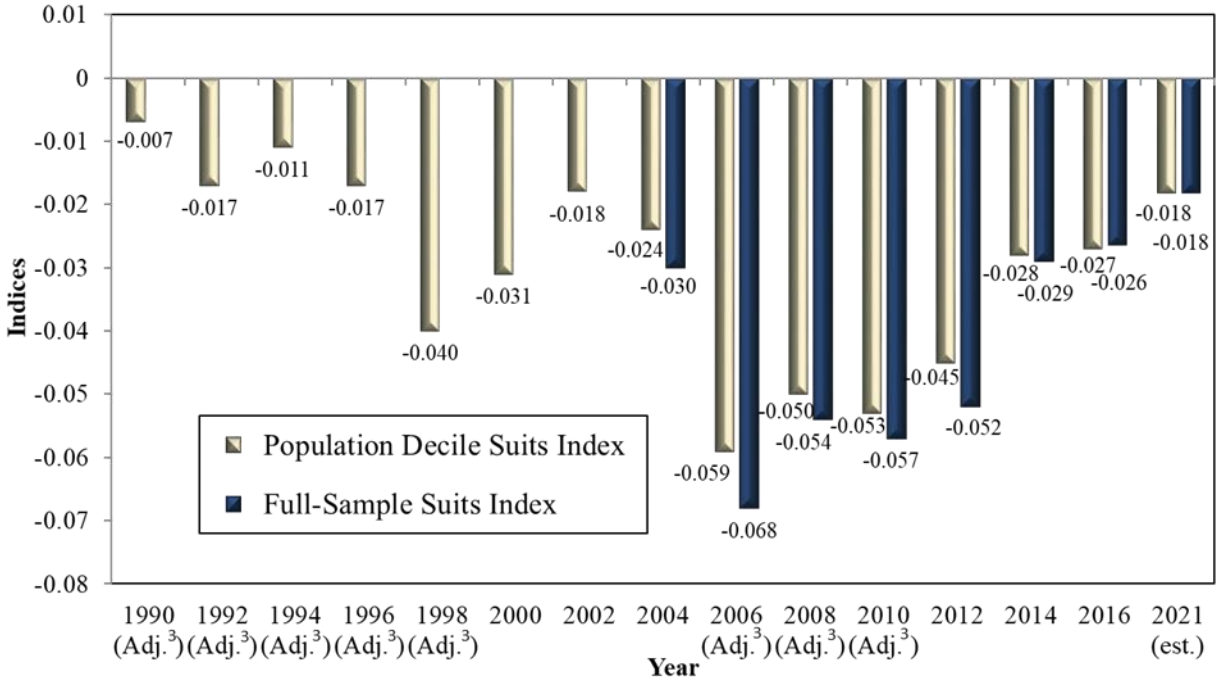


Figure E-2
Suits Index, All Minnesota Taxes[3]



[2] Effective tax rates for 2006 and later years would have been 0.2 percentage points higher except for methodological changes that identified additional income. Data for 1998 is excluded because the first study excluded business taxes.
[3] The earliest studies (before 2000) did not include all of the taxes included in more recent studies, so both the effective tax rates (*Figure E-1*) and Suits indexes (*Figure E-2*) are adjusted to make them comparable. The published report for 2006 did not include the Health Impact Fees. The 2008 and 2010 Suits indexes were also corrected for errors in the database for those years.

Chapter 1: Overview of Study

Minnesota State and Local Tax Collections

Minnesota collected $32.0 billion in state and local taxes in 2016.[4] By 2021, collections are expected to rise to $38.2 billion. This report estimates how much of the burden of total state and local taxes in each of those years falls on Minnesota residents and how the tax burden on Minnesota residents varies with income.[5]

Minnesota's 2016 state and local taxes are summarized in *Table 1-1*. In 2016, 71.4 percent of the $32.0 billion of tax was collected at the state level; local governments collected the remainder, largely from property taxes. The study includes taxes paid by business as well as those paid directly by households. The 31 separate tax components included in the study account for over 99 percent of total state tax collections and over 99 percent of local tax collections. For each of the taxes, the study identifies how the burden is distributed. Combining the results for each of those components provides an estimate of the distribution of the burden of the complete state and local tax system.

The 2016 results are based on a stratified random sample of almost 144,000 Minnesota households. The 2021 results are projected forward from 2016 based on the November 2018 economic forecast and are adjusted to account for law changes that took effect after 2016.

[4] If the $12 million excluded from this study were added, the total would still round to $32.0 billion (as on *Table 1-1*).
[5] Throughout this study, the phrase "tax burden" refers to the burden of Minnesota's state and local taxes on Minnesota residents. The study includes no analysis of either federal taxes or taxes imposed in other states.

Table 1-1
Minnesota State and Local Tax Collections in 2016
($ Millions)

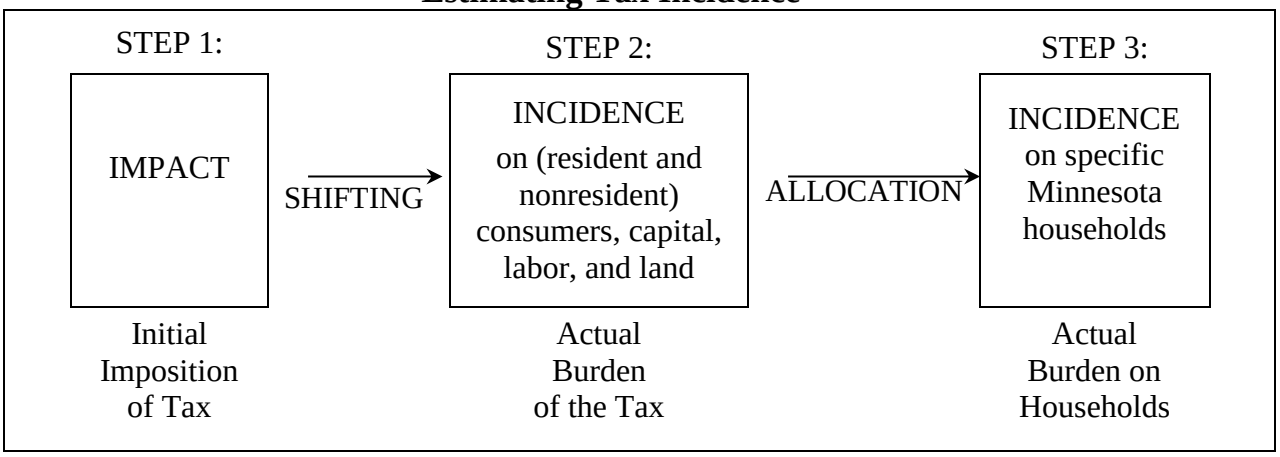
State		Local		State and Local	
Included		**Included**		**Included**	
Individual income tax	$10,835	Local property taxes			
Corporate franchise tax	1,346	Homestead property taxes	$3,946		
Estate tax	156	Property taxes on cabins and second homes	349		
General sales and use tax	5,702	Rental property taxes (residential)	1,030		
Motor vehicle sales tax	735	Other business property taxes	3,108		
Motor fuels excise taxes	911				
Alcoholic beverage excise taxes	89				
Cigarette & tobacco excise taxes	675	Subtotal	$8,432		
Insurance premiums tax	473				
Gambling taxes	61	Mining production taxes (taconite)	107		
MinnesotaCare taxes	599	Wheelage taxes	37		
Motor vehicle registration tax	727	Local sales taxes	419		
Mortgage and deed taxes	235	Gross earnings taxes	148		
Waste taxes	82				
State property tax	862				
Property tax refunds	(658)				
Total	$22,832	**Total**	$9,143	**Total**	$31,975
Omitted		**Omitted**		**Omitted**	
Airflight property tax		Aggregate material production tax			
Aircraft registration tax		Auxiliary forest tax			
Rural electric cooperatives tax		Contamination tax			
Contamination tax		Severed mineral interests tax			
		Unmined taconite tax			
Total	$11	**Total**	$1	**Total**	$12
Total Tax Collections	$22,843		$9,144		$31,987

The Concept of Tax Incidence

Economists commonly distinguish between the *initial impact* of a tax and its *incidence*. The initial impact of a tax is on the taxpayer legally liable to pay the tax, while the incidence of a tax is the final resting place of the tax burden after any tax shifting has occurred.

Figure 1-1 illustrates the steps involved in moving from impact to tax incidence on Minnesota households.

Figure 1-1
Estimating Tax Incidence

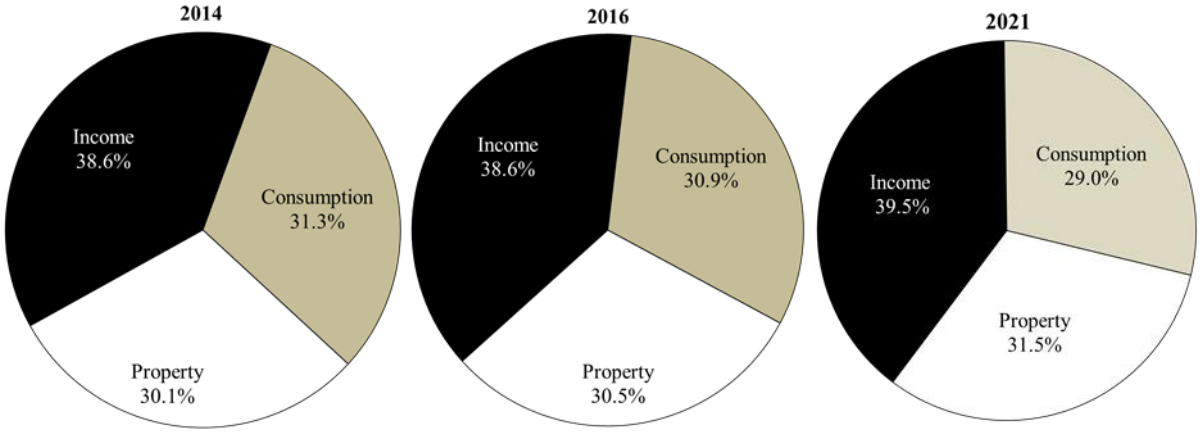


Each of the three steps shown in *Figure 1-1* is discussed separately below. The major findings from this study are reviewed in the context of the three-step estimating process.

Step 1 – Impact

Figure 1-2, derived from *Tables 1-2* and *1-3*, describes the revenues actually collected in 2014 and 2016 and expected to be collected in 2021. Taxes are divided into three general categories: Income, Consumption, and Property.[6]

Figure 1-2
Minnesota Tax System Impacts by Tax Type



[6] All taxes are assigned to one of the three categories. The motor vehicle registration tax, wheelage taxes, and mortgage and deed taxes are defined as property taxes. The estate tax is defined as a tax on income. Property tax is net of property tax refunds.

The three graphs in *Figure 1-2* show that the income tax share was unchanged in 2016 and is expected to rise in 2021. The property tax share increased between 2014 and 2016, and is expected to increase further in 2021. These swings in tax shares are due partly to economic growth and partly to law changes.

- Total household income grew 6.2 percent between 2014 and 2016. In contrast, income is expected to grow by 25.4 percent between 2016 and 2021 (an average of 4.6 percent per year).
- As a general rule (in the absence of any law change), revenue from taxes on income falls sharply in a recession but rises faster than income when the economy expands. Revenue from income taxes rose by 6.6 percent between 2014 and 2016. Revenue from the individual income tax is expected to rise by 25.3 percent – almost exactly as fast as income – between 2016 and 2021, despite tax cuts enacted in 2017.
- Taxes on consumption (sales and excise taxes) are generally less responsive to changes in income. Consumption tax revenue rose by 5.7 percent between 2014 and 2016 (less than income growth) and is projected to rise by 12 percent – much slower than income – between 2016 and 2021, partly due to the sunset of MinnesotaCare taxes.
- Property taxes differ from income and consumption taxes. They are not as directly affected by economic growth. With fixed income tax rates, income tax revenue rises automatically as income rises. The same is true of sales tax revenue. In contrast, property tax levies are set to raise a fixed amount of dollars. Economic growth may eventually affect property tax levies, but only with a lag. The rate of growth in property tax levies also depends partly on changes in the system of state aid to schools and local governments. When state aid increases, this places less upward pressure on local property tax levies. Property taxes net of property tax refunds increased 8 percent between 2014 and 2016, above the growth of income. They are projected to rise by 23 percent – a bit slower than income – between 2016 and 2021.

Another way of looking at Minnesota's tax system is to consider how tax revenues are split between state and local taxes. Between 2014 and 2016, the state's share fell from 71.9 percent to 71.4 percent. By 2021, it is expected to fall to 69.4 percent. The local share (including school taxes) fell from 28.1 percent in 2014 to 28.6 percent in 2016 and is expected to rise to 30.6 percent by 2021. Although local tax revenue is projected to rise 28 percent between 2016 and 2021, state tax revenue is projected to rise by only 16 percent.

This study also highlights the distinction between taxes on households and taxes on business. Taxes on households include taxes paid directly by households (such as the individual income tax, homeowner property tax, vehicle registration tax on private vehicles, and the sales tax on consumer purchases). Household taxes are also defined to include taxes paid by business if the full tax is assumed to be passed on to households in higher prices. These fully-shifted taxes include excise taxes on cigarettes and alcohol, fuel taxes on fuel purchased by households, insurance taxes on homeowner insurance policies, and MinnesotaCare taxes on medical services. The term "business tax," as defined in this study, includes any tax paid by business that is *not* expected to be fully reflected in the price paid by consumers. Business taxes include, among others, the corporate franchise tax, business property taxes (including property taxes on rental housing), the sales tax on business purchases, and insurance taxes on business insurance.

Table 1-2
2016 State and Local Tax Collections by Type of Tax and Taxpayer Category

Tax Type	Collections		Percentage by Taxpayer Category			
	Total ($ Millions)	Percent Distribution	Households		Business	Total
			Resident	Nonresident		
State Taxes						
Taxes on Income and Estates						
Individual income tax	$10,835	33.9%	94.1%	5.9%		100.0%
Corporation franchise tax [1]	1,346	4.2%			100.0%	100.0%
Estate tax	156	0.5%	95.2%	4.8%		100.0%
Total Income and Estate Taxes	$12,337	38.6%	83.8%	5.3%	10.9%	100.0%
Taxes on Consumption						
Total sales tax	$6,437	20.1%	50.7%	5.2%	44.1%	100.0%
General sales/use tax	5,702	17.8%	49.1%	5.9%	45.0%	100.0%
Sales tax on motor vehicles	735	2.3%	62.9%		37.1%	100.0%
Motor fuels excise taxes	911	2.8%	60.6%	6.4%	33.0%	100.0%
Alcoholic beverage excise taxes	89	0.3%	86.2%	13.8%		100.0%
Cigarette and tobacco excise taxes	675	2.1%	98.0%	2.0%		100.0%
Insurance premiums taxes	473	1.5%	78.9%		21.1%	100.0%
Gambling taxes	61	0.2%	98.0%	2.0%		100.0%
MinnesotaCare taxes	599	1.9%	91.6%	8.4%		100.0%
Solid waste management taxes	82	0.3%	42.5%		57.5%	100.0%
Total Consumption Taxes	$9,328	29.2%	59.7%	5.0%	35.3%	100.0%
Taxes on Property						
State Property Tax	$862	2.7%	3.9%	1.0%	95.2%	100.0%
Residential recreational property	42	0.1%	80.2%	19.8%		100.0%
Commercial [2]	558	1.7%			100.0%	100.0%
Industrial	151	0.5%			100.0%	100.0%
Utility	111	0.3%			100.0%	100.0%
Motor vehicle registration tax	727	2.3%	83.9%		16.1%	100.0%
Mortgage and deed taxes	235	0.7%	65.8%		34.2%	100.0%
Total Property Taxes	$1,825	5.7%	43.8%	0.5%	55.8%	100.0%
Property Tax Refunds						
Homeowners	-$440	-1.4%	100.0%			100.0%
Renters	-218	-0.7%	100.0%			100.0%
Total Property Tax Refunds	-$658	-2.1%	100.0%			100.0%
Total State Taxes	$22,832	71.4%	70.3%	4.9%	24.8%	100.0%
Local Taxes						
Taxes on Property	$8,576	26.8%	49.6%	0.8%	49.6%	100.0%
General Property Tax	8,432	26.4%	50.1%	0.8%	49.1%	100.0%
Homeowners (before PTR)	3,946	12.3%	100.0%			100.0%
Residential recreational & 2nd homes [3]	349	1.1%	80.2%	19.8%		100.0%
Commercial [2]	1,636	5.1%			100.0%	100.0%
Industrial	443	1.4%			100.0%	100.0%
Farm (other than residence) [4]	685	2.1%			100.0%	100.0%
Rental Housing (before PTR) [5]	1,030	3.2%			100.0%	100.0%
Utility [6]	343	1.1%			100.0%	100.0%
Mining Production Taxes (taconite)	107	0.3%			100.0%	100.0%
Wheelage Taxes	37	0.1%	81.4%	0.0%	18.6%	100.0%
Taxes on Consumption						
Local Sales Taxes [7]	419	1.3%	49.1%	5.9%	45.0%	100.0%
Local Gross Earnings Taxes	148	0.5%			100.0%	100.0%
Total Local Taxes	$9,143	28.6%	48.8%	1.0%	50.2%	100.0%
Total State and Local Taxes	$31,975	100.0%	64.1%	3.8%	32.0%	100.0%

[1]Includes taconite, iron, & other ores occupation tax
[2]Includes resorts, railroads, and minerals
[3]Second homes are 20% of residential non-homestead property
[4]Includes timber
[5]Apartments, 80% of residential non-homestead property, & rented mobile homes
[6]Includes wind and solar energy production taxes
[7]Includes lodging and other selective sales taxes

Table 1-3
2021 State and Local Tax Collections by Type of Tax and Taxpayer Category

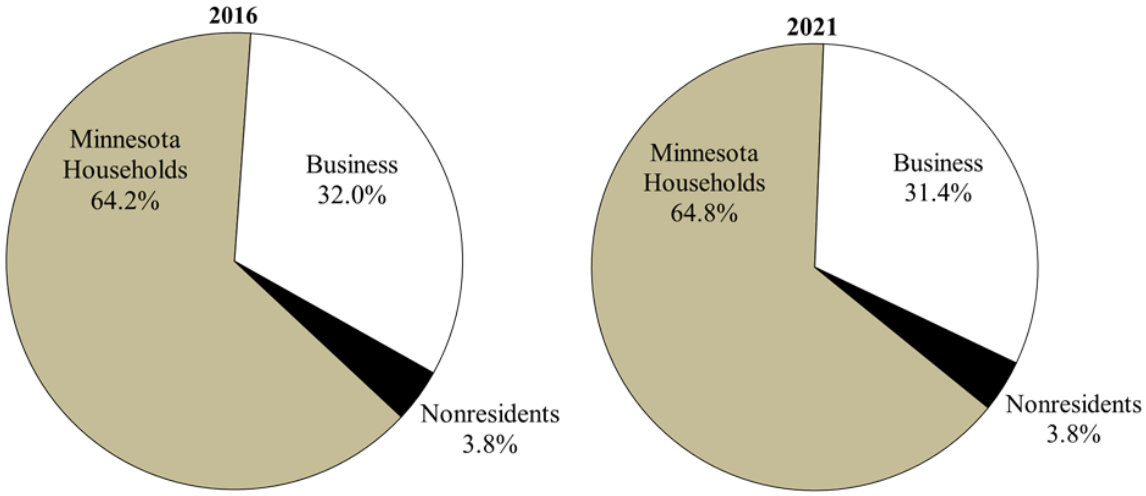
Tax Type	Collections		Percentage by Taxpayer Category			
	Total ($ Millions)	Percent Distribution	Households		Business	Total
			Resident	Nonresident		
State Taxes						
Taxes on Income and Estates						
Individual income tax	$13,575	35.6%	94.1%	5.9%		100.0%
Corporation franchise tax [1]	1,347	3.5%			100.0%	100.0%
Estate tax	138	0.4%	95.2%	4.8%		100.0%
Total Income and Estate Taxes	$15,060	39.5%	85.6%	5.4%	8.9%	100.0%
Taxes on Consumption						
Total sales tax	$7,846	20.6%	50.7%	5.2%	44.1%	100.0%
General sales/use tax	6,957	18.2%	49.1%	5.9%	45.0%	100.0%
Sales tax on motor vehicles	889	2.3%	62.9%		37.1%	100.0%
Motor fuels excise taxes	926	2.4%	60.6%	6.4%	33.0%	100.0%
Alcoholic beverage excise taxes	97	0.3%	86.2%	13.8%		100.0%
Cigarette and tobacco excise taxes	650	1.7%	98.0%	2.0%		100.0%
Insurance premiums taxes	533	1.4%	78.9%		21.1%	100.0%
Gambling taxes	102	0.3%	98.0%	2.0%		100.0%
MinnesotaCare taxes	0					
Solid waste management taxes	97	0.3%	42.5%		57.5%	100.0%
Total Consumption Taxes	$10,252	26.9%	56.8%	4.8%	38.4%	100.0%
Taxes on Property						
State Property Tax	$829	2.2%	4.2%	1.0%	94.7%	100.0%
Residential recreational property	44	0.1%	80.2%	19.8%		100.0%
Commercial [2]	513	1.3%			100.0%	100.0%
Industrial	159	0.4%			100.0%	100.0%
Utility	113	0.3%			100.0%	100.0%
Motor vehicle registration tax	839	2.2%	83.9%		16.1%	100.0%
Mortgage and deed taxes	281	0.7%	65.8%		34.2%	100.0%
Total Property Taxes	$1,949	5.1%	47.4%	0.4%	52.1%	100.0%
Property Tax Refunds						
Homeowners	-$538	-1.4%	100.0%			100.0%
Renters	-234	-0.6%	100.0%			100.0%
Total Property Tax Refunds	-$772	-2.0%	100.0%			100.0%
Total State Taxes	$26,489	69.4%	71.2%	5.0%	23.8%	100.0%
Local Taxes						
Taxes on Property	$10,833	28.4%	51.0%	0.8%	48.2%	100.0%
General Property Tax	10,663	27.9%	51.4%	0.8%	47.8%	100.0%
Homeowners (before PTR)	5,151	13.5%	100.0%			100.0%
Residential recreational & 2nd homes [3]	415	1.1%	80.2%	19.8%		100.0%
Commercial [2]	1,903	5.0%			100.0%	100.0%
Industrial	645	1.7%			100.0%	100.0%
Farm (other than residence) [4]	640	1.7%			100.0%	100.0%
Rental Housing (before PTR) [5]	1,448	3.8%			100.0%	100.0%
Utility [6]	461	1.2%			100.0%	100.0%
Mining Production Taxes (taconite)	120	0.3%			100.0%	100.0%
Wheelage Taxes	49	0.1%	81.4%		18.6%	100.0%
Taxes on Consumption						
Local Sales Taxes [7]	661	1.7%	49.1%	5.9%	45.0%	100.0%
Local Gross Earnings Taxes	169	0.4%			100.0%	100.0%
Total Local Taxes	$11,663	30.6%	50.1%	1.0%	48.8%	100.0%
Total State and Local Taxes	$38,152	100.0%	64.8%	3.8%	31.4%	100.0%

[1]Includes taconite, iron, & other ores occupation tax
[2]Includes resorts, railroads, and minerals
[3]Second homes are 20% of residential non-homestead property
[4]Includes timber
[5]Apartments, 80% of residential non-homestead property, & rented mobile homes
[6]Includes wind and solar energy production taxes
[7]Includes lodging and other selective sales taxes

Figure 1-3 shows that business taxes accounted for 32.0 percent of total state and local taxes in 2016, down from 34.2 percent in 2014. That share is expected to fall to 31.4 percent in 2021.

Total business taxes are projected to increase by 17 percent between 2016 and 2021, but individual taxes are projected to increase faster at 20 percent.

Figure 1-3
Minnesota Tax System Impacts: Business vs. Households



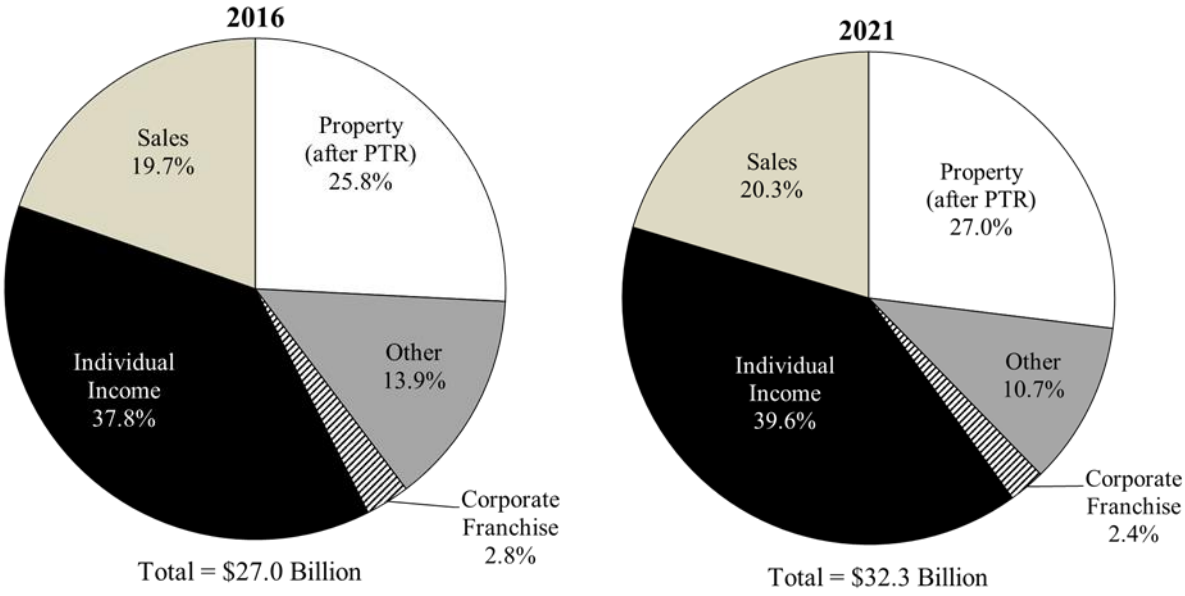
Step 2 – Shifting

Step 2 relies on economic theory to estimate how much of the burden of each tax is "shifted" from the initial business taxpayer to households. Such shifting depends both on (a) how Minnesota tax rates compare to those in other states and (b) the nature of the market for the goods or services produced by the business being taxed. *Appendix B* explains the method used to estimate the extent to which each tax initially levied on business is shifted to consumers (in higher prices) or labor (in lower wages), and how much is borne instead by the owners of capital (in lower rates of return).

Figure 1-4 indicates that in 2016 Minnesota households paid (either directly or indirectly through shifted business tax) a total of $27.0 billion in Minnesota state and local taxes. This equals 84.3 percent of total state and local tax collections ($32.0 billion). The other $5.0 billion (15.7 percent) is "exported" to nonresidents or visitors to the state. Between 2016 and 2021 the total burden on Minnesotans will rise by 19.7 percent (to $32.3 billion). Because it increases more slowly than income (projected to increase 25.4 percent), the tax burden as percent of income will fall from 12.2 percent to 11.6 percent.

Between 2016 and 2021, the individual income tax share of the burden on Minnesota households is projected to increase from 37.8 percent to 39.6 percent. The share of property tax (after PTR) rises from 25.8 percent to 27.0 percent. The share of sales taxes also rises (from 19.7 to 20.3 percent). Shares for corporate tax and other taxes both fall.

Figure 1-4
Tax Incidence After Shifting



Step 3 – Allocation to Specific Households

Step 3 combines the incidence assumptions from Step 2 with information on the income and characteristics of individuals to estimate the tax burden falling on each of Minnesota's 2.72 million households.[7] Each dollar of tax not exported to a nonresident is allocated to a specific Minnesota household. The result is an estimated tax burden, or tax incidence, for each separate tax. These separate taxes are aggregated to estimate the total state and local tax burden for each household. Effective tax rates are calculated by comparing the tax burden to the household's income.

Tax Progressivity and the Suits Index

Taxes may be described as progressive, proportional, or regressive. The effective tax rate – that is, the ratio of taxes paid to income – can be used to compare tax burdens across income categories. A progressive tax is one in which the effective tax rate rises as income rises. A regressive tax is one in which the effective tax rate falls as income rises. However, it is sometimes difficult to summarize the overall distribution of a tax (progressive, proportional, or regressive) from the individual effective tax rates. Taxes may be progressive over some income ranges and regressive over others. The Suits index is often used as a summary measure of overall progressivity or regressivity.

[7] This study defines a household to include a taxpayer and any spouse or dependents. A U.S. Census household may include more than one household as defined in this study. Three single persons living together will be one Census household but three households for purposes of this study. On the other hand, a Census household can consist of a single person who is a dependent for tax purposes. Because of these definitional differences, the number of households reported in this study (2,716,900 in 2016) exceeds the number of households reported by the Census (2,148,725). A more detailed comparison is provided in the last section of *Chapter 5*.

The Suits index has numerical properties that make it easy to identify the degree of progressivity or regressivity of a tax. A proportional tax has a Suits index equal to zero; a progressive tax has a positive index number in the range between 0 and +1. In the extreme case, if the total tax burden were paid by the richest household, the index would be a value of +1. For a regressive tax, the Suits index has a negative value between 0 and -1, with -1 being the most regressive value. (For a more complete description of the Suits index, see *Appendix C*.)

Table 1-4 presents full-sample Suits indexes for selected Minnesota state and local tax categories in 2016 and 2021. The only major progressive tax is the personal income tax. Consumption taxes are the most regressive category. Taken as a whole, the system of Minnesota taxes was regressive in 2016 (a full-sample Suits index of -0.026). State taxes were progressive (+0.033), and local taxes were regressive (-0.178).

Between 2016 and 2021, Minnesota's overall Suits index is expected to rise (moving toward zero) from -0.026 to -0.018.

Table 1-4
Suits Indexes for Selected
Minnesota State and Local Taxes

Tax Category	2016 Suits Index	2021 Suits Index
Personal Income Tax	+0.247	+0.232
Sales Taxes (State & Local)	-0.226	-0.216
Business Taxes	-0.175	-0.169
Individual Taxes	+0.020	+0.028
All State Taxes	+0.033	+0.050
All Local Taxes	-0.178	-0.177
Total Taxes	-0.026	-0.018

Effective Tax Rates by Decile

For analytical purposes, Minnesota's households are divided into ten equal groups, or deciles. Each of these ten population deciles includes 10 percent of all households. The bottom (1st) decile includes the tenth with lowest incomes; the top (10th) decile includes the tenth with highest incomes. Income is defined to include all cash income, whether taxable or not. It includes nontaxable social security, interest, and pension income, as well as nontaxable workers' compensation and cash payments from the Minnesota Family Investment Program (MFIP).[8]

[8] The database captures nontaxable income reported on income tax returns and property tax refund returns, along with workers' compensation and welfare income from administrative sources. For those filing neither income tax nor property tax returns, additional wage and nonwage income is included if reported on W2s or 1099s. For this study, household income does not include in-kind benefits such as food stamps, housing subsidies, energy assistance, or fringe benefits provided by employers. For more information on how income is defined, see *Appendix A* of this report.

Because the information for the first decile includes data anomalies and measurement problems discussed in the box at the end of this section, effective tax rates for the first decile are not reliable.

As *Table 1-5* shows, Minnesota's state and local tax system is progressive between the 3rd and 7th deciles and regressive between the 7th and 10th deciles. For 2016, effective tax rates rose from a low of 11.5 percent of income in the 4th decile to between 12.3 and 12.6 percent in the 6th to 9th deciles, but then falls to 11.6 percent in the 10th decile.[9]

Between 2016 and 2021, effective tax rates are projected to fall in every decile.

As shown in *Table 1-5*, Minnesota residents paid an estimated 12.2 percent of their 2016 total income in state and local taxes. Under current law (and with the November 2018 economic forecast), this is expected to fall to 11.6 percent in 2021. For 2016, the effective tax rate was 8.8 percent for state taxes and 3.4 percent for local taxes. Between 2016 and 2021, the effective state tax rate is projected to fall by 0.7 percentage points and the effective local tax rate is projected to rise by 0.1 percentage point.

Table 1-5
Minnesota Effective Tax Rates for 2016 and 2021[1]
State and Local Taxes by Population Decile

Population	2016			2021		
Decile	State	Local	Total	State	Local	Total
First	18.0%	14.1%	32.1%	14.2%	13.4%	27.6%
Second	8.3%	5.1%	13.4%	6.7%	5.2%	11.9%
Third	7.1%	4.8%	11.9%	6.1%	4.9%	11.0%
Fourth	7.3%	4.2%	11.5%	6.5%	4.3%	10.8%
Fifth	7.8%	4.1%	11.9%	7.0%	4.3%	11.3%
Sixth	8.0%	4.3%	12.3%	7.3%	4.3%	11.6%
Seventh	8.4%	4.2%	12.6%	7.7%	4.3%	11.9%
Eighth	8.6%	3.8%	12.4%	8.0%	3.9%	12.0%
Ninth	8.7%	3.5%	12.3%	8.2%	3.6%	11.8%
Tenth	9.2%	2.4%	11.6%	8.7%	2.5%	11.2%
Total	8.8%	3.4%	12.2%	8.1%	3.5%	11.6%

[1]Parts may not sum to totals due to rounding.

[9] The income ranges for each population decile are shown in *Table 2-2* (for 2016) and *Table 3-2* (for 2021).

As shown in *Figure 1-5*, state tax burdens and local tax burdens are distributed quite differently. Total state taxes for 2016 (individual and business combined) were progressive with effective tax rates rising continuously from 7.1 percent in the 3rd decile to 8.7 percent in the 9th decile and 9.2 percent in the 10th decile. In contrast, effective local tax rates, primarily local property taxes (before any state property tax refunds), declined steadily with income and were regressive overall.

Between 2016 and 2021, reductions in effective state tax rates are greatest in the 1st, 2nd, and 3rd deciles. Effective tax rates for local taxes, in contrast, rise in all except the first decile.

Figure 1-5
Effective Tax Rates for 2016 and 2021
State and Local Taxes by Population Decile

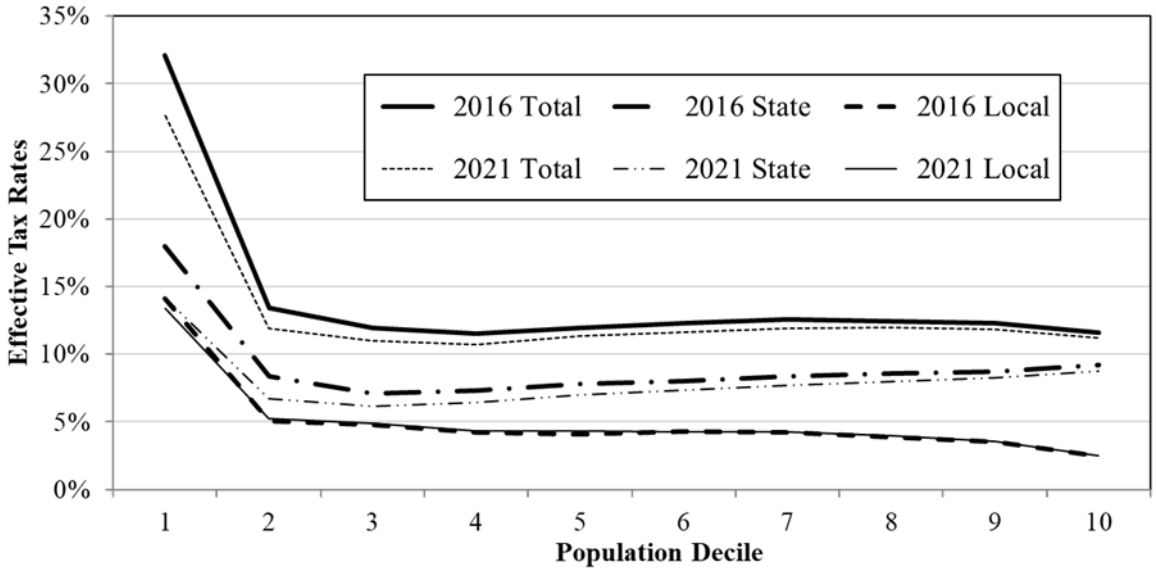


Table 1-6 and *Figure 1-6* show that the patterns of effective rates for taxes paid by individuals versus businesses are also quite different. For 2016, effective rates for taxes paid by individuals increased from 6.9 percent of income in the 3rd decile to 9.8 percent in the 9th decile, and then declined to 9.4 percent in the 10th decile.

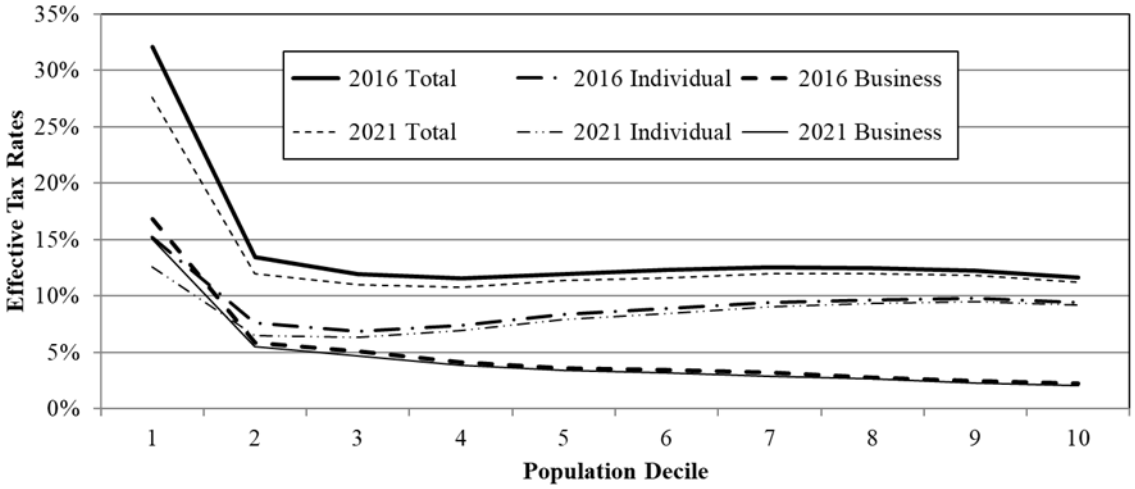
In contrast, Minnesota state and local taxes on businesses (after shifting) are regressive, with effective tax rates for 2016 falling from 5.8 to 2.2 percent of income between the 2nd and 10th deciles. The overall effective rate for taxes on businesses after shifting was 2.9 percent and on individuals was 9.3 percent in 2016. Between 2016 and 2021, effective tax rates for individual taxes fall in every decile.

Table 1-6
Minnesota Effective Tax Rates for 2016 and 2021[1]
Individual and Business Taxes by Population Decile

Population Decile	2016			2021		
	Individual	Business	Total	Individual	Business	Total
First	15.2%	16.9%	32.1%	12.5%	15.1%	27.6%
Second	7.6%	5.8%	13.4%	6.5%	5.5%	11.9%
Third	6.9%	5.1%	11.9%	6.4%	4.7%	11.0%
Fourth	7.4%	4.1%	11.5%	6.9%	3.8%	10.8%
Fifth	8.3%	3.6%	11.9%	7.9%	3.4%	11.3%
Sixth	8.9%	3.4%	12.3%	8.5%	3.2%	11.6%
Seventh	9.4%	3.2%	12.6%	9.0%	2.9%	11.9%
Eighth	9.7%	2.8%	12.4%	9.3%	2.6%	12.0%
Ninth	9.8%	2.5%	12.3%	9.5%	2.3%	11.8%
Tenth	9.4%	2.2%	11.6%	9.2%	2.1%	11.2%
Total	9.3%	2.9%	12.2%	8.9%	2.7%	11.6%

[1]Parts may not sum to totals due to rounding.

Figure 1-6
Effective Tax Rates for 2016 and 2021
Individual and Business Taxes by Population Decile



Effective Tax Rates in the 1st Decile

As shown in *Table 1-5*, the total 2016 effective tax rate of 32.1 percent for taxpayers in the 1st decile is much higher than the rates in other deciles.

The effective tax rate for the 1st decile is overstated for several reasons. First, the lowest decile includes households who have temporarily low incomes or have better overall economic well-being than was indicated by their money income in 2016. A portion of retirees, for example, may be living primarily on savings or other assets but report small amounts of annual money income received. Due to unemployment or business fluctuations, some households who normally have higher incomes are also included in the first decile. A small portion of all first-decile households were in this decile only because they reported business losses or large capital losses for income tax purposes in 2016.

Second, effective tax rates for the 1st decile are overstated because income is understated. The incidence sample was unable to identify all sources of income. Many first-decile households filed neither an income tax nor a property tax refund return. The Incidence Study identified some other sources of income for these households, but many had additional sources of income that were not identified. An underestimate of household income generally causes effective tax rates to be overestimated.

Household income is also underestimated in the *Consumer Expenditure Survey* used to estimate sales and excise tax burdens. To the extent that income was subject to relatively greater underreporting than consumption, particularly for low-income households, the taxable consumption expenditures calculated from CES will be overstated.

While this study does adjust for negative incomes for a small number of households, no attempt has been made to adjust for possible underreported or unidentified sources of income or for other differences between transitory and long-run measures of income. By including only money income, the substantial amounts of food stamps and housing subsidies received by the poor are ignored in this study. Consequently, money income at the low end of the income distribution does not provide an accurate measure of overall economic well-being. For all of these reasons, effective tax rates in the 1st decile are overstated by an unknown but possibly significant amount.

If the 1st decile were excluded, the full-sample Suits index for 2016 would rise from -0.026 to -0.012 – still regressive.[10]

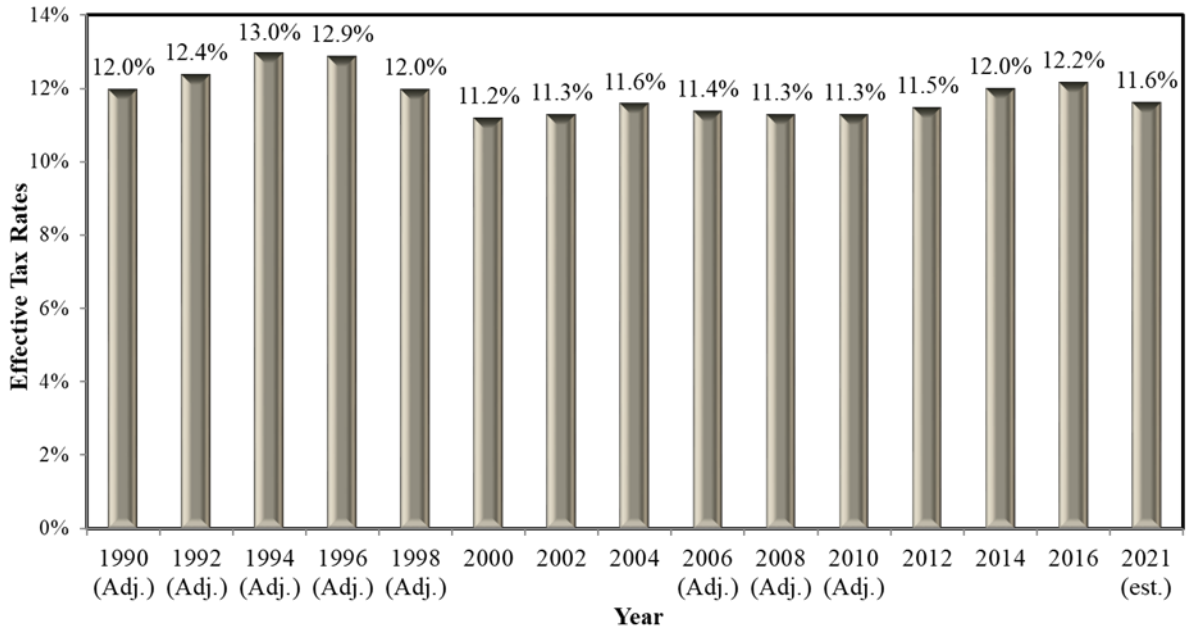
[10] The remaining regressivity is primarily the result of the lower effective tax rate for the top decile. If both the 1st and 10th deciles were excluded, the full-sample Suits index would rise to -0.003 – close to proportional.

Historical Comparison with Earlier Studies

Incidence data has been collected and published in a series of studies, of which this is the fifteenth. Comparable data extends back to 1990. It is interesting to consider the pattern of effective tax rates and Suits indexes over that time. This period illustrates the effect of the business cycle on incomes and tax receipts. It includes both periods of very rapid growth in the mid- and late 1990's, the slowdown of the early 1990's, the contraction from 2000 to 2002, solid growth between 2002 and 2008, recession in 2010, and recovery from 2012 and 2016.

As shown in *Figure 1-*7, effective tax rates over the period 1990–2012 first rise but then fall and remain well below those in 1992 to 1996. The effective tax rate for the tax system as a whole was 12.0 percent in 1990. Effective tax rates rose to 13.0 percent just four years later in 1994, before beginning a sustained decline to 11.2 percent in 2000. The decline through 2000 was attributable partly to tax cuts and partly to income growth, especially in the late 1990's, that outstripped tax collections (see *Table 1-7*). As the economy emerged from recession after 2002, the effective tax rate rose to 11.6 percent in 2004, and remained fairly constant (11.3 to 11.5 percent) through 2012. It rose to 12.2 percent in 2016 but is projected to fall to 11.6 percent in 2021.

Figure 1-7
Effective Tax Rates, All Minnesota Taxes[11]



[11] Because earlier studies (before 2000) did not include all of the taxes included in more recent studies, effective tax rates (*Figure 1-7*) and Suits indexes (*Figure 1-8*) are adjusted to make them comparable. Unadjusted effective tax rates (reported in the published studies) were 11.8%, 12.1%, 12.9%, 12.7%, and 11.4% for 1990-1998. Health Impact Fees were excluded in 2006 but included starting in 2008, so 2006 numbers are adjusted to include the HIF in that year as well. Effective tax rates for 2008 and 2010 are also adjusted downward to correct errors in the published numbers.

A change in methodology starting in 2006 identified additional income. By increasing measured income, this caused effective tax rates to fall by roughly 0.2 percentage points in later years.

Changes in the population-decile Suits index are shown in *Table 1-7* and *Figure 1-8*. The tax system was essentially proportional in 1990, with a population-decile Suits index near zero. The population-decile Suits index fell from -0.017 in 1992 to a low of -0.040 in 1998. It rebounded somewhat in succeeding years, reaching -0.018 in 2002 and -0.024 in 2004. It dropped significantly below those levels in more recent years, to -0.059 in 2006, -0.050 in 2008, -0.053 in 2010, and -0.045 in 2012, before rising to -0.028 in 2014 and -0.027 in 2016. Under current law, though, it is projected to rise to -0.018 in 2021.

Table 1-7 and Figure 1-8 also show the more accurate full-sample Suits index for years 2004 and after. This report generally refers to the full-sample Suits index, but it was not reported until tax year 2004.

Table 1-7
Households, Household Income, Total Taxes,
Effective Tax Rates, and Suits Indexes, All Taxes, 1990-2021

Year	Number of Households	Household Income ($ Thousands)	Total Taxes as Imposed ($ Thousands)	Tax Dollars Included in Study (%)	Total Taxes After Shifting ($ Thousands)	Effective Tax Rate	Population Decile Suits Index	Full-Sample Suits Index
1990	2,072,488	65,842,600	9,575,000	97.1%	$7,747,743	11.8%	-0.007	N/A
1992	2,120,967	74,410,299	11,050,000	96.9%	8,991,383	12.1%	-0.017	N/A
1994	2,148,820	80,148,374	12,539,000	98.0%	10,323,412	12.9%	-0.011	N/A
1996	2,193,971	93,272,563	14,495,000	98.0%	11,886,823	12.7%	-0.017	N/A
1998	2,232,670	114,610,957	16,137,000	97.8%	13,526,348	11.8%	-0.040	N/A
2000	2,322,380	132,094,974	17,599,000	99.8%	14,809,590	11.2%	-0.031	N/A
2002	2,340,070	127,311,429	17,174,000	99.9%	14,412,365	11.3%	-0.018	N/A
2004	2,363,258	138,824,077	19,313,000	99.9%	16,170,469	11.6%	-0.024	-0.030
2006	2,448,872	165,040,421	22,310,000	99.9%	18,753,567	11.4%	-0.059	-0.068
2008	2,541,183	173,854,675	23,796,000	99.9%	19,573,643	11.3%	-0.050	-0.054
2010	2,575,184	175,349,202	23,846,000	99.9%	19,827,961	11.3%	-0.053	-0.057
2012	2,580,561	194,079,578	26,983,000	99.9%	22,304,145	11.5%	-0.045	-0.052
2014	2,660,914	208,192,948	29,951,000	99.8%	25,030,270	12.0%	-0.028	-0.029
2016	2,716,900	221,139,236	31,975,000	99.96%	26,954,961	12.2%	-0.027	-0.026
2021 (est.)	2,848,530	277,290,131	38,152,000	99.97%	32,260,968	11.6%	-0.018	-0.018

Interval	Household Growth	Income Growth	Post-Shifting Tax Growth
1990-1992	2.3%	13.0%	16.1%
1992-1994	1.3%	7.7%	14.8%
1994-1996	2.1%	16.4%	15.1%
1996-1998	1.8%	22.9%	13.8%
1998-2000	4.0%	15.3%	9.5%
2000-2002	0.8%	-3.6%	-2.7%
2002-2004	1.0%	9.0%	12.2%
2004-2006	3.6%	18.9% *	16.0%
2006-2008	3.8%	5.3%	4.4%
2008-2010	1.3%	0.9%	1.3%
2010-2012	0.2%	10.7%	12.5%
2012-2014	3.1%	7.3%	12.2%
2014-2016	2.1%	6.2%	7.7%
2016-2021 (est.)	4.8%	25.4%	19.7%

*Two percentage points was due to more complete data on income.

Figure 1-8
Suits Indexes, All Minnesota Taxes 1990-2021[12]

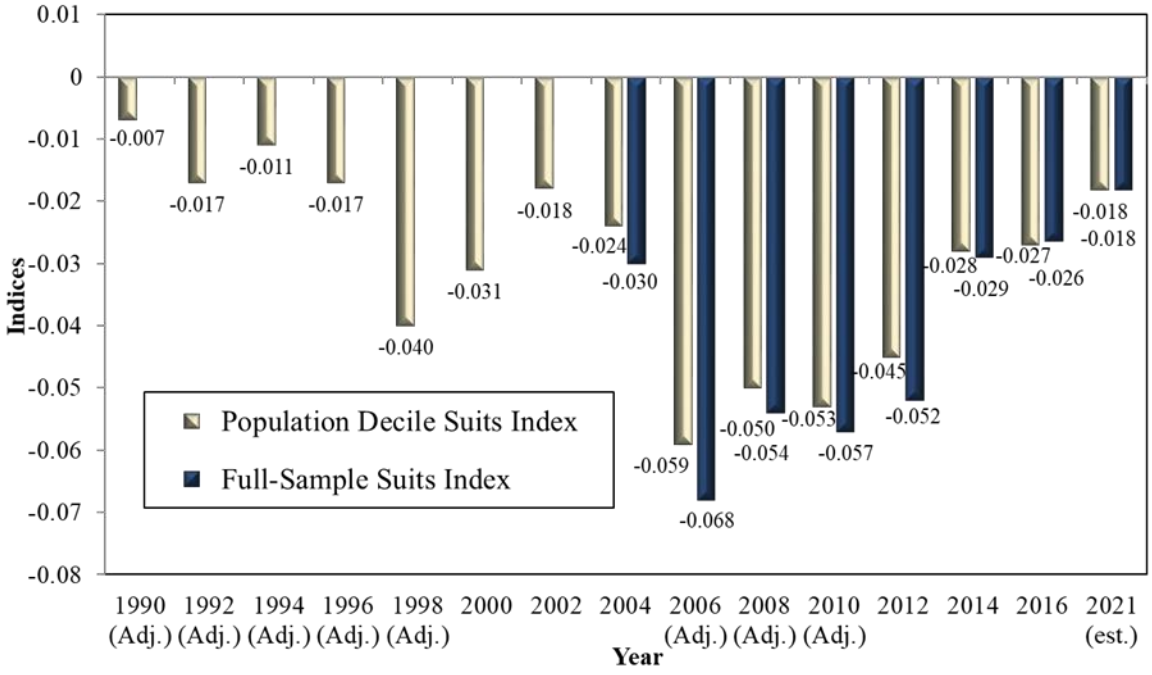


Table 1-8 shows effective tax rates by decile for each incidence study year. It is interesting to compare the pattern of effective tax rates in 1990 and 1992 with those for more recent years. *Figure 1-9* compares effective tax rates in 1992 and 2016. In 1992, effective tax rates were virtually the same for deciles 2 through 10. All were between 11.9 percent and 12.3 percent. Moreover, the tax rate was only slightly lower for the top 1 percent (at 11.6 percent of income).

The pattern has been quite different in more recent years, including 2016:

- The lower deciles (3 and 4) have effective tax rates significantly lower than the average for deciles 5 through 8.
- Effective tax rates drop between the ninth and tenth deciles. The drop was largest in 1998 (dropping from 12.5 percent of income to 10.6 percent of income, or by 1.9 percentage points). The difference fell to 1.0 percentage point in 2002 but rose to 1.7 percentage points in 2006 and 1.3 percentage points in 2008, 2010, and 2012. In 2014, the difference fell to 0.4 percentage points, the smallest difference since 1994. In 2016, it rose to 0.7 percent of income. In 2021, though, it is expected to fall to 0.6 percentage points.

Each of these two patterns has been found consistently in recent studies, regardless of the point in the business cycle. The lower rates in the 3rd and 4th deciles reflect the increased role of refundable income tax credits and property tax refunds.

[12] For an explanation of these adjustments, see footnote 3 on page 3.

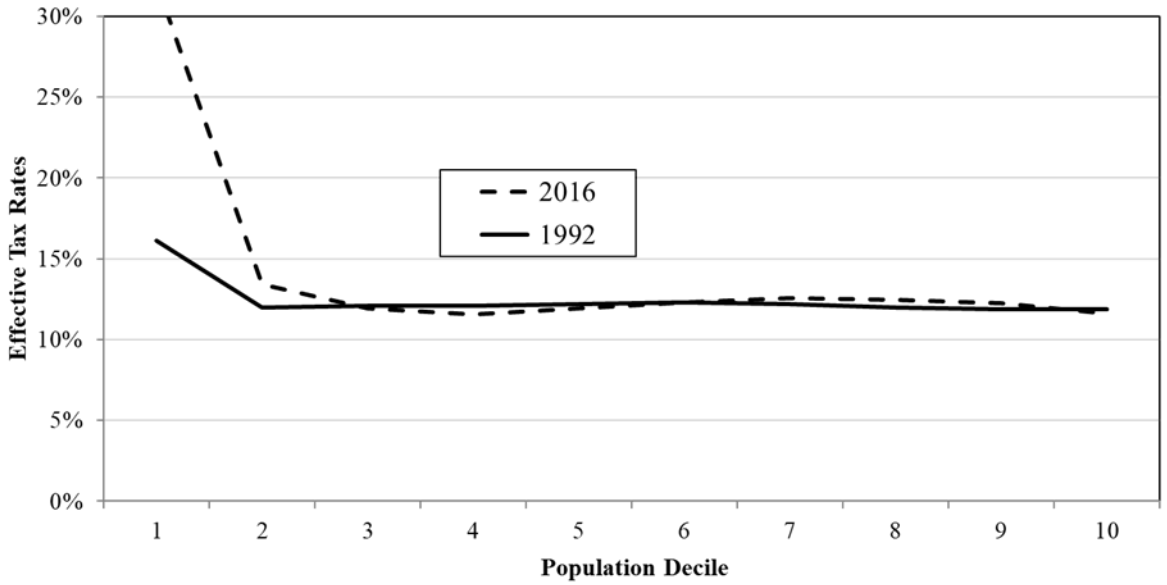
The pattern of lower effective tax rates in the 3rd and 4th deciles disappeared temporarily in 2010, but it returned starting in 2012. The one-year aberration reflects law changes that temporarily reduced property tax refunds for renters by 16 percent between 2008 and 2010.

In 2016, for the first time, the effective tax rate in the 5th decile is below the overall average effective tax rate.

Table 1-8
Effective Tax Rates by Population Decile
All Taxes, 1990–2021

Decile	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2021 (est.)
First	17.9%	16.1%	17.3%	17.8%	20.2%	17.4%	18.2%	18.9%	25.2%	31.4%	31.1%	28.3%	29.6%	32.1%	27.6%
Second	11.1%	12.0%	12.3%	12.0%	11.3%	9.8%	10.5%	11.3%	13.2%	12.7%	13.5%	12.9%	13.8%	13.4%	11.9%
Third	10.7%	12.1%	11.8%	12.2%	10.8%	10.6%	10.1%	10.5%	12.0%	11.3%	11.9%	11.5%	11.8%	11.9%	11.0%
Fourth	11.3%	12.1%	12.8%	12.5%	12.0%	11.1%	11.0%	11.5%	11.9%	11.5%	11.3%	11.4%	11.4%	11.5%	10.8%
Fifth	11.1%	12.2%	12.8%	13.0%	12.1%	11.5%	11.4%	11.9%	12.7%	11.8%	11.8%	12.3%	12.0%	11.9%	11.3%
Sixth	11.8%	12.3%	13.2%	13.1%	13.1%	12.3%	11.9%	12.2%	12.4%	12.0%	12.1%	12.2%	12.2%	12.3%	11.6%
Seventh	12.0%	12.2%	13.0%	13.1%	12.9%	12.0%	12.0%	12.3%	12.3%	11.8%	11.9%	12.2%	12.3%	12.6%	11.9%
Eighth	11.9%	12.0%	13.0%	13.0%	12.9%	12.0%	11.8%	12.3%	12.0%	11.9%	11.8%	12.1%	12.2%	12.4%	12.0%
Ninth	11.8%	11.9%	13.0%	13.0%	12.5%	11.9%	11.7%	12.3%	11.8%	11.5%	11.5%	11.8%	11.9%	12.3%	11.8%
Tenth	11.7%	11.9%	12.6%	12.2%	10.6%	10.3%	10.7%	10.9%	10.1%	10.2%	10.2%	10.5%	11.4%	11.6%	11.2%
Total	11.8%	12.1%	12.9%	12.7%	11.8%	11.2%	11.3%	11.6%	11.4%	11.3%	11.3%	11.5%	12.0%	12.2%	11.6%
Top 5%	11.6%	11.8%	12.3%	11.9%	10.1%	9.9%	10.5%	10.5%	9.7%	9.9%	10.0%	10.2%	11.3%	11.6%	11.2%
Top 1%	11.2%	11.6%	11.8%	11.0%	8.3%	8.4%	9.0%	9.6%	8.9%	9.8%	9.5%	9.8%	11.5%	11.8%	11.2%

Figure 1-9
Effective Tax Rates for 1992 and 2016
By Population Decile



Although the historical changes in the degree of regressivity are due partly to changes in tax laws, the role of the business cycle may be even more important. During the past two decades, income inequality has generally risen during times of rapid growth and fallen during economic contractions. The years of greatest regressivity (1998, 2000, and 2006-2012) were years when the distribution of income was most unequal, due in some years to unusually high capital gains income. As shown in *Figure 1-10*, the income share of the top 5 percent and top 1 percent of Minnesota households was unusually high in those years. In 1998 and 2000, the top 5 percent of households accounted for 31.4 percent of total household income, up from an average of only 26.4 percent in 1990-1994. It was even higher (at 32.2 percent) in 2006 and remained high by historical standards in both 2008 (at 31.1 percent) and 2010 (at 30.9 percent). Despite the recession, the share of income received by the top 5 percent did not drop much in 2010. This was unlike 2002 (following the 2001 recession) when it fell from 31.4 percent to 28.1 percent. In 2012, the income share of the top 5 percent (at 32.7 percent) was even higher than in 1998. It remains high in 2016 and 2019 (at 31.4 percent).

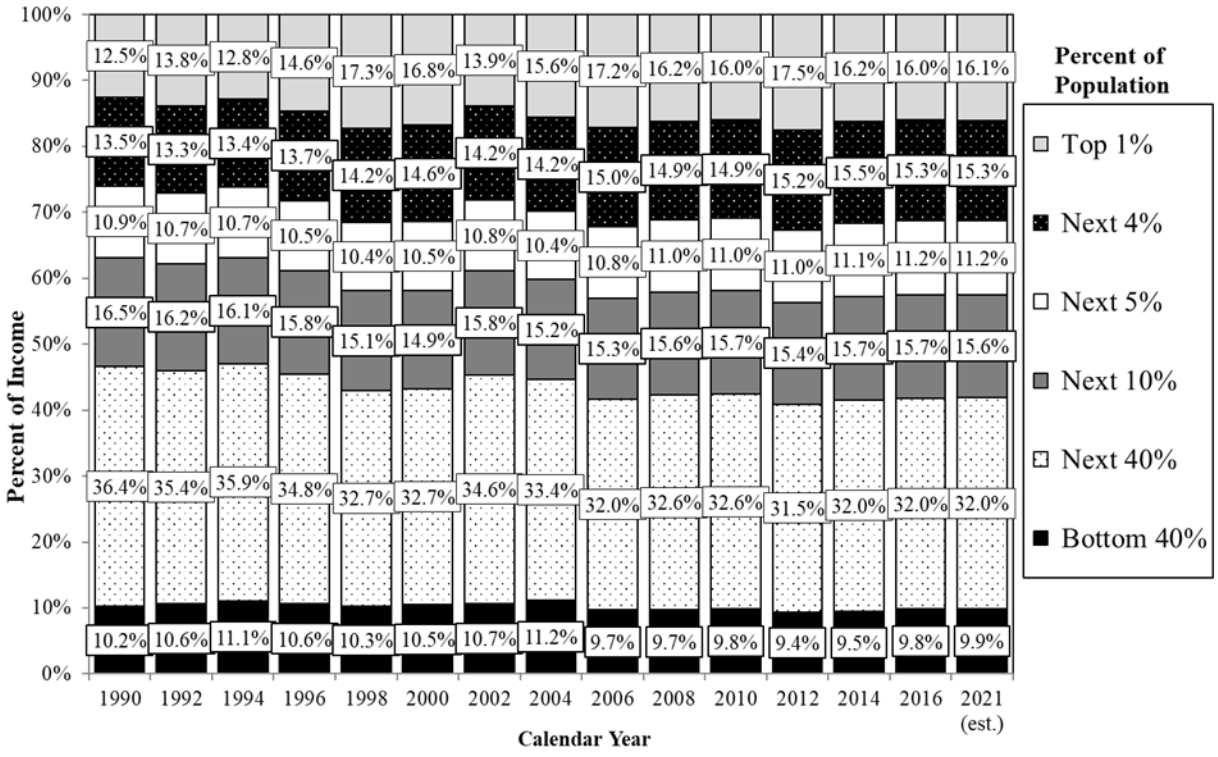
The pattern is similar for the share of income received by the top 1 percent of Minnesota households. In 1998 and 2000, the top 1 percent received 17 percent of total income, up from an average of 13.4 percent in the earlier study years. After a drop to 13.9 percent in 2002, the share of the top 1 percent rose to 17.2 percent in 2006 before falling to 16.2 percent in 2008 and 16.0 percent in 2010. In 2012, the income share of the top 1 percent (at 17.5 percent) was even higher than in 1998. It remains high (at 16 percent) in 2016, but is projected to rise to 16.1 percent in 2021.

This concentration of income by itself, with no change in tax law, will increase the measured regressivity of the tax system. Lower regressivity in earlier recession years (such as 2002) partly reflected the lower share of income at the top. A substantial portion of the increase in regressivity in the years 2006 to 2012 was likely the result of the unusually high share of income received by the highest income Minnesotans.[13]

The income share of the bottom 40 percent dropped below 10 percent in 2006 for the first time since these studies began. It remains below 10 percent in 2016 (at 9.8 percent) and 2021 (at 9.9 percent).

[13] A simple correlation between the population-decile Suits index and the share of income received by the top decile (1990-2012) is -0.92, suggesting that the variation in income inequality could explain much of the variation in the Suits index.

Figure 1-10
Shares of Household Income



Tax policy can certainly affect the degree of regressivity, but it is difficult to identify tax changes that are large enough to move the Suits index by as much as it has moved year-to-year over the last 20 years. Trends in income inequality are certainly responsible for much of the pattern shown above.

Changes in the distribution of the tax burden between 2012 and 2014, though, were clearly due mostly to major tax law changes enacted in 2013 and 2014. Those changes included the new top income tax rate, expanded property tax refunds, an increase in the Working Family Credit, higher cigarette taxes, and lower estate taxes. The *2015 Minnesota Tax Incidence Study* (pp.54-55) estimated that those law changes would raise the Suits index by 0.018. The reduced regressivity of the Minnesota's state and local tax system between 2012 and 2014 is due primarily to state law changes enacted in 2013 and 2014.

Law changes also explain almost all of the reduction in regressivity between 2016 and the projected year 2021. The sunset of the MinnesotaCare provider taxes by itself explains almost all of the change in the Suits index. In its absence, the Suits index would have risen (toward zero) from -0.026 to -0.025, rather than -0.018.

Chapter 2: Principal Results, 2016

This chapter examines the state and local tax burdens imposed on Minnesota taxpayers in 2016. Taxes paid by businesses as well as those paid directly by households are included. The taxes included account for over 99 percent of Minnesota state and local tax revenue in 2016.

Only Minnesota taxes paid by residents are included in the analysis below; Minnesota taxes paid by nonresidents and taxes Minnesota residents pay to the federal government or to other states are excluded. For business taxes, the study estimates the extent to which they are shifted forward to Minnesota consumers (in higher prices), shifted backward to Minnesota workers (in lower wages), or borne by owners of capital (in lower rates of return).

Total Tax Burden

For 2016, Minnesota residents paid a total of $27.0 billion in Minnesota state and local taxes while receiving $221.1 billion in total money income.[14] Minnesota residents thus paid 12.2 percent of their total income in state and local taxes.

Details of Minnesota tax collections before and after tax shifting are shown in *Table 2-1*. Of the $32.0 billion in total tax collections in 2016, $27.0 billion (84.3 percent) of the total burden falls on Minnesotans, directly or indirectly. The other 15.7 percent ($5.0 billion) is exported to nonresident consumers and owners of capital.

As shown in the "as imposed" columns of *Table 2-1*, $20.5 billion (64 percent) of the total tax is imposed directly on Minnesota households. Another $1.2 billion (4 percent) is paid by out-of-state visitors. The remaining $10.2 billion (32 percent) is initially imposed on businesses.

The burden of the business taxes is partially shifted to consumers (in higher prices) or in some cases to labor (in lower wages). Only a portion of business taxes is borne by capital owners as a lower rate of return on their investment. Part of the burden of business taxes is also shifted to nonresidents. This study estimates the degree to which such shifting occurs and then allocates the estimated burden to Minnesota households based on each household's sources of income and patterns of spending. (An explanation of tax shifting and the method of estimating the incidence of business taxes is included in the *Appendix B*.)

[14] Total money income includes all cash income, whether taxable or nontaxable. It includes nontaxable social security, interest, and retirement income, nontaxable workers' compensation payments, and cash payments from the Minnesota Family Investment Program (MFIP). Income excludes the value of fringe benefits and in-kind benefits such as food stamps, rent subsidies, and energy assistance. For a more complete description of the definition of household income, see *Appendix A* of this study.

Table 2-1
2016 Tax Collection Amounts

Tax Type	Total ($ Millions)	As Imposed			After shifting		Full-Sample Suits Index
		MN HH's	NR	Business	Minnesota	Exported	
State Taxes							
Taxes on Income and Estates							
Individual income tax	$10,835	$10,190	$645		$10,190	$645	+0.247
Corporation franchise tax [1]	1,346			$1,346	767	579	-0.172
Estate tax	156	149	7		149	7	+0.839
Total Income and Estate Taxes	$12,337	$10,339	$652	$1,346	$11,106	$1,231	+0.226
Taxes on Consumption							
Total sales tax	$6,437	$3,263	$334	$2,840	$4,970	$1,467	-0.226
General sales/use tax	5,702	2,801	334	2,567	4,388	1,314	-0.233
Sales tax on motor vehicles	735	462		273	582	153	-0.170
Motor fuels excise taxes	911	552	58	301	723	188	-0.352
Alcoholic beverage excise taxes	89	77	12		77	12	-0.217
Cigarette and tobacco excise taxes	675	662	14		662	14	-0.580
Insurance premiums taxes	473	373		100	426	47	-0.314
Gambling taxes	61	60	1		60		-0.476
MinnesotaCare taxes	599	549	50		549	50	-0.327
Solid waste management taxes	82	35		47	67	15	-0.414
Total Consumption Taxes	$9,328	$5,571	$469	$3,288	$7,533	$1,793	-0.285
Taxes on Property							
State Property Tax	$862	$34	$8	$821	$486	$377	-0.092
Residential recreational property	42	34	8		34	8	-0.135
Commercial [2]	558			558	320	238	-0.074
Industrial	151			151	61	90	+0.011
Utility	111			111	71	40	-0.240
Motor vehicle registration tax	727	610		117	690	37	-0.208
Mortgage and deed taxes	235	155		80	209	27	-0.070
Total Property Taxes	$1,825	$799	$8	$1,018	$1,385	$440	-0.147
Property Tax Refunds							
Homeowners	-$440	-$440			-$440		+0.638
Renters	-218	-218			-218		+0.873
Total Property Tax Refunds	-$658	-$658			-$658		+0.716
Total State Taxes	$22,832	$16,050	$1,129	$5,652	$19,366	$3,464	+0.033
Local Taxes							
Taxes on Property	$8,576	$4,255	$69	4,251	7,172	1,405	-0.175
General Property Tax	8,432	4,225	69	4,138	7,126	1,306	-0.174
Homeowners (before PTR)	3,946	3,946			3,946		-0.165
Residential recreational & 2nd homes [3]	349	280	69		280	69	-0.052
Commercial [2]	1,636			1,636	938	698	-0.074
Industrial	443			443	180	264	+0.011
Farm (other than residence) [4]	685			685	683	1	-0.291
Rental Housing (before PTR) [5]	1,030			1,030	881	149	-0.293
Utility [6]	343			343	219	125	-0.240
Mining Production Taxes (taconite)	107			107	10	96	+0.274
Wheelage Taxes	37	30		7	35	2	-0.338
Taxes on Consumption							
Local Sales Taxes [7]	419	206	25	189	323	97	-0.233
Local Gross Earnings Taxes	148			148	94	54	-0.240
Total Local Taxes	$9,143	$4,461	$94	$4,588	$7,588	$1,555	-0.178
Total State and Local Taxes	$31,975	$20,512	$1,223	$10,241	$26,955	$5,019	-0.026

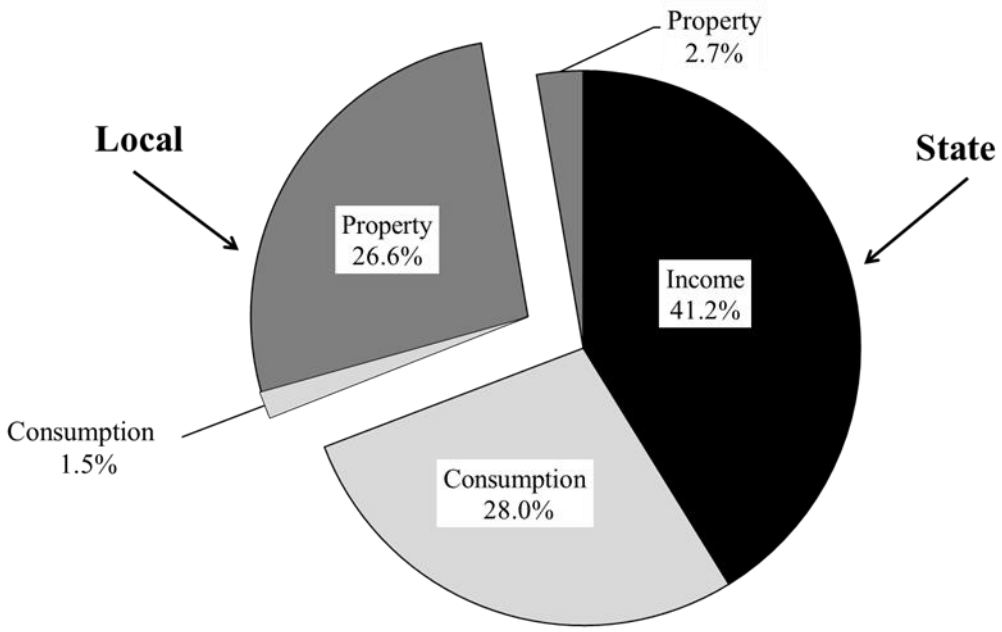
[1] Includes occupation tax on taconite, iron, & other ores
[2] Includes resorts, railroads, and minerals.
[3] Second homes are 20% of residential non-homestead property.
[4] Includes timber.
[5] Apartments, 80% of residential non-homestead property, & rented mobile homes.
[6] Includes wind and solar energy production taxes.
[7] Includes lodging and other selective sales taxes.

The "after shifting" columns in *Table 2-1*, show that some taxes are borne by Minnesotans in much greater proportions than are others. Of the large state taxes, the income tax is borne almost entirely by Minnesota residents, who pay 94 percent of total collections. Minnesota residents bear a smaller share of the general sales tax burden (77 percent). At the other end of the scale, Minnesotans are estimated to bear only 41 percent of the burden of property taxes on industrial property. Minnesotans are estimated to bear 63 percent of the burden of the total tax imposed on business.

Table 2-1 assigns each tax to one of three broad categories. Each tax is either a tax on income, a tax on consumption, or a tax on property. *Figure 2-1* shows each category's share of the total state and local tax burden for Minnesotans. It also distinguishes state taxes from local taxes. Just under 72 percent of the total burden is from state taxes; the other 28 percent is from local taxes. By tax category, 41 percent of the burden is from taxes on income, 29 percent from taxes on property, and 30 percent from taxes on consumption.

Local taxes are primarily taxes on property, with a relatively small portion on consumption (local sales taxes). State taxes are primarily on income or consumption, with a relatively small portion on property.

Figure 2-1
2016 Distribution of State and Local Tax Burdens
By Type of Tax and Level of Government



Taxes by Population Decile

To summarize the distribution of tax burdens by income level, the population of Minnesota households is divided into ten equal-sized groups or *deciles* of households ranked by household income levels. By definition, the 1st decile includes the 10 percent of households with the lowest incomes and the 10th decile includes the 10 percent of households with the highest incomes. There were 271,690 households in each population decile. The total burden by tax type for each decile is summarized in *Table 2-2*. The table also shows the tax burden on the top 5 percent and top 1 percent of households.

Taxpayers in the top decile (incomes of $156,100 and over) bore 41 percent of the total tax burden while having 43 percent of total income. By tax type, taxpayers in the top decile paid 59 percent of the individual income tax, 25 percent of the consumer sales tax, 29 percent of the gross homeowner property tax (before property tax refunds), and 32 percent of business taxes.[15]

In contrast, taxpayers in the bottom decile (incomes of $12,069 and below) bore 2.4 percent of the total tax burden and received 0.9 percent of total income. The bottom-decile taxpayers had a negative net individual income tax burden due to refundable tax credits. First-decile households paid 4.0 percent of consumer sales taxes, 2.2 percent of gross homeowner property tax, and 5.2 percent of business taxes.

Overall Effective Tax Rates

To evaluate the fairness or equity in the distribution of tax burdens by income level, tax burdens may be compared to the underlying distribution of income. This section examines this relationship in more detail.

A key measure used to analyze tax equity is the effective tax rate, which is defined as the ratio of taxes to income. Effective tax rates measure the percentage of income paid in taxes and can be compared for different levels of income.

Effective tax rates by population decile and tax type are reported in *Table 2-3*. The effective tax rate for all Minnesota state and local taxes combined is shown in the last column in the lower section of the table. For all households combined, the effective tax rate is 12.2 percent. Effective tax rates rise from a low of 11.5 percent of income in the 4th decile to 12.6 percent in the 7th decile, but then fall to 12.3 percent in the 9th decile and 11.6 percent in the 10th decile. For the top 5 percent of households the effective tax rate is 11.6 percent, rising to 11.8 percent of income for the top 1 percent.

[15] The term "business tax," as defined in this study, includes any tax paid by business that is *not* expected to be fully reflected in the price paid by consumers. Business taxes include, among others, the corporate franchise tax, business property taxes (including property taxes on rental housing), the sales tax on business purchases, and insurance taxes on business insurance.

Table 2-2 2016 Population Deciles - Amounts ($ Thousands)

Population Decile	Income Range	Number of Households	Household Income	State Income Taxes: Individual Income Tax	State Income Taxes: Corporate Franchise Tax	State Sales Tax: Purchases by Individuals	State Sales Tax: Purchases by Businesses	State Sales Tax: Sales Tax Total	Property Tax Refund	State Property Tax	State Excise Taxes	Other State Taxes: Taxes on Individuals	Other State Taxes: Taxes on Businesses
First	$12,069 & Under	271,690	$2,013,215	-$22,339	$33,291	$129,165	$82,454	$211,619	-$53,863	$21,833	$106,525	$53,097	$11,777
Second	$12,070 - $19,759	271,690	4,317,718	-35,838	32,194	161,304	71,929	233,232	-76,810	16,342	113,633	69,522	7,885
Third	$19,760 - $27,847	271,690	6,448,067	2,483	37,982	187,191	83,714	270,905	-91,868	19,710	121,654	88,694	9,692
Fourth	$27,848 - $37,128	271,690	8,810,186	117,409	42,779	210,682	92,571	303,252	-89,730	22,401	128,410	108,414	10,696
Fifth	$37,129 - $47,991	271,690	11,494,834	286,149	49,605	237,570	107,700	345,270	-90,139	27,171	133,596	135,960	12,584
Sixth	$47,992 - $61,806	271,690	14,814,307	473,972	57,622	274,645	124,987	399,632	-93,987	32,367	140,190	165,862	15,348
Seventh	$61,807 - $80,241	271,690	19,213,061	708,659	71,453	331,319	155,777	487,096	-80,288	42,019	151,923	206,713	19,619
Eighth	$80,242 - $106,851	271,690	25,233,557	1,049,403	86,636	407,156	185,444	592,601	-59,934	52,270	168,311	255,902	23,219
Ninth	$106,852 - $156,100	271,690	34,762,919	1,624,725	109,616	496,293	233,752	730,045	-17,222	70,495	182,212	309,311	29,790
Tenth	$156,101 & Over	271,690	94,031,372	5,985,796	246,310	827,863	568,762	1,396,625	-4,238	181,073	214,640	537,161	78,374
TOTALS		2,716,900	$221,139,236	$10,190,419	$767,488	$3,263,189	$1,707,088	$4,970,277	-$658,080	$485,680	$1,461,093	$1,930,636	$218,983
Top 5%	Over $219,355	136,008	$69,278,401	$4,718,959	$175,667	$526,282	$418,497	$944,778	-$2,262	$135,350	$118,065	$362,152	$58,687
Top 1%	Over $533,924	27,189	$35,323,252	$2,716,914	$84,875	$202,319	$216,318	$418,638	-$460	$72,004	$32,821	$191,766	$31,445

Population Decile	Residential Local Property Taxes: Homeowners Gross	Residential Local Property Taxes: Renters Gross	Residential Local Property Taxes: Owners of Rental Prop.	Residential Local Property Taxes: Total on Rental Prop.	Residential Local Property Taxes: Residential Total [1]	Nonresidential Local Property Taxes	Other Local Taxes [2]
First	$85,243	$18,617	$32,089	$50,706	$141,171	$123,648	$19,216
Second	87,709	36,206	14,456	50,662	141,923	54,897	21,703
Third	124,573	54,347	16,911	71,258	201,342	82,685	25,314
Fourth	163,556	64,512	17,551	82,064	253,301	91,237	28,526
Fifth	239,179	59,863	22,641	82,504	332,332	106,869	32,610
Sixth	335,430	55,769	26,941	82,710	433,915	160,548	37,833
Seventh	448,650	40,198	37,110	77,308	550,910	210,008	45,744
Eighth	561,140	30,736	41,687	72,422	674,517	241,416	55,552
Ninth	725,313	18,302	57,316	75,618	866,481	290,790	67,543
Tenth	1,174,803	14,543	221,003	235,546	1,510,311	657,953	128,170
TOTALS	$3,945,595	$393,092	$487,705	$880,797	$5,106,203	$2,020,051	$462,211
Top 5%	$708,553	$4,978	$183,341	$188,319	$958,672	$458,508	$86,063
Top 1%	$201,540	$569	$113,834	$114,404	$336,761	$229,535	$37,768

Population Decile	Local Taxes Total	Total State Taxes: Total on Individuals	Total State Taxes: Total on Businesses	Total State Taxes: State Taxes Total	Total State and Local Taxes
First	$284,035	$206,467	$155,474	$361,941	$645,976
Second	218,523	223,810	136,350	360,160	578,683
Third	309,341	298,978	160,273	459,252	768,593
Fourth	373,064	465,102	178,529	643,631	1,016,696
Fifth	471,811	692,098	208,098	900,196	1,372,007
Sixth	632,296	948,330	242,675	1,191,005	1,823,301
Seventh	806,662	1,304,186	303,006	1,607,192	2,413,854
Eighth	971,485	1,805,123	363,285	2,168,408	3,139,893
Ninth	1,224,814	2,578,542	460,428	3,038,970	4,263,784
Tenth	2,296,434	7,527,602	1,108,138	8,635,740	10,932,174
TOTALS	$7,588,465	$16,050,239	$3,316,257	$19,366,496	$26,954,961
Top 5%	$1,503,244	$5,700,778	$810,619	$6,511,397	$8,014,641
Top 1%	$604,064	$3,134,607	$413,395	$3,548,002	$4,152,066

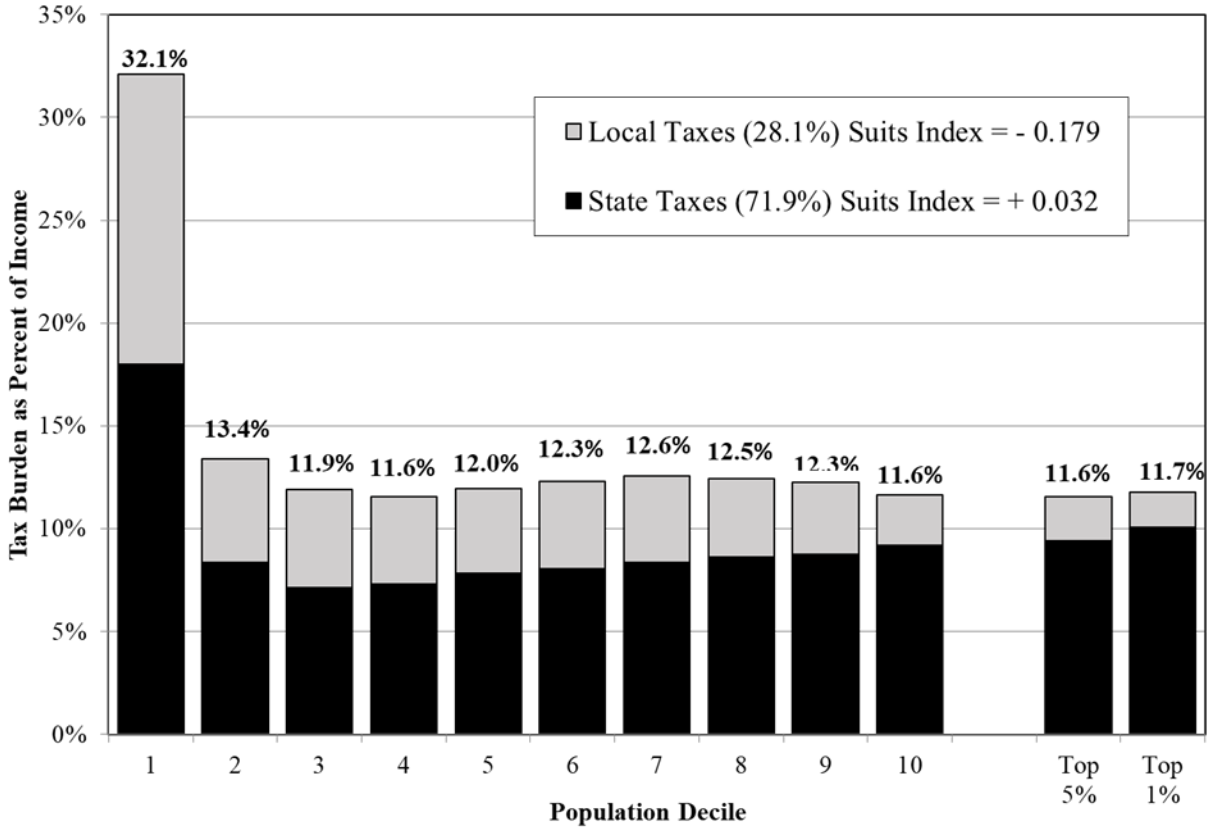
[1] Includes seasonal recreational residential (cabins) and second homes.

[2] Includes taconite production tax and wheelage taxes.

State Taxes Compared to Local Taxes

As shown in *Figure 2-2*, the distribution of the burden of state taxes differs greatly from that of local taxes. The effective state tax rate rises with income (from the 3rd to 10th decile) and continues to rise for the top 5 and top 1 percent. In contrast, the effective local tax rate falls steadily as income rises.

Figure 2-2
Effective Tax Rates by Population Decile
State Taxes Compared to Local Taxes



A tax is said to be regressive if effective tax rates fall with income. A regressive tax claims a smaller share of household income as income rises. If effective tax rates rise with income, a tax is said to be progressive. A progressive tax claims an increasing share of household income as income rises. If the effective tax rate remains constant as income rises, the tax is said to be proportional.

The Suits index is a useful summary measure of regressivity or progressivity. A regressive tax has a negative Suits index (between 0 and -1). A progressive tax has a positive Suits index (between 0 and +1). The more regressive or progressive, the further the Suits index will be from zero. (See *Appendix C* for a more complete description of the Suits index.)

Table 2-3 2016 Population Deciles - Effective Tax Rates

Population Decile	Income Range	Number of Households	Household Income	State Income Taxes		State Sales Tax			Property Tax Refund	State Property Tax	State Excise Taxes	Other State Taxes	
				Individual Income Tax	Corporate Franchise Tax	Purchases by Individuals	Purchases by Businesses	Sales Tax Total				Taxes on Individuals	Taxes on Businesses
First	$12,069 & Under	271,690	$2,013,215	- 1.1%	1.7%	6.4%	4.1%	10.5%	- 2.7%	1.1%	5.3%	2.6%	0.6%
Second	$12,070 - $19,759	271,690	4,317,718	- 0.8%	0.7%	3.7%	1.7%	5.4%	- 1.8%	0.4%	2.6%	1.6%	0.2%
Third	$19,760 - $27,847	271,690	6,448,067	0.0%	0.6%	2.9%	1.3%	4.2%	- 1.4%	0.3%	1.9%	1.4%	0.2%
Fourth	$27,848 - $37,128	271,690	8,810,186	1.3%	0.5%	2.4%	1.1%	3.4%	- 1.0%	0.3%	1.5%	1.2%	0.1%
Fifth	$37,129 - $47,991	271,690	11,494,834	2.5%	0.4%	2.1%	0.9%	3.0%	- 0.8%	0.2%	1.2%	1.2%	0.1%
Sixth	$47,992 - $61,806	271,690	14,814,307	3.2%	0.4%	1.9%	0.8%	2.7%	- 0.6%	0.2%	0.9%	1.1%	0.1%
Seventh	$61,807 - $80,241	271,690	19,213,061	3.7%	0.4%	1.7%	0.8%	2.5%	- 0.4%	0.2%	0.8%	1.1%	0.1%
Eighth	$80,242 - $106,851	271,690	25,233,557	4.2%	0.3%	1.6%	0.7%	2.3%	- 0.2%	0.2%	0.7%	1.0%	0.1%
Ninth	$106,852 - $156,100	271,690	34,762,919	4.7%	0.3%	1.4%	0.7%	2.1%	0.0%	0.2%	0.5%	0.9%	0.1%
Tenth	$156,101 & Over	271,690	94,031,372	6.4%	0.3%	0.9%	0.6%	1.5%	0.0%	0.2%	0.2%	0.6%	0.1%
TOTALS		2,716,900	$221,139,236	4.6%	0.3%	1.5%	0.8%	2.2%	- 0.3%	0.2%	0.7%	0.9%	0.1%
Top 5%	Over $219,355	136,008	$69,278,401	6.8%	0.3%	0.8%	0.6%	1.4%	0.0%	0.2%	0.2%	0.5%	0.1%
Top 1%	Over $533,924	27,189	$35,323,252	7.7%	0.2%	0.6%	0.6%	1.2%	0.0%	0.2%	0.1%	0.5%	0.1%

Population Decile	Residential Local Property Taxes					Nonresidential Local Property Taxes [2]	Other Local Taxes
	Homeowners Gross	Renters Gross	Owners of Rental Prop.	Total on Rental Prop.	Residential Total [1]		
First	4.2%	0.9%	1.6%	2.5%	7.0%	6.1%	1.0%
Second	2.0%	0.8%	0.3%	1.2%	3.3%	1.3%	0.5%
Third	1.9%	0.8%	0.3%	1.1%	3.1%	1.3%	0.4%
Fourth	1.9%	0.7%	0.2%	0.9%	2.9%	1.0%	0.3%
Fifth	2.1%	0.5%	0.2%	0.7%	2.9%	0.9%	0.3%
Sixth	2.3%	0.4%	0.2%	0.6%	2.9%	1.1%	0.3%
Seventh	2.3%	0.2%	0.2%	0.4%	2.9%	1.1%	0.2%
Eighth	2.2%	0.1%	0.2%	0.3%	2.7%	1.0%	0.2%
Ninth	2.1%	0.1%	0.2%	0.2%	2.5%	0.8%	0.2%
Tenth	1.2%	0.0%	0.2%	0.3%	1.6%	0.7%	0.1%
TOTALS	1.8%	0.2%	0.2%	0.4%	2.3%	0.9%	0.2%
Top 5%	1.0%	0.0%	0.3%	0.3%	1.4%	0.7%	0.1%
Top 1%	0.6%	0.0%	0.3%	0.3%	1.0%	0.6%	0.1%

Local Taxes Total	Total State Taxes			Total State and Local Taxes
	Total on Individuals	Total on Businesses	State Taxes Total	
14.1%	10.3%	7.7%	18.0%	32.1%
5.1%	5.2%	3.2%	8.3%	13.4%
4.8%	4.6%	2.5%	7.1%	11.9%
4.2%	5.3%	2.0%	7.3%	11.5%
4.1%	6.0%	1.8%	7.8%	11.9%
4.3%	6.4%	1.6%	8.0%	12.3%
4.2%	6.8%	1.6%	8.4%	12.6%
3.8%	7.2%	1.4%	8.6%	12.4%
3.5%	7.4%	1.3%	8.7%	12.3%
2.4%	8.0%	1.2%	9.2%	11.6%
3.4%	7.3%	1.5%	8.8%	12.2%
2.2%	8.2%	1.2%	9.4%	11.6%
1.7%	8.9%	1.2%	10.0%	11.8%

[1] Includes seasonal recreational residential (cabins) and second homes.

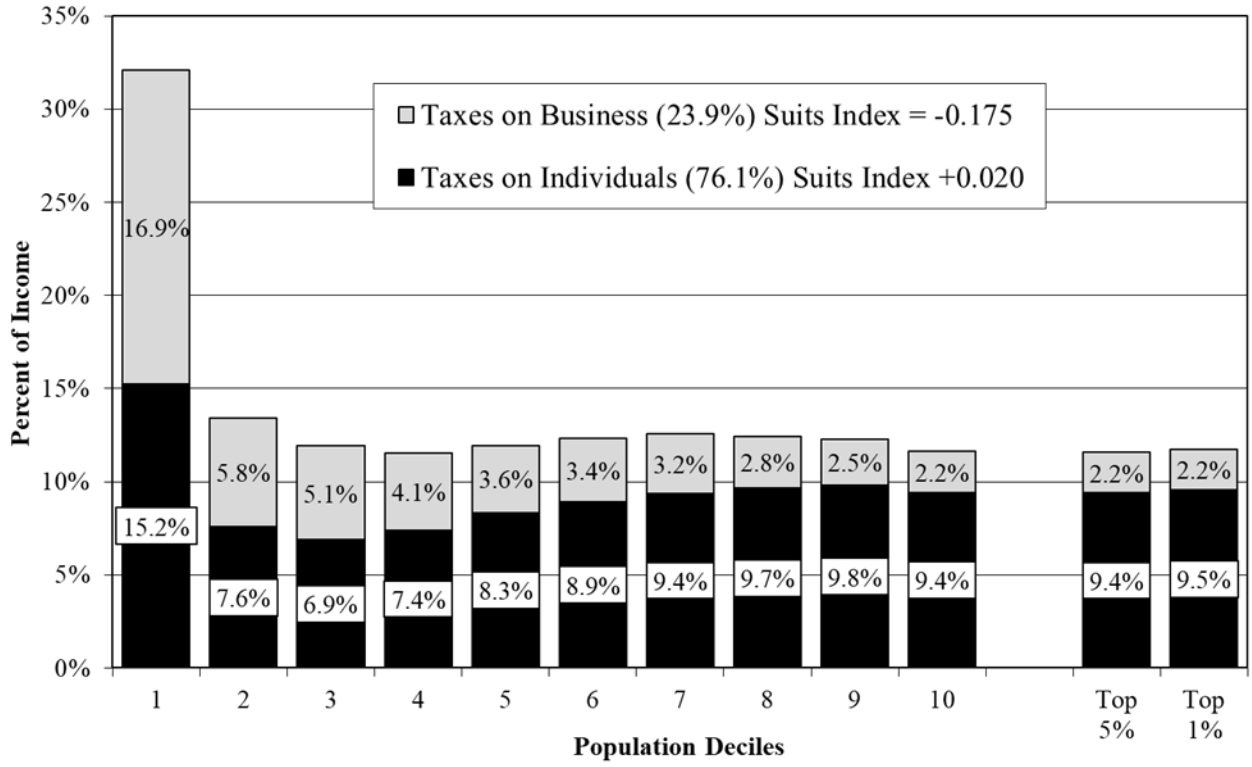
[2] Includes taconite production tax and wheelage taxes.

The Suits index for state taxes is +0.033, meaning that (as seen in *Figure 2-2*) state taxes are progressive. In contrast, the Suits index for local taxes is -0.178 (regressive). When combined, the Suits index for all Minnesota state and local taxes is -0.026 (regressive).

Business Taxes Compared to Taxes on Individuals

Figure 2-3 compares taxes on business with taxes paid by individuals. It illustrates that taxes on business are regressive, with effective tax rates falling with income and a Suits index of -0.175. Taxes on individuals are progressive, with effective tax rates rising with income between the 3rd and 9th deciles before falling slightly in the 10th, and a Suits index of +0.020.

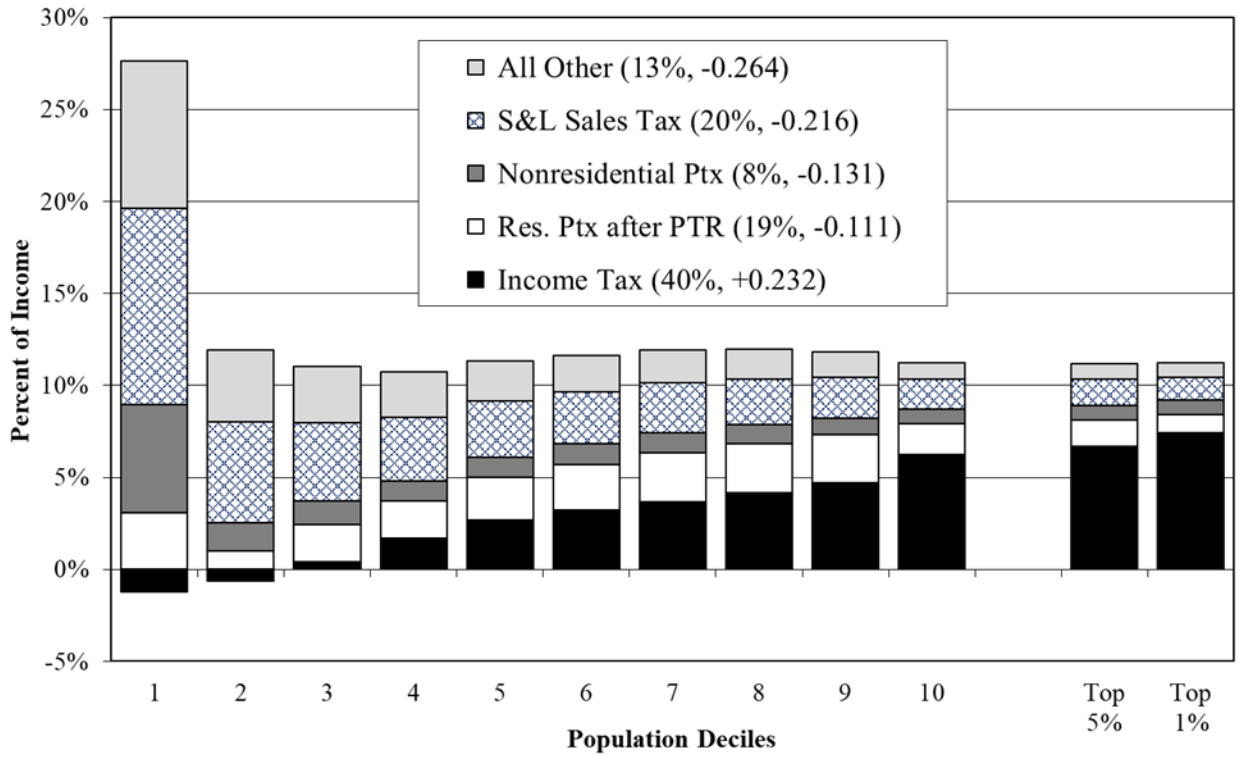
Figure 2-3
Effective Tax Rates by Population
Business Taxes Compared to Taxes on Individuals



Summary of 2016 Tax Burden by Major Tax Type

Figure 2-4 and *Table 2-4* summarize how the 2016 tax burden of the major tax categories varies by population decile. The categories for this table combine both the individual and business components of these tax types. For example, the state and local sales tax total includes both the consumer and business portions (and includes the sales tax on motor vehicles). Residential property tax after PTR includes both homeowner and rental property taxes, along with cabins, and nets out the impact of homeowner and renter property tax refunds.

Figure 2-4
2016 Tax Incidence by Tax Type



Note: Numbers in parentheses show percent of total tax burden and the full-sample Suits index.

Table 2-4
Effective Tax Rates by Tax Type (2016)

Population Decile	Personal Income Tax	Residential Property Taxes*	Other Property Taxes	State & Local Sales Taxes	All Other S&L Taxes
First	-1.1%	4.4%	7.2%	11.2%	10.4%
Second	-0.8%	1.5%	1.6%	5.8%	5.3%
Third	0.0%	1.7%	1.6%	4.5%	4.1%
Fourth	1.3%	1.9%	1.3%	3.7%	3.4%
Fifth	2.5%	2.1%	1.2%	3.2%	3.0%
Sixth	3.2%	2.3%	1.3%	2.9%	2.6%
Seventh	3.7%	2.5%	1.3%	2.7%	2.4%
Eighth	4.2%	2.5%	1.1%	2.5%	2.2%
Ninth	4.7%	2.5%	1.0%	2.2%	1.9%
Tenth	6.4%	1.6%	0.9%	1.6%	1.2%
Total	4.6%	2.0%	1.1%	2.4%	2.0%
Top 5%	6.8%	1.4%	0.8%	1.5%	1.1%
Top 1%	7.7%	1.0%	0.9%	1.3%	1.0%
Share of Total Tax Burden	37.8%	16.6%	9.2%	19.6%	16.8%
Suits Index	+0.247	-0.102	-0.145	-0.226	-0.270

*Residential property taxes are net of property tax refunds.

Individual Income Tax

The individual income tax accounts for almost 38 percent of the total state and local tax burden. Because of its graduated tax rate structure and allowance of personal exemptions and deductions, the individual income tax is, by design, progressive. As seen in *Table 2-4*, effective tax rates rose significantly with increases in household income. At the low end, the effective tax rate for the income tax was negative for the first two deciles, showing the impact of three refundable low-income credits (which can more than offset any income tax liabilities).[16] It rose steadily from 1.3 percent of income for the 4th decile to 6.4 percent for the 10th decile. The top 5 percent and 1 percent of households have even higher effective tax rates, at 6.8 and 7.7 percent respectively. The Suits index of +0.247 reflects its considerable progressivity.

Figure 2-4 (above) clearly demonstrates the importance of the progressive income tax in offsetting most of the regressivity of other taxes.

[16] For more detail on the impact of these refundable credits on the distribution of the overall tax burden, see *Chapter 4, Section C.*

Residential Property Taxes (After PTR)

Residential property taxes include the tax on both owned homes and rental property. The burden shown here includes the impact of state property tax refunds for both homeowners and renters. The property tax refunds ($658 million in 2016) offset 12.8 percent of the residential property tax burden, and the refunds offset a much higher portion in the lowest five deciles. Residential property taxes net of PTR account for almost 17 percent of the total state and local tax burden.

Effective tax rates rise from 1.5 percent of income in the 2nd decile to 2.5 percent of income in the 7th, 8th, and 9th deciles before falling to 1.6 percent in the 10th decile. The Suits index of -0.102 (regressive) shows that the impact of the sharp drop in the 10th decile well outweighs the increasing effective tax rates over the lower deciles.

Although residential property tax burdens (after PTR) are regressive, they are noticeably less regressive than either sales taxes or "all other taxes." This is mostly due to the impact of property tax refunds. In their absence, the Suits index for residential property taxes would be -0.181 – much closer to that of state and local sales taxes (-0.226).[17]

Nonresidential Property Taxes

These include commercial and industrial taxes along with taxes on utilities and farm property. Like other business taxes, the incidence of these taxes depends on the extent to which the tax burden is borne by property owners rather than shifted to others through higher prices or lower wages. Incidence models estimate these taxes to be regressive, but less so than sales taxes.[18]

State and Local Sales Taxes

State and local sales taxes (including the sales tax on motor vehicles) account for almost 20 percent of the total state and local tax burden. In agreement with other incidence studies, this analysis finds the sales tax to be regressive. Higher income households spend a smaller portion of their income on items subject to the sales tax. This is partly due to their higher savings rates and partly to the mix of consumer goods and services they buy. Hence, tax burdens as a proportion of income tend to decline as one moves up the income scale.

For 2016, the effective state and local sales tax rate falls from 5.8 percent in the 2nd decile to 1.6 percent in the 10th decile. Sales taxes overall are much more regressive than property taxes (after PTR), with a Suits index of -0.226.

[17] For more detail on the impact of property tax refunds on residential property taxes, see in *Chapter 4, Section C.*

[18] This is less true of the portion of nonresidential property taxes that falls on utility property because more of those taxes are passed along to consumers in higher prices.

Other Taxes

The "all other taxes" category in *Table 2-4* includes one progressive tax (the estate tax) and many regressive taxes, including excise taxes on motor fuels, tobacco, and alcohol, the motor vehicle registration tax, solid waste management taxes, mortgage and deed taxes, insurance premiums taxes, gambling taxes, and MinnesotaCare taxes. These assorted taxes account for just under 17 percent of Minnesota's state and local tax burden, and their combined impact is more regressive than state and local sales taxes (a Suits index of -0.270).

Representative Households

Table 2-5 presents average tax burdens for households in each decile. For example, in the 6th decile (average income $54,527), the average Minnesota state and local tax burden of $6,711 includes $1,094 of property taxes after PTR, $1,745 of income tax, $1,011 of state consumer sales tax, $463 of excise taxes, $720 of other taxes on individuals, and $1,646 of taxes on businesses.

Table 2-5 also shows how demographic characteristics vary across deciles. As incomes rise, the percentage of households who are married rises from 8 percent in the 1st decile to 88 percent in the 10th decile. The percentage who are homeowners rises from 18 percent in the 1st decile to 95 percent in the 10th. The percentage who have children rises from 16 percent in the 1st decile to 51 percent in the 10th.

Chapter 5 includes similar tables by demographic groups. *Table 5-1* is limited to married couples with children, *Table 5-2* is limited to non-senior married couples without children, *Table 5-3* is limited to single-person households with no children, *Table 5-4* is limited to single seniors, *Table 5-5* is limited to married seniors, and *Table 5-6* is limited to single parents. These tables provide a better understanding of the tax burden for typical taxpayers. They summarize the tax burden for households of the same family type and show how it varies with income. Anyone interested in tax burdens for representative households should use the *Chapter 5* tables rather than *Table 2-5*.

Table 2-5

Household Characteristics and Average Tax Burden Amounts by Population Decile
All Households

Each Decile Contains 271,690 Households

HOUSEHOLD CHARACTERISTICS	Population Decile										Total
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	
Number of Households	271,690	271,690	271,690	271,690	271,690	271,690	271,690	271,690	271,690	271,690	2,716,900
Average Household Income	$7,410	$15,892	$23,733	$32,427	$42,309	$54,527	$70,717	$92,876	$127,951	$346,098	$81,394
Maximum Household Income	$12,069	$19,759	$27,847	$37,128	$47,991	$61,806	$80,241	$106,851	$156,100		
Percent with Earned Income[1]	49%	57%	70%	79%	79%	78%	83%	87%	91%	92%	77%
Average Earned Income[1]	$9,108	$14,329	$21,737	$29,068	$36,940	$46,319	$57,859	$76,434	$103,436	$210,752	$67,826
Homeowners[2]	18%	22%	28%	35%	49%	61%	73%	83%	92%	95%	56%
Married	8%	8%	11%	16%	24%	37%	52%	72%	84%	88%	40%
Seniors	17%	22%	23%	22%	25%	29%	28%	24%	20%	18%	23%
Households with Children	16%	22%	25%	25%	25%	23%	29%	37%	43%	51%	30%
Average Market Value	$184,093	$144,044	$144,789	$146,772	$152,241	$165,059	$182,016	$190,277	$223,473	$333,222	$205,751
Average Monthly Rent	$178	$352	$521	$636	$725	$832	$888	$1,045	$1,236	$1,499	$622
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$382	$456	$659	$839	$1,101	$1,440	$1,799	$2,178	$2,737	$4,378	$1,597
-Property Tax Refund	-$198	-$283	-$338	-$330	-$332	-$346	-$296	-$221	-$63	-$16	-$242
Tax after PTR	$184	$173	$320	$509	$769	$1,094	$1,504	$1,958	$2,674	$4,362	$1,355
Renters Only											
Total Tax on Rental Unit	$427	$711	$955	$1,142	$1,259	$1,445	$1,519	$1,781	$2,099	$2,497	$1,118
Renters Share of Tax	$163	$271	$365	$436	$481	$551	$580	$680	$801	$953	$427
-Property Tax Refund	-$276	-$368	-$324	-$298	-$248	-$177	-$37	-$2	$0	$0	-$244
Tax after PTR	-$113	-$96	$40	$138	$233	$374	$542	$678	$801	$953	$183
Homeowners Only											
Total Tax on Home	$1,785	$1,462	$1,624	$1,700	$1,797	$2,029	$2,266	$2,474	$2,913	$4,575	$2,614
-Property Tax Refund	-$492	-$480	-$586	-$487	-$452	-$465	-$393	-$264	-$67	-$16	-$291
Homeowners Tax after PTR	$1,293	$982	$1,037	$1,213	$1,345	$1,565	$1,873	$2,210	$2,846	$4,559	$2,322
State Income Tax	-$82	-$132	$9	$432	$1,053	$1,745	$2,608	$3,863	$5,980	$22,032	$3,751
State Sales Tax	$475	$594	$689	$775	$874	$1,011	$1,219	$1,499	$1,827	$3,047	$1,201
State Excise Taxes	$367	$386	$411	$431	$445	$463	$496	$543	$577	$631	$475
Other Taxes	$244	$309	$389	$475	$591	$720	$908	$1,153	$1,447	$2,388	$862
Business Taxes[3]	$1,180	$793	$998	$1,104	$1,296	$1,646	$2,101	$2,472	$3,092	$7,569	$2,225
Total State and Local Tax Burden	$2,378	$2,130	$2,829	$3,742	$5,050	$6,711	$8,885	$11,557	$15,694	$40,238	$9,921
Effective Tax Rate for all Taxes	32.1%	13.4%	11.9%	11.5%	11.9%	12.3%	12.6%	12.4%	12.3%	11.6%	12.2%

[1]Earned income includes wage and self-employment income.

[2]Homeowners include farm homesteads.

[3]For this table and those in Chapter 5 only, Business Taxes do not include the share of Rental Property Taxes borne by the renter.

Minnesota's Diversified Tax Portfolio in 2016

The state and local tax structure should be viewed as an integrated system. Minnesota's diversified tax portfolio includes many taxes, and it is important to consider the system as a whole rather than focusing on just a single part. This study helps focus attention on the system as a whole.

The right-hand column of *Table 2-1* (on page 26) reports the Suits index for each tax. The Suits index for the overall state and local tax system (-0.026) is a weighted average of the Suits indexes for each of the individual taxes. In that calculation, each tax's weight is that tax's share of the total burden. As a result, the overall Suits index is most affected by the taxes with the largest burden, though a smaller tax that is very progressive (such as the estate tax) or very regressive (such as the cigarette tax) can also have a substantial impact.

Figure 2-5 provides a visual presentation of the Suits indexes for each of the individual tax types. The magnitude of each tax's burden is represented by the size and height of the circle, and the circles are arranged by Suits index on a line with values between -1 (most regressive) and +1 (most progressive).

Only three circles are located to the right of zero. The individual income tax and the estate tax are progressive taxes. The property tax refunds circle is also on the far right side of the figure because their impact is highly progressive.[19] Two other tax categories (mortgage and deed taxes and the property tax on cabins and second homes) are the least regressive of the remaining taxes, with Suits indexes near -0.070.

Homeowner property taxes and the sales tax are among a larger group of taxes with Suits indexes between -0.140 and -0.250. Even more regressive taxes (with Suits indexes between -0.290 and -0.400) include the property tax on rental housing, the MinnesotaCare taxes, the motor fuels excise tax, and taxes on insurance premiums. The two most regressive taxes (Suits indexes close to -0.500) are lawful gambling and the cigarette and tobacco taxes.

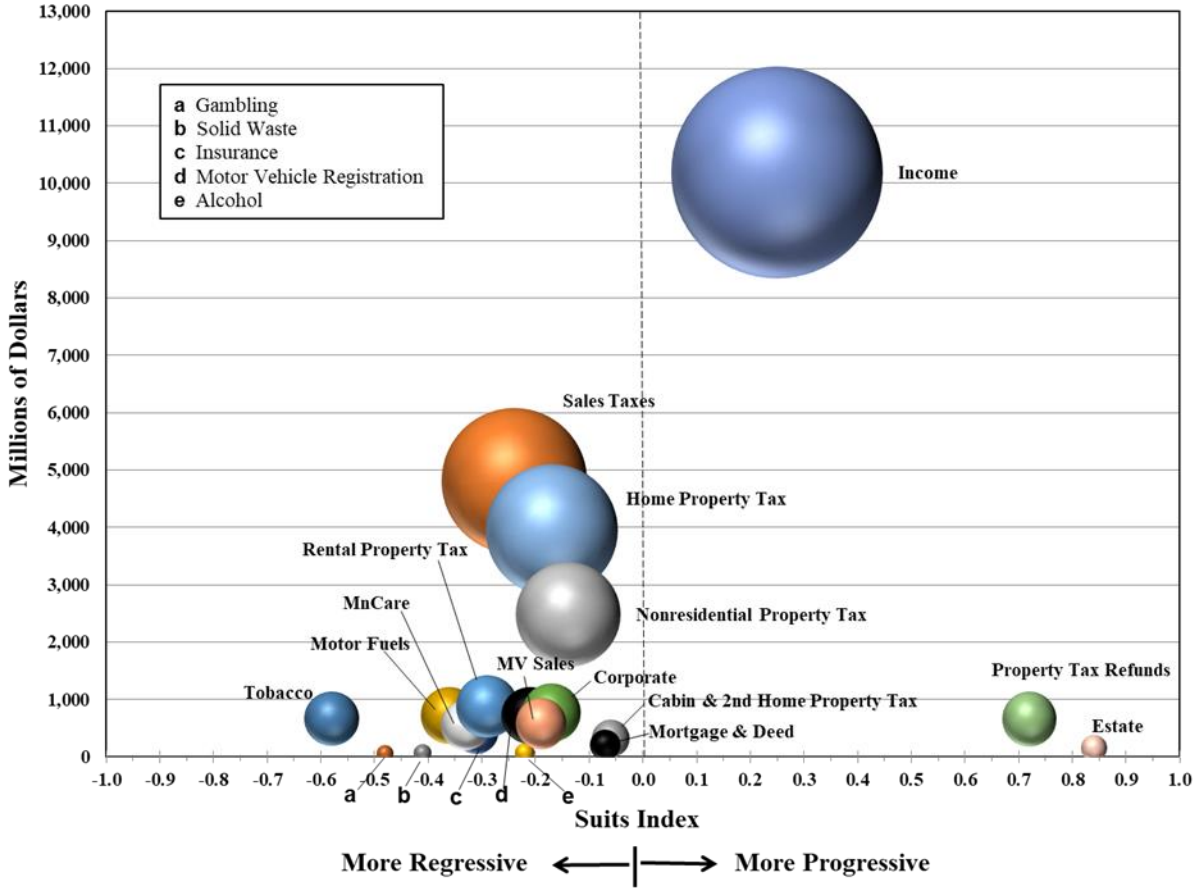
Minnesota's income tax, property tax refunds, and estate tax are effective in offsetting almost all of the regressivity of other taxes. The full portfolio (with a Suits index of -0.026) is less regressive than any of the other tax types.

The overall tax structure can be made more or less regressive by either (1) changing the mix of taxes in the tax portfolio or (2) reducing the regressivity of a particular tax by changing the tax base or (in some cases) adjusting tax rates.

[19] Technically the refunds are negative taxes, but their placement on *Figure 2-5* accurately reflects their impact on overall progressivity and the overall Suits index.

On *Figure 2-5*, the first option (changing the tax mix) would change the size of the circles; the second would move the circle representing that tax either to the right or to the left. For example, increasing the sales tax rate would make the sales tax larger while leaving its regressivity unchanged. The sales tax circle would become larger and move upward, and the overall Suits index for the full tax portfolio would become more negative. Alternatively, raising the top rate on the income tax would shift the income tax circle to the right (and increase its size), and the full portfolio's Suits index would become less regressive.

Figure 2-5
Dollars of Tax Burden and Suits Index
By Type of Tax (2016)



Tax law changes are not the only reason the tax portfolio changes. Economic growth by itself will change the portfolio mix, because some taxes (most notably the income tax) are more responsive to income growth than other taxes. Changes in the distribution of income can also modify the size and location of some of the circles in *Table 2-5*. The Suits index will change from year to year even if there are no changes in tax law.

Choosing the correct tax portfolio for Minnesota requires a weighing of several competing goals. Taxes differ in many ways other than how their burden is distributed by income class. Taxes also differ in their impact on revenue stability over the short-term business cycle, in how their revenues respond to longer-run economic growth, in administrative complexity, and in their impact on Minnesota's competitiveness. In considering any of those goals, it is helpful to look at the tax system as a diversified portfolio.[20]

[20] For an analysis of applying the portfolio approach to the goals of revenue stability and growth, see the report of the Budget Trends Study Commission (January 12, 2009), available on the Minnesota Management and Budget website.

Chapter 3: Projected Results, 2021

This chapter examines the state and local tax burdens imposed on Minnesota taxpayers in 2021. The taxes included are the same as those analyzed for 2016. Changes between 2016 and 2021 are discussed, along with possible reasons for those changes.

Tax Incidence Projections to 2021 (Assuming Current Law)

To analyze tax incidence five years beyond 2016, the 2016 results must be projected into the future. A variety of methods were used to do this.

***Income* –** The HITS income tax model[21] uses growth rates derived from the state economic forecast to grow each of the various categories of income: wages, interest, pensions, capital gains, social security, etc. The expected growth rates vary by type of income. These differential growth rates were applied to each type of income a sample household received in 2016, yielding an estimate of each household's total income in 2021. The various types of income are grown at different rates, so some households will experience faster income growth than others. Because of this, sample households may switch deciles between 2016 and 2021.

***Population* –** The number of Minnesota households is expected to grow by 4.8 percent between 2016 and 2021, a growth rate of just under one percent per year. Therefore, sample households are assumed to represent 4.8 percent more households in 2021.[22]

Taxes – All taxes were adjusted for tax law changes that have already gone into effect or, under current law, are scheduled to go into effect. Income tax projections are from the HITS income tax model, with off model adjustments for several law changes enacted in 2017. For the remaining taxes in the study, total collections were based on the November 2018 forecast from the Department of Management and Budget. Business taxes were assumed to be shifted in the same manner as were the corresponding 2016 business taxes. In the absence of law changes, taxes imposed directly on households are allocated to the various households in the sample in the same way the 2016 taxes were allocated. If tax law has changed since 2016 (as with the estate tax), the study adjusts the allocation.

Total Tax Burden in 2021

In 2021, Minnesota residents are projected to pay a total of $32.3 billion in Minnesota state and local taxes. Total income is projected to be $277.3 billion. Because household income increased faster (at 25.4 percent) than the total tax burden (at 19.7 percent), the effective tax rate is projected to fall from 12.2 percent to 11.6 percent of income.

[21] The House Income Tax Simulation (HITS) model is the micro-simulation model used both for forecasting and for estimating the revenue impact of proposed changes in tax law. The version used in this study is based on a stratified random sample of tax year 2016 income tax returns and the November 2018 economic forecast.

[22] The income tax model projects a 5.8 percent growth in tax returns, so the number of non-filers is assumed to fall by 2.5 percent.

Details of Minnesota tax collections before and after tax shifting are shown in *Table 3-1*. Of the $38.2 billion in total tax collections in 2021, $32.3 billion (84.6 percent) of the total burden falls on Minnesotans, either directly or indirectly. The other 15.4 percent ($5.9 billion) is exported to nonresident consumers and owners of capital.

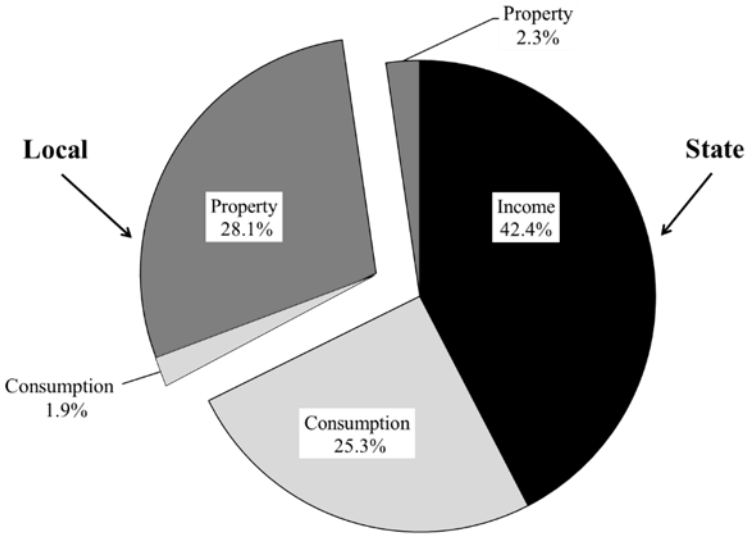
As shown in the "as imposed" columns of the table, $24.7 billion (65 percent) of the total tax is imposed directly on Minnesota households. Another $1.4 billion (4 percent) is paid by out-of-state visitors. The remaining $12.0 billion (31 percent) is initially imposed on businesses.

The "after shifting" columns in *Table 3-1*, show that some taxes are borne by Minnesotans in much greater proportions than are others. Of the large state taxes, the income tax is borne almost entirely by Minnesota residents, who pay 94 percent of total collections. Minnesota residents bear a smaller share of the general sales tax burden (77 percent). At the other end of the scale, Minnesotans are estimated to bear only 41 percent of the burden of property taxes on industrial property. Minnesotans are estimated to bear 63 percent of the burden of the total tax imposed on business.

Table 3-1 assigns each tax to one of three broad categories. Each tax is either a tax on income, a tax on consumption, or a tax on property. *Figure 3-1* shows each category's share of the total state and local tax burden for Minnesotans. It also distinguishes state taxes from local taxes. Over 69 percent of the total burden is from state taxes; about 31 percent is from local taxes. By tax category, 39.5 percent of the burden is from taxes on income, 29 percent from taxes on consumption, and 31.5 percent from taxes on property.

Local taxes are primarily taxes on property, with a relatively small portion on consumption (local sales taxes). State taxes are primarily on income or consumption, with a relatively small portion on property.

Figure 3-1
2021 Distribution of Minnesota
State and Local Tax Burdens by Tax Type



What changed from 2016 to 2021? The income taxes share of the tax burden increases between 2016 and 2021, rising from 41 percent to 42 percent of the total. The property tax share rises from 29 percent to 30 percent, while the consumption tax share falls from 30 percent to 27 percent. The fall in the consumption tax share is due largely to the sunset of the provider taxes. The state taxes share falls from 72 percent to 70 percent.

Taxes by Population Decile

To summarize the distribution of tax burdens by income level, the population of Minnesota households was divided into ten equal-sized groups or *deciles* of households ranked by household income levels. By definition, the 1st decile includes the 10 percent of households with the lowest income levels and the 10th decile includes the10 percent of households with the highest incomes. There are expected to be 284,853 households in each population decile. The total burden by tax type for each decile is summarized in *Table 3-2*.

Taxpayers in the top decile (incomes of $185,600 and over in 2021) are expected to bear 41.0 percent of the total tax burden while having 42.5 percent of total income. By tax type, taxpayers in the top decile would pay 58 percent of the individual income tax, 26 percent of the consumer sales tax, 29 percent of the gross homeowner property tax, and 32 percent of business taxes.[23]

In contrast, taxpayers in the bottom decile (incomes of $14,528 and below) are projected to bear 2.2 percent of the total tax burden while receiving only 0.9 percent of total income. The bottom-decile taxpayers will have a negative individual income tax burden due to the refundable tax credits. They will pay 3.8 percent of the consumer sales tax, 2.1 percent of gross homeowner property tax, and 5.3 percent of business taxes.

[23] The term "business tax," as defined in this study, includes any tax paid by business that is *not* expected to be fully reflected in the price paid by consumers. Business taxes include, among others, the corporate franchise tax, business property taxes (including property taxes on rental housing), the sales tax on business purchases, and insurance taxes on business insurance.

Table 3-1
2021 Tax Collection Amounts

Tax Type	Total ($ Millions)	As Imposed			After shifting		Full-Sample Suits Index
		MN HH's	NR	Business	Minnesota	Exported	
State Taxes							
Taxes on Income and Estates							
Individual income tax	$13,575	$12,767	$808		$12,767	$808	+0.232
Corporation franchise tax [1]	1,347			$1,347	768	579	-0.163
Estate tax	138	131	7		131	7	+0.847
Total Income and Estate Taxes	$15,060	$12,899	$814	$1,347	$13,667	$1,393	+0.216
Taxes on Consumption							
Total sales tax	$7,846	$3,976	$407	$3,463	$6,058	$1,788	-0.215
General sales/use tax	6,957	3,418	407	3,132	5,354	1,603	-0.221
Sales tax on motor vehicles	889	559		330	704	185	-0.169
Motor fuels excise taxes	926	561	59	306	735	192	-0.354
Alcoholic beverage excise taxes	97	83	13		83	13	-0.201
Cigarette and tobacco excise taxes	650	637	13		637	13	-0.584
Insurance premiums taxes	533	421		112	481	53	-0.314
Gambling taxes	102	100	2		100		-0.478
MinnesotaCare taxes	0						
Solid waste management taxes	97	41		56	79	18	-0.409
Total Consumption Taxes	$10,252	$5,820	$495	$3,937	$8,173	$2,077	-0.267
Taxes on Property							
State Property Tax	$829	$35	$9	$785	$466	$363	-0.087
Residential recreational property	44	35	9		35	9	-0.137
Commercial [2]	513			513	294	219	-0.067
Industrial	159			159	65	95	+0.013
Utility	113			113	72	41	-0.230
Motor vehicle registration tax	839	705		135	797	42	-0.211
Mortgage and deed taxes	281	185		96	249	32	-0.070
Total Property Taxes	$1,949	$924	$9	$1,016	$1,512	$437	-0.149
Property Tax Refunds							
Homeowners	-$538	-$538			-$538		+0.690
Renters	-234	-234			-234		+0.898
Total Property Tax Refunds	-$772	-$772			-$772		+0.753
Total State Taxes	$26,489	$18,871	$1,317	$6,300	$22,580	$3,908	+0.050
Local Taxes							
Property Taxes	$10,833	$5,524	$82	$5,226	$9,065	$1,767	-0.174
General Property Tax	10,663	5,484	82	5,097	9,007	1,656	-0.174
Homeowners (before PTR)	5,151	5,151			5,151		-0.169
Residential recreational & 2nd homes [3]	415	333	82		333	82	-0.046
Commercial [2]	1,903			1,903	1,091	811	-0.067
Industrial	645			645	261	384	+0.013
Farm (other than residence) [4]	640			640	639	1	-0.285
Rental Housing (before PTR) [5]	1,448			1,448	1,238	210	-0.291
Utility [6]	461			461	294	168	-0.230
Mining Production Taxes (taconite)	120			120	12	109	+0.286
Wheelage Taxes	49	40		9	46	3	-0.339
Taxes on consumption							
Local Sales Taxes [7]	661	325	39	298	509	152	-0.221
Local Gross Earnings Taxes	169			169	107	61	-0.230
Total Local Taxes	$11,663	$5,849	$121	$5,693	$9,681	$1,981	-0.177
Total State and Local Taxes	$38,152	$24,720	$1,438	$11,993	$32,261	$5,889	-0.018

[1] Includes taconite, iron, & other ores occupation tax
[2] Includes resorts, railroads, and minerals
[3] Second homes are 20% of residential non-homestead property
[4] Includes timber
[5] Apartments, 80% of residential non-homestead property, & rented mobile homes
[6] Includes wind and solar energy production taxes
[7] Includes lodging and other selective sales taxes

Table 3-2 2021 Population Deciles - Amounts ($ Thousands)

Population Decile	Income Range	Number of Households	Household Income	State Income Taxes		State Sales Tax			Property Tax Refund	State Property Tax	State Excise Taxes & HIF	Other State Taxes	
				Individual Income Tax	Corporate Franchise Tax	Purchases by Individuals	Purchases by Businesses	Sales Tax Total				Taxes on Individuals	Taxes on Businesses
First	$14,528 & under	284,853	$2,523,878	-$31,233	$32,158	$151,384	$96,934	$248,318	-$74,550	$20,021	$106,301	$43,727	$13,451
Second	$14,529 - $23,941	284,853	5,472,390	-34,763	31,173	191,364	84,399	275,763	-96,429	15,012	113,941	54,026	9,122
Third	$23,942 - $33,681	284,853	8,182,088	31,887	37,305	222,100	100,163	322,263	-108,880	18,680	121,569	69,087	11,151
Fourth	$33,682 - $44,730	284,853	11,144,059	187,400	41,730	250,179	109,746	359,925	-114,215	21,018	127,466	83,639	12,035
Fifth	$44,731 - $57,679	284,853	14,497,042	386,631	48,680	282,900	128,803	411,703	-113,407	25,820	132,397	109,133	14,728
Sixth	$57,680 - $74,178	284,853	18,653,963	605,071	57,806	334,035	152,714	486,750	-108,693	31,100	139,026	136,625	17,842
Seventh	$74,179 - $96,071	284,853	24,120,111	888,342	72,066	408,907	191,054	599,962	-95,384	40,430	152,203	169,227	22,648
Eighth	$96,072 - $127,270	284,853	31,563,708	1,319,878	87,191	496,663	228,264	724,927	-56,470	50,897	166,835	206,083	27,395
Ninth	$127,271 - $185,600	284,853	43,329,920	2,037,717	111,015	607,479	288,983	896,462	-3,871	68,537	179,787	246,506	34,690
Tenth	$185,601 & over	284,853	117,802,973	7,376,209	249,117	1,031,424	700,496	1,731,921	0	174,076	215,709	464,862	91,333
TOTALS		2,848,530	$277,290,131	$12,767,138	$768,240	$3,976,437	$2,081,558	$6,057,994	-$771,900	$465,591	$1,455,234	$1,582,916	$254,394
Top 5%	Over $262,353	142,663	$86,867,502	$5,792,418	$176,989	$661,060	$513,247	$1,174,307	$0	$129,131	$119,403	$319,357	$68,595
Top 1%	Over $636,247	28,492	$44,537,708	$3,300,309	$85,911	$260,145	$266,321	$526,466	$0	$68,726	$34,035	$172,841	$36,706

Population Decile	Residential Local Property Taxes					Nonresidential Local Property Taxes	Other Local Taxes [2]
	Homeowners Gross	Renters Gross	Owners of Rental Prop.	Total on Rental Prop.	Residential Total [1]		
First	$106,271	$26,801	$43,812	$70,613	$182,845	$128,583	$27,261
Second	111,209	52,277	18,890	71,167	186,344	67,883	30,905
Third	165,843	78,493	23,941	102,434	274,694	87,052	36,204
Fourth	216,430	91,031	23,934	114,965	340,522	98,133	40,613
Fifth	324,733	83,055	31,778	114,834	452,375	129,511	46,674
Sixth	433,208	77,775	38,091	115,866	567,936	177,556	55,055
Seventh	601,655	54,764	51,386	106,150	737,955	224,060	67,368
Eighth	736,608	43,134	60,425	103,559	888,288	276,889	81,148
Ninth	941,073	24,784	81,583	106,368	1,124,079	325,574	99,339
Tenth	1,513,782	20,308	311,546	331,854	1,966,702	770,015	189,796
TOTALS	$5,150,811	$552,423	$685,386	$1,237,809	$6,721,741	$2,285,257	$674,363
Top 5%	$907,226	$7,740	$256,849	$264,589	$1,247,071	$557,801	$127,693
Top 1%	$258,579	$797	$160,403	$161,200	$445,545	$274,109	$56,632

Local Taxes Total	Total State Taxes			Total State and Local Taxes
	Total on Individuals	Total on Businesses	State Taxes Total	
$338,690	$189,691	$168,502	$358,193	$696,883
285,131	220,261	147,583	367,845	652,976
397,950	326,728	176,334	503,062	901,013
479,268	524,573	194,425	718,997	1,198,265
628,560	786,862	228,821	1,015,683	1,644,243
800,547	1,093,534	271,992	1,365,525	2,166,073
1,029,383	1,508,807	340,687	1,849,494	2,878,877
1,246,326	2,117,179	409,557	2,526,737	3,773,063
1,548,992	3,050,298	520,546	3,570,844	5,119,836
2,926,514	9,053,443	1,249,784	10,303,227	13,229,741
$9,681,361	$18,871,376	$3,708,231	$22,579,607	$32,260,968
$1,932,565	$6,869,079	$911,121	$7,780,200	$9,712,766
$776,286	$3,758,220	$466,772	$4,224,992	$5,001,278

[1] Includes seasonal recreational residential (cabins) and second homes.

[2] Includes taconite production tax and wheelage taxes.

Overall Effective Tax Rates

In a similar fashion as was done for taxes paid in 2016, effective tax rates by tax type for 2021 are reported in *Table 3-3*. The effective tax rate for all Minnesota state and local taxes combined is shown in the last column in the lower section of the table. For all households combined, the effective tax rate is 11.6 percent. Effective tax rates rise from 10.8 percent of income in the 4th decile to 12.0 percent in the 8th decile, but then fall to 11.8 percent in the 9th decile and 11.2 percent in the 10th decile. For the top 5 percent and the top 1 percent of households the effective tax rates are also 11.2 percent.

What changed between 2016 and 2021? The average tax rate falls by 0.6 percentage points (from 12.2 to 11.6 percent). It falls more than 0.6 percent in each of the first 7 deciles. Effective tax rates fall by less than 0.6 percent for deciles 8 through 10 and for the top 5 percent and top 1 percent.

The drop in the effective tax rate between the 9th and 10th deciles shrinks between 2016 and 2021 (from 0.7 percentage point to 0.6 percentage point). The drop between the 9th decile and the top 1 percent also rises from 0.4 percentage points to 0.6 percentage points. The effective tax rates in the 3rd, 4th, and 5th decile all remain below the average overall effective tax rate as was true in 2016 for the first time since 1994.

Table 3-3 2021 Population Deciles - Effective Tax Rates

Population Decile	Income Range	Number of Households	Household Income	State Income Taxes: Individual Income Tax	State Income Taxes: Corporate Franchise Tax	State Sales Tax: Purchases by Individuals	State Sales Tax: Purchases by Businesses	State Sales Tax: Sales Tax Total	Property Tax Refund	State Property Tax	State Excise Taxes & HIF	Other State Taxes: Taxes on Individuals	Other State Taxes: Taxes on Businesses
First	$14,528 & under	284,853	$2,523,878	- 1.2%	1.3%	6.0%	3.8%	9.8%	- 3.0%	0.8%	4.2%	1.7%	0.5%
Second	$14,529 - $23,941	284,853	5,472,390	- 0.6%	0.6%	3.5%	1.5%	5.0%	- 1.8%	0.3%	2.1%	1.0%	0.2%
Third	$23,942 - $33,681	284,853	8,182,088	0.4%	0.5%	2.7%	1.2%	3.9%	- 1.3%	0.2%	1.5%	0.8%	0.1%
Fourth	$33,682 - $44,730	284,853	11,144,059	1.7%	0.4%	2.2%	1.0%	3.2%	- 1.0%	0.2%	1.1%	0.8%	0.1%
Fifth	$44,731 - $57,679	284,853	14,497,042	2.7%	0.3%	2.0%	0.9%	2.8%	- 0.8%	0.2%	0.9%	0.8%	0.1%
Sixth	$57,680 - $74,178	284,853	18,653,963	3.2%	0.3%	1.8%	0.8%	2.6%	- 0.6%	0.2%	0.7%	0.7%	0.1%
Seventh	$74,179 - $96,071	284,853	24,120,111	3.7%	0.3%	1.7%	0.8%	2.5%	- 0.4%	0.2%	0.6%	0.7%	0.1%
Eighth	$96,072 - $127,270	284,853	31,563,708	4.2%	0.3%	1.6%	0.7%	2.3%	- 0.2%	0.2%	0.5%	0.7%	0.1%
Ninth	$127,271 - $185,600	284,853	43,329,920	4.7%	0.3%	1.4%	0.7%	2.1%	0.0%	0.2%	0.4%	0.6%	0.1%
Tenth	$185,601 & over	284,853	117,802,973	6.3%	0.2%	0.9%	0.6%	1.5%	0.0%	0.1%	0.2%	0.4%	0.1%
TOTALS		2,848,530	$277,290,131	4.6%	0.3%	1.4%	0.8%	2.2%	- 0.3%	0.2%	0.5%	0.6%	0.1%
Top 5%	Over $262,353	142,663	$86,867,502	6.7%	0.2%	0.8%	0.6%	1.4%	0.0%	0.1%	0.1%	0.4%	0.1%
Top 1%	Over $636,247	28,492	$44,537,708	7.4%	0.2%	0.6%	0.6%	1.2%	0.0%	0.2%	0.1%	0.4%	0.1%

Population Decile	Residential Local Property Taxes: Homeowners Gross	Residential Local Property Taxes: Renters Gross	Residential Local Property Taxes: Owners of Rental Prop.	Residential Local Property Taxes: Total on Rental Prop.	Residential Local Property Taxes: Residential Total [1]	Nonresidential Local Property Taxes [2]	Other Local Taxes
First	4.2%	1.1%	1.7%	2.8%	7.2%	5.1%	1.1%
Second	2.0%	1.0%	0.3%	1.3%	3.4%	1.2%	0.6%
Third	2.0%	1.0%	0.3%	1.3%	3.4%	1.1%	0.4%
Fourth	1.9%	0.8%	0.2%	1.0%	3.1%	0.9%	0.4%
Fifth	2.2%	0.6%	0.2%	0.8%	3.1%	0.9%	0.3%
Sixth	2.3%	0.4%	0.2%	0.6%	3.0%	1.0%	0.3%
Seventh	2.5%	0.2%	0.2%	0.4%	3.1%	0.9%	0.3%
Eighth	2.3%	0.1%	0.2%	0.3%	2.8%	0.9%	0.3%
Ninth	2.2%	0.1%	0.2%	0.2%	2.6%	0.8%	0.2%
Tenth	1.3%	0.0%	0.3%	0.3%	1.7%	0.7%	0.2%
TOTALS	1.9%	0.2%	0.2%	0.4%	2.4%	0.8%	0.2%
Top 5%	1.0%	0.0%	0.3%	0.3%	1.4%	0.6%	0.1%
Top 1%	0.6%	0.0%	0.4%	0.4%	1.0%	0.6%	0.1%

Population Decile	Local Taxes Total	Total State Taxes: Total on Individuals	Total State Taxes: Total on Businesses	Total State Taxes: State Taxes Total	Total State and Local Taxes
First	13.4%	7.5%	6.7%	14.2%	27.6%
Second	5.2%	4.0%	2.7%	6.7%	11.9%
Third	4.9%	4.0%	2.2%	6.1%	11.0%
Fourth	4.3%	4.7%	1.7%	6.5%	10.8%
Fifth	4.3%	5.4%	1.6%	7.0%	11.3%
Sixth	4.3%	5.9%	1.5%	7.3%	11.6%
Seventh	4.3%	6.3%	1.4%	7.7%	11.9%
Eighth	3.9%	6.7%	1.3%	8.0%	12.0%
Ninth	3.6%	7.0%	1.2%	8.2%	11.8%
Tenth	2.5%	7.7%	1.1%	8.7%	11.2%
TOTALS	3.5%	6.8%	1.3%	8.1%	11.6%
Top 5%	2.2%	7.9%	1.0%	9.0%	11.2%
Top 1%	1.7%	8.4%	1.0%	9.5%	11.2%

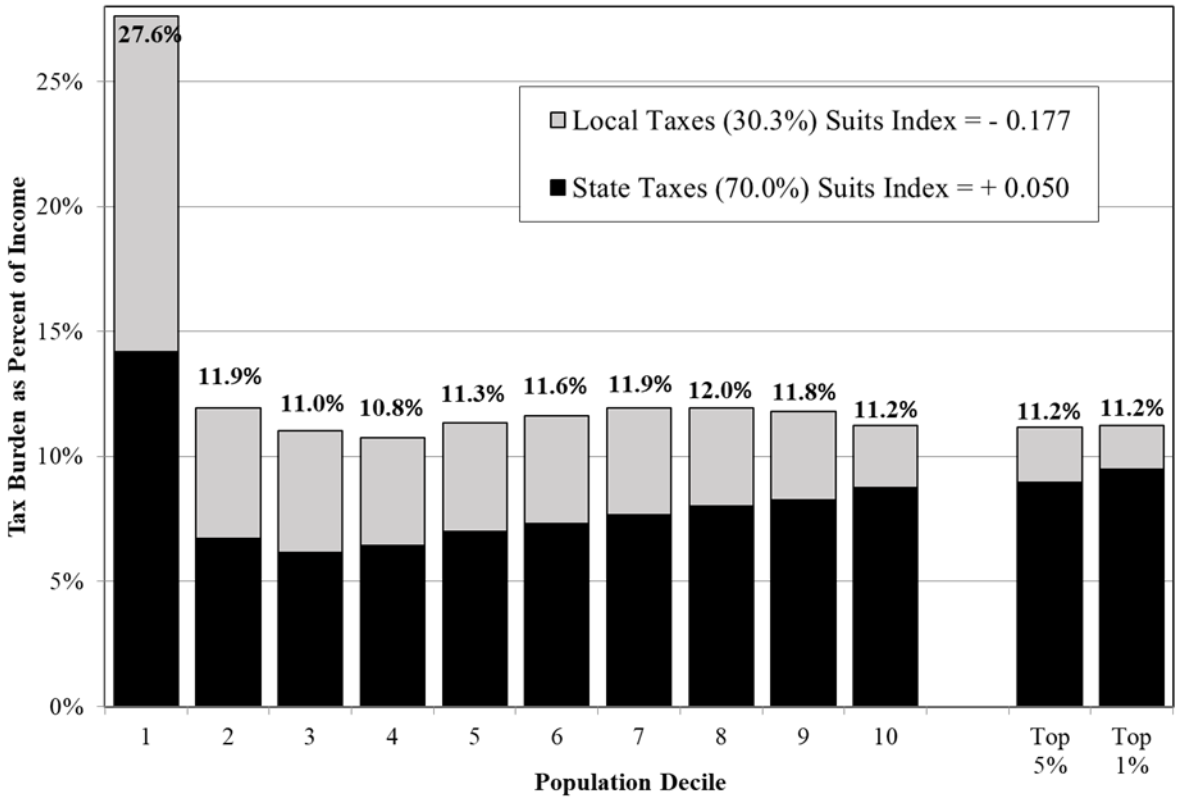
[1] Includes seasonal recreational residential (cabins) and second homes.

[2] Includes taconite production tax and wheelage taxes.

State Taxes Compared to Local Taxes

As shown in *Figure 3-2*, the distribution of the burden of state taxes differs greatly from that of local taxes. The effective state tax rate rises with income from the 3rd to 10th decile and rises further for the top 5 percent and top 1 percent. In contrast, the effective local tax rate falls steadily as income rises.

Figure 3-2
Effective Tax Rates by Population Decile
State Taxes Compared to Local Taxes



A tax is said to be regressive if effective tax rates fall with income. A regressive tax claims a smaller share of household income as income rises. If effective tax rates rise with income, a tax is said to be progressive. A progressive tax claims an increasing share of household income as income rises. If the effective tax rate remains constant as income rises, the tax is said to be proportional.

The Suits index is a useful summary measure of regressivity or progressivity. A regressive tax has a negative Suits index (between -1 and 0). A progressive tax has a positive Suits index (between 0 and +1). The more regressive or progressive, the further the Suits index will be from zero.

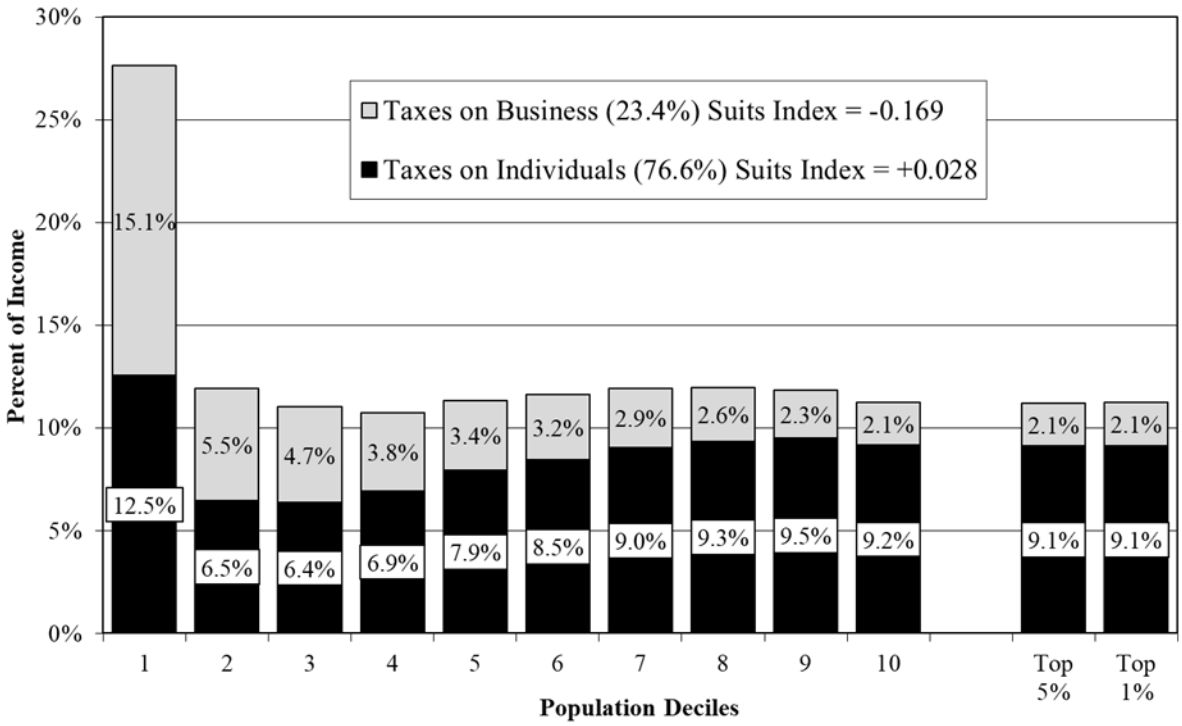
What changed between 2016 and 2021? In 2021, the Suits index for state taxes is +0.050, meaning that (as seen in *Figure 2-2* above) state taxes are progressive. In 2016, state taxes were less progressive, with a Suits index of +0.033. The Suits index for local taxes in 2021 is -0.177 (regressive), almost unchanged from 2016 (-0.178). When combined, the Suits index for all Minnesota state and local taxes in 2021 is -0.018. This is noticeably less regressive than in 2016 (Suits index of -0.026).

Business Taxes Compared to Taxes on Individuals

Figure 3-3 compares taxes on business with taxes paid by individuals. Taxes on business are regressive, with effective tax rates falling with income and a Suits index of -0.169. In contrast, taxes on individuals are progressive, with a Suits index of +0.028. For individual taxes, effective tax rates rise with income between the 3rd and 9th deciles before falling in the 10th. The effective tax rate for the top 5 percent and the top 1 percent are just slightly below that for the full 10th decile.

What changed between 2016 and 2021? In 2016, business taxes were more regressive (Suits of -0.175) and the business share was larger (23.9 percent). Taxes on individuals are more progressive in 2021, partly due to the sunset of the MinnesotaCare provider taxes.

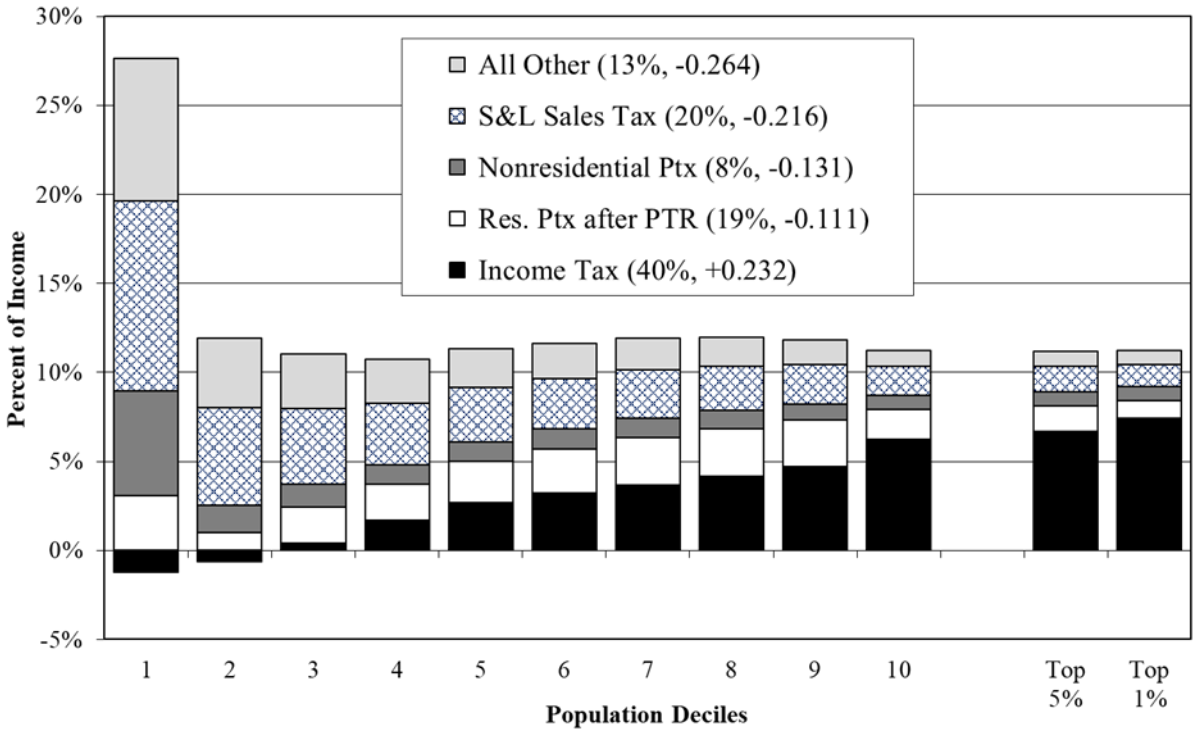
Figure 3-3
Effective Tax Rates by Population Decile
Business Taxes Compared to Taxes on Individuals



Summary of 2021 Tax Burden by Major Tax Type

Figure 3-4 summarizes how the 2021 tax burden of the major tax categories varies by population decile. The categories for this table combine both the individual and business components of these tax types. For example, the state sales tax total includes both the consumer and business portions (and includes the tax on motor vehicles). Residential property tax includes both homeowner and rental property taxes, along with cabins.

Figure 3-4
2021 Tax Incidence by Tax Type



Note: Numbers in parentheses show percent of total tax burden and the full-sample Suits index.

The 2021 effective tax rates by tax type are shown in *Table 3-4*. (These are the effective tax rates graphed in *Figure 3-4* above.) The patterns for each of the five tax types are discussed below.

Table 3-5 shows the percentage point changes in effective tax rates between 2016 and 2021, by tax type. The reasons for those changes are also discussed below.

Table 3-4
Effective Tax Rates by Tax Type (2021)

Population Decile	Personal Income Tax	Residential Property Taxes*	Other Property Taxes	State & Local Sales Taxes	All Other S&L Taxes
First	-1.2%	4.3%	5.9%	10.7%	8.0%
Second	-0.6%	1.7%	1.5%	5.5%	3.9%
Third	0.4%	2.0%	1.3%	4.3%	3.0%
Fourth	1.7%	2.0%	1.1%	3.5%	2.5%
Fifth	2.7%	2.3%	1.1%	3.1%	2.2%
Sixth	3.2%	2.5%	1.1%	2.8%	2.0%
Seventh	3.7%	2.7%	1.1%	2.7%	1.8%
Eighth	4.2%	2.7%	1.0%	2.5%	1.6%
Ninth	4.7%	2.6%	0.9%	2.2%	1.4%
Tenth	6.3%	1.7%	0.8%	1.6%	0.9%
Total	4.6%	2.2%	1.0%	2.4%	1.5%
Top 5%	6.7%	1.4%	0.8%	1.5%	0.8%
Top 1%	7.4%	1.0%	0.8%	1.3%	0.8%
Share of Total Tax Burden	39.6%	18.6%	8.4%	20.4%	13.1%
Suits Index	+0.232	-0.111	-0.131	-0.216	-0.264

*Residential property taxes are net of property tax refunds.

Table 3-5
Change in Effective Tax Rates Between 2016 and 2021

Population Decile	Personal Income Tax	Residential Property Taxes*	Other Property Taxes	State & Local Sales Taxes	All Other S&L Taxes
First	-0.1%	-0.1%	-1.3%	-0.5%	-2.4%
Second	0.2%	0.1%	-0.1%	-0.3%	-1.4%
Third	0.4%	0.3%	-0.3%	-0.2%	-1.1%
Fourth	0.3%	0.2%	-0.2%	-0.2%	-0.9%
Fifth	0.2%	0.2%	-0.1%	-0.1%	-0.8%
Sixth	0.0%	0.2%	-0.2%	0.0%	-0.7%
Seventh	0.0%	0.2%	-0.2%	0.0%	-0.6%
Eighth	0.0%	0.2%	-0.1%	0.0%	-0.6%
Ninth	0.0%	0.1%	-0.1%	0.0%	-0.5%
Tenth	-0.1%	0.1%	-0.1%	0.0%	-0.3%
Total	0.0%	0.1%	-0.1%	0.0%	-0.5%
Top 5%	-0.1%	0.1%	-0.1%	0.0%	-0.2%
Top 1%	-0.3%	0.0%	-0.1%	0.0%	-0.2%

Calculated as the difference between the unrounded percentages in Tables 3-4 and 2-4.
*Residential property taxes are net of property tax refunds.

Individual Income Tax

The individual income tax is expected to account for 39.6 percent of the total state and local tax burden in 2021, up from 37.8 percent in 2016. Because of its graduated tax rate structure and allowance of personal exemptions and deductions, the individual income tax is, by design, progressive. As seen in *Table 3-4*, effective tax rates rose significantly with increases in household income. At the low end, the effective tax rate for the income tax was negative for the first two deciles and close to zero in the third decile, showing the impact of three refundable low-income credits (which can more than offset any income tax liabilities).[24] Effective tax rates rise steadily from 1.7 percent of income for the fourth decile to 6.3 percent for the tenth decile. The top 5 percent and 1 percent of households have even higher effective tax rates, at 6.7 and 7.4 percent respectively. The Suits index of +0.232 reflects its considerable progressivity.

Figure 3-4 clearly demonstrates the importance of the progressive income tax in offsetting most of the regressivity of other taxes.

What changed between 2016 and 2021? Income tax burdens are projected to increase by 25 percent between 2016 and 2021, almost exactly matching the growth in income. As a result, the overall effective tax rate remains the same as it was in 2016 (at 4.6 percent of income). Effective tax rates are expected to rise in the 2nd through 4th deciles and remain constant in the 5th through 9th deciles. In contrast, the effective tax rate falls in the 10th decile (and for the top 5 percent and top 1 percent). As a result, the income tax is projected to become less progressive in 2021, the Suits index falling from +0.247 to +0.232.

These changes in effective income tax rates across deciles are not the result of changes in tax law. The law changes enacted in 2017 – by themselves – make the income tax more progressive. The changes instead reflect the pattern of economic growth in the November 2018 Minnesota economic forecast. Wage growth for income tax filers is projected to exceed inflation by 6.4 percent. This helps explain the growth in effective income tax rates in the lower deciles. Income tax brackets are adjusted for inflation, but if income rises faster than inflation, effective tax rates will rise even if tax rates remain unchanged.

The average projected income growth in the top three deciles is lower than in any of the first seven deciles. Although the forecast for capital gains, dividends, and interest income is very strong, growth rates for other forms of business income are much lower than the growth rate for wages. The high growth rate for U.S. bond interest (which the state cannot tax) may also contribute to the fall in effective income tax rates in the top decile.

Residential Property Taxes (After PTR)

Residential property taxes include the tax on owned homes and rental property. The burden shown here includes the impact of state property tax refunds for both homeowners and renters. The property tax refunds ($772 million in 2021) offset 11.4 percent of the residential property tax burden (down from 12.8 percent in 2016). The refunds offset a much higher portion in the lowest five deciles. Residential property taxes (after PTR)

[24] The impact of these refundable credits on the distribution of the overall 2016 tax burden is shown in *Chapter 4, Section C.*

account for 18.6 percent of the total state and local tax burden, up from 16.6 percent in 2016.

In 2021, effective tax rates rise from 1.7 percent of income in the 2nd decile to 2.7 percent of income in the 7th decile before falling to 2.6 percent in the 9th and 1.7 percent in the 10th decile. The Suits index of -0.111 (regressive) shows that the impact of the sharp drop in the 10th decile far outweighs the increasing effective tax rates over the lower deciles.

Although residential property tax burdens (after PTR) are regressive, they are noticeably less regressive than either sales taxes or "all other taxes." This is mostly due to the impact of property tax refunds. In their absence, the Suits index for residential property taxes would be -0.185 – much closer to that of state and local sales tax (-0.216).

What changed between 2016 and 2021? Residential property taxes before PTR are projected to rise faster than income (by 31% compared to 25%). Property tax refunds growth (at 17%) is slower. As a result, the overall effective tax rate rises by 0.1 percent of income. The effective tax rate rises by 0.3 percent of income in the 3rd decile and by 0.2 percent of income in the 4th through 8th deciles. The Suits index shows increased regressivity, falling from -0.102 to -0.111.

The pattern is stronger for renters than for homeowners. Rental property taxes rise faster (by 41% compared to 31%), and renter refunds rise more slowly (by 7% compared to 22%).

Nonresidential Property Taxes

These include commercial and industrial taxes along with taxes on utilities and farm property. Like other business taxes, the incidence of these taxes depends on the extent to which the tax burden is borne by property owners rather than shifted to others through higher prices or lower wages. Incidence models estimate these taxes to be regressive, but less so than sales taxes. Average effective tax rates generally fall between 2016 and 2021. Nonresidential property tax burdens are expected to rise less than half as fast as income.

State and Local Sales Taxes

In agreement with other incidence studies, this analysis finds the sales tax to be regressive. Higher income households spend a smaller portion of their income on items subject to the sales tax. This is partly due to their higher savings rates and partly to the mix of consumer goods and services they buy. Hence, tax burdens as a proportion of income tend to decline as one moves up the income scale.

For 2021, the effective state and local sales tax rate falls from 5.5 percent in the 2nd decile to 1.6 percent in the 10th decile. Sales taxes overall are much more regressive than property taxes (after PTR), with a Suits index of -0.216.

What changed between 2016 and 2021? The state general sales tax burden is expected to grow by 22 percent between 2016 and 2021, less than the 25 percent increase in income. The sales tax on motor vehicles is expected to grow by 21 percent. Local sales taxes growth is projected at 58 percent. The overall effective tax rate remains unchanged, though it falls in the lower deciles. The sales tax share of the total burden rises from 19.6 percent to 20.4 percent.

Other Taxes

The "all other taxes" category in *Table 3-4* includes one progressive tax (the estate tax) and many regressive taxes, including excise taxes on motor fuels, tobacco, and alcohol, the motor vehicle registration tax, solid waste management taxes, mortgage and deed taxes, insurance premiums taxes, and gambling taxes. These assorted taxes account for 13.1 percent of Minnesota's state and local tax burden in 2021, and their combined impact is more regressive than sales taxes (a Suits index of -0.264). Effective tax rates fall from 3.9 percent in the 2nd decile to 0.9 percent in the 10th decile.

What changed between 2016 and 2021? The other taxes share of the tax burden fell from 16.8 percent to 13.1 percent. This is due largely to the sunset of the MinnesotaCare provider taxes under current law. If the tax had continued at the 2% tax rate in effect in 2016, it would have raised an estimated $763 million in 2021 and increased the Minnesota taxpayer burden by $699 million. Ending this tax accounts for half of the drop in this category's share of the tax burden.

Growth rates for the other taxes in this category are low. Excluding the MinnesotaCare taxes, their total grew by only 6.5 percent, only about half of forecast inflation (11.8%). Excise taxes grow slowly (2% for motor fuels, -4% for tobacco, and 9% for alcohol), as expected, because none of their per-unit tax rates are indexed for inflation. The revenue drop for the estate tax (down 12%) reflects the phased-in increase in the exemption level. Corporate tax growth is projected to be zero.

Summary of the Impact of Law Changes Taking Effect Between 2016 and 2021

Significant law changes enacted in 2017 made the overall tax system less regressive.

- Income tax changes included a subtraction for some federally-taxable Social Security income, tax breaks for many with student loan interest or contributions to college savings plans, and expansion of the child and dependent care and working family credits. By themselves, these changes reduced the growth in income tax revenue between 2016 and 2021, but made the income tax more progressive.
- Property tax changes included the exclusion of the first $100,000 of value of commercial and industrial property from the state property tax levy. Indexed growth in the state levy was also repealed. This reduced the growth in property tax on commercial and industrial property. A new school bond agricultural credit reduced farm business taxes, helping explain negative growth.
- The estate tax exclusion was increased from $2 million to $3 million. This accounts for the drop in estate tax revenue between 2016 and 2021. Although this increased the Suits index for the estate tax (from +0.839 to +0.847), it reduced the size of this very progressive tax and made the overall tax system more regressive.

The most significant law change (enacted in 2011) was the sunset of the MinnesotaCare provider taxes effective December 31, 2019. This reduced projected 2021 tax revenues by $763 million and the tax burden on Minnesota residents by $699 million. Without this law change, the overall tax rate would have fallen from 12.2 percent in 2016 to 11.9 percent in 2021, rather than falling to 11.6 percent. This law change explains half of the drop in the overall effective tax rate. It also explains almost all of the reduction in the Suits index. Without the sunset of this tax, the Suits index would have risen (toward zero) from -0.026 to -0.025 rather than to -0.018.

Two of the fastest growing taxes are local sales taxes (up by 58%) and local wheelage taxes (up 33%). The number of counties with a local sales tax for transportation rose from 22 in 2016 to 41 in 2018 and is likely to increase further. The number of counties with wheelage taxes has also grown (to 52 in 2019), and the maximum rate per vehicle doubled from $10 to $20 in 2018.

Economic growth also modifies the distribution of the tax burden. Income grows at different rates in different deciles, and shares of the tax burden will change as shares of income change. The relative importance of tax law changes and economic changes will vary through time.

Minnesota's Diversified Tax Portfolio in 2021

Table 3-6 shows how revenue is expected to grow between 2016 and 2021 for each of the components of Minnesota's tax portfolio. The varying growth rates change the mix of taxes. Income tax revenue growth, at 25%, exceeds that of the general sales tax (22%). Property tax revenue growth is projected at 26%, but the growth rate for residential property taxes (31%) far exceeds that for nonresidential property taxes (14%). Homeowner property tax refunds are projected to grow more slowly than homestead property taxes (22% compared to 31%). Growth in rental property taxes (at 41%) far exceeds growth in renter property tax refunds (7%).

Table 3-6
Projected Growth in Tax Collections
Between 2016 and 2021 by Tax Type*

5-Year Growth	Taxes on Consumption	Taxes on Property	Taxes on Income
Negative	MinnesotaCare** Cigarette & Tobacco		Estate***
0% to 5%	Motor Fuels		Corporate
5% to 10%	Alcohol	Renter PTR	
11% to 15%		Nonresidential Property Motor Vehicle Reg.	
16% to 20%	Solid Waste	2nd Homes & Cabins Mortgage & Deed	
21% to 25%	State General Sales Motor Vehicle Sales	Homeowner PTR	Income
26% to 30%		Homesteads Mortgage & Deed	
31% to 35%		Wheelage Taxes	
36% to 40%			
Over 40%	Gambling Local Sales Taxes	Rental Property	

*Growth in collections for the total state and local tax portfolio: 19.3%. Income growth: 25.4%.
**Minnesota Care sunset under current law, so revenue falls to zero.
***Growth rate was affected by phase-in of higher exemption levels.

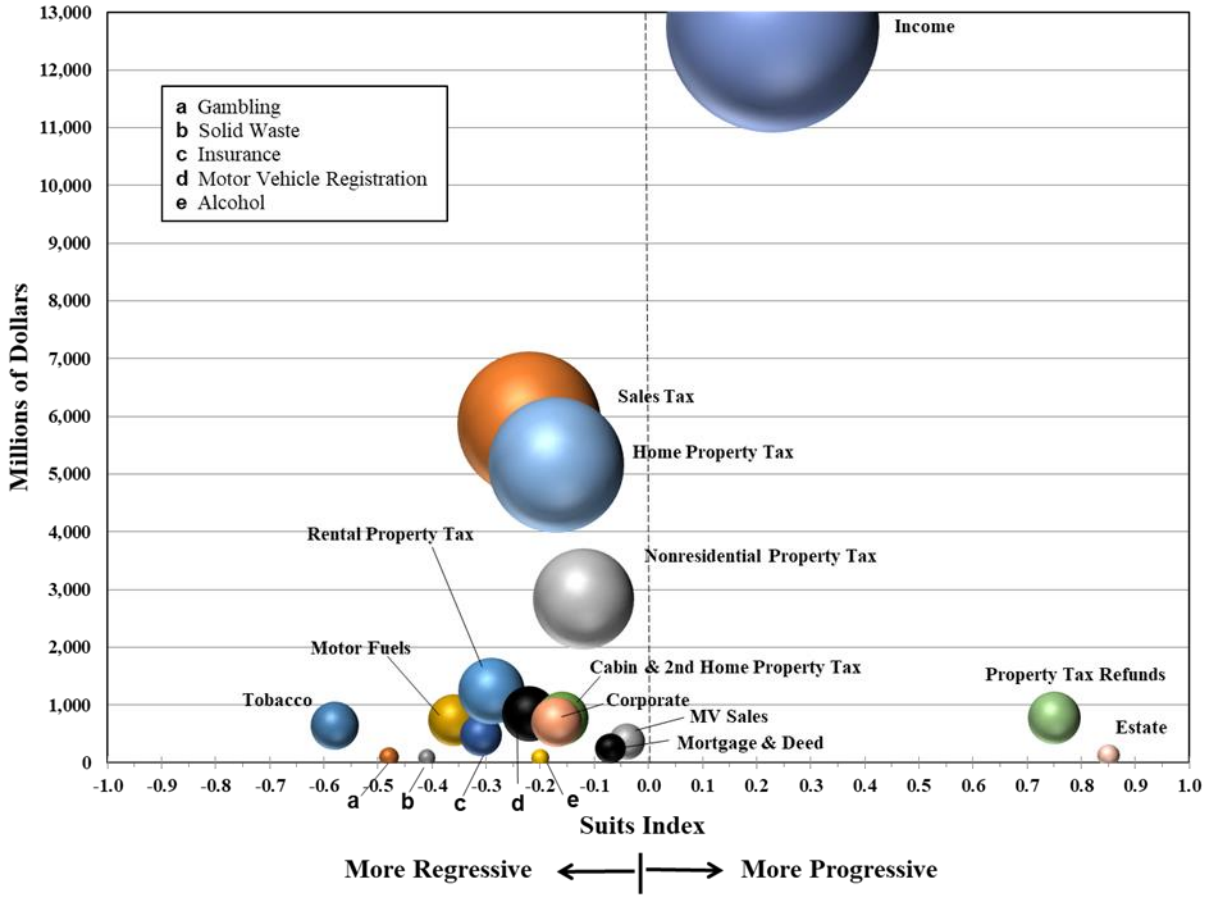
Taxes with high expected growth rates include gambling taxes (up 67%), rental property (41%), and local sales taxes (58%). Taxes with very low growth include excise taxes (tobacco, motor fuels, and alcohol), the corporate tax, and the estate tax (due to enacted cuts).

Different growth rates change the mix of taxes in Minnesota's tax portfolio. *Figure 3-5* illustrates the magnitude of the tax burden and Suits index for components of Minnesota's state and local tax system in 2021. Due to expected revenue growth, most of the circles are larger and have moved higher in *Figure 3-5* than they were in *Figure 2-5* (for 2016). The vertical dollar scale is unchanged, so growth in the income tax burden shifts its circle partly off the top of the chart.

Between 2016 and 2021, some circles have moved to the left (more regressive/less progressive) and some have moved to the right (less regressive/more progressive). One change – for the estate tax – reflects a change in law. The increased estate tax exemption level caused revenue to fall, but made the tax more progressive. Shifts of other circles to the right or left are primarily driven by changes in the distribution of income.

Dollars of revenue from the two progressive taxes plus property tax refunds are projected to grow by 24 percent. Growth for the regressive taxes is much lower, at 16 percent – partly because the MinnesotaCare tax sunsets. As a result, the total state and local tax portfolio becomes less regressive. The overall Suits index falls from -0.026 to -0.018.

Figure 3-5
Dollars of Tax Burden and Suits Index
By Type of Tax (2021)



Chapter 4: Additional Results

This chapter provides additional analysis of the 2016 results.

- Section A reports the 2016 results by income deciles rather than population deciles. The households in each income decile receive 10 percent of total household income. This provides added detail for high-income households (but less detail for lower-income households).
- Section B explains why the study disregards the "federal tax offset" in calculating the burden of state and local taxes. For those who itemize deductions, an increase in their state income tax, homestead property tax, or motor vehicle registration tax may reduce their federal income tax liability. Taking this into account would reduce the estimated tax rates reported in this study. For informational purposes, effective tax rates and Suits indexes adjusted for the federal tax offset are included in this section.
- Section C demonstrates the significant impact that refundable income tax credits and property tax refunds have on the distribution of the overall tax burden. Effective tax rates and Suits indexes are calculated both with and without these provisions.
- Section D explains why this study's estimates of the incidence of *existing* business taxes should not be used to estimate the incidence of a *change* in Minnesota taxes. The difference between "average incidence" (for existing taxes) and "incremental incidence" (for a change in taxes) is illustrated for the corporate income tax, rental property tax, and industrial property tax.
- Section E presents results from a 50-state study of overall tax incidence. Though the results are limited to the population of non-seniors, they help provide context for the results of Minnesota's tax incidence studies.

Section A
An Alternative Presentation: Income Deciles[25]

The results presented elsewhere in this study have been summarized for deciles of households. Each population decile represented 10 percent of the population of households in the study. This section provides an alternative way to summarize the distribution of the 2016 and 2021 tax burdens. *Tables 4-1* through *4-4* are organized by income deciles rather than population deciles. To derive income deciles, households are ranked from lowest to highest income and divided into groups representing equal amounts of total income.

The distribution of tax by income deciles in these tables can be compared to the distribution by population deciles in *Tables 2-2, 2-3, 3-2,* and *3-3.* In both distributions, households are ranked by income level. In 2016, for example, each population decile of 271,690 households includes 10 percent of all households; each income decile with $22.1 billion of income includes 10 percent of total income. Because of their relatively low incomes, it takes 1,100,814 households in the first income decile to account for 10 percent of total income; in contrast, there are only 8,321 high-income households in the tenth decile, who also received 10 percent of total income.

Again using the year 2016 for illustration, the first income decile includes 40.5 percent of all households. Their share of total taxes (11.4 percent) exceeded their share of household income (10 percent). First income decile households (with 10 percent of total income) paid less than 1 percent of the individual income tax, but paid 21 percent of the consumer sales tax, 34 percent of consumer excise taxes, and 20 percent of all business taxes borne by Minnesota residents.

The tenth income decile includes only 0.3 percent of all households. Their share of total taxes (10.0 percent) equals their share of household income (10 percent). They paid 18.0 percent of the individual income tax, but paid 3.3 percent of the consumer sales tax, 0.7 percent of consumer excise taxes, and 7.9 percent of business taxes borne by Minnesota residents.

Tables by income decile provide more detail about the tax burdens of higher-income households. In contrast, tables by population decile provide more detail about tax burdens for households at the middle of the income distribution or below.

[25] Unlike some earlier studies, *Tables 4-1* through *4-4* do not report the results separately for those receiving the top 1 percent of income. Because less than 25 households would be included in that group, reporting such information separately would raise disclosure issues.

Table 4-1 2016 Income Deciles - Amounts ($ Thousands)

Income Decile	Income Range	Number of Households	Household Income	State Income Taxes		State Sales Tax			Property Tax Refund	State Property Tax	State Excise Taxes	Other State Taxes	
				Individual Income Tax	Corporate Franchise Tax	Purchases by Individuals	Purchases by Businesses	Sales Tax Total				Taxes on Individuals	Taxes on Businesses
First	$37,585 & under	1,100,814	$22,113,924	$71,418	$148,596	$699,920	$335,725	$1,035,645	-$316,247	$81,523	$476,956	$325,881	$40,660
Second	$37,586 - $58,295	468,103	22,113,924	626,881	90,926	434,653	197,327	631,980	-158,780	50,372	234,517	255,144	23,746
Third	$58,296 - $79,562	323,279	22,113,924	800,587	82,681	384,671	180,182	564,853	-97,953	48,349	179,004	238,912	22,492
Fourth	$79,593 - $102,858	244,213	22,113,924	912,868	76,733	359,603	164,755	524,357	-57,538	46,116	149,790	227,025	20,666
Fifth	$102,859 - $129,945	192,626	22,113,924	997,191	70,678	329,480	149,871	479,351	-21,039	44,667	126,042	205,857	19,346
Sixth	$129,946 - $166,910	150,791	22,113,924	1,066,798	67,795	299,630	144,928	444,557	-2,927	43,955	104,460	183,802	17,993
Seventh	$166,911 - $232,821	114,113	22,113,924	1,152,655	63,240	261,469	135,675	397,145	-1,569	41,446	81,813	150,868	18,182
Eighth	$232,822 - $384,891	75,769	22,113,924	1,250,899	59,006	217,433	129,829	347,262	-1,310	40,239	58,586	115,493	17,193
Ninth	$384,892 - $977,384	38,870	22,113,924	1,476,300	55,434	170,293	129,102	299,395	-688	41,545	36,143	79,233	17,905
Tenth	$977,385 & over	8,321	22,113,924	1,834,822	52,399	106,038	139,695	245,733	-28	47,469	13,780	148,422	20,801
TOTALS		2,716,900	$221,139,236	$10,190,419	$767,488	$3,263,189	$1,707,088	$4,970,277	-$658,080	$485,680	$1,461,093	$1,930,636	$218,983
Top 5%	Over $3,229,417	1,265	$11,067,593	$976,568	$24,121	$45,081	$66,146	$111,226	-$4	$23,163	$4,271	$94,862	$10,051

Income Decile	Residential Local Property Taxes					Nonresidential Local Property Taxes	Other Local Taxes[2]
	Homeowners Gross	Renters Gross	Owners of Rental Prop.	Total on Rental Prop.	Residential Total[1]		
First	$469,649	$177,045	$81,948	$258,993	$751,160	$358,199	$96,203
Second	479,131	101,381	41,975	143,356	644,468	231,320	59,733
Third	511,963	49,893	42,445	92,338	631,585	234,919	53,099
Fourth	501,369	27,888	37,522	65,410	602,116	218,894	49,208
Fifth	467,399	17,437	34,253	51,691	560,858	212,417	44,521
Sixth	446,201	7,471	36,841	44,311	530,540	141,970	41,096
Seventh	414,704	7,333	36,268	43,601	491,762	192,130	36,983
Eighth	336,935	3,486	42,272	45,758	410,174	141,691	31,919
Ninth	238,592	996	53,060	54,056	313,051	140,910	27,470
Tenth	79,652	162	81,121	81,283	170,489	147,603	21,978
TOTALS	$3,945,595	$393,092	$487,705	$880,797	$5,106,203	$2,020,051	$462,211
Top 5%	$17,826	$14	$40,522	$40,536	$60,884	$73,020	$10,083

Local Taxes Total	Total State Taxes			Total State and Local Taxes
	Total on Individuals	Total on Businesses	State Taxes Total	
$1,205,562	$1,224,004	$640,428	$1,864,432	$3,069,994
935,521	1,372,508	382,278	1,754,786	2,690,306
919,603	1,488,685	350,239	1,838,923	2,758,526
870,218	1,577,586	322,430	1,900,016	2,770,235
817,796	1,626,466	295,626	1,922,093	2,739,888
713,606	1,641,409	285,025	1,926,434	2,640,040
720,875	1,635,252	268,528	1,903,780	2,624,655
583,783	1,631,849	255,518	1,887,368	2,471,151
481,431	1,753,819	251,447	2,005,266	2,486,697
340,070	2,098,661	264,737	2,363,398	2,703,469
$7,588,465	$16,050,239	$3,316,257	$19,366,496	$26,954,961
$143,987	$1,119,247	$125,011	$1,244,258	$1,388,245

[1] Includes seasonal recreational residential (cabins) and second homes.

[2] Includes taconite production tax and wheelage taxes.

Table 4-2 2016 Income Deciles - Effective Tax Rates

Income Decile	Income Range	Number of Households	Household Income	State Income Taxes		State Sales Tax			Property Tax Refund	State Property Tax	State Excise Taxes	Other State Taxes	
				Individual Income Tax	Corporate Franchise Tax	Purchases by Individuals	Purchases by Businesses	Sales Tax Total				Taxes on Individuals	Taxes on Businesses
First	$37,585 & under	1,100,814	$22,113,924	0.3%	0.7%	3.2%	1.5%	4.7%	- 1.4%	0.4%	2.2%	1.5%	0.2%
Second	$37,586 - $58,295	468,103	22,113,924	2.8%	0.4%	2.0%	0.9%	2.9%	- 0.7%	0.2%	1.1%	1.2%	0.1%
Third	$58,296 - $79,562	323,279	22,113,924	3.6%	0.4%	1.7%	0.8%	2.6%	- 0.4%	0.2%	0.8%	1.1%	0.1%
Fourth	$79,593 - $102,858	244,213	22,113,924	4.1%	0.3%	1.6%	0.7%	2.4%	- 0.3%	0.2%	0.7%	1.0%	0.1%
Fifth	$102,859 - $129,945	192,626	22,113,924	4.5%	0.3%	1.5%	0.7%	2.2%	- 0.1%	0.2%	0.6%	0.9%	0.1%
Sixth	$129,946 - $166,910	150,791	22,113,924	4.8%	0.3%	1.4%	0.7%	2.0%	0.0%	0.2%	0.5%	0.8%	0.1%
Seventh	$166,911 - $232,821	114,113	22,113,924	5.2%	0.3%	1.2%	0.6%	1.8%	0.0%	0.2%	0.4%	0.7%	0.1%
Eighth	$232,822 - $384,891	75,769	22,113,924	5.7%	0.3%	1.0%	0.6%	1.6%	0.0%	0.2%	0.3%	0.5%	0.1%
Ninth	$384,892 - $977,384	38,870	22,113,924	6.7%	0.3%	0.8%	0.6%	1.4%	0.0%	0.2%	0.2%	0.4%	0.1%
Tenth	$977,385 & over	8,321	22,113,924	8.3%	0.2%	0.5%	0.6%	1.1%	0.0%	0.2%	0.1%	0.7%	0.1%
TOTALS		2,716,900	$221,139,236	4.6%	0.3%	1.5%	0.8%	2.2%	- 0.3%	0.2%	0.7%	0.9%	0.1%
Top 5%	Over $3,229,417	1,265	$11,067,593	8.8%	0.2%	0.4%	0.6%	1.0%	0.0%	0.2%	0.0%	0.9%	0.1%

Income Decile	Residential Local Property Taxes					Nonresidential Local Property Taxes	Other Local Taxes[2]
	Homeowners Gross	Renters Gross	Owners of Rental Prop.	Total on Rental Prop.	Residential Total[1]		
First	2.1%	0.8%	0.4%	1.2%	3.4%	1.6%	0.4%
Second	2.2%	0.5%	0.2%	0.6%	2.9%	1.0%	0.3%
Third	2.3%	0.2%	0.2%	0.4%	2.9%	1.1%	0.2%
Fourth	2.3%	0.1%	0.2%	0.3%	2.7%	1.0%	0.2%
Fifth	2.1%	0.1%	0.2%	0.2%	2.5%	1.0%	0.2%
Sixth	2.0%	0.0%	0.2%	0.2%	2.4%	0.6%	0.2%
Seventh	1.9%	0.0%	0.2%	0.2%	2.2%	0.9%	0.2%
Eighth	1.5%	0.0%	0.2%	0.2%	1.9%	0.6%	0.1%
Ninth	1.1%	0.0%	0.2%	0.2%	1.4%	0.6%	0.1%
Tenth	0.4%	0.0%	0.4%	0.4%	0.8%	0.7%	0.1%
TOTALS	1.8%	0.2%	0.2%	0.4%	2.3%	0.9%	0.2%
Top 5%	0.2%	0.0%	0.4%	0.4%	0.6%	0.7%	0.1%

Local Taxes Total	Total State Taxes			Total State and Local Taxes
	Total on Individuals	Total on Businesses	State Taxes Total	
5.5%	5.5%	2.9%	8.4%	13.9%
4.2%	6.2%	1.7%	7.9%	12.2%
4.2%	6.7%	1.6%	8.3%	12.5%
3.9%	7.1%	1.5%	8.6%	12.5%
3.7%	7.4%	1.3%	8.7%	12.4%
3.2%	7.4%	1.3%	8.7%	11.9%
3.3%	7.4%	1.2%	8.6%	11.9%
2.6%	7.4%	1.2%	8.5%	11.2%
2.2%	7.9%	1.1%	9.1%	11.2%
1.5%	9.5%	1.2%	10.7%	12.2%
3.4%	7.3%	1.5%	8.8%	12.2%
1.3%	10.1%	1.1%	11.2%	12.5%

[1] Includes seasonal recreational residential (cabins) and second homes.

[2] Includes taconite production tax and wheelage taxes.

Table 4-3 2021 Income Deciles - Amounts ($ Thousands)

Income Decile	Income Range	Number of Households	Household Income	State Income Taxes		State Sales Tax			Property Tax Refund	State Property Tax	State Excise Taxes	Other State Taxes	
				Individual Income Tax	Corporate Franchise Tax	Purchases by Individuals	Purchases by Businesses	Sales Tax Total				Taxes on Individuals	Taxes on Businesses
First	$44,097 and under	1,148,464	$27,729,013	$161,413	$143,773	$823,413	$394,959	$1,218,371	-$397,059	$75,455	$473,367	$254,044	$46,186
Second	$45,098 - $69,545	490,777	27,729,013	809,891	89,988	521,239	238,083	759,321	-193,530	48,074	232,500	206,748	27,548
Third	$69,546 - $94,725	339,987	27,729,013	1,008,603	83,188	472,892	220,373	693,265	-116,698	46,372	178,817	194,889	26,078
Fourth	$94,726 - $122,097	257,497	27,729,013	1,144,507	77,181	441,326	201,933	643,259	-58,559	44,601	150,063	183,500	24,392
Fifth	$122,098 - $154,233	203,659	27,729,013	1,258,287	72,021	405,091	186,946	592,037	-6,055	43,852	124,758	165,733	22,651
Sixth	$154,234 - $198,072	159,197	27,729,013	1,345,430	69,017	369,143	179,831	548,974	0	42,901	104,257	148,821	21,047
Seventh	$198,073 - $276,694	119,969	27,729,013	1,443,227	64,401	322,336	168,329	490,665	0	40,457	81,492	124,607	20,623
Eighth	$276.695 - $460,094	79,940	27,729,013	1,579,996	59,961	270,674	161,149	431,823	0	39,078	59,023	100,384	20,926
Ninth	$460,095 - $1,199,244	40,655	27,729,013	1,820,622	56,618	213,621	161,032	374,653	0	40,436	36,750	71,976	20,965
Tenth	$1,199,245 & over	8,385	27,729,013	2,195,162	52,093	136,702	168,922	305,625	0	44,366	14,207	132,214	23,978
TOTALS		2,848,530	$277,290,131	$12,767,138	$768,240	$3,976,437	$2,081,558	$6,057,994	-$771,900	$465,591	$1,455,234	$1,582,916	$254,394
Top 5%	Over $4,098,922	1,218	$13,876,955	$1,158,713	$23,349	$59,272	$77,632	$136,904	$0	$21,035	$4,467	$89,500	$11,243

Income Decile	Residential Local Property Taxes					Nonresidential Local Property Taxes	Other Local Taxes[2]
	Homeowners Gross	Renters Gross	Owners of Rental Prop.	Total on Rental Prop.	Residential Total [1]		
First	$609,564	$250,875	$111,430	$362,305	$997,747	$385,237	$136,369
Second	633,056	141,759	59,454	201,213	859,943	258,808	85,965
Third	683,705	68,481	58,449	126,930	844,700	259,624	77,935
Fourth	650,711	40,127	52,640	92,767	784,676	256,319	72,171
Fifth	616,651	23,009	50,082	73,092	739,108	231,367	65,711
Sixth	574,584	11,643	52,340	63,983	685,049	166,315	60,811
Seventh	545,737	9,972	51,399	61,370	647,921	193,703	54,621
Eighth	432,806	4,886	60,725	65,611	531,775	194,106	47,294
Ninth	306,124	1,455	76,274	77,729	408,759	163,273	40,996
Tenth	97,874	216	112,592	112,808	222,062	176,505	32,492
TOTALS	$5,150,811	$552,423	$685,386	$1,237,809	$6,721,741	$2,285,257	$674,363
Top 5%	$21,003	$23	$54,236	$54,259	$78,208	$85,155	$14,734

Income Decile	Local Taxes Total	Total State Taxes			Total State and Local Taxes
		Total on Individuals	Total on Businesses	State Taxes Total	
First	$1,519,353	$1,282,110	$693,440	$1,975,550	$3,494,904
Second	1,204,715	1,557,104	423,437	1,980,541	3,185,256
Third	1,182,259	1,721,574	392,940	2,114,515	3,296,774
Fourth	1,113,166	1,846,468	362,477	2,208,944	3,322,111
Fifth	1,036,186	1,936,395	336,889	2,273,285	3,309,470
Sixth	912,175	1,956,891	323,556	2,280,447	3,192,622
Seventh	896,245	1,961,287	304,185	2,265,472	3,161,716
Eighth	773,175	2,000,530	290,660	2,291,191	3,064,365
Ninth	613,028	2,135,227	286,792	2,422,018	3,035,047
Tenth	431,059	2,473,789	293,855	2,767,644	3,198,703
TOTALS	$9,681,361	$18,871,376	$3,708,231	$22,579,607	$32,260,968
Top 5%	$178,096	$1,310,395	$134,815	$1,445,210	$1,623,306

[1] Includes seasonal recreational residential (cabins) and 2nd homes.

[2] Includes taconite production tax

Table 4-4 2021 Income Deciles - Effective Tax Rates

Income Decile	Income Range	Number of Households	Household Income	State Income Taxes		State Sales Tax			Property Tax Refund	State Property Tax	State Excise Taxes	Other State Taxes	
				Individual Income Tax	Corporate Franchise Tax	Purchases by Individuals	Purchases by Businesses	Sales Tax Total				Taxes on Individuals	Taxes on Businesses
First	$44,097 and under	1,148,464	$27,729,013	0.6%	0.5%	3.0%	1.4%	4.4%	- 1.4%	0.3%	1.7%	0.9%	0.2%
Second	$45,098 - $69,545	490,777	27,729,013	2.9%	0.3%	1.9%	0.9%	2.7%	- 0.7%	0.2%	0.8%	0.7%	0.1%
Third	$69,546 - $94,725	339,987	27,729,013	3.6%	0.3%	1.7%	0.8%	2.5%	- 0.4%	0.2%	0.6%	0.7%	0.1%
Fourth	$94,726 - $122,097	257,497	27,729,013	4.1%	0.3%	1.6%	0.7%	2.3%	- 0.2%	0.2%	0.5%	0.7%	0.1%
Fifth	$122,098 - $154,233	203,659	27,729,013	4.5%	0.3%	1.5%	0.7%	2.1%	0.0%	0.2%	0.4%	0.6%	0.1%
Sixth	$154,234 - $198,072	159,197	27,729,013	4.9%	0.2%	1.3%	0.6%	2.0%	0.0%	0.2%	0.4%	0.5%	0.1%
Seventh	$198,073 - $276,694	119,969	27,729,013	5.2%	0.2%	1.2%	0.6%	1.8%	0.0%	0.1%	0.3%	0.4%	0.1%
Eighth	$276.695 - $460,094	79,940	27,729,013	5.7%	0.2%	1.0%	0.6%	1.6%	0.0%	0.1%	0.2%	0.4%	0.1%
Ninth	$460,095 - $1,199,244	40,655	27,729,013	6.6%	0.2%	0.8%	0.6%	1.4%	0.0%	0.1%	0.1%	0.3%	0.1%
Tenth	$1,199,245 & over	8,385	27,729,013	7.9%	0.2%	0.5%	0.6%	1.1%	0.0%	0.2%	0.1%	0.5%	0.1%
TOTALS		2,848,530	$277,290,131	4.6%	0.3%	1.4%	0.8%	2.2%	- 0.3%	0.2%	0.5%	0.6%	0.1%
Top 5%	Over $4,098,922	1,218	$13,876,955	8.3%	0.2%	0.4%	0.6%	1.0%	0.0%	0.2%	0.0%	0.6%	0.1%

Income Decile	Residential Local Property Taxes					Nonresidential Local Property Taxes	Other Local Taxes
	Homeowners Gross	Renters Gross	Owners of Rental Prop.	Total on Rental Prop.	Residential Total [1]		
First	2.2%	0.9%	0.4%	1.3%	3.6%	1.4%	0.5%
Second	2.3%	0.5%	0.2%	0.7%	3.1%	0.9%	0.3%
Third	2.5%	0.2%	0.2%	0.5%	3.0%	0.9%	0.3%
Fourth	2.3%	0.1%	0.2%	0.3%	2.8%	0.9%	0.3%
Fifth	2.2%	0.1%	0.2%	0.3%	2.7%	0.8%	0.2%
Sixth	2.1%	0.0%	0.2%	0.2%	2.5%	0.6%	0.2%
Seventh	2.0%	0.0%	0.2%	0.2%	2.3%	0.7%	0.2%
Eighth	1.6%	0.0%	0.2%	0.2%	1.9%	0.7%	0.2%
Ninth	1.1%	0.0%	0.3%	0.3%	1.5%	0.6%	0.1%
Tenth	0.4%	0.0%	0.4%	0.4%	0.8%	0.6%	0.1%
TOTALS	1.9%	0.2%	0.2%	0.4%	2.4%	0.8%	0.2%
Top 5%	0.2%	0.0%	0.4%	0.4%	0.6%	0.6%	0.1%

Local Taxes Total	Total State Taxes			Total State and Local Taxes
	Total on Individuals	Total on Businesses	State Taxes Total	
5.5%	4.6%	2.5%	7.1%	12.6%
4.3%	5.6%	1.5%	7.1%	11.5%
4.3%	6.2%	1.4%	7.6%	11.9%
4.0%	6.7%	1.3%	8.0%	12.0%
3.7%	7.0%	1.2%	8.2%	11.9%
3.3%	7.1%	1.2%	8.2%	11.5%
3.2%	7.1%	1.1%	8.2%	11.4%
2.8%	7.2%	1.0%	8.3%	11.1%
2.2%	7.7%	1.0%	8.7%	10.9%
1.6%	8.9%	1.1%	10.0%	11.5%
3.5%	6.8%	1.3%	8.1%	11.6%
1.3%	9.4%	1.0%	10.4%	11.7%

[1] Includes seasonal recreational residential (cabins) and 2nd homes.

[2] Includes taconite production tax

Tables 4-2 and *4-4* show effective tax rates by income decile in 2016 and 2021. A comparison with the effective tax rates for population deciles reveals some differences. First, the effective tax rate for the first income decile in 2016 (13.9 percent) was much lower than that for the first population decile (32.1 percent). The first *income* decile included more than four times as many households as the first *population* decile.

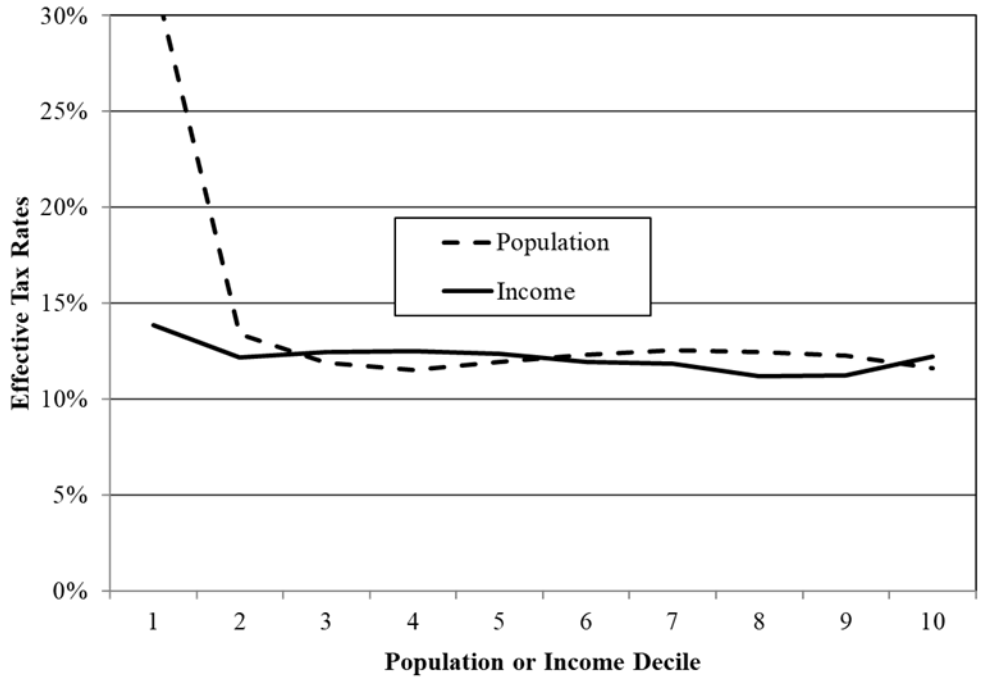
The pattern of effective tax rates also differs for the top deciles. The tenth income decile (with 8,321 households) had an effective tax rate of 12.2 percent in 2016. In contrast, the tenth population decile (with about 271,690 households) had an effective tax rate of 11.6 percent.

Figure 4-1 compares the pattern of effective tax rates by income decile to those by population decile.

- The first income decile includes roughly the same households as the first four population deciles. As a result, the line for income deciles hides the substantial variation among those first four population deciles.
- The top population decile includes roughly the same taxpayers as the top four income deciles. As a result, the line for population deciles hides the substantial variation among the top four income deciles.

Income deciles provide more detailed information about the burden on higher income households, but less information about the 58 percent of households who are combined in the first two income deciles.

Figure 4-1
State and Local Effective Tax Rates for 2016
Income Deciles vs. Population Deciles



Section B
An Alternative Methodology: Adjusting for the Federal Tax Offset

In estimating the incidence of existing Minnesota taxes, this study has made no adjustment for the "federal tax offset" due to the deductibility of Minnesota taxes in calculating the federal income tax. Individuals can generally deduct what they pay in state income tax and homeowner property taxes (and a portion of their motor vehicle registration tax) as itemized deductions. Those who itemize deductions pay less federal income tax as a result. For a taxpayer in the 28 percent federal tax bracket, each additional dollar of itemized deductions lowers federal income tax by 28 cents. As a result, 28 percent of deductible state and local taxes would be borne by the federal government in lower tax revenue. If no adjustment is made for this federal tax offset, the Minnesota tax burden is arguably overstated. Because itemizing deductions is more common for higher income households (and because they face higher federal tax rates), the federal tax offset will reduce taxes by much more in the upper deciles. A tax system that looks proportional in the absence of such an adjustment might look quite regressive after such an adjustment is made. A regressive system would look even more regressive.

There is a strong argument, however, against making such an adjustment in this study. This study estimates the burden of Minnesota taxes in a multistate context. The incidence of Minnesota taxes depends on the level of taxes in other states. If all states levy deductible taxes, then the federal government presumably makes up for the lost revenue by raising federal tax rates. It is unlikely that the deductibility of state and local taxes actually lowers the total federal tax burden on Minnesota residents. Minnesota's share of itemized deductions is roughly equal to its share of federal income tax payments. Whether the combination of deductible taxes and higher tax rates reduces a particular decile's tax burden is unknown; it depends on how the federal tax structure has been adjusted to make up for the lost tax revenue.

The results presented elsewhere in this study include no adjustment for the federal tax offset. The impact of such an adjustment is shown only in this section.

The impact of the federal tax offset for non-business taxes is shown in *Tables 4-5* and *4-6*, and *Figure 4-2*. For all households combined, the federal offset for non-business taxes would reduce Minnesota tax burdens by 8.2 percent, reducing the effective tax rate from 12.2 percent to 11.2 percent of income. There are small changes in the lowest deciles, which include few who itemize deductions. As expected, the impact of the federal tax offset rises with income. Despite the federal Alternative Minimum Tax and the limitation on itemized deductions for high-income taxpayers, the effective tax rate in the tenth decile would fall from 11.6 percent to 10.0 percent. For the top 1%, it falls from 11.8% to 9.5%. The adjusted tax burden for all taxes combined is noticeably more regressive, with the full-sample Suits index falling from -0.026 to -0.062.

Federal law changes enacted in December 2017 will significantly reduce the number of itemizers on federal returns, substantially reducing the federal tax offset in 2018 and future years.

In summary, the federal tax offset (even if limited to individual taxes) would have a significant impact on the distribution of the Minnesota tax burden in 2016. Because a strong argument can be made against such an adjustment in a study of this kind, however, no federal tax offset is included in the results presented elsewhere in this study.

As explained in *Section D* of this chapter, though, the federal tax offset *should* be included in estimates of the incidence of *changes* in Minnesota taxes.

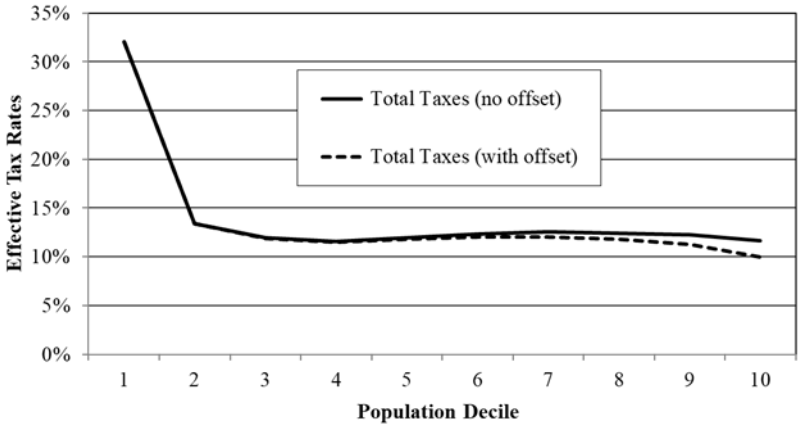
Table 4-5
Impact of Federal Tax Offset on Effective
State and Local Tax Rates by Population Decile
(Minnesota Residents, 2016)

Population Decile	Household Income	Effective Tax Rate		
		No Federal Tax Offset	Change Due to Federal Tax Offset	Adjusted for Federal Tax Offset
First	$ 12,069 & Under	32.1%	0.0%	32.1%
Second	12,070 - $ 19,759	13.4%	0.0%	13.4%
Third	19,760 - 27,847	11.9%	0.0%	11.9%
Fourth	27,848 - 37,128	11.5%	0.0%	11.5%
Fifth	37,129 - 47,991	11.9%	0.1%	11.8%
Sixth	47,992 - 61,806	12.3%	0.3%	12.0%
Seventh	61,807 - 80,241	12.6%	0.6%	12.0%
Eighth	80,242 - 106,851	12.4%	0.6%	11.8%
Ninth	106,852 - 156,100	12.3%	1.1%	11.2%
Tenth	156,101 & Over	11.6%	1.6%	10.0%
Total		12.2%	1.0%	11.2%
Top 5%	$ 219,355 & Over	11.6%	1.7%	9.9%
Top 1%	$ 533,924 & Over	11.8%	2.3%	9.5%

Table 4-6
Suits Index With and Without Federal Tax Offset

	Without Offset	With Offset
Income Tax	+0.247	+0.212
All Taxes	-0.029	-0.063

Figure 4-2
Effective Tax Rates for 2016
With and Without Federal Tax Offset



Section C
The Impact of Refundable Income Tax Credits and Property Tax Refunds

The tax burden results presented elsewhere in this report include the impact of refundable tax credits and the property tax refund. The Working Family Credit, Dependent Care Credit, and K-12 Credit are considered "negative taxes." Because these negative taxes are included, the average income tax rate in the first two population deciles is negative. Similarly, the property tax refunds for homeowners and renters are treated as "negative property taxes," offsetting the burden of the gross property tax on homes and rental housing.

Most of these payments are intended to make the tax system more progressive than it otherwise would be. To evaluate their effectiveness, it is useful to compare the current system to the tax system that would exist in their absence. *Table 4-7* shows the magnitudes of those payments in 2016. That table also shows the full-sample Suits index for each of the major categories of payments.

Table 4-7
Suits Index for Refundable Credits
and Property Tax Refund Payments in 2016

Payments	Amount ($ Thousands)	Population-Decile Suits Index
Income Tax Credits		
Working Family Credit	$ 246,003	+0.894
Dependent Care Credit	11,618	+0.894
K-12 Education Credit	10,371	+0.892
Subtotal	$ 267,992	+0.894
Property Tax Refund		
Homeowners	$ 439,610	+0.638
Renters	218,470	+0.873
Subtotal	$ 658,080	+0.716
Total	$ 926,072	+0.768

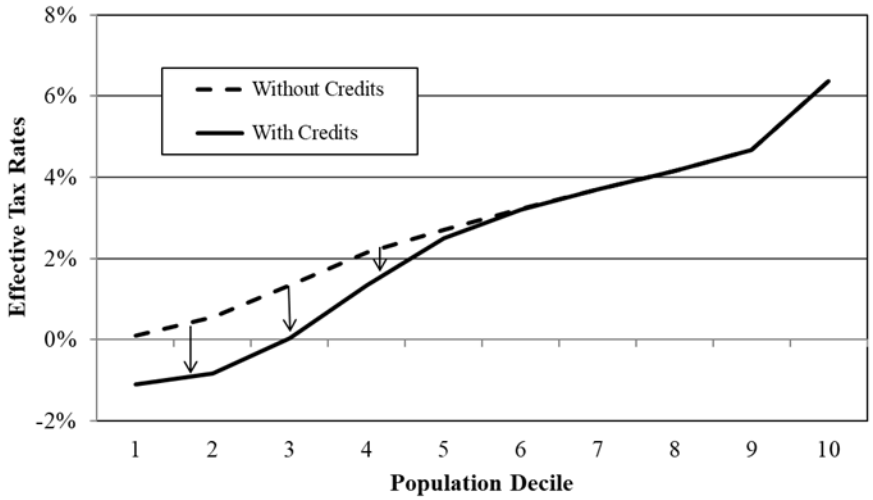
Total dollars of property tax refunds and refundable credits increased by 6.7 percent between 2014 and 2016, roughly equal to the growth in total tax collections (which increased by 6.8 percent). The refundable income tax credits fell by 4.2 percent; property tax refunds rose by 11.9 percent. Homeowner property tax refunds rose by 16.4 percent, and renter refunds rose by 3.7 percent.

Table 4-8 and *Figure 4-3* show the impact of the refundable income tax credits on effective income tax rates by population decile in 2016. Without those credits, effective tax rates would be noticeably higher in each of the first five deciles. For example, the effective income tax rate in the second decile would rise from -0.8 percent to +0.5 percent. The refundable credits make the income tax more progressive. In their absence, the full-sample Suits index for the income tax would be +0.218 rather than the +0.247.

Table 4-8
Impact of Refundable Income Tax Credits on Effective Income Tax Rates (2016)

Population Decile	Household Income	Effective Tax Rates (Income Tax)		
		With Credits	Change If No Credits	Without Credits
First	$ 12,069 & Under	-1.1%	+1.2%	0.1%
Second	12,070 - $ 19,759	-0.8%	+1.4%	0.5%
Third	19,760 - 27,847	0.0%	+1.3%	1.3%
Fourth	27,848 - 37,128	1.3%	+0.8%	2.1%
Fifth	37,129 - 47,991	2.5%	+0.2%	2.7%
Sixth	47,992 - 61,806	3.2%	0.0%	3.2%
Seventh	61,807 - 80,241	3.7%	0.0%	3.7%
Eighth	80,242 - 106,851	4.2%	0.0%	4.2%
Ninth	106,852 - 156,100	4.7%	0.0%	4.7%
Tenth	156,101 & Over	6.4%	0.0%	6.4%
Total		4.6%	+0.2%	4.8%

Figure 4-3
Effective Income Tax Rates by Population Decile, With and Without Refundable Credits



In the absence of property tax refunds (PTR), property taxes on homesteads and rental housing would be almost as regressive as the sales tax, with a Suits index of -0.188 rather than -0.105. As shown in *Figure 4-4* and the last column of *Table 4-9*, effective tax rates would be 3.2 percent in the second decile and fall to 1.5 percent in the tenth decile. Property tax refunds reduce effective tax rates in the first eight deciles. With the PTR, effective tax rates fall to 1.4 percent in the second decile, then rise to 2.3 percent in the seventh decile before falling to 1.5 percent in the tenth. Net residential property taxes (after PTR) are still regressive (with a full-sample Suits index of -0.105), but much less regressive than in the absence of the PTR.

Table 4-9
Residential Property Taxes Before and After Property Tax Refunds for 2016
(Homesteads and Rental Housing)

Population Decile	Household Income	Effective Tax Rates (Property Tax)		
		With PTR	Change If No PTR	Without PTR
First	$ 12,069 & Under	4.1%	+2.7%	6.8%
Second	12,070 - $ 19,759	1.4%	+1.8%	3.2%
Third	19,760 - 27,847	1.6%	+1.4%	3.0%
Fourth	27,848 - 37,128	1.8%	+1.0%	2.8%
Fifth	37,129 - 47,991	2.0%	+0.8%	2.8%
Sixth	47,992 - 61,806	2.2%	+0.6%	2.8%
Seventh	61,807 - 80,241	2.3%	+0.4%	2.7%
Eighth	80,242 - 106,851	2.3%	+0.2%	2.5%
Ninth	106,852 - 156,100	2.3%	0.0%	2.3%
Tenth	156,101 & Over	1.5%	0.0%	1.5%
Total		1.9%	+0.3%	2.2%

Figure 4-4
Effective Residential Property Tax Rates by Population Decile,
Before and After Property Tax Refunds

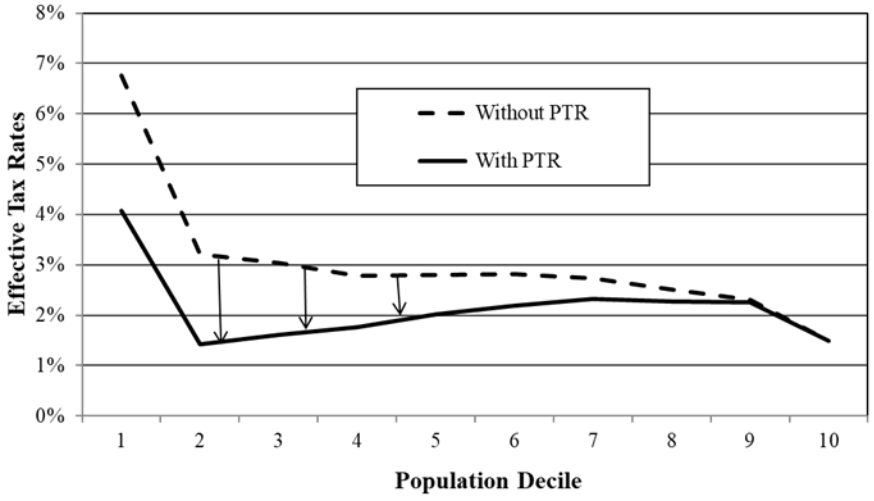
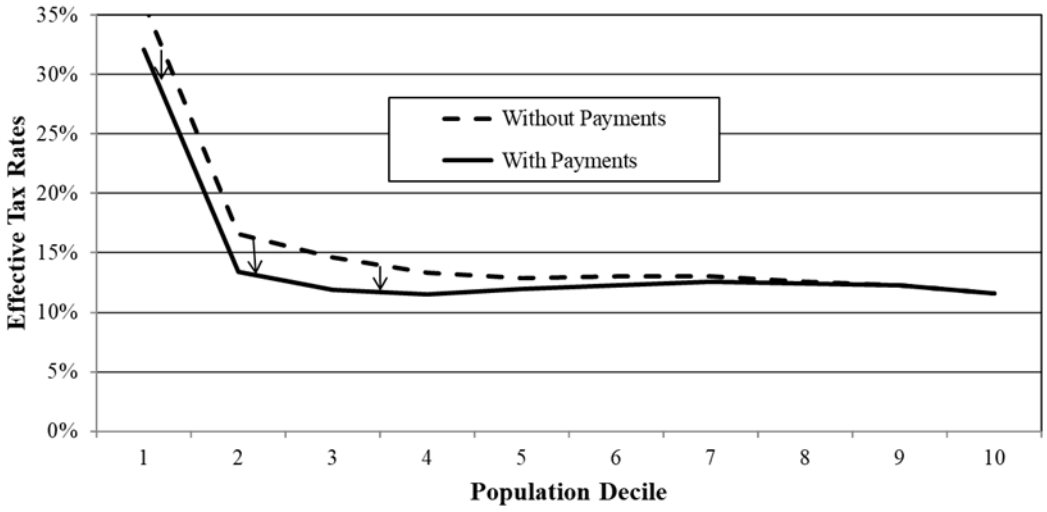


Table 4-10 and *Figure 4-5* show the combined impact of both the income tax credits and property tax refunds on the overall effective tax rates by population decile. Without the credits or property tax refunds, effective tax rates would be higher in the first eight deciles. These payments make the overall tax system less regressive. In their absence, the full-sample Suits index for all taxes would be -0.051 rather than -0.026.

Table 4-10
Combined Impact of Property Tax Refunds and Refundable Income Tax Credits on Effective State and Local Tax Rates

Population Decile	Household Income	Effective Tax Rates (All Taxes)		
		With PTR & Credits	Change If No PTR or Credits	Without PTR or Credits
First	$ 12,069 & Under	32.1%	+3.9%	36.0%
Second	12,070 - $ 19,759	13.4%	+3.2%	16.6%
Third	19,760 - 27,847	11.9%	+2.7%	14.6%
Fourth	27,848 - 37,128	11.5%	+1.8%	13.3%
Fifth	37,129 - 47,991	11.9%	+1.0%	12.9%
Sixth	47,992 - 61,806	12.3%	+0.7%	13.0%
Seventh	61,807 - 80,241	12.6%	+0.4%	13.0%
Eighth	80,242 - 106,851	12.4%	+0.2%	12.6%
Ninth	106,852 - 156,100	12.3%	0.0%	12.3%
Tenth	156,101 & Over	11.6%	0.0%	11.6%
Total		12.2%	+0.4%	12.6%

Figure 4-5
Effective State and Local Tax Rates by Population Decile, With and Without Property Tax Refunds and Refundable Credits



Section D
Incremental Incidence: Estimating the Incidence of a Change in Business Taxes

The incidence of proposed changes in business taxes has, on occasion, been incorrectly assumed to be identical to the incidence reported in the *Tax Incidence Study*. This is a mistake. The incidence results reported in this study cannot be applied to proposals for business tax changes.

The *Tax Incidence Study* estimates the burden of business taxes under the assumption that all states levy their existing taxes at the same time. Under that assumption, the ultimate burden of business taxes depends on how Minnesota's taxes compare to the taxes in other states. A tax on capital (other than land) is divided into three parts:

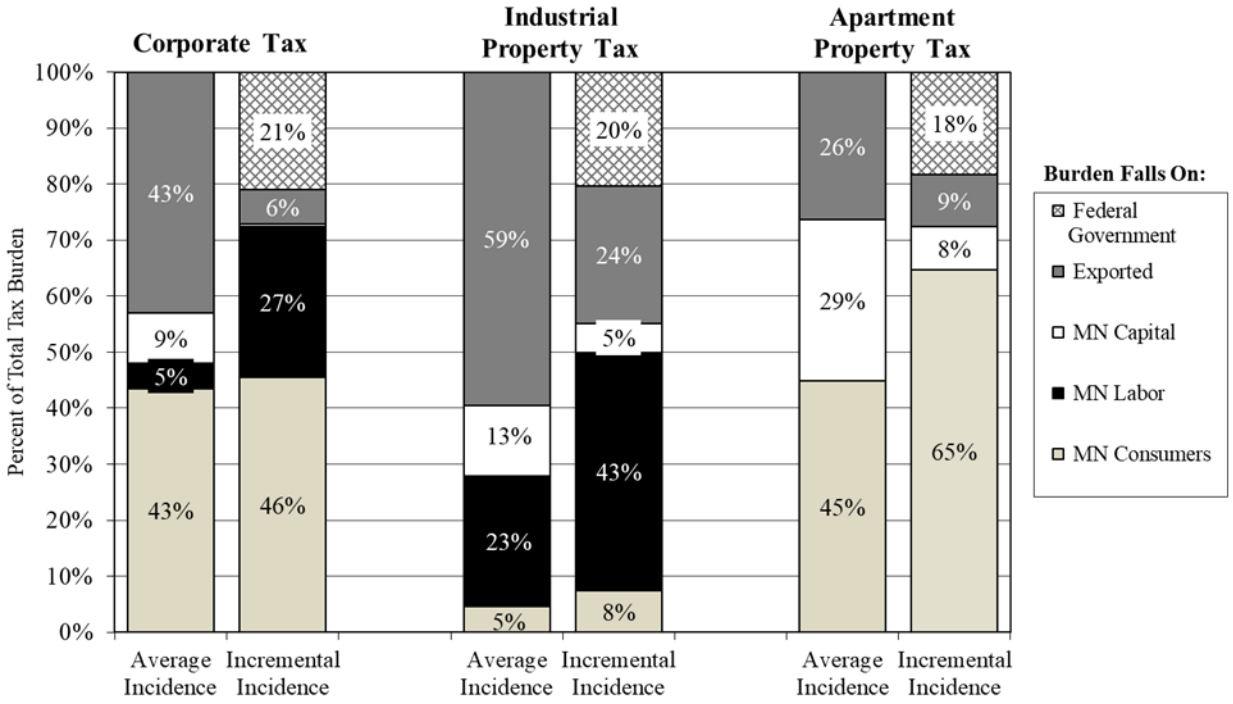
- The "average national tax rate on all capital."
- The "sector differential," defined as any portion of the tax that reflects higher national tax rates for a particular business sector.
- The "Minnesota differential," defined as any excess of Minnesota's tax over the average national level of tax levied on this sector.

The portion of Minnesota's tax representing the national average tax on capital has a different incidence than the "Minnesota differential." The tax burden reported in this study is the "average" incidence of a tax that is partly a tax levied at average national rates and partly a tax in excess of what is typical in other states.

The burden of *existing* business taxes (the "average" incidence reported in this study) can be much different from the incidence of a *change* in tax ("incremental incidence"). If Minnesota changes its tax alone – with no changes in other states – then *all* of that tax change should be considered a change in the Minnesota differential.

Compared to the "average" incidence reported in this study, the burden of an *increase* in a business tax is less likely to fall on capital and more likely to fall on labor and consumers. Similarly, a *cut* in business taxes is more likely to benefit labor and consumers and less likely to benefit capital owners than is suggested by the results reported in this study. The ability to export the tax burden to residents of other states is often less than is suggested by the results for "average incidence" reported here. However, the incidence of change in tax – unlike existing taxes – should take the federal tax offset into account. Part of a tax increase may be "exported" to the federal government. As a result, the exported share is sometimes larger than suggested by the results for "average incidence" reported in this study. (See *Section B* of this chapter for a discussion of the federal tax offset.)

Figure 4-6
Average vs. Incremental Incidence



Three examples are provided in *Figure 4-6* to illustrate the potential differences. The figure contrasts the average incidence reported in this study with the incremental incidence of a change in the corporate tax, industrial property taxes, or property taxes levied on apartments.[26] These results should be considered rough approximations, provided for illustration only. In calculating the federal tax offset, the federal tax rate is assumed to be 21 percent for those paying the federal corporate tax, while the federal tax rate for non-corporate businesses is assumed to be 18 percent. These rates are adjusted for the corporate rate reduction (from 35 percent to 21 percent) enacted in December 2017 as well as the 20 percent subtraction provided for most non-corporate businesses.

[26] Apartments are only a portion of the rental housing category shown on *Table B-2*, so the average-incidence results differ somewhat.

Section E
Tax Incidence in Other States

Minnesota is the only state that completes a comprehensive tax incidence study on a regular basis. This makes it difficult to know how to put the Minnesota results in context. Given the questions raised about how Minnesota compares to other states, this section summarizes the results of a 50-state study of state and local tax incidence. That study, entitled *Who Pays? A Distributional Analysis of Tax Systems in All 50 States* (6th Edition), was published by the Institute on Taxation and Economic Policy (ITEP) in October 2018.[27] It uses a methodology that is relatively close to what is used in this study.

The ITEP study is of high quality, but its results should be used with caution for several reasons.

- The population is limited to non-senior households. It also excludes all households with negative incomes.
- Income is defined more broadly, so average incomes are higher and effective tax rates are lower.
- The results are based on 2015 income levels adjusted for the impact of tax changes enacted through September 2018.
- Because all 50 states are included, there is obviously a less detailed analysis of each individual state's tax structure than in Minnesota's studies. Among the taxes excluded from their study are the MinnesotaCare provider taxes, insurance taxes, mortgage and deed taxes, and gambling taxes.
- Although business taxes are included and their burden is assumed to be borne partly by consumers and labor, the proportions shifted are not specified.
- The results include only 7 population groups rather than either population deciles or income deciles:
    - Bottom 20 percent
    - Second 20 percent
    - Third 20 percent
    - Fourth 20 percent
    - Next 15 percent
    - Next 4 percent
    - Top 1 percent

The ITEP Study's 7-point Suits index for Minnesota's state and local taxes is +0.006, making us one of the four states they show having a progressive tax system. This contrasts with the negative Suits index reported in this study. However, the Minnesota Tax Incidence Study would also report a positive Suits index in 2016 and 2021 if it both omitted senior households and excluded the four tax types excluded from the ITEP study.

Despite differences in methodology, the ITEP Study helps provide useful context for the results of the Minnesota Tax Incidence Study. It is particularly useful in illustrating the great variation in how states choose to distribute the tax burden.

[27] Available at: https://itep.org/whopays/. The 7-point Suits indexes were calculated by Jeff Van Wychen.

Table 4-11 lists the 7-point Suits indexes for each state (for non-senior households), based on the ITEP study. The variation across states is striking. They show four states with a Suits index greater than zero, including Minnesota. In contrast, 16 states had Suits indexes below -0.100, and seven of those were below -0.200. The 7-point Suits based on the average of effective tax rates for the seven population groups in all states was -0.062.

Minnesota would be expected to have one of the less regressive tax systems for several reasons:

- Minnesota is more reliant on the income tax than most states. Minnesota's income tax share of state and local taxes is exceeded in only a few other states. The nine most regressive state tax systems, as measured by ITEP's 7-point Suits index, were the nine states with no broad-based income tax.
- Minnesota's income tax is one of the more progressive. The most regressive states with an income tax (such as Pennsylvania and Illinois) generally have a flat-rate tax.
- Minnesota also has among the most generous refundable income tax credits for low-income households, along with one of the most generous income-conditioned property tax refunds for homeowners and renters. As seen in *Section C* of this chapter, these credits significantly reduce the regressivity of Minnesota's overall tax system.

Table 4-11 also shows each state's average overall effective tax rate as estimated by ITEP for non-senior households. Minnesota's reported effective tax rate (at 9.7 percent of income) was above the U.S. average reported by ITEP (at 8.8 percent). The correlation (R) between the average effective tax rate and the Suits index (+0.63) suggests that the tax structures of states with higher taxes tend to be less regressive. The ten most regressive tax structures are all in states with average effective tax rates at or below 7.6 percent. In contrast, of the 20 states with Suits indexes showing below-average regressivity, only two (Montana and Delaware) had average effective tax rates at or below 7.6 percent.

Table 4-11
ITEP "7-Point" Suits Index by State
Non-Senior Households in 2015 (2018 Law)

Listed Alphabetically		
State	7-Point Suits Index	Average Effective Tax Rate
Alabama	-0.120	7.3%
Alaska	-0.162	3.4%
Arizona	-0.111	8.0%
Arkansas	-0.085	9.2%
California	0.062	10.0%
Colorado	-0.066	7.7%
Connecticut	-0.069	10.3%
Delaware	0.030	6.1%
Florida	-0.259	5.4%
Georgia	-0.063	8.7%
Hawaii	-0.073	10.3%
Idaho	-0.034	7.9%
Illinois	-0.097	10.6%
Indiana	-0.101	9.0%
Iowa	-0.062	9.7%
Kansas	-0.062	9.5%
Kentucky	-0.072	9.4%
Louisiana	-0.101	8.4%
Maine	-0.001	9.4%
Maryland	-0.022	10.2%
Massachusetts	-0.072	8.3%
Michigan	-0.074	8.3%
Minnesota	**0.006**	**9.7%**
Mississippi	-0.094	8.4%
Missouri	-0.063	8.3%
Montana	-0.014	6.7%
Nebraska	-0.039	9.6%
Nevada	-0.233	5.2%
New Hampshire	-0.151	5.8%
New Jersey	-0.001	10.0%
New Mexico	-0.090	8.8%
New York	-0.018	12.0%
North Carolina	-0.065	8.2%
North Dakota	-0.143	6.4%
Ohio	-0.085	9.5%
Oklahoma	-0.110	8.9%
Oregon	-0.013	8.8%
Pennsylvania	-0.113	9.3%
Rhode Island	-0.033	9.1%
South Carolina	-0.035	7.9%
South Dakota	-0.230	6.1%
Tennessee	-0.212	5.9%
Texas	-0.208	7.1%
Utah	-0.035	7.8%
Vermont	0.022	9.9%
Virginia	-0.052	8.5%
Washington	-0.247	7.6%
West Virginia	-0.032	8.5%
Wisconsin	-0.050	9.6%
Wyoming	-0.210	5.2%
All U.S.	**-0.062**	**8.8%**

Ranked from Most Progressive to Most Regressive			
State Suits Rank	State	7-Point Suits Index	Average Effective Tax Rate
1	California	0.062	10.0%
2	Delaware	0.030	6.1%
3	Vermont	0.022	9.9%
4	**Minnesota**	**0.006**	**9.7%**
5	Maine	-0.001	9.4%
6	New Jersey	-0.001	10.0%
7	Oregon	-0.013	8.8%
8	Montana	-0.014	6.7%
9	New York	-0.018	12.0%
10	Maryland	-0.022	10.2%
11	West Virginia	-0.032	8.5%
12	Rhode Island	-0.033	9.1%
13	Idaho	-0.034	7.9%
14	South Carolina	-0.035	7.9%
15	Utah	-0.035	7.8%
16	Nebraska	-0.039	9.6%
17	Wisconsin	-0.050	9.6%
18	Virginia	-0.052	8.5%
19	Kansas	-0.062	9.5%
20	Iowa	-0.062	9.7%
	All U.S.	**-0.062**	**8.8%**
21	Missouri	-0.063	8.3%
22	Georgia	-0.063	8.7%
23	North Carolina	-0.065	8.2%
24	Colorado	-0.066	7.7%
25	Connecticut	-0.069	10.3%
26	Kentucky	-0.072	9.4%
27	Massachusetts	-0.072	8.3%
28	Hawaii	-0.073	10.3%
29	Michigan	-0.074	8.3%
30	Arkansas	-0.085	9.2%
31	Ohio	-0.085	9.5%
32	New Mexico	-0.090	8.8%
33	Mississippi	-0.094	8.4%
34	Illinois	-0.097	10.6%
35	Louisiana	-0.101	8.4%
36	Indiana	-0.101	9.0%
37	Oklahoma	-0.110	8.9%
38	Arizona	-0.111	8.0%
39	Pennsylvania	-0.113	9.3%
40	Alabama	-0.120	7.3%
41	North Dakota	-0.143	6.4%
42	New Hampshire	-0.151	5.8%
43	Alaska	-0.162	3.4%
44	Texas	-0.208	7.1%
45	Wyoming	-0.210	5.2%
46	Tennessee	-0.212	5.9%
47	South Dakota	-0.230	6.1%
48	Nevada	-0.233	5.2%
49	Washington	-0.247	7.6%
50	Florida	-0.259	5.4%

Figures 4-7, *4-8*, and *4-9* illustrate how effective tax rates vary with income in selected states. *Figure 4-7* compares Minnesota to the national average and to the state with the most progressive tax system (California). *Figure 4-8* shows three states with much more regressive tax structures. *Figure 4-9* compares Minnesota with its neighboring states.

Figure 4-7
ITEP Effective Tax Rates for Minnesota, California, and All States Combined (Non-Seniors)

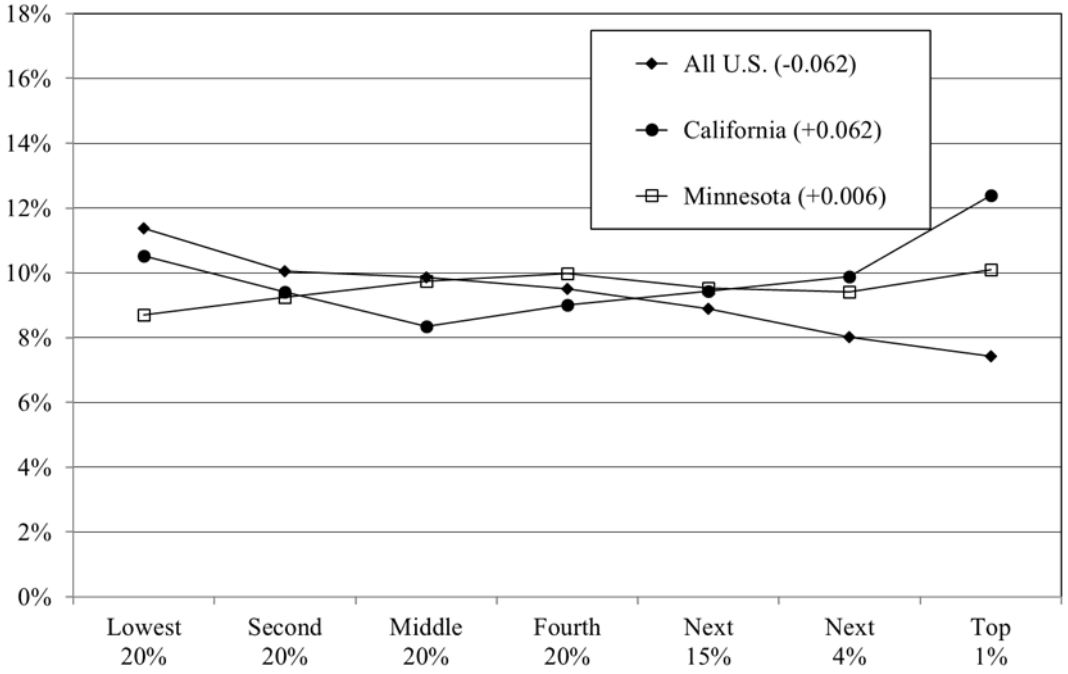


Figure 4-8
ITEP Effective Tax Rates for Minnesota and Three States With More Regressive Tax Systems (Non-Seniors)

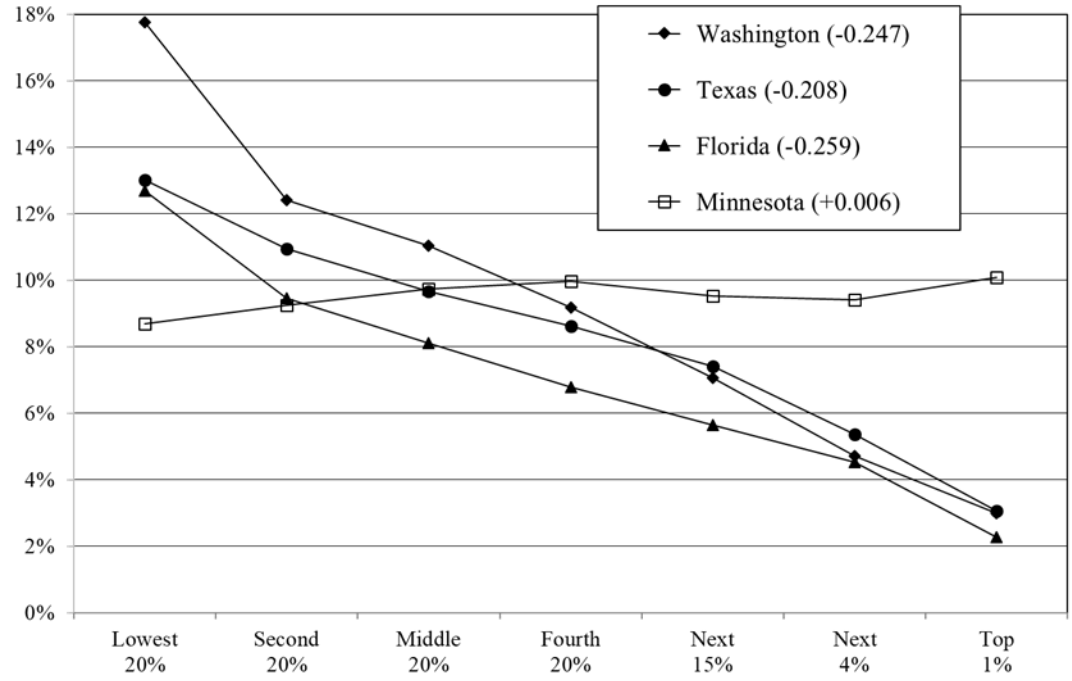
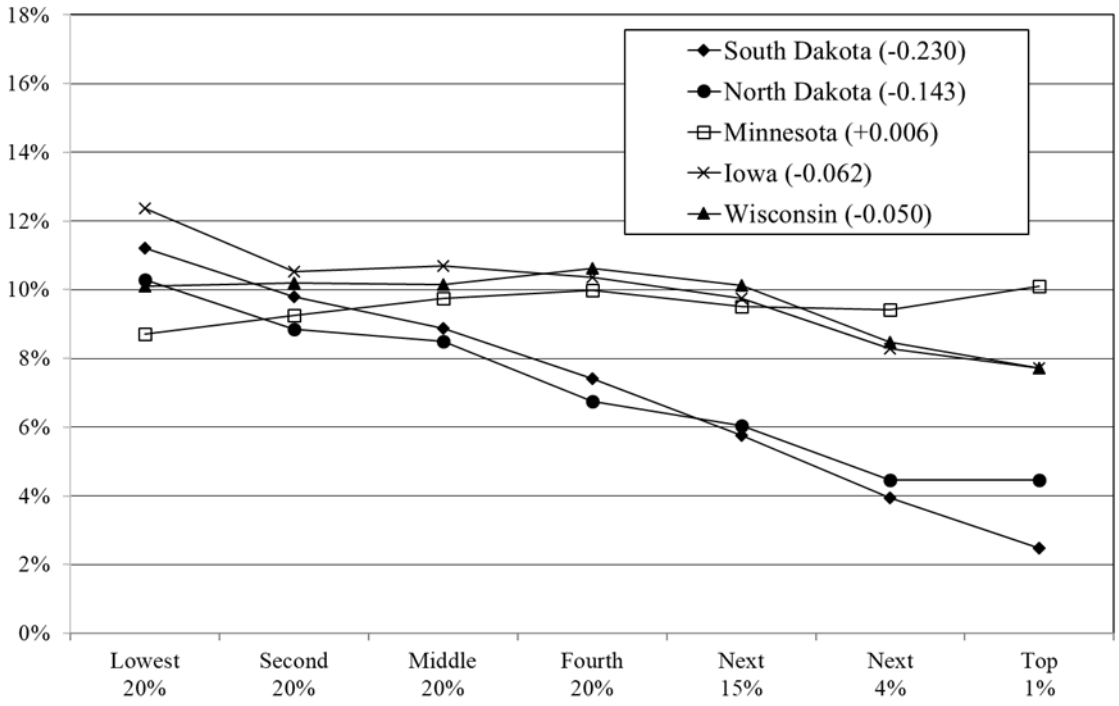


Figure 4-9
ITEP Effective Tax Rates for Minnesota and Neighboring States (Non-Seniors)



Chapter 5: Demographic Variation

Previous chapters show how effective tax rates vary by income when all households are considered together, regardless of household size, marital status, or age. This implicitly assumes that a single person with $50,000 of income is the same as a family of six with the same income. This chapter provides more detail by type of household, allowing comparisons of tax across similar households. For example, *Table 5-1* shows average tax burdens for married couples with children at different levels of income. The tables in this chapter allow the reader to identify the average tax burden for representative households – a married couple with children and income of $100,000 or a non-senior single-person household with income of $40,000.

Household Types by Population Decile

The demographic makeup of individual deciles varies greatly, as shown in *Figure 5-1*. In the bottom three deciles, more than 70 percent of the households are single-person households; only 21 percent include children. In contrast, in the top two deciles only 11 percent of all households are single-person households, and 47 percent include children.

Figure 5-1 also shows that senior households (married and single) are distributed unevenly across deciles. Seniors account for over one-fifth of all households in deciles 2 through 4 and 18 percent of all households in the top decile – but 79 percent of those top-decile seniors are married. Single seniors far outnumber senior couples in the first five deciles; in the top deciles, the number of senior couples far exceeds the number of single seniors.

In the first five deciles, three out of four households with children are single-parent households. The proportion of all households with children that include two parents increases steadily with income. Almost 86 percent of all households in the top two deciles are married couples (with or without children).

Figure 5-1
Family Type by Population Decile

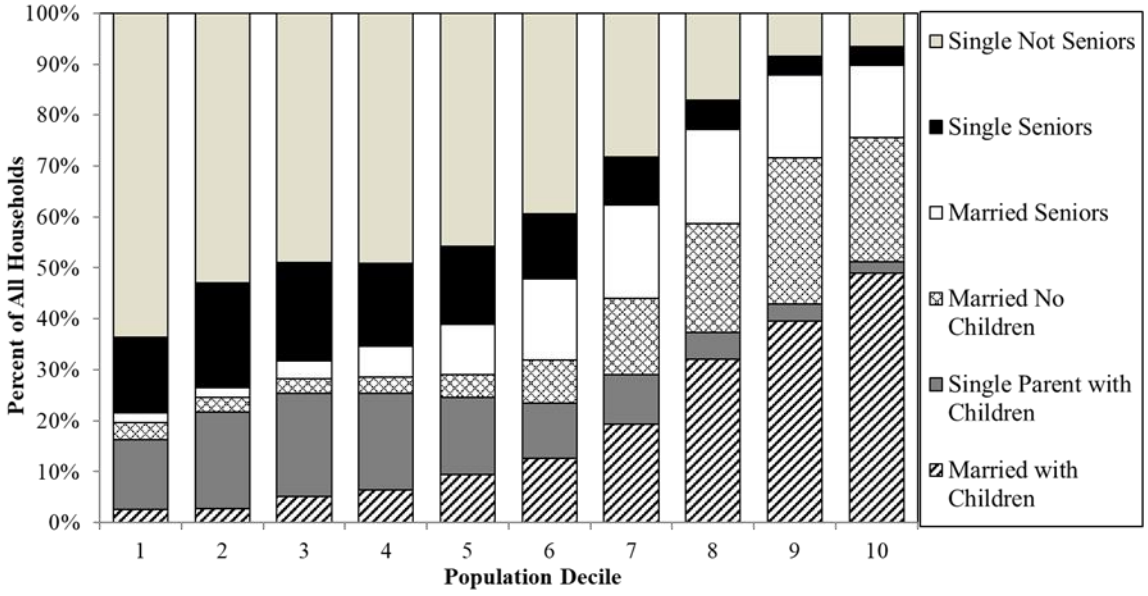
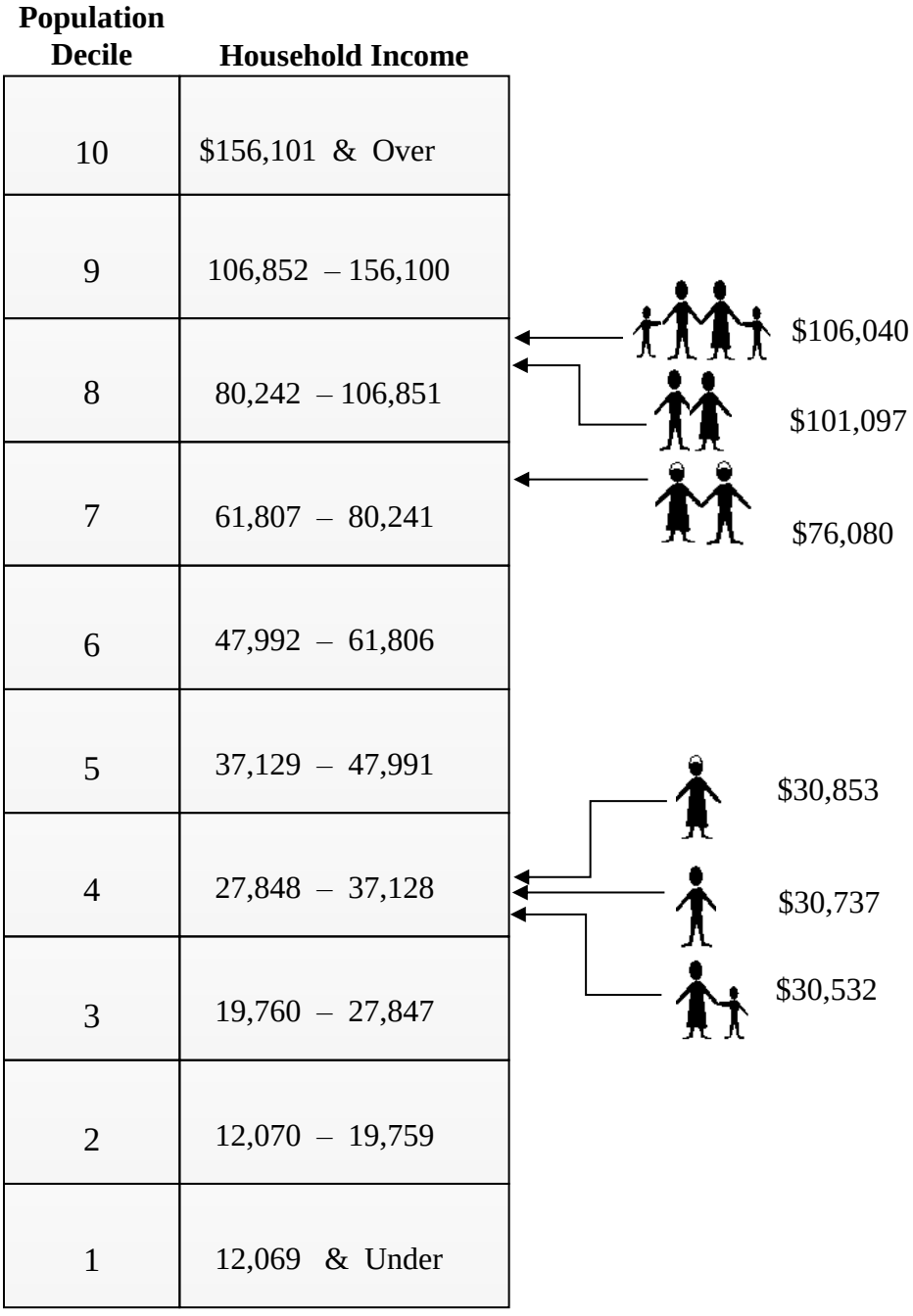


Figure 5-2 illustrates the great differences in median incomes for each of the six family types. In 2016, the median income for a single-parent family was $30,532, so the typical single-parent family was in the fourth population decile. The median income for a married couple with children was $106,040 (top of the eighth decile). The median income for senior couples ($76,080) puts them in the seventh decile. In contrast, the median single senior (at $30,853) is in the fourth decile.

Figure 5-2
Median Income by Household Type (2016)



Average Tax Burdens by Household Type

Tables 5-1 through *5-6* each show how average tax burdens and demographic characteristics vary with income for a particular type of household. *Figure 5-1* is limited to Minnesota's 485,475 married couples with children. The couples are divided into ten groups, each with 48,548 couples, ordered from lowest income to highest income.

For example, consider the third decile of married couples with children (the shaded column on *Table 5-1*). These households have incomes between $58,575 (the maximum income for the second decile) and $76,202 (the maximum income for the third decile). This is the third decile, so 20 percent of married couples with children have lower incomes; 70 percent of such families have higher incomes. For those in the third decile, average income is $67,756, and 99 percent have earned income (averaging $62,761). Three-quarters are homeowners, with homes valued an average of $150,309. Twenty-five percent are renters (paying an average of $879 per month), and 1 percent are neither owners nor renters (perhaps living with parents).

These married couples with children pay state and local taxes equal to 12.9 percent of their income (an average of $8,737 of tax). This includes $1,330 in residential property tax (net of PTR), $1,498 of income tax, $1,484 in state sales tax, $649 in excise taxes (motor fuels, cigarettes, and alcohol), $1,043 in other types of taxes levied on individuals, and $2,343 in business taxes.

Similar information is provided for other household types.

When the population is limited to a single household type, the variation of effective tax rates with income is easier to interpret. For married couples with children (*Table 5-1*), the effective tax rate falls from 12.8 percent in the second decile to 11.7 percent in the ninth decile, then rises to 11.9 percent in the tenth decile. The Suits index for the population limited to married couples with children is -0.016, well above the all-household Suits index (-0.026).

Table 5-7 (on page 86) shows the full-sample Suits index for each of the six household types considered separately. The tax is most regressive for non-senior single-person households (at -0.059) and married couples with no children (at -0.048). It is progressive for single parents (Suits index of +0.047).

Table 5-1

Household Characteristics and Average Tax Burden Amounts by Population Decile Married Couples with Children

Each Decile Contains 48,548 Married Couples with Children

HOUSEHOLD CHARACTERISTICS	Population Decile										
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Total
Number of Households	48,548	48,548	48,548	48,548	48,548	48,548	48,548	48,548	48,548	48,548	485,475
Average Number of Children	2.3	2.4	2.2	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Average Household Income	$24,069	$48,812	$67,756	$83,936	$99,071	$114,437	$136,217	$163,986	$215,898	$574,339	$152,854
Maximum Household Income	$38,718	$58,575	$76,202	$91,592	$106,040	$123,885	$148,483	$183,139	$267,923		
Percent with Earned Income	85%	98%	99%	100%	99%	100%	100%	100%	100%	99%	98%
Average Earned income	$26,840	$46,525	$62,761	$77,423	$91,886	$104,333	$119,572	$139,176	$181,750	$354,623	$121,899
Housing Status											
Homeowners	40%	60%	74%	84%	88%	92%	95%	95%	97%	98%	82%
Renters	47%	37%	25%	16%	12%	8%	5%	5%	3%	2%	16%
Other	13%	3%	1%	0%	0%	0%	0%	0%	0%	0%	2%
Average Market Value	$167,594	$151,557	$150,309	$155,108	$188,057	$205,671	$230,993	$244,256	$311,981	$418,951	$233,138
Average Monthly Rent	$527	$806	$879	$992	$1,089	$1,228	$1,228	$1,501	$1,502	$1,501	$852
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$951	$1,339	$1,665	$1,947	$2,338	$2,680	$3,020	$3,351	$4,176	$5,922	$2,739
-Property Tax Refund	-$547	-$484	-$335	-$303	-$252	-$190	-$46	-$8	-$4	-$5	-$217
Tax after PTR	$405	$855	$1,330	$1,643	$2,086	$2,490	$2,974	$3,344	$4,173	$5,916	$2,522
Renters Only											
Total Tax on Rental Unit	$1,042	$1,389	$1,498	$1,690	$1,857	$2,093	$2,093	$2,558	$2,559	$1,475	$1,499
Renters Share of Tax	$398	$530	$572	$645	$709	$799	$799	$976	$977	$563	$572
-Property Tax Refund	-$570	-$455	-$130	-$4	$0	$0	$0	$0	$0	$0	-$294
Tax after PTR	-$173	$74	$442	$641	$709	$799	$799	$976	$977	$563	$278
Homeowners Only											
Total Tax on Home	$1,872	$1,884	$2,063	$2,200	$2,557	$2,832	$3,143	$3,478	$4,280	$6,022	$3,214
-Property Tax Refund	-$684	-$525	-$410	-$362	-$285	-$205	-$48	-$8	-$4	-$6	-$207
Homeowners Tax after PTR	$1,188	$1,359	$1,652	$1,838	$2,272	$2,628	$3,095	$3,470	$4,276	$6,017	$3,007
State Income Tax	-$1,091	$508	$1,888	$2,877	$3,874	$4,831	$6,139	$7,975	$11,354	$41,990	$8,035
State Sales Tax	$971	$1,283	$1,484	$1,632	$1,767	$1,894	$2,049	$2,232	$2,548	$4,322	$2,018
State Excise Taxes	$611	$632	$649	$663	$670	$679	$689	$696	$699	$775	$676
Other Taxes	$627	$841	$1,043	$1,260	$1,459	$1,582	$1,714	$1,820	$1,999	$3,735	$1,608
Business Taxes[1]	$2,352	$2,125	$2,343	$2,380	$2,587	$2,708	$3,200	$3,492	$4,524	$11,442	$3,715
Total State and Local Tax Burden	$3,874	$6,243	$8,737	$10,455	$12,443	$14,184	$16,765	$19,559	$25,296	$68,180	18,574
Effective Tax Rate for all Taxes	16.1%	12.8%	12.9%	12.5%	12.6%	12.4%	12.3%	11.9%	11.7%	11.9%	12.2%

[1]For these tables only, Business Taxes does not include the share of Rental Property Taxes borne by the renter.

Table 5-2

Household Characteristics and Average Tax Burden Amounts by Population Decile
Non-Senior Married Couples without Children

Each Decile Contains 31,149 Married Couples with Children

HOUSEHOLD CHARACTERISTICS	Population Decile										
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Total
Number of Households	31,149	31,149	31,149	31,149	31,149	31,149	31,149	31,149	31,149	31,149	311,487
Average Number of Children	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Household Income	$18,267	$47,692	$65,848	$80,190	$94,164	$108,649	$124,954	$147,492	$189,413	$536,091	$141,277
Maximum Household Income	$34,769	$58,537	$73,190	$86,788	$101,097	$116,349	$134,820	$161,365	$227,324		
Percent with Earned Income	55%	93%	97%	97%	98%	98%	100%	96%	100%	97%	93%
Average Earned income	$23,529	$40,415	$56,523	$70,769	$80,230	$93,449	$103,459	$122,040	$147,743	$281,651	$105,786
Housing Status											
Homeowners	46%	69%	79%	78%	86%	89%	91%	95%	95%	96%	82%
Renters	27%	28%	19%	21%	14%	11%	9%	5%	5%	4%	14%
Other	27%	3%	2%	1%	0%	0%	0%	0%	0%	0%	4%
Average Market Value	$201,700	$161,870	$167,050	$173,597	$164,433	$179,642	$194,829	$231,733	$291,120	$356,635	$217,132
Average Monthly Rent	$462	$804	$838	$987	$1,001	$1,228	$1,227	$1,296	$1,501	$1,501	$909
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$917	$1,444	$1,609	$1,858	$1,937	$2,139	$2,376	$2,709	$3,207	$4,861	$2,306
-Property Tax Refund	-$319	-$388	-$256	-$203	-$145	-$74	-$10	-$2	-$4	-$21	-$142
Tax after PTR	$598	$1,056	$1,353	$1,655	$1,792	$2,065	$2,367	$2,707	$3,203	$4,840	$2,163
Renters Only											
Total Tax on Rental Unit	$848	$1,382	$1,428	$1,683	$1,707	$2,093	$2,092	$2,208	$2,558	$1,475	$1,564
Renters Share of Tax	$324	$528	$545	$642	$651	$799	$798	$843	$976	$563	$597
-Property Tax Refund	-$238	-$240	-$30	$0	$0	$0	$0	$0	$0	$0	-$96
Tax after PTR	$86	$288	$515	$642	$651	$799	$798	$843	$976	$563	$501
Homeowners Only											
Total Tax on Home	$1,809	$1,865	$1,907	$2,200	$2,137	$2,304	$2,531	$2,807	$3,334	$5,012	$2,692
-Property Tax Refund	-$555	-$464	-$317	-$260	-$168	-$83	-$10	-$3	-$4	-$22	-$156
Homeowners Tax after PTR	$1,254	$1,401	$1,590	$1,940	$1,970	$2,220	$2,520	$2,804	$3,330	$4,990	$2,536
State Income Tax	$126	$1,138	$2,317	$3,211	$3,975	$4,956	$6,111	$7,408	$10,044	$35,231	$7,452
State Sales Tax	$831	$1,172	$1,333	$1,442	$1,538	$1,630	$1,747	$1,912	$2,200	$4,111	$1,792
State Excise Taxes	$598	$579	$579	$580	$583	$584	$568	$552	$537	$599	$576
Other Taxes	$643	$972	$1,130	$1,263	$1,334	$1,501	$1,641	$1,714	$1,857	$3,662	$1,572
Business Taxes[1]	$2,593	$1,958	$2,251	$2,559	$2,659	$2,724	$2,807	$3,324	$5,454	$11,945	$3,828
Total State and Local Tax Burden	$5,390	$6,875	$8,963	$10,710	$11,880	$13,460	$15,241	$17,616	$23,295	$60,389	17,382
Effective Tax Rate for all Taxes	29.5%	14.4%	13.6%	13.4%	12.6%	12.4%	12.2%	11.9%	12.3%	11.3%	12.3%

[1]For these tables only, Business Taxes does not include the share of Rental Property Taxes borne by the renter.

Table 5-3

Household Characteristics and Average Tax Burden Amounts by Population Decile
Non-Senior Single-Person Households

Each Decile Contains 97,828 Non-Senior Single-Person Housholds

HOUSEHOLD CHARACTERISTICS	Population Decile										Total
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	
Number of Households	97,828	97,828	97,828	97,828	97,828	97,828	97,828	97,828	97,828	97,828	978,279
Average Household Income	$4,789	$10,846	$15,783	$21,232	$27,355	$34,070	$41,471	$50,943	$65,798	$146,836	$41,912
Maximum Household Income	$8,475	$13,234	$18,522	$24,267	$30,737	$37,379	$45,714	$56,810	$76,765		
Percent with Earned Income	61%	53%	68%	80%	93%	95%	96%	97%	97%	95%	83%
Average Earned income	$6,135	$10,345	$13,816	$19,985	$25,361	$31,791	$38,643	$47,140	$59,035	$101,566	$38,961
Housing Status											
Homeowners	12%	14%	14%	15%	15%	21%	32%	40%	51%	69%	28%
Renters	33%	44%	48%	54%	65%	62%	58%	53%	44%	31%	49%
Other	55%	42%	38%	31%	20%	17%	10%	7%	5%	0%	23%
Average Market Value	$191,395	$157,010	$128,676	$129,837	$133,980	$149,362	$143,380	$139,056	$152,424	$213,907	$162,712
Average Monthly Rent	$111	$250	$360	$480	$588	$646	$703	$781	$844	$1,139	$590
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$250	$318	$336	$393	$515	$591	$817	$1,056	$1,293	$2,251	$782
-Property Tax Refund	-$152	-$187	-$222	-$179	-$191	-$160	-$171	-$195	-$184	-$100	-$174
Tax after PTR	$99	$131	$114	$214	$324	$431	$645	$862	$1,109	$2,151	$608
Renters Only											
Total Tax on Rental Unit	$343	$527	$712	$854	$1,025	$1,113	$1,202	$1,332	$1,440	$1,475	$1,044
Renters Share of Tax	$131	$201	$272	$326	$391	$425	$459	$508	$549	$563	$398
-Property Tax Refund	-$250	-$277	-$328	-$213	-$188	-$159	-$124	-$108	-$30	-$2	-$171
Tax after PTR	-$119	-$75	-$56	$113	$203	$266	$334	$400	$519	$561	$227
Homeowners Only											
Total Tax on Home	$1,781	$1,613	$1,466	$1,440	$1,671	$1,540	$1,682	$1,911	$2,045	$2,920	$2,048
-Property Tax Refund	-$593	-$461	-$457	-$433	-$446	-$290	-$303	-$338	-$333	-$144	-$315
Homeowners Tax after PTR	$1,188	$1,153	$1,009	$1,008	$1,224	$1,250	$1,379	$1,574	$1,712	$2,777	$1,733
State Income Tax	-$21	-$1	$164	$429	$815	$1,196	$1,653	$2,325	$3,228	$8,865	$1,865
State Sales Tax	$401	$501	$555	$602	$646	$686	$725	$769	$881	$1,488	$726
State Excise Taxes	$369	$397	$411	$422	$433	$443	$452	$461	$462	$474	$432
Other Taxes	$191	$217	$261	$311	$343	$406	$476	$548	$661	$1,091	$451
Business Taxes[1]	$1,061	$712	$734	$802	$903	$952	$1,055	$1,292	$1,357	$3,154	$1,202
Total State and Local Tax Burden	$2,101	$1,957	$2,239	$2,781	$3,465	$4,114	$5,006	$6,257	$7,699	$17,223	$5,284
Effective Tax Rate for all Taxes	43.9%	18.0%	14.2%	13.1%	12.7%	12.1%	12.1%	12.3%	11.7%	11.7%	12.6%

[1]For these tables only, Business Taxes does not include the share of Rental Property Taxes borne by the renter.

Table 5-4

Household Characteristics and Average Tax Burden Amounts by Population Decile
Single Senior Households

Each Decile Contains 33,095 Single Senior Households

HOUSEHOLD CHARACTERISTICS	Population Decile										
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Total
Number of Households	33,095	33,095	33,095	33,095	33,095	33,095	33,095	33,095	33,095	33,095	330,953
Average Household Income	$8,403	$13,333	$17,987	$22,397	$27,815	$34,411	$41,926	$52,660	$69,775	$187,926	$47,663
Maximum Household Income	$10,954	$15,696	$20,271	$24,942	$30,853	$37,885	$46,991	$59,091	$84,233		
Percent with Earned Income	4%	4%	7%	12%	18%	24%	25%	26%	26%	45%	19%
Average Earned income	$12,084	$4,540	$4,786	$7,777	$9,210	$13,760	$14,380	$26,278	$27,681	$71,976	$29,578
Housing Status											
Homeowners	28%	38%	45%	57%	66%	65%	73%	76%	77%	84%	61%
Renters	40%	41%	37%	31%	29%	31%	24%	22%	22%	15%	29%
Other	32%	21%	18%	12%	5%	4%	3%	2%	1%	1%	10%
Average Market Value	$160,021	$140,201	$143,822	$154,301	$176,433	$167,835	$163,618	$189,165	$236,920	$275,603	$189,420
Average Monthly Rent	$198	$295	$399	$511	$613	$694	$784	$883	$913	$1,235	$572
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$458	$649	$797	$1,115	$1,354	$1,447	$1,570	$1,703	$2,250	$3,048	$1,439
-Property Tax Refund	-$211	-$369	-$465	-$561	-$603	-$573	-$536	-$458	-$361	-$132	-$427
Tax after PTR	$247	$279	$332	$554	$752	$873	$1,033	$1,245	$1,889	$2,916	$1,012
Renters Only											
Total Tax on Rental Unit	$453	$692	$862	$1,030	$1,323	$1,450	$1,435	$1,748	$1,576	$1,475	$1,142
Renters Share of Tax	$173	$264	$329	$393	$505	$553	$548	$667	$602	$563	$436
-Property Tax Refund	-$336	-$511	-$584	-$528	-$620	-$631	-$495	-$393	-$52	$0	-$450
Tax after PTR	-$163	-$247	-$255	-$135	-$115	-$78	$52	$274	$550	$563	-$14
Homeowners Only											
Total Tax on Home	$1,403	$1,400	$1,472	$1,704	$1,801	$1,965	$1,963	$2,028	$2,732	$3,476	$2,139
-Property Tax Refund	-$280	-$425	-$542	-$693	-$644	-$586	-$573	-$487	-$452	-$138	-$482
Homeowners Tax after PTR	$1,122	$976	$930	$1,010	$1,157	$1,380	$1,390	$1,542	$2,280	$3,338	$1,656
State Income Tax	$4	$0	$1	-$1	$51	$233	$689	$1,640	$2,787	$10,550	$1,595
State Sales Tax	$387	$469	$535	$589	$647	$704	$762	$836	$939	$1,306	$717
State Excise Taxes	$184	$215	$238	$257	$276	$277	$269	$262	$257	$275	$251
Other Taxes	$243	$303	$349	$385	$454	$486	$540	$620	$698	$1,191	$527
Business Taxes[1]	$688	$577	$810	$729	$1,027	$1,031	$1,438	$1,749	$1,824	$4,107	$1,398
Total State and Local Tax Burden	$1,753	$1,843	$2,265	$2,512	$3,206	$3,604	$4,730	$6,353	$8,395	$20,345	$5,502
Effective Tax Rate for all Taxes	20.9%	13.8%	12.6%	11.2%	11.5%	10.5%	11.3%	12.1%	12.0%	10.8%	11.5%

[1]For these tables only, Business Taxes does not include the share of Rental Property Taxes borne by the renter.

Table 5-5

Household Characteristics and Average Tax Burden Amounts by Population Decile
Married Senior Households

Each Decile Contains 28,879 Senior Households

HOUSEHOLD CHARACTERISTICS	Population Decile										
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Total
Number of Households	28,879	28,879	28,879	28,879	28,879	28,879	28,879	28,879	28,879	28,879	288,793
Percent that are Married	-94%	-94%	-76%	-52%	-17%	5%	23%	48%	54%	57%	-15%
Average Household Income	$21,709	$40,132	$50,840	$60,197	$70,437	$81,600	$95,068	$114,926	$148,906	$435,641	$111,945
Maximum Household Income	$33,234	$46,148	$55,474	$64,986	$76,080	$88,174	$103,782	$127,248	$177,888		
Percent with Earned Income	25%	33%	38%	44%	51%	51%	61%	62%	60%	74%	50%
Average Earned income	$16,843	$12,385	$17,576	$21,678	$24,705	$27,266	$37,380	$51,082	$68,749	$158,791	$53,011
Housing Status											
Homeowners	67%	86%	89%	94%	94%	95%	93%	96%	97%	99%	91%
Renters	21%	12%	9%	6%	5%	5%	7%	4%	3%	1%	7%
Other	12%	2%	2%	0%	1%	0%	0%	0%	0%	0%	2%
Average Market Value	$174,537	$166,134	$170,576	$198,652	$203,000	$225,627	$225,760	$257,181	$261,198	$398,455	$231,523
Average Monthly Rent	$478	$753	$953	$1,073	$875	$1,001	$1,086	$1,224	$1,357	$1,501	$843
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$1,189	$1,559	$1,791	$2,016	$2,253	$2,494	$2,616	$2,789	$3,420	$5,440	$2,557
-Property Tax Refund	-$411	-$482	-$522	-$499	-$462	-$369	-$275	-$89	-$24	-$26	-$316
Tax after PTR	$778	$1,076	$1,269	$1,518	$1,792	$2,125	$2,341	$2,700	$3,396	$5,414	$2,241
Renters Only											
Total Tax on Rental Unit	$890	$1,456	$1,987	$2,013	$1,491	$1,705	$1,851	$2,086	$2,314	$1,475	$1,547
Renters Share of Tax	$340	$556	$758	$768	$569	$651	$706	$796	$883	$563	$590
-Property Tax Refund	-$391	-$557	-$678	-$469	-$42	$0	$0	$0	$0	$0	-$330
Tax after PTR	-$51	-$1	$80	$299	$527	$651	$706	$796	$883	$563	$260
Homeowners Only											
Total Tax on Home	$1,645	$1,727	$1,909	$2,092	$2,357	$2,583	$2,756	$2,873	$3,491	$5,508	$2,754
-Property Tax Refund	-$487	-$483	-$513	-$502	-$487	-$387	-$294	-$92	-$24	-$26	-$320
Homeowners Tax after PTR	$1,158	$1,243	$1,395	$1,590	$1,870	$2,196	$2,461	$2,780	$3,466	$5,482	$2,434
State Income Tax	$8	$40	$237	$708	$1,568	$2,380	$3,623	$4,817	$6,911	$26,738	$4,703
State Sales Tax	$950	$1,170	$1,263	$1,333	$1,416	$1,531	$1,663	$1,844	$2,126	$3,497	$1,679
State Excise Taxes	$353	$380	$394	$404	$413	$420	$429	$440	$457	$536	$423
Other Taxes	$807	$907	$979	$1,072	$1,100	$1,239	$1,313	$1,484	$1,699	$3,081	$1,368
Business Taxes [1]	$2,365	$1,696	$1,934	$2,279	$2,731	$2,761	$3,595	$4,336	$3,257	$10,276	$3,523
Total State and Local Tax Burden	$5,261	$5,270	$6,074	$7,312	$9,019	$10,456	$12,964	$15,623	$17,846	$49,542	$13,937
Effective Tax Rate for all Taxes	24.2%	13.1%	11.9%	12.1%	12.8%	12.8%	13.6%	13.6%	12.0%	11.4%	12.4%

[1]For these tables only, Business Taxes does not include the share of Rental Property Taxes borne by the renter.

Table 5-6

Household Characteristics and Average Tax Burden Amounts by Population Decile
Single-Parent Households

Each Decile Contains 32,191 Single-Parent Households

HOUSEHOLD CHARACTERISTICS	Population Decile										Total
	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	
Number of Households	32,191	32,191	32,191	32,191	32,191	32,191	32,191	32,191	32,191	32,191	321,912
Average Number of Children	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.6	1.5	1.4	1.6
Average Household Income	$7,001	$13,699	$18,544	$23,219	$28,004	$33,496	$40,326	$50,338	$66,747	$147,987	$42,936
Maximum Household Income	$11,102	$15,989	$20,886	$25,478	$30,532	$36,605	$44,652	$57,125	$77,921		
Percent with Earned Income	65%	82%	88%	93%	95%	97%	97%	97%	98%	98%	91%
Average Earned income	$8,024	$12,477	$17,315	$21,910	$26,253	$31,392	$37,767	$46,056	$58,813	$105,832	$38,377
Housing Status											
Homeowners	11%	16%	16%	18%	23%	32%	34%	48%	66%	79%	34%
Renters	65%	65%	68%	65%	66%	59%	58%	46%	30%	21%	54%
Other	24%	19%	16%	17%	11%	9%	8%	6%	4%	0%	12%
Average Market Value	$159,283	$88,898	$119,134	$103,056	$94,517	$110,425	$136,304	$144,282	$166,710	$235,190	$156,892
Average Monthly Rent	$153	$285	$385	$485	$583	$623	$712	$811	$857	$1,124	$534
AVERAGE TAX BURDENS											
Local Property Tax											
All Households											
Total Tax	$289	$338	$446	$484	$592	$787	$942	$1,259	$1,801	$2,734	$967
-Property Tax Refund	-$204	-$267	-$357	-$391	-$347	-$428	-$385	-$373	-$346	-$184	-$328
Tax after PTR	$85	$71	$90	$93	$244	$358	$557	$885	$1,455	$2,549	$639
Renters Only											
Total Tax on Rental Unit	$360	$594	$752	$914	$1,057	$1,122	$1,242	$1,399	$1,462	$1,475	$975
Renters Share of Tax	$137	$227	$287	$349	$404	$428	$474	$534	$558	$563	$372
-Property Tax Refund	-$226	-$320	-$395	-$439	-$360	-$470	-$353	-$288	-$108	-$4	-$331
Tax after PTR	-$89	-$94	-$108	-$90	$43	-$42	$121	$246	$450	$559	$42
Homeowners Only											
Total Tax on Home	$1,798	$1,206	$1,578	$1,442	$1,397	$1,610	$1,909	$2,096	$2,477	$3,258	$2,218
-Property Tax Refund	-$530	-$377	-$578	-$592	-$468	-$468	-$524	-$502	-$478	-$232	-$435
Homeowners Tax after PTR	$1,268	$829	$1,000	$850	$929	$1,141	$1,385	$1,594	$1,999	$3,026	$1,783
State Income Tax	-$436	-$944	-$1,092	-$1,005	-$799	-$308	$667	$1,458	$2,505	$7,962	$801
State Sales Tax	$555	$673	$735	$785	$829	$874	$923	$985	$1,114	$1,632	$911
State Excise Taxes	$392	$423	$438	$451	$461	$472	$484	$499	$536	$651	$481
Other Taxes	$264	$302	$365	$402	$493	$536	$650	$746	$950	$1,495	$620
Business Taxes[1]	$789	$785	$855	$923	$997	$1,027	$1,130	$1,255	$1,529	$3,077	$1,237
Total State and Local Tax Burden	$1,649	$1,310	$1,391	$1,648	$2,226	$2,960	$4,410	$5,828	$8,089	$17,365	$4,688
Effective Tax Rate for all Taxes	23.6%	9.6%	7.5%	7.1%	7.9%	8.8%	10.9%	11.6%	12.1%	11.7%	10.9%

[1]For these tables only, Business Taxes does not include the share of Rental Property Taxes borne by the renter.

Table 5-7
Full-Sample Suits Index
Calculated Separately for Each Household Type

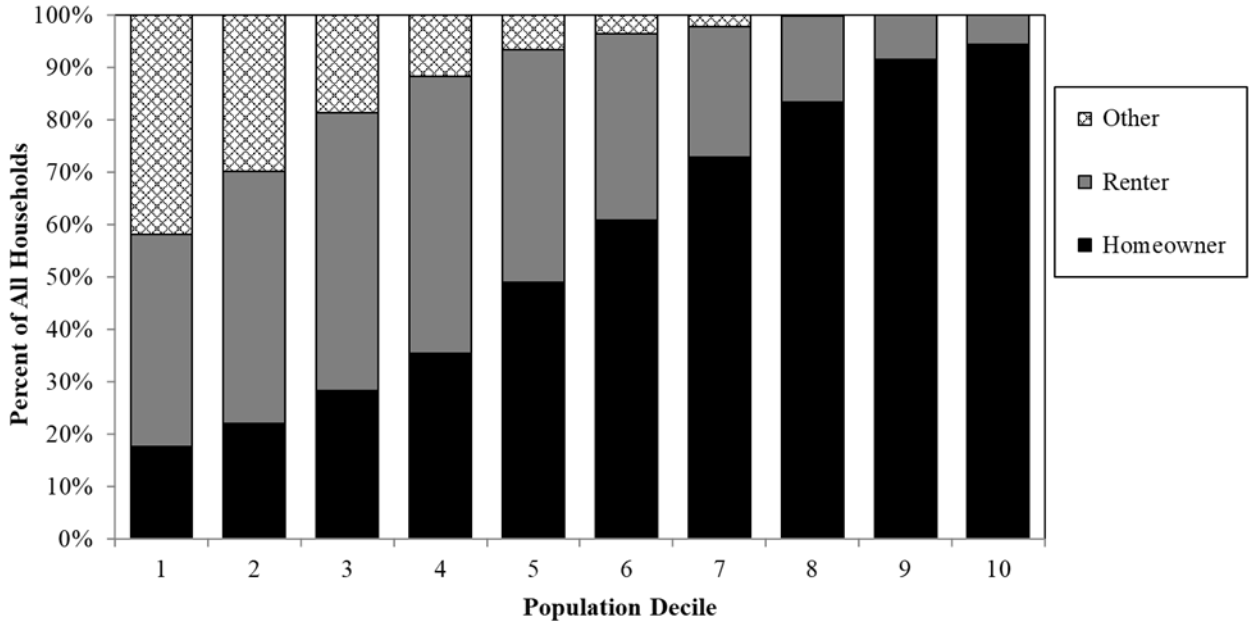
Household Type	Full Sample Suits Index	Average Effective Tax Rate
Married With Children	-0.016	12.2%
Married No Children (Non-Senior)	-0.048	12.3%
Single-Person Household (Non-Senior)	-0.059	12.6%
Single Seniors	-0.031	11.5%
Married Seniors	-0.045	12.4%
Single Parents	+0.047	10.9%
All Family Types	-0.026	12.2%

Housing Status by Population Decile

Figure 5-3 shows how housing status varied with income. As expected, home ownership rates (including farmers) rose steadily with income, from 18 percent in the first decile to 95 percent in the tenth decile. For all households, 56 percent were homeowners. Renter households outnumbered homeowners in each of the first four deciles; the top three deciles contained nine homeowner households for every renter household.

Figure 5-3 also shows that a significant proportion of the households in the first five deciles were classified as neither homeowners nor renters. This "other" category is the result of this study's definition of a household. While the Census defines a household to include all individuals living in a particular housing unit, this study (like other tax incidence studies) defines a household as a taxpayer, a taxpayer's spouse, and all others that are claimed (or could be claimed) as dependents for income tax purposes.

Figure 5-3
Housing Status by Population Decile



In this study, a secondary household living with a primary household is assumed to pay no property tax. For example, an older child living with parents (but not claimed as dependent) would generally be classified as neither renter nor homeowner. Other examples would include elderly parents living with their children or an unrelated single person living with a homeowner. In such cases, the entire property tax burden was assigned to the homeowner; the second household is assumed to pay no property tax.[28] Although the second incidence household might be considered to have paid part of the homeowner property tax, it is not possible to link the two households using available information (nor would it be clear how to split the tax between them).

Most of the non-renter/non-owner households were single persons in the lower income deciles, reflecting the characteristics of such persons in the Census data. Those living in group quarters (including nursing homes) were also included in this category. None of those living in group quarters would have been considered a separate household by the Census.

Incidence Households Compared to Census Households

By extrapolating from the incidence database, the tax incidence study estimates a total of 2,716,900 Minnesota households in 2016, with a median income of $47,991. In contrast, the U.S. Census reports a total of 2,148,725 Minnesota households in 2016, with a median household income of $65,599. Census households average 2.51 persons, while the incidence study households average 1.98 persons. This section explains the differences between the numbers presented in this study and those reported by the Census.

The Census defines a household to include all persons who live together in a housing unit. The precise Census definition is:

> A household includes all the persons who occupy a housing unit . . . in which the occupants live and eat separately from any other persons in the building and which has direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements.

In contrast, the incidence study defines a household as an actual or potential income tax filer and all dependents, even if not living under the same roof.

[28] If a home is owned jointly, the property tax is split equally among all owners.

There are three basic reasons why Census and incidence households differ. First, some Census households are not counted as incidence study households. For example, a full-time college student living in an apartment and claimed as a deduction on a parent's tax return is a Census household but would be combined with the parents in the incidence study. Second, Census households often contain two or more incidence households. For example, three single persons sharing an apartment would be counted as one Census household but might be three incidence households. Third, individuals living in "group quarters" are not part of any Census household, but some are defined as a household in the incidence study. Examples include a financially independent college student living in a college dorm, or a nursing home resident not claimed as a dependent on someone else's tax return. As a result, the incidence study reports 26 percent more households than the Census, and the median household income in the incidence study is only 73 percent of that reported by the Census.

In summary, the incidence study's population is consistent with the Census.[29] The U.S. Census estimate of Minnesota's 2016 population exceeds the Incidence Study population by 2.4 percent (though the incidence study's population exceeds the population in Census *households* because it includes some in group quarters). This difference in the total population is primarily due to this study's exclusion of part-year residents. The lower median income reported in this study occurs largely because the same total income is spread over a larger number of households. The incidence definition of a household is more appropriate than the Census definition when describing the distribution of the tax burden.

[29] More details about the cross-walk between Census data and the data used in tax incidence studies can be found in the 1999 *Tax Incidence Study*, pp. 19-21. Total household income reported in the *Tax Incidence Study* exceeds that in Census estimates by almost 19 percent. This reflects both the study's broader definition of income and income underreporting in the Census.

Appendix A
The Incidence Study Database

The 2016 incidence study database includes detailed information on income and taxes for a stratified random sample of 143,649 Minnesota households. This sample is then "blown up" to represent 2.72 million Minnesota households. Individual income tax returns and property tax refund returns filed with the Department of Revenue were the primary sources of information and were supplemented with data on nontaxable income obtained from various sources. The additional nontaxable income information provides a more accurate measure of total income, particularly for low-income households who did not meet tax filing requirements.

The use of social security numbers to merge income data from different sources for specific individuals is a unique and important aspect of this study. Income data was matched, for example, with property tax and market value information for individual homeowners. Because of these "hard matches," the need to impute estimated values of income and tax variables to households in the database was minimized.

The incidence study database was constructed from a number of different sources. First, data was taken from state and federal income tax returns filed in Minnesota. Then, data was added from property tax refund returns. More information concerning homestead property taxes was obtained from data provided by Minnesota counties to the Department of Revenue. Additional income and data came from several state agencies. Information obtained from the American Community Survey of the United States Bureau of the Census was used to estimate annual rent expenditures for renter households. Finally, estimates of household spending patterns were derived using several years of Consumer Expenditure Survey data from the United States Department of Labor.

Measurement of Household Income

An appropriate measure of income is critical to any study of tax incidence. By definition, a tax incidence study compares taxes paid to some measure of a household's economic well-being or ability-to-pay. In this study, tax burdens are expressed as ratios of taxes paid to a broad measure of household money income. This comprehensive measure of money income includes not only income taxable on income tax returns but also nontaxable income, such as public assistance payments, tax-exempt interest, and nontaxable social security and pension income.

Definition of Income

The definition of income should be as consistent as possible with the public's perception of economic well-being. Households with equal incomes should be viewed as being equally well off, and those with higher incomes should be considered consistently better off than those in lower income groups. This argues for a comprehensive definition of income. An incidence study using too narrow a definition of income would overstate the ratio of taxes to income; it might also give a distorted picture of the regressivity or progressivity of the tax system.

Comprehensive income in this study includes only monetary sources of income. Capital gains and pension benefits are included when realized, not as they accrue, and no adjustment is made for inflation or for the impact of family size on ability-to-pay.

Components of Household Income in 2016

Table A-1 summarizes the measure of household income used in this study. Minnesota households are divided into three groups.

- Income tax filers (88.7 percent of all households and 97.6 percent of all income)
- Property Tax Refund filers who file no income tax return (3.1 percent of all households and 0.8 percent of all income)
- Nonfilers (8.2 percent of all households and 1.6 percent of all income)

Federal Gross Income (FGI) reported on federal income tax returns accounts for 86.6 percent of total income. Nontaxable interest and retirement income reported on income tax returns adds another 8.1 percent.

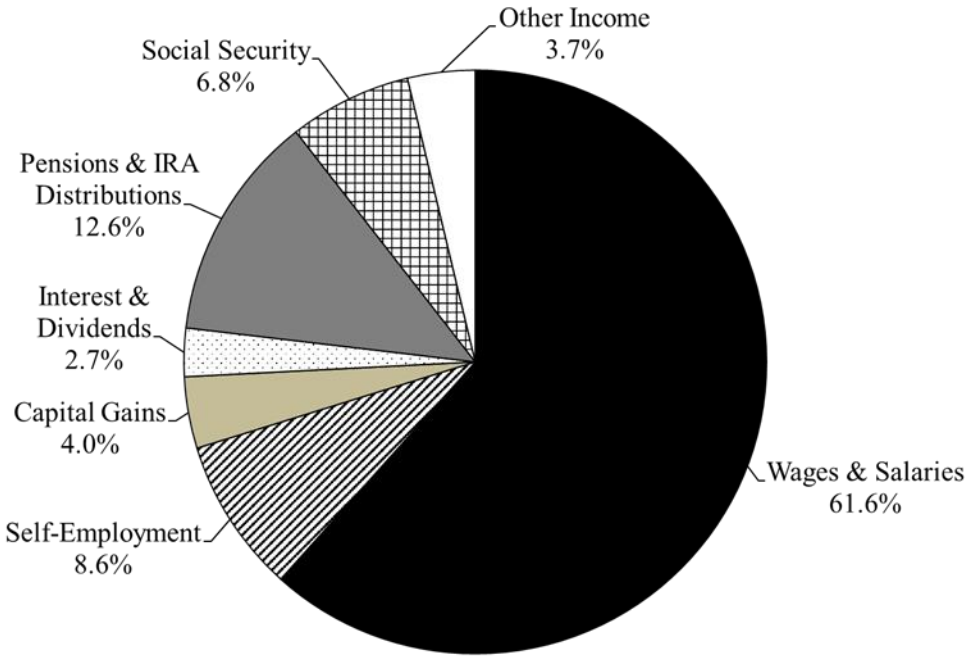
Table A-1
Components of Total Household Income in 2016 ($ Millions)

Group	Source of Income	Amount
File income tax 2,410,060 households (88.7% of households 97.6% of total income)	Wages	$ 134,487
	Taxable interest & dividends	5,068
	Business income (Schedules C, E, and F)	20,070
	Capital gains & other gains	8,710
	Taxable IRA distributions	4,933
	Taxable pension & annuity income	11,526
	Taxable unemployment benefits	608
	Taxable social security benefits	5,560
	Other taxable income	(621)
	Federal Gross Income (FGI)	**$ 190,341**
	Adjustments to FGI	
	Taxable refunds of state income taxes	(603)
	Half of Self-employment tax	(503)
	Self-employed health insurance deduction	(706)
	Penalty on early withdrawal of savings	(4)
	Alimony paid	(185)
	Nontaxable interest	755
	Nontaxable IRA distributions	1,056
	Nontaxable pension & annuity income	9,644
	Nontaxable social security income	6,368
	Other nontaxable income	7,847
	Public assistance cash payments	286
	Workers' compensation	157
	Total Household Income	**$ 214,454**
File Property Tax Refund (but not income tax) 82,900 households (3.1% of households 0.8% of total income)	Wages	$ 203
	Interest & dividends	14
	Unemployment benefits	2
	Pension income	159
	Social security income	1,008
	Public assistance cash payments	186
	Workers' compensation	6
	Other income	133
	Total Household Income	**$ 1,711**
Nonfilers 223,940 households (8.2% of households 1.6% of total income)	Wages	$ 737
	Interest & dividends	45
	Unemployment benefits	26
	Pension income	336
	Social security income	2,013
	Public assistance cash payments	160
	Workers' compensation	42
	Other income	187
	Total Household Income	**$ 3,546**
Total Population 2,716,900 households	**Total Household Income**[1]	**$ 219,711**

[1]Household income differs from what is shown in *Table 2-2* because *Table 2-2* sets negative total incomes to zero.

Figure A-1 shows the shares of income by type of income. Wages account for 61.6 percent of all income, and income from sole proprietors, farmers, pass-through entities, and rents accounts for another 8.6 percent. Capital income in the form of interest, dividends, and capital gains combines for 6.7 percent. Retirement income totals 19.4 percent.

Figure A-1
Shares of Total Income (2016)



Income Not Included in Incidence Study Income

Minnesota money income excludes many forms of income that would be included in the broadest income measure. It excludes all non-monetary forms of income (food stamps, housing subsidies, Medicare and Medicaid benefits, employer-provided fringe benefits, and imputed rent for homeowners). It includes capital gains and pension income only when realized, not when accrued. No adjustment is made for depreciation deductions in excess of economic depreciation, nor is a deduction made for the portion of interest income that represents inflation.

Minnesota money income also excludes some forms of cash income. Three particular omissions should be noted. First, due to data limitations, only a portion of wage and salary and other income could be added to other sources of income, such as public assistance and social security benefits, for taxpayers who file neither an income tax nor a property tax refund return. This results in an understatement of money income and an overstatement of tax burdens for the lowest income groups. Second, veterans' benefits are excluded (except for those reported on property tax refund returns). Third, child support payments are not included as income for the recipient, nor are they subtracted from the income of the payer.

Comparison to Personal Income

A commonly used measure of income is "personal income" as reported by the U.S. Department of Commerce, Bureau of Economic Analysis. Personal income differs from the definition of income used in this study in a number of ways. The most important components of personal income that are not included here are employer contributions for employee pension and insurance funds and the investment income of life insurance carriers and pension plans. It should also be noted that personal income does not include some significant items that are included in FAGI and hence in this study. Personal income excludes the following: capital gains, taxable pensions, and the employee share of Social Security and Medicare taxes.

Accounting Period

Income received in a single year can be a misleading measure of economic well-being. Individual households may have unusually high or low income in a particular year due to business losses, unemployment, or the sale of capital assets. Because of such transitory income, a snapshot of the income distribution in a single year shows more income inequality than would a time exposure over several years. In addition, income varies over a household's life cycle. For these reasons, annual income may not be an accurate measure of a household's more permanent economic well-being.

In spite of these shortcomings, there are two strong reasons why this study uses annual rather than permanent income. First, an adequate record of the income of individual households over a longer period is rarely available. Consequently, state incidence studies have always used an annual accounting period. Second, an annual perspective may be preferred because taxes are paid out of a household's current income, not out of what might be earned in the future. If the purpose of an incidence study is to make policy decisions regarding current ability to pay taxes, then it is reasonable to argue that the appropriate measure should be based on annual rather than permanent income.

Definition of a Household

This study combines dependents who file their own income tax return with taxpayers claiming them as dependents to form a single household. The most common situation is a student working part-time and claimed as a dependent on the parent's tax return. If not combined into a single household, these part-time workers would be treated as separate, low-income individuals in the study, with misleading results.

Some income information for nonfilers was initially reported separately for each member of a family (e.g., spouses having separate social security payment records). When possible, available state agency files containing name and address information were used to combine such individuals into household units. This adjustment provides a more accurate picture of such households.

Appendix B
The Incidence Analysis

Introduction

The results of any incidence study are determined by the study's incidence assumptions. This section explains both the incidence assumptions used in this study and the method of allocating tax burdens to specific households. This study's incidence assumptions are summarized as follows:

1. Incidence of Taxes on Households

   - The personal income tax is paid by individual taxpayers, and the incidence is the same as the initial impact of the tax.
   - Taxes on purchases by consumers (sales, solid waste management) are borne by consumers of the taxed items.
   - The property tax on homeowners is borne by the homeowner.
   - The motor vehicle registration tax on vehicles owned by households is borne by the owner of the vehicle.
   - Mortgage registration and deed transfer taxes on homes are borne by homeowners.
   - Excise taxes – those on motor fuels (bought by consumers), tobacco, and alcohol – are assumed fully shifted to consumers, as are the taxes on consumer purchases of insurance, MinnesotaCare taxes, and taxes on gambling. For purposes of this study, these are considered taxes on households even though they are paid by businesses. The term "business taxes" in this study does not include these taxes.

2. Incidence of Taxes on Business

   Most taxes on business property, business purchases, and corporate income are partially shifted to consumers and workers. The amount of tax shifting varies by tax and by business sector, depending on the scope of the product market (local or national) and the magnitude of Minnesota's tax rates compared to those in other states. To shift a tax, the individual or business legally liable to pay the tax must alter its economic behavior because of the tax. For example, a property tax paid by a business firm may lead the firm to raise its prices, lower its pay to employees, or the business owner may experience reduced profits.

The rationale for this study's incidence assumptions is discussed in the next two sections. First, taxes on households are discussed. The incidence of business taxes, which is discussed next, is much more complex. Many issues are unsettled, and a wide variety of approaches have been used in incidence studies other than Minnesota's approach. As a result, this section provides an extended discussion of the methodology underlying this study's approach to business tax incidence.

Taxes on Households

Taxes on Income or Wealth

Individual Income Tax. This study assumes that the burden of the individual income tax is not amenable to shifting through changes in either wages or interest rates. This assumption is correct if total hours worked and savings rates are unresponsive to after-tax returns and the package of public spending and taxes in Minnesota (compared to other states) does not cause significant migration. Given this assumption, the state income tax burden equals each household's tax liability, as listed in the study's database.

Estate Tax. Defining the incidence of the estate tax presents unique problems; the impact of the tax is on the estate, not on a currently acting economic entity (person or firm) as is true of all other taxes. There is no consensus among economists as to whether the incidence of the tax properly applies to the decedent or to the estate beneficiaries, and arguments can be made for either position. Given the information that was available for analysis, the computations reported here were carried out assuming that the incidence of the estate tax was on the decedent.

In order to eliminate the chance that decedent incomes were understated due to lack of a full year's income in the year of death, estate tax returns were matched against income tax returns for the last two full years prior to death. All returns for deaths occurring between 2000 and 2016 were included in estimating how the tax varied with income.

Taxes on Consumer Purchases

Sales and Excise Taxes. This study, like most other incidence studies, assumes that businesses legally liable for sales and excise taxes on final products and services will be able to raise product prices by the full amount of the tax, leaving wages and the return to capital unchanged. Therefore, the tax burden is fully shifted to consumers in higher prices. The sales and excise tax burdens were allocated in proportion to each household's consumption of taxed items, as estimated in the study's database.

Insurance Premiums Taxes. The insurance premiums tax equals a flat percentage of the premium paid on selected types of insurance. This tax was assumed to raise insurance premiums by the full amount of the tax, so its burden was distributed in proportion to each household's purchase of insurance subject to the tax. For auto, life, medical, and household insurance, the tax burden allocation was in proportion to expenditures as estimated from the *Consumer Expenditure Survey*.

Gambling Taxes. Gross receipts taxes on pulltabs, tipboards, bingo, raffles, and horse racing were assumed to be borne by the bettor. A 1994 survey by the Minnesota Lottery[30] provided substantial information about how gambling varies by income level. That information was supplemented by more recent data from a Wisconsin Lottery Tracking Study and current data from the Consumer Expenditure Survey.

MinnesotaCare Taxes. The two percent gross receipts tax on most medical bills (including hospital, physician, dental, and laboratory services along with prescription drugs) was assumed to be paid by consumers in higher out-of-pocket medical costs or higher costs for insurance (except for Medicare premiums). The higher costs of employer-provided health insurance were assumed to be borne by households in reduced wages or other fringe benefits. MinnesotaCare taxes were distributed in proportion to the sum of the total (employer plus employee) cost of health insurance plus out-of-pocket costs for medical services and prescription drugs.

Property Taxes on Non-Business Property

Homeowner Property Taxes. The homeowner is both the owner and consumer of housing. As a result, the homeowner bears the full tax burden, regardless of how the burden is split between consumers and owners. The tax burden on the household was assumed to be the total property tax paid on the homestead, as identified in the incidence study database. Similarly, the property tax on cabins was assumed borne by the owners.

Motor Vehicle Registration Tax and County Wheelage Taxes. The registration tax on motor vehicles owned by households was assumed to be fully borne by the owner. In this study, the actual tax paid by sample households was found by matching sample households to the motor vehicle registration files.

[30] Minnesota State Lottery (1994). *Gambling in Minnesota.* St. Cloud University Survey Research, February.

Mortgage Registration and Deed Transfer Taxes. The homeowner portion of these taxes was assumed to be borne by the owner of the home. Given a lack of information about the identity of those buying homes or obtaining mortgages in 2016, the burden of the mortgage registration tax was distributed over all mortgage holders (in proportion to mortgage interest paid in 2016); the deed transfer tax burden was distributed over all homeowners (in proportion to the estimated market value of the home).

Adjustment for Burdens on Nonresident Households

The proportion of the total receipts from each of these taxes that was allocated to Minnesota households was given in *Table 1-2*. For the general sales and use tax and the excise taxes, the Minnesota household share was estimated by the Minnesota Consumption Tax Model. For the other taxes (insurance premiums tax, property tax on cabins, gambling taxes, MinnesotaCare taxes, motor vehicle registration tax, and mortgage and deed taxes), the total burden on Minnesota households was defined as total collections minus the estimated taxes paid by business and nonresident visitors and tourists.

Some incidence studies reduce state and local tax burdens to reflect the "federal tax offset." State income taxes and homeowner property taxes are both deductible in calculating federal income tax liability, so households paying these Minnesota taxes will pay less in federal income tax (if they itemize deductions). A portion of these deductible taxes is sometimes considered to be shifted to the federal government in lower federal tax revenue. Although no such adjustment is included in this study's general results, the impact of such an adjustment (and the arguments for and against it) are presented earlier. (See *Chapter 4, Section B.)*

Taxes on Business

Introduction

This study includes $10.2 billion in business taxes in 2016, as summarized in *Table 2-1*. These business taxes (including rental property taxes) account for a significant percent of Minnesota's state and local tax revenue. Business taxes include both taxes on capital (structures, capital equipment, and land) and taxes on business purchases of short-lived intermediate inputs (such as gasoline and restaurant meals).

This study estimated the incidence of each of these business taxes. While the initial impact of these taxes is on business, they are partially shifted forward to consumers in higher prices or backward to labor in lower wages. Much of the tax is paid by nonresidents, either as consumers of goods and services produced in Minnesota or as owners of capital and land located in Minnesota. This section summarizes how this study estimated the incidence of business taxes, and how business tax burdens were allocated to Minnesota households.

Conceptual Structure

The following six principles define this study's approach to estimating the incidence of Minnesota's existing business taxes.

1. *Capital moves to where it earns the highest return.* If a tax on capital in a single state (or industry) reduces the after-tax rate of return, investors will move their capital to lower-tax locations (or industries). As production falls, prices will rise or costs (including wages) will fall until the after-tax rate of return is again equal to the after-tax rate of return elsewhere. Only the average tax on all forms of capital in all states — a tax which owners of capital cannot avoid — will be fully borne by capital so long as capital is free to move in search of the highest rate of return.

2. *Minnesota's taxes do not occur in isolation.* Every state levies business taxes. The incidence of a tax levied at the same rate in all states differs greatly from the incidence of a tax levied only in Minnesota. For example, a one percent tax levied on business capital in only Minnesota will be largely shifted to consumers and workers; capital is unlikely to bear much of the final burden due to the ease of capital movement. In contrast, if all states impose the identical one percent tax on the value of all business capital, investors cannot escape the tax. Such a "national" tax on capital is much more likely to be borne by capital, reducing the after-tax rate of return on capital throughout the nation.

   This distinction between a single-state tax and a nation-wide tax is crucial to the results of this study. The incidence of a particular Minnesota tax on business depends on how Minnesota's tax rate compares to those of other states. If, for example, a particular Minnesota business tax rate is 10 percent above the national average, the incidence of this 10 percent "Minnesota differential" will differ greatly from the incidence of the remainder of the tax.

3. *Minnesota's tax structure evolved over time.* In describing the incidence of existing business taxes, this study assumes that businesses, consumers, and workers have fully adjusted to tax differences across states.

4. *Some businesses, depending on their market, can shift Minnesota business taxes forward to consumers in higher prices.* Given time for full adjustment, the ability to shift taxes forward to consumers depends on the nature of the product being sold. Some producers, such as restaurants, compete only with other Minnesota companies; tax increases would affect all restaurants equally, and prices would rise to cover this higher cost. In contrast, a higher Minnesota tax on manufacturers is much harder to shift to consumers because firms compete in a national market. Therefore, Minnesota manufacturers cannot raise prices to cover higher state taxes. In this study, producers of "local market products" are assumed to pass tax differentials on to consumers but producers of "national market products" cannot.

5. *A tax that reduces the competitiveness of Minnesota businesses will be borne by immobile resources — those either unable or unwilling to leave the state.* If capital is mobile and prices cannot be increased (due to competition), the burden of business taxes will reduce payments to inputs that are geographically tied to the state, including labor and land.

6. *An increase in taxes reflects an increase in state and local government spending.* This study assumes that workers do not move between Minnesota and other states in response to changes in state taxes, because tax changes are offset by expenditure changes, leaving the net benefits to Minnesota taxpayers unchanged. In other words, labor (along with land) is assumed to be immobile. In contrast, changes in taxes on business income are assumed not to be offset by changes in benefits from government expenditures.

In summary, these six concepts have guided this study's approach to estimating the incidence of Minnesota's existing business taxes. The study provides an answer to the question: What is the burden of Minnesota taxes on Minnesota residents, in a multistate context where Minnesota's taxes coexist with those of other states, assuming that producers and consumers have fully adjusted to existing tax rate differences?

Allocation of Business Taxes

The six concepts discussed above are used in this section to determine the allocation of business taxes among the four major taxpayer categories: Minnesota consumers, Minnesota capital, Minnesota labor, and nonresidents. The methodology used in this step is discussed in detail before the results are presented.

Several major features of the tax incidence approach used in this study are important to keep in mind. First, this study emphasizes the importance of Minnesota tax rates relative to those in other states. In estimating the incidence of existing business taxes, it is the relative tax rate that matters, not the absolute level of taxes. The incidence of a property tax on manufacturers, for example, depends on how heavily other states tax such property.

Second, this study emphasizes the difference between the incidence of existing business taxes and the incidence of an incremental increase in those taxes. Much of an existing business tax is matched by taxes in other states. The incidence of an increase in such a tax (unmatched by increases in other states) would be quite different. The tax incidence results in this study measure the distribution of existing taxes, not the distribution of increasing Minnesota taxes relative to other states.

Third, this study estimates the burden of business taxes after businesses, consumers, and workers have fully adjusted to them in the long run. For example, relatively high tax rates on capital may reduce wages of Minnesota workers through less capital investment. This long-term perspective is appropriate for estimating the incidence of existing taxes.

Allocation of Business Taxes: An Example

To understand the allocation approach used in this study, suppose that Minnesota levied a $120 million tax on capital — manufacturing equipment, for example. The owners of that capital are legally liable for the tax, but who would bear the ultimate burden? The first step in answering this question is to determine how shifting spreads the tax to capital owners, consumers, and labor.

Allocating the Burden Among Capital, Consumers, and Labor

For each of the business taxes on capital, the tax paid by a particular economic sector is divided into three parts:

- The portion representing the *national average tax rate on all capital.*
- The portion representing the *national sector differential.*
- The portion representing the *Minnesota sector differential*.

This 3-part division of the tax is based on the answers to three questions. The approach is summarized in *Figure B-1*, using the example of a $120 million property tax on capital in the manufacturing sector.

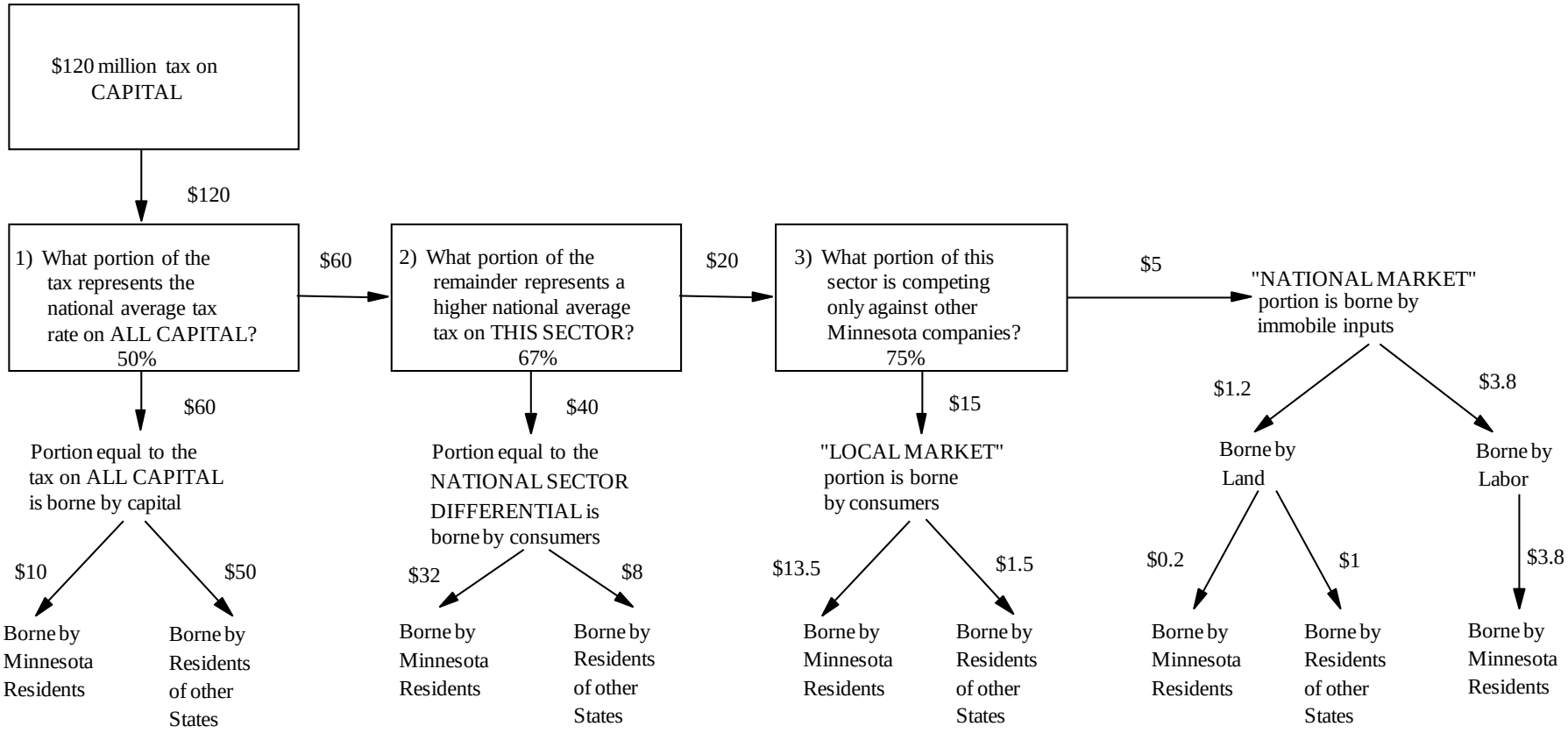
Question 1. What portion of this $120 million Minnesota tax represents the national average tax on all capital? If all states levied an identical tax on *all* forms of capital, capital would be unable to shift that tax to others and the entire burden would be borne by capital. Given the variation in rates among the states, it is the "average national tax rate on capital" which is borne by capital owners.

The average tax rate on all capital is measured in this study as the average state tax rate on all capital — total tax revenue (in all states) divided by the total national stock of capital. If the Minnesota tax rate on a particular sector is equal to the national average tax rate on all capital, then the tax will be borne entirely by the owners of capital; if the Minnesota tax rate exceeds the national average tax rate the remainder of the Minnesota tax would be shifted either forward to consumers or backward to labor and other immobile inputs.

For each particular tax on capital, this study estimates the average national tax rate on all capital. If the Minnesota tax rate on a particular form of capital is twice the national average (as is assumed hypothetically in *Figure B-1*), then the burden of the first half of the tax is assumed to fall on capital. What happens to the remaining half ($60 million) depends on the answers to the next two questions.

Figure B-1

Incidence of a Hypothetical $120 Million Tax on Capital



Summary of Tax Incidence
($ Millions)

Taxpayer Category	Total	Minnesota Residents	Residents of Other States
Capital*	$61.2	$10.2	$51.0
Consumers	55.0	45.5	9.5
Labor	3.8	3.8	0.0
Total	$120.0	$59.5	$60.5

*Capital includes land.

Question 2. What portion of the remaining $60 million in taxes on capital equipment represents a higher national average tax on this particular sector? Because capital taxes are levied at different rates on different forms of capital, some forms of capital are taxed in all states at a higher rate than all capital. For example, commercial property is taxed at a considerably higher rate than manufacturing property, and both are taxed more heavily than agriculture. In this example, suppose the national tax rate in the manufacturing sector is 1.67 times as high as the national average tax on all capital. This 67 percent higher-than-average tax rate difference for the manufacturing sector is referred to as its "national sector differential."

Despite these heavier taxes, however, the after-tax rate of return in manufacturing cannot remain lower (with mobile capital) than the rate of return available in other sectors. As firms adjust by reducing output, the portion of a tax on capital equal to this "national sector differential" is borne entirely by consumers in the form of higher prices. For each tax on capital, this study estimates the average national tax rate on capital invested in each sector. The share of the Minnesota tax representing the "national sector differential" is allocated to consumers of products produced in Minnesota. (See *Figure B-1*.)

The remaining tax (if any) is the "Minnesota sector differential" — the amount by which Minnesota's tax rate on capital invested in this sector exceeds the national average tax rate in this sector. To determine who bears the burden of this "Minnesota differential," it is necessary to answer the third question.

Question 3. What portion of this sector's producers compete only against other Minnesota producers in "local markets"? For products sold in local markets, the Minnesota differential will result in higher prices to consumers.

In contrast, prices for products that compete in national markets (including most manufactured products) are determined nationally. A "Minnesota sector differential" on producers of such national market products cannot usually be shifted to consumers, so that the burden of the tax must fall on immobile resources, land, and labor. This study assumes that immobile labor and landowners share the burden of any Minnesota sector differential for national market products in proportion to their relative shares in production.

In summary, to allocate the burden of taxes among capital owners, consumers, and labor, this study divides the $120 million tax into three parts (the percentages refer to the example in *Figure B-1*):

1. The portion representing the "national average tax on all capital" is borne by capital ($60 million, which is 50 percent of the total).

2. The portion representing the "national sector differential" is borne by consumers ($40 million, which is 33 percent of the total).

3. The portion representing the "Minnesota sector differential" is borne by:
   - Consumers for products sold in "local markets" ($15 million, 13 percent);
   - Labor and landowners for products sold in "national markets" ($5 million, 4 percent).

This approach requires an estimate, for each tax, of the national average tax on all capital. For each tax and each sector, it requires an estimate of the Minnesota differential — the excess of Minnesota taxes over the national average for that sector. The study also needs to estimate, for each sector, the extent to which its products are sold in local as opposed to national markets.

Allocating the Burden Between Minnesota Residents and Nonresidents

Exported Tax Burden. A large amount of capital located in Minnesota is owned by nonresidents. For the portion of any tax borne by capital and land, much of the burden will fall on residents of other states. IRS data was used to identify the proportion of Minnesota businesses in each sector that are corporations, S-corps, partnerships, and sole proprietors. This study assumed that nonresidents own 90 percent of the stock in corporations subject to Minnesota tax, 50 percent of S-corps and partnerships subject to Minnesota tax, and 10 percent of sole proprietor businesses subject to Minnesota tax. As such, in sectors which are predominantly corporate, most of the burden falling on capital was exported.

Consumers located in other states will pay some of the "national sector differential" on Minnesota firms that is shifted forward in higher prices. In addition, nonresident visitors bear some of the tax shifted to in-state consumption. For each sector, this study estimated the proportion of sales made to (1) out-of-state consumers and (2) visitors.

The burden on labor (in the form of reduced wages) was assumed to fall entirely on Minnesota residents.

Imported Tax Burden. Both Minnesota consumers and Minnesota owners of capital and land located in other states pay taxes to other states. However, taxes that Minnesota residents pay to other states are ignored here; this study estimates and analyzes the incidence of Minnesota taxes on Minnesota residents.

Federal Tax Offset. In estimating the incidence of existing Minnesota taxes, this study makes no adjustment for the "federal tax offset" due to the deductibility of Minnesota business taxes in calculating federal taxable income. Given the "multistate" approach taken in this study, the federal tax offset is most likely to be quite small. All 50 states levy business taxes. Since approximately one-third of *every* state's business taxes are offset by a reduction in federal revenues, the federal government has essentially replaced this lost tax revenue through higher federal tax rates. A state's "net" federal tax offset would be its "gross" federal tax offset minus the state's share of those increased federal tax payments. As a result, the net offset for the average state would be zero; with above average business taxes, Minnesota's would be positive. However, given the offset's small and uncertain size, this study simply assumes it is zero.

The same argument also applies to the federal tax offset for non-business taxes (the individual income tax, homeowner property tax, and motor vehicle registration tax) deductible in calculating federal individual income tax liability; the net offset for the average state is again zero. Given the multistate perspective of this study, no federal tax offset for household taxes is included. For informational purposes, however, the impact of the federal tax offset for non-business taxes is presented in *Chapter 4, Section B.*

Taxes on Intermediate Business Inputs

The incidence of a tax on short-lived intermediate business inputs like gasoline, business meals, lodging, or liquor, is different from the incidence of a tax on capital. While a uniform national tax on all capital would be borne by capital, a uniform national tax on business purchases of gasoline, for example, would not. It would almost certainly be shifted forward to consumers in higher prices. Taxes on short-lived intermediate products raise the cost of production, but they do not raise the cost of capital.

As a result, the approach to the incidence of such taxes skips the first of the three questions asked about capital taxes. The tax on intermediate business purchases is divided into only two parts:

1. The portion representing the "average national tax rate" on this sector is shifted forward to consumers in higher prices.

2. The portion representing the "Minnesota differential" is borne by:

    a. Consumers for products sold in "local markets;"
    b. Labor and landowners for products sold in "national markets."

Property Taxes on Land

Unlike reproducible capital, land is not mobile, so the land share of business property taxes is assumed to fall on its owners.

Business Tax Allocators

After estimating the share of Minnesota business taxes borne by Minnesota owners of capital and land, consumers, and labor, the final step was to allocate those taxes to specific households based on each household's characteristics contained in the database records. In most cases, the study allocated to each household the average tax burden for households with the same characteristics. *Table B-1* summarizes the allocators used in this final step.

Table B-1
Business Tax Allocators

Allocator	Used to Distribute Tax Borne By:
Dividend Income	Corporate Owners
Noncorporate Capital Ownership	Noncorporate Owners
Total Consumer Expenditures	Consumers
Labor Income	Workers
Adjusted Farm Property Tax	Farmers using their own land.
Farm Rents	Farmers leasing their land.

Burden on Consumers. Taxes shifted forward to consumers in higher prices were allocated based on their share of total consumer expenditures, as estimated from the *Consumer Expenditure Survey*. Total expenditures for a particular household were estimated based on household income and household type.

Burden on Renters. Renters are the consumers of rental housing, so the proportion of the total rental property tax shifted forward to renters in higher rents is estimated using the same methodology used for other business taxes. That portion of total taxes on rental housing is distributed across renter households in proportion to each household's annual rent. For renter households receiving a property tax refund, annual rent is known. For others, rent is estimated based on the most recent information from the U.S. Census.

Burden on Corporate Capital. The burden on corporate capital was allocated to households in proportion to taxable dividends received. This allocator was used to estimate the total income received by owners of corporate stock, both as dividends and as capital gains on appreciated stock. Although dividends received may not be a good measure of corporate ownership for particular individuals, the decile-by-decile distribution of dividend income should match the distribution of corporate capital fairly closely.

Burden on Noncorporate Capital. Noncorporate business capital includes capital owned by sole proprietors, partnerships, and S corporations. This study used a variety of information from Schedules C and E to develop a reasonable estimate of each household's ownership of noncorporate capital. The construction of this measure guaranteed that: (1) households with large business losses are assigned some capital ownership (based on either claimed depreciation or the size of claimed losses); and (2) the shares of capital ownership imputed to those with sole proprietor income, rental income, and partnership and S corporation income are roughly proportional to each income source's aggregate share of claimed depreciation.

Burden on Farmers. Rental land accounts for about one-third of Minnesota farm land. Approximately half of all farm business property taxes were paid on rented land, reflecting higher classification rates on non-homestead farms. Therefore about half of the farm business property tax burden was allocated in proportion to farm rents (reported on Schedule E), with the rest allocated in proportion to farm homestead property taxes.

Burden on Labor. The burden on labor (through lower wages) was allocated based on each household's share of earned income, defined as the sum of wages and salaries, plus three-quarters of income reported by sole proprietors.

A summary description of the incidence results for the distribution of each business tax to consumers, capital, and labor (both residents and nonresidents) is provided in *Table B-2*.

Table B-2
Distribution of Business Tax Burden by Taxpayer Category (2016)

	Percent Borne by Minnesota Taxpayers			Percent
	Capital	Labor	Consumers	Exported
State Taxes				
Corporation Franchise Tax	9%	5%	43%	43%
Sales and Excise Taxes				
General Sales and Use Tax	11%	0%	51%	38%
Motor Vehicle Sales Tax	35%	0%	9%	56%
Motor Fuels Excise Taxes	0%	0%	57%	43%
Mortgage and Deed Taxes	49%	0%	18%	33%
Gross Earnings Taxes				
Insurance Premiums Taxes	18%	0%	35%	47%
In lieu of property taxes				
Motor Vehicle Registration Tax	12%	12%	44%	31%
Solid Waste Management Taxes	0%	0%	68%	32%
State Property Tax				
Commercial	20%	4%	33%	43%
Industrial	13%	23%	5%	59%
Utility	2%	3%	58%	36%
Local Taxes				
Property Taxes (Pay 2010)				
General Property Tax				
Commercial	20%	4%	33%	43%
Industrial	13%	23%	5%	59%
Farm (other than residence)	100%	0%	0%	0%
Rental Housing	47%	0%	38%	14%
Utility	2%	3%	58%	36%
Mining Production Taxes (taconite)	9%	1%	0%	90%
Wheelage Taxes	12%	12%	44%	31%
Local Sales Taxes	11%	0%	51%	38%
Local Gross Earnings Taxes	2%	3%	58%	36%

Incremental vs. "Average" Incidence

The analysis in this study assumes that markets are in equilibrium, with economic factors fully adjusted to tax rates here and in other states. Analyzing the effect of a tax change poses a different problem.

The incidence of a *change* in business taxes would be different from those presented in this study. Compared to the results in this study, economic theory suggests that the long-run incidence impact of a change in Minnesota business taxes would tend to fall:

- *less* on nonresidents,
- *less* on Minnesota owners of capital,
- *more* on Minnesota consumers, and
- *more* on Minnesota labor.

In addition, the incidence of a change in Minnesota tax should include the impact of the federal tax offset. (See *Chapter 4, Section B.*)

Illustrations of the magnitude of these differences are presented in *Chapter 4, Section D.*

The logic of business tax incidence described in this Appendix divides a business tax on capital into three parts:

- The portion representing the *national average tax rate on all capital.*
- The portion representing the *national sector differential.*
- The portion representing the *Minnesota sector differential.*

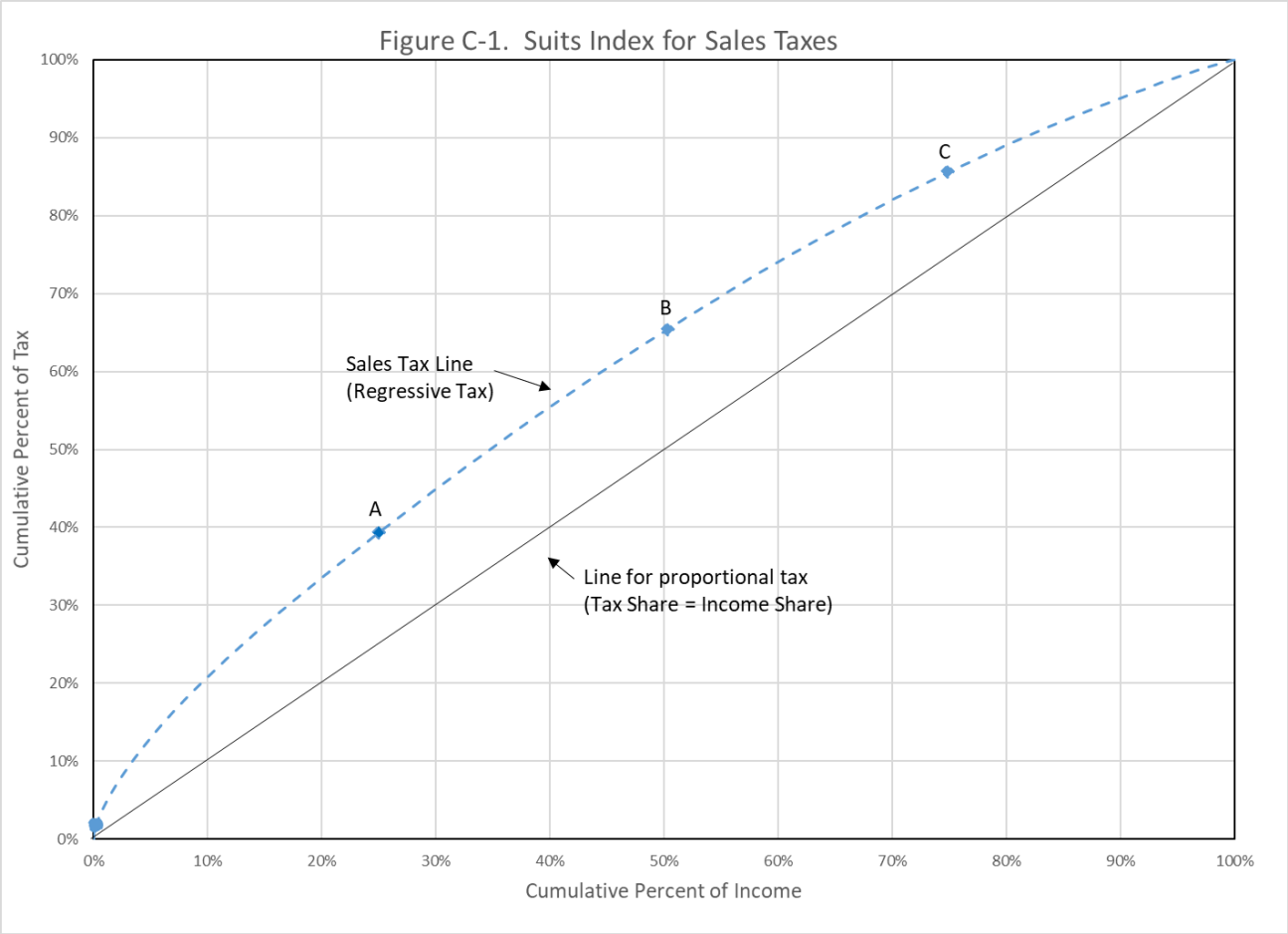
The incidence of each of the three portions of the tax will generally be different. For example, the first part might be borne entirely by capital (in lower returns), the second entirely by Minnesota consumers (in higher prices), and the third primarily by Minnesota labor (in reduced wages). The "average" incidence, as presented in this study, would be a mixture of all three. In contrast, a change in the tax would change only the third portion – the *Minnesota differential*. As a result, the "incremental incidence" of a change in tax can be very different from the "average incidence" of an existing tax. This study only reports the latter. Great care should be taken in applying the results reported here to a proposed change in a tax on business.

Appendix C
The Suits Index

The Suits index is a summary measure of the progressivity or regressivity of a tax. The index is named after economist Daniel Suits, who proposed it in 1977. The calculation of the index is illustrated in the two figures below, using 2016 data.

In the figures, the horizontal axis shows the cumulative percentage of total income, starting with the lowest income household. The straight diagonal line represents a proportional tax, where the cumulative percent of tax is the same as the cumulative percentage of income. Those with the bottom 25% of income would pay 25% of the tax; those with the bottom 50% of the income would pay 50% of the tax.

In Figure C-1, the line for the sales tax is above the proportional tax line. Those with the bottom 25 percent of income pay 40 percent of the tax. (See point A.) Those with the bottom 50 percent of income pay 65 percent of the tax. (See Point B.) Because the share of tax exceeds the share of income, the tax is regressive.



The Suits index is the ratio of the area between the solid and dashed line to the area of the full triangle under the solid line, 0.226. If the dashed line is above the solid line (as it is for sales taxes), the tax is regressive, so the Suits index is negative. The Suits index for Minnesota's sales taxes in 2016 was -0.226.

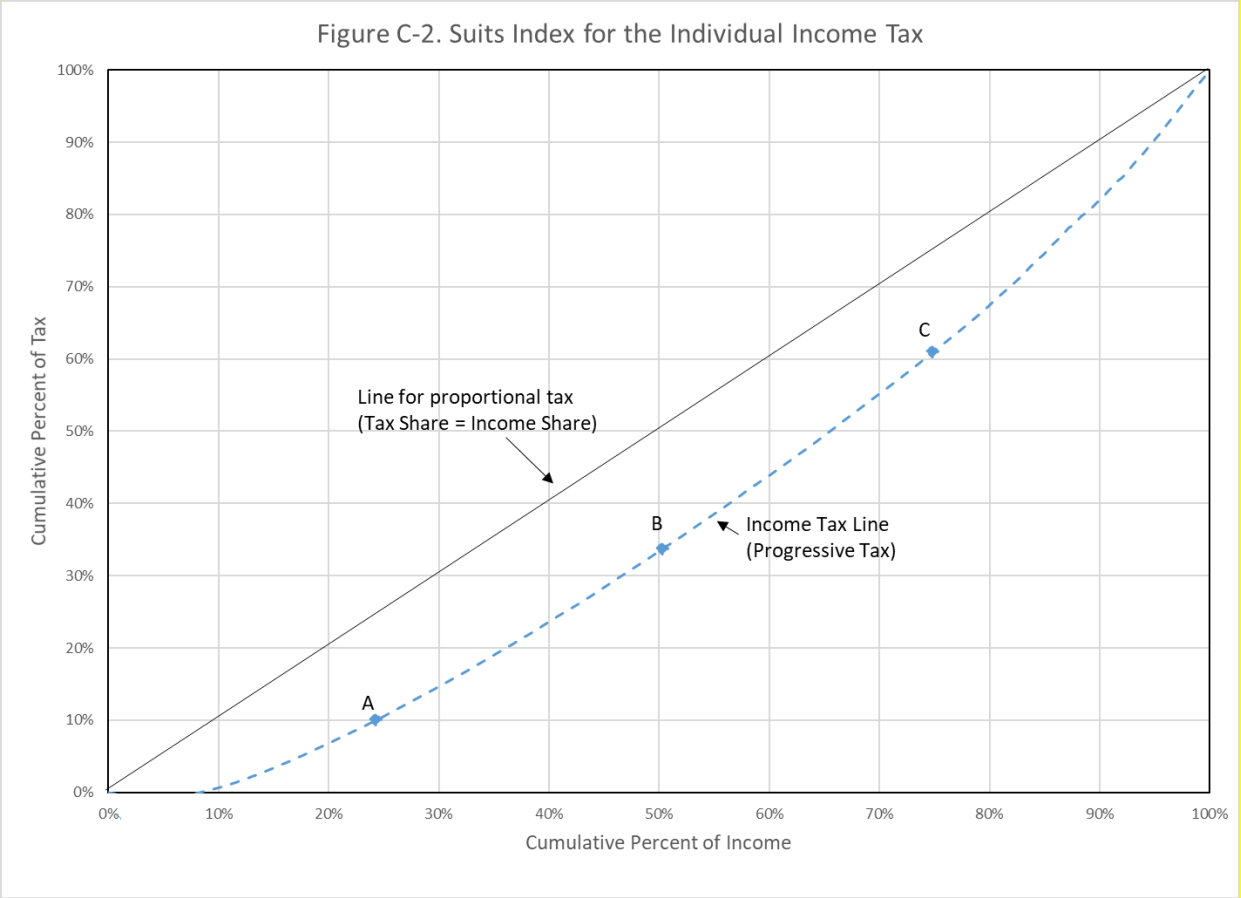


Figure C-2 shows the same diagram for the individual income tax. The income tax line is below the proportional tax line. Those with the bottom 25 percent of income pay 10 percent of the tax. (See point A.) Those with the bottom 50 percent of income pay 34 percent of the tax. (See point B.) Because the shares of tax are less than the shares of income, the tax is progressive.

The ratio of the area between the two lines to the size of the triangle is 0.247. Because it is a progressive tax, the Suits index is positive, at +0.247.

Suits indexes provide an easy way to compare the relative regressivity or progressivity of different taxes. The index also has some convenient mathematical qualities. The Suits index for the income tax and sales taxes combined, for example, is simply the weighted average of the individual Suits indexes, where the weights are each of the tax's share of the combined total tax burden.

Appendix D
Tax Incidence by Type of Tax (2016)

The tables in *Appendix D* provide more detail about the incidence of each of the taxes included in this study. For each tax, the following information is provided:

Top Table

- The total dollars of tax paid by Minnesota households, by non-resident households, and by business. The sum of these three parts equals the total tax collected in 2016. The business portion is based on this study's definition of business taxes. (See pages 8-11 of this study.)
- The total dollars of tax burden that fall on Minnesota residents – after shifting of any business portion of the tax. This equals the sum of (a) the tax imposed on Minnesota households and (b) any portion of the tax imposed on business that is borne by Minnesota residents.
- The total dollars of tax burden "exported" to nonresident households. This equals the sum of (a) the tax imposed on non-resident households and (b) any portion of the tax imposed on business that is shifted to nonresidents.
- The share of the total burden on Minnesota residents that is imposed directly on Minnesota households ("Direct") and the shares that represent business tax that is shifted to Minnesota consumers (in higher prices), shifted to Minnesota labor (in lower wages or benefits), or borne by Minnesota capital (as owners of businesses).

Chart

- The effective tax rate for this particular tax, by population decile – using the scale on the right-hand side of the chart.
- The effective tax rate for all Minnesota state and local taxes combined, by population decile – using the scale on the left-hand side of the chart.
- The average effective tax rate for this particular tax (and for all Minnesota state and local taxes combined) as a percent of income.

Bottom Table

- Effective tax rates by population decile, and more detail for the top decile (divided into its first 5%, next 4%, and top 1%).
- The Suits index for this particular tax (and for all Minnesota state and local taxes combined).

Appendix D Tables

State Taxes

Income and Estate Taxes

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Estate Tax 118
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Insurance Premiums Taxes 127
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Total State Taxes 138

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Appendix D Tables (cont.)

State and Local Property Taxes by Type of Property

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Industrial Property Tax – (State and Local) 149
Utility Property Tax – (State and Local) 150

Total State and Local Property Taxes (Before PTR) 151

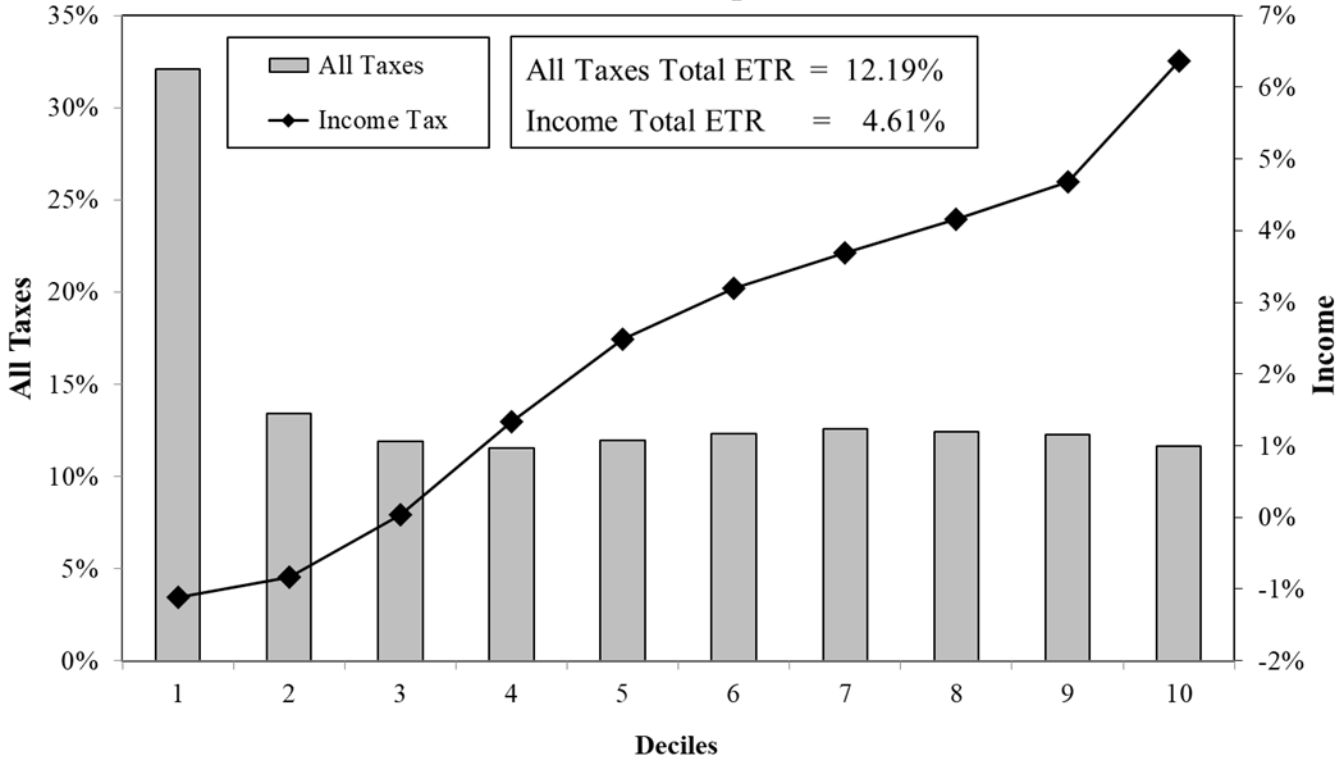
2016 Incidence Estimate for
Individual Income Tax

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After Shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$10,835	$10,190	$645	$0	$10,190	$645

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Deciles



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Income	-1.11%	-0.83%	0.04%	1.33%	2.49%	3.20%	3.69%	4.16%	4.67%	6.37%	5.12%	5.90%	7.69%	0.247

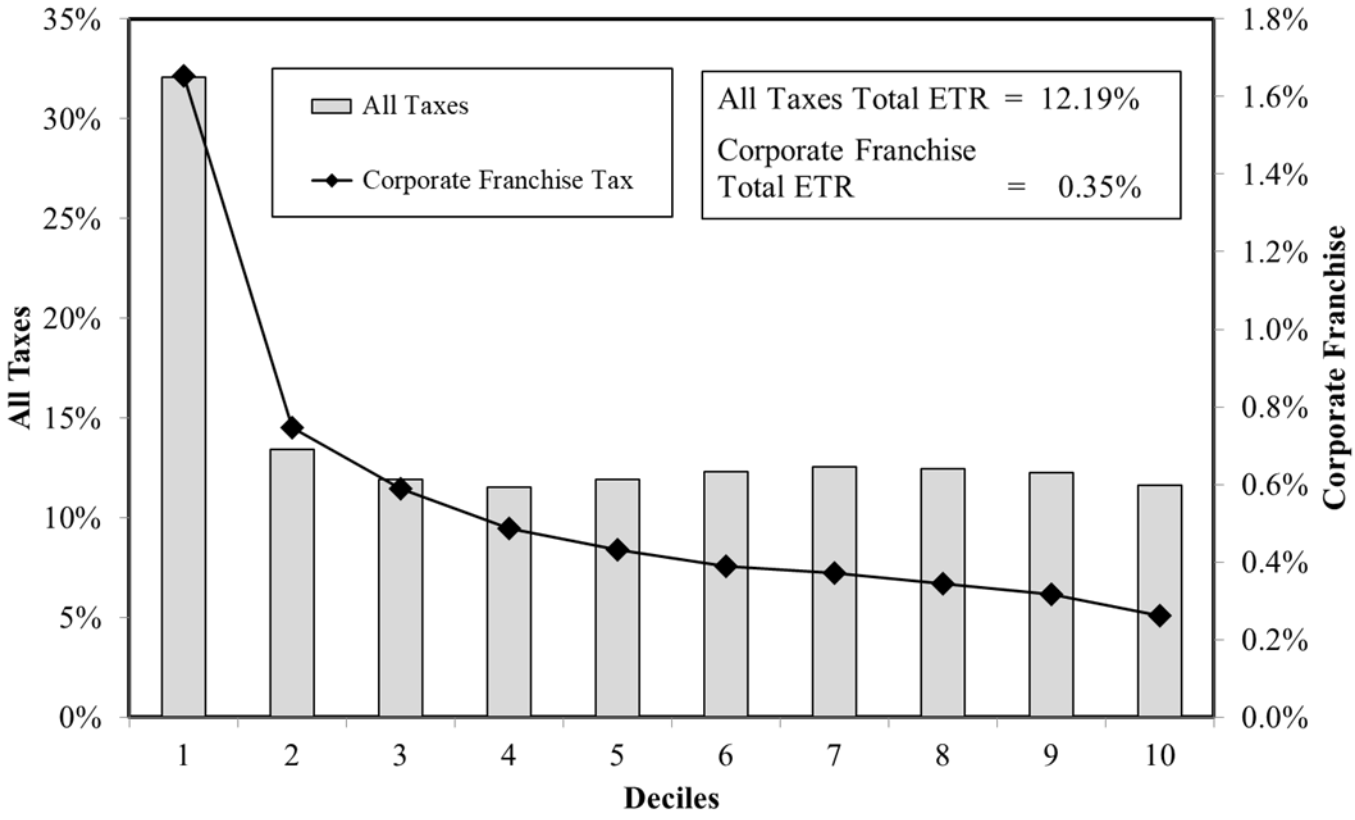
2016 Incidence Estimate for Corporate Franchise Tax[1]

Tax Collection Amounts 2016 ($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$1,346	$0	$0	$1,346	$767	$579

* Shifting allocations: Direct = 0%, Consumers = 76%, Labor = 8%, Capital = 16%

Effective Tax Rates, Population Deciles



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Corporate Franchise	1.65%	0.75%	0.59%	0.49%	0.43%	0.39%	0.37%	0.34%	0.32%	0.26%	0.29%	0.27%	0.24%	-0.172

[1]Includes Corporate Franchise Tax ($1,339 million) and Mining Occupation Tax ($7 million).

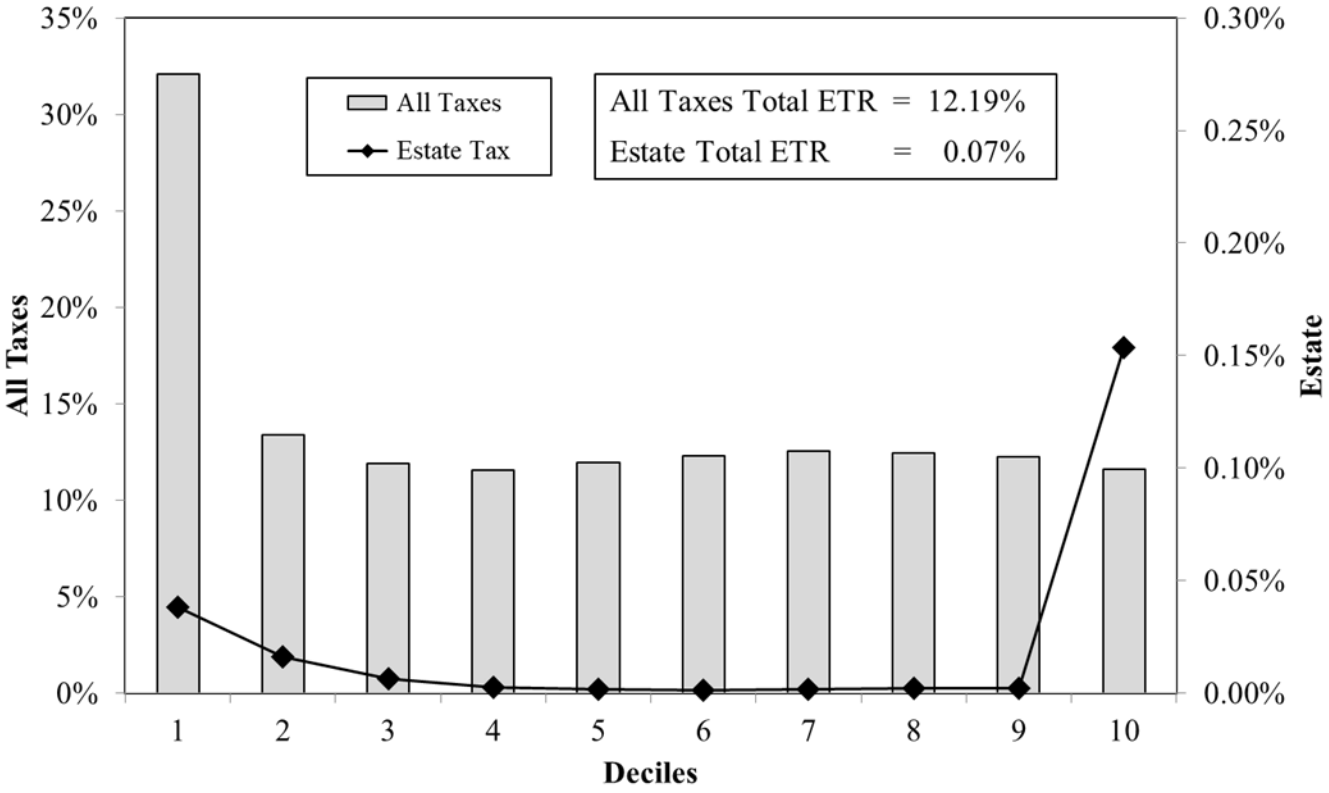
2016 Incidence Estimate for
Estate Tax

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$156	$149	$7	$0	$149	$7

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Deciles



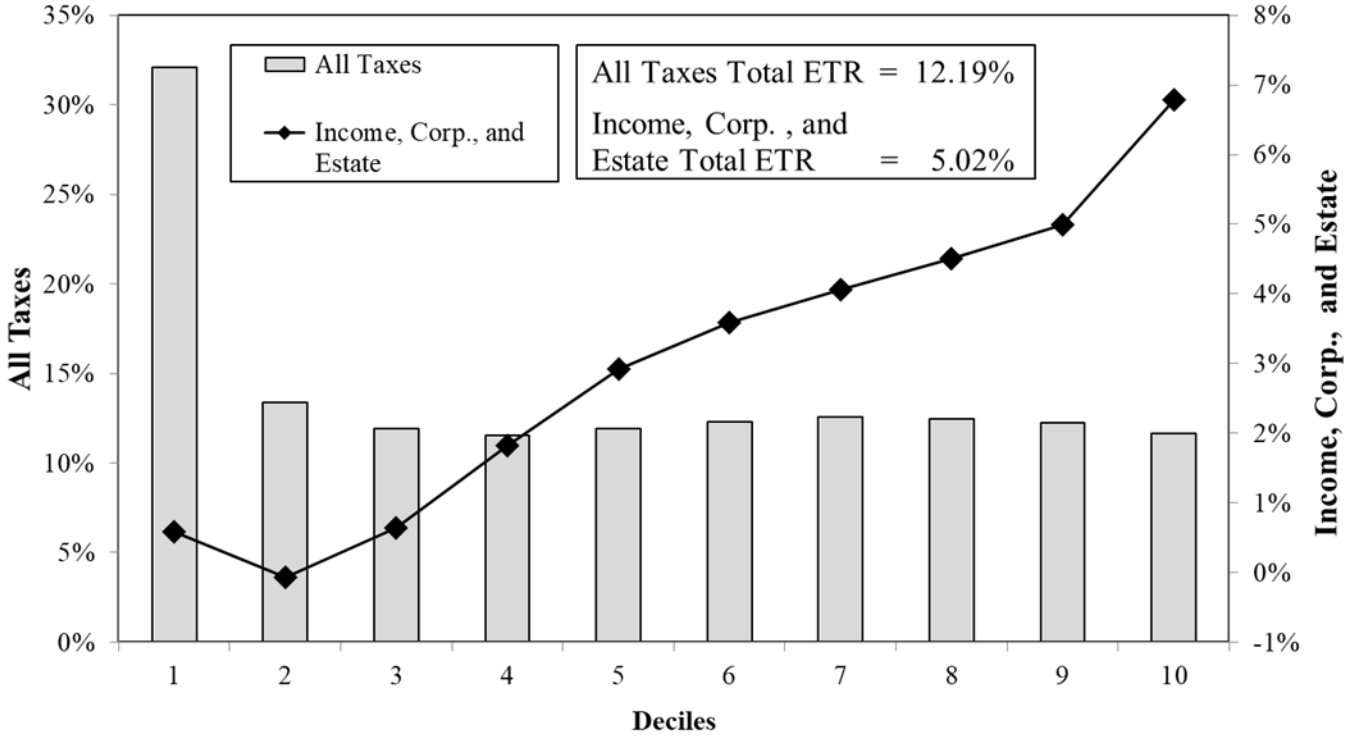
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Estate	0.04%	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.15%	0.00%	0.02%	0.39%	0.839

2016 Incidence Estimate for
Total Income, Corporate, and Estate Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$12,337	$10,339	$652	$1,346	$11,106	$1,231

Effective Tax Rates, Population Deciles



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Income, Corp., and Estate	0.58%	-0.07%	0.63%	1.82%	2.92%	3.59%	4.06%	4.50%	4.99%	6.78%	5.41%	6.18%	8.32%	0.226

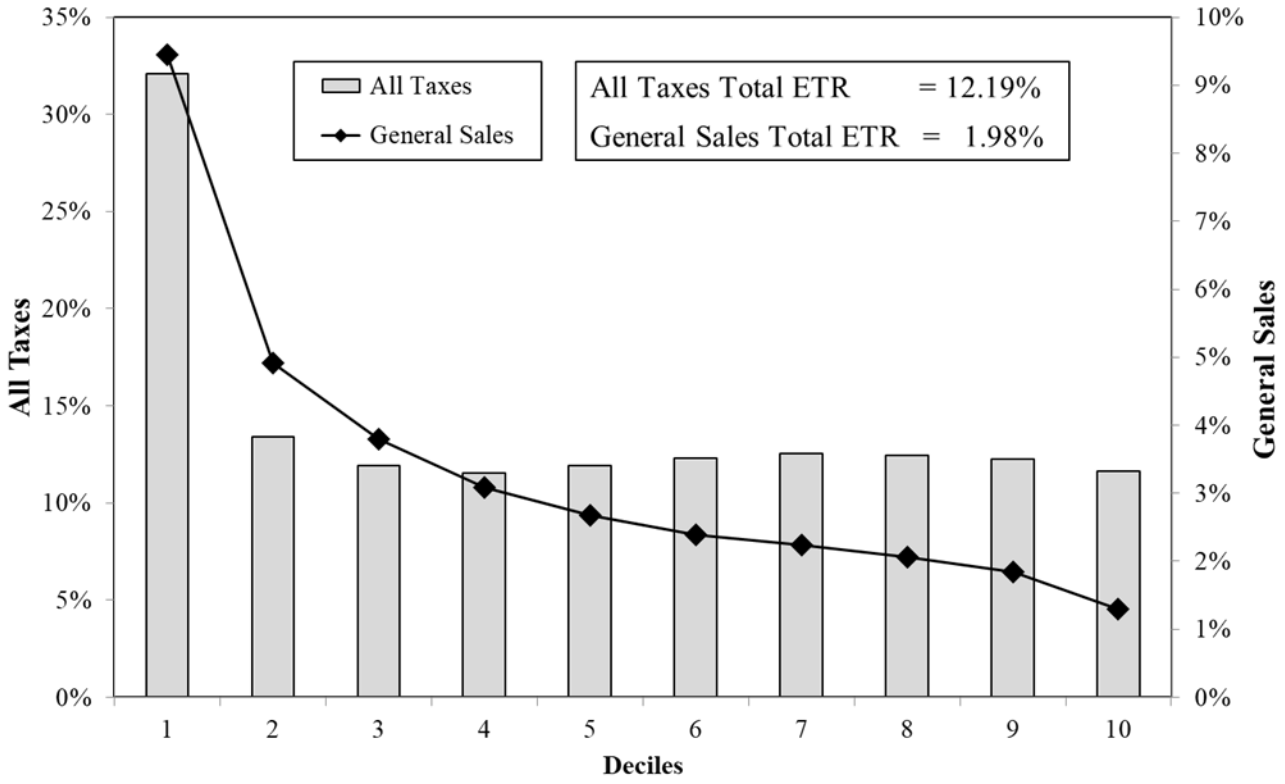
2016 Incidence Estimate for
General Sales and Use Tax

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$5,702	$2,801	$334	$2,567	$4,388	$1,314

* Shifting allocations: Direct = 64%, Consumers = 30%, Labor = 0%, Capital = 6%

Effective Tax Rates, Population Deciles



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
General Sales	9.45%	4.91%	3.79%	3.09%	2.68%	2.39%	2.24%	2.07%	1.84%	1.29%	1.60%	1.35%	1.02%	-0.233

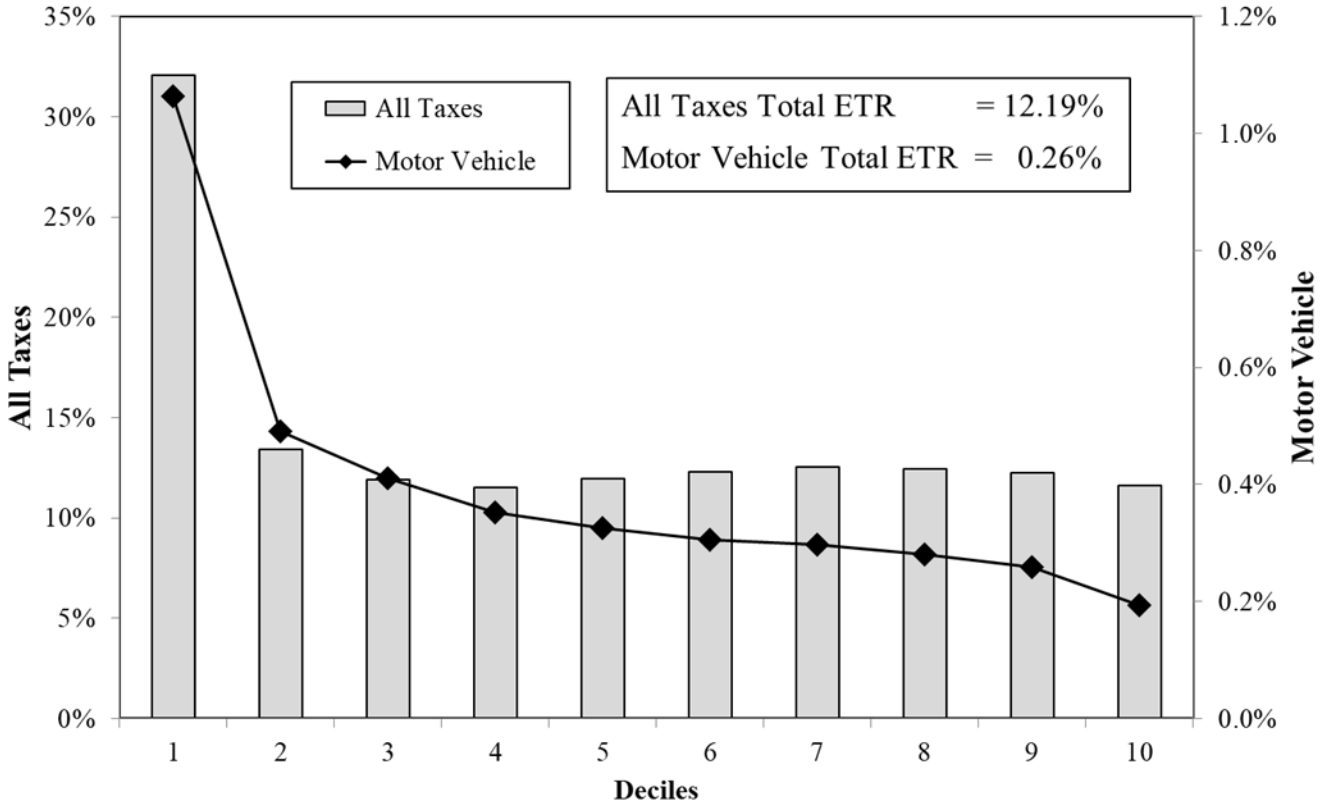
2016 Incidence Estimate for
Sales Tax on Motor Vehicles

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$735	$462	$0	$273	$582	$153

* Shifting allocations: Direct = 80%, Consumers = 4%, Labor = 0%, Capital = 16%

Effective Tax Rates, Population Deciles



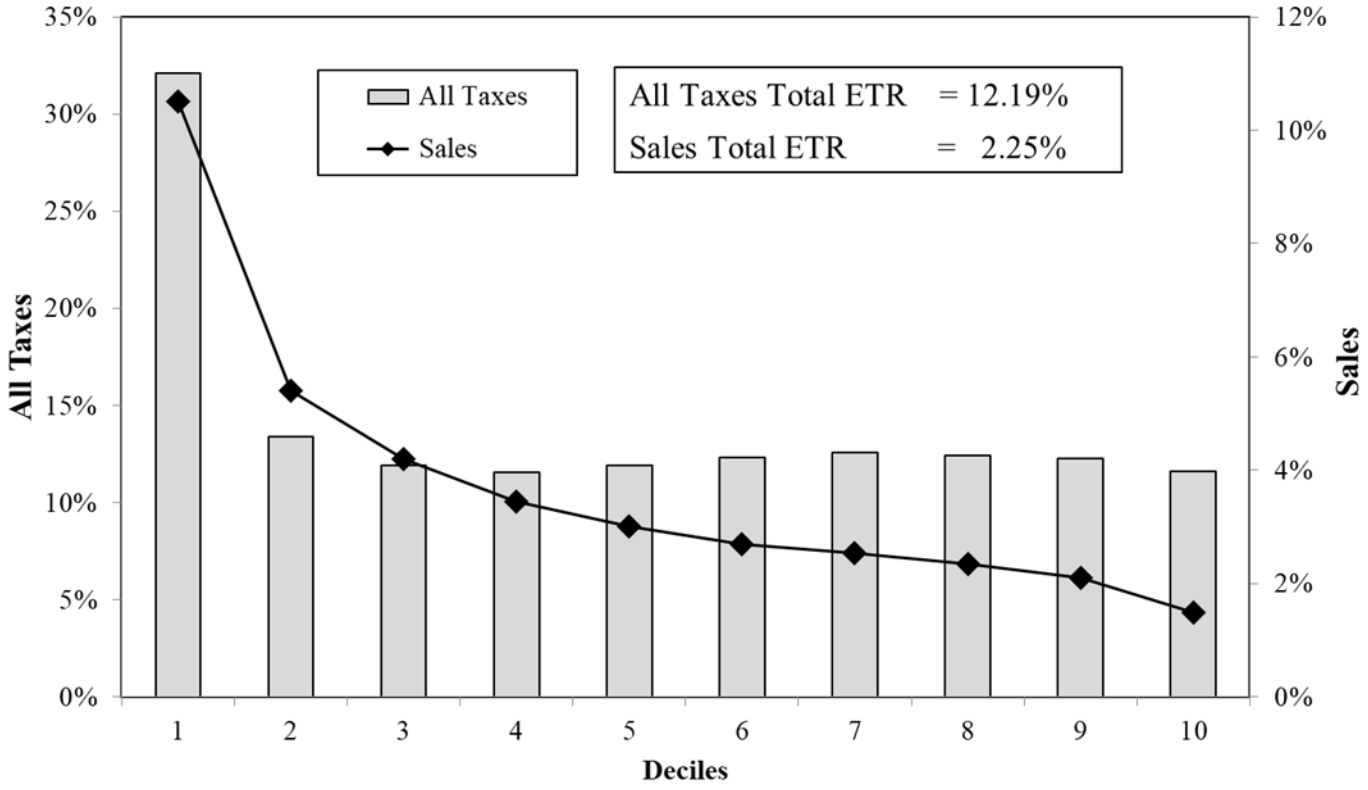
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Motor Vehicle	1.06%	0.49%	0.41%	0.35%	0.33%	0.30%	0.30%	0.28%	0.26%	0.19%	0.22%	0.20%	0.16%	-0.170

2016 Incidence Estimate for
Total State Sales Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$6,437	$3,263	$334	$2,840	$4,970	$1,467

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Sales	10.51%	5.40%	4.20%	3.44%	3.00%	2.70%	2.54%	2.35%	2.10%	1.49%	1.83%	1.55%	1.19%	-0.226

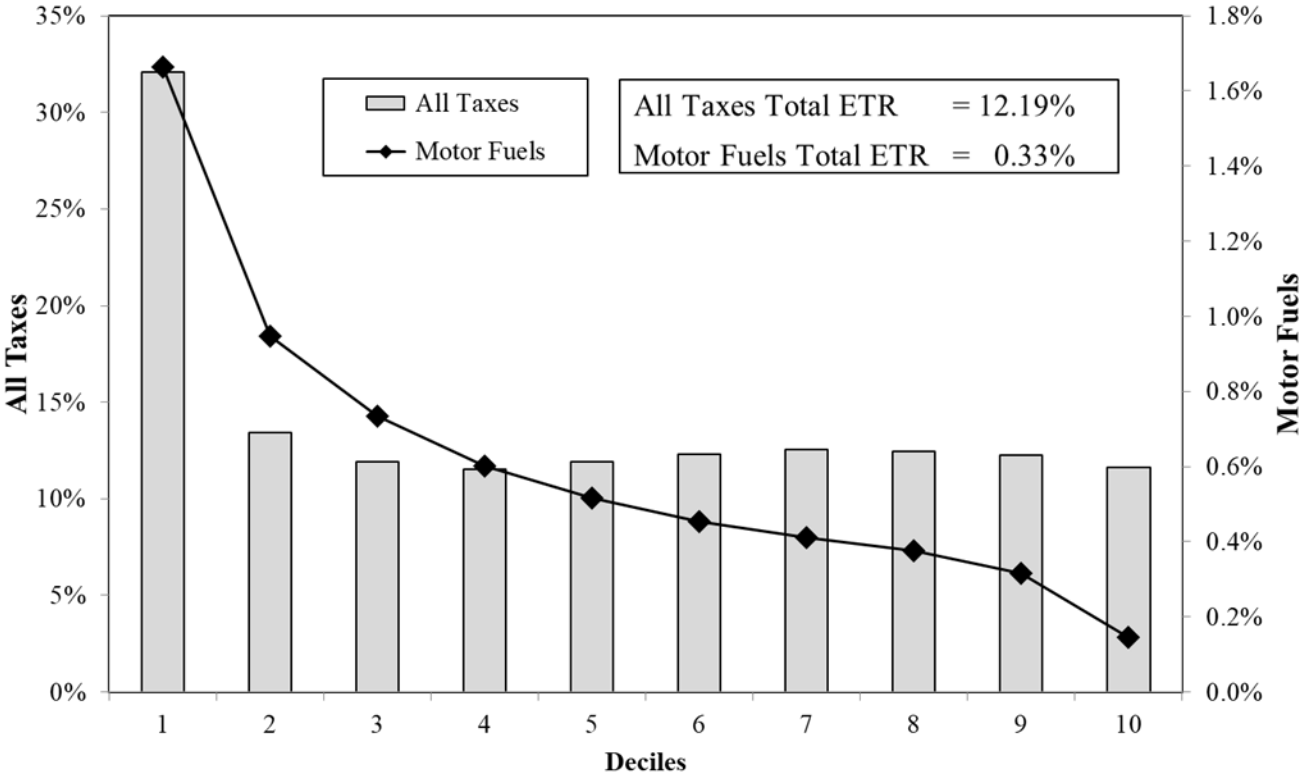
2016 Incidence Estimate for
Motor Fuels Excise Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$911	$552	$58	$301	$723	$188

* Shifting allocations: Direct = 76%, Consumers = 24%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Motor Fuels	1.66%	0.95%	0.74%	0.60%	0.52%	0.45%	0.41%	0.38%	0.32%	0.15%	0.25%	0.16%	0.06%	-0.352

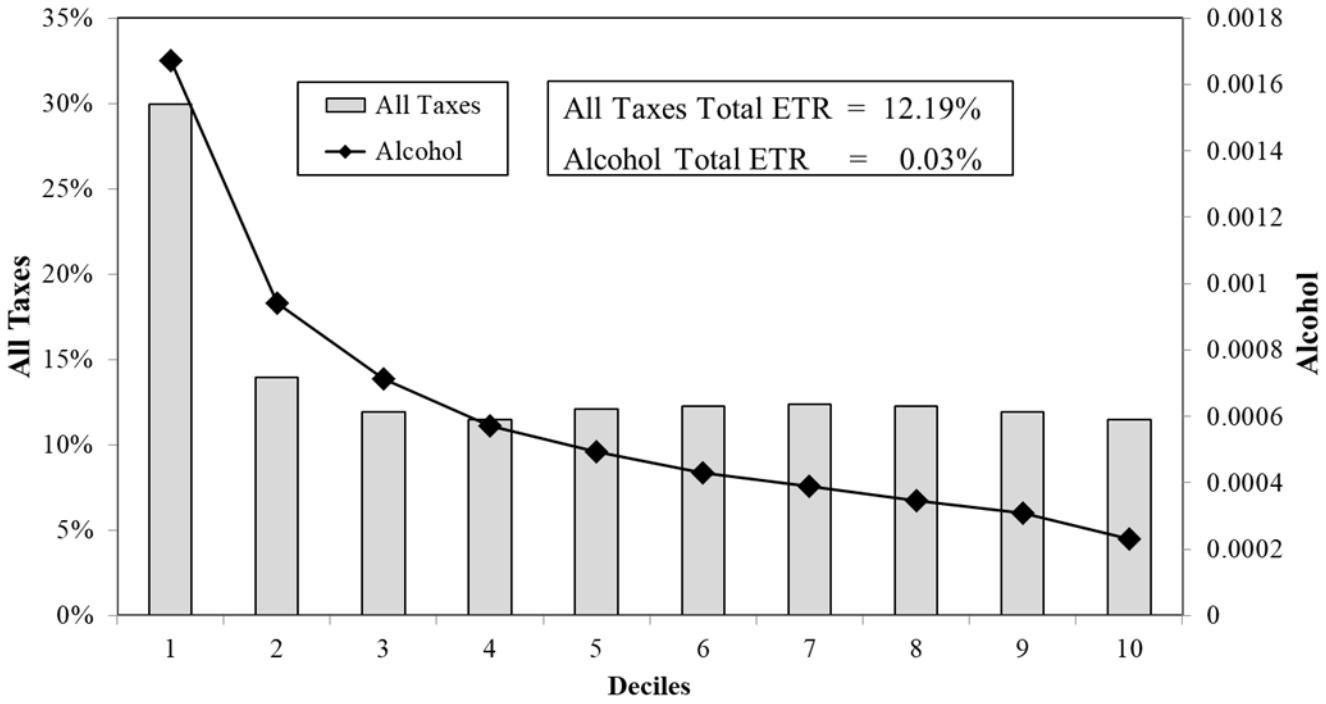
2016 Incidence Estimate for
Alcoholic Beverage Excise Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$89	$77	$12	$0	$77	$12

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Alcohol	0.15%	0.08%	0.06%	0.05%	0.05%	0.04%	0.04%	0.04%	0.03%	0.06%	0.03%	0.02%	0.02%	-0.217

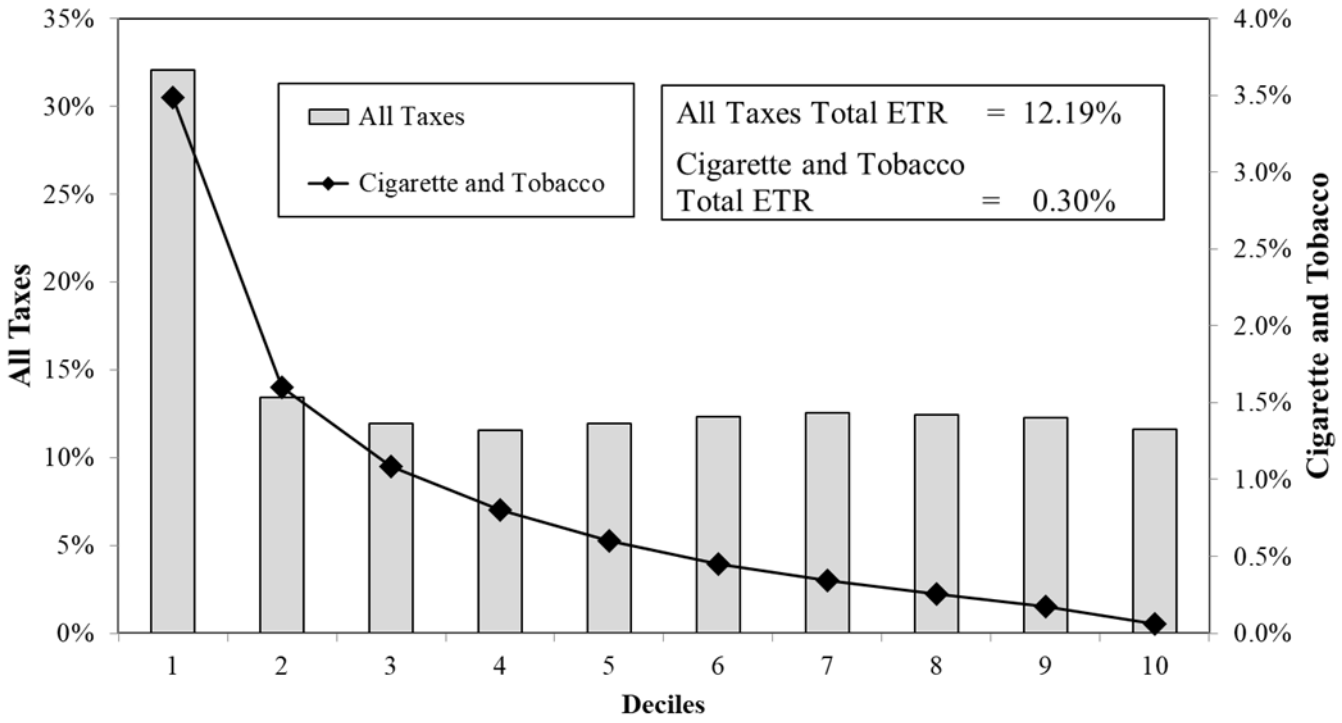
2016 Incidence Estimate for
Cigarette and Tobacco Excise Taxes[1]

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$675	$662	$14	$0	$662	$14

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Cigarette and Tobacco	3.48%	1.60%	1.09%	0.80%	0.60%	0.45%	0.34%	0.26%	0.18%	0.06%	0.12%	0.06%	0.01%	-0.580

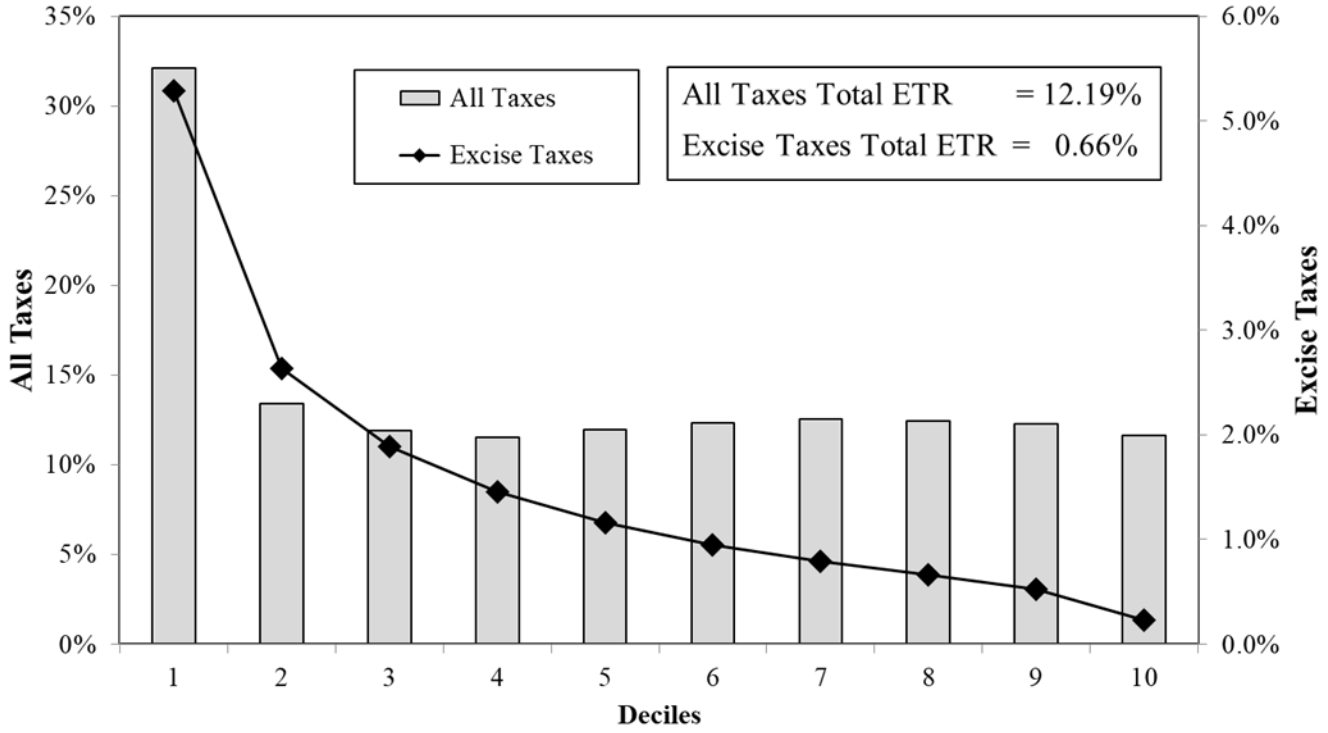
[1]Includes Cigarette Tax ($576 million) and Tobacco Products Tax ($99 million).

2016 Incidence Estimate for
Total Excise Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$1,675	$1,291	$84	$301	$1,461	$214

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Excise Taxes	5.29%	2.63%	1.89%	1.46%	1.16%	0.95%	0.79%	0.67%	0.52%	0.23%	0.39%	0.25%	0.09%	-0.448

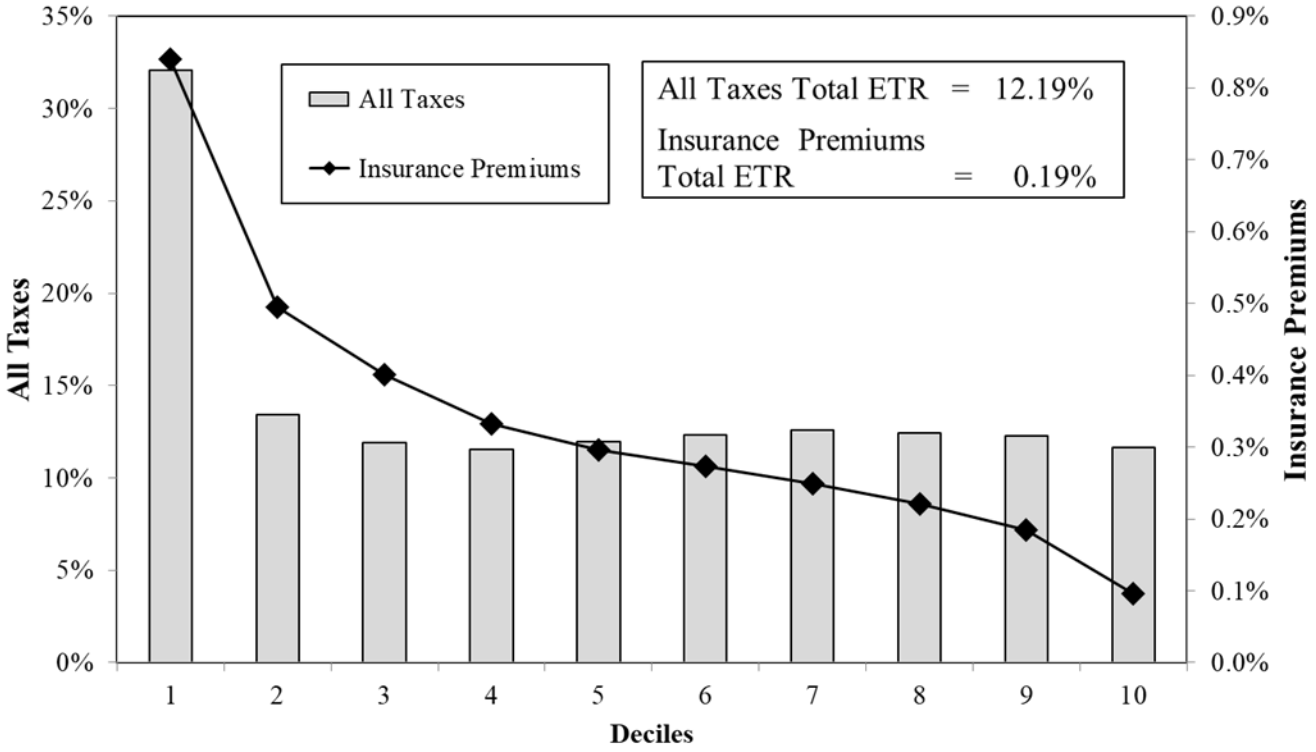
2016 Incidence Estimate for
Insurance Premiums Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$473	$373	$0	$100	$426	$47

* Shifting allocations: Direct = 88%, Consumers = 8%, Labor = 0%, Capital = 4%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Insurance Premiums	0.84%	0.49%	0.40%	0.33%	0.30%	0.27%	0.25%	0.22%	0.19%	0.10%	0.15%	0.10%	0.05%	-0.314

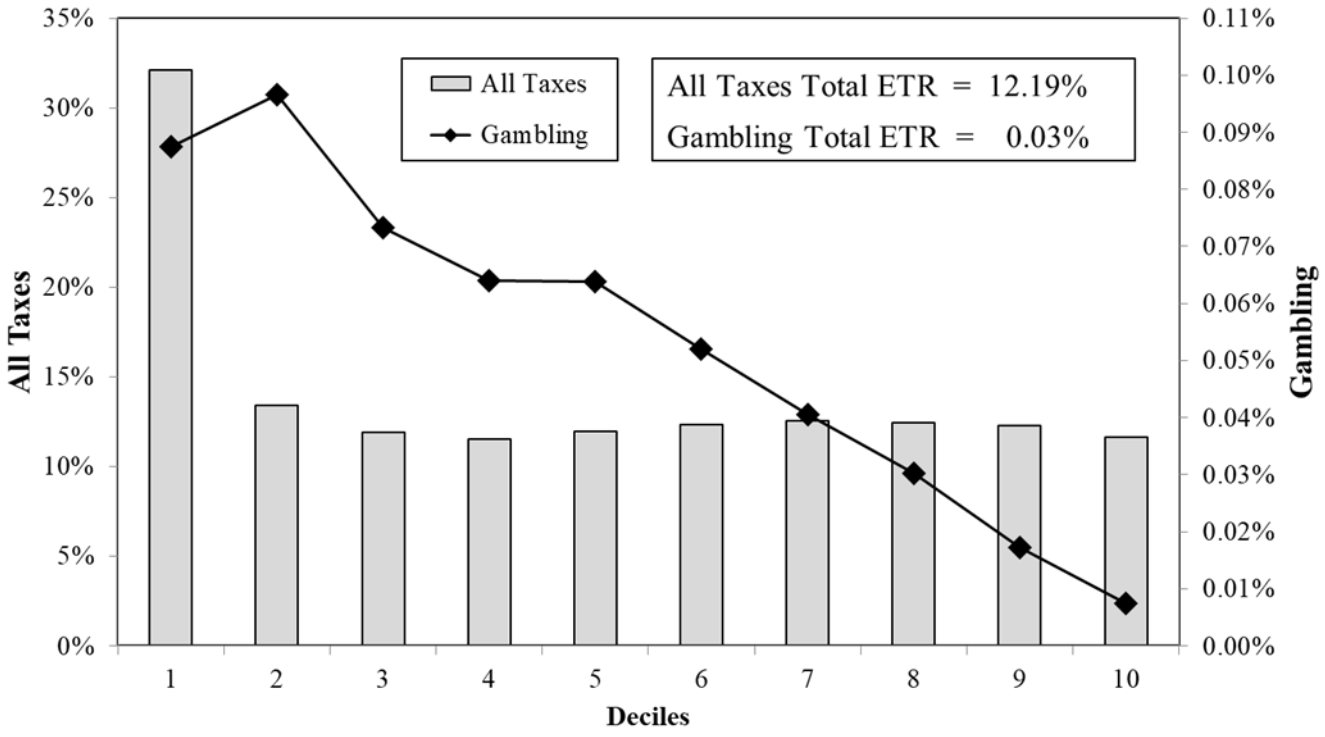
2016 Incidence Estimate for
Gambling Taxes[1]

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$61	$60	$1	$0	$60	$0

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Gambling	0.09%	0.10%	0.07%	0.06%	0.06%	0.05%	0.04%	0.03%	0.02%	0.01%	0.01%	0.01%	0.00%	-0.476

[1]Gambling taxes include Lawful Gambling ($2.5 million),
Combined Receipts ($57.8 million), and Pari-Mutuel ($0.7 million).

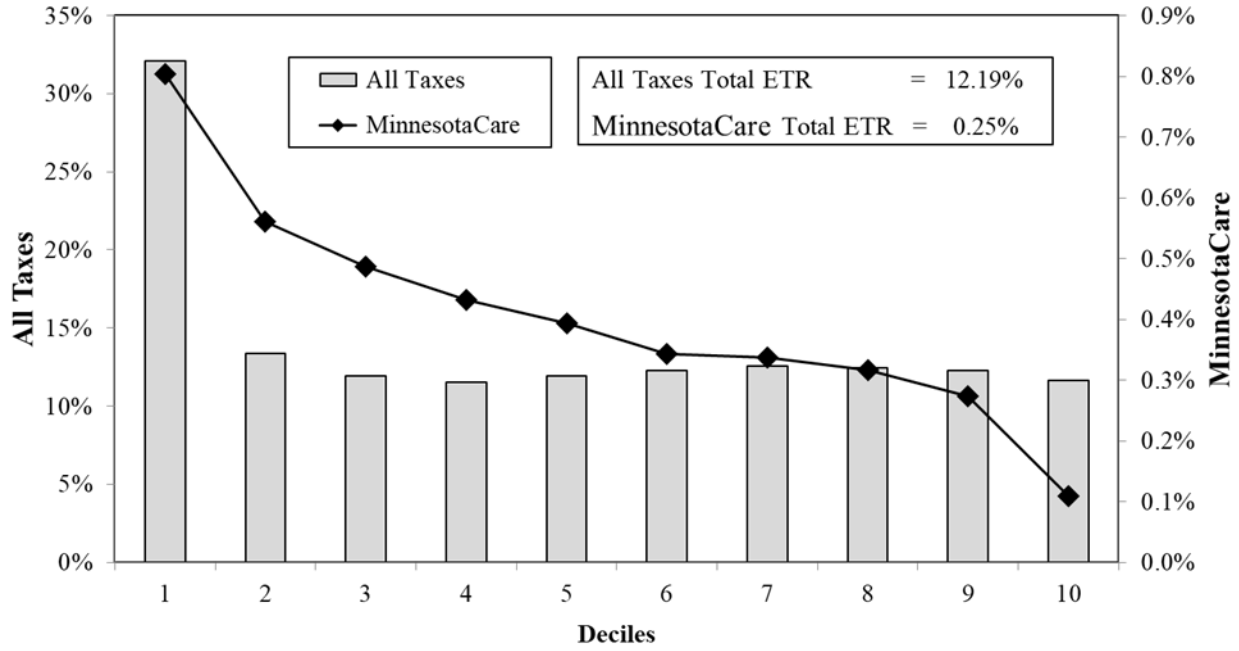
2016 Incidence Estimate for MinnesotaCare Taxes[1]

Tax Collection Amounts 2016 ($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$599	$549	$50	$0	$549	$50

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
MinnesotaCare	0.80%	0.56%	0.49%	0.43%	0.39%	0.34%	0.34%	0.32%	0.27%	0.11%	0.21%	0.12%	0.03%	-0.327

[1]Includes the Provider Tax ($230 million), Hospital Tax ($234 million), and Drug Distributor Tax ($135 million).

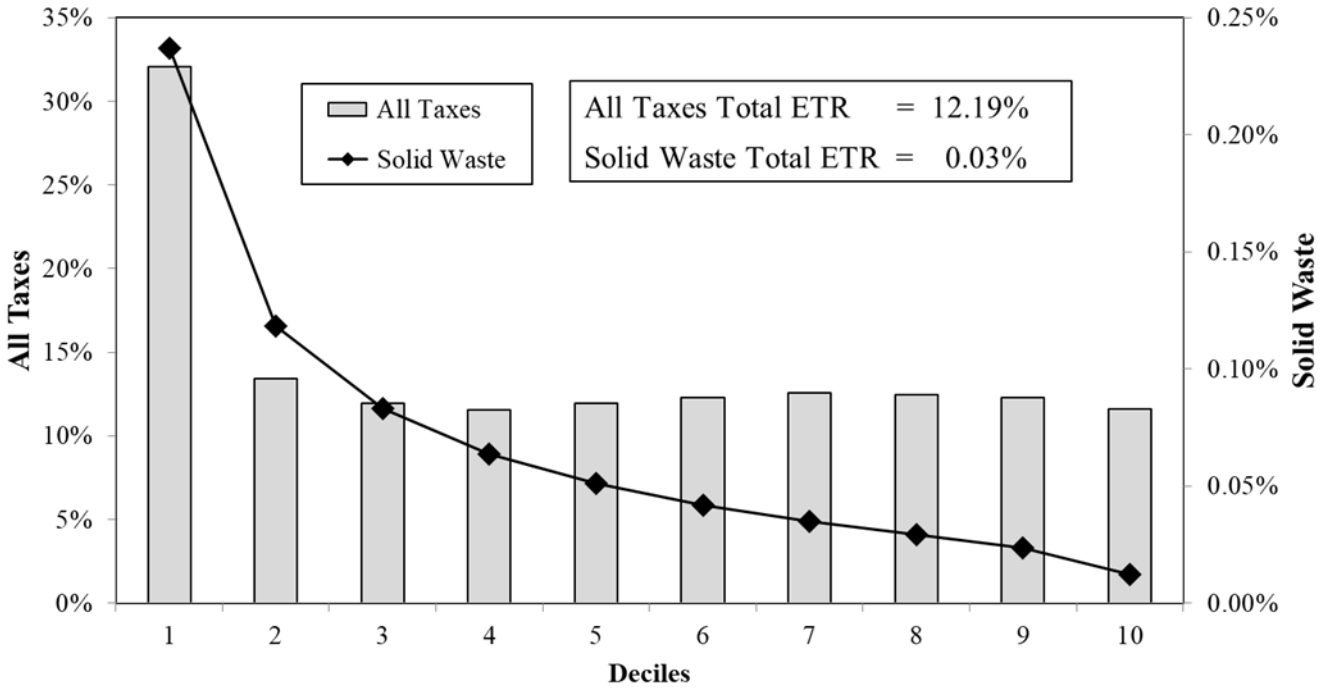
2016 Incidence Estimate for
Solid Waste Management Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$82	$35	$0	$47	$67	$15

* Shifting allocations: Direct = 52%, Consumers = 48%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



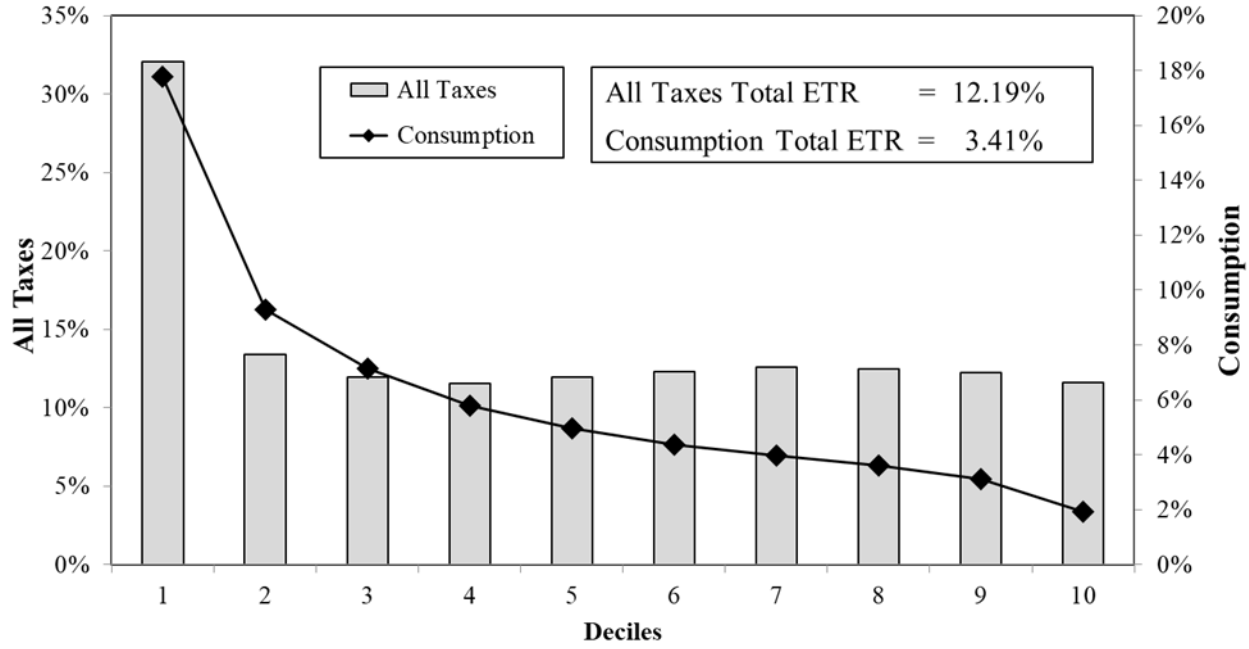
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Solid Waste	0.24%	0.12%	0.08%	0.06%	0.05%	0.04%	0.04%	0.03%	0.02%	0.01%	0.02%	0.01%	0.01%	-0.414

2016 Incidence Estimate for
Total State Consumption Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$9,328	$5,571	$469	$3,288	$7,533	$1,793

Effective Tax Rates, Population Decile



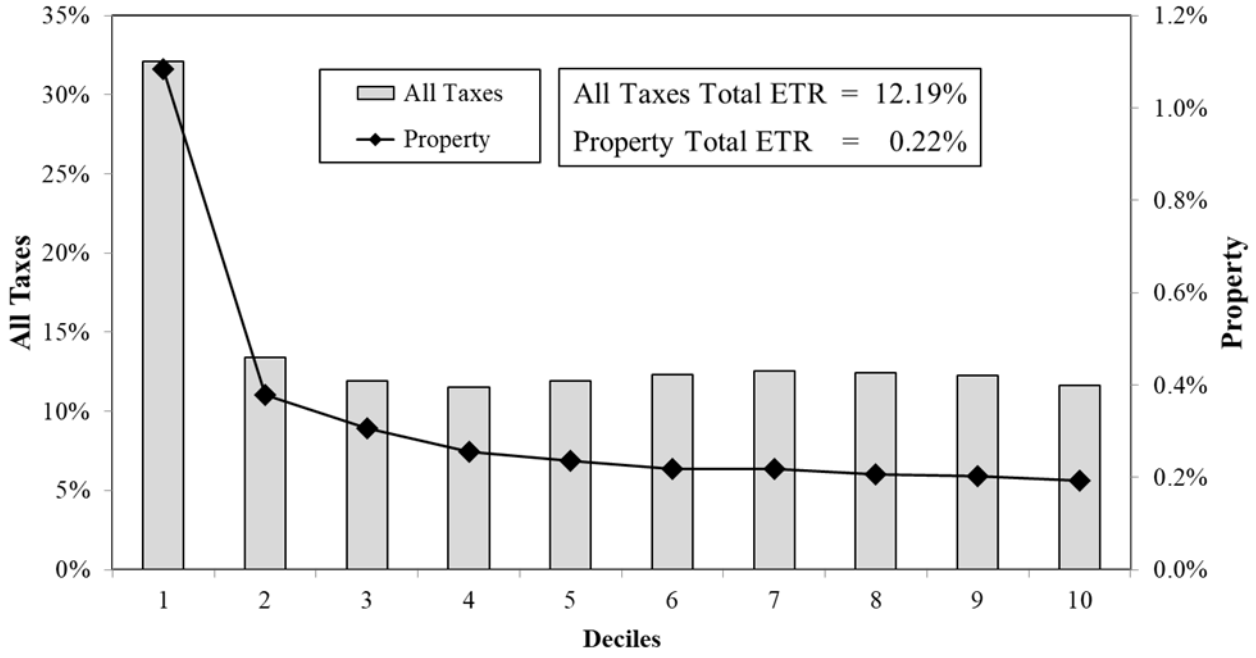
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Consumption	17.77%	9.30%	7.13%	5.79%	4.97%	4.35%	3.99%	3.61%	3.12%	1.94%	2.60%	2.05%	1.37%	-0.285

2016 Incidence Estimate for
State Property Tax[1]

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$862	$34	$8	$821	$486	$377

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Property	1.08%	0.38%	0.31%	0.25%	0.24%	0.22%	0.22%	0.21%	0.20%	0.19%	0.18%	0.19%	0.20%	-0.092

[1]Includes taxes on Commercial Property ($558 million), Industrial Property ($151 million), Utility Property ($111 million), and Residential Seasonal Recreational Property ($42 million).

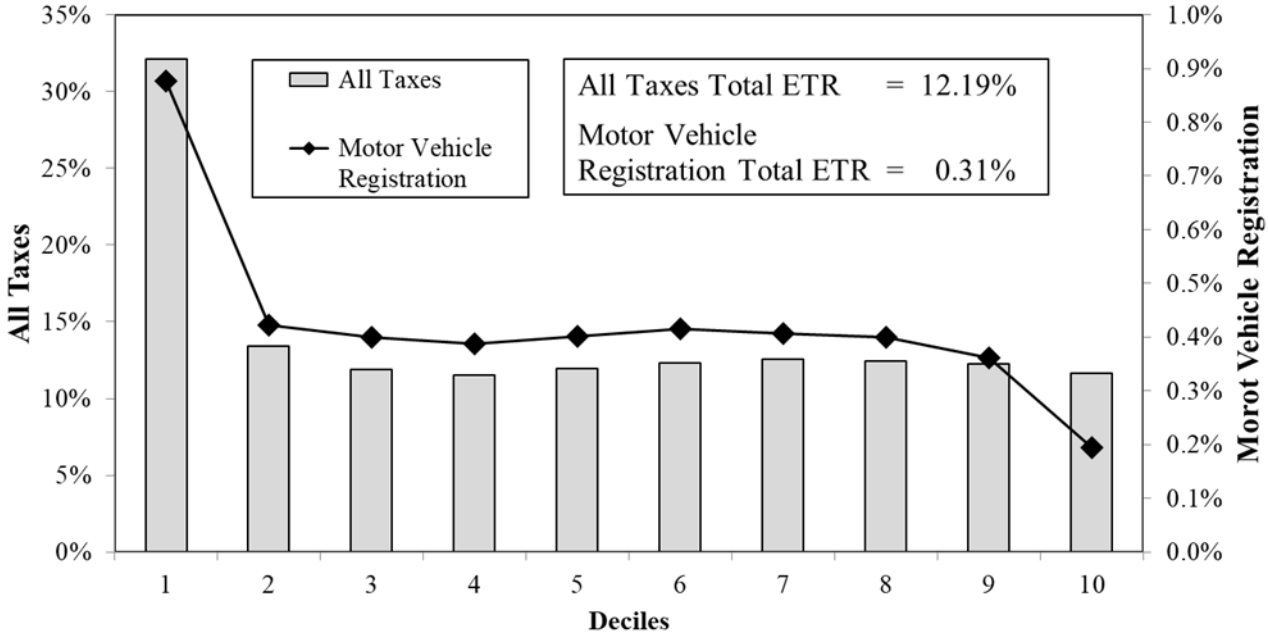
2016 Incidence Estimate for
Motor Vehicle Registration Tax[1]

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$727	$610	$0	$117	$690	$37

* Shifting allocations: Direct = 88%, Consumers = 8, Labor = 2, Capital = 2%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Motor Vehicle Registration	0.88%	0.42%	0.40%	0.39%	0.40%	0.42%	0.41%	0.40%	0.36%	0.19%	0.29%	0.22%	0.10%	-0.208

[1]Includes State Registration Tax ($727 million) and County Wheelage Taxes ($37 million).

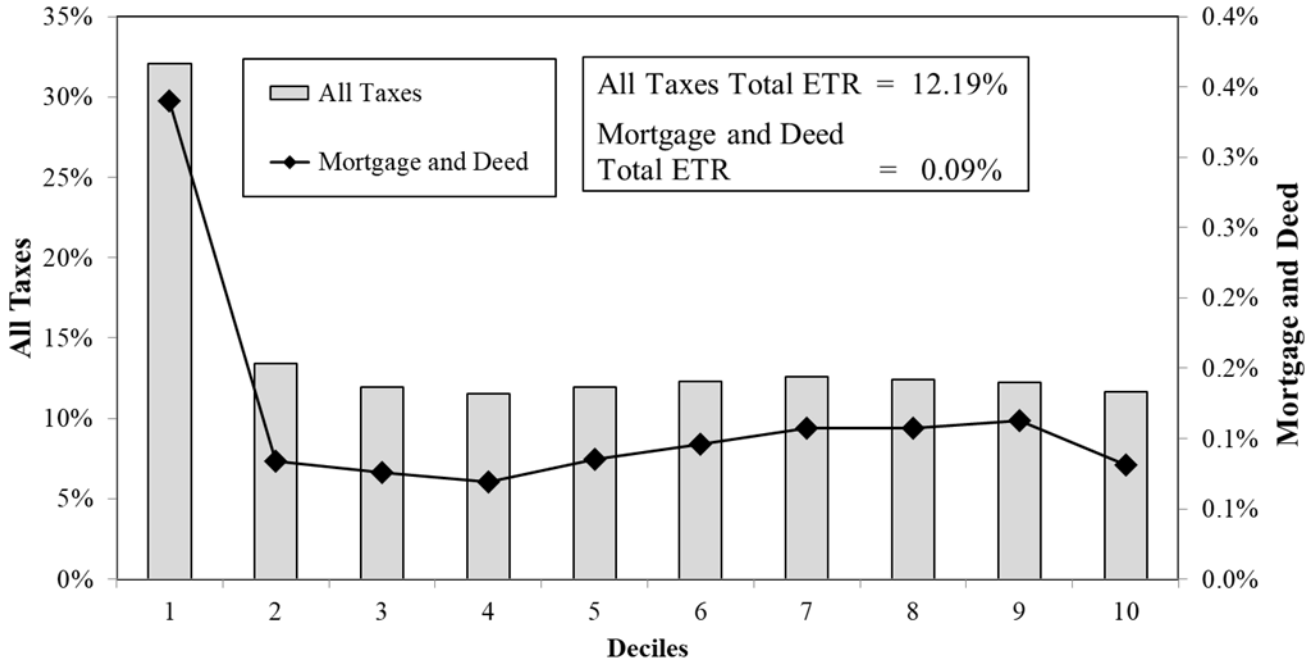
2016 Incidence Estimate for Mortgage and Deed Taxes[1]

Tax Collection Amounts 2016 ($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$235	$155	$0	$80	$209	$27

* Shifting allocations: Direct = 74%, Consumers = 7%, Labor = 0%, Capital = 19%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Mortgage and Deed	0.34%	0.08%	0.08%	0.07%	0.08%	0.10%	0.11%	0.11%	0.11%	0.08%	0.10%	0.09%	0.06%	-0.070

[1]Includes Mortgage Registry Tax ($121 million) and Deed Transfer Tax ($114 million).

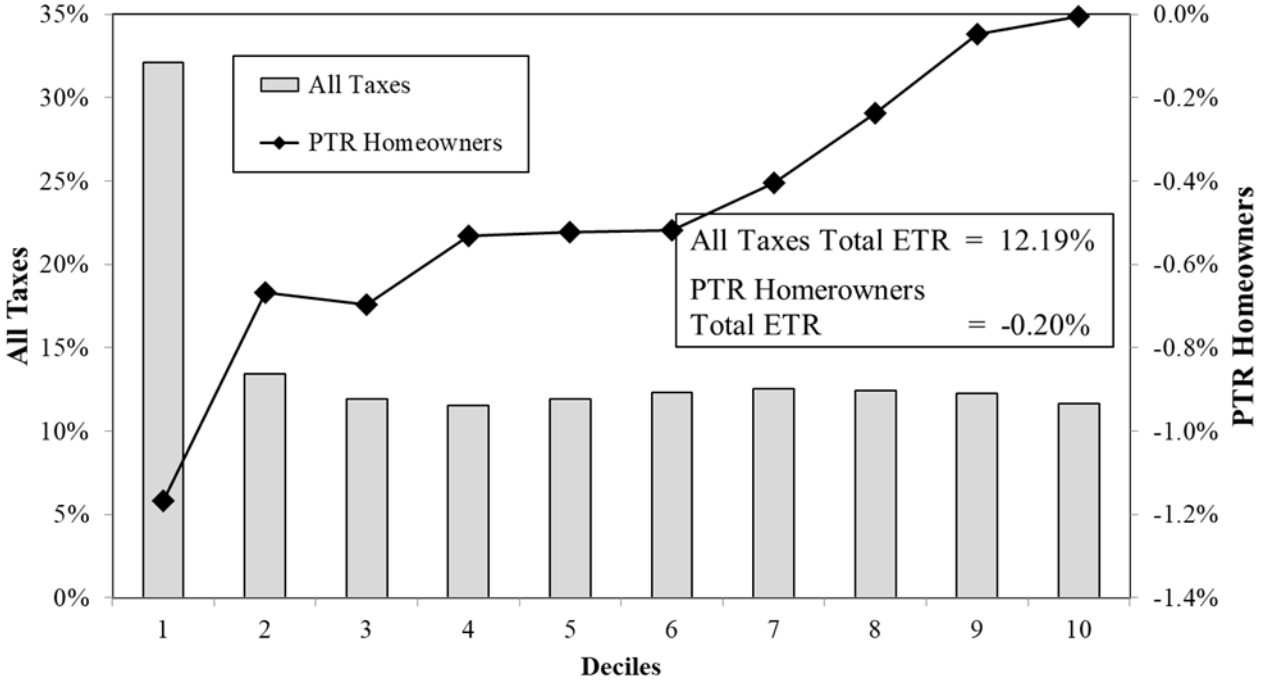
2016 Incidence Estimate for
Property Tax Refunds - Homeowners

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
-$440	-$440	$0	$0	-$440	$0

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
PTR Homeowners	-1.17%	-0.67%	-0.70%	-0.53%	-0.52%	-0.52%	-0.40%	-0.24%	-0.05%	0.00%	-0.01%	-0.01%	0.00%	0.638

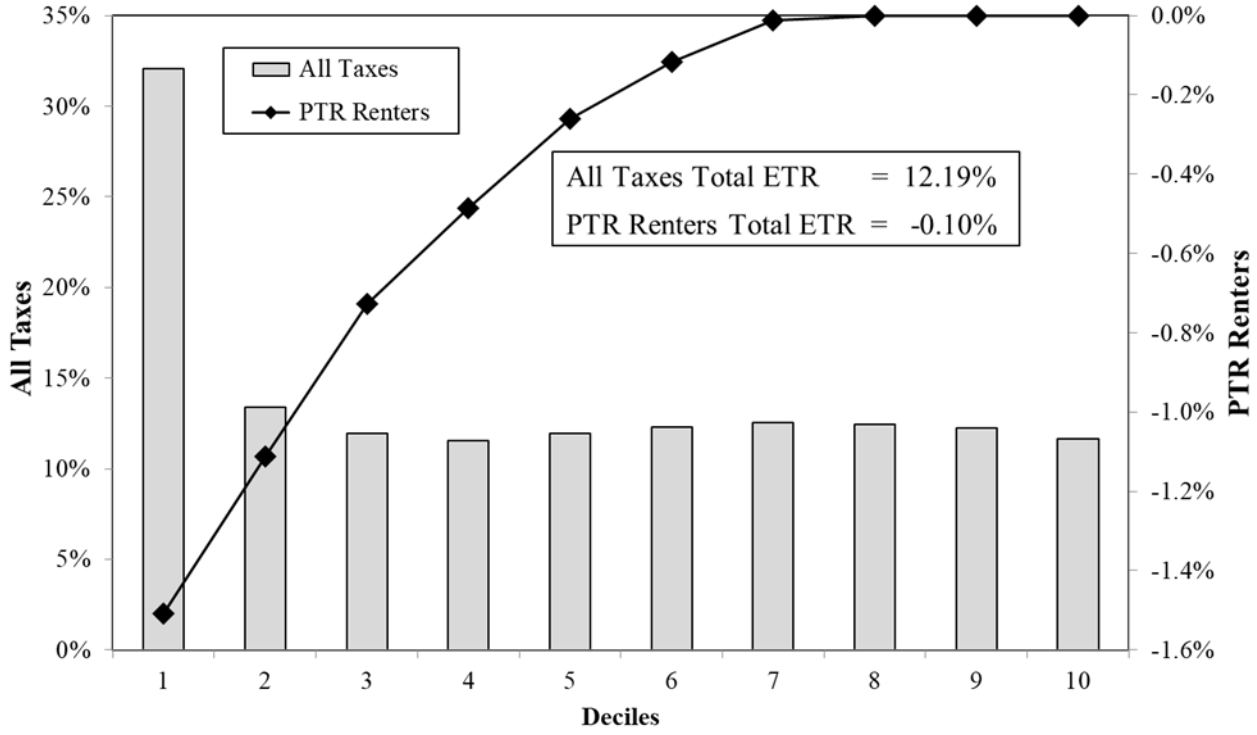
2016 Incidence Estimate for
Property Tax Refunds - Renters

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
-$218	-$218	$0	$0	-$218	$0

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
PTR Renters	-1.51%	-1.11%	-0.73%	-0.49%	-0.26%	-0.12%	-0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.873

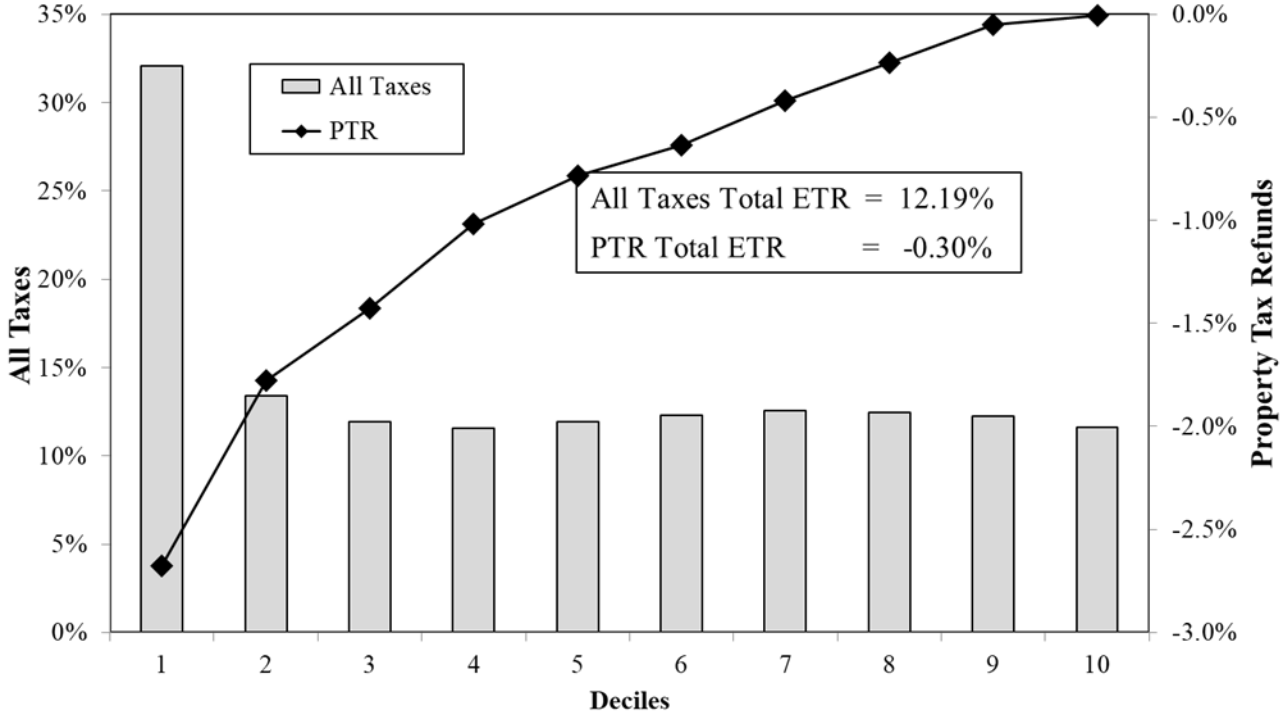
2016 Incidence Estimate for
Total Property Tax Refunds

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
-$658	-$658	$0	$0	-$658	$0

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



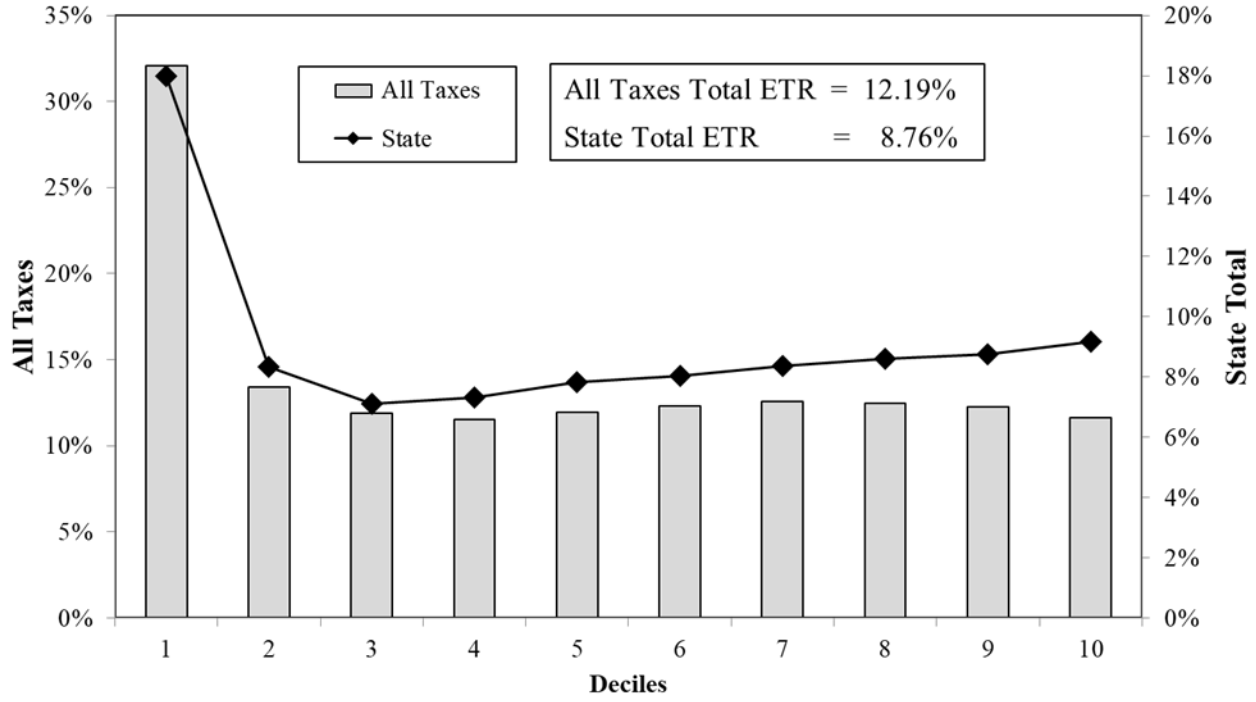
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
PTR	-2.68%	-1.78%	-1.42%	-1.02%	-0.78%	-0.63%	-0.42%	-0.24%	-0.05%	0.00%	-0.01%	-0.01%	0.00%	0.716

2016 Incidence Estimate for
Total State Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$22,832	$16,050	$1,129	$5,652	$19,366	$3,464

Effective Tax Rates, Population Decile



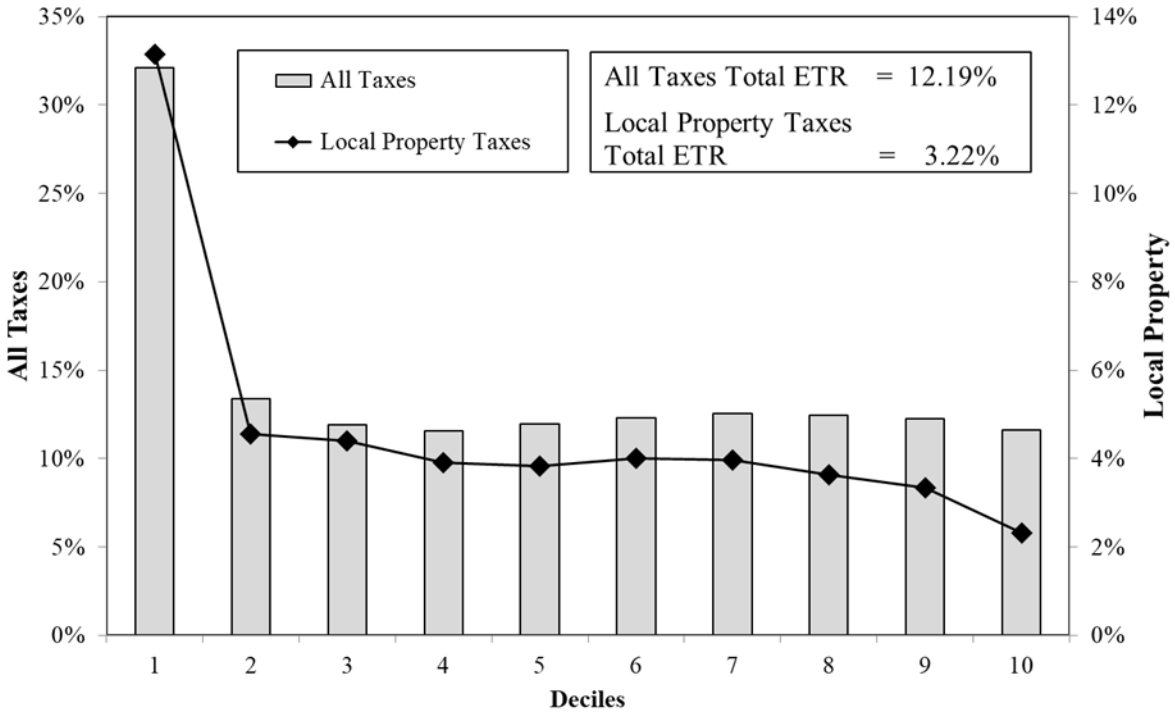
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
State	17.98%	8.34%	7.12%	7.31%	7.83%	8.04%	8.37%	8.59%	8.74%	9.18%	8.58%	8.73%	10.04%	0.033

2016 Incidence Estimate for
Local Property Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$8,432	$4,225	$69	$4,138	$7,126	$1,306

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Local Property	13.15%	4.56%	4.40%	3.91%	3.82%	4.01%	3.96%	3.63%	3.33%	2.31%	3.03%	2.51%	1.60%	-0.174

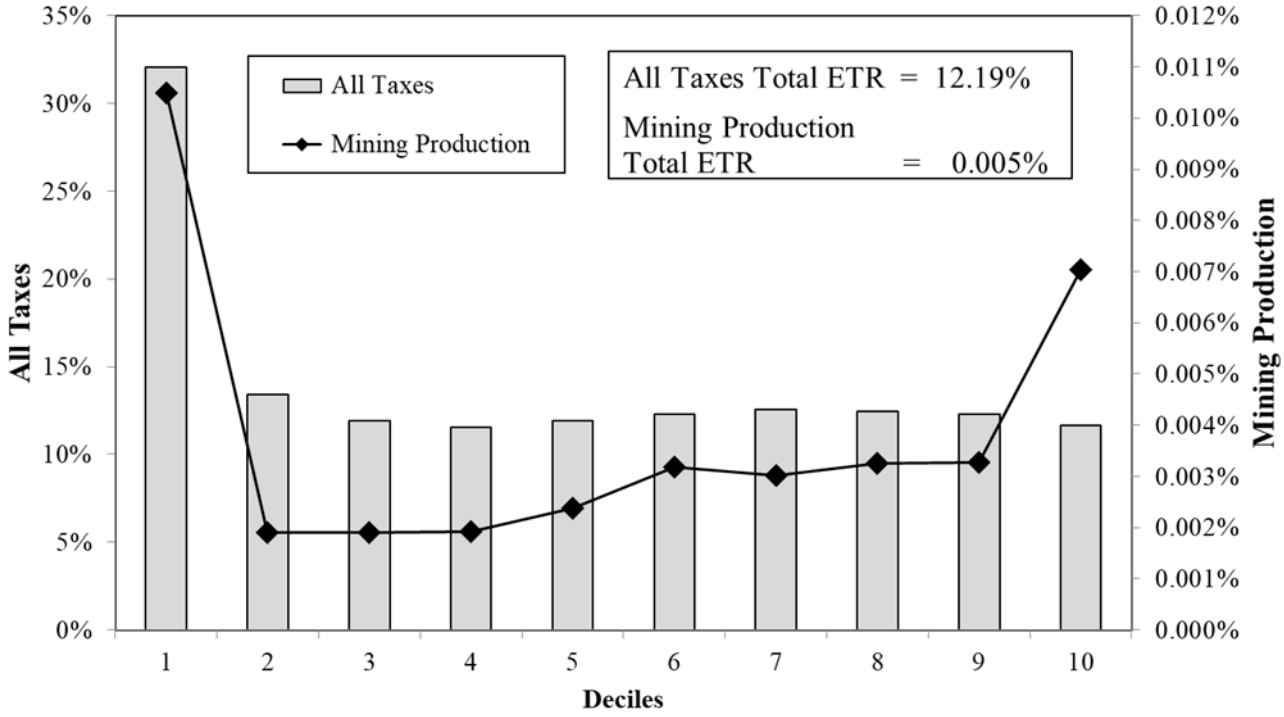
2016 Incidence Estimate for
Mining Production Taxes (Taconite)

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$107	$0	$0	$107	$10	$96

* Shifting allocations: Direct = 0%, Consumers = 0%, Labor = 7%, Capital = 93%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Mining Production	0.010%	0.002%	0.002%	0.002%	0.002%	0.003%	0.003%	0.003%	0.003%	0.007%	0.005%	0.006%	0.01%	0.274

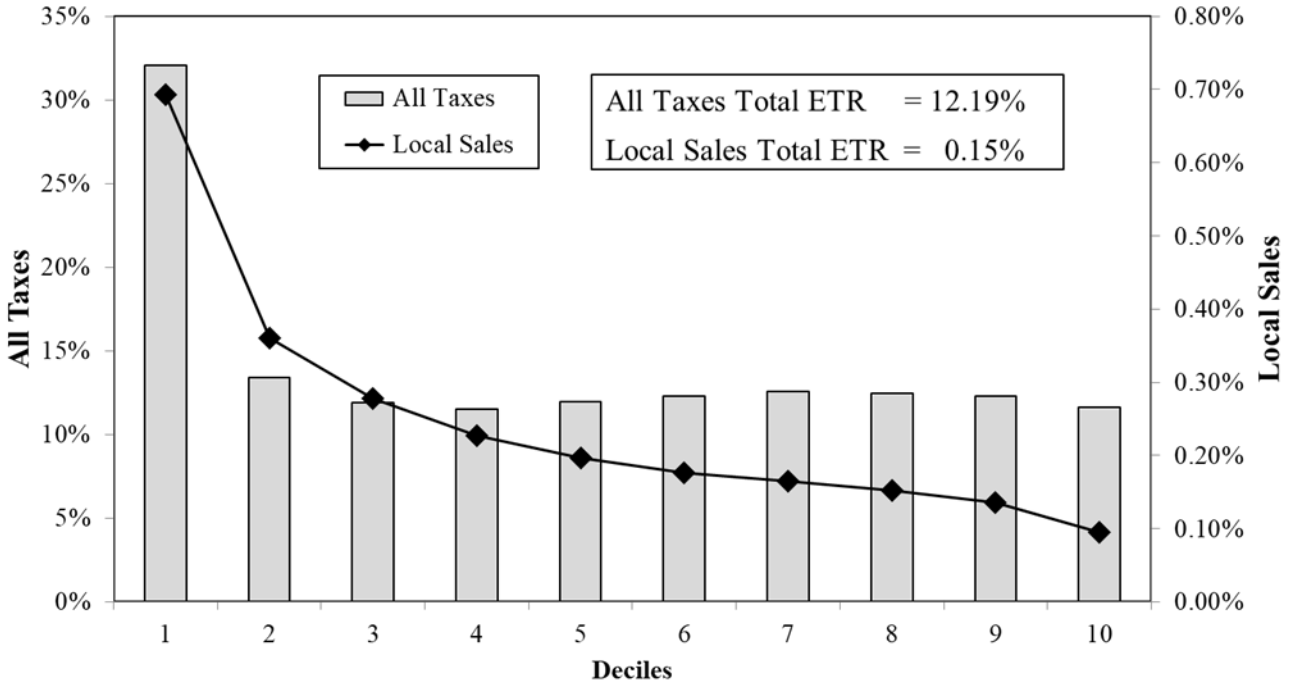
2016 Incidence Estimate for
Local Sales Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$419	$206	$25	$189	$323	$97

* Shifting allocations: Direct = 64%, Consumers = 30%, Labor = 0%, Capital = 6%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Local Sales	0.69%	0.36%	0.28%	0.23%	0.20%	0.18%	0.16%	0.15%	0.14%	0.10%	0.12%	0.10%	0.08%	-0.233

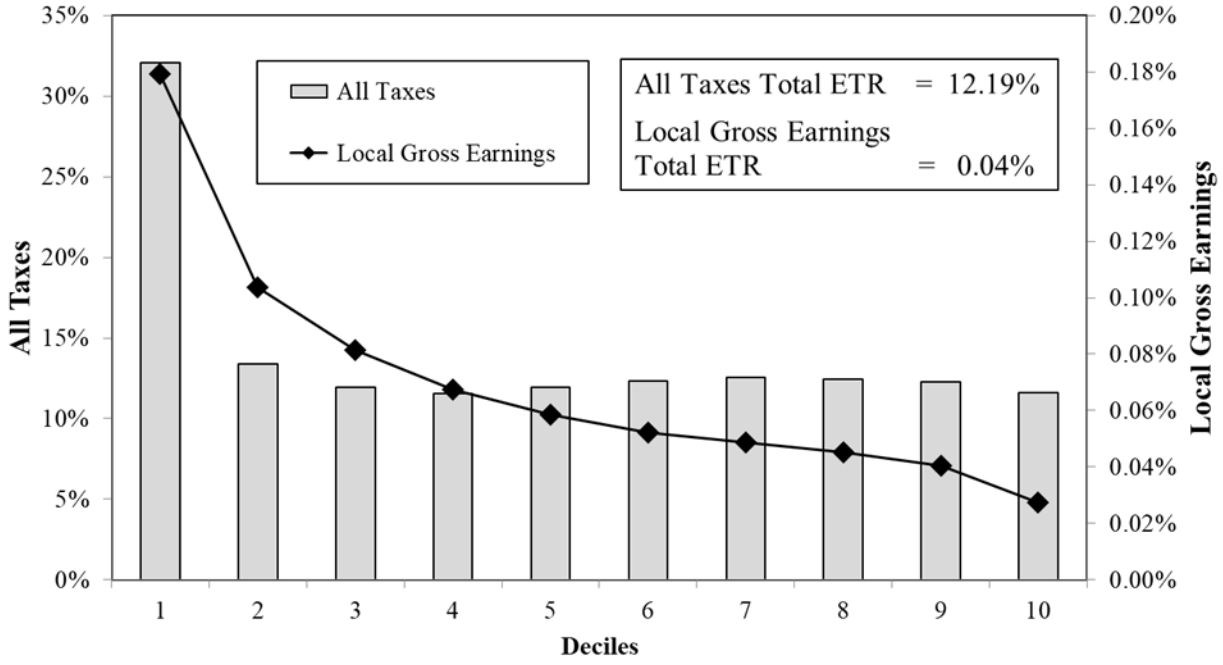
2016 Incidence Estimate for
Local Gross Earning Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$148	$0	$0	$148	$94	$54

* Shifting allocations: Direct = 0%, Consumers = 92%, Labor = 5%, Capital = 3%

Effective Tax Rates, Population Decile



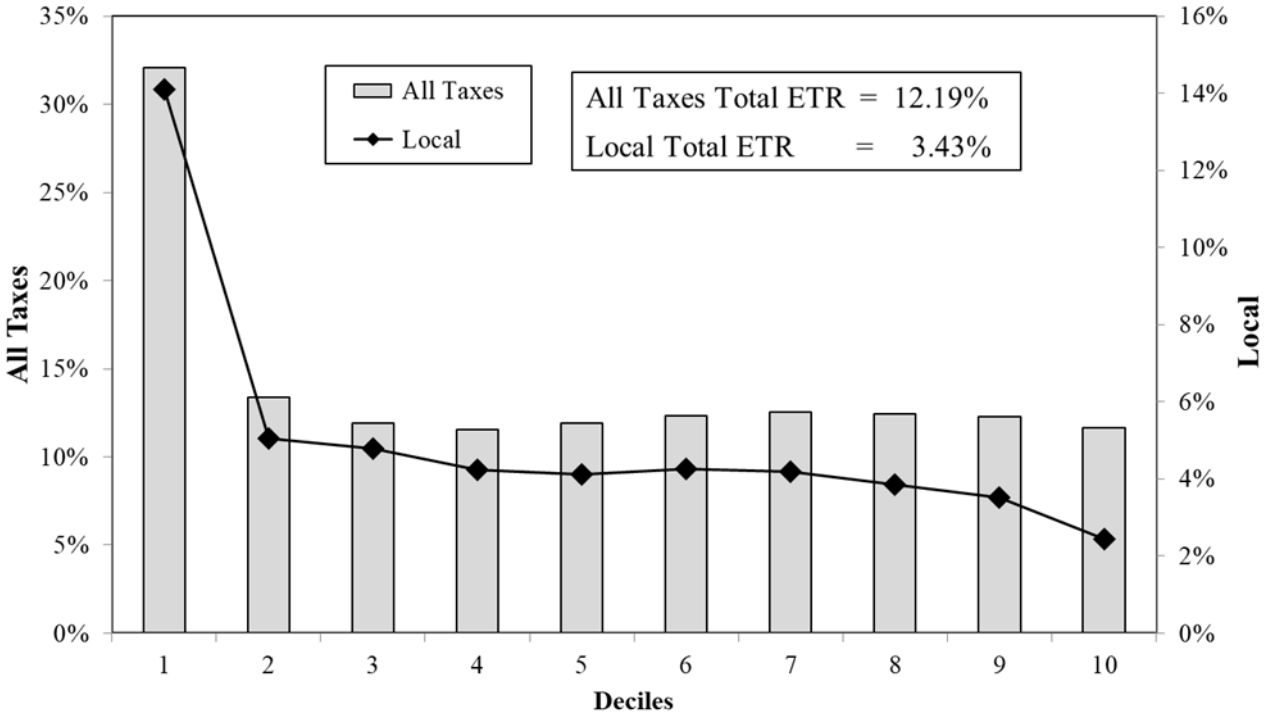
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Local Gross Earnings	0.18%	0.10%	0.08%	0.07%	0.06%	0.05%	0.05%	0.05%	0.04%	0.03%	0.04%	0.03%	0.02%	-0.240

2016 Incidence Estimate for
Total Local Taxes

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$9,143	$4,461	$94	$4,588	$7,588	$1,555

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Local	14.11%	5.06%	4.80%	4.23%	4.10%	4.27%	4.20%	3.85%	3.52%	2.44%	3.20%	2.65%	1.71%	-0.178

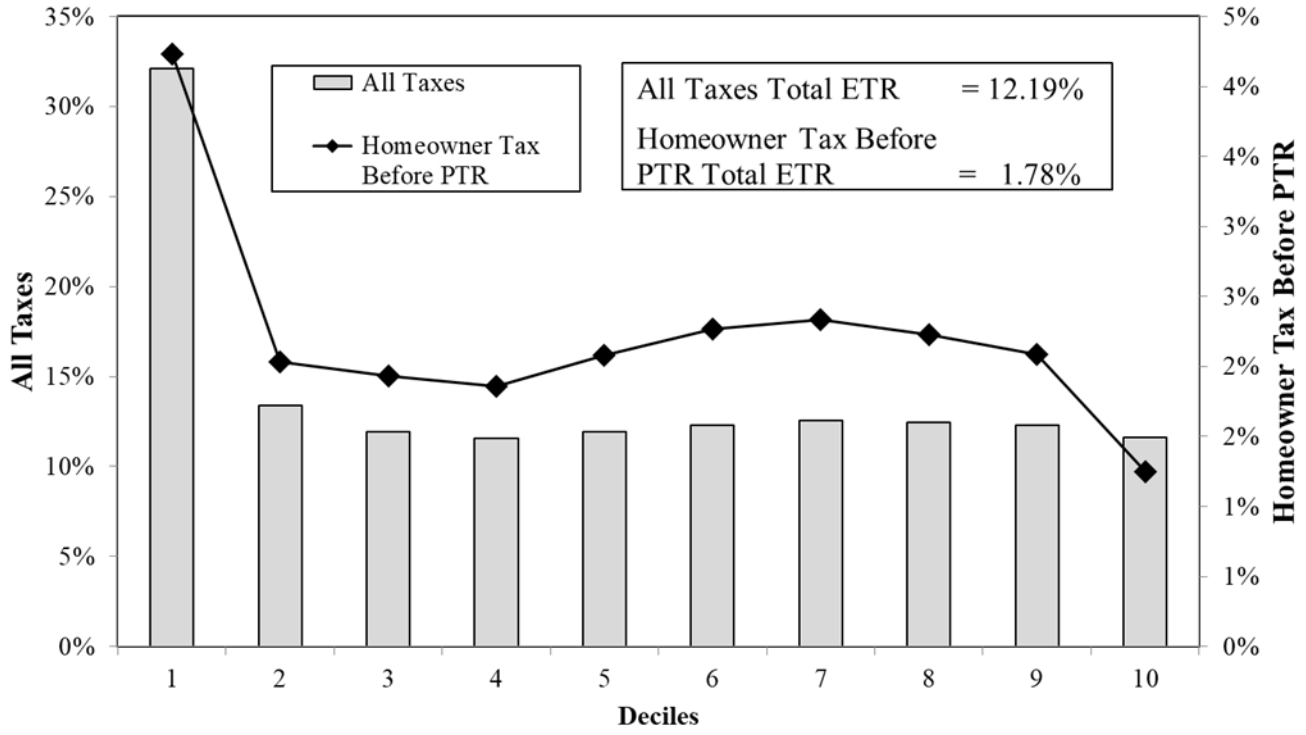
2016 Incidence Estimate for
Homeowner Property Tax Before PTR

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$3,946	$3,946	$0	$0	$3,946	$0

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Homeowner Tax Before PTR	4.23%	2.03%	1.93%	1.86%	2.08%	2.26%	2.34%	2.22%	2.09%	1.25%	1.88%	1.49%	0.57%	-0.165

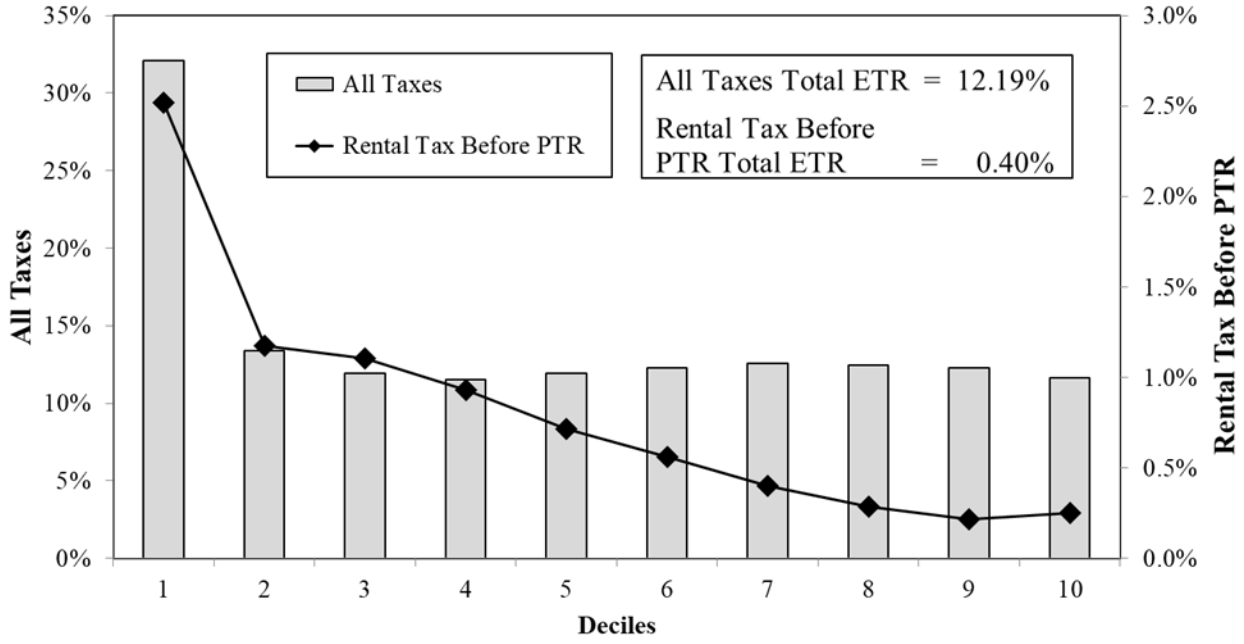
2016 Incidence Estimate for
Rental Property Tax Before PTR

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$1,030	$0	$0	$1,030	$881	$149

* Shifting allocations: Direct = 0%, Consumers = 45%, Labor = 0%, Capital = 55%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Renter Tax Before PTR	2.52%	1.17%	1.11%	0.93%	0.72%	0.56%	0.40%	0.29%	0.22%	0.25%	0.19%	0.22%	0.32%	-0.293

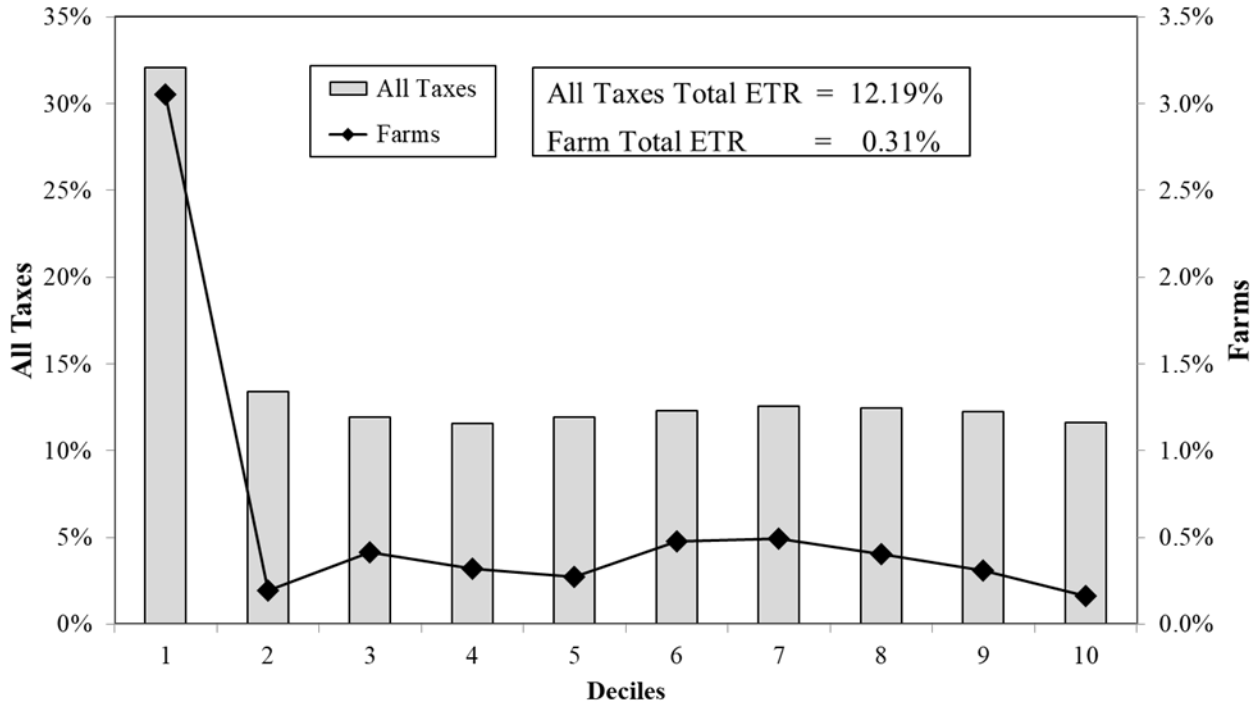
2016 Incidence Estimate for
Farm Property Tax (other than residence)

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$685	$0	$0	$685	$683	$1

* Shifting allocations: Direct = 0%, Consumers = 0%, Labor = 0%, Capital = 100%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Farms	3.05%	0.19%	0.41%	0.32%	0.27%	0.48%	0.49%	0.40%	0.31%	0.16%	0.31%	0.16%	0.06%	-0.291

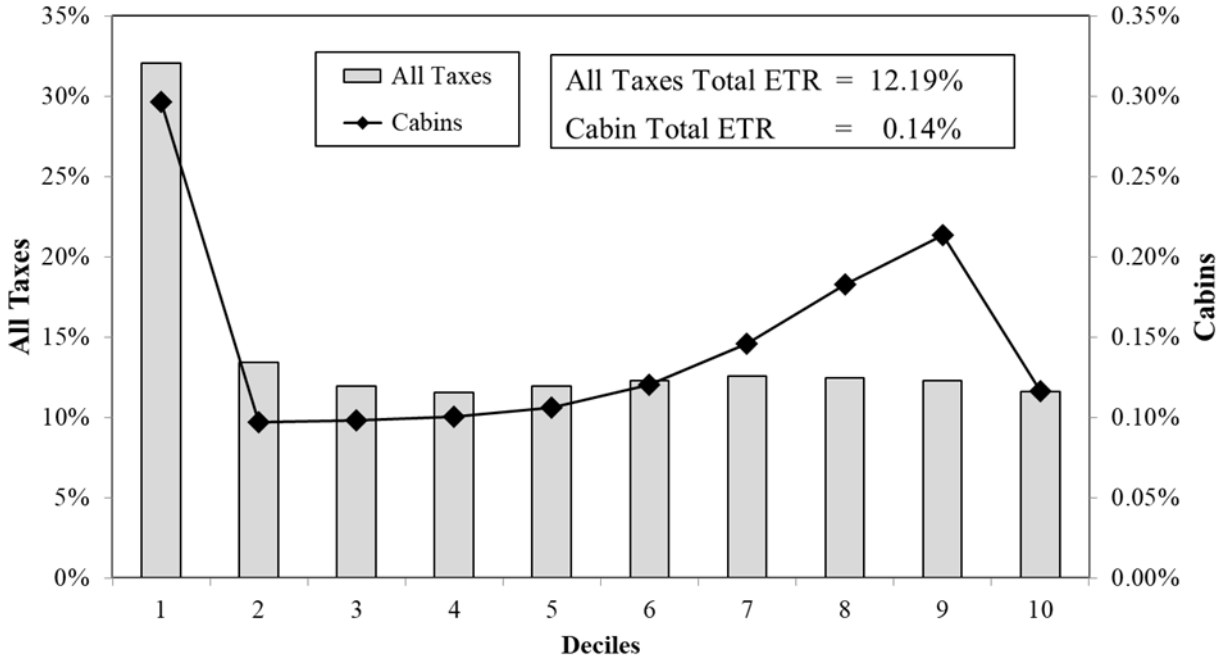
2016 Incidence Estimate for
Cabins and Second Homes Property Tax (State & Local)[1]

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$391	$313	$77	$0	$313	$77

* Shifting allocations: Direct = 100%, Consumers = 0%, Labor = 0%, Capital = 0%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Cabins/2nd Homes	0.30%	0.10%	0.10%	0.10%	0.11%	0.12%	0.15%	0.18%	0.21%	0.12%	0.17%	0.13%	0.06%	-0.061

[1]Includes Seasonal Recreation Property Tax ($257 million) and 20% of Residential Non-Homestead Property Tax ($134 million).

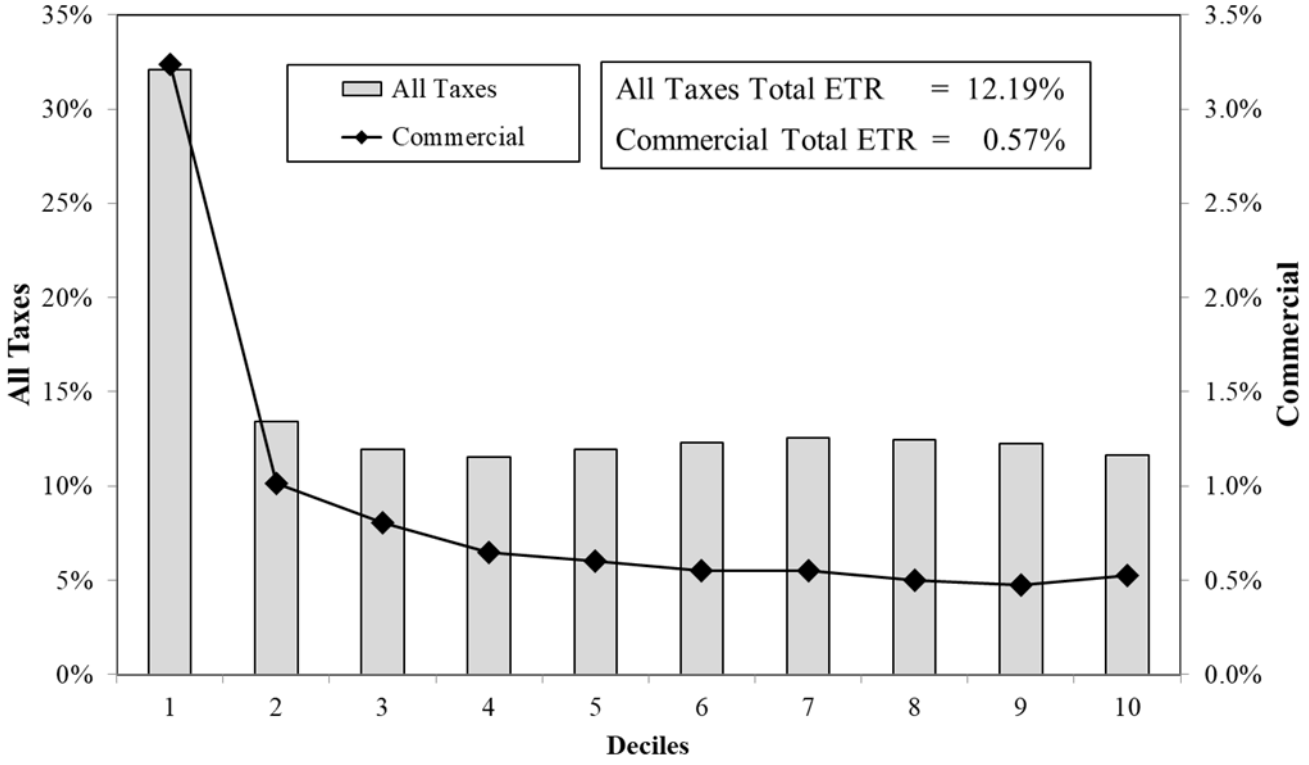
2016 Incidence Estimate for
Commercial Property Tax (State & Local)

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$2,195	$0	$0	$2,195	$1,259	$936

* Shifting allocations: Direct = 0%, Consumers = 58%, Labor = 7%, Capital = 35%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Commercial	3.24%	1.01%	0.80%	0.65%	0.60%	0.55%	0.55%	0.50%	0.48%	0.52%	0.44%	0.49%	0.61%	-0.074

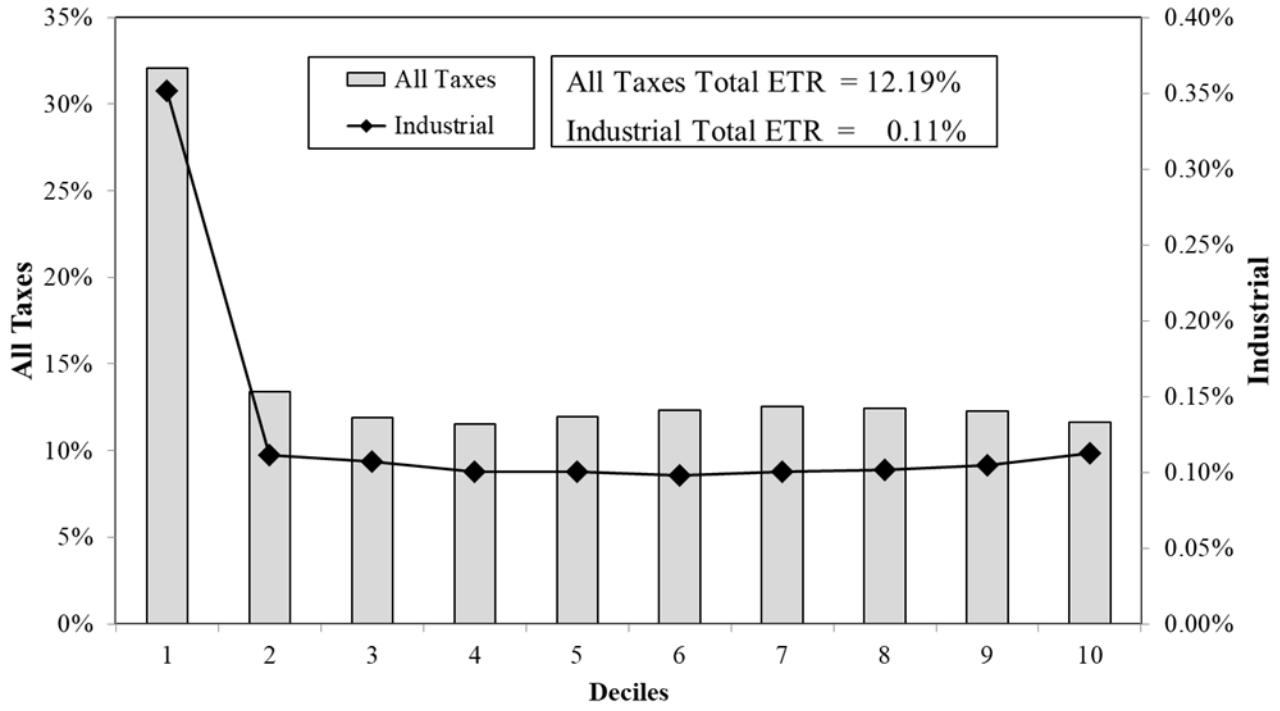
2016 Incidence Estimate for
Industrial Property Tax (State & Local)

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$595	$0	$0	$595	$241	$354

* Shifting allocations: Direct = 0%, Consumers = 11%, Labor = 58%, Capital = 31%

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Industrial	0.35%	0.11%	0.11%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.11%	0.10%	0.11%	0.12%	0.011

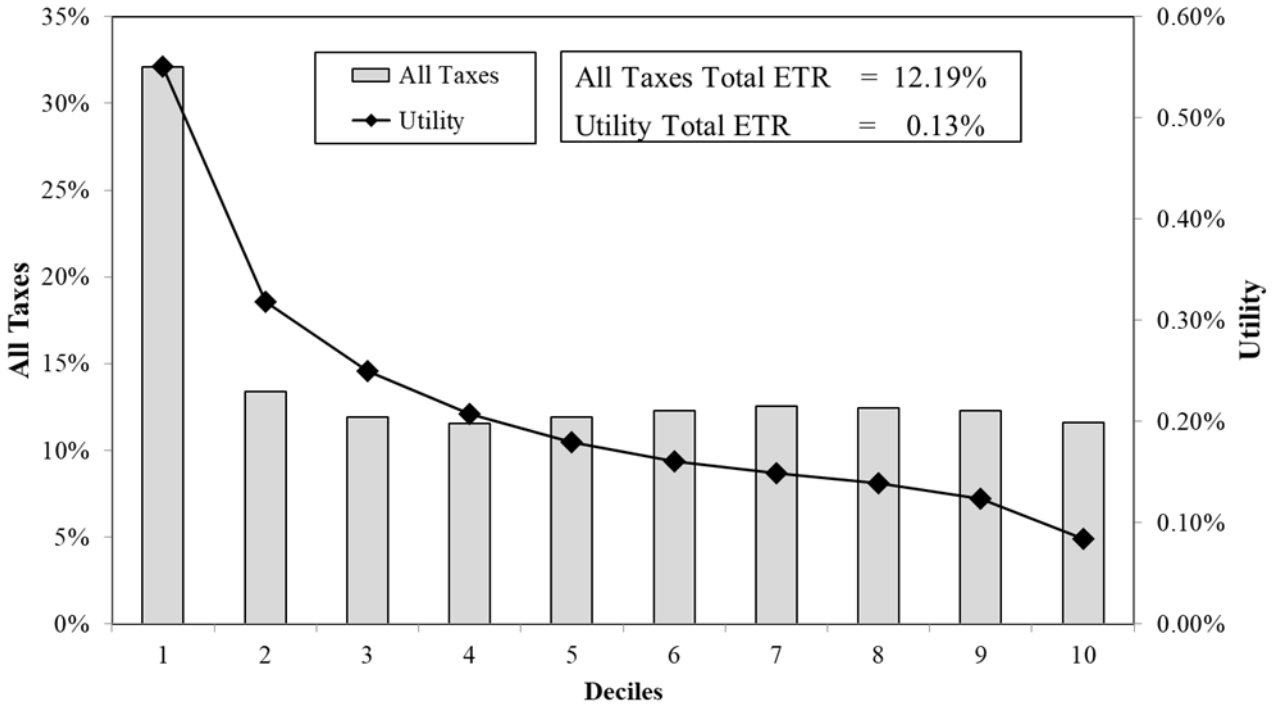
2016 Incidence Estimate for
Utility Property Tax (State & Local)

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota*	Exported
$454	$0	$0	$454	$289	$165

* Shifting allocations: Direct = 0%, Consumers = 92%, Labor = 5%, Capital = 3%

Effective Tax Rates, Population Decile



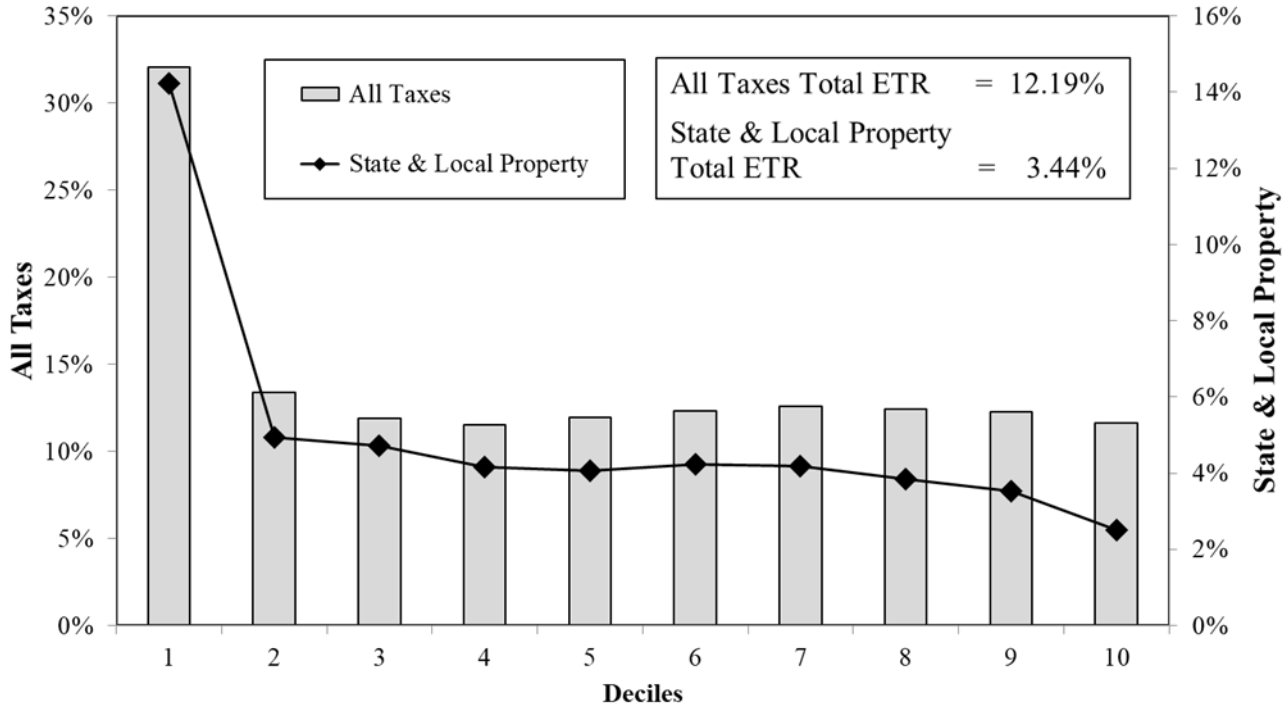
Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
Utility	0.55%	0.32%	0.25%	0.21%	0.18%	0.16%	0.15%	0.14%	0.12%	0.08%	0.11%	0.09%	0.06%	-0.240

2016 Incidence Estimate for
Total State and Local Property Tax Before PTR

Tax Collection Amounts 2016
($ Millions)

Total	As Imposed			After shifting	
	MN HH's	NR	Business	Minnesota	Exported
$9,295	$4,259	$77	$4,958	$7,612	$1,683

Effective Tax Rates, Population Decile



Deciles	1	2	3	4	5	6	7	8	9	10	91%-95%	96%-99%	Top 1%	Suits Index
All Taxes	32.09%	13.40%	11.92%	11.54%	11.94%	12.31%	12.56%	12.44%	12.27%	11.63%	11.79%	11.38%	11.75%	-0.026
State & Local Property	14.24%	4.94%	4.71%	4.16%	4.06%	4.23%	4.18%	3.84%	3.53%	2.50%	3.22%	2.69%	1.81%	-0.169

Glossary of Tax Incidence Study Terms

Consumer Expenditure Survey – a database produced annually by the Bureau of Labor Statistics that contains information from a large nationwide sample of households on the amounts spent for a great variety of goods and services. Used to estimate consumption patterns for Minnesota households.

Decile – one tenth of an ordered list. In this study decile usually means a particular tenth of the total number of households in the state after those households have been ordered or ranked by income; sometimes referred to as a population decile. For example, the first decile means the tenth of the population ranking lowest in income; the tenth decile is the tenth of the population having the highest incomes. An alternative use of the term in this study means a tenth of the total income of the households so ranked; this is referred to as an income decile. For example, the tenth income decile refers to those households receiving the highest tenth of total income.

Effective tax rate – tax paid as a percentage of gross income. Effective tax rates can be calculated for single taxes or groups of taxes. Effective tax rates by decile are one of the main methods by which study results are presented. It should be noted that effective tax rates for the first decile are unreliable for several reasons. That decile includes households with temporarily low incomes or who consume based on wealth rather than current income (retirees, for example).

Federal offset – the reduction in federal taxes due to the reduction in federal taxable income that occurs when state taxes are included in itemized deductions. Because of this offset, the burden of state taxes would be lower than it otherwise appears, as long as federal rates are not increased to make up for the lower revenue.

Household – for tax filers, in this study a household is defined as the one or two people entitled to file one income tax return or property tax refund return, plus any dependents. For the nonfilers in this study, a household means those people living at the same address who presumably would be entitled to file one income tax return if they were filers, plus any dependents. This definition differs from that used by the U.S. Census Bureau, which defines a household as any group of people who share living arrangements.

Impact of tax – refers to the initial burden of the tax, experienced by the person or firm legally obligated to pay the tax. The impact is distinguished from the incidence of the tax.

Incidence of tax – refers to the ultimate burden of the tax after the person or business firm legally obligated to pay the tax alters its behavior in response (if it does alter its behavior). In some cases, namely taxes imposed directly on households, both the impact and the incidence are the same. In other cases, such as taxes on businesses, some or all of the incidence may be shifted from the business to others.

Progressive tax – a tax for which the effective tax rate rises as income rises.

Proportional tax – a tax for which the effective rate does not change with income.

Regressive tax – a tax for which the effective tax rate falls as income rises.

Suits index – a numerical score ranging between –1 and +1 that indicates the extent to which a tax is progressive or regressive. Negative values indicate a regressive tax, positive values a progressive tax, and zero shows a proportional tax. The closer the Suits index is to +1 or –1, the higher the degree of progressivity or regressivity. Suits indexes can be calculated based on totals for 10 deciles (a "10-point" Suits index) or based on the full sample. Except where noted, all Suits indexes reported in this report are "full-sample" Suits indexes.

Tax shifting – the process by which the incidence of a tax is translated from the economic entity legally obligated to pay the tax to those bearing the ultimate burden of the tax.

Legislative Mandate

270C.13 Tax Incidence Reports

Subdivision 1. **Biennial report.** The commissioner of revenue shall report to the legislature by March 1 of each odd-numbered year on the overall incidence of the income tax, sales and excise taxes, and property tax. The report shall present information on the distribution of the tax burden as follows: (1) for the overall income distribution, using a systemwide incidence measure such as the Suits index or other appropriate measures of equality and inequality; (2) by income classes, including at a minimum deciles of the income distribution; and (3) by other appropriate taxpayer characteristics.

Subd. 2. **Bill analyses.** At the request of the chair of the house Tax Committee or the senate Committee on Taxes and Tax Laws, the commissioner shall prepare an incidence impact analysis of a bill or a proposal to change the tax system which increases, decreases, or redistributes taxes by more than $20,000,000. To the extent data is available on the changes in the distribution of the tax burden that are affected by the bill or proposal, the analysis shall report on the incidence effects that would result if the bill were enacted. The report may present information using system wide measures, such as Suits or other similar indexes, by income classes, taxpayer characteristics, or other relevant categories. The report may include analyses of the effect of the bill or proposal on representative taxpayers. The analysis must include a statement of the incidence assumptions that were used in computing the burdens.

Subd. 3. **Income measure.** The incidence analyses shall use the broadest measure of economic income for which reliable data is available.

History: 1990 c 604 art 10 s 9, 2005 c 151 art 1 s 15; 1Sp2011 c 7 art 10 s 1; 2013 c 3 s 2