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A Working Paper

February 1987

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The Burden of the Sales Tax

A Working Paper

February 1987

This paper examines the income distribution (the progressivity or regressivity) of both the existing sales tax base and the major options for expanding the tax base to additional consumption items.

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PREFACE

Public attention has recently been focused on Minnesota's general sales tax--in particular its narrow tax base and the instability of its revenues. The Minnesota Tax Study Commission recommended that the sales tax be extended to clothing and services.* The Commission found that this would make the tax more equitable and a more stable source of revenue. The principal objection to expanding the sales tax base is that the tax burden will fall disproportionately on lower income households. As a result, the tax will become more regressive.

This paper examines the income distribution (the progressivity or regressivity) of both the existing sales tax base and the major options for expanding the tax base to additional consumption items. Progressivity is measured with a commonly used index of tax distribution, the Suits index. Effective sales tax rates are also calculated for the present tax base and for each of the base expansion options.

Two more publications from the House Research Department also address sales tax issues. A second working paper on the sales tax examines the effect of base expansion options on the stability of sales tax revenue flows. An information brief presents a summary of both papers in combination with estimates, prepared by the Department of Revenue, of the revenue yields for the base expansion options.

* The Final Report of the Minnesota Tax Study Commission, vol. 1, 15-18, 165 (1986).

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SUMMARY

A relatively high tax rate (6 percent) and a narrow tax base characterize the Minnesota sales tax. The tax does not apply to most necessities, such as food, clothing, and home heating fuels. In addition, services are largely exempt from taxation.

Proposals have recently been made to expand the sales tax base, either to raise additional state revenues or to make the revenue flows from the tax more stable. The exemptions, particularly those for necessities, were enacted to reduce the general regressivity of the sales tax. As a result, the principal objection to elimination of the exemptions is that it will make the sales tax more regressive or disproportionately burdensome to lower income individuals.

In order to analyze the effect on the regressivity of the major sales tax base expansion options, Suits indexes and effective tax rates were calculated for both the existing tax base and the major base expansion options. Suits indexes provide a system wide measure of the overall progressivity/regressivity of a tax.

The results indicate that the existing sales tax base is regressive. In other words, under present law taxpayers with higher incomes pay smaller proportions of their incomes in sales tax. All the major base expansion items are regressive as well. However, a sales tax on purchases of clothing or personal services would be less regressive than Minnesota's current sales tax. By contrast, a sales tax on food and home heating fuels would be significantly more regressive than the existing sales tax. Imposing the sales tax on a comprehensive tax base would be somewhat more regressive than the existing tax base.

1. The Minnesota Sales Tax

The Minnesota general sales and motor vehicle excise taxes¹ are imposed on final sales of tangible personal property and a few selected services. The general tax rate is 6 percent. An 8.5 percent rate applies to purchases of alcoholic beverages. Lower rates are imposed on some purchases of capital equipment and farm machinery.

Exemptions from taxation are provided for purchases of necessities--food for consumption at home, clothing, medicine, and home heating fuels purchased during the winter months. Purchases of motor fuels that are subject to the special sales tax on motor fuels are exempt, as well as a variety of other more minor categories of purchases.

Thus, the tax base consists of a combination of consumption items and capital goods. The consumption items are primarily consumer durables (e.g., appliances and furniture), household supplies, building materials, motor vehicles, alcohol, tobacco, food consumed in restaurants, and recreational expenses (admissions and amusements). Most services and the "necessities" listed above are excluded from the tax base. The capital goods subject to tax include machinery, equipment, and building materials. Goods purchased for resale or for incorporation in products for resale are not taxable.

The narrowness and the nature of the tax base suggest that the revenues generated will not be stable. For example, it is likely that consumers will delay purchases of refrigerators, washing machines, and new houses and will reduce the number of restaurant meals consumed during economic downturns. By contrast, purchases of food, clothing, and other necessities are likely to fluctuate less with changes in the economy.

In addition, consumers with identical amounts of total consumption will pay different amounts of tax, depending upon their preferences for exempt goods and services versus taxable goods. As suggested by the Tax Study Commission, this may violate norms of horizontal equity.²

The Legislature created the exemptions largely out of a concern that the burden of the tax would otherwise fall disproportionately upon lower income persons. It is commonly thought that lower income households expend a larger share of their incomes on consumption generally and on necessities in particular. Thus, by exempting these items from taxation it is thought that the regressivity of the sales tax can be reduced. This paper analyzes these assumptions.

¹ Minnesota imposes a separate sales tax, the motor vehicle excise tax, on the purchases of automobiles, trucks, and other motor vehicles used on the public highways. Minn. Stat. chap. 297B. This tax is imposed at the same rate as the general sales tax, but is enforced through the motor vehicle registration process. For convenience, throughout the paper the term sales tax includes the motor vehicle excise tax.

² The Final Report of the Minnesota Tax Study Commission, vol. 1, 149 (1986).

2. Incidence Assumptions; Scope

In order to measure or analyze the income distribution (i.e., progressivity/regressivity) of the tax burden, one must first determine the economic incidence of the tax--i.e., who ultimately suffers a reduction in their income or assets because of the tax. The ultimate burden of the tax may fall on someone other than the individual or entity that is legally liable to collect or pay the tax. For example, taxes paid by a corporation ultimately must be paid by natural individuals--either the owners of the corporation, its employees, customers or suppliers. Similarly, natural individuals who are legally obligated to pay taxes may be able economically to "shift" them to other individuals by charging higher prices, paying lower wages or other input costs.

As discussed above, the Minnesota sales tax base consists of two basic components:

- (1) purchases of consumption items, and
- (2) purchases of inputs into the production process (primarily capital equipment and building materials).

It is generally recognized that the incidence of a general sales tax on consumption items falls on the consumer.³ The incidence of the sales tax that on capital equipment and other production inputs is less clear. In a competitive market the tax probably will be passed on to the consumers of the ultimate goods produced. Assuming this to be so, allocating this portion of the tax to Minnesota consumers would be difficult and the results problematic, given the available data. As a result, the study was limited to measuring the burden of the sales tax that is levied on sales of consumption items only. No attempt was made to measure the burden of the existing tax on capital equipment and building materials for production facilities. Similarly, for repeal of the exemptions for items that are both consumption items and production inputs (e.g., purchases of motor fuels by businesses), the analysis is limited to purchases of final consumption items by households.

Under the present state individual income tax and under prior federal law, general state and local sales taxes may be deducted as itemized deductions. The income tax deduction affects the burden of the sales tax for individuals who itemize. For example, if an individual in the 30 percent income tax bracket pays an additional \$1 in sales tax, the itemized deduction reduces his income tax by \$.30. Thus, the real burden of the additional dollar of the sales tax is \$.70.

Because the federal government repealed the itemized deduction for sales taxes as part of the Tax Reform Act of 1986 and because the state generally has conformed to the federal rules on itemized deductions, the tax burdens computed for purposes of this study do not take into account the effect of the itemized deduction.

³ See, e.g., D. Phares, Who Pays State and Local Taxes 30-35 (1980).

3. Measuring Progressivity: The Suits Index

(a) The Suits Index

Any tax system can be classified either as progressive, regressive or proportional depending on the relationship between the tax burden and taxpayers' incomes. If a tax is progressive, the tax burden (measured as a percentage of income) rises as income increases. If the tax is regressive, the burden declines as income increases. A proportional tax imposes an equal percentage burden upon all income classes.

The concept of progressivity/regressivity is relatively straightforward. How one should measure the degree of progressivity of a tax of the overall tax system is not so clear. A variety of indexes have been developed to measure the aggregate distribution of the tax burden and thereby permit comparison of the degree of progressivity of alternative taxes and tax bases.⁴

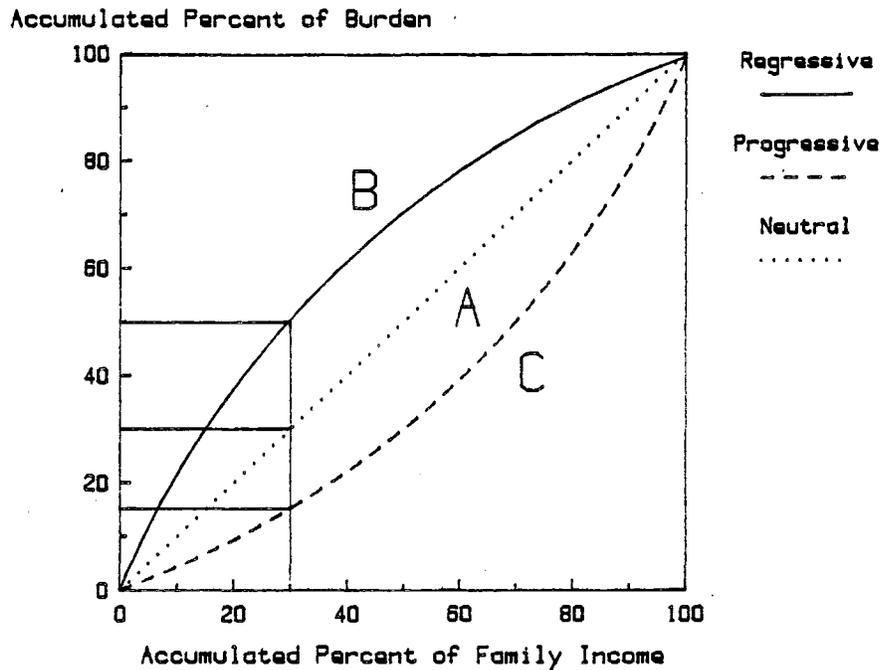
Perhaps the most frequently used index of distributional tax progressivity was developed by economist Daniel Suits.⁵ Suits, using the concept of the Lorenz curve and the Gini index, ranked all individuals according to their income level and computed the percentage of their tax burden for each percentile of income. Suits, then, plotted the accumulated percent of tax burden on the vertical axis against the accumulated percent of household income on the horizontal axis, as shown in Figure 1.

Figure 1 illustrates three possible income distributions of the burden of a tax, as represented by lines A, B, and C. Situation A occurs only when the cumulative percentage of tax burden is equal to the cumulative percentage of household income for all income levels. For example, when 30 percent of the lowest income households bear 30 percent of the tax burden, the tax is proportional. On the other hand, when 30 percent of the lowest income households bear 50 percent of the tax burden, the tax is regressive, as represented by line B. Similarly, when 30 percent of the lowest income households bear 15 percent of the tax burden, it is a progressive tax represented by line C.

⁴ See D. Kiefer, "Distributional Tax Progressivity Indexes," 37 Nat. Tax J. 497 (1984) for a discussion of the various indexes.

⁵ Some analysts have criticized the Suits index for failing to take into account the effect of the tax burden on the distribution of income--the "social welfare effect"--and of the effect of different income distributions on the numerical value of the index. See Id. However, for our purposes this is a minor consideration, at most, and the Suits index provides a convenient and widely used measure of the income distribution of the tax burden.

FIGURE 1: THREE TYPES OF TAX BURDEN



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The graphic presentation in Figure 1 is clear and neat. It is particularly useful for comparison of different kinds of tax systems when the nature of the tax burden is visible and obvious, such as in the case of income and sales tax. It is less helpful, and sometimes confusing, for the comparison of several tax systems that are similar in nature, e.g., the sales tax on clothing and the sales tax on food. Furthermore, it may not be practical to plot the graph, like the one in Figure 1, when there are a large number of observations (points) to be plotted or a large number of tax systems to be compared at the same time. To overcome these measuring problems and to provide a convenient method of comparing overall progressivity or regressivity, an aggregate measure is needed to give each tax system a quantitative index of the distribution of the tax burden--the Suits index.

The Suits index is a quantitative measure of the degree of progressivity or regressivity of a tax.⁶ A tax is proportional if the index is zero, regressive if negative, and progressive if positive. The index is "scale invariant." If the tax is increased

⁶ Mathematically, the index, S, can be calculated using the following formula:

$$S = 1 - (L/K)$$

where

L = area under the tax burden curve

K = area of the triangle under the proportional tax burden line

proportionately (e.g., by increasing the rate of a flat rate tax such as the general sales tax) or if incomes increase proportionately, the index will remain unchanged.

(b) The Data: Consumer Expenditure Survey

Consumer Expenditure Survey data, collected by the United State Bureau of Labor Statistics, on income and consumption were used to compute the Suits indexes. This data is based on interview surveys of 910 households, located in Midwestern states,⁷ for the period from the third quarter of 1983 through the first quarter of 1984. Non-Minnesota households were included to insure an adequate sample size. The sample data were weighted to reflect the distribution of income in Minnesota, using 1984 Current Population Survey data. See Appendix A for a more complete discussion of the data set, the weighing methods and assumptions used in calculating sales tax burdens.

(c) The Results: Table 1

Suits indexes were computed for six consumption items that are taxable under present Minnesota law.⁸ In addition, Suits indexes were computed for six general categories of consumption items that are not taxable under current Minnesota law--food, clothing, exempt fuels, personal and households services, medical services and products, and publications and text books.

Suits indexes for these twelve categories and for the eight subdivided items are summarized and presented in Table 1. As shown in Table 1, among the currently taxable items, the sales tax on alcohol, food, beverages and tobacco is the most regressive (-0.190), followed by motor vehicles, auto parts and supplies (-0.179). The tax on recreational services, boats, trailers, and amusements purchases is the least regressive (-0.033) of the currently taxable consumption items. Thus, it may be said that the sales tax on alcohol purchases is about five times more regressive than that on recreational purchases. All together, the aggregate Suits index for all the currently taxable items is -0.163, indicating that the current sales tax is regressive overall.

Separate Suits indexes were computed for application of the sales tax to currently non-taxable items. As one would expect, taxation of most of the items would yield a regressive tax burden. However, application of the sales tax to expenditures for recreational services (club dues, admission to nonprofit arts events, and so forth) is essentially proportional (0.004). In contrast, imposing the sales tax on medical services is the most regressive (-0.299) of the base expansion options, followed by home heating fuels (-0.266) and food (-0.239).

Application of the sales tax to purchases of clothing and shoes is regressive (-.130). However, as found by the Tax Study Commission using a different data set and slightly

⁷ The states include Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

⁸ As discussed above, the Minnesota sales tax also applies to some inputs in the production and distribution process--e.g., purchases of machinery and equipment. The incidence of this portion of the tax probably falls on the consumers of the final products being produced. The analysis in the paper is limited to the portion of the tax that applies to purchases for final consumption by households.

different methodology,⁹ the resulting tax burden is less regressive than the existing sales tax base (-.0163). Similarly, while the resulting burden from imposing the sales tax on personal services is regressive (-.0132), it is not as regressive as the current sales tax base. In particular, the aggregate regressivity of all personal and household services is about 23 percent less regressive than current tax base, as shown by their Suits indexes in Table 1.

TABLE 1: SUITS INDEXES OF SALES TAX BURDEN

	Suits Index
Currently Taxable Items	-.163
1. Building Materials and Home Improvement	-.092
2. Household Supplies, Appliances, Furniture and Furnishings	-.141
3. Motor Vehicles Rental, Auto Parts and Supplies	-.179
4. Recreational, Boats, Trailers, Amusements	-.033
5. Alcohol, Food, Beverages, Tobacco	-.190
6. Other Taxable Items	-.213
Expansion Options (Currently Non-taxable Items)	-.205
7. Food	-.239
8. Clothing	-.130
9. Exempt Fuels	-.207
a. Home Heating Fuels	-.266
b. Motor Fuels	-.176
10. Personal and Household Services	-.132
a. Water and Sewer	-.219
b. Recreation Expenses	.004
c. Personal Care	-.179
d. Household Operation	-.100
e. Auto Repairs	-.159
f. Other Personal Services	-.159
11. Medical Services and Products	-.299
12. Publications and Textbooks	-.172
All Taxable and Non-taxable Items	-.186

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Thus, if the sales tax base were expanded to include clothing and personal services, the overall regressivity of the sales tax would be reduced.¹⁰ On the other hand, if all

⁹ See J. Mikesell, "Retail Sales and Use Taxation in Minnesota," in Final Report of the Minnesota Tax Study Commission, vol. 2, 155, 171-74 (1986).

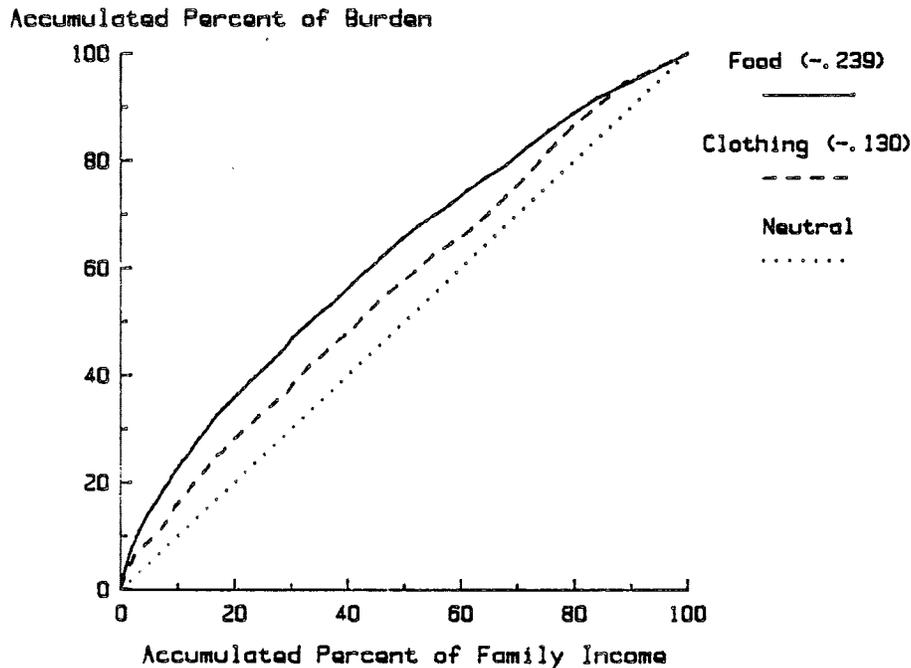
¹⁰ It must be emphasized that this is a separate question from whether the overall state (or state and local) tax and expenditure system would become less regressive as a result. This will depend upon how the additional revenue resulting from the base expansion is used. If it is used to reduce the sales tax rate, the overall system will become less regressive. Similar results would obtain, if the revenue is used to reduce another tax (perhaps the property tax) that is as regressive as the current sales tax or

twelve non-taxable items were added to the tax base, the overall Suits index would be slightly more regressive (-.0186 versus -.0163) than the current tax base.

As noted earlier, the Suits index provides an aggregate measure of the progressivity or regressivity of the tax. The numerical index does not show the variations in regressivity (or progressivity) across the income distribution. For example, although the Suits index may be regressive for the entire income distribution, the tax may be roughly proportional at the lower income levels and be sharply regressive at upper income levels. Similarly, it is possible that the index would indicate the tax system is proportional, while in reality, it is regressive in the lower income group and progressive in the higher income group. Thus, the graphical representation of the tax burden curve for each of the tax base items and the effective tax rate for each income group provide valuable supplemental information on the distribution of the tax burden.

Figures 2 to 5 are pictorial descriptions of Suits indexes which not only reveal the regressivity (or progressivity) of the application of the sales tax to different consumption items, but also reveal the relative regressivity (or progressivity) for different income groups. For example, Figure 2 shows that the tax burden curve for food is higher (more regressive) than the tax burden curve for clothing and the two curves cross at the 89 percentile of income. This suggests that the sales tax on food is more regressive than clothing for almost all income groups except the highest income group.

FIGURE 2: BURDEN OF SALES TAX
FOOD AND CLOTHING

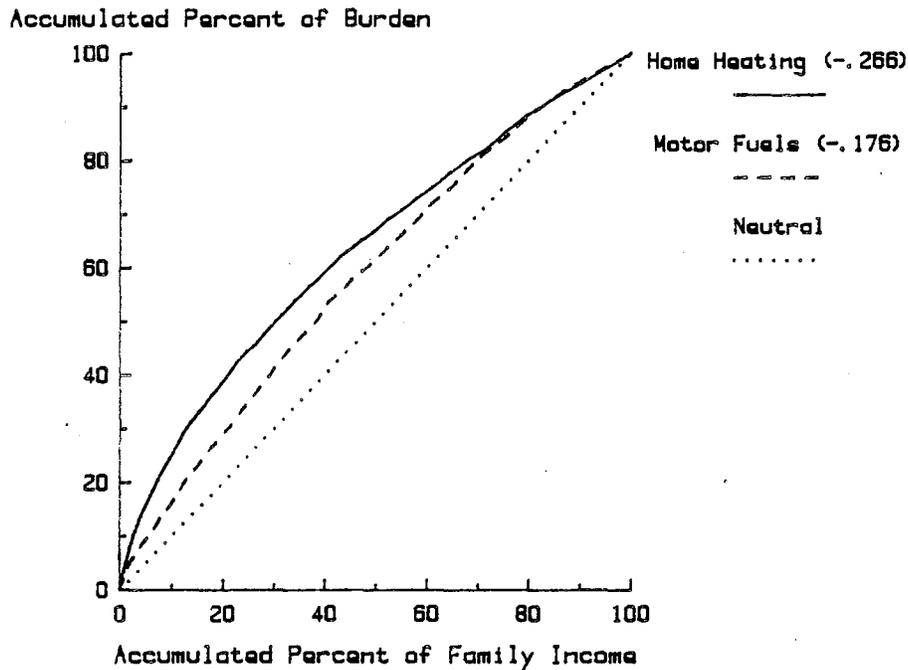


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to finance expenditures which are progressively distributed. The overall system would become more regressive, however, if the revenues were used to reduce a less regressive tax such as the individual income tax.

Two energy related items are not currently subject to sales tax--home heating fuels and motor fuels. If the sales tax is imposed on these two items, the curves in Figure 3 show that the tax burden would fall disproportionately on lower income households. For example, households that received 40 percent of the total income would pay 60 percent and 54 percent of a sales tax on the home heating fuels and motor fuels, respectively. Figure 3 also reveals that a tax on the purchases of home heating fuels is 50 percent more regressive than on purchases of motor fuels.¹¹

FIGURE 3: BURDEN OF SALES TAX
HOME HEATING AND MOTOR FUELS

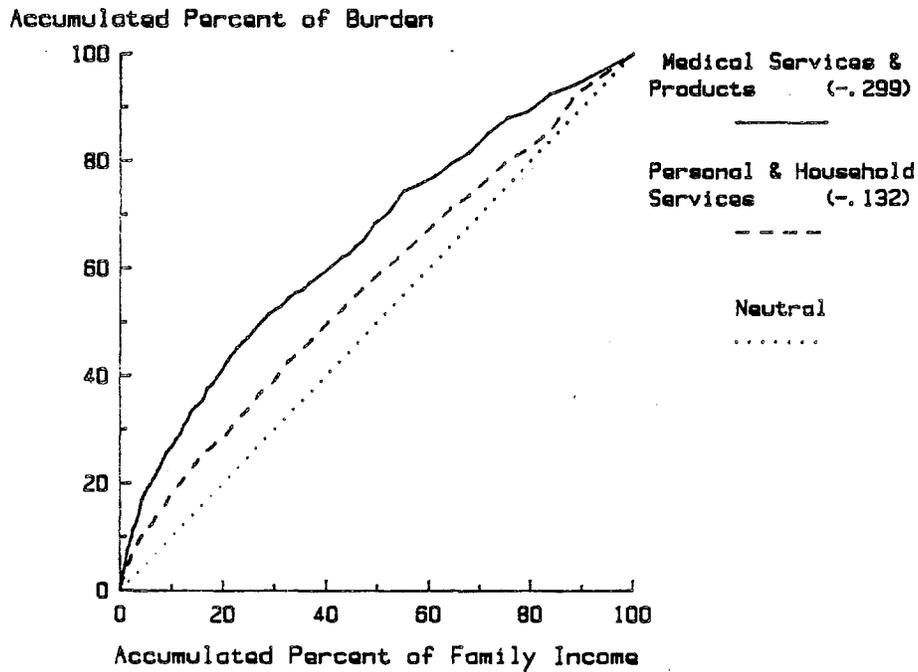


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¹¹ This analysis applies only to motor fuels purchased for consumption by households. As discussed above, distribution of the tax imposed on goods that are inputs in the production and distribution process raises separate questions. For example, the cost of motor fuels purchased by a common carrier will ultimately be reflected in the cost of the goods that are delivered and will be borne by the purchaser of those goods.

Personal and household services and medical services are not taxable under current law. Personal and household services are divided into six categories; among them, recreation expenses is the only item that is not regressive. All together, the sales tax burden on personal and household services is slightly less regressive than the current tax base. By contrast, imposing the sales tax on medical services is much more regressive than the current tax base and about two times more regressive than imposing the tax on personal and household services, as shown in Figure 4. The tax burden curves in Figure 4 reveal that a tax on medical services is more regressive than personal and household services for all income levels.

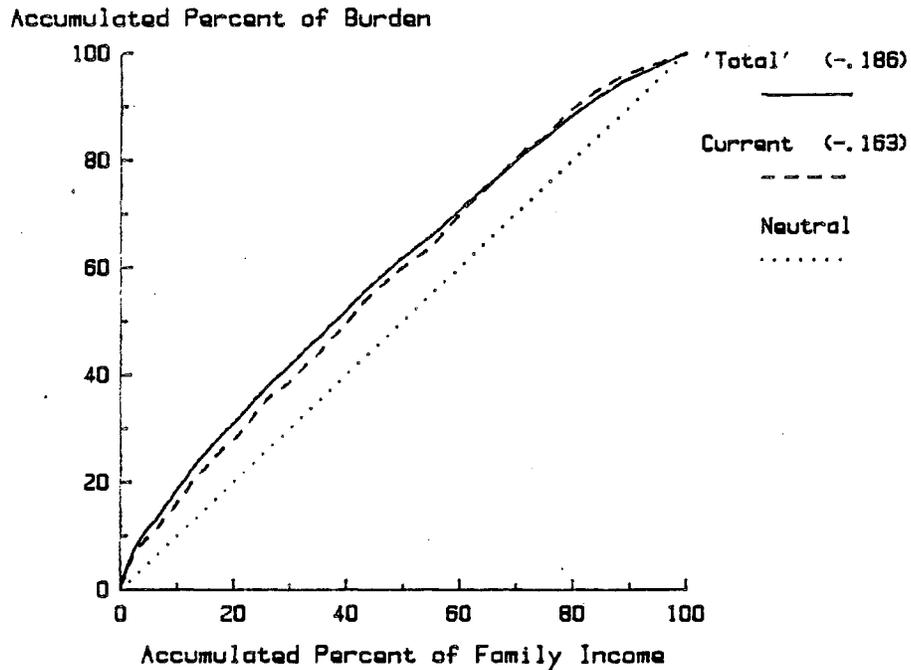
FIGURE 4: BURDEN OF SALES TAX
MEDICAL AND PERSONAL SERVICES



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As mentioned earlier, some of the potential base expansion items are less regressive than the current tax base, while others are more regressive. Inclusion of all six of the additional items in the sales tax would slightly increase the regressivity of the tax. The tax burden curves in Figure 5 confirm this observation, but also reveal that the expanded tax base would be less regressive than the current tax base for households with incomes above the point where cumulative income is more than 72 percent of the total.

FIGURE 5: BURDEN OF SALES TAX
'TOTAL' AND CURRENT TAX BASE



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4. The Effective Rates of Sales Tax

Another method of measuring progressivity or regressivity of a tax is to compute the effective tax rates imposed for different income classes. The Suits indexes provide a convenient overall measure (reduced to a single index number) of the progressivity of the tax or a component of the tax. The plotted Lorenz curves provide additional information on the shape of the distribution of the burden across the income distribution. Effective tax rates permit comparison of the relative burden of the tax and base expansion options on selected income classes. For an individual taxpayer, the effective tax rate is simply the amount of tax paid by the taxpayer, expressed as a percentage of his total income. In other words the effective tax rate shows what proportion of the taxpayer's income was necessary to pay the tax.

Effective tax rates were computed for nine income groups. For purposes of this study, the effective tax rate for each income class was defined as the average ratio of sales tax paid by individuals to their incomes for all the individuals in the group.¹² The effective tax rates are displayed in Table 2.

Therefore, for example, the interpretation of the effective tax rate of item 1 for the income group of \$1,001 to 5,000 is that sales tax paid by households in this income group for purchases of building materials and home improvement items accounted for, on the average, 0.14 percent of their household income. As shown in Table 2, the effective tax rate of the current tax base for the income group of \$1,001 to \$5,000 is about 6 percent, which is the highest and seven times higher than the effective tax rate for the \$60,000 or more income group. As expected for a regressive tax, the effective tax rates for the lower income groups generally are larger than for the higher income groups for all items and categories.

One important caveat should be noted regarding the effective tax rates. The reported consumption of individuals in the lowest two income classes (0 to \$5000) in some instances is substantially higher than their reported income. As a result, their effective tax rates are very high.

Several factors may explain this seeming anomaly. For example, it may be that the individuals have low annual income because of a temporary business reversal or unemployment during the year, but nevertheless were able to maintain their consumption by spending their savings or borrowing against future earnings. Thus, while these individuals' effective tax rates appear extremely high, they may not reflect the effect on

¹² The formula used in computing the effective tax rate for item *i* for income group *k* is:

$$R_{ik} = (\sum_j^N T_{ijk} / I_{jk}) / N_k$$

where

R_{ik} = effective tax rate of item *i* for income group *k*

T_{ijk} = sales tax paid by individual *j* in income group *k* for the purchase of item *i*

I_{jk} = annual income of individual *j* in income group *k*

N_k = no. of household in income group *k*

the households' permanent income.¹³ Alternatively, there may have been reporting errors where some sources of income were not reported. In any case, the effective tax rates are much larger than would be the case for a normal income-consumption relationship.

Because of these factors the effective tax rates for these two income classes probably do not have much, if any, relevance to policy decisions regarding the appropriate sales tax base or reliance on a sales tax versus other forms of taxation. Further investigation into the cause of the unusual relationship between income and consumption for these households probably is necessary before the policy implications can be analyzed. In particular, the relationship between the annual and permanent income would seem to be critical.¹⁴

¹³ This is not as significant a problem when a system wide measure, such as a Suits index, is used. Since the individuals who temporarily have low annual incomes and high permanent incomes will tend to be off-set by individuals who have temporarily high annual incomes and low permanent incomes.

¹⁴ A somewhat unusual example can serve to illustrate the impact of the data limitations for the lower income strata noted in the text. The effective tax rates for recreational expenditures are 73.4 percent and 0.12 percent for the 0 to \$1000 and \$1001 to \$5000 income classes, respectively. The next highest effective tax rate for recreational expenditures applies to the highest income class (over \$60,000). This rate is 0.072 percent. Nevertheless, the Suits index for recreational expenditures indicates it is essentially proportional (.004).

This anomaly may be explained as follows. Country club dues constitute a significant share of exempt recreational expenditure. Generally, individuals with incomes of \$5000 or less will not belong to country or other recreational clubs with significant dues. However, individuals who have temporary business or capital losses and thus have annual incomes of \$5000 or less, may not allow their country club memberships to lapse because they expect their incomes to return to "normal" in succeeding years or because they regard the membership as necessary to maintain their business contacts. These individuals will have substantially higher permanent incomes. As a result, the effective rates on these lower income individuals appear to be very high, while the Suits indexes suggest a proportional tax burden.

TABLE 2: EFFECTIVE RATES OF SALES TAX

<u>Income Group</u>	<u>\$ 0 -1,000</u>	<u>\$1,001 -5,000</u>	<u>\$5,001 -10,000</u>	<u>\$10,001 -20,000</u>	<u>\$20,001 -30,000</u>	<u>\$30,001 -40,000</u>	<u>\$40,001 -50,000</u>	<u>\$50,001 -60,000</u>	<u>\$ 60,001+</u>
<u>Currently Taxable Items</u>	3441.584%	6.027%	2.587%	1.612%	1.353%	1.334%	1.389%	1.124%	.787%
1. Building Materials and Home Improvement	831.366	.136	.073	.047	.061	.069	.054	.073	.033
2. Household Supplies, Appliances, Furniture and Furnishings	497.099	.819	.407	.247	.200	.247	.187	.194	.144
3. Motor Vehicles Rental, Auto Parts and Supplies	766.955	1.876	.869	.528	.451	.495	.628	.352	.194
4. Recreational, Boats, Trailers, Amusements	362.014	.384	.219	.088	.124	.098	.145	.132	.071
5. Alcohol, Food, Beverages, Tobacco	711.977	2.049	.708	.526	.402	.339	.301	.286	.285
6. Other Taxable Items	349.164	.985	.387	.233	.158	.121	.107	.118	.090
<u>Expansion Options (Currently Non-taxable Items)</u>	2406.698	8.946	4.045	2.368	1.711	1.448	1.263	1.290	1.038
7. Food	510.053	3.316	1.436	.824	.541	.478	.374	.418	.275
8. Clothing	618.791	.890	.349	.250	.204	.187	.174	.214	.154
9. Exempt Fuels	344.666	2.154	.917	.601	.461	.368	.333	.316	.250
a. Home Heating Fuels	193.494	.926	.441	.244	.151	.114	.094	.102	.078
b. Motor Fuels	151.173	1.229	.476	.357	.310	.254	.239	.214	.172
10. Personal and Household Services	723.634	1.203	.581	.333	.271	.237	.222	.191	.267
a. Water and Sewer	48.589	.197	.075	.042	.030	.023	.021	.016	.018
b. Recreation Expenses	73.438	.124	.054	.037	.035	.040	.039	.041	.072
c. Personal Care	122.503	.258	.142	.084	.068	.057	.052	.041	.045
d. Household Operation	456.068	.225	.104	.060	.056	.049	.041	.034	.064
e. Auto Repairs	5.903	.107	.066	.044	.039	.036	.026	.025	.021
f. Other Personal Services	17.133	.291	.141	.066	.042	.032	.044	.034	.047
11. Medical Services and Products	160.367	1.255	.691	.319	.203	.149	.136	.128	.073
12. Publications and Textbooks	49.186	.127	.071	.041	.030	.029	.024	.022	.019
<u>All Taxable and Non-taxable Items</u>	5848.282	14.973	6.631	3.980	3.064	2.782	2.652	2.414	1.825

Conclusions; Policy Implications

Calculation of the Suits indexes for the existing sales tax reveals, as expected, that the tax is regressive. With the exception of exempt recreational expenditures, all of the major base expansion options are also regressive. However, a sales tax on two of the major base expansion options--clothing and personal services--is less regressive than the existing sales tax base. Thus, if the sales tax base were expanded to include recreational expenditures, clothing, and personal services, the burden of the sales tax would become less regressive.

Whether expansion of the sales tax to these items would make the overall state and local tax and expenditure system more progressive will depend upon the use of the additional revenue generated by expanding the tax base. If the revenue is used to reduce the sales tax rate, the system will become more progressive. If the revenue is used to reduce an equally or more regressive tax or for additional public expenditures with a progressive distribution, the system will become more progressive. However, if the revenues are used to reduce (or to avoid an increase in) a tax which is less regressive than the existing sales tax (e.g., the individual income tax), the result would be to make the overall system less progressive.

Minnesota has exempted necessities--food, clothing, and home heating fuels--from sales taxation as its principal strategy for reducing the regressivity of the sales tax. The analysis contained in this paper suggests that this strategy has not been very successful in reducing the regressivity of the tax. The tax would be slightly, but not substantially, more regressive if all of these items were included.

As has been widely pointed out, other mechanisms are available to reduce the regressivity of either the existing sales tax or potential base expansion options. For example, seven states provide refundable credits to reduce the sales tax burden on low income households.¹⁵ The amount of these credits do not depend upon the precise sales tax paid by a household, but rather are determined by household size and income.

Minnesota currently uses a similar approach, the property tax refund, as a major component of its effort to reduce the regressivity of the property tax. Analysis done for the Minnesota Tax Study Commission suggests that the property tax refund is the most powerful component of all the state's efforts to mitigate the regressivity of the property tax on homeowners.¹⁶ This suggests that a well designed credit could substantially reduce or eliminate the regressivity of the sales tax.

A low income sales tax credit could be administered as part of the income tax system or as a separate program. As an alternative, the credit could be combined with or administered as part of the property tax refund program.

¹⁵ S. Gold, State Tax Relief for the Poor: An Overview (NCSL, Dec. 1986). The seven states are Hawaii, Idaho, Kansas, New Mexico, South Dakota, Vermont, and Wyoming. In four of the states, however, only senior citizens qualify for the credits.

¹⁶ See T. Stinson & Vanderwall, "The Impact of Existing Property Tax Relief Programs on Taxes Paid on Owner-occupied Housing in Minnesota" in Final Report of the Minnesota Tax Study Commission, vol. 2, 361-74 (1986).

Appendix A: Explanation and Sources of Data

The income and expenditure data used in this study were derived from the Quarterly Interview series of the Consumer Expenditure Survey (CES) conducted by the United States Bureau of Labor Statistics. The current data series was begun in 1979. Each household unit was interviewed five times. The first interview obtained the demographic characteristics of the household, estimated annual income, characteristics and earnings of the reference person, and characteristics and earnings of the spouse. The second to fifth interviews collected data on detailed expenditures and actual income. Thus, the sum of the quarterly expenditures reported in interviews 2 through 5 represent annual expenditures.

About 20 percent of the interviewed household units did not complete the five interview cycle because of changes in residence or other factors. The original data series contained expenditure information for the first quarter of 1981 through the first quarter of 1984, derived from 41,062 interviews with 3.5 million expenditures reported. In order to estimate the expenditure pattern of Minnesota households, only households from midwestern states (Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin) were selected. Selecting only Minnesota households would have resulted in too small a sample to be statistically reliable. In addition, only those households that completed all of the five interviews between the third quarter of 1982 and the first quarter of 1984 were included in this study. In the end, 910 household units satisfied these criteria.

The expenditure data report include the amount expended for state and local sales taxes. Because of the different sales tax rates and exemptions that apply in the various state and local jurisdictions included in the sample, it was not possible to determine the amount of the reported expenditures that constituted sales tax, rather than the purchase price of the goods or services. As a result, the amounts stated for purchases of goods and services that are commonly subject to sales tax in most midwestern states and cities will be slightly overstated. This should, however, have little affect on the validity of the results of the study.

The CES instructs participants in the survey to report their incomes using a comprehensive definition of income that includes public assistance payments, unrealized capital gains, and other forms of nontaxable income. Two income measures are included for each household. In the first through fourth interview the household reports its estimated income for the year, while in the fifth interview the household reports the actual income received during the previous year. The actual income reported in the fifth interview was used in estimating the tax burdens. However, if no income was reported in the fifth interview, the income reported in the fourth interview was chosen instead. It was felt that this approach would more closely approximate the permanent income of those households. The extremely large (as compared with census data) number of households reporting zero or negative actual income suggested that there may have been some systematic misreporting of income. After this selection, twenty-nine households had either zero or negative income.

Expenditures were combined into 12 consumption items as shown in Tables 1 and 2. See Table A-1 for definition of the individual items. In some instances, negative expenditures were reported. Although it is not clear, in most cases these represent

trade-ins or insurance reimbursements. Since it is unlikely that these negative amounts would generate sales tax refunds, negative expenditures were set to zero.

Most annual expenditures were computed by adding up the four quarterly expenditures, as noted earlier. However, several expenditures were adjusted by a factor because of the nature of the expenditure. Twenty-five percent of magazines and periodicals were assumed to be subject to Minnesota jurisdiction to tax. Under Minnesota law magazines purchased over the counter are taxable, while magazines purchased under subscription are exempt. However, even if the state were to impose the tax on magazines sold by subscription, most of the publishers are located outside of Minnesota and have no physical presence in Minnesota. Thus, under United States Supreme Court rulings, it may be impossible for the state to require the publishers to collect the sales tax on behalf of the state. Seventy-five percent of dental and health insurance payments were assumed, based on conversations with individuals in the medical insurance community, to pay for the cost of medical services, while the remainder represent the cost of marketing, overhead, and profit (or return on capital for nonprofit insurers) for the insurance provider.

In order to conform to the definitions used in Minnesota, some expenditures were divided into taxable and nontaxable categories. Seventy percent of home improvement expenditures were considered as home improvement--i.e., purchases of building materials that are subject to sales tax under present law--while 30 percent were considered household services--currently non-taxable labor. Purchases of carbonated soft drinks and candy are subject to the sales tax, while all other purchases of food for consumption at home are exempt. To reflect this fact, we assumed that 5.25 percent of the expenditures in food and nonalcoholic beverages were taxable food items.

Although all the 910 households included in this study are from the midwestern states, the income distribution of the sample deviated substantially from the income distribution of a purely Minnesota data set, such as Current Population Series (CPS), compiled by the United States Bureau of the Census. Thus, in the computation of the Suits indexes, income and expenditures were scaled to conform to the Minnesota income distribution obtained from the Minnesota CPS. The scaling factor and income distribution before and after re-scaling were summarized in Table A-2.

Appendix A-1: Definition of Consumption ItemsCurrently Taxable Items

1. Building Materials and Home Improvement

Materials and supplies for building, remodeling and repairing of homes, vacation homes, and rental units including insulation, carpeting, paint, roofing, construction material, and landscaping materials. In those categories where the data sources included both the materials and the installation of those materials, 70 percent of the category was assumed to be materials and therefore taxable.

2. Household Supplies, Appliances, Furniture and Furnishings

Purchase and rental kitchen appliances, household furniture, linens, curtains, outdoor furniture, televisions, radio, other household electronics, records, tapes, glassware, dishes, power tools, sewing machines, small and personal care appliances, lawn maintenance equipment, telephones, home computers and calculators. When categories include the repair of an item, 50 percent of the category was included.

3. Motor Vehicles, Rental, and Automotive Parts and Supplies

Purchase and rental of new and used automobiles, trucks, motorcycles, automotive parts, motor oil, and other fluids, tires. Trade-in allowances have been factored out of this category. When categories include both the labor and parts in the repair of vehicles, 60 percent of the category was included based on discussions of representatives of auto dealers and service stations.

4. Recreational, Boats, Trailers and Amusements

Purchase and rental of boats, aircraft, outboard motors, boat and recreation trailers, bicycles, camping equipment, sports equipment, health and exercise equipment, toys, film, pets and pet supplies, musical instruments, taxable admissions to recreational and sports functions. Trade-in allowances are factored out of this category.

5. Alcohol, Food, Beverages and Tobacco

Purchase of food consumed away from home, alcohol beverages, cigarettes and other tobacco products. Since some beverages and prepared foods are taxable, 5.25 percent of food and beverages purchased at food stores are included based on data provided in a marketing survey of grocery stores.

6. Other Taxable Items

Purchase of notions, watches, books, "over the counter" sales of magazines, wigs and those energy purchases (e.g., electricity) that are taxable. For those fuels which are not taxable during specific winter months, only the purchase during the second and third quarter of the year are included.

Currently Non-taxable Items

7. Food

Purchases of food for consumption at home as well as the food purchased on trips but prepared by the consumer, meals received as pay and catered affairs. Since this category initially included all purchases of food and beverages at stores, 5.25 percent of those purchases were factored out of the category to account for taxable beverages and prepared food.

8. Clothing

Purchases of clothing and non-taxable accessories and material for making clothes.

9. Exempt Fuels

a. Home Heating Fuels

Purchase of fuel oil, bottled gas, coal, electricity, and natural gas. For those fuels which are taxable during certain months of the year, only purchases during the first and fourth quarter of the year are included in this category.

b. Motor Fuels

Purchases of gasoline and diesel fuel.

10. Personal and Household Services

a. Water and Sewer

Household expenditures on public and private water and sewer systems.

b. Recreation Expenses

Purchases, dues and fees paid for country clubs, automobile clubs, participant sports and recreational lessons.

c. Personal Care

Expenditure for dry cleaning, laundry services, clothing and shoe repair, watch and jewelry repair, haircuts and other personal care services.

d. Household Operation

Expenditure for household repair, installation and repair of appliances, wall covers and floor coverings, trash and garbage collection, septic tank cleaning, landscaping and lawn services, moving and stores services, TV and personal electronic repair, furniture repair and upholstery, security management services, and household management services. In those

categories which included both labor and materials, only that percentage suggested by a representative of that industry that accounted for labor was included in this category.

e. Automobile Repair

Expenditures for the repair of motor vehicles, parking fees, towing charges, landing fees (aircraft) and automotive repair serviced policies. For those categories that included both labor and materials, only that portion which accounted for labor was included in this category as suggested by representatives of the automotive dealers and service stations.

f. Other Personal Services

Expenditures for film processing, pet and veterinarian services, legal fees, funeral services, bank charges, cemetery lots and vaults and accounting fees.

11. Medical Services and Products

Purchases of prescription drugs, eyeglasses, medical equipment and the following services: laboratory, dental, physicians, X-ray, nursing and hospital (include room charges). In addition, since many households do not purchase these services directly but through insurance premiums, this category includes 75 percent of commercial health insurance premiums. According to the National Insurance Association of America, approximately three quarters of all health or medical insurance premiums are used to pay for actual medical services.

12. Publication and Textbooks

Purchases and subscriptions of newspapers, textbooks, periodicals, journals and magazines.

Appendix A-2: Income Distribution and Scaling Factors

<u>Group</u>	<u>Income</u> \$	<u>US Bureau of Labor Statistics</u> cumulative		<u>Minnesota Current Population Survey</u> cumulative		<u>Scaling Factor</u>	<u>Scaled</u> percent	<u>Scaled</u> cumulative percent
		percent	percent	percent	percent			
1	0 or less	-0.58	-0.58	-0.02	-0.02	0.026	0.00	0.00
2	1- 2,499	0.18	-0.40	0.04	0.02	0.130	0.02	0.02
3	2,500- 4,999	1.08	0.68	0.56	0.59	0.518	0.56	0.59
4	5,000- 7,499	2.54	3.22	1.60	2.19	0.634	1.60	2.19
5	7,500- 9,999	2.97	6.19	1.47	3.66	0.499	1.47	3.66
6	10,000-12,499	3.74	9.93	2.37	6.03	0.626	2.37	6.03
7	12,500-14,999	4.26	14.19	2.88	8.91	0.690	2.88	8.91
8	15,000-17,499	4.62	18.81	3.38	12.29	0.736	3.38	12.29
9	17,500-19,999	4.70	23.51	3.36	15.65	0.719	3.36	15.65
10	20,000-22,499	6.35	29.87	4.59	20.24	0.726	4.58	20.23
11	22,500-24,999	5.28	35.15	4.05	24.29	0.792	4.06	24.29
12	25,000-27,499	6.64	41.78	4.79	29.07	0.711	4.78	29.07
13	27,500-29,999	6.24	48.03	4.77	33.85	0.769	4.77	33.85
14	30,000-32,499	5.62	53.65	4.66	38.50	0.833	4.66	38.50
15	32,500-34,999	3.88	57.53	4.62	43.13	1.198	4.62	43.13
16	35,000-37,499	6.97	64.50	4.55	47.67	0.656	4.55	47.67
17	37,500-39,999	3.42	67.92	4.42	52.09	1.298	4.42	52.09
18	40,000-44,999	8.12	76.04	9.71	61.80	1.203	9.71	61.80
19	45,000-49,999	6.10	82.14	8.16	69.95	1.345	8.16	69.95
20	50,000-59,999	8.74	90.88	11.45	81.41	1.319	11.45	81.41
21	60,000-74,999	7.06	97.94	8.27	89.68	1.247	8.27	89.68
22	75,000+	2.06	100.00	10.32	100.00	4.229	10.32	100.00

Research Department
Minnesota House of Representatives