

# **Wisconsin Tax Incidence Study: An Overview of Methodology**

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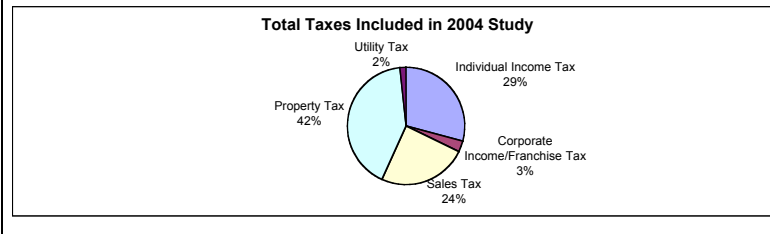
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## **Outline**

- I. Background
- II. Taxes Included
- III. Methodology
  - Step 1: What constitutes a household
  - Step 2: Measure of income
  - Step 3: Determining tax impact
  - Step 4: Tax Shifting and Exporting Assumptions
  - Step 5: Allocation of taxes to households
  - Step 6: Measuring Equity of burden

## Taxes Included in Study

	2001 Collections (millions)	Comments
Individual Income Tax	\$4,473	Excludes part year residents, married filing separately and dependent filers
Corporate Income/Franchise Tax	\$472	C-corps only
Sales Tax	\$3,742	Excludes use/sales tax paid by governments, baseball, premier and stadium taxes
Property Tax	\$6,434	Excludes swamp and waste and forestland
Utility Tax	\$235	Excludes airlines, railroads and utilities paid by public entities
<b>Total Taxes included in Study</b>	<b>\$15,356</b>	
<b>Total 2001 State and Local Taxes</b>	<b>\$17,375</b>	
<b>% of Taxes in Study to Total</b>	<b>88%</b>	



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## Tax Incidence: Taxes as a Percentage of Household Income

$$\text{Tax Incidence} = \frac{\text{Tax Burden}_i}{\text{Household Income}_i}$$

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## Methodology

- To determine the denominator- household income
  - Step 1: What is a household?
  - Step 2: What constitutes household income?
- To determine the numerator - tax burden
  - Step 3: Initial tax impact
  - Step 4: Tax shifting and exporting
  - Step 5: Allocation of taxes to sample households

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## Step 1: Households

- What constitutes a tax household?
  - A married couple filing a joint tax return counts as a one tax household
  - Single filers and heads of households
    - A filer who is claimed as a dependent on the tax return of another filer is not a separate household. He belongs to the household of the filer who claimed the dependent on his return
    - Two unrelated individuals living together are considered two households.
  - Data source: Tax Year 2001 Income Tax Model, which is based on a stratified sample of 21,000 income tax filers and Homestead and Farmland Preservation Credit claimants, extrapolated to represent the 2.6 million tax-filing population.
- Non-filers
  - WI Welfare to Work, Child Care Subsidy Recipients
  - Social Security Recipients - IRS informational returns

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## Tax Burden Sample: Wisconsin Tax Filers and Non-filers

	Sample Size	Population Estimate	Sample %	% Represented in Sample
2001 Tax Sample	18,827	2,230,335		92.4%
2001 Non-Filer Social Security Recipients	17,450	174,500	10%	7.2%
2001 Non-Filer Welfare Recipients	8,629	8,629	100%	0.4%
<b>TOTAL TAX BURDEN SAMPLE</b>	<b>44,906</b>	<b>2,413,464</b>	<b>1.9%</b>	<b>100.0%</b>

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## Tax Burden Sample

	<b>Sample</b>	<b>Census</b>
<b>Percent of Households:</b>	<b>%</b>	<b>%</b>
Under 65	77%	78%
Over 64	23%	22%
Total		
<b>% Married</b>		
Under 65	47%	44%
Over 64	34%	35%
Total	44%	42%
<b>Average Family Size</b>	2.1	2.59
<b>Median Family Income 2001</b>	\$53,748	\$58,000
<b>% Home Owners</b>		
15-64	54%	51%
>64	59%	59%
Total	55%	53%

Notes:  
Non-filers are assumed single unless information is available regarding marital status.

Census 1999 median family income is inflated based on BEA growth in personal income.

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## Step 2: Definition of Household Income: (Before Tax) Income Sources

- Wages, salaries (IRS 1040, WI-1, or IRS W-2 form)
- Dividends (IRS 1040, 4794, 1099-DIV)
- Realized capital gains (Schedule D, 1099-DIV)
- Interest, rent, royalty (IRS 1040, 1099-INT, 1099-OID)
- Alimony received (IRS 1040)
- Farm income, business/partnership income (IRS 1040, Sch. F, 1099-G)
- Unemployment compensation (IRS 1040, 1099-G)
- Social security, annuities, pensions (SSA 1099, 1099-R)
- Deferred compensation (IRS W-2 form)
- Child Care subsidies, Welfare to Work payments

Less: business expenses, casualty losses and alimony paid

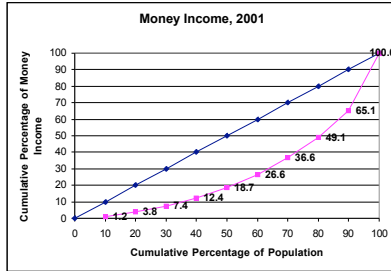
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## Income Distribution by Household Deciles

<b>Household Income Group:</b>	<b>Income Below:</b>	<b>% of Total Income</b>
Lowest 20%	\$15,488	4%
2nd 20%	\$27,609	9%
3rd 20%	\$43,632	14%
4th 20%	\$68,894	22%
Next 10%	\$92,334	16%
Top 10%	\$53,052,722	35%

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## Distribution of Money Income, 2001 & 1974



Money Income*		
% of Households	2001	1974
Bottom 20%	3.8%	4.6%
Next 20%	8.6%	9.8%
Middle 20%	14.3%	16.3%
Fourth 20%	22.4%	23.3%
Ninth 10%	16.1%	15.7%
Top 10%	34.9%	30.4%
Gini Coefficient	0.4580	0.4182

\*Money Income in 1974 included Medicaid and food stamp payments; 2001 Money Income does not.

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## Distribution of Money Income, Allocating Medicaid Benefits

% of Households	2001*	1974
	(w/Medicaid)	
Bottom 40%	15.1%	14.4%
Next 20%	13.8%	16.3%
Next 20%	21.7%	23.3%
Next 10%	15.6%	15.7%
Top 10%	33.8%	30.4%
Gini Coefficient	41.0%	41.8%

\*Assigning all Medicaid benefits to bottom 40%

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## Income Sources by Income Group

Household Income Group:	Income Sources (as % of Total Household Income):				
	Wages	Business Income <sup>1</sup>	Investment Income <sup>2</sup>	Retirement Income <sup>3</sup>	Transfer Payments <sup>4</sup>
Lowest 20%	47%	3%	3%	42%	4%
2nd 20%	66%	1%	4%	25%	3%
3rd 20%	71%	2%	5%	20%	1%
4th 20%	76%	2%	4%	16%	1%
Next 10%	80%	3%	5%	11%	0%
Top 10%	65%	12%	14%	8%	0%
Total	70%	6%	8%	15%	1%

<sup>1</sup> Sole proprietor, farm and rental income

<sup>2</sup> Capital gains, interest and dividend

<sup>3</sup> Social Security, pensions and IRA distributions

<sup>4</sup> Unemployment compensation, welfare and child care subsidies

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## Wisconsin Nontaxable Income by Income Group

Income Group	Nontaxable Income as % of Total Income	Types of Nontaxable Income:		
		Social Security/ Pensions	Interest	Welfare
Lowest 20%	44%	41%	1%	2%
2nd 20%	21%	20%	1%	1%
3rd 20%	13%	12%	0%	0%
4th 20%	6%	6%	0%	0%
Next 10%	3%	3%	0%	0%
Top 10%	3%	2%	1%	0%
Total	8.3%	7.6%	0.5%	0.2%

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## Retirement Income: WI Taxable vs. Nontaxable

Household Income Class	Total Pensions			Non-Taxable Pension			Nontaxable %
	Count	Amount (\$m)	Aver.Amt (\$)	Count	Amount (\$m)	Aver.Amt (\$)	
Lowest 20%	68,023	162	2,375	52,646	110	2,081	67.8%
2nd 20%	131,667	754	5,724	59,546	264	4,441	35.1%
3rd 20%	142,082	1,566	11,025	37,043	280	7,571	17.9%
4th 20%	148,677	2,486	16,724	43,051	420	9,763	16.9%
Next 10%	64,410	1,520	23,603	19,850	265	13,330	17.4%
Top 10%	71,328	2,513	35,235	23,908	549	22,958	21.8%
<b>Total</b>	<b>626,187</b>	<b>9,002</b>	<b>14,375</b>	<b>236,044</b>	<b>1,888</b>	<b>7,999</b>	<b>21.0%</b>

Household Income Class	Total Social Security			Non-Taxable Social Security			Nontaxable %
	Count	Amount (\$m)	Aver.Amt (\$)	Count	Amount (\$m)	Aver.Amt (\$)	
Lowest 20%	219,259	1,748	7,972	219,259	1,748	7,972	100.0%
2nd 20%	153,880	1,778	11,555	153,880	1,774	11,527	99.8%
3rd 20%	127,166	1,825	14,351	127,166	1,739	13,674	95.3%
4th 20%	105,359	1,679	15,933	105,359	1,195	11,339	71.2%
Next 10%	36,519	596	16,316	36,519	307	8,403	51.5%
Top 10%	37,071	661	17,820	37,071	339	9,142	51.3%
<b>Total</b>	<b>679,254</b>	<b>8,286</b>	<b>12,199</b>	<b>679,254</b>	<b>7,101</b>	<b>10,454</b>	<b>85.7%</b>

Household Income Class	Total Retirement Income Amount (\$m)	Non-Taxable Retirement Income Amount (\$m)	Nontaxable %
Lowest 20%	1,910	1,858	97.3%
2nd 20%	2,532	2,038	80.5%
3rd 20%	3,391	2,019	59.5%
4th 20%	4,165	1,615	38.8%
Next 10%	2,116	571	27.0%
Top 10%	3,174	888	
<b>Total</b>	<b>17,288</b>	<b>8,989</b>	<b>52.0%</b>

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## Deferred Compensation: Average Employee Contributions & Participation [(401(k), 403(b) & 457 Accounts)]

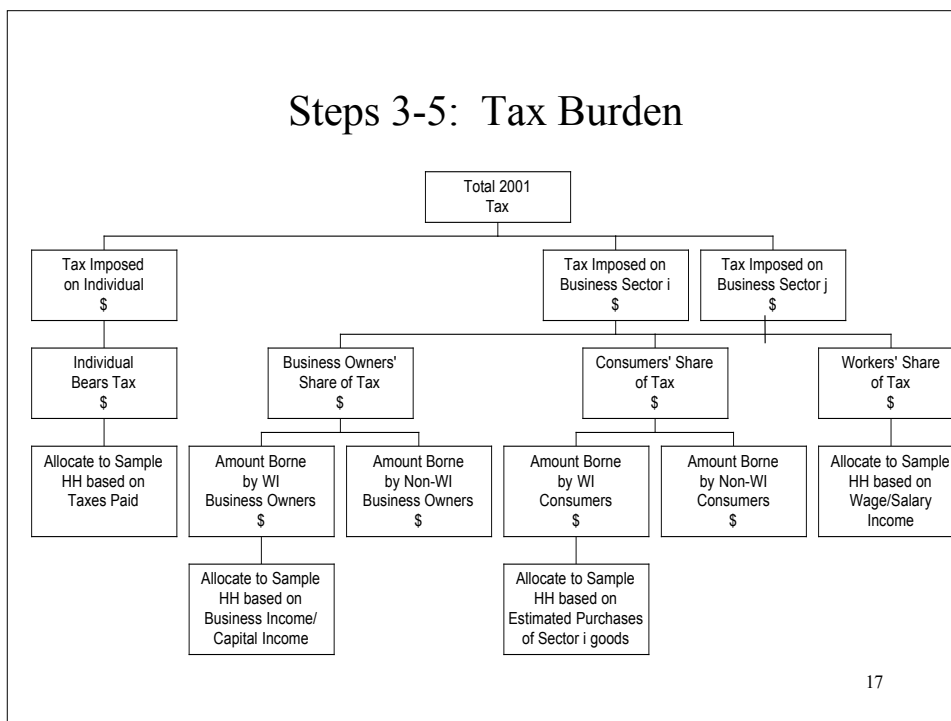
Population Decile	Total Wages* (millions)	Employee Deferred Comp. Contributions (millions)	Average Annual Employee Contribution	Participation Rate
Bottom 20%	\$2,127	\$9	\$765	4%
2nd 20%	\$6,742	\$108	\$1,145	25%
3rd 20%	\$11,719	\$347	\$1,843	47%
4th 20%	\$19,395	\$798	\$2,984	63%
Next 10%	\$14,442	\$767	\$4,492	77%
Top 10%	\$25,488	\$1,353	\$7,754	80%
<b>Total</b>	<b>\$79,913</b>	<b>\$3,381</b>	<b>\$3,724</b>	<b>47%</b>

Wages after employee contributions

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## Steps 3-5: Tax Burden



## Step 3: Determining Tax Impact Estimating Business Taxes

- Corporate income tax & business property tax observed
- Sales & utility taxes - allocation to consumers, manufacturers and non-manufacturers:
  - purchases of manufacturing, utility, financial, retail, wholesale, agricultural, mining goods and service based on type of customer (Census)
  - purchases of new construction materials based on construction data
  - use taxes paid on capital acquisitions
- Rental property taxes - based on WI income tax credit claimed for primary residence property tax credit, 1040 Schedule A deduction for property taxes, vacancy rates (Census housing data); reconciled with DOR data on residential and commercial property

## State and Local Sales/Use Taxes Paid by Consumers, Manufacturers, & Non-Manufacturers, 2001

	State/Local Consumer (millions)	State/Local Manufacturing (millions)	State/Local Non Manufacturing (millions)	Total (millions)	% of Total
CONSTRUCTION	\$118.4	\$19.5	\$92.0	\$230.0	6%
MANU	\$21.1	\$7.1	\$51.9	\$80.1	2%
UTILITY	\$190.2	\$91.1	\$157.9	\$439.2	12%
FINANCIAL	\$8.7	\$2.3	\$6.4	\$17.5	0.5%
SERVICES	\$251.7	\$79.9	\$219.3	\$550.9	15%
RETAIL	\$1,819.9	\$0.0	\$314.6	\$2,134.5	57%
WHOLESALE	\$0.8	\$27.1	\$60.4	\$88.3	2%
CAPITAL EXPENDITURES	\$0.0	\$13.7	\$64.4	\$78.1	2%
AG MINING	\$0.0	\$11.3	\$23.2	\$34.5	1%
OCCASSIONAL SALES	\$88.5	\$0.0	\$0.0	\$88.5	2%
<b>TOTAL</b>	<b>\$2,499</b>	<b>\$252.06</b>	<b>\$990.19</b>	<b>\$3,742</b>	<b>100%</b>
% to Total	67%	7%	26%	100%	

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## Business Taxes: Percent to Total Taxes

	TOTAL TAXES (millions)		BUSINESS TAX BREAKDOWN	
	STUDY 2001	COST <sup>1</sup> Ave. FY00 and FY03	STUDY 2001 WI	COST <sup>1</sup> 2001 U.S.
Business Taxes:				
Corporate Income & Franchise Tax	472		12%	11%
Sales Tax on Business Inputs	1,242		30%	28%
Property Tax on Business Property	2,227		55%	54%
Utility Tax	137		3%	7%
<b>Total Business Tax in Study<sup>2</sup></b>	<b>4,077</b>	<b>4,801</b>	<b>100%</b>	<b>100%</b>
Taxes on Individuals:				
Individual Income Taxes	4,474			
Sales Tax on Consumer Purchase	2,499			
Residential Property Tax	4,133			
Utility Tax on Consumer Use	98			
<b>Total Taxes on Individuals</b>	<b>11,205</b>			
Total Taxes <sup>2</sup>	15,184	17,287		
<b>Business Tax Share of Total Taxes<sup>2</sup></b>	<b>26.9%</b>	<b>27.8%</b>		

<sup>1</sup> Prepared for Council on State Taxation (COST) by Robert Cline, William Fox, Tom Neubig & Andrew Phillips: *Total State and Local Business Taxes: A 50-State Study of the Taxes Paid by Business in 2003, January 2004*

<sup>2</sup> Does not include excise taxes, licenses and unemployment/workers' compensation. Total WI business taxes as estimated for COST are reduced by these taxes based on their share of U.S. total business taxes (see footnote 3).

<sup>3</sup> Prepared for COST by Robert Cline, William Fox, Tom Neubig and Andrew Phillips: *A Closer Examination of the Total State and Local Business Tax Burden, January 2003*. 2001 business tax composition for U.S.

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### Step 3: Determining Tax Impact (cont.) Property Tax Imputation

- 16% of tax-filers (366,000), 100% of non-filers (183,129) have no information regarding property tax liability
- Random assignment of homeownership with higher probability if married (all elderly). Number of imputed owners designed to match Census home-ownership rates (by age group).
- Property tax liability for imputed owners based on average liability of similar (tax-filing) households (marital status, age, income decile). Property tax liability constrained to 40% of household income.
- Renters' property tax equivalent (PTE) based on average PTE of similar tax-filing households; constrained to 25% of household income. (Based on Census, 22% of imputed renters assumed to live with someone else)

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### Imputed Property Tax

Income Decile	Average Property Tax Liability	Average Renter's PTE
Lowest 10%	\$1,096	\$634
2	\$1,626	\$866
3	\$1,839	\$1,122
4	\$1,969	\$1,171
5	\$2,190	\$1,280
6	\$2,368	\$2,199
7	\$2,663	\$2,002
8	\$2,765	\$2,536
9	\$3,088	\$1,877
Top 10%	\$4,538	\$2,174
Total Count:	57,315	378,961
Total:	\$100,375,009	\$442,005,741

\*112,800 renters are assumed to live rent-free, based on Census population living with others

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### Step 4: Tax Shifting Assumptions

- Taxes on individuals (individual income taxes, property taxes on residents) are assumed to be borne by the individual. Sales tax on consumer items are assumed to be borne by the consumer.
- Taxes on businesses can be shifted forward to consumers through higher prices, or backward to factors of production (labor/land/capital) through lower wages/ lower rents/lower profits.
- 3 variants of tax shifting assumptions for taxes initially paid by businesses.

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### Business Taxes: Shifting Assumptions Under Three Incidence Variants

<b>ASSUMPTIONS:</b>	<b>SHIFTING:</b>	<b>EXPORTING:</b>
<b>REGRESSIVE</b>	100% Shift to Consumers &/or Labor	Tourists/Out-of-State Consumers
<b>PLAUSIBLE</b>	Owner Share=National Ave. capital rate Remaining Shifted to Consumers & Labor	Tourists/Out-of-State Consumers Out-of-State Capital Owners
<b>PROGRESSIVE</b>	100% Capital Owners	95-98% corporate owners 5-10% non corporate owners

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## Distribution of Business Taxes by Taxpayer Category - Three Incidence Variants

	WISCONSIN TAXPAYERS			Exported Taxes
	Consumers	Labor	Capital	
<b>Business Property Taxes</b>				
Regressive Variant	32%	27%	0%	41%
Plausible Variant	11%	3%	29%	57%
Progressive Variant	0%	0%	43%	57%
<b>Rental Housing Property Taxes</b>				
Regressive Variant	89%	0%	11%	0.3%
Plausible Variant	57%	0%	41%	2%
Progressive Variant	0%	0%	98%	2%
<b>Sales &amp; Use Tax</b>				
Regressive Variant	56%	28%	0%	16%
Plausible Variant	46%	28%	4%	22%
Progressive Variant	0%	0%	27%	73%
<b>Corporate Income/Franchise Tax</b>				
Regressive Variant	51%	26%	0%	23%
Plausible Variant	23%	9%	4%	64%
Progressive Variant	15%	0%	5%	79%
<b>Utility Taxes</b>				
Regressive Variant	42%	37%	0%	21%
Plausible Variant	15%	5%	14%	66%
Progressive Variant	0%	0%	21%	79%

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## Step 5: Allocation of Taxes to Sample Households

- Corporate capital - dividend share
- Non-corporate capital - based on  
max(rent inc, Sch. E depreciation) +  
max (farm inc, Sch F depreciation) +  
Partnership Gains + Partnership Losses
- Labor - wage share
- Property tax on Housing - property/renter property taxes  
claimed for WI income tax credit
- Landlord - Schedule E rental share
- Consumer - consumption share by sector

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## Consumption Imputations

- Step 1: CES Data - Estimate total consumption (durables, nondurables, services, utilities)
  - $\log(C) = f(\text{Midwest dummy, family size, homeownership, marital status, over 64 dummy, under 18 dummy, log(income)})$
- Step 2: CES Data - Calculate consumption shares (e.g., manufactured goods/total consumption) by home ownership, marital status, over 64 status, under 18 status
- Step 3: Tax Incidence Sample - Use CES regression results to estimate total consumption of sample households

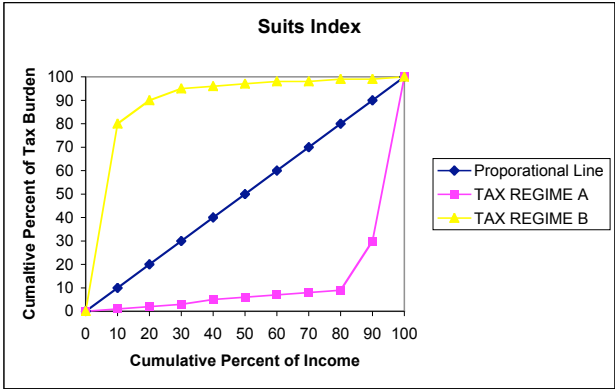
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## Consumption Imputations (cont.)

- Step 4: Tax Incidence Sample - Statistical match of consumption shares; estimate consumption by sector
  - Household  $i$ 's Consumption of Manu. Goods =
  - $$M_i = \text{Total } C_i * m_{\text{CES } i}$$
- Step 5: Calculate allocation factor - determine household  $i$ 's share of total (estimated) consumption by sector
  - Household  $i$  Allocator of Manu. Goods =
  - $$A_{\text{manu}, i} = \frac{M_i}{\sum_i M_i}$$
- Step 6: Allocate consumers' share of business tax to sample households (by sector)
  - Manu. Business Taxes Shifted to Consumers \*  $A_{\text{manu}, i}$

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# Step 6: Measuring Overall Progressivity



Suits Index = 1 - [Area below incidence curve/Area below Proportional Line]

END OF PRESENTATION

## **1979 Findings**

- For plausible and regressive variants, overall 1974 state and local taxes were regressive:
  - Effective rate declined from 10% for \$3,000 of income to 3.5% for income of \$100,000 for the plausible case; and from 13% at \$3,000 income to 3.5% at \$100,000 for the regressive case.
  - For 80% of families (incomes between \$4,000 and \$25,000) average effective rate declined from 12% to 8% as income rose under the regressive variant, and from 9% to 7.5% under the plausible variant.

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## **1979 Findings (cont.)**

- For the progressive variant, 1974 taxes were progressive for incomes below \$10,000, roughly proportional at 8.5% for incomes between \$10,000 and \$50,000, and regressive for incomes over \$50,000.
- The conclusion under the progressive variant depends heavily on one critical assumption – that the residential property tax on rental housing is borne by the landlord rather than the tenants.

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## **Tax Changes Between Tax Years 1974 and 2001**

- **Property Tax**
  - Personal property exemptions since 1974:
    - machinery and equipment used in manufacturing (1974)
    - inventories and stocks (50% in 1974, 100% in 1981)
    - computers (1999).
  - Farmland: use value assessment did not exist in 1974. Use value assessment fully phased in by 2000.

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## **Tax Changes Between Tax Years 1974 and 2001**

- **Individual Income Tax**
  - Marital property reform - joint returns, & married couple credit to mitigate the effects of the marriage penalty (1986)
  - Capital gains fully taxed prior to 1982 ; 60% exclusion (fully phased-in by tax year 1986)
  - Revision of rates and brackets - widening and reduction in number of tax brackets, rate reduction
  - Sliding scale standard deduction, property tax credit available to homeowners as well as renters (in place of the itemized deduction), indexing of tax brackets and standard deduction.
  - Various “above-the-line” deductions – for IRAs, health insurance, education – did not exist in 1974.
  - Homestead Credit - substantial increase in benefits.
  - Refundable Earned Income Credit (1989)

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## **Tax Changes Between Tax Years 1974 and 2001**

- **Sales Tax:**
  - State sales tax rate increase from 4% to 5% (1982)
  - County sales tax (.5%) (Beg. in 1986)
    - 55 of 72 counties imposed sales tax in 2001
  - Exemption for residential fuel and electricity used in winter (1979)
  - Sales tax base expansion to include interstate telephone services, and landscaping and lawn maintenance services, central office equipment
- **Utility taxes:**
  - Taxation of telecommunications companies changed from a gross receipts tax to a state- administered property tax (1998)

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## **Tax Changes Between Tax Years 1974 and 2001**

- **Corporate Income Tax:**
  - In 1981, a flat 7.9% tax rate replaced the graduated rate structure that ranged from 2.3% on taxable income below \$1,000 to 7.9% on taxable income over \$6,000.
  - Taxation of unrelated business income (beg. 1988)
  - Repeal of railroad exemption (beg. 1991)
  - Pass-through entity legislation (Sub-chapter S legislation in 1979 and limited liability company legislation for 1994) that allowed income of businesses to be passed through to the individual owners and taxed under the individual income tax.

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