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0204 Colorado Predictive Income Tax Model, Phase I Report

Colorado Legislative Council

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COLORADO PREDICTIVE INCOME TAX MODEL

PHASE I REPORT

by

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INTRODUCTION

The Colorado Tax Profile Study (CTPS) presented an analysis of the magnitude, composition, and distributional effects on resident households of the Colorado state and local tax structure for the fiscal year 1972. The basic CTPS household income and tax data on a merged basis which combined "married-separate" returns were derived from 1971 state income tax returns filed in fiscal year 1972. These data, which are stored at the University of Colorado computer facility, represent the basic data on which the Colorado Predictive Income Tax Model is structured. In other words, the current phase of the research carries the CTPS one step further. The objectives of the present study are to:

- Develop and test a predictive model which can be used to estimate the revenue and distributional effects of basic modifications of the state income tax structure.

- Update the CTPS income and tax data as new information becomes available from the Colorado Department of Revenue, Division of Property Taxation, Division of Local Government, and other relevant sources.

- Provide a "quick response" service for predicting the fiscal impact of specific tax changes proposed by members of the Colorado Legislature.

This report presents the results of a series of tests programmed to simulate the tax revenue and burden effects of several basic changes in the Colorado income tax structure. The simulations and supporting text demonstrate the capabilities of the predictive model and indicate the type of analyses that can be generated by use of a computerized data bank. In addition, the report describes some related research undertaken in response to several other tax questions submitted by the Legislative Council.

SECTION I. REVISED COMPUTER DATA BANK

As is now widely recognized, about one-third of all Colorado state income tax returns are filed as "married-separates" because the Colorado tax code does not have a "split-income" provision such as provided under the federal income tax code. Since any distribution of Colorado income and tax burdens based on the number of returns filed rather than taxpaying households gives a distorted picture of the Colorado tax structure, the income and tax data reported on "married-separate" returns for each household in the original CTPS sample were identified and merged before being entered into the computer bank. However, in order to estimate the tax effects of any proposed changes in the rate and base provisions of the present state income tax it is first necessary to recompute the new tax on a "returns" basis. Thus, in order to make the CTPS income tax data in the computer bank operational for the purposes of the present predictive model study, the detailed tax information on the merged "married-separate" returns had to be re-entered into the computer on an individual tax returns basis, verified, and tested. The computerized data bank is now capable of producing results on either a "household" or a "returns" basis.

In carrying out the above process some coding and transcription errors in the original 1971 sample data were discovered and corrected. However, the magnitude of these errors when the sample data were blown-up to a universe basis were unusually small. For example, the corrected overall count of household returns were less than 2/100 of 1 percent larger than the original CTPS count; the corrected total of adjusted gross income was less than 2/10 of 1 percent smaller than the CTPS figure; and the corrected total normal tax liability was less than 4/10 of 1 percent smaller. Table 1 compares the original CTPS study figures with the corrected amounts used in the present research.

TABLE 1. COMPARISON OF CTPS UNIVERSE WITH THE PREDICTIVE MODEL UNIVERSE, COLORADO STATE INDIVIDUAL INCOME TAX RETURNS,[a] FISCAL YEAR 1972

Adjusted Gross Income Classes	Number of Returns on Merged Basis[b]		Adjusted Gross Income (thousands of dollars)		Normal Tax Liability (thousands of dollars)	
	CTPS Study	Predictive Model	CTPS Study	Predictive Model	CTPS Study	Predictive Model
Under $5,000	315,497	315,460	$ 717,149	$ 717,157	$ 5,838	$ 5,905
$ 5,000 to $10,000	222,970	223,315	1,679,671	1,682,334	23,975	24,207
$10,000 to $15,000	162,480	162,608	1,997,527	1,999,039	36,102	36,397
$15,000 to $25,000	99,878	99,765	1,852,742	1,850,934	44,851	45,430
$25,000 and over	28,961	28,800	1,253,581	1,237,959	43,835	44,027
Total	829,786	829,948	$7,500,670	$7,487,423	$154,601	$155,966

[a]Includes all returns filed--full-year residents, part-year residents, and non-residents.

[b]Married-separate returns merged to a household basis.

SECTION II. PROGRAMMING OF THE PREDICTIVE MODEL

In conjunction with the computerized data bank an algebraic income tax simulation program, designated as SIMTAX 1, was developed for estimating the revenue and tax burden effects of any proposed major revisions of the rate and base features of the present state income tax.[1] This program has the capability of recomputing on both an individual returns and merged household basis the simulated normal tax liabilities which would result from any proposed modifications in the present tax rate structure, changes in adjusted gross income, or the treatment of personal exemptions, standard or itemized deductions, and the federal income tax deduction. The 20 key variables included in the SIMTAX 1 program are the following:

- Adjusted gross income
- Wage and salary income
- Standard deduction
- Federal income tax deduction
- Medical expense deduction
- Charitable contributions
- Real estate tax deduction
- Gasoline tax deduction
- General sales tax deduction
- Property tax deduction
- Interest expense deduction
- Other itemized deductions
- Total itemized deductions
- Allocation of deductions
- Normal exemptions claimed
- Extra exemptions claimed
- Net taxable income
- Tax rate structure
- Normal tax liability
- Food sales tax credit

[1] A copy of the SIMTAX 1 documentation manual used for programming simulations is available for examination upon request.

SECTION III. TESTING OF THE PREDICTIVE MODEL

A variety of tests were conducted to check the ability of the SIMTAX 1 computer program to simulate the tax revenue and distributional effects that would result from specified changes in normal tax rates, the value of exemptions, the treatment of the federal income tax deduction provision, and the itemized real estate tax deduction. The tests were performed on the corrected data bank described above for the 1971 income tax returns filed in fiscal year 1972. Provision for the growth in adjusted gross income and the number of returns filed since the original data bank was compiled has not been built into the test runs. The updating of the data bank for income and population growth cannot be made until the relevant adjusted gross income, net taxable income, and normal tax liability information, classified by major income strata, for the 1972 tax returns filed in 1973 are made available by the State Department of Revenue. It originally had been estimated that this information would be available early in January 1974, but it now appears that these data will not be produced until mid-March 1974.

The results of the test runs in terms of tax revenue and burden effects for eight hypothetical modifications in the present Colorado income tax structure are presented in Tables 3 through 10 and are briefly analyzed below:

Reduce Tax Rates with Expanded Tax Brackets

As is widely recognized the growth in nominal income, in part reflecting the unprecedented price inflation of recent years, has not only resulted in an increase in the aggregate level of adjusted gross income, but has shifted a large number of taxpayers into higher adjusted gross income classes and correspondingly into higher net taxable income brackets subject to increased rates of taxation. It is this feature of the progressive income tax which results in the tax having a "revenue-elasticity" greater than one. For example, it is estimated that the elasticity of the Colorado income tax is approximately equal to 1.5, i.e., if nominal income for the state increases by 10 percent during a given period, the normal tax liability with no change in rate structure will increase by approximately 15 percent.

If it were so desired, one means of partially compensating for such growth in nominal income without changing the present maximum rate of 8 percent would be to lower the tax rates for all present tax brackets and extend the range of tax brackets which now tops off at $10,000 of net taxable income to either $15,000 or $25,000 of net taxable income. Table 2 shows three alternative tax rate schedules contrasted with each other and the present Colorado rate structure. In Tables 3 and 4 the tax rates for the first nine net taxable income brackets are reduced by .5 of one percentage point, and for the next two brackets by one full percentage point. This modified rate structure with a $15,000 and above" top bracket is designated as Schedule A and is used as the basis for the test run shown in Table 3. The other tax structure with similar rates but expanded brackets to "$25,000 and above" is designated as Schedule B and is used as the basis for Table 4. The revised tax structure used as the basis of Table 5 also has expanded brackets to "$25,000 and above," but in this instance the tax rates for the first nine brackets are reduced by one full percentage point and the next two brackets by 1.5 percentage points. This tax structure is designated as Schedule C.

Table 3 shows that if Schedule A had been in effect for fiscal year 1972 the total individual income tax liability would have been reduced from $156.0 million to $138.3 million. This would have represented a revenue loss for the state of $17.7 million, or a reduction of slightly more than 11 percent in the income tax take. However, taxpayers in the lowest income stratum, those with reported adjusted gross incomes of less than $5,000, would have received on the average a 17 percent reduction compared with a 6.4 percent reduction for those in the highest income category -- with adjusted gross incomes of $25,000 or more. But it also should be noted that the average dollar reduction for the lowest group would have been only about $3 per household contrasted with an average reduction of $97 for those in the highest income stratum.

The increase in the relative progressivity of Schedule A over the present rate structure also is reflected by the change in tax burdens expressed as a percentage of adjusted gross income. Although the burden is reduced for all income categories, the revised burden for the lowest group becomes .68 percent compared with a 3.33 percent burden for the

TABLE 2. COLORADO STATE INDIVIDUAL INCOME TAX, COMPARISON OF PRESENT TAX RATE STRUCTURE WITH THREE ALTERNATIVE RATE SCHEDULES

Net Taxable Income Classes			Present	Revised Rate Schedules		
Income Increment		Income Bracket	Schedule	A	B	C
First	$ 1,000	$1 to $ 1,000	2.5%	2.0%	2.0%	1.5%
Second	1,000	1,000 to 2,000	3.0	2.5	2.5	2.0
Third	1,000	2,000 to 3,000	3.5	3.0	3.0	2.5
Fourth	1,000	3,000 to 4,000	4.0	3.5	3.5	3.0
Fifth	1,000	4,000 to 5,000	4.5	4.0	4.0	3.5
Sixth	1,000	5,000 to 6,000	5.0	4.5	4.5	4.0
Seventh	1,000	6,000 to 7,000	5.5	5.0	5.0	4.5
Eighth	1,000	7,000 to 8,000	6.0	5.5	5.5	5.0
Ninth	1,000	8,000 to 9,000	6.5	6.0	6.0	5.5
Tenth	1,000	9,000 to 10,000	7.5	6.5	6.5	6.0
Next	2,500	10,000 to 12,500	8.0	7.0	7.0	6.5
Next	2,500	12,500 to 15,000	8.0	7.5	7.0	7.0
Next	10,000	15,000 to 25,000	8.0	8.0	7.5	7.5
Remainder		25,000 and over	8.0	8.0	8.0	8.0

TABLE 3. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, PRESENT RATE STRUCTURE REPLACED BY SCHEDULE A AND EXPANDED NET TAXABLE INCOME BRACKETS TO "$15,000 AND ABOVE"

Adjusted Gross Income Classes	Household Returns[a]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	4,900	-17.0	18.72	15.53	- 3.9	.82	.68
$ 5,000 to $10,000	223,315	26.9	24,207	20,723	-14.4	108.40	92.80	- 15.60	1.44	1.23
$10,000 to $15,000	162,608	19.6	36,397	31,479	-13.5	223.83	193.59	- 30.24	1.82	1.57
$15,000 to $25,000	99,765	12.0	45,430	39,943	-12.1	455.37	400.37	- 55.00	2.45	2.16
$25,000 and over	28,800	3.5	44,027	41,226	- 6.4	1,528.72	1,431.46	- 97.26	3.56	3.33
Total	829,948	100.0	155,966	138,271	-11.3	187.92	166.60	- 21.32	2.08	1.85

[a]Includes part-year residents and non-residents.

highest stratum. Thus, in terms of the progressivity measure developed for the CTPS study, i.e., the ratio of the tax burden of the lowest income class to the highest, the index would drop from .23 to .20 and hence would more closely approximate the federal income tax progressivity ratio of .19 for Colorado resident taxpayers in fiscal year 1972.[2]

Table 4 shows that if Schedule B rate structure with tax brackets expanded to $25,000 of net taxable income and above had been in effect in fiscal year 1972, the total income tax liability would have been about $19 million less than under the present rate structure. This would have represented a 12 percent reduction in income tax revenues. However, the average reductions both percentagewise and dollarwise would have been practically the same under both Schedules A and B rate structures for taxpayers in the first four income categories, i.e., those with adjusted gross incomes of less than $25,000. Only the 4 percent of the taxpayers comprising the top income stratum would have received a larger tax break under Schedule B than under Schedule A. In this instance the average reduction would have been 8.4 percent instead of 6.4 percent, or $128 instead of $97. In other words, expanding the top taxable income bracket from $15,000 to $25,000 with the revised rate structure would have cost an additional $1 million revenue loss and resulted in a slightly less progressive income tax structure than could have been achieved under Schedule A. It should be noted that both of these revised schedules would be significantly more progressive than the present state tax rate structure but still less progressive than the federal income tax.

Table 5 shows that if the Schedule C structure which assumes tax rates reduced by at least one full percentage point coupled with a $25,000 top bracket had been in effect in 1972 the revenue loss to the state would have been about $36 million, or almost 23 percent of the 1972 fiscal year income tax liability. The average reduction would have been about $7 for taxpayers with adjusted gross income of less than $5,000, in contrast with an average reduction of $201 for those in the $25,000 or more income class. Notwithstanding this marked variation in average dollar reductions this test run shows that Schedule C would have resulted in

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[2]See Colorado Tax Profile Study, Colorado Legislative Council, Research Publication No. 202, (Denver, Colorado) October 1973, p. 34.

TABLE 4. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, PRESENT RATE STRUCTURE REPLACED BY SCHEDULE B AND EXPANDED NET TAXABLE INCOME BRACKETS TO "$25,000 AND ABOVE"

Adjusted Gross Income Classes	Household Returns[a]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	4,900	-17.0	18.72	15.53	- 3.19	.82	.68
$ 5,000 to $10,000	223,315	26.9	24,207	20,723	-14.4	108.40	92.80	- 15.60	1.44	1.23
$10,000 to $15,000	162,608	19.6	36,397	31,479	-13.5	223.83	193.59	- 30.24	1.82	1.57
$15,000 to $25,000	99,765	12.0	45,430	39,877	-12.2	455.37	399.71	- 55.66	2.45	2.15
$25,000 and over	28,800	3.5	44,027	40,336	- 8.4	1,528.72	1,400.56	-128.16	3.56	3.26
Total	829,948	100.0	155,966	137,315	-12.0	187.92	165.45	- 22.47	2.08	1.83

[a]Includes part-year residents and non-residents

TABLE 5. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, PRESENT RATE STRUCTURE REPLACED BY SCHEDULE C AND EXPANDED NET TAXABLE INCOME BRACKETS TO "$25,000 AND ABOVE"

Adjusted Gross Income Classes	Household Returns[a]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	3,823	-35.3	18.72	12.12	- 6.60	.82	.53
$ 5,000 to $10,000	223,315	26.9	24,207	16,932	-30.1	108.40	75.82	- 32.58	1.44	1.01
$10,000 to $15,000	162,608	19.6	36,397	26,486	-27.2	223.83	162.88	- 60.95	1.82	1.32
$15,000 to $25,000	99,765	12.0	45,430	34,770	-23.5	455.37	348.52	-106.85	2.45	1.88
$25,000 and over	28,800	3.5	44,027	38,235	-13.2	1,528.72	1,327.60	-201.12	3.56	3.09
Total	829,948	100.0	155,966	120,246	-22.9	187.92	144.88	- 43.04	2.08	1.61

[a]Includes part-year residents and non-residents.

a significantly more progressive tax structure than that provided under the simulated Schedules A or B, or the present federal income tax on Colorado residents. For example, the average tax for taxpayers in the lowest income stratum would be reduced by 35 percent, contrasted with a reduction of 13 percent for those in the highest income category. In terms of the CTPS progressivity measure, the tax burden rates of the lowest to the highest income class would drop from .23 to .17.

Raise the Value of Personal Exemptions

An alternative means of reducing the state income tax to compensate for inflation and the growth in taxpayer nominal income is to raise the $750 value of the present exemption which has been in effect since 1957. During this period of a fixed exemption value (1957-1973), the consumer price index rose by 64 percent and per capita personal income for Colorado increased by 149 percent.[3] It would appear that the basic $750 exemption value no longer approximates the cost of a minimum standard of living in Colorado.

Table 6 shows the revenue and tax burden effects of raising the value of personal exemptions from the present $750 to $1,000. In this test run the normal income tax liability for fiscal year 1972 would have been reduced from $156 million to $136 million, a loss in state revenue of $20 million. This would have been a 12.8 percent overall reduction, but once again the relative change by adjusted gross income categories would vary inversely with the level of income and result in a more progressive tax structure. For example, raising the exemption value by $250 would have reduced the average tax for those in the lowest income stratum by almost 27 percent (or by about $5), contrasted with a reduction of less than 5 percent (or by about $69 per household) for those in the highest income stratum. In terms of the CTPS progressivity measure the tax burden ratio of the lowest to the highest income class under this revision would have been .18. Thus, it appears that raising the value of exemptions to $1,000 would be slightly more progressive than the tax cuts simulated under Schedules A or B, but slightly less progressive than the burden impact of Schedule C.

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[3]See U.S. Department of Commerce, Survey of Current Business, August 1973 and January 1974; and The Economic Report of the President, 1973.

TABLE 6. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, VALUE OF PERSONAL EXEMPTIONS ARE RAISED FROM PRESENT $750 TO $1,000 PER EXEMPTION[a]

Adjusted Gross Income Classes	Household Returns[b]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	4,322	-26.8	18.72	13.70	- 5.02	.82	.60
$ 5,000 to $10,000	223,315	26.9	24,207	19,586	-19.1	108.40	87.71	- 20.69	1.44	1.16
$10,000 to $15,000	162,608	19.6	36,397	30,154	-17.2	223.83	185.44	- 38.39	1.82	1.51
$15,000 to $25,000	99,765	12.0	45,430	39,952	-12.1	455.37	400.46	- 54.91	2.45	2.16
$25,000 and over	28,800	3.5	44,027	42,026	- 4.5	1,528.72	1,459.24	- 69.48	3.56	3.39
Total	829,948	100.0	155,966	136,040	-12.8	187.92	163.91	- 24.01	2.08	1.82

[a]Applied to all normal exemptions as well as extra exemptions claimed for age, blindness, and retarded children.

[b]Includes part-year residents and non-residents.

TABLE 7. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, VALUE OF PERSONAL EXEMPTIONS ARE RAISED FROM PRESENT $750 TO $1,250 PER EXEMPTION[a]

Adjusted Gross Income Classes	Household Returns[b]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	3,392	-42.6	18.72	10.75	- 7.97	.82	.47
$ 5,000 to $10,000	223,315	26.9	24,207	15,824	-34.6	108.40	70.86	- 37.54	1.44	.94
$10,000 to $15,000	162,608	19.6	36,397	24,685	-32.2	223.83	151.81	- 72.02	1.82	1.23
$15,000 to $25,000	99,765	12.0	45,430	34,868	-23.2	455.37	349.50	-105.87	2.45	1.88
$25,000 and over	28,800	3.5	44,027	40,007	- 9.1	1,528.72	1,389.13	-139.59	3.56	3.23
Total	829,948	100.0	155,966	118,776	-23.8	187.92	143.11	- 44.81	2.08	1.59

[a]Applied to all normal exemptions as well as extra exemptions claimed for age, blindness, and retarded children.

[b]Includes part-year residents and non-residents.

Table 7 shows the results if the value of the personal exemptions were raised to $1,250, or increased by $500 instead of by $250 per exemption. The cost to the state would have been $37 million and the overall income tax reduction would have been almost 24 percent. In this case the distributional effects would have been significantly more progressive than the $1,000 exemption or any of the simulated tax cuts described above. The average reduction in normal tax for the lowest income stratum would have been almost 43 percent in contrast with a decrease of 9 percent for the top income category. Moreover, the CTPS progressivity index would be .15 (.146 rounded), indicating that the average income tax burden measured as a percentage of adjusted gross income would be approximately seven times greater for taxpayers in the highest income category than for those in the lowest. In short, if exemptions were raised to this value it would make the Colorado state income tax structure markedly more progressive than the federal income tax which had a progressivity index of .19 for Colorado resident taxpayers in fiscal year 1972.

Revise Treatment of the Federal Tax Deduction

In order to further test the predictive model, Tables 8 and 9 show the revenue and tax burden changes that would have occurred if the use of the federal income tax as a deduction had been either limited to a $1,000 maximum or not permitted at all in the computation of the state income tax in fiscal year 1972. Of course, either one of these simulated revisions would have significantly increased state income tax revenues -- $34 million and $60 million, respectively -- because of the magnitude of the federal tax relative to the state tax.

Table 8 shows that a federal tax deduction limited to a maximum of $1,000 per return[4] would raise state income tax revenues by almost 22 percent in a highly progressive manner. The average tax would remain practically unchanged for taxpayers in the lowest income stratum, whereas

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[4] If the federal tax deduction was limited to some maximum amount, it would be more equitable to set the maximum on a household basis rather than a returns basis in order to treat "joint" and "married-separate" households in a similar manner. In the case of the latter the allocation of the limited federal tax deduction between the spouses' respective returns would be left to the discretion of the taxpayers.

TABLE 8. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, FEDERAL INCOME TAX DEDUCTION IS LIMITED TO $1,000 MAXIMUM PER RETURN

Adjusted Gross Income Classes	Household Returns[a]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	5,911	+ .1	18.72	18.74	+ .02	.82	.82
$ 5,000 to $10,000	223,315	26.9	24,207	24,665	+ 1.9	108.40	110.45	+ 2.05	1.44	1.47
$10,000 to $15,000	162,608	19.6	36,397	39,386	+ 8.2	223.83	242.21	+ 18.38	1.82	1.97
$15,000 to $25,000	99,765	12.0	45,430	54,782	+20.6	455.37	549.11	+ 93.74	2.45	2.96
$25,000 and over	28,800	3.5	44,027	65,148	+48.0	1,528.72	2,262.08	+733.36	3.56	5.26
Total	829,948	100.0	155,966	189,892	+21.8	187.92	228.80	+ 40.88	2.08	2.54

[a]Includes part-year residents and non-residents.

TABLE 9. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, FEDERAL INCOME TAX IS NOT PERMITTED AS A DEDUCTION IN THE COMPUTATION OF THE STATE INCOME TAX

Adjusted Gross Income Classes	Household Returns[a]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000	315,460	38.0	5,905	6,982	+18.2	18.72	22.13	+ 3.41	.82	.97
$ 5,000 to $10,000	223,315	26.9	24,207	31,030	+28.2	108.40	138.95	+ 30.55	1.44	1.84
$10,000 to $15,000	162,608	19.6	36,397	48,096	+32.1	223.83	295.78	+ 71.95	1.82	2.41
$15,000 to $25,000	99,765	12.0	45,430	62,662	+37.9	455.37	628.10	+172.73	2.45	3.39
$25,000 and over	28,800	3.5	44,027	67,620	+53.6	1,528.72	2,347.92	+819.20	3.56	5.46
Total	829,948	100.0	155,966	216,390	+38.7	187.92	260.73	+ 72.81	2.08	2.89

[a]Includes part-year residents and non-residents.

for those in the $25,000 and over class the resulting increase would have averaged $733, or 48 percent. The progressivity effects of a limited federal tax deduction provision also is revealed by contrasting the change in the relative tax burdens for taxpayers in the major income categories. For taxpayers with incomes of less than $10,000 (about two-thirds of the total taxpayers) the average burden remains practically unchanged, while for those in the two upper income strata the burden increases from 2.5 to 3.0 percent and 3.6 to 5.3 percent, respectively. In terms of the CTPS progressivity measure, the index would be .16, or markedly more progressive than either the present state or federal income tax.

Table 9 shows the effects of completely eliminating the federal tax deductibility provision. As noted, this would have raised state income tax revenues by more than $60 million, or by almost 39 percent in fiscal year 1972. However, the increased progressivity of the state tax structure would not have been as great as under the limited deductibility provision discussed above. In this case the average tax liability for all income strata would be increased, ranging from 18 percent for those in the lowest category to almost 54 percent for those in the highest. In terms of the CTPS progressivity measure, the index would have been .18, -- indicating that the state tax structure under either of these simulated provisions would have been made more progressive than the federal income tax for fiscal year 1972.

Changed Real Estate Tax Deductions

One of the indirect or secondary effects of providing residential property tax relief, whether initiated by local or state governments, is to reduce the dollar amount of real estate tax payments that can be claimed in subsequent years as itemized deductions against the property taxpayer's state and federal income tax. Table 10 shows the revenue and tax burden changes that would have occurred if the real estate tax deductions taken against the 1971 income tax returns filed in 1972 had been 20 percent smaller. First it should be noted that only about one-third of the taxpayers filing returns take such deductions and the relative number varies in a marked manner with income levels. For example, only about 5 percent of the taxpayers with incomes of less than $5,000 took a property tax deduction on their income tax returns filed in 1972, whereas 87 percent

TABLE 10. TEST RUN ON PREDICTIVE INCOME TAX MODEL BASED ON FISCAL YEAR 1972 DATA, REAL ESTATE TAX DEDUCTIONS ON ITEMIZED RETURNS REDUCED BY 20 PERCENT

Adjusted Gross Income Classes	Household Returns[a]		Total Normal Tax (thousands of dollars)			Average Dollar Normal Tax			Tax Burden as Percent of AGI	
	Number	Percent Dist.	Present	Revised	Percent Change	Present	Revised	Change	Present	Revised
Under $5,000[b]	315,460	38.0	5,905	5,905	--	18.72	--	--	.82	.82
$ 5,000 to $10,000	223,315	26.9	24,207	24,383	+ .7	108.40	109.73	+ 1.33	1.44	1.46
$10,000 to $15,000	162,608	19.6	36,397	36,830	+ 1.2	223.83	226.50	+ 2.67	1.82	1.84
$15,000 to $25,000	99,765	12.0	45,430	45,998	+ 1.3	455.37	461.06	+ 5.69	2.45	2.49
$25,000 and over	28,800	3.5	44,027	44,381	+ .8	1,528.72	1,536,70	+ 7.98	3.56	3.58
Total	829,948	100.0	155,966	157,497	+ 1.0	187.92	189.76	+ 1.84	2.08	2.10

[a]Includes part-year residents and non-residents.

[b]Effect of change not calculated for this income stratum because of small number with property tax deductions and low sampling reliability. Revised averages based on changes in top four strata.

of those with incomes of $25,000 or more itemized such deductions.[5] In the aggregate a 20 percent across-the-board reduction in the property tax would have reduced deductions by about $28 million and, in turn, would have raised the income tax liability by $1.5 million, or by only 1 percent. The resulting average tax increase for all taxpayers in the middle-income categories would have been slightly larger than 1 percent, while for those in the top income stratum it would have averaged slightly less than 1 percent. Of course, the income tax increases resulting from such a change in the property tax would be limited to those taxpayers who actually took the deduction on their returns. For these taxpayers the percentage increases would work out to be somewhat higher by income category.[6] Similarly, it appears that the total distributional or tax burden effects of this change would be relatively small although it would result in a slight increase in the progressivity of the overall income tax structure.

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[5] See Colorado Tax Profile Study, Appendix B, Table 7-B. The effect of changes in the real estate tax was not estimated for the lowest income stratum because of the relatively small number and low sampling reliability of the tax returns with such deductions in this category.

[6] The following tabulation shows the effect of this change on the income tax liability for 1972 of only those taxpayers in the four top income strata taking real estate deductions:

Adjusted Gross Income Classes	Average Normal Tax			Percent Increase
	Present	Revised	Increase	
$ 5,000 to $10,000	$ 87.51	$ 89.74	$ 2.23	2.5
$10,000 to $15,000	202.81	206.69	3.88	1.9
$15,000 to $25,000	439.08	445.92	6.84	1.6
$25,000 and over	1,533.70	1,547.19	13.49	.9
Totals	$ 355.99	$ 361.11	$ 5.12	1.4

Summary of Test Runs

The major revenue and tax burden effects of the eight simulations performed to test the Colorado Predictive Income Tax Model are summarized below:

Modification	Total Revenue Impact (millions)	Percent Change in Average Tax		CTPS Prog. Index (1972=.230)
		Lowest Stratum	Highest Stratum	
Revised Tax Rates:				
Schedule A (Table 3)	-$17.7	-17.0	- 6.4	.204
Schedule B (Table 4)	- 18.7	-17.0	- 8.4	.209
Schedule C (Table 5)	- 35.7	-35.3	-13.2	.172
Value of Exemptions:				
Raised to $1,000 (Table 6)	-$19.9	-26.8	- 4.5	.177
Raised to $1,250 (Table 7)	- 37.2	-42.6	- 9.1	.146
Federal Tax Deductions:				
$1,000 Maximum (Table 8)	+$33.9	+ 0.1	+48.0	.156
Not Permitted (Table 9)	+ 60.4	+18.2	+53.6	.178
Property Tax Deduction:				
Reduced by 20% (Table 10)	+$ 1.5	--	+ 0.8	.229

SECTION IV. OTHER RELATED RESEARCH

In addition to the development and testing of the predictive income tax model, the following analyses were conducted as part of the ongoing research of this study.

Analysis of Property Tax "Circuit-Breaker" Proposal

A proposed bill that would provide property tax credits and refunds against Colorado income taxes was analyzed with regard to its estimated revenue cost and distributional effects on taxpayers classified by the same adjusted gross income classes used in the CTPS study. The proposal would provide a generalized property tax credit or refund up to a maximum of $500 based upon a specified percentage of the amount by which a taxpayer's property taxes or a tax equivalent portion of his contract rental costs exceeded a specified percentage of his reported adjusted gross income. Two different versions of this proposal were analyzed -- one designated as the "original," the other as the "modified" proposal.[7] In the treatment of renter-occupied households, 20 percent of the annual rent was considered to be the property tax equivalent for such households under the original proposal, and 17 percent was used as the tax equivalent under the modified one. The schedules of income and tax credits used in analyzing the original and modified versions were as follows:

Adjusted Gross Income Class of Taxpayer	Percent of AGI Applied Against the Property Tax		Percent Refund of Excess of Property Tax over Applicable Portion of AGI
	Original Proposal	Modified Proposal	
Under $ 5,000	1%	2%	90%
$ 5,000 to $10,000	2	3	80
$10,000 to $15,000	3	4	70
$15,000 to $25,000	6	6	60
$25,000 and over	10	10	50

[7] The original version was proposed by Representatives Kirscht, DeMoulin, Boley, Taylor, and Gaon, and this analysis was requested by the staff of the Colorado Legislative Council.

The analyses of these proposals were based on fiscal year 1974 estimates. However, since the Revenue Department income and tax data reported on 1972 tax returns were not available, it was not possible to compare 1974 income with 1974 property tax for each sample household in the computerized data bank. Instead, the updating of the number of households, average income, and average property tax for each of the adjusted gross income classes was estimated on the basis of household and income growth information obtained from other sources.[8]

Tables 11-A and 11-B show that the cost of the program for fiscal year 1974 based on the original version would amount to about $57.9 million consisting of $29.4 million in credits to resident owner-occupied households and $28.5 million in credits to resident renter-occupied households. Also, in the case of the former (Table 11-A) less than one-fifth of the total dollar refunds would be received by taxpayers with adjusted gross incomes of less than $5,000, whereas in the case of the renter-occupied households (Table 11-B) almost two-thirds of the total benefits would accrue to taxpayers in the lowest income category.

Tables 12-A and 12-B show that the modified version, with the percentage of adjusted gross income applied against the property tax raised by one percentage point for the three lowest income categories and the rental tax equivalent reduced from 20 to 17 percent, has the effect of cutting the overall cost of the program in half. In this case the total cost of fiscal year 1974 was estimated to be about $29.4 million of which $14.6 million represented credits to owner-occupied households (Table 12-A), and $14.8 million represented credits to renter-occupied households (Table 12-B). Of course, the higher ratios of adjusted gross income used against the property tax in the upper-middle and top income strata would effectively eliminate most taxpayers in these categories from the program.

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[8]Population growth estimates based on Colorado State Department of Commerce and Industry and State Department of Labor and Employment data. Income growth estimates based on U.S. Department of Commerce personal income series and Colorado Department of Revenue adjusted gross income data.

TABLE 11-A. ESTIMATED COST OF "CIRCUIT-BREAKER" ON FULL-YEAR RESIDENT OWNER-OCCUPIED HOUSEHOLDS FOR FISCAL YEAR 1974, BASED ON ORIGINAL PROPOSAL

Adjusted Gross Income Class	(A) 1974 Full-Year Resident Households Filing Returns in 1975	(B) Census Ratio of Owner-Occupied to Total Households	(C) Estimated Number of Owner-Occupied Households (A)x(B)	(D) Estimated 1974 Average Property Tax Deduction	(E) Projected Average AGI to Reflect 20% Income Increase	(F) Percent of AGI Applied Against Prop. Tax	(G) $ AGI Applied Against Prop. Tax (E)x(F)	(H) Excess of Prop. Tax Over App. AGI (D)-(G)	(I) Percent Refund of Excess of Property Tax	(J) Average $ Amount Prop. Tax Refund (H)x(I)	(K) Total Prop. Tax Refund ($000) (C)x(J)
Less than $5,000	142,110[a]	36.5%	51,870	$145	$ 3,000	1%	$ 30	$115	90%	$103.50	$ 5,368
$ 5,000-$10,000	177,638	56.3%	100,010	373	8,000	2%	160	213	80%	170.40	17,042
$10,000-$15,000	227,376	79.6%	180,991	445	13,000	3%	390	55	70%	38.50	6,968
$15,000-$25,000	127,899	87.7%	112,167	576	19,000	6%	1,140	--	60%	--	--
$25,000 and over	35,528	89.5%	31,798	951	48,000	10%	4,800	--	50%	--	--
Total	710,551	67.1%[b]	476,836	$507[c]	$12,580	--	--	--	--		$29,378

[a]Excludes 87,210 returns in lowest income stratum with one exemption and no food tax credit.
[b]Weighted average.
[c]Based on 4 highest income strata.

TABLE 11-B. ESTIMATED COST OF "CIRCUIT-BREAKER" ON FULL-YEAR RESIDENT RENTER-OCCUPIED HOUSEHOLDS FOR FISCAL YEAR 1974, BASED ON ORIGINAL PROPOSAL

Adjusted Gross Income Class	(A) 1974 Full-Year Resident Households Filing Returns in 1975	(B) Census Ratio of Renters to Total Households	(C) Estimated Number of Renter Households (A)x(B)	(D) Census Average Annual Rental Adjusted	(E) Tax Equivalent Based on 20% of (D)	(F) Projected Aver. AGI to Reflect 20% Income Increase	(G) Percent of AGI Applied Against Tax Equiv.	(H) $ AGI Applied Against Tax Eq. (F)x(G)	(I) Excess of Tax Eq. Over App. AGI (E)-(H)	(J) Percent Refund of Excess Tax Equiv.	(K) Average $ Amount of Rent Refund (I)x(J)	(L) Total Rent Refund ($000) (C)x(K)
Less than $5,000	142,110[a]	63.5%	90,240	$1,265	$253	$ 3,000	1%	$ 30	$223	90%	$200.70	$18,111
$ 5,000-$10,000	177,638	43.7%	77,628	1,620	324	8,000	2%	160	164	80%	131.20	10,185
$10,000-$15,000	227,376	20.4%	46,385	1,981	396	13,000	3%	390	6	70%	4.20	195
$15,000-$25,000	127,899	12.3%	15,732	2,450	490	19,000	6%	1,140	--	60%	--	--
$25,000 and over	35,528	10.5%	3,730	2,970	594	48,000	10%	4,800	--	50%	--	--
Total	710,551	32.9%[b]	233,715	--	--	$12,580	--	--	--	--		$28,491

[a]Excludes 87,210 returns in lowest income stratum with one exemption and no food tax credit.
[b]Weighted average.

TABLE 12-A. ESTIMATED COST OF "CIRCUIT-BREAKER" ON FULL-YEAR RESIDENT OWNER-OCCUPIED HOUSEHOLDS FOR FISCAL YEAR 1974, BASED ON MODIFIED PROPOSAL

Adjusted Gross Income Class	(A) 1974 Full-Year Resident Households Filing Returns in 1975	(B) Census Ratio of Owner-Occupied to Total Households	(C) Estimated Number of Owner-Occupied Households (A)x(B)	(D) Estimated 1974 Average Property Tax Deduction	(E) Projected Average AGI to Reflect 20% Income Increase	(F) Percent of AGI Applied Against Prop. Tax	(G) $ AGI Applied Against Prop. Tax (E)x(F)	(H) Excess of Prop. Tax Over App. AGI (D)-(G)	(I) Percent Refund of Excess of Property Tax	(J) Average $ Amount Prop. Tax Refund (H)x(I)	(K) Total Prop. Tax Refund ($000) (C)x(J)
Less than $5,000	142,110[a]	36.5%	51,870	$145	$ 3,000	2%	$ 60	$ 85	90%	$ 76.50	$ 3,968
$ 5,000-$10,000	177,638	56.3%	100,010	373	8,000	3%	240	133	80%	106.40	10,641
$10,000-$15,000	227,376	79.6%	180,991	445	13,000	4%	520	--	70%	--	--
$15,000-$25,000	127,899	87.7%	112,167	576	19,000	6%	1,140	--	60%	--	--
$25,000 and over	35,528	89.5%	31,798	951	48,000	10%	4,800	--	50%	--	--
Total	710,551	67.1%[b]	476,836	$507[c]	$12,580	--	--	--	--		$14,609

[a]Excludes 87,210 returns in lowest income stratum with one exemption and no food tax credit.
[b]Weighted average.
[c]Based on 4 highest income strata.

TABLE 12-B. ESTIMATED COST OF "CIRCUIT-BREAKER" ON FULL-YEAR RESIDENT RENTER-OCCUPIED HOUSEHOLDS FOR FISCAL YEAR 1974, BASED ON MODIFIED PROPOSAL

Adjusted Gross Income Class	(A) 1974 Full-Year Resident Households Filing Returns in 1975	(B) Census Ratio of Renters to Total Households	(C) Estimated Number of Renter Households (A)x(B)	(D) Census Average Annual Rental Adjusted	(E) Tax Equivalent Based on 17% of (D)	(F) Projected Aver. AGI to Reflect 20% Income Increase	(G) Percent of AGI Applied Against Tax Equiv.	(H) $ AGI Applied Against Tax Eq. (F)x(G)	(I) Excess of Tax Eq. Over App. AGI (E)-(H)	(J) Percent Refund of Excess Tax Equiv.	(K) Average $ Amount of Rent Refund (I)x(J)	(L) Total Rent Refund ($000) (C)x(K)
Less than $5,000	142,110[a]	63.5%	90,240	$1,265	$215	$ 3,000	2%	$ 60	$155	90%	$139.50	$12,588
$ 5,000-$10,000	177,638	43.7%	77,628	1,620	275	8,000	3%	240	35	80%	28.00	2,174
$10,000-$15,000	227,376	20.4	46,385	1,981	337	13,000	4%	520	--	70%	--	--
$15,000-$25,000	127,899	12.3%	15,732	2,450	417	19,000	6%	1,140	--	60%	--	--
$25,000 and over	35,528	10.5%	3,730	2,970	505	48,000	10%	4,800	--	50%	--	--
Total	710,551	32.9%[b]	233,715	--	--	$12,580	--	--	--	--		$14,762

[a]Excludes 87,210 returns in lowest income stratum with one exemption and no food tax credit.
[b]Weighted average.

Analysis of Part-Year Resident Returns in the Lowest Income Stratum

In the original CTPS study part-year resident taxpayers were included in many of the detailed analyses of tax burdens. It has been suggested that their inclusion, particularly in the case of those reporting adjusted gross income of less than $5,000, may have distorted the burden analysis. Under the Colorado income tax code part-year resident taxpayers have the option of either: (a) reporting and computing their tax only on that portion of their income earned in Colorado, or (b) reporting and computing the tax on their total annual income and then allocating that portion of the tax which corresponds to the length of time they resided in the state. It is apparent that the inclusion in the burden analysis of income data from taxpayers electing the first option understates the true average of the adjusted gross income for the lowest income stratum. Of course, no such distortion results from part-year resident taxpayers who reported their total annual income, but in this instance the relative tax liability is understated. Also, it may be noted that since the other state household taxes -- general, retail sales, and excise taxes -- were allocated by an exhaustive method, the inclusion of part-year residents lowers the average household taxes in these categories.

Table 13 isolates the tax burden effects which resulted from the inclusion of the part-year resident taxpayers in the original CTPS study. It shows that the part-year residents accounted for about 10 percent of the number of taxpayers, adjusted gross income and normal tax liability for the lowest income category. However, it also shows that if all part-year residents had been excluded from the CTPS analysis, the average adjusted gross income would have been about .7 of 1 percent lower, and the average income tax liability would have remained practically unchanged. Similarly, the relative burdens of the income tax expressed as percentages of either adjusted gross or broad income remain practically unchanged when part-year residents were included or excluded from the analysis.

TABLE 13. DISTRIBUTION OF INCOME AND TAXES FOR COLORADO RESIDENT TAXPAYERS WITH ADJUSTED GROSS INCOME UNDER $5,000, FISCAL YEAR 1972

	CTPS Study[a]	With Part-Year Residents Filing Colo. AGI Excluded	With Part-Year Residents Filing Total AGI Excluded	All Part-Year Residents Excluded
Number of Resident Taxpayers	296,000	282,463	278,444	264,907
Adjusted Gross Income				
Total (in thousands)	$691,942	$659,151	$647,908	$615,117
Average	$2,338	$2,334	$2,327	$2,322
Adjusted Broad Income				
Total (in thousands)	$1,146,045	$1,091,734	$1,073,113	$1,018,802
Average	$3,872	$3,865	$3,854	$3,846
Individual Income Tax				
Total (in thousands)	$5,513	$5,145	$5,316	$4,948
Average	$18.63	$18.21	$19.09	$18.68
As Percent of AGI	0.80	0.78	0.82	0.80
As Percent of ABI	0.48	0.47	0.50	0.49

[a]Includes full-year and part-year resident taxpayers.

Analysis of Tax Returns Not Claiming Food Tax Credits

It has also been observed that average household income in the CTPS study may have been understated to the extent that the income separately reported by youngsters living with their parents was not merged with that of the parents. This is suggested by the fact that a large number of individuals in the lowest income stratum did not claim a food tax credit and reported only one exemption. Although some of these individuals may have inadvertently failed to file for the food tax credit, it is believed that the overwhelming majority of such cases represents persons living with their parents on whose returns their food tax credit had already been claimed. If the latter interpretation is correct, then the estimate of the number of households is overstated and the estimate of the average household income is understated for the lowest income stratum in the original CTPS study.

Under the present Colorado tax code a youngster living at home and taken as an exemption on his parents' tax return may also claim an additional exemption for himself if he files a return, generally for a withholding refund on his earnings from part-time employment. He is not, however, entitled to a food tax credit on his return since it will be claimed on his parents' return. Thus, a large number of tax returns, mainly concentrated in the lowest income stratum, show only one exemption and no food tax credit.

The following tabulation gives the distribution of such full-year resident returns filed in fiscal year 1972 when the "under $5,000" income category is separated into under and over $3,000 income classes:

Adjusted Gross Income Classes	All Full Year Resident Tax Returns	Tax Returns With One Exemption and No Food Tax Credit		
		Total	Non-Taxable	Taxable
Under $3,000	177,262	79,223	60,408	18,815
$3,000 to $5,000	87,822	7,987	592	7,395
$5,000 and over	488,686	3,535	--	3,535
Total	753,770	90,745	61,000	29,745

It will be noted that of the total number of "one exemption, no food tax credit" returns, 96 percent or 87,210 were in the under $5,000 income stratum, but within this category 91 percent had adjusted gross incomes of less than $3,000. Moreover, three out of four, or more than 60,000 of these returns in the under $3,000 group were non-taxable. In short, almost one out of every two full-year resident taxpayers with incomes of less than $3,000 reported only one exemption and did not claim a food tax credit. It appears that these returns mainly represent youngsters living at home. Since it is not possible to merge them with the parents' returns on the basis of the information given on present tax returns, the average household incomes and tax burdens reported in the original CTPS study are somewhat understated, particularly for the lowest income category.[9]

Table 14 compares the average adjusted gross income and normal tax, as well as relative tax burdens, for full-year resident taxpayers in the under $5,000 income category when the "one exemption, no food tax credit" returns are included and excluded from the universe analysis. It shows that this special category of returns accounted for about one-third of all full-year resident returns in this income stratum, about one-fifth of the adjusted gross income, and less than one-sixth of the normal tax. If these returns are excluded from this stratum, the average income for the remaining returns increases to $2,806, or 21 percent above the average for all full-year resident returns. Similarly, the average normal tax increases to $23.56, or by 26 percent. On the other hand, the change in the relative burden of the tax expressed as a ratio of adjusted gross income is comparatively small, increasing from .80 percent to .84 percent.

Related to the above analysis is the problem of estimating from reported income tax data the number of state residents currently not receiving food tax credit refunds. On the basis of the CTPS study data slightly more than one-third of the taxpayers in the lowest income category did not file for food tax credits, whereas the percentage of such taxpayers

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[9]Of course, some of these "one exemption, no food tax credit" returns may represent low-income single individuals who inadvertently failed to take the credit and their inclusion in the CTPS study partially offsets the understatement of average income and average tax due to the inclusion of all "one exemption, no food tax credit" returns.

TABLE 14. COMPARISON OF INCOME AND TAXES OF TAXPAYERS CLAIMING ONE EXEMPTION AND NO FOOD TAX CREDIT WITH ALL FULL-YEAR RESIDENT TAXPAYERS IN ADJUSTED GROSS INCOME CLASS UNDER $5,000, COLORADO INDIVIDUAL INCOME TAX, FISCAL YEAR 1972

	CTPS Study Resident Taxpayers[a]	Full-Year Resident Taxpayers		
		Total	One Exemption and No Food Tax Credit	All Others
Number of Taxpayers	296,000	265,084	87,210	177,874
Adjusted Gross Income				
Total (in thousands)	$691,942	$616,166	$116,970	$499,196
Average	$2,338	$2,324	$1,341	$2,806
Normal Tax Liability				
Total (in thousands)	$5,153	$4,958	$766	$4,192
Average	$19.00	$18.70	$8.78	$23.56
As Percent of AGI	0.80	0.80	.66	0.84

[a]Includes full-year and part-year resident taxpayers.

in the upper four strata averaged only 2 percent.[10] But as already indicated, a large number of those in the lowest income stratum not taking the credit (as many as one-half) probably represent youngsters filing tax returns who are not legally entitled to the food tax credit. Also part-year residents cannot take a full $7 credit and in many instances where the apportioned credit would be relatively small no refund is claimed. On the basis of income tax data alone it is not possible to ascertain the number of taxpayers who neglected to take the credits as opposed to those who legally were not entitled to the food tax credit.

An alternative means of estimating the Colorado resident population not covered by the credit may be derived by a residual method. For example, the state's estimated population for 1971 was 2,277,000 and the Department of Revenue reported that total food tax credit refunds for fiscal year 1972 amounted to $14,435,000.[11] Based on a credit of $7 per normal exemption it would appear that only slightly more than 2 million persons, or only about 90 percent of the state's population, were covered by the refund program. However, the actual number was significantly larger because part-year residents who claim the food tax credit received only a fractional refund corresponding to the time they were in the state.

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[10]The following tabulation based on data developed for the Colorado Tax Profile Study shows the distribution of resident taxpayers (full and part-year) who did not claim food tax credits on their 1971 tax returns filed in fiscal year 1972:

Adjusted Gross Income Classes	Total Number of Returns	Number with No Food Tax Credit	Percent with No Food Tax Credit
Under $ 5,000	296,000	162,051	34.5%
$ 5,000 to $10,000	221,626	8,128	3.7
$10,000 to $15,000	162,131	1,998	1.2
$15,000 to $25,000	99,695	638	0.6
$25,000 and over	28,912	503	1.7
Total	808,364	113,318	14.0%

[11]See Colorado Division of Planning, Colorado Population Trends, Vol. 2, No. 1, p. 1; Colorado Department of Revenue, Annual Report, 1972, p. 22.

In fiscal year 1972 almost 55,000 part-year residents' returns were filed. Food tax refunds amounting to $396,000 on 38,000 returns covered 108,000 exemptions, for an average credit of $3.65 per exemption.[12] The following calculation which takes account of this part-year resident factor shows the derivation of the estimate of the number of persons affected by the program:

		Dollars and Numbers in Thousands
Total:	Food tax refunds	$14,435
Less:	Part-year resident refunds	396
Equals:	Full-year resident refunds	$14,039
Divided by $7 per exemption		
Equals:	Persons covered on full-year returns	2,006
Plus:	Persons covered on part-year returns	108
Equals:	Total persons covered by food tax credits	2,114
Estimated State Population (July 1971)		2,277
Estimated percent of state's resident population covered by food tax credit program		92.8%

Although on the basis of this residual method it appears that less than 93 percent of the state's population participated in the food

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[12]The tabulation below shows the distribution of part-year resident returns with food tax credits filed in fiscal year 1972:

Adjusted Gross Income Classes	Number of Returns	Number of Normal Exemptions	Food Tax Credits (thousands)	Average Food Tax Credit Per Exemptions
Under $ 5,000	17,220	41,745	$127	$3.04
$ 5,000 to $10,000	12,530	35,237	145	4.12
$10,000 to $15,000	4,433	16,938	69	4.04
$15,000 to $25,000	2,831	11,862	45	3.79
$25,000 and over	644	2,499	10	4.06
Total	37,658	108,281	$396	$3.65

tax credit program, this estimate is still understated to the extent that other factors were not considered. For example, in addition to the part-year residents, another group of taxpayers not entitled to the entire $7 credit were full-year residents physically out of the state at least 6 months of the taxable year. Moreover, some military personnel, out-of-state college students, and institutionalized persons included in the population figure are not considered to be residents for purposes of food tax credits. In brief, a conservative estimate of the number of persons not presently covered by the food tax credit program is probably less than 5 percent of Colorado's resident population legally entitled to refunds.

The Public School Finance Act of 1973 and Colorado Property Taxes

The final section of this report attempts to estimate the impact of the 1973 school funding act on Colorado property taxes. The act raised the school districts' entitlement to state aid from $160 million for 1973 to $278 million for 1974. This increase of $118 million, or more than 70 percent, generally enabled the individual school districts to improve the quality of educational programs as well as reduce their property tax mill levies. In order to measure the effect of the latter it is necessary to compare the actual 1973 property tax (to be paid in 1974) with what the 1973 tax would have been in the absence of this act, and with the actual tax of the preceding year (the 1972 tax paid in 1973).

According to the County Commissioners' certification of individual county property taxes to the State Division of Property Taxation, the total tax for 1973 to be paid in 1974 amounted to $516.4 million. The comparable figure for the 1972 tax totaled $532.0 million, and thus the 1973 tax was $15.6 million or approximately 3 percent lower than the 1972 tax. However, this difference does not reflect the full impact of the School Finance Act on property taxation since the relevant comparison should be with a projected level of taxation that would have occurred in the absence of this act, taking cognizance of the continuous growth during recent years in both local governmental expenditures and property tax assessments. On this basis it is estimated that the projected 1973 property tax would have been $586.8 million or 13.6 percent larger than the

actual 1973 tax of $516.4 million, and 10.3 percent larger than the actual 1972 tax of $532.0 million.[13]

For purposes of the Colorado Predictive Income Tax Model the actual 1973 property tax (to be paid in 1974) was used as the basis for updating the residential real estate tax deduction information in the computerized data bank. It also should be noted that it will be the 1973 residential property tax that will appear as a deduction on the 1974 income tax returns. In order to obtain an estimate of these deductions for 1974, the CTPS real estate tax deductions for 1971 were updated by applying to each of the itemized income tax returns, on the basis of county residence, the average percentage increase in per capita property taxes for that specific county.[14]

The following tabulation compares the 1971 average real estate tax deduction on itemized returns with the updated averages for 1973 and 1974 for each of the four income categories above $5,000.[15]

Adjusted Gross Income Classes	Average Real Estate Tax Deduction Taken on Income Tax Returns for: 1971	1973	1974	Percent Change of 1974 Over: 1971	1973
$ 5,000 to $10,000	$352	$ 401	$373	+6.0%	-7.0%
$10,000 to $15,000	420	483	445	+6.0	-7.9
$15,000 to $25,000	538	625	576	+7.1	-7.8
$25,000 and over	877	1,019	951	+8.4	-6.7
Total	$475	$ 548	$507	+6.7%	-7.5%

[13]The projected 1973 property tax was based on a weighted trend analysis of total property tax revenues for the four years 1969 through 1972. If the growth factor is accounted for by use of per capita tax data, the annual weighted increase for the period is 7.2 percent instead of 10.3 percent, and the projected 1973 tax would have been $570.3 million instead of $586.8 million. In other words, the $16.5 million difference between these projected estimates may be attributed to population and economic growth.

[14]This analysis excludes part-year residents not residing in the state and non-residents.

[15]Tax returns in the lowest income stratum were excluded because of the low sampling reliability of the relatively small number of returns with property tax deductions.

It will be noted that the estimated average 1974 property tax deduction is 7.5 percent smaller than the 1973 estimate, but 6.7 percent larger than the 1971 average. Moreover, the 1974 projected average property tax that would have occurred in the absence of the School Finance Act would have been 6.9 percent larger instead of 7.5 percent smaller than the 1973 average.[16] With regard to the variance in percentage change among the income categories, the decreases in the average 1974 tax compared with the 1973 tax ranged from 6.7 to 7.9 percent, whereas the increases of the average 1974 tax over the 1971 tax ranged from 6.0 to 8.4 percent.

In summary, it is evident that whether the overall tax effect is estimated on the basis of the projected change in total property tax revenues or in terms of the projected change in average real estate tax deductions taken on itemized income tax returns, a significant reduction occurred in Colorado residential and non-residential property taxes in 1974 as a result of the Public School Finance Act of 1973.

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[16] In the absence of the School Finance Act it is estimated that the projected 1974 average real estate tax deduction would be $586, or 6.9 percent larger than the $548 average for 1973.