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# Public Service Delivery in Rural Places

Stephen P. Coelen\*

Rural citizens are being offered increasingly urban public services. Many rural residents resent this service growth, while others clamor for more. This disagreement is the result of a demographically and economically dynamic rural hinterland that is absorbing more and more of the U.S. population. The situation sets up a classic confrontation between old and new—established resident and new migrant.

Rural areas are characterized by: (1) dispersed population and low population density, (2) low-money income, although real income is increased by higher payments-in-kind, and (3) population shifts that have major effects on small communities. These socioeconomic characteristics make rural areas different from urban areas. They deeply affect rural service delivery and Federal and State policy. These impacts must be understood so that independent rural communities can select efficient systems benefiting the entire Nation. This article explores each characteristic and its influence on rural areas.

## Dispersed Population

Rural communities generally have both dispersed populations and a population density that is too low to provide efficient delivery of public services. To overcome their individual lack of size, smaller communities often rely on larger governments (for example, county governments) to capitalize on any size economies that may exist. Special service districts and voluntary associations are often overlaid on networks of county governments to provide services best produced on a larger scale.

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The literature on providing public services—whether it be advertising brochures from hardware manufacturers, engineering researchers, or economic analysts—plays a large part in the rural decisionmaker's conception of the most efficient scale of operations. Because they usually treat the country as a whole, these information sources lump together a wide range of places, including small urban areas, small towns inside metropolitan areas, and rural places. The general conclusion emerges that bigger is better because the largest and most densely populated places have lower average public service costs. This kind of analysis has led many authors, writing about small governments near large urban centers, to promote metropolitanization or areawide service provision as a means of lowering service costs. What these analysts forget is that low population density in most rural areas contributes diseconomies that often offset economies from larger scale production. For example, although larger water treatment plants may be able to provide more gallons of water at lower rates, the high cost of new pipelines to reach new customers spread out over a wide area will overshadow the production economies.

Research on size economies, largely based on urban locales, has often misled rural planners. Since this research attributes higher service costs in rural places to the small scale of delivery, it leads planners to conclude that expanded scale of operations yields greater efficiency. This concept was for many years the prevailing philosophy of service delivery, particularly in water supply, wastewater treatment, solid waste, energy, telecommunications, and fire safety.

Small-scale technology may provide lower costs to rural residents than they can obtain using more urban-oriented production techniques. Cluster well water systems are a prime example. These systems were first adapted to rural water supply by National Demonstration Water Project affiliates in Jasper County, S.C. (at the Levy-Limehouse/Bellinger Hill Project), and Franklin County, Va. They are based on drilling multiple, but physically separate, wells. Each well is centrally located for a different user group. Although the wells are not interconnected, the system is centrally managed and maintained. Cluster well water systems, however, have been slow to receive institutional support at the Federal level.



## Low Income

Large areas of rural America are characterized by low incomes and a high incidence of poverty. To address the special service needs of these areas, economists have often advocated public subsidies.

It is always difficult to determine when and how much subsidy is appropriate. Economists usually justify subsidies on two bases. The most common, known as the income redistribution argument, holds that it is desirable to equalize service levels or opportunities among areas regardless of residents' ability to pay for them. Here, the motivation behind the subsidies is usually altruistic: the public spirited desire to help one's less fortunate neighbors or the belief that the service by its very nature must be made available to all people.

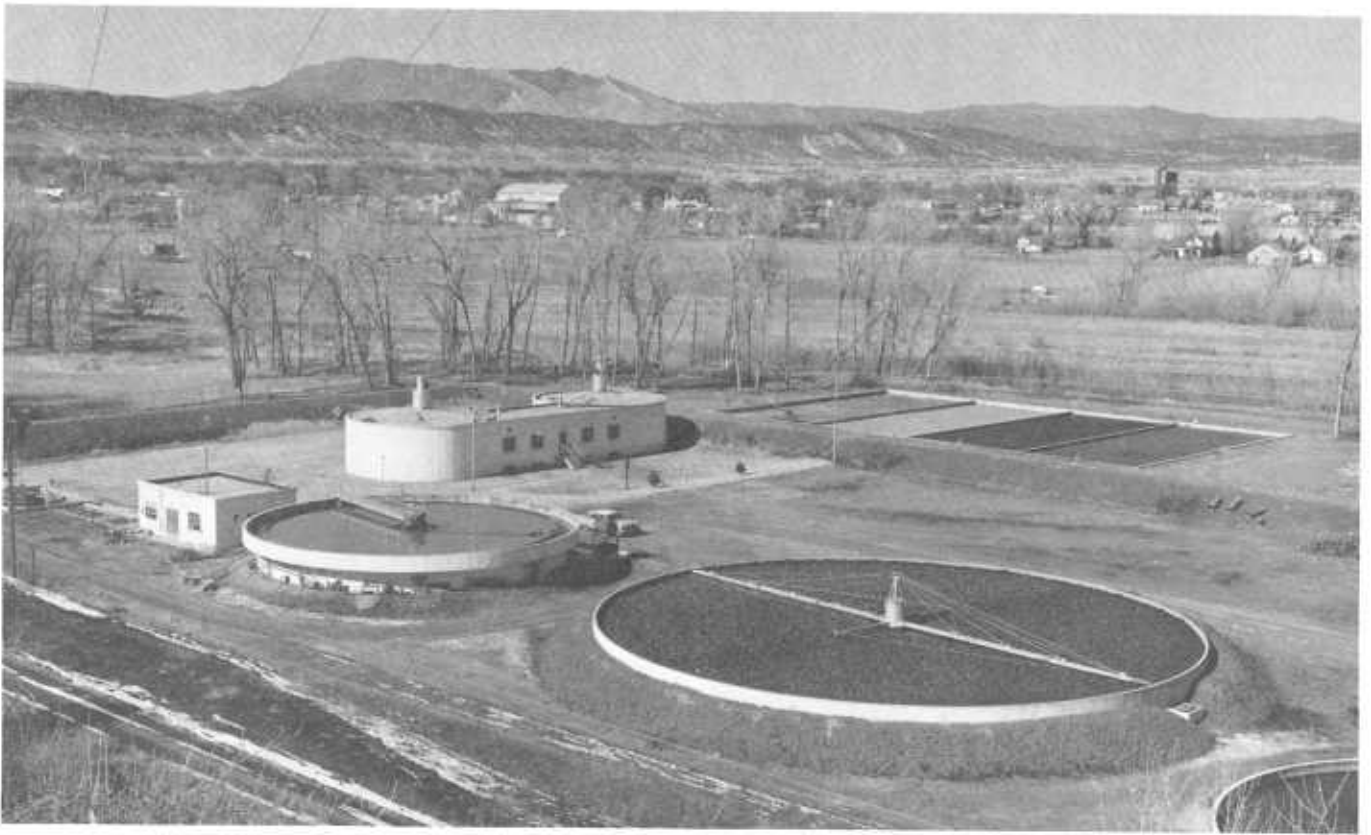
The second, and less well recognized, argument is that subsidies can make service provision more efficient from the viewpoint of society as a whole. To hold down costs, governments serving low-income residents sometime provide a lower level of services than desirable for society at large. This situation usually occurs when the benefits of a service are spread over a larger area than that directly served by the providing government, or when failure to provide the service imposes costs on other localities. When this happens, State or Federal intervention—either in the form of regulation or subsidy—may be justified to achieve the most socially desirable outcome.

An example is water supply in rural areas, where because of limited local revenue, local governments may be unable or unwilling to pay all costs of producing and distributing the water. The obvious solution would be to limit the service to what the local government can afford. However, this solution may not be best for society at large, since an insufficient water supply may lead to other problems, some of them health-related. Thus, it may be more economically efficient to provide subsidies for some services in relatively low-income rural areas.

Another example is education. The entire Nation benefits when education is adequately provided in all areas, since people migrate freely from one area to another in our mobile society.

Many rural communities combine two or more methods to provide a given service. This procedure points up another limitation of the research literature. Research has developed cost estimates only for single approaches to producing services, rather than integrating costs of several approaches. In water supply, for example, cost estimates have been developed separately for piped distribution systems using surface water and for systems relying on well fields. However, there is little research that develops integrated cost estimates for systems combining surface water with well fields. What is needed, then, are new studies that would show when combinations of two or more methods are most efficient.

Research provides little help answering the questions of when or where to adopt alternative technologies. The decision depends partly on the anticipated growth of each community in question. Technical studies are needed to define the effect of varying combinations of technologies on local costs and to establish if and how conventional systems in large urban centers should penetrate less densely settled fringes.



A variety of programs provide subsidies to reduce or eliminate costs that spill over political boundaries or to redistribute income. Examples are the Environmental Protection Agency (EPA) income policy on sewer grants and the Farmers Home Administration (FmHA) hardship definition for water and wastewater grants and loans. The EPA rule has been that user charges for normal operations and maintenance of wastewater systems should not exceed 1 percent of annual average per capita income and that debt retirement costs plus user charges should not be greater than 2 percent.

### Shifting Population

Four significant phenomena are associated with the population reversal of the early seventies:

- (1) For the first time since the early 1800's, rural and smalltown areas are growing faster than urban areas;
- (2) The most rapid growth is in the most rural counties with no urban places or very small ones;
- (3) Population is increasing faster in open-space areas in rural counties than in towns and cities in these same counties; and
- (4) Nonmetro growth is occurring in all U.S. Census regions. This growth poses significant challenges for rural governments as they seek to extend services to new residents.

The size of this challenge may be understated by the numbers of new residents, since relatively small numbers of new residents may represent large percentage increases. For example, 3,000 people moved into Summit County, Colo., between 1970 and 1976. Compared with the record of Orange County, Calif. (the fastest growing metropolitan area during the same period, where population increased an average of 3,000 people *every 29 days*), the Summit County growth was small. Yet, Orange County's population increase was only 17 percent, while Summit County's population doubled. In relative terms, the impact of growth on the need to expand services and on the per capita costs of those services would be expected to be greater in Summit County than in Orange County. In fact, per capita direct expenditures in Summit County rose by 15.5 percent annually between 1972 and 1977, compared with 8.1 percent annually in Orange County.

Population redistribution affects costs and influences the relative efficiencies of rural and urban public services. Because the per capita cost of providing services is highest for both very small and very large scales of operation, it is likely that neither rural nor large urban governments operate at the peak level of efficiency. The urban area may be too large; the rural area may be too small and sparsely populated. If so, declining rural populations, common before 1970, would push local government costs even higher. Increases in urban populations due to immigration would also push average costs upward in these areas. The reverse population

flows during the seventies should have lowered average service costs in both rural and urban areas.

A good example is police protection. A small, one police officer, one car, rural town must divide its costs among fewer residents as it loses population. This raises per capita costs of rural police services. At the same time, the movement of rural people to urban areas may increase urban density to the point that the per capita costs of police services in those areas rise because more protection is required.

While the recent population shift to rural areas is likely to lead to lower costs for both rural and urban places, two factors complicate the situation and may even keep the financial gain from occurring. First, the region experiencing outmigration loses some of its wealth as the productive usefulness of its existing infrastructure is reduced. With fewer residents, roads are less utilized, hospital occupancy rates fall, and schools are operated below their designed capacity. In each case, the value of services produced per dollar of in-place infrastructure declines, a loss that can be expressed as a decline in the area's wealth or as a depreciation of productive capital. Residents who remain may be worse off since debt on this infrastructure must still be paid off, but by fewer taxpayers.

Second, the greater efficiencies that may result from migration to rural areas may not appear until sometime after the changes have occurred. In the short run, there may be important inefficiencies in both gaining and losing areas. For example, underused schools must still be heated and serviced even when student populations decline due to outmigration. And, the quality of education may suffer in areas of heavy immigration due to overcrowded classrooms. Roads with low average daily traffic must be plowed in winter just as often as when they were used more frequently. Increased electrical demands on municipal systems in growing areas may require increased use of expensive gas-turbine generators during peak periods of demand. Until adjustments can be made in the infrastructure of both growing and declining areas, costs in both areas will rise as a result of less efficient use of resources.

Both these problems—wealth losses and short-run inefficiencies—are more significant for the more capital-oriented services. The most capital-intensive services—hospitals, water supply, wastewater treatment, transportation, energy, and telecommunications—have the longest planning and adjustment period. The length of this period depends on many factors, including interest rates, population size and rate of change, and the durability of the facilities themselves. The planning and adjustment period may extend over 20 years for water supply, for example. With such a long lead-time, local governments must operate at less than peak efficiency, using either too little or too much capital because of their difficulties in adjusting quickly to new capital needs.

There is a presumption that adjusting capital during periods of community growth is easier than during periods of decline. It is easier to add capital, such as a room on a schoolhouse or a wing on a hospital, than to withdraw a given number of miles of highway lanes. Even if one could withdraw part of a capital facility from production, the community must continue to pay off its debt on the parts withdrawn.

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Population shifts from urban to rural places may reduce costs of providing government services. These cost savings may, however, be offset if substantial infrastructure has been developed in declining places and if remaining residents must provide upkeep for these facilities and pay off existing debt. High costs may also result in places of rapid growth, particularly if the extent of growth was not anticipated and if the existing infrastructure is impaired by overuse. These problems that tend to counteract the advantages of the population shift to rural places may be overcome by: (1) grant programs designed to offset fiscal strains in declining places and (2) loan programs to support planning and development of infrastructure in growing places. □