

Finally, the key staff position, the administrator, must be given the authority and the flexibility to direct the contractor within the bounds of the contract. Without this flexibility, problems will go unsolved and overburden the RTA governing board. More important, members of the service community will not perceive the transit system to be responsive to their needs and consistent with the cost of service.

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REFERENCES

1. A Direction of Regularly Scheduled, Fixed-Route, Local Rural Public Transportation Service. UMTA, 1981.
2. G.M. Smerk and R.B. Gertz, ed. Mass Transit Management: A Handbook of Small Cities, 2nd ed., rev. UMTA, 1980.

Planning for Transit Development in an Era of Fiscal Scarcity

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An approach to transit development planning is presented that grew out of a research effort to formulate planning guidelines for the Iowa Department of Transportation for application to small urban and rural areas. A critique of the transit planning process is presented. It is concluded that planners must act not only as technical experts but also as facilitators who strive to ensure that local preferences and needs are reflected in the service ultimately provided. A "budget-constraint" approach to transit development planning is then laid out. Through surveys of transit users, the general public, business leaders, and political officials, views regarding goals and objectives are obtained. The results of the survey are discussed in a public meeting, where those in attendance may express their views. Out of these contacts with the public, the planner formulates and ranks a series of social objectives for transit in the area. The objectives constitute a basis for generating developmental alternatives. Each of the several alternatives is aimed at attaining the same objectives, but they vary in scale and, hence, in cost. Decision makers are thus able to perceive the incremental benefits and costs of moving from the smallest to larger alternatives. The approach allows citizen views to become the basis for the transit plan, and decision makers are enabled to make informed choices rather than merely respond to a finalized plan.

During the past decade, public transportation in small urban and rural areas has made major strides forward. As we enter the 1980s, however, the future of transit assistance programs at the federal level is not favorable. The impetus for starting new systems as well as for continued transit development, then, will increasingly have to come from the local and state levels of government.

This paper presents an approach to planning that aims at maximizing the ability of transit to respond to local needs, preferences, and desires. In the simplest terms, the rationale for this approach is that, since transit is a public service, it must be accountable to public choice. Taxpayers are more likely to support local expenditures on a transit system when they (a) have participated in the planning process from the beginning and (b) ultimately receive the level and nature of service they desire.

The approach to transit development presented in this paper grew out of a research effort to formulate planning guidelines for the Iowa Department of Transportation (1). Because the service environment and federal requirements for larger urban systems (those that serve cities of 50 000 population or more) are very different from systems found in small

urban and rural areas, the planning needs differ as well. The approach suggested here is geared toward the latter types of services, both for new systems and those already in operation.

In the first section of the paper, common deficiencies of the transit planning process are considered. Transit development plans (TDPs) for numerous localities across the United States were reviewed as part of this evaluation. In the second section, a participatory approach to preparing transit plans for small urban and rural areas is suggested. This method, called the "budget-constraint" approach, is offered as a means of facilitating greater involvement in the planning process by citizens and decision makers.

CRITIQUE OF TRANSIT DEVELOPMENT PLANNING

A review of documents on transit development planning indicates several common shortcomings. These deficiencies include (a) overemphasis on descriptive presentations, (b) failure to arrive at a real statement of purpose for transit, (c) limited involvement by citizens, and (d) lack of clear choices for decision makers. Each of these difficulties is discussed in turn, and then an approach to transit development planning that seeks to avoid them is presented.

Overemphasis on Descriptive Presentations

Most TDPs place heavy emphasis on a comprehensive description of the area: its population, geography, economic base, and the various forms of transportation available. There is no question that existing conditions must be understood before meaningful plans can be formulated; unfortunately, many TDPs amount to little more than a regional description. This description implicitly becomes the basis for requests to the state for transit assistance, as much as to say, "Because of the conditions existing within our region, we request...."

The point is that careful analysis of the region is often lacking in terms of transportation needs

(2), the extent to which existing transportation facilities meet these needs, and how additional funds will help. Could the requested funds be deployed so as to better meet local needs and preferences? Are local willingness and ability to pay for transit such that a fairly high level of service could be offered, given some amount of state (or federal) assistance? For these essential questions to be answered, a thorough analysis is required. Descriptive presentations simply are not sufficient.

No Real Statement of Purpose

A document that sets out to chart a developmental course for transit within a small urban or rural area must contain a clear-cut statement of the ends for which transit is to be provided: What is its purpose? Particularly in the current era of fiscal scarcity, it is not enough to assume that transit is a "good thing" and therefore should receive the requested local, state, and federal funds. The TDP should specify the social objectives each system is intended to achieve. (Within a given planning region, a rural demand-responsive system may well be geared toward achieving quite different purposes than a fixed-route system operating in an urban area.) It is worth stressing that the emphasis here should be on social objectives rather than service standards. For example, a transit system that serves a small urban area might have as its key purpose providing a ride to work for those who do not have an alternative mode (i.e., those with the greatest need). On the other hand, arriving at all bus stops within 5 min of the schedule, though laudable, is not a social objective; it is a service standard. Maintaining service standards, in and of itself, is not the ultimate purpose for which transit is provided. Again, transit must be viewed as a public service if it is to claim taxpayers' dollars.

Limited Involvement by Citizens

Transportation planning frequently suffers from the same "technically rational" orientation as traditional comprehensive planning. Specifically, the planner is assumed to have (a) an overall sense of the public interest and (b) an all-encompassing knowledge of possible actions that enables him or her to gauge the approximate net effect of each action on this public interest (3, p. 186). In its most technical version, this orientation leads to a substitution of the planner's intuition for a more participatory process. An increasing number of writers recognize the severe limitations of the planner as a technician, an analyst, isolated from the members of society he or she serves (4).

In an attempt to promote citizen participation in the transportation planning process, regulations issued jointly by the Federal Highway Administration (FHWA) and the Urban Mass Transportation Administration in 1975 mandate provisions "to ensure involvement by the public" (5). To comply with this directive, many areas have formed citizens' advisory committees. Although such committees have functioned effectively on certain occasions, this approach to citizen involvement has several important limitations:

1. Some client groups go unrepresented, since the committee members are unlikely to be representative of every segment of the region's population.
2. Group dynamics may work against those with limited bargaining or negotiating skills.
3. Compared with approaches that do not involve a continuing participation by the same person, members will be self-selected on the basis of their sustained interest.

4. Local support for transit is not stimulated, since few citizens are directly involved in the planning process.

A fuller discussion of advisory committees is given by Wellman (6, pp. 649-650).

If transit development plans are to reflect adequately the preferences, needs, and desires of the population served, direct interaction between the planner and those being planned for is indispensable. Friedmann (7, pp. 172-173) has pointed to the need for "transactive" planning, whereby the technical knowledge of the planner and the experience of the citizenry are brought together. Among the techniques for bringing about public input are surveys and public meetings.

Lack of Clear Choices for Decision Makers

One of the most common deficiencies in transit development planning is a failure to present decision makers with clear choices. One of two conditions prevails: (a) The planner surrounds his or her preferred course of action with several "straw" alternatives, which are clearly inferior to the preferred one; or (b) the planner selects an alternative and its implementation is discussed in the more or less completed TDP, which is presented to decision makers for their endorsement. Davidoff and Reiner (8, p. 108) note, "If an ultimate objective of planning is to widen choice, and the opportunity to choose, then the planner has the obligation not to limit the choices arbitrarily."

This is not to say that the planner must remain value free. The planner should seek out the values of different groups of potential users and taxpayers (e.g., the elderly or those in business) and transform these values into recommendations to decision makers. As Simon (9, p. 80) emphasizes, it is quite impossible for decision makers to possess complete knowledge of all possible alternative developmental strategies as well as the attendant costs and benefits. The planner can greatly facilitate enlightened decision making by providing the necessary facts and revealing a hierarchy of values derived through close contact with client groups.

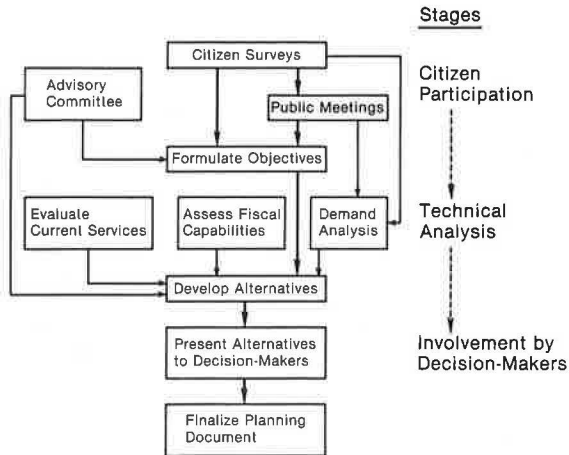
BUDGET-CONSTRAINT APPROACH TO TRANSIT DEVELOPMENT PLANNING

The chief conclusion from the foregoing evaluation is that transit development planning needs to be opened up to citizens and decision makers. The planner must act both as a technical expert and as a facilitator who strives to ensure that local preferences, needs, and desires are reflected in the service ultimately provided. Especially during the current period of fiscal scarcity, the planner has to be capable of providing decision makers with clear choices: What are the incremental benefits and costs of moving from some baseline service to higher levels?

The guidelines developed for the state of Iowa are an attempt to make the transit planning process more participatory. The approach called for in these guidelines is depicted by the flow chart shown in Figure 1. The process begins with a survey of area citizens. Results of the survey are presented at a public meeting, where those in attendance are encouraged to express their views. Out of these contacts with the public and the inputs from the advisory committee, if one exists, the planner formulates and ranks objectives to which transit should contribute.

The objectives constitute a basis for a technical analysis to generate alternative developmental paths

Figure 1. Steps in the planning process.



for the system. In formulating these alternatives, demand for service, current transportation options, and the fiscal position of the area are considered. A key feature of this approach is that the alternatives are all geared toward attaining the same objectives but they vary in scale and, hence, in cost. Decision makers are thus able to assess the incremental net benefits of moving from the smallest to larger, more costly alternatives. Only after a choice, and thus a commitment, has been made is the planning document finalized. Each of these steps is discussed in greater detail below.

Citizen Surveys

The initial mechanism for obtaining citizen views about which social objectives transit should pursue is a short survey. Transportation planners have used surveys for many years to obtain data on people's attitudes, life situations, and actual behavior. It is generally recognized that surveys used to estimate user demand for new or reconfigured services are of limited value because respondents have difficulty evaluating hypothetical circumstances (10, p. 57). For this reason, surveys are likely to be more effective in measuring societal demand--the desired level of transit service and its purpose--than in estimating private demand that relates to expected personal use.

For the purpose of establishing objectives for transit, a mail-back format is preferable because (a) it is relatively inexpensive, (b) respondents need not be in close proximity (they are likely to be scattered in rural areas), (c) it is easy to administer so that no interviewers need be trained, and (d) sample division, or stratification, is not difficult. The last point is important because the planner should elicit responses from several subsamples, including the general population, business leaders, and local politicians. Manheim and others (11, p. 9) maintain that completely similar views across different population groups are unlikely on anything more specific than the most abstract objectives.

The survey instrument itself should be short and simple. Very limited personal data are needed, which should contribute toward higher response rates (field tests of this procedure have yielded variable return rates, occasionally as high as 60-75 percent). In terms of substance, the form may have several major sections. One section contains questions that pertain to the sufficiency and quality of the transportation services currently available to

the individual. Another section is intended to measure the importance of social objectives that could be pursued through providing transit service. Because the list of possible purposes is limited to those included on the form, care must be taken to be comprehensive but precise. A third section amplifies the second; here the respondent identifies the types of individuals and trip purposes that should be served in order of priority.

Public Meetings

Once the survey results have been tabulated, the findings are presented to the public at a general meeting. Those who were not included in the sample are thus given an opportunity to express their views. In the context of each objective, specific service deficiencies and suggestions for improvements are discussed. Because the planner is acting as moderator, explaining how survey respondents felt and noting comments, he or she need not assume the defensive. Trial applications of the survey-meeting sequence have been positive experiences for planners, who previously had suffered through nervous defenses of completed plans that had been prepared with little public input.

A significant by-product of the meetings is a substantially greater public awareness of the issues present in planning for transit development. Understanding the criteria for federal matching funds, the extent of state assistance and how it is distributed, and the approximate cost of alternative service levels can serve to increase the willingness to contribute local tax dollars for transit.

Objective Formation

Increasingly, researchers are stressing the importance of public input in the formation and ranking of objectives for transportation services. A variety of techniques, often quite complicated, has been devised, including a rating scheme that uses a judging panel composed of advisory committee members (12) and a dollar-scaled mechanism used to assess the value ascribed to a series of transportation characteristics (13).

To avoid unduly complicating the transit planning process in small urban and rural areas, an easy-to-implement approach was selected. The tabulated responses from the section of the citizen survey that pertains to social objectives for transit are rank-ordered by subsample. To combine subsamples that represent unequal fractions of their respective population segments, the responses in each subsample are assigned a weight that serves to equalize the emphasis placed on each person's response within the entire sample (14, pp. 102-105). This relatively simple approach provides the planner with an overall ranking of local objectives for transit on which development plans can be based.

Development of Alternatives

The most significant innovation of the transit development planning process devised in this research is the budget-constraint approach to alternative generation and selection. Given a set of ordered transit objectives, service elements are designed to pursue each of these objectives. For example, if an objective were to "enable those who do not have an automobile available to have access to employment opportunities," a rural commuter route leading to various employment centers might constitute one service element. The cost (net of revenues or contract payments) of providing each service element is estimated.

Instead of formal demand modeling techniques, which can be quite data intensive and often have limited applicability in small urban and rural areas, a simpler analysis is suggested. In its most basic form, this analysis consists of identifying major activity centers (e.g., hospitals, employment concentrations, and retail facilities) and the residential locations of those who are most likely to use the services being planned. The origins and destinations of probable users can then be considered in establishing new or expanded services. Experience has shown that, once a system is operational, articulated demand is the best method for refining the spatial configuration of transit in small urban and rural areas.

Especially in the case of new regional transit operations, the planner should work closely with directors of the various human service agencies within the area. Rural transit operations are often partly financed by contract revenues from these agencies. To the extent that this is the situation, the specific mission and approximate ability to pay of the region's service agencies will delimit the general types of services that can be provided. In general, significantly more planning flexibility exists when services are financed by various levels of government rather than by contracting agencies.

By reconciling this potential supply of transit service with the anticipated demand (its level and spatial pattern), individual service elements can be delineated. A successful planning effort is one that combines the resources available from a variety of sources to meet the needs of each funding organization while contributing to the objectives the people of the region deem important.

Several alternatives can now be developed, each of which contains a series of service elements. In the lowest-cost alternative, only those elements that pertain to the highest-ranked objectives are included. Another more costly alternative can then be generated that involves the same services as the first plus service elements for one or more lower-ranked objectives. The budget for each alternative, then, constrains the number of service elements that can be included and, hence, the objectives that can be pursued. [It is worth noting that Dyckman (15) suggested this sort of approach to planning 15 years ago, but I know of no previous applications to transit development planning.] The guidelines for Iowa encourage planners to devise a minimum of three alternatives: (a) a low-cost, minimum-service-level alternative; (b) an alternative with moderate service levels and expenditures; and (c) an alternative predicated on a higher service level, though not of the "pie-in-the-sky" variety.

For each alternative, a complete budget is formulated. On the expenditure side, the budget includes (a) the running costs associated with the service elements to be provided; (b) support functions, including administration, maintenance, and marketing; (c) special activities such as demonstrations; and (d) capital projects needed to provide the contemplated services. Expected revenues from contracts and the amount of funds to be requested from state and federal sources are shown as well.

A five-year development path is laid out for each of the alternatives. Detailed budgets are provided for the first two years, and sketch plans are prepared for the remaining three years. The sketch plans highlight developmental benchmarks and provide a capital improvement timetable. This timetable assists the state in programming its capital assistance and alerts local decision makers to forthcoming needs.

Presentation of Alternatives

Unlike most of the TDPs reviewed, the suggested approach does not call for the planner to select an alternative and then complete the document before submitting it to decision makers. Rather, the planner presents the several alternatives--their budgets, the services to be provided, and the objectives to be pursued. Starting with the lowest-cost alternative and proceeding to the more ambitious alternative, the incremental costs to the local government, the additional benefits, and their incidence are laid out.

With this approach, decision makers are faced with several alternatives of different scale and must reconcile the incremental benefits with costs. An interesting possibility grows out of this more participatory approach to transit development planning: When decision makers know what the public really wants, their valuations of the benefits of transit service may increase. Even though decision makers rarely think in terms of net benefits per se, they are interested in allocating scarce fiscal resources to services that are needed and preferred by their constituents. The budget-constraint approach affords them a means by which to make more enlightened decisions.

Completion and Use of TDP

Only after decision makers have selected an alternative is the TDP finalized. In Iowa, subsequent grant applications for state and federal pass-through assistance [primarily FHWA Section 18 (Surface Transportation Assistance Act of 1978)] must conform directly to the budget of the alternative selected by the applicable policy board and published in the TDP.

A practical function of the completed TDP is to serve as a management aid to the transit operator. A clear statement is made in the document as to which services are to be offered and why. Then, if local economic conditions change so that added or reduced transit service becomes possible or necessary, guidance is provided as to which service elements should be retained, added, or deleted.

CONCLUSIONS

The approach to transit development planning formulated in this research is designed to involve citizens and decision makers in the planning process. The objectives the plan is oriented toward achieving are achieved through direct contacts with the public. Decision makers are afforded the opportunity to examine incremental service benefits and their costs and to make an informed choice. Greater local support for transit is a likely by-product as citizens and their leaders acquire a better understanding of the issues and options related to transit service in their community.

REFERENCES

1. D.J. Forkenbrock. Regional Transit Development Planning Guidelines for Fiscal Years 1982-1986. Iowa Department of Transportation, Ames, 1980.
2. K.C. Koutsopoulos. Determining Transportation Needs. Traffic Quarterly, Vol. 34, No. 3, July 1980, pp. 397-412.
3. A. Altshuler. The Goals of Comprehensive Planning. Journal of American Institute of Planners, Vol. 31, No. 3, Aug. 1965, pp. 186-195.
4. M.W. Webber. A Difference Paradigm for Planning. In Planning Theory in the 1980's: A

- Search for New Directions (R.W. Burchell and G. Sternlieb, eds.), Center for Urban Policy Research, Rutgers Univ., New Brunswick, NJ, 1978, pp. 151-162.
5. Federal Highway Administration and Urban Mass Transportation Administration. Transportation Improvement Program. Federal Register, Vol. 40, No. 181, Sept. 17, 1975.
 6. B. Wellman. Public Participation in Transportation Planning. Traffic Quarterly, Vol. 31, No. 4, Oct. 1977, pp. 639-656.
 7. J. Friedman. Retracking America: A Theory of Transactive Planning. Doubleday and Co., Garden City, NY, 1973.
 8. P. Davidoff and T.A. Reiner. A Choice Theory of Planning. Journal of American Institute of Planners, Vol. 28, No. 2, May 1962, pp. 103-115.
 9. H. Simon. Administrative Behavior. Free Press, New York, 1957.
 10. D.T. Hartgen and C.A. Keck. Forecasting Dial-a-Bus Ridership in Small Urban Areas. TRB, Transportation Research Record 563, 1976, pp. 53-62.
 11. M.L. Manheim, J.H. Surhbier, E.D. Bennett, L.A. Neumann, F.C. Colcord, Jr., and A.T. Reno, Jr. Transportation Decision-Making: A Guide to Social and Environmental Considerations. NCHRP, Rept. 156, 1975.
 12. C.C. Schimpeler and W.L. Grecco. Systems Evaluation: An Approach Based on Community Structure and Values. HRB, Highway Research Record 238, 1968, pp. 123-143.
 13. R. Pulliam, R.F. Pain, M.T. Shaffer, and J.L. D'Ignazio. Survey to Assess Public Perception of Values Critical to Transportation Planning. TRB, Transportation Research Record 617, 1976, pp. 13-18.
 14. E.R. Babbie. Survey Research Methods. Wadsworth Publishing Co., Inc., Belmont, CA, 1973.
 15. J.W. Dyckman. Social Planning, Social Planners, and Planned Societies. Journal of American Institute of Planners, Vol. 32, No. 2, March 1966, pp. 66-76.

Replanning Existing Rural Public Transportation Systems

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A commitment to provide accountable, effective, and responsive transportation services can best be supported by hard factual data concerning effectiveness and efficiency measures. Based on an analysis of system goals versus current performance, a transit system manager can preserve, enhance, alter, or terminate system operations. Methods of improving effectiveness and efficiency are discussed along with methods of handling six common problems: lower ridership than expected, low vehicle use, low revenues, basic changes required, cash flow, and use of incorrect or inappropriate types of vehicles.

As a relatively new field, rural transportation lacks the historical data bases used by other elements of the transportation industry to consider alternative scenarios [although a number of relatively new training references (1-4) provide important guidance]. So it should surprise no one that even the best-laid plans for rural public transportation will, of necessity, be subject to review, evaluation, and probable changes. After looking at the benefits of changing ongoing systems, this paper discusses some of the initial decisions that are frequently valuable candidates for reexamination once the system and its personnel have some experience against which to test their initial plans, including ridership, system design, cash flow, and vehicle specifications.

BASIC INGREDIENT: A COMMITMENT TO IMPROVE

The evaluation of the Section 147 (Federal-Aid Highway Act of 1973) demonstration project (5) showed that projects that experimented with their operations with the idea of making continual improvements were very successful. Of course, the willingness to change had to be implemented in such a fashion as to maintain public confidence in the availability of service. Projects that took a long time to change unproductive routes and practices generally showed

very poor statistics (6-10).

The basis for making such changes must be an evaluation of how well things are going at the present time. That question must be answered by hard factual data concerning factors such as ridership and costs, potential costs of service changes, effectiveness measures, and attitudes of community leaders and others. The need for factual data can only be satisfied by a serious data-collection effort by the system's managers.

The major reasons for evaluating system operations are

1. To better meet the needs of the people and the objectives of the system,
2. To control the costs of service,
3. To support and justify charges to social service agencies and other agencies that have contracts for service,
4. To obtain factual information for purposes of public relations with the local community and government sponsors, and
5. To provide an example for other projects about successful operations.

Whereas some systems do not have a definite procedure for assessing when system changes are required, others have experimented with routes and schedules in a formal way. This means that problems were observed, solutions were designed and implemented, and tests were conducted to monitor the experiment. All stages of the process were written down. In contrast, another system observed noted that it had a real problem knowing when to change routes. It was suggested by the Federal Highway Administration (FHWA) regional office that the system experiment with different times for relatively