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TRANSPORTATION IN RURAL AMERICA--PROBLEMS AND RESEARCH NEEDS

by

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## TRANSPORTATION IN RURAL AMERICA--PROBLEMS AND RESEARCH NEEDS

### ABSTRACT

Rural transportation problems seem less acute than two years ago. However, problems remain and extensive multi-disciplinary research on major modes is suggested. Mobility problems of people and relationships between rural development and transportation require study. Forecasting of supply and demand for services is needed. ERS transportation research is outlined.

Most of the acute problems that prevailed two years ago in transporting agricultural products to market have subsided. This summer's bountiful grain crop is moving with relative ease through the transportation system to meet domestic and export demands. Few rural shippers seem to be having difficulty arranging for transport of perishables, livestock, or other commodities. Also, most rural people have access to private motor vehicles and are quite mobile despite recent fuel price increases. Nevertheless, not all is well in the segments of the transportation industry serving rural America.

The peculiar demands of rural transportation users and the highly regulated status of major segments of the transportation industry frequently result in an imbalance between supply and demand for service. It is that imbalance that gives rise to most of the research topics identified in this paper. 1/

Agricultural traffic, which accounts for about a fifth of total U.S. transportation expenditures (USDA, p. 1) is both seasonal and cyclical. Seasonality arises from the nature of crop production; cyclical changes generally reflect sharp shifts in exports.

Besides the irregular demand, agricultural shipments have several other special requirements. For example, the bulky semi-perishable commodities

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1/ Many of the research suggestions come from a recent Economic Research Service (ERS) review of transportation in rural America completed at the request of the U.S. Congress (U.S. Senate, Feb. 1975). Some of the areas suggested for study have also been recognized by others (Casavant, Gerald, and USDA).

generally originate at widely scattered points and thus require extensive collection networks. Service--including temperature, humidity and atmospheric control and minimum transit time--characterizes the particular needs of perishables. Fertilizer and other farm inputs generally move seasonally, especially in the spring. Nonagricultural goods are usually supplied to rural areas in small, sometimes uneconomic, shipments.

While rural interests are especially concerned about deficiencies in facilities and services, excess capacity and underutilized equipment are related problems. Shippers may gain from excess capacity in the short run. However, the costs are likely to eventually be borne by users either as higher rates or indirectly through poorer service.

#### Anticipating Supply and Demand for Transportation Services

Better information is needed if the supply of transportation services is to match future demands from rural areas. Such information can help in developing policies that lead to a smoother working transportation system. Ideally, the commodity transportation system would supply services to meet demands at projected levels of output, domestic use and export, while remaining financially viable. Studies are also needed on how rural transportation services may be affected by shifts in demand for transportation in the remainder of the economy. Shipping patterns, response capabilities of trucks, railroads, and barges, and relative costs of alternative modes should all be considered. In addition to short term benefits, such studies could aid investment and regulatory decision-making by State and Federal governments and by the transportation industry.

#### Improving Rail Service in Rural Areas

Because railroads have been an important key to the continuing development of rural resources, much study and discussion has centered on means for

providing better rail service to rural areas. Despite the widespread belief that railroads are efficient in large volume, long-distance movements of freight, the revenue-cost relationships of railroads have not been impressive. Among concerns are abandonment of services for perishables, the general decline in local service quality, abandonment of light-density track, bankruptcies and rail reorganization.

The railroads' relative inflexibility to adjust as markets change causes them to be residual suppliers of transport services. This position along with their weak financial condition could be the source of continuing problems.

Although the plight of railroads is relatively clear, policies to resolve the questions involve a community of interests far broader than those of rural people. Unfortunately, few agricultural economists are knowledgeable on the relationship between the financial problems of railroads and the future availability of service to rural areas. The urgency of the questions and the short time before major institutional changes are likely to occur suggest a need for immediate research efforts.

Only a few studies exist on the costs and benefits of rail abandonments. Thus, it is difficult to draw conclusions on the efficiency and equity of proposals that are offered. But trends in rail technology, methods and work rules are likely to concentrate the traffic through fewer origins and destinations. This may mean advantages for areas with heavy traffic flows, but it could hinder the development of some rural areas. The research question is, could changes in technology, institutional and structural constraints or work rules allow railroads to improve service to rural communities.

Railroads view abandonment as necessary because many branch lines do not carry enough goods to be economically viable. Shippers and communities protest abandonments because they foresee higher costs or restricted transportation

options. Gains in efficiency in grain transportation through a reduction of track mileage and greater use of multiple car shipments appear to be substantial (Baumel, Tosterud and Gaibler). If equitably shared, net benefits from efficiency gains could accrue to railroads, shippers, communities, and consumers. However, there is need to study how benefits of a modernized grain transportation system are shared and whether the resulting structure of the grain marketing industry is likely to be acceptable to farmers and consumers.

More study is needed of how to maintain an effective integrated rail system. One example is examination of the relative economics of public subsidy of rail lines versus public improvements in local and collector highway systems that might be required if some rural railroads are abandoned. More broadly, it would be useful to examine costs and benefits from alternatives to the current system of ownership of linehaul track, yards, and terminal facilities. One proposal, among several that might be studied, is public ownership of all rail lines and facilities in combination with private rail company ownership of rolling stock. Rail freight companies would have operating rights between specific points. This proposal would allow competitive service where feasible and could resemble the service provided by airlines using facilities and airplanes maintained by the Government.

The whole area of rates and regulation needs further analysis. It is not clear that regulation must mean inflexible rates, nor is it clear that the desired degree of rate flexibility would occur in an unregulated rail industry. Without price flexibility, equipment shortages are likely to occur periodically unless railroads maintain excess railcar capacity or non-price mechanisms are used to shift equipment to rural areas during periods of heavy demand.

Could the number of railcars demanded be balanced with those available during peak periods by allowing seasonal and cyclical changes in car prices? Study of the expected influence of seasonal and cyclical rate variations on the supply of rail equipment for movement of grain could help answer the question. Also needed is better understanding of the probable response of shippers in modifying peak period shipments under flexible rates. And, given greater price flexibility, would the relatively inelastic short-run car supply cause sharp price fluctuations detrimental to rural areas? Such information could prove useful in improving equipment allocation mechanisms.

#### Truck Service and Highways

The ability of trucks to provide rapid and reliable delivery service in combination with publicly supported improvements in highways, particularly the Interstates, has led to the nearly complete shift of perishables and livestock to trucks. Equipment shortages have occurred in the trucking industry. But trucking capacity can generally be expanded to meet demand, and the agricultural exemption allows the flexibility that is essential to orderly marketing of perishables.

Although some complaints are heard about service quality and withdrawal of motor carrier service to rural communities, little is known about rural trucking. Some research that can expose existing problems or suggest solutions to known problems of the rural trucking industry is possible. However, improvements in the data base are needed, especially for unregulated movements of unmanufactured agricultural commodities.

The rail abandonment question has added to concern about rural roads, especially those in major grain areas that would need to carry more heavily loaded vehicles. Also, the trend toward centralization of grain elevators and machinery, feed, seed, fertilizer, and chemical distributors to larger

rural communities and increased reliance on trucks all add to stress on rural roads, even if railroads are not abandoned.

Rural roads have been improved somewhat, but more than three-fifths of all arterial and collector roads were identified by the States as deficient in 1970 (U.S. Senate, Feb. 1975, p. 44). Well over half of the collector mileage in the United States was found to be unpaved or had pavement unsuited to continuing heavy truck traffic. Rapid escalation of maintenance costs could cause some States to decrease maintenance levels and perhaps abandon some roads. There is uncertainty about the economic limitations the quality of rural roads place on rural communities, however.

The trucking industry is probably more vulnerable to changes in fuel costs than are the rail, water, and pipeline modes. Studies are needed on possible economies in fuel use and gains in efficiency that might result from reduction of empty truck backhauls in rural areas. Fuller utilization of round-trip capacity might develop with modest changes in regulation to allow use of backhaul capacity at marginal cost. Also, some have suggested that such rates would provide incentives for rural development. These questions need to be explored.

#### Barges and Waterways

Barges are exempt from regulation in transporting bulk agricultural products, and the supply of services is rationed by supply and demand. Research needs include continued study of costs and benefits of extending barge service. A related topic needing further study is the effect on rural areas if user charges are instituted for waterways.

#### Effect of Transportation on Rural Development

An effective transportation system is necessary for rural development, although that alone does not guarantee such development. Better highways,



improved trucking service, and developing regional markets have made industrial decentralization to suburban and nonmetropolitan areas possible. Because highways have become a strong determinant of industrial location and intercity and local movement of people, railroads are not as important in many rural areas as they once were.

Several additional lines of research are needed to help us understand the relationship between transportation and rural development. There is much more to know about how transportation interacts with other factors, such as labor, resources, and markets, in influencing the location of industry and economic development in rural areas. Nevertheless, little has been done to understand these important relationships.

#### Transportation of People

Most rural people use automobiles and light trucks as their primary mode of travel. However, some of the disadvantaged--the elderly, disabled and poor--may not have access to such private motor vehicles. Also, rural areas are infrequently served by public transportation systems. To provide guidance to public agencies, additional study of rural trip characteristics and of alternatives to the private motor vehicles is suggested.

#### Energy Research

Because of its relative importance in transportation, efficient use of limited energy supplies has become a matter of concern. Analysts have developed data on average energy intensiveness of the various modes and such estimates are sometimes used in suggesting modal choices. However, average estimates often may not accurately reflect relative efficiencies because of widely varying energy intensiveness within individual modes. For example, average data on energy used for rail shipments would be expected to be inaccurate for branch line operations. Immediate efforts are needed to

develop energy use coefficients by mode for a broad range of conditions.

Because of greater distances involved in travel, higher energy costs are probably affecting rural people more than those in towns and urban areas. This raises important research and policy questions concerning the possible impact on rural people of energy conservation measures (Rupprecht).

#### The Role of Economic Researchers

The basic role of economic researchers working on rural transportation problems is to evaluate public transportation policy as it affects or is affected by agricultural and other rural interests. A major task is to assess the performance of the transportation system in meeting rural needs. Part of the job is to appraise its ability to meet such needs efficiently and to examine major adjustments imposed on rural areas by changes in the transportation system.

#### Multi-Disciplinary Research

New directions in transportation policy come slowly in spite of the near consensus by economists on needed changes. For example, many economists have suggested a need for less regulation in the transportation sector, but regulatory changes have been relatively minor. The lesson for economic researchers seems clear--our research needs to become more multi-disciplinary if it is to be the most fruitful. By broadening our inquiry to include such disciplines as history, geography, political science and law, our research could become more relevant. Surely, the roots of transportation problems often lie outside the realm of economics.

#### Transportation Economics Research in Economic Research Service

The transportation economics research effort in ERS is part of the research program of the National Economic Analysis Division (NEAD). The Transportation Economics Program Area is relatively small. We expect to

concentrate our research on a few areas of national interest. To allow us to benefit from your reaction to our plans, I will briefly describe some highlights of our near-term effort.

Because it remains a major unresolved issue, rail reorganization and abandonment will continue to receive research attention during coming months. This work will extend the earlier study done for the Senate Agricultural Committee (U.S. Senate, Mar. 24, 1975). As planned, the study, which is now underway, will provide additional information on the effects of loss of rail service and will allow a unique picture of several rural communities before and after abandonment.

Increased funding provided to ERS by the Congress is being used in developing improved situation and outlook information concerning supply, demand and price and for projecting demand for transportation services by agriculture. We see a need for both longer-run projections of transportation supply and demand relationships and shorter-run situation and outlook information. Longer run projections are important to guide investments in transportation facilities serving rural areas. Better short-term outlook and situation information could help in establishing policies to deal with major changes in demand for transportation services in a given year. Plans are to coordinate the projection of demand for transportation services with ongoing ERS projections of output and use of the various commodities.

We are now beginning to examine the personal transportation problems of rural people. This area of study will initially consider the problems of rural people that arise because of fuel shortages and higher energy costs. Later we may look more specifically at problems of the transportation disadvantaged.

Our program area has developed several lines of research on specific

aspects of truck transportation. For example, a report on for-hire cattle truck service will soon be published describing the kind and quality of truck service experienced by shippers of beef cattle and calves. In another study, data from a survey of livestock trucking firms are being analyzed and will be used with existing information on truck costs to determine the extent to which rates charged reflect costs. Two parallel studies of the use of trucks for delivery of feed and fertilizer, which are nearing completion, examine means for improving the efficiency of trucking in rural areas. Finally, we are beginning a study in cooperation with the U.S. Department of Transportation of the conduct of exempt trucking. A survey of truck brokers is underway.

#### Summary

Although rural transportation problems seem less serious today than two years ago, many significant problems needing research remain. Some of these problems arise from peculiar transportation demands of rural shippers and the highly regulated status of much of the transportation industry. Improved information on the supply of transportation services and future requirements of rural shippers is needed for both short and long term decisions by government and industry.

To help improve rail service, studies are suggested on rail abandonment, rail reorganization, rates, and regulation. Acceptability of likely structural changes in grain marketing resulting from changes in transportation should be analyzed.

Some valuable research on rural trucking may be possible, however, data are lacking on exempt truck traffic. Waterway improvements affecting barge movements of agricultural commodities and waterway user charges are identified as areas of study.

A largely unexplored area is the relationship between transportation and

rural development. Closely related problems are the transportation problems of rural people and the effect of energy shortages on travel costs of rural people. Study of the effects of higher energy costs on commodity movements is also needed. Finally, because the product of economic research is only a part of the policymaking process, multi-disciplinary research is needed.

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