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Measuring Costs and Benefits of Public Services in Growing Communities

Gerald Marousek, Professor and Agricultural Economist

Idaho's population growth is among the most rapid in the nation, in percentage terms. Most of the increase has come from people moving into the state. Population growth has several sources, including industrialization, recreation developments and retirement centers. Another type of growth occurs when people seek greater contact with natural surroundings. This "back-to-the-land" attraction is strongest in scenic rural areas.

Whatever the source of population growth, the communities affected are faced with demands for more goods and services in both the private and public sectors. In the public sector, particularly, the question arises as to who benefits from, and who pays for, the increased educational, health, welfare, waste disposal and other services required.

"Back-to-the-Land" Settlements in Boundary County

Boundary County has had a high rate of population growth the past several years, primarily from "back-to-the-land" settlers. Local observers estimated that 10% of the rural dwellers in 1974 were such residents.

Members of the community, especially long-term residents, have felt that the population influx had greatly increased demand for public services, particularly welfare and education. Further, they contended that those benefiting from the increased level of public services were not contributing a proportional share to the total cost of providing public services to the community.

Study Objectives

Based on the observed situation and expressed opinions, a study of the Boundary County rural community was made to determine (1) the relative composition of the rural population, i.e., "back-to-the-land" vs. "conventional" rural residents, (2) the revenue contributions and derived benefits for each group with respect to 8 selected public programs, and (3) the benefit/cost ratios and income redistribution effects of the programs for each subpopulation.* This report summarizes the results and their implications for rural communities with rapid population growth.

Population Characteristics

The study revealed some contrasts in demographic and economic characteristics of conventional and back-to-the-land rural households (Table 1). The estimated 10% back-to-the-land composition of the Boundary County rural population was confirmed. On this basis, approximately 427 of the 1974 total rural population of 4,134 were back-to-the-land residents.

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 one per conventional household vs. one-sixth per back-to-the-land household.

Conventional rural households paid more in each of the 4 major types of taxes (federal income, state income, sales and property) in 1973 than did the back-to-the-land group. Adjusted gross income averaged nearly \$13,000 in conventional rural households in 1973 compared to about \$5,750 in back-to-the-land households (Table 1).

Estimated Benefits and Costs

Since public programs are financed primarily through taxes, the benefits must be measured in terms of the expenditures made in relation to the amount of services provided. This is expressed as "expenditure-benefits." Expenditure-benefits from the 8 selected public programs averaged \$1,138 in conventional rural households, with nearly 80% accruing from the Public School program and 14% from Department of Health and Welfare programs. Back-to-the-land expenditure-benefits were \$306 per household, one-half from Public Schools and one-third from Health and Welfare.

The costs of these programs for conventional rural households averaged \$479, with Public Schools and Health

*This study is reported in detail in Idaho Experiment Station Bulletin 573, "Fiscal Impacts of Public Programs on Two Types of Rural Residents in Boundary County, Idaho."

and Welfare accounting for nearly the same proportions of total costs as of benefits. Costs for back-to-the-land households were \$178, with 70% for Public School support and 17% for Health and Welfare programs. Table 2 lists all expenditure-benefits (EB), costs (C), ratio of expenditure-benefits to costs (EB/C) and net expenditure-benefits (EB-C) of the 8 programs.

Income Distribution Effects

Expenditure-Benefit/Cost Ratios. EB/C ratios ranged from 0.62 to 5.68 for conventional and from 0 to 10.15 for back-to-the-land households. The EB/C ratios for all 8 programs combined demonstrate that for every \$1 paid, the real income of conventional rural and back-to-the-land households was increased by \$2.38 and \$1.72, respectively. The cost/expenditure-benefit ratios of the 8 programs were 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. Total net benefits (EB-C) were \$659 for conventional households and \$128 for back-to-the-land households. 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 totaling \$89 and \$76 was redistributed to conventional and back-to-the-land households, respectively. Public Health Nurse, Restorium, Airport and Rural Solid Waste programs together redistributed only \$4 real income from conventional households and \$5 from back-to-the-land households.

Table 2. 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.

Table 1. 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 ±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.

Redistributed Income Sources. All but one of the programs examined were financed from two or more tax sources. The sources of real income redistributed by each program were segregated into exclusively locally-derived revenue (Boundary County property tax) and all other revenue (Table 3). The \$659 real income redistributed to the average conventional rural household was composed of 20% Boundary County property tax revenue and 80% revenue from all other sources. Of the real income accruing to back-to-the-land households, 25% was derived from local property taxes; 75% came from other sources. Of Boundary County property tax revenues redistributed to conventional rural and back-to-the-land households, 98% and 92%, respectively, came from educational programs. 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. Table 3 shows the amount of total net benefits which came from county property tax revenue and from all other revenue sources for each program and each population group.

Age and Income Factors

Back-to-the-land households consumed fewer of the public goods and services and paid fewer of those taxes examined than did the conventional rural households. The expenditure-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 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.

One would expect that conventional rural households in which the average age of adult members was 42.6 years would have a larger number of children enrolled in public schools than back-to-the-land households in which the average adult age was 27.5. This was the case in rural Boundary County. The expenditure-benefit 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 benefits accrued to conventional households than to back-to-the-land households. Thus, the programs examined in this study, for which consumption could reasonably be expected to increase with household age, accounted for 90% of the difference in benefits. This suggests that the socio-economic values of back-to-the-land households may not have been the primary factor affecting their demand for the public goods and services examined.

Conventional rural households paid more of each of the 4 major types of taxes (federal income, state income, state sales and local property) in 1973. One 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 and acquire more property, and thereby have larger consumption expenditures (bases on which taxes are levied). Thus, while the socio-economic values of the back-to-the-land group may have accounted for some of its lower public program consumption and tax payments, age composition may have been the dominant factor.

Table 3. 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	-1.582	-2.386	-.296	-.590
TOTAL	\$+128.680	\$+530.234	\$+32.267	\$+96.096

Summary of Boundary County Situation

Back-to-the-land residents accounted for 10% of the rural population in Boundary County in 1974. Rural residents, on the average, received more benefits from the 8 programs studied than they paid in costs. Conventional rural households had greater net benefits than did back-to-the-land households. The back-to-the-land settlers were younger, had fewer school-age children and had lower income. Thus, age and income rather than lifestyle may account for the difference in use and support of public services. These differences may decline or disappear over time.

Implications for Growing Communities

Boundary County is an example of a rural community which faced adjustment problems as a result of population growth. Financial and physical stress is placed on public services when communities grow. The type and amount of adjustment in public service demands can be expected to vary depending on the source of growth. For instance, growth based on industrialization results in public service demand different from demands from recreational, retirement or hobby-centered growth. Each type of growth is associated with a population differing in age composition, income, consumption patterns and lifestyle.

Knowledge of the fiscal impacts of public programs affected by community growth provides a useful input for public officials and community planners.

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