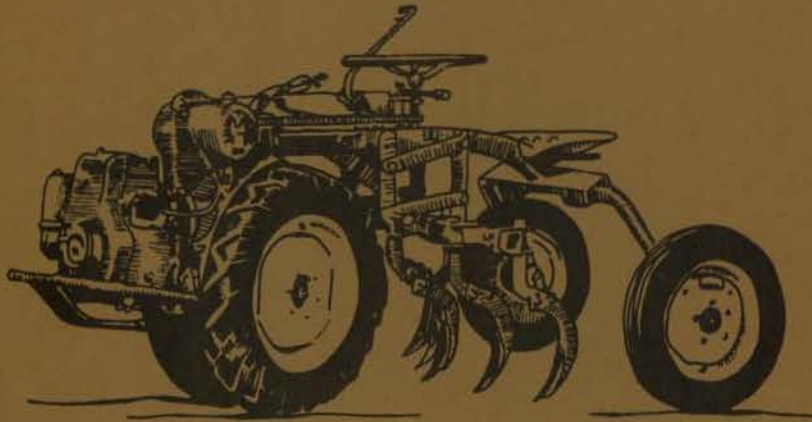


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Fiscal Impacts of Public Programs On Two Types of Rural Residents In Boundary County, Idaho



David E. Stubbs and Gerald Marousek

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About The Authors

David E. Stubbs is former Research Assistant and Gerald Marousek is professor of Agricultural Economics and Agricultural Economist, both Department of Agricultural Economics, University of Idaho, Moscow.



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David E. Stubbs and Gerald Marousek

THE PROBLEM

Description of the Study Area:

Boundary County

Geography

Boundary County is Idaho's northernmost county, bordered by British Columbia, Canada, on the north, Washington State on the west and Montana on the east. Approximately one-half of Boundary County's 1,275 square miles consists of large mountains and deep valleys, many of which lead to the Kootenai River Valley. The valleys of the Kootenai River and its tributaries lie generally north and south through the central and eastern parts of the county. These valleys are the county's principal farming and population center. Centrally located in the major river valley are the county's two largest towns: Bonners Ferry, the county seat, and Moyie Springs.

Major industries

Boundary County businesses and industries rely on the county's agricultural, forest and other natural resources. The relative importance of each of the two major industries, timber processing and agricultural production, is shown by comparing the estimated wholesale value of the county's total 1969 timber harvest, \$10,434,768 (30), with the total market value of all of the county's agricultural products sold in 1969, \$3,265,277 (28). During 1974 an average of 444 persons was employed in Boundary County's lumber industry (23) while an average of 133 persons was employed in agriculturally-related jobs (4). The latter figure does not include farm owners and operators; there were 308 farms in Boundary County in 1969 (28).

The tourist and seasonal housing businesses, which also rely on Boundary County's natural resources as they cater to the outdoor recreationist, are presently relatively small industries. However, they may well increase in economic importance with improved air service and improved roads into the remote areas of the county (17).

Population

In 1970, 6,371 people lived in Boundary County (29), an average of 4 persons per square mile. Of these, 56.2% or 3,575 were classified by residence as rural and 43.9% or 2,796 were classified as urban. Bonners Ferry and Moyie Springs had populations of 2,796 and 203 persons respectively, and several hundred persons resided in the villages of Copeland, Eastport, Porthill, Naples and Moravia.

According to 1976 estimates, Boundary County is expected to experience a 49.7% increase in population between 1970 and 1980 (13). Since all of the county except Bonners Ferry is classified as rural, this population projection suggests a continuation of the urban-to-rural migration which has been observed in recent years. The expected rate of growth is much greater than that experienced in Boundary County during the 1960 decade, when the county's population increased 9.8% compared to 5.5% for the State of Idaho and 6.8% for the 5 northernmost counties (29).

Back-to-the-Land Immigrants

Many of the recent Boundary County immigrants can be described as "back-to-the-land" people, characterized, in part, by lifestyle. As a general definition, back-to-the-land people are rural Americans whose major objectives are self-sufficiency and independence from a highly organized and mechanized society. They may live a frugal existence as they attempt to earn a livelihood from the land, raising their own poultry and meats, growing their own vegetables and fruits, searching for wild herbs and berries and perhaps accumulating a small surplus. The extremists seek to attain self-sufficiency from the land itself, eliminating all consumption of goods and services produced by the market economy and living outside existing economic institutions. Extremists are few in Boundary County; many back-to-the-land people there strive for a lesser degree of self-sufficiency and use some of the goods and services produced by the market economy. Many back-to-the-land people have

built their dwellings from materials taken from their own land; others have renovated seemingly unrepairable structures.

Most back-to-the-land people do not use modern conveniences and services such as electricity, inside plumbing, power farm equipment, telephones, pesticides and chemical fertilizers. Their lifestyle suggests advocacy of physical labor with little concern for financial security; many seek outside employment only when necessary to supply the household with certain items they are unable or unwilling to provide.

Earlier studies and discussions with public officials in Boundary County indicate the immigration of back-to-the-land people has increased the demand for certain public services. Among those services most often cited are Cooperative Extension and other education, and public welfare. The actual incidence of increased use of these and other public services by back-to-the-land immigrants, and the cost of providing for the increased use, has not been determined.

The Situation: Increasing Rural Population and Demand for Public Services

Community leaders and public officials are concerned with the effects of population growth in Boundary County. Additional costs have accrued as local governmental officials have spent time and resources anticipating, planning for and constructing additional public facilities necessitated by the county's increased population. These additional costs have a potential impact on the redistribution of real income between the immigrant people and the indigenous population. Specifically, unless the additional revenues collected from the new county residents are sufficient to cover the additional costs necessitated by their presence, redistribution of real income will necessarily occur through the public sector. If the tax burdens of all county residents increase or the existing per capita quantity of public

goods and services decreases as resources are reallocated to provide for new residents, real income is redistributed from the former to the latter. The unknown redistribution of real income that may occur as Boundary County's growing population requires increased public facilities and services is a fundamental county concern.

Objectives and Hypotheses

The objectives of this research project were:

- (1) To estimate the proportions of Boundary County's rural population that are back-to-the-land people and conventional rural people.
- (2) To identify the economic variables and collect data that will enable estimation of the revenue contribution made by the two rural subpopulations toward the support of county welfare, certain state and federal welfare programs, county health services, county restorium care, public education, public library services, rural solid waste services and the county airport.
- (3) To identify the economic variables and collect data that will enable estimation of the expenditure-benefits derived by each rural sub-population from the 8 public programs listed above.
- (4) To determine the expenditure-benefit/cost ratio of the 8 programs for each subpopulation.
- (5) To determine the magnitude and direction of redistributed real income through the 8 programs for each subpopulation.

The primary hypothesis of this study is: households within both the conventional and back-to-the-land sectors of Boundary County's rural population incur costs equal to the expenditure-benefits received from the 8 programs.

The subsidiary hypothesis is: households in the back-to-the-land and conventional sectors of Boundary County's rural population have equal average gross incomes.

METHODOLOGY USED

Analytical Technique: Partial, Static Benefit-Cost Analysis

Benefit-cost analysis quantifies both the positive effects (benefits) and negative effects (costs) of a given action. It can be used to examine the tax-expenditure symmetry of a public program. Thus budgetary incidence, defined as the tax and other payments made by individuals to public agencies (costs) and the public program expenditures (benefits) arising from a given budgetary policy to an individual, can be analyzed in a benefit-cost framework.

Using estimates of public program expenditures (benefits) and the taxes and other payments made by individuals to public agencies (costs), the budgetary incidence with respect to relevant population groups can be expressed as a ratio: the public program expenditure incidence, called expenditure-benefits, divided by the public revenue outlays, called costs. These estimates can also be expressed with respect to relevant population groups as the net expenditure-benefits received, that is, public program expenditures minus public revenue outlays. The net expenditure-benefit figure shows the direction and magnitude of any real income redistribution. The incidence of expenditure-benefits and costs can be estimated for all goods and services provided by a public sector or for any subset of the total goods and services provided.

Determination of a public program's expenditure-benefit/cost ratio and income redistribution impact is only a partial analysis of that policy's total effects, unless effects on other areas of economic activity are neutral. Another aspect of the partial nature of this type of analysis is recognition that the measurement of budgetary incidence may not include the total costs incurred by society in making the program available and the total benefits accruing to society from goods and services provided. Defining budgetary incidence to include only tax and other payments made by individuals to public agencies and public program expenditures has the advantage of re-

quiring only a manageable number of readily quantifiable variables. Static benefit-cost analysis facilitates determination of real income redistribution through the population's past public sector economic participation.

Estimating the budgetary incidence with respect to the two population groups within this study's static, partial benefit-cost analysis framework requires development of two general models: the expenditure-benefit model and the cost model. The purpose of the expenditure-benefit model is to provide a consistent method of estimating the average public sector expenditures that accrued to each population group from each of the eight public programs examined. The purpose of the cost model is to provide a consistent method of estimating the average public revenue contributions or outlay made by each population group to each public program. The models specify the data required to quantify the expenditure-benefit and cost components for each program.

The Expenditure-Benefit Model

The general expenditure-benefit model has two components: (1) the average total cost of one unit of program output and (2) the average number of units of output consumed by each population group. The average expenditure-benefit received by a given subpopulation from a given program is the product of (1) and (2):

$$\begin{aligned} EB_j &= (\text{average total cost per unit of program output}) \times (\text{average number of units consumed}) \\ &= \left(\frac{TC}{Q}\right) \bar{X}_j \end{aligned} \quad (1)$$

where:

j = subpopulation sample — 1 = conventional rural; 2 = back-to-the-land.

EB_j = average expenditure-benefit received from the public program in a given fiscal period by all households in the j^{th} subpopulation sample

TC = total cost of the program in the fiscal period

Q = total units of program output in the fiscal period

X = total units of program output consumed during the fiscal period by all persons residing in one household during that period

$$\bar{X}_j = \frac{1}{n_j} \sum_{i=1}^{n_j} X_{ji} \quad (2)$$

where:

n_j = total observations on X in the j^{th} subpopulation sample

X_{ji} = total units of program output consumed during the fiscal period by all persons residing in the i^{th} household in the j^{th} subpopulation sample during that period

The variables of each program's expenditure-benefit model will differ as the definition of each program's total output, units of consumption and expenditure-benefit recipients differ. However, their general interpretation will remain unchanged.

Total program costs (TC) must be defined as the program's total appropriation when detailed cost data are not available. Total program output (Q) will be defined in most cases as the total number of public program consumers or participants in a given fiscal period. The definition of a single unit of program output will vary according to the nature of goods and services provided, the number of times the benefits can be received by an individual from the program in a given fiscal period and the available records.

The Cost Model

The total cost of a public program accruing to a household is defined as the portion of its total payments made to all levels of government which were expended for that program. Thus average total cost can be expressed as the sum of all revenue sources, of the proportion of this revenue source spent on the program times the average contribution by the subpopulation to this revenue source:

C_j = Summation of all revenue sources (proportion of this revenue source spent on the program) x (average contribution by subpopulation households to this revenue source)

$$= \left[\frac{A_1}{R_1} \bar{r}_{1j} + \frac{A_2}{R_2} \bar{r}_{2j} + \dots + \frac{A_q}{R_q} \bar{r}_{qj} \right]$$

where:

j = subpopulation sample — 1 = conventional rural; 2 = back-to-the-land.

C_j = average total cost of the program accruing to all households in the j^{th} subpopulation sample in a given fiscal period

r_1 = total net public revenue outlay made (first public revenue source) during the fiscal period by all persons residing in one household

R_1 = total amount of r_1 collected in the fiscal period

A_1 = total amount of R_1 appropriated to the program during the fiscal period

$$\bar{r}_{1j} = \frac{1}{n_{1j}} \sum_{i=1}^{n_{1j}} r_{1ji}$$

where:

r_{1ji} = total net public revenue outlay made (first public revenue source) during the fiscal period by all persons residing in the i^{th} household in the j^{th} subpopulation sample

n_{1j} = total number of observations on r_1 in the j^{th} subpopulation sample

The same computation is made for revenue sources "2" through "q" in order to determine the total cost of the program.

Derivation of the amount appropriated from a given revenue source is related to the appropriating level of government, the funds from which the appropriation is made (trust, nontrust) and deficit financing, if used. When the United States (federal) government makes a general fund appropriation in a year in which a budget deficit exists, the appropriation from a nondeficit revenue source (e.g., r_2) is the product of total general fund appropriations to the program of interest, times the ratio of federal government receipts to expenditures, times the ratio of household program payments to federal general fund deposits:

$$\begin{aligned} A_2 &= (\text{general fund appropriation to program}) \\ &\quad \times \left(\frac{\text{total federal receipts}}{\text{total federal expenditures}} \right) \\ &\quad \times \left(\frac{\text{household program payments}}{\text{federal general fund deposits}} \right) \\ &= (A) \left(\frac{R}{E} \right) \left(\frac{R_2}{T} \right) \end{aligned}$$

where:

R_2 = total amount of r_2 collected in a given fiscal period

A_2 = total amount of R_2 appropriated to the program in the fiscal period

A = total program appropriation from the federal general fund in the fiscal period

E = total federal expenditure in the fiscal period

R = total net budgetary receipts collected by the federal government in the fiscal period

T = total net federal budgetary receipts deposited in the federal general fund in the fiscal period

r₂ = total net public revenue outlay made (second public revenue source) during the period by all persons residing in one household

When the appropriating level of government is the State of Idaho, determination of the amount appropriated from a given revenue source depends on: (1) whether monies are appropriated from the general fund, federal funds or endowment funds; (2) the existence of a budget deficit; and (3) whether the appropriation includes dedicated revenues. The State's appropriation in a year of budgetary surplus to the program of interest from revenue source r₂ is the product of state general fund appropriations times the ratio of household program payments deposited in the state general fund to total state general fund deposits, plus revenue dedicated to the program:

$$A_2 = \left(\begin{array}{l} \text{general fund} \\ \text{appropriation} \\ \text{to program} \end{array} \right) \times \left(\frac{\text{household program payments deposited in state general fund}}{\text{total state general fund deposits}} \right)$$

$$+ \left(\begin{array}{l} \text{revenue} \\ \text{dedicated} \\ \text{to program} \end{array} \right) = (A) \left(\frac{R'_2}{T} \right) + a_2$$

where:

A = total program appropriation from the State general fund in a given fiscal period

R'₂ = total amount of R₂ deposited in Idaho's general fund in the fiscal period

T = total revenues deposited in Idaho's general fund in the fiscal period

a₂ = total amount of R₂ dedicated directly to the program of interest

r₂, R₂ and A₂ = same as in the previous formula

Some Boundary County property tax revenues are collected for specific purposes. Thus, when r₂ is defined as the amount of property tax revenues paid for one specific program, A₂ = R₂, and the average property tax contribution made by all households in the jth subpopulation sample to that program is \bar{r}_{2j} . Some property tax revenues are collected for specific types of activities but are appropriated to more than one program. Continuing the above example, the amount of R₂ appropriated to the program (A₂) is assumed to be proportional to the expenditures undertaken for that program from the fund in which R₂ was deposited.

PROGRAMS ANALYZED

Description of the Programs

The Boundary County Public Health Nurse Program

The major objective of the program is to help "... improve the level of public and community health for all citizens in the Panhandle Health District (District I, comprised of the 5 northernmost Idaho counties) . . . by providing services that are available, acceptable and accessible to all" (18). The major services provided through the Boundary County Public Health Office include blood and hearing tests, immunizations, consultations, home health care including visits to the Boundary County Restorium, public school health nurse duties, medical tests for children whose parents are on welfare, mother-baby clinics, and family planning clinics.¹

The U.S. Department of Health, Education and Welfare administratively oversees the Idaho Department of Health and Welfare, which in turn oversees Idaho's 7 district health departments. However, the specific operation of the district health departments is the responsibility of a board of health, whose members are appointed by the county commissioners of the counties included in each district (10). This complex administrative system is designed to facilitate delivery of health services consistent with the needs of the local communities.

Since cost data are not available at the county level for district health programs, the expenditure-benefits for the public health nurse program are based on District I output. We assumed that District I's public health nurse program total costs included a proportional share — one-seventh — of the total Idaho Department of Health and Welfare general administration costs. Costs categorized as (1) nursing, (2) home care, (3) family planning, and (4) that fraction of the total District I administrative costs attributable to these three functions were included.

Monies for the public health nurse program came from the following sources: (1) Partnership in Health Congressional appropriation (314-D appropriation), (2) Maternal Child Health Congressional appropriation (M.C.H. appropriation), (3) Family Planning grant (federal revenue), (4) Solid Waste grant (federal revenue), (5) Idaho Health District general fund appropriation, (6) county appropriations (from property taxes and returned sales tax revenue), and (7) money earned by the District.²

Boundary County Restorium

The Restorium was described by its manager as "... a board and room home rather than a nursing home. The county does some maintenance on the home and pays the managers some money every month . . . It is a . . . home for people not quite able to manage a home by themselves, but who do not need to be in a nursing home" (17). The facility provides rooms, with adequate kitchen and laundry facilities. The Restorium manager makes sure its residents receive medical attention when necessary, all at relatively low monthly rates.

Public costs only were included in computing Restorium expenditure-benefits; payments made by Restorium residents were not included. Appropriations to the Restorium came from property taxes and sales tax revenue returned to Boundary County (16).

Boundary County Indigent Assistance Program

The Indigent Assistance program is designed to provide immediate short-term assistance to persons unable to obtain help from other sources. Assistance, made available at the discretion of county officials, may include cash payments, groceries, gasoline, medicine, doctor services, hospital services, and burial services. As with the Restorium, appropriations to the indigent assistance program were made from property and sales tax revenues.

¹Letch, Millie Jean, Boundary County Public Health Nurse. Personal interview. Bonners Ferry, Idaho, June 4, 1975.

²Belmont, Larry M., Director of Panhandle Health District I. Personal interview. Coeur d'Alene, Idaho, August 28, 1975.

Department of Health and Welfare Financial and Medical Assistance Program

Five financial assistance programs and one medical assistance program are provided through the combined efforts of federal, state and county governments. These programs are: Old Age Assistance (OAA) Aid to the Blind (AB), Aid to the Permanently and Totally Disabled (APTD), Aid to Families with Dependent Children (AFDC), Food Stamp program, and the medical assistance program (Medicaid). The OAA, AB, APTD and AFDC programs provide cash payments to the aged, the blind, disabled adults, and mothers with dependent children. These cash payments are made to cover basic living expenses when household income is below a certain level. The Food Stamp program allows qualified persons to purchase food stamps at a price ranging from zero to near-full value, depending on the individual's income (10).

The medical assistance program (Medicaid) provides direct reimbursement to medical enterprises, including nursing homes, for goods and services rendered to recipients and costs of transporting recipients to and from medical centers. In addition, Medicaid may pay up to \$20 per month for a recipient's prescription drugs. Medicaid also provides periodic medical services, including eyeglasses, hearing aids, and dental care for children under the age of 21 if their household receives OAA, AFDC, APTD, or AB financial assistance (10).

The U.S. Department of Health, Education and Welfare determines the objectives and guidelines of the OAA, AB, AFDC, APTD and Medicaid programs. The Idaho Department of Health and Welfare administers certification and distribution of assistance payments through its local community offices (24). The objectives and guidelines of the Food Stamp program are determined by the U.S. Department of Agriculture, while certification processes are the responsibility of the Idaho Department of Health and Welfare (24). The Food Stamp program is implemented at the option of each county in the United States, and has been in operation in Boundary County since February 2, 1974. Distribution of the stamps in Boundary County is currently undertaken by the County Treasurer.

Total costs of the Idaho Department of Health and Welfare financial and medical assistance programs are of three major types. The first type, general administrative costs, includes general management, legal services, financial administration, district directors, and staff training. The second type, support costs, includes the costs of determining program eligibility, processing eligible recipients, and rent and utilities of community facilities. The third type is the actual net public assistance payments, sometimes referred to as bonus payments.

The state and federal government appropriations to the Department of Health and Welfare program

came from their respective general funds. Boundary County's appropriation was composed of property tax and returned Idaho sales tax revenue (15).

Boundary County Public Schools

The 7 public schools in Boundary County are administered by District No. 101. Instruction for students in grades 1-12 is augmented by library resources, health services, school lunch program, and daily pupil transportation system. In addition, the District provides a drivers' training program, special attention for handicapped students, special education programs (for children from low income and AFDC families and foster homes), Indian education, adult basic education, and adult training in welding, sewing and woodworking (22). While the United States Department of Health, Education and Welfare provides administrative oversight for all state departments of education, the Idaho Department of Education and District No. 101 have the major administrative responsibilities.

The analysis of the public school program includes only costs accrued by District No. 101. These have been categorized as (1) student transportation (including 21 bus routes), (2) life skills, (3) school lunch, (4) special education, (5) Indian education, (6) vocational education, (7) adult education, and (8) general education (costs not listed elsewhere, in most cases those incurred on behalf of all students).

Boundary County revenues appropriated to School District No. 101 consisted of property taxes and returned Idaho sales tax revenues deposited in the school fund (15). Hot school lunch payments provided a source of nontax revenue, with the prices charged dependent on family income. The price categories were: (1) student, free; (2) student, reduced cash, \$.20/meal; (3) student, cash, \$.45/meal; and (4) adult, cash, \$.55/meal.

During the 1974 fiscal year, School District No. 101 received federally-appropriated revenues categorized as: (1) Public Law 874 (for federally affected areas), (2) Vocational education, (3) Adult education, (4) School hot lunch, (5) Title I, E.S.E.A., (6) Title II, E.S.E.A., (7) Title VI, E.S.E.A., and (8) Indian education (22). Federal forest money, based on stumpage of timber harvested from federal forests, was also allocated to School District No. 101 but was not included in this analysis because of the difficulty of calculating this on a household basis.

The major sources of state appropriations to public schools were: (1) general fund revenue, 79.3%; (2) federal revenue sharing money (federal general fund revenue), 11.0%; (3) endowed interest, 6.4%; (4) income earned from leasing school property and land, and railroad car taxes, 2.4%; and (5) royalties paid on minerals taken from state land, 0.9%³.

³Reid, Garth O., Finance Department, Idaho State Department of Education. Personal interview. Boise, Idaho, July 21, 1975.

Boundary County Public Library

The public library provides the general public with books, magazines, audio recordings, displays, and browsing facilities. The library collections is comprised of more than 13,000 books, including "... one of the finest collections of historical and out of print books in northern Idaho. There are over 100 volumes in this collection" (17). Administrative responsibilities for the Boundary County Public Library are shared by the Idaho State Library and county officials.

The expenditure-benefit model includes only non-construction costs, since it was not feasible to determine federal and state costs involved in library construction and administrative assistance. The library appropriation came from property tax revenues and returned Idaho sales tax revenues (15). No attempt was made to determine the average per household library fine. State and federal nonconstruction appropriations to all state library systems, of which the Boundary County Public Library is a part, came from their respective general funds. The federal government's appropriations are Title I, L.S.C.A. and Title II, L.S.C.A.

Boundary County Airport

The Boundary County airport is a lighted, asphalt surface, single-runway facility. It is available to the general public, with operations overseen by county officials. Mechanical services, fuel, tie downs, charter services, and pilot instruction are available. Airport appropriation consisted of property taxes and returned Idaho sales tax revenue (16).

Boundary County Rural Solid Waste Program

Rural solid waste disposal service is provided through contractual arrangement with a private firm. The service provides large waste containers, located

throughout the county for the convenience of depositors, the contents of which are emptied and placed in landfills maintained by the contracting firm. While the contract is with a private firm, the solid waste fees are assessed and collected by the county from its residents according to property ownership. This program's cost model estimates the average total public revenue outlay made to the program by households through their \$1 per month solid waste fee payment. This fee accounts for the total appropriation to the Rural Solid Waste program (16).

Revenue Sources

The previous section gives the sources of each program's revenue received from the three major levels of government. All three collect revenues by one or more of the following techniques: (1) taxing various bases, including income, wealth and economic transactions; (2) user prices; (3) administrative revenues; and (4) public debt (9). The specific revenue-gathering techniques used depends upon that level of government's authority, tradition, which programs are being financed, and the desire to regulate expenditures on certain goods and services, among other considerations.

Federal budgetary receipts during fiscal year 1974 were of two general types: (1) earmarked tax revenues and (2) all other tax revenues and nontax revenues. These general types of revenue were deposited in trust funds and the general fund, respectively (8). The federal government's general fund is assumed to include all federal net budget receipts from which all nontrust program grants and appropriations are made. Table 1 shows the sources of federal budgetary receipts for the 1974 fiscal year, the federal funds in which the receipts were deposited, and the percentage of the general fund by type of budgetary receipt.

Table 1. Sources of total new federal budgetary receipts and percentage distribution among federal funds, fiscal year 1974.

Source of net federal budget receipts	General fund (000)	Percentage of general fund	Trust fund (000)
Individual income taxes	\$118,951,631	65.7	
Corporate income taxes	38,619,654	21.3	
Social insurance taxes and contributions			\$76,780,053
Miscellaneous excise taxes	9,743,249	5.4	
Airport & airway trust fund			840,110
Highway trust fund			6,260,309
Estate and gift taxes	5,034,641	2.8	
Customs duties	3,334,139	1.8	
Miscellaneous receipts	5,368,614	3.0	
TOTAL	\$181,051,928	100.0	\$83,880,472
GRAND TOTAL	\$264,932,401,000		

Source: (8).

All federal grants and appropriations made during fiscal year 1974 to the nontrust programs examined in this study consisted of general fund monies and money borrowed from the public. We assumed that public debt required to finance the \$3,459,582,609 federal deficit was equally distributed among all government expenditures; thus 1.3 cents of every federal dollar expended in fiscal year 1974 was money borrowed from the public (8).

All monies received by the Idaho State Treasurer during the 1974 fiscal year were deposited in one or more of the state's 359 trust, endowment, or dedicated funds (sometimes referred to as special funds), or in the general fund. The special funds are used by designated departments and agencies, while the general fund is used as designated in Idaho legislative appropriation acts. Table 2 shows the major sources of budgetary receipts during fiscal year 1974 by all state agencies, and their distribution.

Boundary County's fiscal year begins on January 14 and the budget must be adopted by the second Monday of February. The budget specifies the funds from which expenditures are to be made, and the tax rates necessary to raise the required revenue (12). Expenditures cannot exceed estimated revenues plus fund balances. Table 3 shows the amount and percentage, by major revenue sources, of Boundary County receipts during the 1973 and 1974 fiscal years.

Table 4 shows the Boundary County tax rates or levies per \$100 assessed valuation and the total property tax revenues collected by tax districts in 1973 and 1974. The school, library and county tax districts and Boundary County are geographically identical; thus, the levies apply to all taxable property in the county.⁴

⁴Hall, Marilyn, Boundary County Treasurer. Personal interview. Bonners Ferry, Idaho, August 26, 1975.

Table 2. Sources of total net Idaho state budgetary receipts and percentage distribution among state funds, fiscal year 1974.

Revenue Sources	General fund	% of general fund	Special fund	Totals
Income tax, individual	\$ 75,087,560	42.6	\$ 17,041,511	\$ 92,129,070
Income tax, corporate	18,980,305	10.8	4,095,665	23,075,970
Sales tax	49,250,094	27.9	20,583,252 ¹	69,833,346
Cigarette tax	6,474,905	3.7	964,975	7,439,880
Beer tax	1,792,938	1.0	896,469	2,689,407
Car company ad valorem tax			85,121 ²	85,121
Insurance premium tax	6,965,978	3.9		6,965,978
All other taxes	1,208,273	0.7	50,395,600	51,603,873
Total other revenue receipts ³	9,505,023	5.4	264,385,720	273,890,742
Total non-revenue receipts ⁴	<u>7,134,060</u>	<u>4.0</u>	<u>158,846,047</u>	<u>165,980,108</u>
Total revenue and non-revenue receipts	\$176,399,136	100.0	\$517,294,360	\$693,693,495

¹ The \$20,553,252 is allocated as follows: \$340,660 to the sales tax refund fund; \$4,894,103 to the social security trust fund; \$950,000 to the public school income fund; \$13,898,489 to counties; and \$500,000 to the state building fund.

² Allocated to the public school income fund.

³ Revenues collected as administrative revenues.

⁴ Revenues collected as user prices.

Sources: (21,26).

Table 3. Sources and totals, net Boundary County budgetary receipts fiscal years 1973, 1974

Sources of revenues	Net budgetary receipts, 1973	% of total net budget receipts, 1973	Net budgetary receipts 1974	% of total net budget receipts 1974
Property taxes and charges	\$1,264,718	50.9	\$1,347,740	43.6
Federal forest allocation	334,205	13.4	666,191	21.5
Highway user taxes and fees	21,018	0.8	163,834	5.3
Federal revenue sharing	122,178	4.9	162,337	5.3
Returned sales tax (Inventory Phaseout tax)	104,439	4.2	117,099	3.8
Apportionment to reduce levy			71,358	2.3
Liquor application	21,471	0.9	36,124	1.2
All other tax and nontax revenues	617,645	24.8	527,296	17.1
TOTAL	\$2,485,674	100.0*	\$3,091,979	100.0*

*Rounding error of 0.1%
Source: (15,16).

Table 4. Boundary County property tax levies and collections, fiscal years 1973 and 1974

Tax Districts & Programs	Levy on \$100 1973	Levy on \$100 1974	1973 amount	1974 amount
County Levies				
Current expense	1.30	1.31	\$172,429	\$199,669
Road & Bridge	.55	.45	73,011	68,833
State Highway	.14	.20	18,585	30,315
County School	.82	.39	109,179	60,263
Fair	.13	.12	17,241	17,580
Indigent	.10	.10	13,290	15,251
Nursing home indigent	.28	.22	37,173	33,649
Airport	.16	.13	21,239	19,910
Veterans Mem.	.02	.01	2,009	1,843
Bounty	.01	.01	1,320	1,530
Nursing home bond	.04	.03	4,649	4,602
Noxious weed	.05	.05	6,631	6,847
Hospital maint.	.04	.04	5,695	6,127
Public health	.17	.14	21,841	21,378
Re-Valuation	.13	.12	17,223	17,580
Parks	.04	.04	5,589	6,125
Hospital bond			45	
Solid waste			35	
Total county	3.97	3.35	527,184	511,503
Mosquito abatement levy	.05	.05	1,425	1,589
Library levy	.20	.22	26,508	33,489
Bonnors Ferry	2.46	2.82	55,499	73,052
Moyie Springs	.88	.58	4,448	4,831
School District No. 101	3.98	3.79	527,422	578,158

Sources: (15,16).

A total of \$24,372 was collected from the rural solid waste charge in fiscal 1974. This was collected as a \$12 annual solid waste fee, charged to the land owner for each inhabited house or trailer house. If there was no house on the property, the owner was assessed the \$12 fee on one parcel of land (2).

Table 5 summarizes for each of the eight programs: (1) services from which expenditure-benefits are derived, (2) fiscal periods in which expenditure-benefits are estimated, and (3) funds and ultimately the types of tax and nontax government revenue that financed the program.

Data Source and Sample Design

Secondary data were available for: (1) total expenditures, costs, or appropriations for each

program; (2) the level of government making program revenues available; (3) the total amount dedicated and/or appropriated to each program by each level of government; (4) the fund from which the revenues were appropriated or dedicated; (5) the types and total amounts of revenues deposited in relevant funds; (6) the total amounts of each type of revenue collected by each level of government; (7) the total net budgetary receipts collected by each level of government; (8) the total expenditures made by each level of government, and (9) total output or consumption of each program.

Data not available from secondary sources were collected from Boundary County's rural households by a personal interview sample survey. Information obtained included: (1) public program participation or use, (2) tax and other payments made to public agencies, (3) number of bottles of beer and packages

Table 5. Fiscal period, services included, and the sources of program revenues of eight boundary county public programs.

Program	Program dates	Services included	Revenue sources (program costs)		
			federal	state	local
Pub. Health Nurse	Fiscal 1974*	nursing home care family planning administration	general fund	general fund	Property tax Returned sales tax
Restorium	Calendar 1974**	room & board personal assistance			Property tax Returned sales tax
Indigent Assist.	Calendar 1974	food cash medical asst. gasoline burial services			Property tax Returned sales tax
Dep't of Health & Welfare	Fiscal 1974	OAA, AB, APTD, AFDC, FS & Medicaid pmts. administration support costs	general fund	general fund	Property tax Returned sales tax
Public School	Fiscal 1974	school lunch transportation Indian ed. adult basic ed. vocational ed. special ed. life skills	general fund	general fund	Property tax Returned sales tax School lunch outlay
Public Library	Fiscal 1974	books magazines	general fund	general fund	Property tax Returned sales tax
Airport	Calendar 1974	takeoffs and landings			Property tax Returned sales tax
Rural solid waste	Calendar 1974	rural waste depositories			Property tax

* July 1, 1973- June 30, 1974

** January 14, 1974-January 13, 1975

of cigarettes purchased, (4) expenditures for personal consumption and household goods, construction, recreation equipment, and farm inputs, and (5) subsidiary data. Items (2) through (4) documented household income, property, sales, and excise taxes, and school lunch payments. The last category of primary data included the age of each adult household member and each household's adjusted gross income, from which subpopulation averages were derived.

A one-in-k randomized sample survey design was chosen, specifying that a sample be obtained by randomly selecting one element from the first k elements in the frame and every kth element thereafter. In order to draw a systematic sample of n elements from a population of size N, k must be less than or equal to $\frac{N}{n}$. The formula used to determine sample size (14) was:

$$n = \frac{Npq}{(N-1)\frac{B^2}{4} + pq}$$

where: n = sample size
 N = size of total population
 p = estimate of the population proportion
 q = 1-p
 B = bound on the error of the estimator

Based on estimates of (1) 10% back-to-the-land people in the rural population; (2) an average of 3.96 persons in rural households (29); and (3) a 1975 Boundary County population of 6510 (13), we cal-

culated that 12.5% (p) of 1312 (N) households presently provided with rural mail service were in the back-to-the-land subpopulation. The resources available necessitated a relatively small sample; a 6.0% bound on the error of the estimator (B) was accepted. Using the above data, n = 111.3 and k = 11.8, rounded to 12.

The sample starting point was changed for each of the 5 rural mail routes when interviewing. This reduced the possibility of choosing observations from the same relative position in the periodic population by, in effect, shifting the elements of the population (14).

Designation of the subpopulation category for each sample unit was made from interview information. After three unsuccessful attempts on different days to obtain an interview, the next household in the direction the houses were initially counted was approached in its place. This procedure was followed until an interview was obtained.

When it became obvious that few back-to-the-land households were included in the initial sample, all other known back-to-the-land households were interviewed and their responses designated as oversample data. The oversampling of the back-to-the-land population was necessary to achieve a minimum number of observations from this group, even though not consistent with the randomized sampling design. The initial sample consisted of 9 back-to-the-land households and 78 conventional rural households. The oversample consisted of 26 interviews, for a total of 35 back-to-the-land observations and a grand total of 113 interviews completed.

RESULTS OF THE STUDY

Characteristics of the Boundary County Rural Population

Information obtained in the sample survey revealed some of the contrasts in demographic and economic characteristics of conventional and back-to-the-land rural households. The estimated 10 percent back-to-the-land composition of the Boundary County rural population was substantiated by the survey. On this basis approximately 427 of the 1974 total rural population of 4,134 were back-to-the-land people.

The average age of adults in conventional rural households was 42.6 years, 15 years older than in back-to-the-land households. This is consistent with the average number of school enrollees in grades 1 through 12: nearly 1 per household for conventional people versus one-sixth in back-to-the-land households.

Conventional rural households paid more in each of the four major types of taxes (federal income, state income, sales and property) in 1973 than did the back-to-the-land group. The higher conventional household average adult age, number of school enrollees and tax payments are each statistically significant (t-test, 1% level).

Adjusted gross income averaged nearly \$13,000 in conventional rural households in 1973 compared to about \$5,750 in back-to-the-land households. The difference of \$7,234 is statistically significant at the 5 percent probability level. This leads to rejection of the hypothesis that incomes are equal in the two subpopulations. Selected population characteristics are presented in Table 6.

Expenditure-Benefit and Cost Values for Programs

The inputs derived to satisfy the expenditure-benefit model for each of the 8 programs, including the 9 Department of Health and Welfare and 28

Public School subprograms, are shown in Table 7. Units of output are defined and recorded in total (Q) and as average output consumed per conventional household (X_1) and back-to-the-land (X_2). Total dollar cost is given (TC). Mean expenditure-benefits of 6 programs were estimated with the same degree of precision for the two household categories. For the public school program (except school bus No. 25

Table 6. Selected demographic and economic characteristics of Boundary County conventional rural and back-to-the-land sample households.

Characteristic (Unit)	Conventional rural households	Back-to-the-Land households
1974 rural population proportions (%)	89.66	10.34 ¹
1974 adults' average age (years)	42.6 *	27.5
1973-74 public school enrollees (no./household)	0.94*	0.17
1973 adjusted gross income (\$/household) ²	12,985.00**	5,751.00
1973 individual tax payments (\$/household)		
Federal income	777.43*	319.21
Idaho income	168.41*	38.54
Idaho sales	233.62*	116.72
General property ³	301.52*	94.94

¹Error of estimator is $\pm 6.29\%$ at a 95% level of significance.

²All monetary receipts less federal transfer payments, death payments, gifts, inheritances, certain types of income, and farm production expenses.

³Boundary County real property taxes.

*Statistically different at 1% level of significance.

**Statistically different at 5% level of significance.

Table 7. Values and appropriate 95% confidence limits of the variables specified by the 8 Boundary County program expenditure-benefit models.

Program	Sub-program/Unit of output	Q	TC	\bar{X}_1	Conf. limits for \bar{X}_1 left/right	\bar{X}_2	Conf. limits for \bar{X}_2 left/right
		(total prog. or subprog. output)	(total prog. or subprog. dollar cost)	(average output consumed by conv. rural households)		(ave. output consumed by b.t.t.l. households)	
Pub. Health Nurse	person contacts	36,797	352,820	0.67	0.23/1.10	0.31	0.03/0.60
Restorium	residents	26	6,772	0.03	-0.01/0.06	0	---
Indigent Assist.	recipients	79	9,853	0.04	-0.02/0.09	0.06	-0.02/0.14
Dept. of Health & Welfare	OAA, AB, APTD & AFDC gen. ad. & support/state asst. pmts.	286,518	4,737,925	1.17	1.03/1.30	0.34	-0.35/1.04
	Bo. County OAA asst. pmts.	282	14,658	0.42	-0.22/1.07	0	---
	Bo. County AB asst. pmts.	12	1,452	0	---	0	---
	State APTD asst. pmts.	225	14,821	0.26	-0.25/0.76	0.34	-0.35/1.04
	Bo. County AFDC asst. pmts.	1,728	89,656	0.49	-0.43/1.40	0	---
	FS gen. ad. & support/state bonus pmts.	85,816	121,570	0.26	0.03/0.49	1.14	0.48/1.81
	Bo. County FS asst. pmts.	579	36,137	0.26	0.03/0.49	1.14	0.48/1.81
	Medicaid gen. ad. & support/state asst. pmts.	186,631	3,265,942	0.59	-0.34/1.52	0	---
	Bo. County medicaid asst. pmts.	1,507	111,633	0.59	-0.34/1.52	0	---
	Public school	gen. ed / students	1,564	1,174,303	0.94	0.64/1.23	0.17
life skills/students		6	12,242	0.01	0.01/0.01	0	---
special ed./students		914	21,452	0.05	0.00/0.10	0	---
Indian ed./students		24	4,938	0	---	0	---
Adult ed./students		30	432	0	---	0	---
Vocational ed./students		81	9,738	0.26	0.22/0.29	0	---
bus no. 1/rides		14,040	3,579	1.85	-1.81/5.50	0	---
bus no. 2/rides		6,120	2,898	0	---	0	---
bus no. 3/rides		10,440	3,487	18.46	-3.67/40.60	10.29	-10.63/31.20
bus no. 5/rides		5,040	3,519	4.61	-14.52/13.75	0	---
bus no. 6/rides		12,780	3,465	32.31	-2.55/67.17	0	---
bus no. 7/rides		20,160	3,237	12.46	-1.77/26.70	0	---
bus no. 8/rides		13,140	4,037	36.92	-1.19/75.04	10.29	-10.63/31.20
bus no. 9/rides		4,680	3,234	0	---	0	---
bus no. 10/rides		6,660	3,190	0	---	0	---
bus no. 11/rides		14,580	3,266	18.46	-10.32/47.24	0	---
bus no. 14/rides		11,160	4,279	31.38	-9.79/72.56	0	---
bus no. 15/rides		12,240	3,767	41.54	-1.55/84.63	0	---
bus no. 16/rides		3,780	3,271	9.41	-3.42/22.24	0	---
bus no. 17/rides		2,340	3,363	9.23	-9.04/27.50	0	---
bus no. 18/rides		720	2,986	0	---	0	---
bus no. 19/rides		14,580	3,419	20.31	-16.37/56.99	0	---
bus no. 20/rides		12,060	3,362	23.08	-4.02/50.17	0	---
bus no. 23/rides		17,820	3,590	11.08	-7.51/29.66	0	---
bus no. 24/rides		13,140	3,248	4.62	-4.52/13.75	0	---
bus no. 25/rides		12,060	3,502	6.92	-3.24/17.08	41.14	-8.82/91.12
bus no. 26/rides		11,880	3,341	27.69	-6.14/61.53	0	---
school lunches	105,528	68,962	98.83	56.94/140.73	15.77	-7.33/38.87	
Public library	books & materials	37,250	28,132	60.03	28.82/91.24	36.53	18.27/54.80
Airport	takeoffs and landings	4,000	20,902	0.62	-0.03/1.26	0	---
Rural Solid Waste	person months	24,360	28,407	7.30	6.11/8.48	8.00	6.19/9.81

Sources: (1,11,16,18,19,20,22,24,25, and personal interviews.)

subprogram) and the library program, output consumption was estimated more precisely for back-to-the-land households.

Program values for the cost model are recorded in Table 8. Included in the table are the dollar amounts of revenue appropriated (A) and collected (R) for each of the 8 programs from each of the 11 sources (4 types of federal taxes, 5 state taxes, county property tax, and school lunch payments). The average household outlay or payment (\bar{r}) made to each program through each type of tax (plus school lunch) is given for the conventional (I) and back-to-the-land (II) sectors of the rural population. Ninety-five percent confidence intervals on the \bar{r} values for given programs and types of payments show small differences between the conventional and back-to-the-land households, indicating similar precision in the cost estimates.

Estimated Expenditure-Benefits and Costs

The largest expenditure-benefits (EB, Table 9) accrued to conventional rural households from the Public School program (\$904) and the Department of Health and Welfare program (\$159). Back-to-the-land households had annual expenditure-benefits of \$157 and \$101, respectively, from these two programs. With the exception of the Public Library, with expenditure-benefits of \$46 and \$28 for conventional and back-to-the-land households respectively, expenditure-benefits for the remaining programs were each less than \$10. Expenditure-benefits for back-to-the-land people from the Restorium and Airport programs were zero, these programs were not used by this group.

The total program expenditure-benefits that accrued from all 8 programs to the average conventional rural household exceeded those to the average back-to-the-land household by \$832 (Table 9). Expenditure-benefits accruing to conventional rural households from six programs — Public School, Department of Health and Welfare, Public Library, Restorium, Public Health Nurse and Airport — exceeded those of back-to-the-land households. Expenditure-benefits that accrued to back-to-the-land households for the Indigent Assistance and Rural Solid Waste programs exceeded those of conventional rural households.

Public School and Department of Health and Welfare programs had the highest per household costs (C, Table 9). The cost of each program to the average back-to-the-land household was less than to the average conventional rural household (except for the Rural Solid Waste program where they were equal). The total cost of all 8 programs to conventional rural households exceeded those to back-to-the-land households by \$301.

Income Distribution Effects of Programs

Expenditure — Benefit/Cost Ratios

Table 9 also shows the ratio of expenditure-benefits to costs (EB/C) for each of the 8 programs for both conventional rural and back-to-the-land households.

EB/C ratios ranged from 0.62 to 5.68 for conventional and from zero to 10.15 for back-to-the-land households. The EB/C ratios for all 8 programs combined demonstrate that for every dollar paid, the real income of conventional rural and back-to-the-land households was increased by \$2.38 to \$1.72, respectively, a difference of \$.66 per No. 1 cost. This leads to rejection of the primary hypothesis of this study: that the expenditure-benefit/cost ratios of the programs examined are equal to 1.0 for both subpopulations.

The expenditure-benefit/cost ratio shows the level of program benefits in relation to program costs. The inverse ratio (cost/expenditure-benefit) reveals program costs as a proportion of benefits derived. The cost/expenditure-benefit ratios of the eight programs are 0.42 and 0.58 for the conventional rural and back-to-the-land subpopulations, respectively. This indicates that the back-to-the-land group paid 16% more program costs in relation to benefits derived than did conventional rural households.

Net Expenditure — Benefits

Net expenditure-benefits (EB-C) reveal the dollar amount of income redistributed annually per household through the programs. Total net benefits of the 8 programs was \$659 for conventional households and \$128 for back-to-the-land households (Table 9).

The largest amount of real income was redistributed to the average conventional rural household through the Public School program. Less than \$10 real income was redistributed from the average household in this subpopulation through the Public Health Nurse, Rural Solid Waste, and Airport programs combined.

In comparison, the largest amount of real income was redistributed to the average back-to-the-land household through the Department of Health and Welfare program. About \$5 real income was redistributed from the average back-to-the-land household through the Rural Solid Waste, Airport, Public Health Nurse and Restorium programs, combined.

More real income was redistributed to the average conventional rural household than to the average back-to-the-land household through the Public School, Department of Health and Welfare, Public Library and Restorium programs. More real income was redistributed to back-to-the-land households than to conventional households through the Indigent Assistance program.

Table 8. Values and appropriate 95% confidence limits¹ of the variables specified by the 8 Boundary County program cost models.

Variable ²	Pub. Health Nurse	Restorium	Indigent Assist.	Dept. of Health & Welfare	Public School	Public Library	Airport	Rural Solid Waste
A ₁	\$ 488,261,477	\$	\$	\$ 7,290,322,249	\$ 2,472,453,685	\$ 30,318,188	\$	\$
A ₂	160,595,272			2,366,969,009	802,738,349	9,283,332		
A ₃	20,937,389			308,590,353	104,655,916	1,283,332		
A ₄	13,852,857			204,394,336	69,319,021	850,017		
A ₅	554,530			6,350,667	25,667,901	76,535		
A ₆	146,173			1,605,309	6,488,280	19,346		
A ₇	547,408	534	218,497	4,165,448	5,230,078	85,151	44,236	
A ₈	47,823			547,685	2,213,613	6,600		
A ₉	13,236			151,579	612,648	1,827		
A ₁₀	14,768	5,107	7,430	1,868	636,601	26,508	17,792	24,372
A ₁₁					32,094			
R ₁	118,951,631,000			118,951,631,000	118,951,631,000	118,951,631,000		
R ₂	38,619,654,000			38,619,654,000	38,619,654,000	38,619,654,000		
R ₃	5,034,641,000			5,034,641,000	5,034,641,000	5,034,641,000		
R ₄	3,334,139,000			3,334,139,000	3,334,139,000	3,334,139,000		
R ₅	92,129,070			92,129,070	92,129,070	92,129,070		
R ₆	23,075,970			23,075,970	23,075,970	23,075,970		
R ₇	69,833,346	69,833,346	69,833,346	69,833,346	69,833,346	69,833,346	69,833,346	
R ₈	7,439,880			7,439,880	7,439,880	7,439,880		
R ₉	2,689,407			2,689,407	2,689,407	2,689,407		
R ₁₀	21,841	15,251	15,251	13,290	636,601	26,508	20,902	24,372
R ₁₁					32,094			

¹ The 95% confidence limits for each sample mean are shown in brackets as (left limit/ right limit). Once the limits for a sample mean are given, they are not repeated in other columns (when the mean is the same).

- ² A = total public revenue appropriated
 R = total public revenue collected
 \bar{r} = household's average public revenue outlay
 1 = federal individual income tax
 2 = federal corporate income tax
 3 = federal estate and gift taxes
 4 = federal customs duties
 5 = Idaho individual income tax
 6 = Idaho corporate income tax
 7 = Idaho sales tax
 8 = Idaho cigarette tax
 9 = Idaho beer tax
 10 = Boundary County property tax
 11 = School District No. 101 hot lunch outlay

Table 8. Cont'd.

Variable ²	Pub. Health Nurse	Restorium	Indigent Assist.	Dept. of Health & Welfare	Public School	Public Library	Airport	Rural Solid Waste
$\bar{r}_{1,I}$	\$777.43 (750.92/803.94)	\$	\$	\$777.43	\$777.43	\$777.43	\$	\$
$\bar{r}_{2,I}$	0			0	0	0		
$\bar{r}_{3,I}$	11.41 (9.10/13.72)			11.41	11.41	11.41		
$\bar{r}_{4,I}$.64 (0.50/0.78)			.64	.64	.64		
$\bar{r}_{5,I}$	168.41 (161.80/175.02)			168.41	168.41	168.41		
$\bar{r}_{6,I}$	0			0	0	0		
$\bar{r}_{7,I}$	233.62 (227.84/239.40)	233.62	233.62	233.62	233.62	233.62		
$\bar{r}_{8,I}$	22.14 (21.20/23.07)			22.14	22.14	22.14		
$\bar{r}_{9,I}$	3.53 (3.36/3.70)			3.53	3.53	3.53		
$\bar{r}_{10,I}$	6.11 (5.87/6.35)	4.48 (4.22/4.53)	4.48	3.70 (3.56/3.85)	177.04 (170.09/184.00)	7.38 (7.08/7.66)	5.63 (5.43/5.81)	12.00 (12.00/12.00)
$\bar{r}_{11,I}$					34.27 (34.07/34.46)			
$\bar{r}_{1,II}$	319.21 (294.94/343.48)			319.21	319.21	319.21	319.21	
$\bar{r}_{2,II}$	0			0	0	0		
$\bar{r}_{3,II}$	0			0	0	0		
$\bar{r}_{4,II}$	0			0	0	0		
$\bar{r}_{5,II}$	38.54 (34.82/42.26)			38.54	38.54	38.54	38.54	
$\bar{r}_{6,II}$	0			0	0	0		
$\bar{r}_{7,II}$	116.72 (112.49/120.95)	116.72	116.72	116.72	116.72	116.72	116.72	
$\bar{r}_{8,II}$	16.74 (10.91/22.57)			16.74	16.74	16.74		
$\bar{r}_{9,II}$	7.72 (7.07/8.37)			7.72	7.72	7.72		
$\bar{r}_{10,II}$	1.92 (1.72/2.13)	1.24 (1.11/1.37)	1.24	1.17 (1.04/1.29)	55.90 (49.88/61.92)	2.33 (2.08/2.58)	1.62 (1.45/1.79)	12.00
$\bar{r}_{11,II}$					2.86 (2.04/3.68)			

I = conventional rural subpopulation sample

II = back-to-the-land subpopulation sample

Sources: (2,3,5,7,8,11,14,15,16,21,24,26, and personal interviews.)

Educational programs (Public school and Public Library) resulted in net benefits of \$574 to conventional rural households and \$57 to back-to-the-land households. For public income maintenance programs (Indigent Assistance and Department of Health and Welfare), real income totalling \$88 and \$76 was redistributed to conventional and back-to-the-land households, respectively. When the Public Health Nurse, Restorium, Airport and Rural Solid Waste programs are grouped as "all others", this category redistributed \$4 real income from conventional households and \$5 from back-to-the-land households.

Sources of redistributed income

This study has shown that (1) both rural subpopulations experienced an increase in real income through the public programs examined, and (2) 7 of the 8 programs were financed by 2 or more tax sources. Thus the programs served as vehicles through which income was redistributed from nonrural Boundary County taxpayers and taxpayers residing in other areas of the United States. The sources of real income redistributed to or from each subpopulation by each program were categorized (1) Boundary County property tax revenues and (2) all other revenues. (We assumed that only Boundary County property taxes were expended for Public Health Nurse and Department of Health and Welfare programs in Boundary County.) Table 10 shows the amount of exclusively local tax revenue and of other

revenue that was redistributed to and from each subpopulation by each program.

The \$659 real income redistributed to the average conventional rural household was composed of \$129 or 20% Boundary County property tax revenues and \$530 (80%) revenues categorized as "all other". The \$128 redistributed to back-to-the-land households was composed of \$32 (25%) Boundary County property tax revenues and \$96 (75%) "all other revenues". Thus, while more local property tax revenues and more other revenues were redistributed to conventional households than to back-to-the-land households, the sources of redistributed income were in nearly the same proportion for both groups.

Of Boundary County property tax revenues redistributed to conventional rural and back-to-the-land households, 98 and 92% respectively, came from the Public School and Public Library programs. The distributional impacts were \$5 or less for each of the remaining six programs and nearly offsetting in total. Thus, rural income was increased and Boundary County nonrural income decreased through educationally related programs as they redistributed local property tax revenue from the latter to the former.

For conventional rural households, 84% of the total real income gain from "all other revenue" sources came through public schools; for back-to-the-land households, 71% came from health and welfare. Thus, Boundary County rural income was increased and the real income of taxpayers residing in non-

Table 9. Estimated expenditure-benefits, costs, ratio of expenditure-benefits to costs, and net expenditure-benefits for 8 Boundary County public programs for an average household in back-to-the-land and conventional rural subpopulation samples.

Program	Conventional rural				Back-to-the-land			
	EB	C	EB/C	EB - C	EB	C	EB/C	EB - C
Pub. Health Nurse	\$ 6.390	\$ 10.358	0.617	\$ (3.968)*	\$ 3.010	\$ 3.896	0.773	\$ (0.886)
Restorium	6.668	1.465	4.552	5.203	0	0.417	0	(0.417)
Indigent Assist.	4.802	2.856	1.681	1.946	7.121	.968	7.356	6.153
Dep't. of Health & Welfare	158.823	72.270	2.198	86.553	101.210	31.009	3.264	70.201
Public School	903.765	366.958	2.243	536.807	157.458	125.047	1.259	32.411
Public Library	45.623	8.038	5.676	37.585	27.763	2.736	10.147	25.027
Airport	3.216	4.927	0.653	(1.711)	0	1.446	0	(1.446)
Rural Solid Waste	8.499	12.000	0.708	(3.501)	9.320	12.000	0.777	(2.680)
TOTAL	\$1,137.786	\$478.872	2.376**	\$658.914	\$305.882	\$177.519	1.723**	\$128.363

* Parentheses indicate that the number is negative.

**Total expenditure-benefits divided by total costs for all 8 programs.

rural Boundary County and in other areas of the United States was decreased through the Public School and Health and Welfare programs.

The income distribution effects of the programs examined can be summarized as follows: Both types of rural households in Boundary County experienced an increase in real income through the 8 programs, with conventional households benefiting more than back-to-the-land households. Most of the gain to conventional households accrued from the Public School program. Department of Health and Welfare and Public Library programs also had the effect of increasing conventional rural household real income. For back-to-the-land households, the Department of Health and Welfare program contributed the largest amount of net benefits, but the Public School and Public Library programs also redistributed real income to this group. Revenue other than local property taxes was the source of at least 75% of redistributed income, benefiting rural households through the Public School and Department of Health and Welfare programs.

Socio-Economic Factors Related to Program Benefits and Costs

The study shows that the back-to-the-land subpopulation consumed fewer of the public goods and services and paid fewer of those taxes examined than did the conventional rural subpopulation. The ex-

penditure-benefits that accrued to the average back-to-the-land household from all 8 programs were \$832 less than to the average conventional rural household. Back-to-the-land and conventional households paid \$579 and \$1,519, respectively, through the 5 major federal and state taxes and the Boundary County property tax. The extent to which socio-economic values and goals determined the incidence of program benefits and costs to the two groups is not clear, however. Other characteristics of the subpopulations may be related to the differences in consumption patterns for public programs and in tax payments.

The average age of the adult members of back-to-the-land and conventional rural households was 27.5 years and 42.6 years, respectively. We would expect that households in which the average age of adult members is just over 40 years will have a larger number of children enrolled in public schools than households in which the average adult age is 15 years less. This was the case in rural Boundary County. The expenditure-benefits accruing to each subpopulation from the Restorium program would also be affected by the 15-year difference in average adult age.

If expenditure-benefits from the Public School and Restorium programs are omitted, only \$80 more public program benefits accrued to conventional households than to back-to-the-land households. Thus, the programs examined in this study whose consumption could reasonably be expected to increase with household age accounted for 90% of the

Table 10. Sources of real income redistributed to (+) and from (-) the average household in Boundary County rural subpopulations via 8 1974 fiscal year public programs.

Program	Conventional Rural Subpopulation		Back-to-the-land Subpopulation	
	County property tax revenues	All other revenues	County property tax revenues	All other revenues
Public School	\$ +90.345	\$+446.462	\$ +5.455	\$+26.956
Public Library	+36.360	+1.225	+24.211	+0.816
Airport	-1.662	-.049	-1.376	-.070
Rural Solid Waste	-3.501	0	-2.680	0
Dept. of Health & Welfare	+2.709	+83.844	+2.197	+68.004
Indigent Assistance	+1.636	+310	+5.173	+980
Restorium	+4.375	+828	-.417	0
Public Health Nurse	<u>-1.582</u>	<u>-2.386</u>	<u>-.296</u>	<u>-.590</u>
TOTAL	\$+128.680	\$+530.234	\$+32.267	\$+96.096

difference in program benefits. The study results suggest that the atypical socio-economic values and goals assumed for the back-to-the-land subpopulation did not significantly reduce demand for the public goods and services examined.

Conventional rural households paid more of each of the four major types of taxes (federal income, state income, state sales, and local property) in 1973 than did back-to-the-land households. We would expect that at least some of the difference in tax

payments was accounted for also by the difference in average age. In other words, members of the conventional rural subpopulation have had a longer time to achieve higher income, acquire more property, and thereby have larger consumption expenditures (based on which taxes are levied). Thus, while the assumed atypical socio-economic goals and values of the back-to-the-land subpopulation may have accounted for some of its lower public program consumption and tax payments, the age composition of this group may have been the dominant factor.

SUMMARY AND CONCLUSIONS

Boundary County experienced a 10% population increase from 1960 to 1970 and is projected to have a much greater increase between 1970 and 1980. Much of the increase has been by immigration, particularly urban residents moving "back-to-the-land." County residents were concerned about this urban to rural migration pattern as it affected the economic and social structure of the community. Of specific concern was the unknown effect of the immigrant population on the distribution of community real income as measured by the benefits derived from, and the costs of providing, public services.

"Back-to-the-land" people are defined as rural Americans whose major socio-economic objectives are self-sufficiency and independence from a highly organized society. Extremists attempt to earn a livelihood entirely from the land, with little concern for financial security. Extremists were few in number in Boundary County, however, as many of the back-to-the-land people were striving for a lesser degree of self-sufficiency and willingly utilized some market goods and services. The atypical socio-economic values and goals of the back-to-the-land immigrants added further uncertainty regarding the income distribution effect of population growth.

The basis for this study was the unknown relationship between the back-to-the-land people and the redistribution of real income through Boundary County's public sector. The objectives were to: (1) estimate the proportion of back-to-the-land people in the rural population, (2) determine the benefits and costs of specific public programs to back-to-the-land and conventional rural households, and (3) derive the benefit-cost ratios, net benefits, and income distribution effects of the programs for each rural subpopulation. The 8 programs examined were Indigent Assistance, Public Health Nurse, Restorium, Public Library, Public School, Rural Solid Waste, Airport, and Department of Health and Welfare.

The primary hypothesis was that the ratio of public program expenditures to costs was equal to one for each subpopulation. The subsidiary hypothesis was that gross household income was equal for the two groups.

Partial, static benefit-cost analysis was used to determine program effects. This technique enabled systematic estimation of narrowly defined costs (tax and other payments made by individuals to public agencies) and benefits (public program expenditures). Two models were developed — an expenditure-benefit model to estimate the average expenditures that accrued to the households in each subpopulation from each program and a cost model to estimate the average public revenue outlay made by households in each subpopulation to each program.

Expenditures included in the expenditure-benefit model for each program varied according to administrative complexity and the available data. In most cases, however, only the top-level administrative expenditures were excluded. The cost of each program that accrued to households was estimated from payments made to the program through: (1) five major types of public revenues deposited in both the federal and state general funds, (2) dedicated Idaho sales tax revenues, (3) Boundary County property tax revenues, and, in the case of the Public School program, (4) hot lunch outlays.

Data were obtained from secondary sources when possible. Other data were obtained by personally interviewing 113 households. Back-to-the-land households accounted for 10.34% of the estimated 1044 rural households in Boundary County. The average age of adult members of back-to-the-land and conventional rural households was 27.5 years and 42.6 years, respectively. The average household in the former group had 0.17 students enrolled in Boundary County public schools during the 1973-1974 school year, while the latter group had 0.94 enrolled students per household.

The 1973 average adjusted gross income of the conventional rural households sampled was \$12,985; that of the back-to-the-land households was \$5,751. This difference was statistically significant. So the subsidiary hypothesis was rejected. The four largest tax payments (federal individual income tax, Idaho individual income tax, Idaho sales tax, and Boundary County property tax) made by the conventional rural subpopulation for the 1973 calendar year were statistically greater than those made by back-to-the-land households.

The highest expenditure-benefits accrued to both subpopulations from Public School, Department of Health and Welfare, and Public Library programs. Expenditure-benefits that accrued to the average conventional rural household from all 8 programs totaled \$1,138; those to back-to-the-land households were \$306. The largest costs were estimated to have accrued to both subpopulations for the Public School and Department of Health and Welfare programs. With the exception of the Rural Solid Waste program, the cost of each program to conventional households exceeded that to back-to-the-land households. The total cost of all 8 programs to conventional households was \$479; that to back-to-the-land households, \$178.

The expenditure-benefit/cost ratios indicated that households in both population groups received more public program benefits than they paid in program costs from the Public Library, Public School, Department of Health and Welfare, and Indigent Assistance programs. Conventional households received net expenditure-benefits from the Restorium program also. The largest expenditure-benefit/cost ratios were for the Public Library (10.1 for back-to-the-land households and 5.7 for conventional households) and Indigent Assistance (7.4 for back-to-the-land households).

Expenditure-benefit/cost ratios for the total of all programs were 2.4 and 1.7 for conventional and back-to-the-land households, respectively. Thus, the primary hypothesis was rejected. Neither rural sub-

population made tax and other payments to public agencies in amounts sufficient to cover their accrued public program benefits. However, back-to-the-land households paid 16% more of their accrued public program expenditure-benefits than did conventional households.

Of the \$659 real income redistributed to conventional rural households through the 8 programs examined, 81% accrued from Public Schools. Department of Health and Welfare programs provided 55% of the \$128 redistributed to back-to-the-land households.

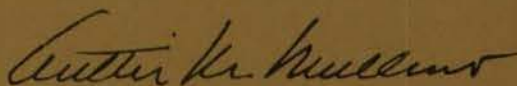
The real income redistributed to both subpopulations came primarily from revenues not collected exclusively in Boundary County. For conventional households, only 20% came from Boundary County property tax revenues and 80% from revenues categorized as "all others." For back-to-the-land households, the figures were 25% and 75%.

The relationship between socio-economic values and goals of the two rural subpopulations and their consumption of, and payment for, public programs is not clear. Public School and Restorium programs, whose consumption could reasonably be expected to relate to age, accounted for 90% of the \$832 greater expenditure-benefits that accrued to conventional rural households. Tax payments also can be expected to relate to age. Thus, the 15 year higher average adult age in conventional rural households may have been the primary reason for this group's greater program consumption and tax payments.

Literature Cited

1. Boundary County Auditor's Office, financial files. Bonners Ferry, Idaho.
2. Boundary County Board of Commissioners. 1974. Memorandum to the County Assessor and Treasurer. Sept. 3.
3. Boundary County Community Attitude Survey, 1971-72. Cooperative Extension Service (unpub.).
4. Bureau of Research and Analysis, Idaho Department of Employment. 1975. Annual Rural Manpower Report, Idaho.
5. Burkhead, Jesse, and Jerry Miner. 1971. Public Expenditure. Chicago: Aline-Atherton, Inc.
6. Chase, Samuel B., Jr., ed. 1970. Problems in Public Expenditure Analysis. Washington, D.C.: The Brookings Institution.
7. Department of the Treasury. Federal Aid to States, Fiscal Year 1974. Washington: Government Printing Office.
8. _____. 1975. Statistical Appendix to Annual Report of the Secretary of the Treasury on the State of the Finances. Washington: Government Printing Office.
9. Herber, Bernard P. 1975. Modern Public Finance. Homewood, IL: Richard D. Irwin, Inc.
10. Higgins, Vickie S., Susan Jarrell, and Doris Schneider, eds. Directory of Services. State of Idaho Department of Health and Welfare.
11. Holland, David W. 1973. The Distribution of the Costs and Benefits of Public Schooling. Southern Journal of Agricultural Economics. July.
12. Idaho Code. New York: Bobbs-Merrill Co., Inc.
13. Manpower Plan for Area 1, Idaho, CETA 1. Fiscal Year 1976. Obtained from Panhandle Planning and Development Council, Coeur d'Alene, Idaho.
14. Mendenhall, William, Lyman Ott, and Richard L. Schaeffer. 1971. Elementary Survey Sampling. Belmont, Ca: Wadsworth Publishing Co.
15. Mesenbrink, Marian, compiler. 1973. Annual Financial Report. Boundary County, Idaho.
16. _____. 1974. Annual Financial Report. Boundary County, Idaho.
17. Nybrotten, Norman, ed. 1969. Economy and Conditions of Bonners Ferry and Boundary County, Idaho. Moscow, Idaho: Bureau of Business and Economic Research.
18. Panhandle Health District I. Annual Report, Fiscal Year 1974.
19. School District No. 101, Bonners Ferry, Idaho. Cost of Operating School Buses, 1973-1974. (Mimeographed chart.)
20. _____. Enrollment Figures as of Sept. 9, 1974. (Mimeographed chart.)
21. State Auditor. Compiled Annual and Biennial Reports, 1972-74, Vol. I.
22. State of Idaho Department of Education. Financial Summaries, Idaho School Districts, July 1, 1973 - June 30, 1974.
23. State of Idaho Department of Employment. Average Monthly Employment in Idaho, Calendar 1974.
24. State of Idaho Department of Health and Welfare. Biennial Report of the Idaho Department of Environmental and Community Services, Environmental Protection and Health, and Social and Rehabilitation Services, July 1, 1972 - June 30, 1974.
25. _____. County Summary of Public Assistance Payments, July 1, 1973 - June 30, 1974. (Mimeographed tables.)
26. State of Idaho Tax Commission. 1974. Thirteenth Annual Report.
27. The Panhandle Planning and Development Council. 1974. Overall Economic Development Plan for the Panhandle Economic Development District, January.
28. U.S. Bureau of the Census. 1972. Census of Agriculture: 1969, Vol. I, Area Reports, Part 39, Idaho. Washington, D.C.: U.S. Government Printing Office.
29. _____. 1973. Census of Population: 1970, Vol. I, Characteristics of the Population, Part 14, Idaho. Washington, D.C.: U.S. Government Printing Office.
30. Western Wood Products Association, Statistical Department. 1974 Statistical Year Book.

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Auttis M. Mullins
Dean, College of Agriculture
University of Idaho



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