

panel discussion

PAST, PRESENT, AND FUTURE OF DEMAND-RESPONSIVE TRANSPORTATION

Daniel Roos, Massachusetts Institute of Technology, moderator

Each panelist was asked to make a brief presentation and then to respond to questions from the audience.

PANELISTS:

Thomas H. Floyd Jr., DGA International
Karl Guenther, Ann Arbor Transportation Authority
Earl W. Putnam, Amalgamated Transit Union
Anthony Simpson, Dave Systems
Roger Slevin, Cranfield Institute of Technology, Bedford, England
Jerry D. Ward, Office of the Secretary, U.S. Department of Transportation

SIMPSON: Those who are involved in demand-responsive transportation seem not to be able to develop criteria for success or criteria for accomplishing objectives. I think the difficulty arises because there are no guidelines available. Early on, criteria for success were generalized in 3 areas: (a) Would dial-a-ride work? (three years ago, nobody really could answer); (b) Would it be accepted by the public? (from various surveys, the public seemed to be in favor of it, but nobody knew whether that meant acceptance); and (c) Could it be operated at a profit?

The indication at this conference is that dial-a-ride systems do indeed work, certainly to the size and the capacity that they have been developed so far. With only rare exceptions, all of the dial-a-ride systems that have been implemented have been expanded. I do not know that we could get a better indication of public acceptance. With regard to the third criterion, all of the dial-a-ride systems that are operating, except possibly some of the Canadian ones, require significant subsidies. Nobody has yet developed a cost-benefit justification for dial-a-ride. It is a very difficult problem, and I am not sure it can be fully resolved. But it is a serious omission in the efforts that have been put into dial-a-ride—to go this far and not be able to justify it on a cost-benefit basis.

WARD: One of my surprises at this conference was how far the dial-a-ride movement has gone. There is a great deal more momentum than I had suspected from just reading the literature and talking to people in a piecemeal fashion. The second surprise was the extent of the thinking about dial-a-ride as a subsystem of a larger transportation system, i.e., tied into fixed-route systems, either bus or rail, that operate together in an integrated manner. I could not have been more impressed with the work that is going on in Rochester—with how far they have thought through what they are doing and the confidence and enthusiasm with which they approach the problem of expanding into an areawide integrated system.

There is perhaps a negative side to this momentum: It can easily lead people to rush in too quickly and result in a proliferation of systems where there is an inadequate knowledge base and an increasing number of failures. This could slow the process for a while. I am not sure what we can do about that except to encourage people to

operate on the basis of as much knowledge as they can garner in a fairly new field.

The state of the art and the analytical base that we have are fairly well along. For a half dozen years, many people have been analyzing dial-a-ride systems and the variations in types of operations. But the state of the art is not nearly so far along in analyzing integrated systems of which dial-a-ride and its variants are a part. Analyses are needed to show how the pieces tie together, how cross subsidization should take place, and how the trade-offs between the productivity of the fixed-route system and the productivity of the dial-a-ride system should be made. Research in this area would be fruitful as we move into the future. We can also add other problems such as institutional and management problems.

FLOYD: When I asked why I was invited to be a panelist, I was told "You are one of the real old ones in this field—kind of representative of the senior citizens." Now I also represent another group—the handicapped. I have been on crutches and a cane recently. It came about in an interesting way.

I like to experiment with transportation systems and to personalize the experience. I started riding my bicycle to work about 2 years ago, largely on the advice of the Department of Transportation, which was promoting bicycling at that time, particularly through the Office of the Secretary. I should have learned when I was in the Urban Mass Transportation Administration never to listen to the Office of the Secretary, but once I left UMTA I became a little careless. I was careless in another way also. I managed to fall while riding the bicycle, land on my hip, and break my leg.

I did learn something interesting while being among the handicapped. There was no way to go to work except in my car with my wife driving it. There is no good way to use public transportation when you are on crutches. So, if I had not already been a convert to dial-a-bus, my being handicapped certainly made me more of one.

One of the amusing things that has happened during the movement has been the debate on terminology. What should this new service be called? Should it be called demand-responsive transportation, dial-a-bus, or dial-a-ride? There were serious and solemn discussions in the Department of Transportation and elsewhere. There were a lot of nominations for names before dial-a-bus and later dial-a-ride were selected. During this selection procedure, I fought hard for a different term. I had begun to worry about the word "dial" because, if we were going to identify ourselves with new technology, we should not refer to the dial phone, which had already begun to disappear. More and more, M.I.T., for example, had begun to talk about punching requests for service directly into the phone without going through a human dispatcher. I advocated the name touch-a-bus for touch-tone phones and when that failed I proposed push-a-bus. That also failed.

In the early days as today, funding was a major issue. Between 1961 and 1966, about \$38 million was spent on research, development, and demonstration programs. No one knew how that money had been allocated, where it had gone, and what purposes it had served. One of the first things some of us did when we came to UMTA was to take a close look at the program.

The interesting finding was that about 98.9 percent of the money had gone into commuter-railroad demonstrations. Only about \$500,000 in a 5-year period had gone into any kind of bus work. Within 2 years, we turned that around significantly and put several million dollars a year into the bus area. When a major problem in bus service was identified as a management problem, we began to put money into improved management methods.

Demand-responsive transportation is concerned essentially with applying better management and marketing techniques to transit. We are talking about a management tool that enables bus operators to be much more responsive than they have previously been able to be to the needs of users. This is not a big and expensive hardware development program.

PUTNAM: My organization is involved in these conferences because we believe that demand-responsive transportation can turn the industry around and create more ridership, better jobs, and more earning potential. We do not think there are labor problems involved, yet certain assumptions do apply. First, a demand-responsive system must be in some way tied into the existing public transportation systems,

whether those are taxis or buses or rail. The community is a community, and mobility must be available to all citizens; to deal with a dial-a-bus system as a separate entity from all other systems is not going to solve anything and, in fact, will create organizational, institutional, funding, and labor problems. So, we believe that as an essential first step, dial-a-bus has to be planned and integrated into the overall transportation system. If that is done, we will start with existing wages, hours, and working conditions applicable to the system, and changes that are made will be collectively bargained on a local level by the people who run the system and who work for the system. My international union would expect any needed flexibilities and changes to be bargained at the the local level, and we expect that few changes would have to be made. If a dial-a-bus system is operated independently from the public transportation system, a complete reversal of the attitude of transit labor toward this system will occur. We are not enthusiastic about additional competition that will tend to undercut the transportation system and undercut wage rates. We have been concerned because the taxicab industry as compared to transit is a low-wage, high-turnover, and basically a nonunionized industry. If dial-a-bus is placed in that industry, my organization and transit labor generally would oppose that effort. There, I do not think one can simply assume that, because dial-a-bus is a labor-intensive industry, it will necessarily have labor support.

GUENTHER: The number one problem that we must solve to make dial-a-bus systems work on a universal scale is existing management organizations. I had a transit manager say to me not long ago that it is the moral obligation of citizens of the United States to walk to catch a bus. If that is so, then dial-a-bus is obviously doomed. But I think that was perhaps a reactionary statement that some transit managers have made about dial-a-bus. Reactionary management that says that the only way to do things is the way they have been done for 25 years is one of the greatest impediments to more widespread diffusion of the dial-a-bus concept.

Another problem is tied closely to existing transit management and its attitude toward change and that is the attitude of the consulting community, particularly south of the Canadian border. I have been disappointed in the reluctance of consultants to consider technical studies that were funded by UMTA and to recommend dial-a-bus to communities as one of several possible alternatives to solve transportation problems. Those of us on the dial-a-bus bandwagon have a job to do in working with consultants so that they understand what it can and cannot do, understand what it costs, and make intelligent recommendations to communities about the role of dial-a-bus in their public transit systems. In Canada there are more consultants that can provide competent design services for dial-a-bus implementation than in the United States. I think that is a sorry commentary both on our ability to communicate with consultants and on their receptiveness.

The third problem is the fear of regulatory agencies and government agencies from the local to the federal level that something might start and then fail. It is expressed to us as "Go slow." "That is too fast." "Do not move so suddenly." "Are you sure you have looked at all aspects?" We can learn so much by failures and mistakes. Sometimes we must try something to find out that it does not work.

I have been frustrated by all the bureaucratic roadblocks to getting a radio license to put in an expanded dial-a-bus system. The bureaucracy is not going to go away, and we must recognize it as a major problem and work on it.

I would like to discuss several areas that I do not consider to be problems, although others do. The first is organized labor. In Ann Arbor, organized labor has been, and I expect will continue to be, of great help in getting dial-a-bus going. Organized labor is not to be viewed as someone to fight in getting changes made. The collective bargaining process has worked successfully in Ann Arbor.

Another area is vehicles. I agree that the vehicles are not perfect. But the fact that we do not have ideal vehicles is not sufficient reason for not having dial-a-bus. The properties that claim to have the most difficult problems with small vehicles (and they are the ones that are damning them the most) are those that have a maintenance and repair organization built to service large vehicles. Small vehicles require different tools, different people, and different skills. In Bay Ridges, the vans were maintained

at a local gas station and operated at a cost per mile lower than in many other operations.

The third area is research. We have developed quite a bit of capability and can proceed without a great deal of additional research.

The fourth area is money. Every successful dial-a-bus project has demonstrated that, if there is enough community support, enough community involvement, and enough optimism on the part of local leaders to make dial-a-bus work, the money tree can be shaken and sources of funding can be found. In most cases, one has to travel unconventional routes and put together weird coalitions of people to make these things happen. But no one should be dissuaded from starting a dial-a-bus project because there appears to be no money.

QUESTION: The administrator of the Urban Mass Transportation Administration has constantly emphasized the notion of benefit-cost analysis as being fundamental to UMTA funding any capital grant request. I would like the panelists to comment on the stressing of benefit-cost analysis in terms of any solving of urban transportation problems.

WARD: I think that the thrust of the Administrator's remarks is that we should do our best to know what we are getting for our money before we spend it. That is a very legitimate request to make. The problem is how far to go with analysis. There is a large gap between being able to prove in a universally accepted way what benefits are and what costs are. So one can get all wound up in an analysis that can take a great deal of time and delay actions that otherwise reasonable people would think are reasonable to take. The hope is that we can be as rational as possible about estimating what we are gaining and what we are paying for in any of the actions that we undertake.

In most cases, benefit boils down to the set of values used in the evaluation. That is a local decision and should not be dictated from the federal level. Local decision-makers must decide whether they would rather have more of A and less of B or more of B and less of A. And, in most cases, neither A nor B can be quantified in any meaningful sense.

GUENTHER: Each community does have a set of decisions to make about how it spends its money. In Ann Arbor, I think the fact that a popular vote was passed by a margin of 2 to 1 is enough of a criterion. Many people have since said, "Are you really going to reduce emissions by putting in this system? Will the air in Ann Arbor really be cleaner when you get this system going?" We have examined these questions, and it looks like there is a point in ridership at which we can make a positive statement. We are putting air-quality monitoring stations all around the city and spending \$250,000 to \$300,000 a year to collect and digest those data and will produce the results 5 years from now about something that has already been done. That is why we have all the delays. We are doing an extensive cost-benefit analysis right now in connection with our application for a capital grant. Questions are asked that, as far as I know, have never been asked of any applicant for a capital grant before in terms of justifying our decision to expand a demand-responsive transportation system.

SLEVIN: I would be happier in a British situation if we had a mechanism by which the populace could reflect their views. Cost-benefit analysis has been imposed on us by central government and does not give the population a chance to vote on an issue in the way the Ann Arbor population did in saying that they wanted to put in that amount of money locally to a transit system.

Cost-benefit analysis is not nearly so important as benefit analysis. It is important that we keep costs down, but the critical question is, Who is benefiting from these services? Many of us were interested in demand-responsive transportation from the beginning as a technique for meeting the unmet transportation needs of the handicapped, the poor, and the transportation dispossessed.

QUESTION: What are the most important accomplishments that we aim for during the coming year, and what mechanism might be used to achieve these?

SIMPSON: I think one of the most important tasks is to see that all aspects of dial-

a-ride are integrated with the public transportation mode. For example, in cases where integration with bus transportation or commuter rail transportation has been tried, the mode of operation of the dial-a-ride system has almost always been in a one-to-many or many-to-one mode with an occasional many-to-many. The problem of using a fully responsive many-to-many system with integration is still something of a challenge in dial-a-ride. The timing problem of the many-to-many operation that has to integrate with a fixed-schedule system is surprisingly difficult to solve. We end up with a many-to-many mode, with a very good routing system and relatively efficient use of buses, but the timing of when exactly the bus will arrive and the integration with other systems is still an idea that has, in most systems, been avoided by using the one-to-many, many-to-one mode of operation. This is going to be a very important area to work in, and I am not sure that manual systems can handle the complexity of that timing problem. We may have to wait until a sufficient number of automated systems are operating.

Another has to do with experience and skills. Though attendance at these conferences on demand-responsive transportation has doubled every year, we still find that there is a very small base of people with expertise. I am concerned that people who have little skill will be putting in dial-a-ride systems and that in the next few years we will have failures because experienced people are not available. The rate of increase in dial-a-ride systems may well be limited by the skills in the work force, and training people is a slow process. To train a supervisor or a controller in a dial-a-ride system may take 6 months to a year.

GUENTHER: I have already suggested 3 areas where I think the biggest problems lie. I propose that the Transportation Research Board and the American Transit Association hold a series of workshops to educate the consulting community on how to design and implement dial-a-ride systems.

WARD: Some form of information dissemination is required on what is good and what is bad and what will work and what will not.

FLOYD: We need a national strategy that not only supports the dial-a-ride concept but provides funding and support through the various federal agencies. Two things need to be accomplished. One is to help the concept ripple out as quickly as possible. The other is a continuing vigorous research and development activity that leads to increased productivity and capability to serve. Cost is important, and the capability to do things more efficiently is important.

ROOS: In many ways, dial-a-bus transportation has been a very unusual concept in terms of how it was developed. It has largely been caused by citizens and communities. This suggests what the way of the future may be in terms not only of dial-a-bus but also of how we go about deciding on what our transportation alternatives are. With respect to some of the comments about the transit industry, dial-a-bus might be a mechanism that causes significant change within the transit industry. Some of the issues and problems that were faced and some of the solutions to those problems are going to be transferable in the future. We need new approaches in marketing and many other new approaches. In this respect dial-a-bus will play an extremely important role as a catalyst and as a mechanism for bringing about that change.