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MEASURING THE ACHIEVEMENT OF NATIONAL URBAN TRANSPORTATION GOALS AND OBJECTIVES: THE ROLE OF METROPOLITAN PLANNING ORGANIZATIONS

BY

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INTRODUCTION

As the federal government becomes more involved in financing transportation at the state and local governmental levels, both the legislative and executive branches need feedback as to the effectiveness of federal assistance. This is increasingly a concern as the financial assistance now encompasses local transit operating assistance and street and highway maintenance, areas previously a state and local responsibility. As long as the federal government confined its role to grants-in-aid for capital expenditures, the U.S. Department of Transportation could count the number of buses purchased or miles of roadway constructed with federal assistance and report progress to the U.S. Congress.

The benefits of federal involvement in operations and maintenance are more difficult to assess than involvement in capital projects. How can Congress determine whether national transportation goals and objectives are being met and whether federal funding of transportation is helping to improve the level of transportation services? Congress needs information on the supply, demand, and utilization of transportation. This information could be derived from a national level data collection effort undertaken by the U.S. Department of Transportation or by requiring that state and local governments participating in federal aid programs report data to be used to assess national level programs.

Normally, Congress employs the latter method--that of requiring localities to supply data for program evaluation. In fact, the National Transportation Act of 1974 which established the Section 5 Operating Assistance Program also set forth a data reporting requirement (Section 15) which is now called FARE. FARE requires public transportation operators receiving Section 5 operating assistance to report data on their operations as a condition for receipt of federal

operating assistance (Federal Register, 1-19-77). Similarly the U.S. Department of Transportation has recently issued a data reporting requirement for Metropolitan Planning Organizations (MPO) to collect general transportation related data to assess transportation goal achievement in a broader context (UMTA and FHWA, 1978).

Purpose

The institutionalization of the MPO data reporting requirement is the focus of this report. The purpose of this investigation is to assess the extent to which the MPO data reporting requirements can serve both local data needs for transportation planning at the metropolitan level, and national needs for assessing the performance of the nation's urban transportation system. This dual purpose for data reporting is deemed important because the quality of assessment at the national level is dependent on the quality of data reported by the MPOs, which in turn is dependent on their need for and commitment to the data.

Consequently the design of MPO data reporting requirements was constrained by a recognition that the U.S. DOT should not burden the MPOs with costly data collection, especially data for which the MPOs have no use. The attempt was to require data that the MPO now uses/wants/should want for their own planning. The assumption is that data of interest to the MPOs would be generated more readily and be of higher quality than imposed data items. This constraint of not burdening the MPOs was also felt in the explicit objective of minimizing the number of data items requested. A few key measures were sought that could be used to assess national transportation objectives.

Re-experiencing the data problems of the 1972-1974 National Transportation Needs Study is not desired. Those efforts required state and local governments to provide data on an ad hoc basis that was difficult to collect and

assemble. There was considerable resistance in providing the data by state and local governments, and the quality of the data was suspect, as many respondents allegedly invented/ guessed/fabricated/estimated data.

The purpose, then, is to assess how well the MPO data reporting requirements would be received and accommodated locally, and the likelihood of producing quality data. In addition, is it possible to extract, from local data needs, a select set of data that can be employed to assess national urban transportation? This question cannot be addressed fully in this limited study, but the question should be recognized because of the importance of this tradeoff in designing the MPO data reporting requirements.

Assessing the MPO data reporting requirements necessitates an examination of the past and current transportation planning processes, for it is the planning at the metropolitan level that drives the local data requirements. These local data requirements, then, provide the framework within which a subset can be selected for assessing urban transportation nationally.

This report is separated into four parts: 1) the status of urban transportation planning, 2) origins of TSM, 3) data collection and its influence on the "type" of planning being done, and 4) impacts of TRB's new data reporting set on two particular MPOs. The separate parts are necessary in order to place data reporting in context. Connections between the individual parts should be thought of in a hierarchical fashion--the first tier being the evolution of a changing transportation planning process; the second tier being one facet of that process, data reporting; and the third tier being the data reporting impacts on two specific MPOs--Cedar Rapids and Bi-State (Davenport, Iowa and Rock Island, Moline, and East Moline, Illinois).

THE STATUS OF URBAN TRANSPORTATION PLANNING

Throughout the 1960's and early 1970's, urban street and highway planning, as embodied in the FHWA-supported urban area transportation studies, had a long-range orientation. On the other hand, transit planning, as embodied in UMTA-supported transit technical studies, had a short-range orientation. There were problems with both processes. The street and highway planning suffered from being too remote from current decisions, too accepting of committed facilities, and too oriented to supply of facilities with little consideration of options to constrain demand. The urban area transportation studies failed when freeway revolts, environmental concerns, and energy shortages exposed the inflexibility of the plans and the methodology upon which the plans are based.

Similarly, but less seriously, transit planning has been recognized as being too short range, ad hoc and grant application oriented. Attempts to integrate street and highway planning with public transportation planning is occurring under FHWA-UMTA joint planning requirements. This new multi-modal planning is called Transportation Systems Management (TSM). TSM emphasizes making better use of existing transportation facilities and services and emphasizes short-range planning.

THE ORIGINS OF TSM PLANNING

A rapid growth in automobile travel from the 1930's into the late 1960's created an insatiable demand for new and improved urban streets and highways. Federal transportation policy responded to this demand by encouraging and assisting in construction of new streets and highways. Initially, it was thought that increasing highway capacity would reduce congestion, while over time it became apparent that more highway capacity could not keep pace with the increase in vehicles. With this realization and a growing concern for the environment, energy consumption and mass transit, federal transportation policy began to shift away from highway construction. During the 1970's transportation officials also began to accept the amount of investment in highways as being continually limited. Interest in traffic management techniques began to grow as a new method of dealing with the still increasing demand for automobile travel.

Meanwhile, in 1966 and 1967, the Bureau of Public Roads initiated a program called "Traffic Operations Program to Increase Capacity and Safety (TOPICS)." The TOPICS program drew out the Bureau's long time interest in increasing the traffic-carrying potential of arterial streets through traffic operations improvements. The program offered 50-50 matching funds with the states and allowed the use of federal aid highway funds for the improvement of traffic flow on urban streets.

The TOPICS guidelines had a stipulation requiring a long-range plan of improvements for the federal aid systems, using traffic engineering principles. No project could be approved until an areawide plan of traffic operations improvements was developed. Because of this stipulation, the short-range planning process incorporating traffic operations improvements became, on paper, an integral part of the urban transportation planning process. The general intent of the program was to

develop a process which identified low cost improvements. The status of TOPICS changed in 1975 when FHWA and UMTA issued their joint planning regulations. TOPICS improvements are now included within the urban transportation planning process as part of the required TSM element. This change placed traffic engineering considerations in the planning and programming stages of TSM. A significant product of the TOPICS program has been in creating an awareness of the benefits associated with traffic operations improvements.

The initial funds for the joint planning regulations were provided by the 1973 Federal Aid Highway Act. A provision in the Act made ½ of 1 percent of funds apportioned for the federal aid systems available to metropolitan transportation planning organizations for Section 134 planning. The joint planning regulations (Federal Register, September 17, 1975) required: 1) the transportation plan for metropolitan regions to consist of a long-range element and a short-range element addressing the transportation problems of the area; 2) that projects programmed in the Transportation Improvement Program (TIP) be drawn from those long- and short-range elements; and 3) a unilateral requirement from UMTA that reasonable progress be demonstrated in implementing previously programmed projects. The joint transit and traffic management is termed Transportation Systems Management (TSM).

Characteristics of TSM

The kind of planning represented by transportation systems management is responsive to the new trend in urban transportation planning as previously described. What is really new about TSM is not necessarily the techniques themselves, but the institutional framework--the cooperative way individual methods are put together into a package of strategies carried out by the various partners in urban transportation. The number of reports for guiding the local TSM process has been

numerous but confusing. The following elements and their discussions draw out the characterizing features of TSM as a form of planning.

1. TSM is a service-oriented planning. It deals with managing the output of existing facilities rather than the provision of new ones.

2. TSM uses a variety of multi-modal actions to solve problems. It often involves such a variety of options that meaningful comparisons between alternatives are difficult. TSM may be defined as more of a process and a series of options for selection, rather than in terms of methodology.

3. TSM is directed mostly at solving present problems, not future ones. TSM solutions are not generally aimed at conditions on some target date. Although there is an underlying sense that TSM actions are building to better performance in the long run, no vision of the accumulations from service-oriented planning is offered. The advantage of this orientation is that the aims of solutions are consistent with political and participant interests.

4. The emphasis of TSM is on localized, small-scale actions. The majority of TSM actions are within single localities and are often focused on the central city.

5. TSM is accomplished through a heterogenous group of participant institutions. Classical urban transportation planning involved a single metropolitan planning body, which ran the show from a technical point of view. In TSM, leadership is fundamentally in the hands of the MPO, but there is no basis for real central control in the process. Typically, there is no single agency which contributes the majority of new proposed actions, nor which provides the professional skills bit. Planning is more related to the operating characteristics of the transportation systems and as a result the operating agencies come into focus as an important group.

6. Monitoring is the formal technical element of planning most involved in advancing TSM. Monitoring is the important methodological issue in service-oriented transportation planning. Two types are important: 1) measuring the product of service-oriented planning by monitoring the physical installations of actions; and 2) supplying feedback on the effectiveness of decisions taken by monitoring the action's performance in altering the transportation system.

Connections Between TSM and Long-Range Planning

TSM has a tenuous relation to long-range transportation planning. Early regulations attempted to integrate the planning process by requiring TSM to be linked with the long-range plan, but recently the "Red Tape Reduction" task force of the U.S. DOT recommended this association no longer had to be documented. In addition, this is a time when interest and confidence in long-range transportation planning has declined. Long-range planning anticipated changes in locations of activities and travel behavior, while TSM is responsive to issues within grasp.

Nevertheless, a connection exists on paper (Section 450.16, Federal Register, September 17, 1975), and it can be argued that the connection should be strengthened. The long-range connection is important as a means of keeping short-range actions on course and relevant to the overall transportation planning job. Similarly, if TSM actions are to make significant contributions to the urban transport system, they can do so only through some form of consistency. An exclusively short-run focus may leave TSM in the role of an ad hoc system of repair, rather than as a part of transportation planning in general. By expressing long-range objectives in terms to which traffic management is responsive, a connection can be bridged. Such things as reduced vehicle miles of travel (VMT) per capita, raised passenger loading in certain corridors, and raised efficiency for particular modes are a few examples.

DATA REQUIREMENTS AND THEIR INFLUENCE ON PLANNING

Urban transportation planning is one functional element within the broader spectrum of all urban facilities and services. The data collected for the planning process can be viewed as influencing the characteristics of planning and its products. The type of transportation planning being done is related to both the data collected and the activities within the other urban facilities and service sectors. This part of the report uses the data/planning relationship to compare the changing data requirements between continuing transportation planning and TSM planning. Secondly, it moves into a general discussion of the MPO's planning role as influenced by the institutional and data reporting requirements/ constraints. The difference between Section 15's (Project FARE) data requirements and Metropolitan Planning Organization's (MPO) data reporting program must be pointed out before proceeding. On January 19, 1977 the Federal Register issued data requirements to the applicant and beneficiary of UMTA Section 5 funds (operating assistance). These requirements are addressed to the transit operator for comparison and performance purposes. The MPO's data reporting requirements are broader in scope. They are intended to provide information to FHWA and UMTA which will help in their assessment of how all transportation assistance is working in the urban environment.

Continuing Transportation Planning Data Requirements

The Federal Aid Highway Act of 1962 required urban areas with populations of 50,000 or more to engage in an approved program of "continuing comprehensive transportation planning" to be eligible for federal funds. (United States Code, Title 42.) In response, metropolitan areas set up transportation studies whose purpose was to identify the long-range (over the next 20 years) transportation needs of their area and evaluate

alternatives to satisfy that demand. To successfully accomplish this task, transportation planning agencies collected and maintained data which kept track of the constantly shifting patterns of social and economic activities in the urban area. The intention was to incorporate the causal elements of urban change related to transportation into the continuing planning process. Thus, continuing transportation planning's purpose was viewed as a continual re-evaluation of end state plans and the means of obtaining them. (Dueker and Horton, 1972)

Several data sources are necessary to develop an approved program of continuing comprehensive transportation planning. Secondary data sources such as census data or information generated by administrative record keeping could be used to provide information required to meet the needs for refinement and modification of existing transportation system plans. The categorization in Table 1 provides an example of data requirements for the continuing phase of urban transportation planning.

FARE Data Elements

Transportation planning is moving into an era of managing the existing system rather than expanding capital facilities. The census does not provide data on urban transportation facilities operating and financial characteristics. Such data is necessary to monitor changes in the transportation system and affect its performance. Hence, a change in the objective of transportation planning (from developing an end state plan to monitoring comparative evaluation and improving the existing transportation system) dictated a change in the required data reported. This change was made an institutional requirement through UMTA's Uniform System of Accounts and Records published in the Federal Register, January 19, 1977. For example, the FARE data elements contained in Table 2 illustrate the changing data focus to collecting transportation system operational information.

Table 1

Data Requirements for Continuing
Urban Transportation Planning

Data Items	Source
Population	School census, building permits,
Age	U.S. Census
Sex	
Dwelling Units	
Type	
Density	
Occupancy	
School Enrollment	Schools
Type	
Employment	State
Retail	
Wholesale	
Manufacturing	
Extractive	
Service	
Auto Registration	County
Land Use	Survey
Commercial areas	
Non-residential, floor area	
Traffic	
OD	Questionnaires, special tab from Census
Generation	Small sample home interview
Speeds, volume capacity	

Source: Dueker and Horton, 1972.

Table 2

Project FARE Data Elements

-A measure of walking accessibility to transit systems and certain demographic data will be provided by the MPO for all urbanized areas with 50,000 or more population.

-Facilities and equipment

Miles of roadway or track
Railway classifications
Bus roadway classifications
Revenue vehicle inventory classifications
Number of passenger stations

-Employees

Transit operating personnel classifications
Employee count classifications

-Maintenance Performance and Fuel Consumption

Roadcalls for mechanical failure
Roadcalls for other reasons
Labor hours for inspection and maintenance of revenue vehicles
Fuel power consumption
Number of light maintenance facilities

-Safety

Collision accident classifications
Noncollision accident classifications
Injury and damage classification

-Service Supplied and Vehicle Utilization

Average and total vehicles operated
Miles of revenue service
Miles of total service
Miles of charter and school bus service
Hours of revenue service
Hours of charter and school bus service

-Passenger Utilization

Unlinked passenger trips
Passenger miles
Average time per unlinked trip

The MPO's Planning Role and the Influence of Institutional and Data Reporting Requirements

The Metropolitan Planning Organization's (MPO) role in urban transportation planning has increased over the last few years. Their responsibilities have changed as FHWA and UMTA policies developed and as short-range (TSM) planning emerged. During 1973, the U.S. Department of Transportation asked state governors to designate a single planning agency within urban areas to plan for both highway and transit improvements. In spite of specifications and guidelines defining the MPO's function, the MPO's role in urban transportation is still developing. The next discussion draws out the new institutional structure by discussing and clarifying U.S. DOT intentions toward the MPO's planning role and by discussing the recently mandated planning and data regulations.

Planning organizations have seldom had direct implementation power. They usually lack programming authority, meaning the plans produced are not ensured of implementation. Recognizing this, U.S. DOT assigned MPOs some programming functions. That is to say, MPO review and approval of projects within the urban area is necessary before receiving federal funds. The "ideal" role for an MPO encompasses two areas: 1) the MPO's role in the planning process, and 2) the MPO's role as the regional programming agency. A distinction is made here between planning and programming. The term planning is defined as an identification and analysis of alternative actions. Programming is the term reserved to mean the actual decision process among alternative courses of action. Through a review of the current legislation, regulations, guidelines and administrative actions, the following outline is assembled to show the federal intentions toward the MPO.

MPO's role in the planning process:

*Develop a comprehensive and coordinated program of planning activities to be carried out by the various planning organizations in the urban area.

*Develop a unified work program which describes and and justifies how planning activities contribute to decisions between transportation improvement alternatives.

*Ensure adequate public participation in the preparation of regional transportation and transit plans.

MPO's role as the regional programming agency for transportation system improvements:

*Adopt a financially feasible long-range transportation plan consistent with the comprehensive development plan.

*Adopt a 3-5 year program of projects which follow from the long- and short-range plans.

*Program the allocation of UMTA Section 5 funds where more than one operator is involved.

*Program UMTA Section 3 funds.

MPO Data Reporting Requirements

In 1976 a Transportation Research Board Advisory Committee on Urban Transportation Data Reporting Needs and Requirements issued a report identifying basic data for good urban transportation planning (TRB, 1976). Table 3 contains a listing of data the Advisory Committee recommended for collection by MPOs. Rather than implement the Advisory Committee's recommendations in terms of mandated reporting requirements through joint planning regulations, FHWA and UMTA issued a memorandum (FHWA and UMTA, 1978), which does not mandate the data collection. The memorandum also modifies slightly the emphasis from one of providing data that will help in a national level assessment of how well federal transportation assistance is working in urban areas to an emphasis on suggesting a basic set of data for a good urban planning process.

FHWA and UMTA are seeking voluntary compliance with the data recommendations. They will publish reports of data from participating MPOs on the assumption that MPOs will provide data for comparative purposes. The data recommendations are

Table 3
TRB Recommended MPO Data Reporting Requirements

Data Element and Classification	Reporting Interval (years)	MPOs Affected	Implementation Phase
Highway data			
Road miles			
By functional classification	2	All	1
By geographic area	2	All[a]	1
Lane miles of arterials during peak period	2	All	1
By functional classification of arterials			
By number of lanes			
By geographical area			
By 1-way or 2-way direction			
Miles of reversible lanes	2	All	1
Vehicle miles of travel			
By functional classification[b]	2	All	1
By geographic area	2	All[a]	1
By vehicle type	4	—[c]	2
Passenger occupancy	4	—[c]	2
By vehicle type			
By geographic area			
CBD cordon measurement	4	—[d]	2
Passenger occupancy			
Vehicle type			
Traffic volume and congestion[e]	4	—[f]	2
Public transit data			
* Land area within ¼ mile of weekday transit service (population within band will be determined when census data become available)			
By number of boardable vehicles per 24 hour period	4	All	1
By geographic area	4	All[a]	1
* Transit user survey	4	—[g]	2
Number of linked passenger trips			
Average linked trip distance			
Average linked trip time			
Trip purpose			
Rider characteristics			
Age			
Sex			
Income			
Whether handicapped			
Automobile availability			
Limited transit user survey	4	—[h]	1
Unlinked passenger trips			
Unlinked passenger miles or average unlinked trip distance			
Average unlinked trip time			
Rider characteristics			
Age			
Sex			
Race			
Handicapped			
Selected data from transit operators (classified by mode)	2	All	1
Annual unlinked passenger trips			
Annual revenue passengers			
Annual vehicle miles			
Annual revenue vehicle miles			
Number of revenue vehicles			
Age distribution of revenue vehicles			
Average age of revenue vehicles			
Demographic data			
Population			
By geographic area	2	All[a]	1
Dwelling units			
By geographic area	2	All[a]	1
Employment	2	All[a]	1
By geographic area			
By CBD			
Passenger vehicle registrations	2	All	1
By county located in or containing urbanized area			
By vehicle type			
Land areas	2	All	1
By urbanized area			
By central city			
By central business district			
By federal-aid system boundaries			
Measurement of system performance			
Highway system: land area and dwelling units within travel time contours[i]			
From CBD	2	—[f]	1
From airport	4	—[f]	2
From major non-CBD employment center	4	—[f]	2
From major non-CBD shopping center	4	—[f]	2
Transit system: land area and dwelling units within travel time contours[i]			
From CBD	2	—[f]	1

[a] Areas with populations between 50,000 and 200,000 report only for urbanized areas.
[b] In phase 1, functional classifications are combined into 3 groups: Interstate, freeways, and expressways; principal and minor arterials; and collectors and locals. In phase 2, only the first 2 groups are used; collectors and locals are excluded.
[c] Only areas with population of 200,000 or more; a systemwide sampling method will be used.
[d] Only areas with population of 750,000 or more.
[e] Under consideration by FHWA.
[f] Only areas with population of 200,000 or more.
[g] Only areas with population of 200,000 to 750,000.
[h] After census figures become available, dwelling units and population within contours will be calculated on a 4 year cycle.

*Mandatory reporting of these items is required under Section 15 of the Urban Mass Transportation Act as indicated in the Federal Register, Vol. 42, No. 13, January 19, 1977, Page 377B.

Source: TRB, 1976.

aimed at improving the performance measures required for monitoring the effect of federal actions. The federal interest is in having a standardized data system which allows accurate monitoring and comparisons between urban areas. The FARE data requirements (mandatory) and the MPO data reporting requirements (voluntary) represent the influence of institutional requirements on urban transportation planning. Table 3 also illustrates the common data items between the FARE and MPO data requirements. There is considerable overlap of data items, but FARE requires reporting at the transit operator level while MPO data reporting requirements require reporting at the central city and urbanized area levels. These requirements apply to all urbanized areas.

Depending upon the case, the MPO requirements may act as a constraint wherever the particular local planning needs fail to "fit" the mandates. For example, the complexity of developing a comprehensive and coordinated program of planning activities varies greatly between the small and large MPO. Similarly, the data requirements for developing and analyzing separate transportation alternatives within the small versus large urban environment vary significantly. These institutional requirements may affect (help or hinder) the efficiency and effectiveness of local transportation planning outcomes.

The following section takes a case study view of a set of proposed MPO transportation data reqporting requirements and their impacts on two quite different MPOs (they differ in size and jurisdictional boundaries). A companion report (Dueker, Barbaresso and Stoner, 1978) examines the planning effectiveness of these same urban areas through case studies of their transportation planning histories and through the development of transit performance measures which examine planning inputs and outputs.

IMPACTS OF TRB'S DATA REPORTING PROPOSAL ON TWO MPOs

Does data influence the character of planning? Does a uniform data reporting system constrain local transportation planning? A data requirement can be thought of as a constraint when it is viewed by the MPO as being unnecessary for local planning purposes. Can federal programs be assessed from data used in local transportation planning? The federal intention is to provide a basis for the classification, standardization and correlation of transportation information to monitor their funding programs from a set of data, which presumably is used for local transportation planning. Is this linkage compatible or does one act as a constraint on the other? A major issue is whether data aggregated from traffic zone level of aggregation, which is the useful level of analysis for metropolitan planning, can be aggregated to levels of federal interest (urbanized area, central city, outside central city, and central business district) for meaningful comparisons across metropolitan areas. Then the problem is how to infer relationships between these measures of transportation system performance and federal transportation programs.

Local officials are more likely to participate in the voluntary data reporting if they see utility and if they are not confronted with conflicitng data definitions and incompatible areal units. There exists a problem of this latter type if U.S. Census-defined urbanized areas are used, because states and MPOs collect highway data for a different urban region.

A case study approach is used to study how an MPO responds to urban transportation data reporting elements and whether the reporting system can be accommodated with relative ease or whether it places a burden on MPOs. The two MPOs studied are Linn County Regional Planning Commission in Cedar Rapids,

Iowa and Bi-State Metropolitan Planning Commission in Rock Island, Illinois. Linn County represents a small MPO (less than 250,000 population), a "clean" jurisdiction of one city and one county. Bi-State represents a slightly larger MPO (between 250,000 and 500,000 population), a "messy" jurisdiction including two states (Iowa and Illinois), four cities (Davenport, Iowa; Rock Island, Moline and East Moline, Illinois), and five counties (Muscatine, Scott, Henry, Mercer, and Rock Island).

Both MPOs were interviewed with respect to TRB's Proposed Urban Transportation Data Reporting Requirements for States and Metropolitan Planning Organizations.

Cedar Rapids

The metropolitan planning organization for Cedar Rapids is the Linn County Regional Planning Commission. Within its jurisdiction lies the Cedar Rapids metro area (two cities, Cedar Rapids and Marion) and Linn County. Cedar Rapids has an extensive grid network of wide urban streets. Short trip distances with high auto dominance characterize their intensive road layout. Transit ridership has been increasing over the past several years, but still handles only a small percentage of all trips.

An interview was set up with the Cedar Rapids MPO to assess their reaction to the Transportation Research Board's Proposed Urban Transportation Data Reporting Requirements for States and MPOs. The flow chart (Figure 1) represents the data requirements affecting Cedar Rapids. Their responses to the proposed requirements are summarized in Table 4. Generally the Linn County Regional Planning Commission felt they could fulfill the MPO data reporting requirements with additional funds to cover the cost of collection.

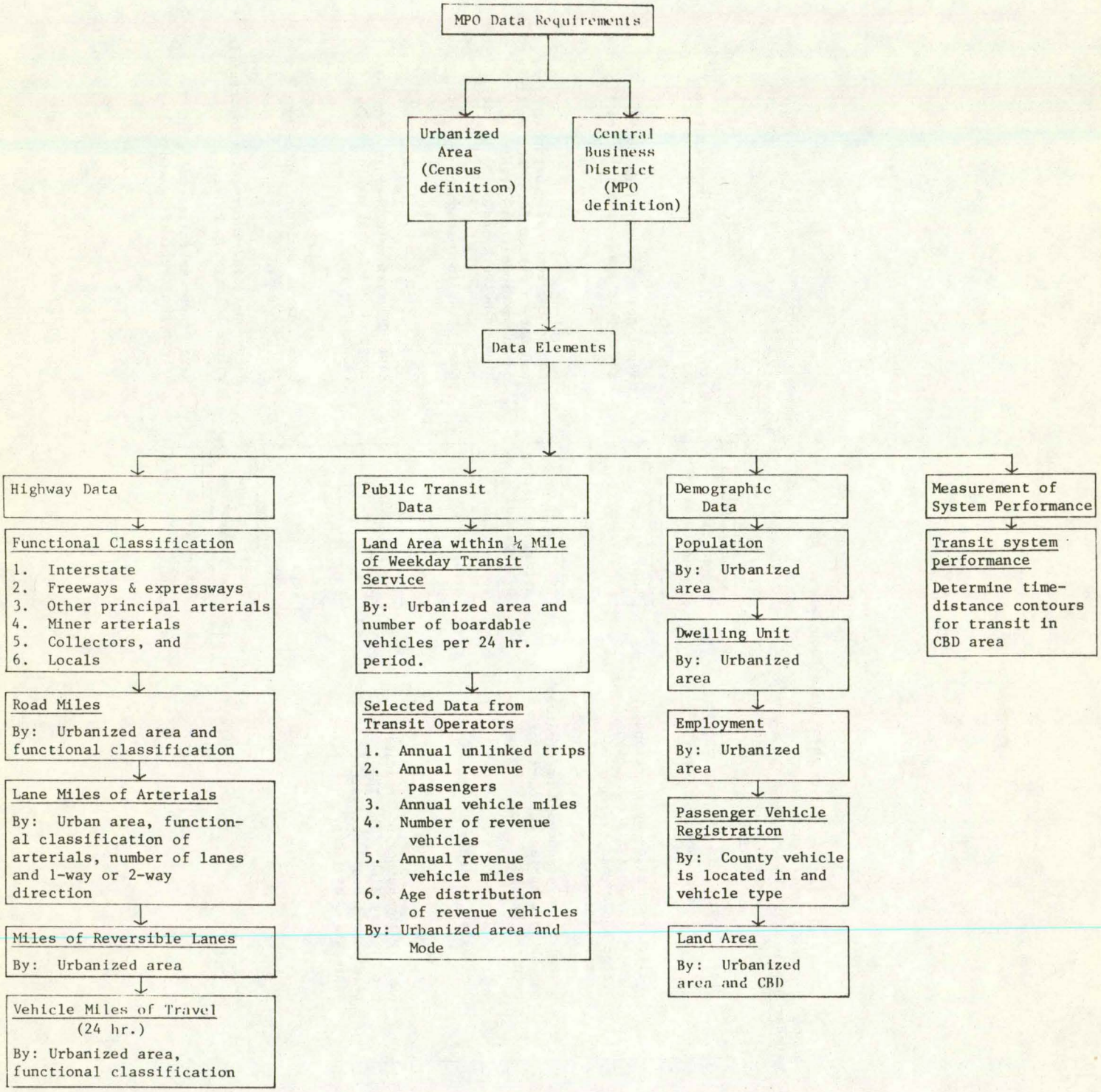

Figure 1 MPO Data Reporting Requirements for Cedar Rapids (less than 200,000 population)

Table 4a

Highway Data Requirements Response

Cedar Rapids		Davenport	
Category	Comment	Category	Comment
Functional Classification	Classification is similar, except collectors and locals are grouped together.	Functional Classification	Use the identical classification.
Road Miles	Collect road miles by functional classification (with exception stated above) and by required urbanized area.	Road Miles	Don't collect road miles by TRB's geographic areas rather by traffic zones.
Lane miles of arterials during peak period	Have lane miles encoded on a network map but not tabled in exact form as required by TRB.	Lane miles of arterials during peak period	Not by the required geographic area, and not in tabled form, but by links on the metropolitan street and highway network map.
Miles of reversible lanes	None exist in Cedar Rapids.	Miles of reversible lanes	None exist in Davenport.
Vehicle miles of travel	Have VMT by number of vehicles per highway link. The TRB requirement would necessitate aggregation of links.	Vehicle miles of travel	Have VMT available through Iowa DOT's computer model, but again not by geographic area.
		Vehicle Type	Have data on number of autos by census track.
		Traffic volume and congestion	Have non-tabled information for traffic volume by highway links.
		Passenger occupancy	Have linear estimates using the '61 origin and destination study.

Table 4b

Public Transit Data Requirements Response

Cedar Rapids		Davenport	
Category	Comment	Category	Comment
Land area within ¼ mile of weekday transit service	In the process of collecting this information.	Land area within ¼ mile of weekday transit service	In rough mapped form only.
Selected Data from Transit Operators: Annual unlinked trips Annual revenue passengers Annual vehicle miles Annual revenue vehicle miles Number of revenue veh. Age distribution of revenue vehicles	This information is collected in conjunction with Section 18 (Project FARE).	Limited Transit User Survey: Unlinked pass. trips Unlinked pass. miles Avg. unlinked trip distance Rider characteristics	Passenger trips and miles are collected indirectly by links between bus stops. Trip distances and rider characteristics are collected under Project FARE.
		Selected Data from Transit Operators: Annual unlinked trips Annual revenue passengers Annual vehicle miles Annual revenue vehicle miles Number of rev. vehicles Age distribution of rev. veh.	In conjunction with the Cities' transit operator and participation in Project FARE, this information is collected.

Table 4c

Demographic Data Requirements Response

Cedar Rapids		Davenport	
Category	Comment	Category	Comment
POPULATION	Population statics by urbanized area are collected.	POPULATION	Population by county and traffic zones (census tracts) is collected. They don't split population into TRB's geographic areas.
DWELLING UNITS	Collect information on types of dwelling units by urbanized area.	DWELLING UNITS	Information on dwelling units is complied, but not separated into TRB's suggested geographic areas.
EMPLOYMENT	Categories of employment are collected by urbanized area.	EMPLOYMENT	Different employment types are collected by traffic zones.
PASSENGER VEHICLE REGISTRATION	Passenger vehicle registration is collected.	PASSENGER VEHICLE REGISTRATION	Passenger vehicle registration is collected by county.
LAND AREA	Information on functional land use areas is compiled.	LAND AREA	Land use by census tracts is collected using a 1970 survey and classification scheme.

Table 4d

Transit System Performance Measures Responses

Cedar Rapids		Davenport	
Category	Comment	Category	Comment
TRANSIT SYSTEM PERFORMANCE	Staff is in the process of collecting information on time distance contours for transit to the CBD. Their measures of transit performance also include ridership increases/decreases and cost to revenue comparisons.	TRANSIT SYSTEM PERFORMANCE	Currently this information is not collected on time distance contours for transit travel times to the CBD.
		HIGHWAY SYSTEM PERFORMANCE	Data on the specific measures suggested by TRB (land area and dwelling within travel time contours from activity centers) are not collected. Information is available on jobs within 40 minutes from different activity locations and time distance contours by auto from the CBD are compiled.

Davenport

The Davenport metropolitan planning organization is the Bi-State Metropolitan Planning Commission and is located in Rock Island, Illinois. Within its SMSA planning jurisdiction lie several counties and cities in two states. Davenport, though very different in terms of political boundaries, is similar to Cedar Rapids in its grid street pattern and high auto dominance characteristics.

An interview was set up, identical to the one in Cedar Rapids, in which the MPO data reporting requirements were discussed. The flow chart (Figure 2) represents Bi-State's requirements.* Their responses to the proposed requirements are summarized and compared with those of Cedar Rapids in Table 4. The MPO data reporting requirements not included in Project FARE could be collected if funds were made available to cover initial costs.

Comparison

The MPO data reporting requirements for Davenport and Cedar Rapids are summarized by two flow charts (Figures 1 and 2). TRB's data scheme is stressed within the two flow charts. The first level of transportation data breakdown is accomplished by separating the following: 1) highway data, 2) transit data, 3) demographic data, and 4) transit performance data. Under each of these four aggregate categories data is reported by geographic area (i.e., Central City, Outside Central City and Urbanized Area) and in the case of highway data it is reported according to its functional classification. Two major differences are notable between the MPOs being studied. Cedar Rapids, because its population is below a given threshold,

*The difference in data categories is due to Davenport's population. The MPO data reporting requirements increase as an SMSA's population exceeds established thresholds.

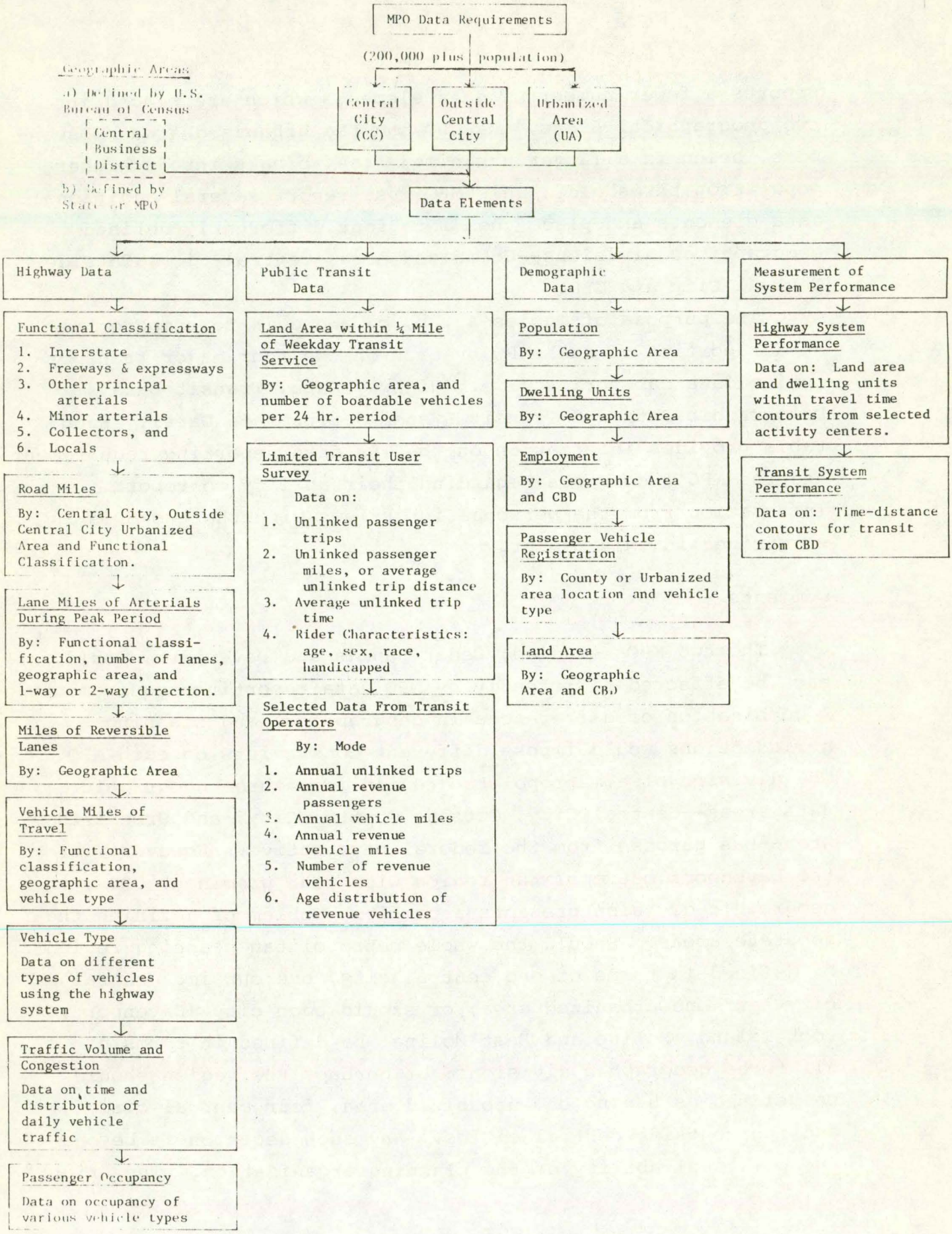

Figure 2 MPO Data Reporting Requirements for Davenport

(Urbanized area population over 200,000)

reports a fewer number of data elements which are placed into two geographical areas, the CBD and the urbanized area. Davenport, being in a larger urbanized area, breaks into a higher population threshold. This MPO must report several additional data elements and place them into four differently defined geographical divisions--Urbanized Area, Central City, Outside Central City and CBD.

The purpose of Tables 4a, b, c, and d is to compare the data reporting of each MPO by each of the four major transportation data categories (i.e., Highway Data, Transit Data, Demographic Data and Transit System Performance Data). Each table provides information on the TRB data reporting requirement and the MPO's comments regarding their ability to report. Information from the personal interviews with the two MPOs is summarized in this manner.

Comments

The two MPOs studied, Cedar Rapids and Davenport, would each be affected differently by MPO data reporting requirements. A combination of differences in geographical and planning jurisdictions would impose different constraints on each MPO. The division of a metropolitan region into three geographic data areas--Central City, Outside Central City, and Urbanized Area--has purpose from the federal perspective. However, for the Davenport metropolitan region with four prominent CBDs, this geographic division presents a complex problem of defining the separate areas. Should the whole metropolitan planning region be defined in terms of one central city, one outside central city, and one urbanized area; or should each city (Davenport, Rock Island, Moline and East Moline) be defined in terms of all three geographic divisions; or perhaps the region should be defined as having one urbanized area, four central cities, and four outside central cities. Any such decision is beyond the political ability of the planning organization. The "right"

data reporting areas are further complicated by the Mississippi River, slicing the region in two; thus this MPO has to deal with two states (Iowa and Illinois). The Cedar Rapids MPO does not face these geographic and planning jurisdiction problems. Cedar Rapids has one fairly clearly defined central city, one outside central city, and one urbanized area. The TRB's data region division is of little problem to Cedar Rapids.

How useful is the TRB data reporting system? Realistically, the MPO will address the special concerns of the local interest. Each individual MPO may have a different list of problems to address, within a given time period. It is likely the MPO will ignore or use different data elements depending on their needs. The TSM program (short-range planning) characteristically demands a broad range of improvements over the entire transportation system. The MPO transportation data reporting package combines, at a general (federal) level, TSM-related data categories, but at the MPO level misses many of the specific data needs. With respect to the two MPOs studied, both Cedar Rapids and Davenport had similar responses to the question. Generally they perceived the data requirements as being useful to transportation planning. When answering the question "which data elements were most useful," both MPOs hedged in responding that many of the requirements were already being reported in order to receive transportation planning funds (value is thus assumed). Neither Cedar Rapids nor Davenport showed any intrinsic interest in aggregation scheme.* Their concerns were more specific to auto travel or bus ridership on particular highway links and accumulation of data by designated traffic zones. Each MPO offered a general willingness and acceptance to collect required data.

One final caveat must be discussed. Data collection is a logical step in the evaluation process. To ensure that data

*This refers to three geographic areas (Central City, Outside Central City, Urbanized Area) and four data categories (Highway Data, Public Transit Data, Demographic Data, and Measurement of System Performance).

usefulness is consistsnt with its cost, the data collection effort must be constant, high in quality, accurate and up to date. Up to this point little has been mentioned in this regard. There is a vast difference between discussing data requirements during a casual interview and actually using staff and resources to collect the data. Since neither of the two MPOs studied felt a particular gain by shifting to the MPO data reporting system, it is felt that unless outside incentives are provided a new data gathering system would be complied with in a piecemeal fashion.

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CONCLUSIONS

The MPO data reporting requirements are less consistent with TSM planning than with more generalized long-range planning, characterized by the continuing phase of the 3C urban area transportation planning. Consequently, the MPO data reporting requirements data elements are less needed and relevant to MPOs now than in prior years. Generally, their aggregation level is either non-purposeful or too large for short-term planning.

The attitude of MPOs with respect to required data is extremely important. The quality of data reported is dependent on their willingness to exercise care in data collection and manipulation. Both MPOs studied in this investigation show a willingness and a trust in federal judgment that the data items are needed and important. Thus, they will likely exercise adequate care in the collection and manipulation of the required data. However, they see it as an extra task that benefits federal agencies rather than local agencies; therefore, they feel justified in asking for extra federal monies to defray the costs. Bi-State has a unique problem of ambiguity of central city definition and a two-state region, which complicates compliance with the requirement and will increase their cost of compliance.

From a substantive point of view, there are several questions that follow from this investigation which should be explored as the MPO data reporting requirements become operational. Are the variables sufficiently sensitive to measure changes in the transportation system and its utilization? Does aggregation of urban areas by size classes provide useful information at the national level as to the state of the transportation system and information as to whether objectives are being met? At the urban level, does one compare the change in transit passengers to the change in population or VMT as a basis to assess whether the change in transit ridership is significant? Even then, are these relatively small changes reflective of policies or programs

or more general socioeconomic trends? Similarly, when the urban areas are aggregated by size classes, will the changes in the data variables be reflective or attributable to transportation policies?

The utility of the MPO data reporting has been diminished by the decision to make compliance voluntary rather than mandatory. A national level assessment of transportation policies and programs is made more difficult by partial data. The decision to make the data reporting non-mandatory was a result of a general climate of reducing federal reporting requirements and regulations. This results in seeking compliance by claiming any good urban planning process should have and utilize the requested data items.

The lack of support for the MPO data reporting requirements at either the federal or local level might be attributed to the data set itself that resulted from compromise between federal data requirements to assess national policies and programs, and local requirements for more location specific data. Compromise on data items may have resulted in a data set that serves neither purpose well.

Under voluntary compliance, the success of the program is dependent on MPO acceptance of the notion that the data items are useful for their own planning process. If the data are found useful in tracking federal transportation policies and programs, the data reporting program may warrant to be made mandatory.

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