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Transportation Systems Management (TSM) is a process designed to make more efficient use of present transportation facilities. Promotion and development of transit services is one aspect of TSM and transit proposals must be able to be compared and weighed against other transportation improvements.

The Federal Regulations establishing the requirements and form of TSM require "Monitoring and reporting of urban development and transportation indicators..."¹ for transit. Yet, there is no accepted means of evaluating performance in transit systems: the criteria for evaluation have not been clearly described, nor is the data presently reported by transit agencies suited for comparative evaluation.

Although comparative evaluation has been neglected by the transit industry, that attitude has changed. In remarks at the 1977 Transportation Research Board meeting, B.R. Stokes, the Executive Director of the American Public Transit Association, indicated that operating and financial data must permit comparison of systems and groupings of systems.²

The Institute of Transportation Studies has developed criteria to evaluate transit performance,³ but there is insufficient reliable information

¹ CFR 450.120(a)(8)(vi).

² "APTA Calls For Increased Data Collection," Passenger Transport, January 28, 1977, p. 3.

³ Conceptual problems in criteria development are discussed in Fielding and Glauthier, Distribution and Allocation of Transit Subsidies In California, University of California, Irvine, Institute of Transportation Studies, September, 1976.

to test their usefulness. Performance indicators have been specified for each criterion,⁴ and we have attempted to collect operating and financial information from public transit operators throughout California to test the usefulness of the indicators. The experience of two months of collection effort, together with literally hundreds of telephone calls, has led to the conclusion that accurate financial and operating data for the public transit industry is presently not available nor can it be reasonably collected. Without such data, comparison of systems is not possible, comparison of any system's performance in successive years may not be reliable, and certainly, the information on which TSM policies and policies are based is questionable.

This paper details the problems encountered and the issues raised by our experience in collecting reliable and uniform data from operators within California. It is perhaps useful at the outset to acknowledge that California is an optimistically-biased case. Only a few states presently have annual reporting requirements for transit properties; Pennsylvania, Wisconsin, and Michigan together with California being the most comprehensive. California has had uniform reporting requirements since passage of the Transportation Development Act in 1971. The Act makes specified sales tax revenues available to transit, and requires annual claims for these funds to be accompanied by specific operating and financial data.

⁴ A typical criterion of efficient performance is that of Labor Productivity. Possible performance indicators of this criterion are vehicle hours per employee and vehicle miles per employee.

There are three appropriate questions: (1) Why is the data not being reported? (2) What does the data mean? and (3) Is the data outdated? The paper will conclude with a brief examination of present reporting requirements and some recommendations for improvement of transit statistics.

Why Is the Data Not Being Reported?

Operating and financial information which is made public or available outside the transit organization often omits important data elements.

The first reason for missing elements centers on the ability of the transit property to generate the required data. Shortage of manpower and absence of basic elements on the property's record system are understandable reasons for missing data. Statistics on accessibility of people to the transit system, for example, require time and effort beyond that available to some properties. The promulgation of standard reporting requirements for all operations generally disregards differences in generation capabilities.

Another reason for missing elements is that they may be inappropriate for the particular transit system. Route-miles and accessibility measures, for example, are inappropriate for demand-responsive systems.

A third reason for missing data elements is that governmental agencies charged with collecting such data, seldom have effective means for enforcing timely and complete responses from the operators or choose not to use enforcement options available to them. Our research found no legal obstacles to the use of enforcement techniques in the execution of California's TDA requirements, yet reports were still found to be submitted to the state without the information of certain operators.

Fourth, important information which up to now has not been required may constitute as much of an omission as any blank in a reporting form. In California, for example, each operator is required to submit an estimated budget for the upcoming fiscal year, but there is no requirement for the reporting of actual expenditures at the close of the fiscal year. Without actual expenditures, only very limited evaluations may be conducted.⁵

What Does the Data Mean?

Apparently similar data items for different properties are often very dissimilar when analyzed in detail. Some of this difference is due to generation techniques used: just as different generation techniques require different investments of manpower and resources, so do they arrive at somewhat different values. Transfer passenger figures are one example of an item which can be computed through more than one technique; some properties use mechanical counters, others transfer tickets, and others survey estimates. Accessibility measures are another example: they may be carefully computed using census data and maps, or estimated on the basis of operator knowledge and experience.

Significant differences in data content can often be traced to a lack of clarity in the requirements and terminology to which the report responds. A request for "operating expense", for example, will produce

⁵ SB759 (Mills), introduced into the California Legislature on March 31, 1977, would correct this omission by requiring operators to submit a certified fiscal year financial audit report within 180 days after the end of each fiscal year.

very different statistics depending on the particular operator's understanding of the term; some will include only cash expenditures, disregarding services not explicitly funded by the property and most will omit depreciation. Reporting of system employees or total manpower provides another example of imprecise requirements.

California's TDA requires reporting of total employees of the system and total drivers. When examined, the statistic reported is strictly full time employees with no accounting for services--like maintenance and accounting--of other municipal departments or outside contractors.

Similarly, a request for "route miles" opens a "Pandora's Box" of definitional problems and conflicting requirements. Route-miles may be one-way or two-way, may be duplicating or non-duplicating, and there appear to be no standard terms to denote these characteristics. Examples of ill-defined terms and requirements are many; the point being that virtually every common statistic relating to transit may be defined in more than one manner.

Another problem with transit data is the attitude in the industry that similarly titled statistics from different properties are just not the same--that a "vehicle mile traveled" in Oakland is not the same as a "vehicle mile traveled" in Baltimore or San Diego. The issue of comparability of transit properties has been carried to a point where many individuals contend that no aspect of performance may be compared in the absence of environmental, demographic, political or other considerations. There is little question that these factors do affect the interpretation of one system's performance as compared to another, but they do not preclude evaluation of all aspects of transit performance.

Evaluation is necessary for decision-making and good management, and this evaluation must consider the effects of the area in which transit operates when interpreting the results.

Is the Data Outdated?

The nature of the transit industry and the reporting process through which data passes results in significant questions about the appropriateness of commonly available operating and financial data for performance evaluation and support of governmental decision processes.

The past decade has seen unprecedented change in the transit industry. In the sphere of organizational change, transit has become largely a public enterprise often absorbing small, traditionally private operations into larger regional operations. Provision of governmental funds for capital investments and operating subsidies has produced marked changes in operating and service philosophies in the industry. Government encouragement of innovative service modes has also enlarged the scope of services provided by the operator.

Such factors have combined to create a dynamic environment in which conditions and organizations are seldom stable. This dynamism alone produces an incidence of reported data which is quickly made inappropriate through organizational and operational change.

The reporting channels through which data is transmitted exacerbates this effect of dynamism by the time consumed in requesting, transmitting, and reporting of data through different levels. Our research has encountered situations in the reporting procedure for California's TDA where the time necessary for information to progress from operator

to its final destination is so great that data formally titled "actual" operating statistics are, in reality, estimates made months before the end of the fiscal year.

Existing Reporting Requirements

A number of the problems cited are aggravated by the existence of multiple reporting requirements; among them shortage of resources, inadequate time to compile reliable and complete statistics, and confusion over precise definitions.

At the present time, transit properties respond to requirements from federal, state, and local levels of government--and in each case the desired items are defined somewhat differently. The federal level requires properties to submit selected operating and financial information in support of both Section 3 and Section 5 grant applications, and in these cases many of the exhibits are the same for both. The state level in California, by way of the regional planning agencies, requires submission of the detailed statistics of the TDA claim. The regional transportation planning agencies require properties to provide their individual contributions to those areas' transportation plans and Transportation Improvement Programs. And finally, the local governments, agencies, and transportation boards--who are ultimately responsible for the properties' policies and major operational decisions--require submission of such statistics as will justify appropriations and comply with the requirements of local auditors.

These reports constitute significant investments of time and personnel. And, while not all of the reports listed require the financial and operating statistics with which this paper is concerned, they are--

in the majority of transit properties--prepared by the same personnel.

Will the FARE System Help?

UMTA's Section 15 reporting requirements have been awaited as (take your pick) a solution for, or an addition to, these problems in reporting and data reliability. The final implementation guidelines for the Uniform System of Accounts and Records were published in the middle of January, 1977.⁶ The system clearly defines the elements it requires and how they are to be reported.⁷ It prescribes accounting procedures to be followed and general techniques for obtaining nonfinancial statistics. It even promises development of statistical sampling techniques that will provide practical methods for obtaining passenger statistics.⁸

The system directly addresses the problems of imprecise requirements and definitions. It also appears to specify generation techniques and to indicate federal interest in simplification of such techniques.

With the introduction of the Section 15 system, the major issue will change from the uniformity and reliability of available data to the relevance of the data to be collected. The inherent value of particular data items being required will be questioned. Unlinked passenger trips and passenger miles, for example, are the sole measures of patron-

⁶ Federal Register, January 19, 1977, Part II.

⁷ The requirements are detailed in the four volume report, Urban Mass Transportation Industry Uniform System of Accounts and Records and Reporting System, Report No. UMTA-IT-06-0094-77-1, January 10, 1977.

⁸ Ibid., Vol. II, p. 2.11-1.

age and system utilization--absent are commonly accepted statistics such as revenue passengers and transfers.

These requirements constitute another report and a completely new set of accounts and records. They hold promise for remedying many of the problems found in existing data, but do not appear to be the panacea anticipated by some. A major objective behind industry involvement in developing this system was that it would satisfy the requirements of all levels of government.⁹ It is unclear whether the system will achieve this objective.

Conclusion and Recommendations

This paper has attempted to relate the frustrations and problems encountered in obtaining reliable operating and financial data from approximately 75 transit properties in California. Other projects might vary in terms of both data requested and properties involved, yet we believe that the fundamental problems of obtaining reliable information and understanding and controlling for basic differences in data between operators will still exist.

A number of recommendations follow from the preceding comments. The first of these is that data requirements and data reporting channels urgently need simplification. The new UMTA reporting standards are a step in the right direction, and should be followed by elimination of unnecessary reporting requirements at the federal and possibly the state levels. At the same time, requirements must be examined to insure in-

⁹ Ibid., Vol. I, p. 1-5.

clusion of all truly necessary data items.

The second recommendation is that required data items must be clearly defined and that generation techniques must be specified. Again, the UMTA system addresses this point.

Finally, the area of data requirements, collection, and use, needs the combined and cooperative attention of the transit industry, government, and the research community. It is necessary for both the users and the suppliers of such information to agree on its content, significance, and limitations. Other issues requiring the attention of such a cooperative effort include evaluation techniques, the effects of demographic, geographic, political, and other factors on evaluation measures, and the uses and limitations of such measures.

We have attempted to evaluate only one area which comes under TSM. We anticipate even greater evaluation difficulties in other areas; synchronized traffic devices, carpooling efforts, express lanes for high-occupancy vehicles, and bicycle and pedestrian lanes to name some of the most difficult. Requirements for evaluation are not enough--effort and research must make these evaluations meaningful.