

Transportation Brokerage: Key Findings from Crosscutting Analysis

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ABSTRACT

Some of the key findings of a crosscutting analysis of 13 transportation brokerage projects studied under the auspices of the Urban Mass Transportation Administration's Service and Methods Demonstration (SMD) program are presented. Most projects were SMD-funded demonstrations; others represented case study evaluations. Transportation brokerage is characterized by an orientation toward understanding and accommodating the actual demand for transportation services as identified by and for specific target groups. This approach differs from traditional transportation arrangements that design and operate single-mode, somewhat static delivery systems that are intended to serve areawide, aggregated demand for a range of needs. Several key definitional issues (centering around the degree to which the broker intervenes in the marketplace) are resolved by defining brokerage as an approach to problem solving instead of as an explicit organizational structure or planning process. The conclusions, based on findings from the SMD-sponsored evaluations, suggest that the future of transportation brokerage is dependent on the ability of brokerage advocates to adapt the approach within the existing decision-making environment instead of trying to force new institutional relationships on often entrenched organizational allegiances.

The urban transportation system is composed of numerous transportation resources that are owned, operated, and managed by a host of public and private entities. These resources can vary from the empty seats in an automobile trip to a capital-intensive regional rail system. In the aggregate, these resources provide a range of transportation options to the potential user. The discrepancy between the available supply of transportation and the knowledge of potential users about that availability gave rise to an innovative concept termed "transportation brokerage." In its purest form, transportation brokerage is the facilitation of activities aimed at matching targeted demand for services with existing and potential suppliers.

Beginning in the mid-1970s, the Urban Mass Transportation Administration's Service and Methods Demonstration (SMD) program sponsored a number of demonstrations and case study evaluations under the general concept of transportation brokerage. Some of the key findings of a larger crosscutting evaluation of 13 brokerage projects studied under the auspices of the SMD program (1) are presented here. The findings, therefore, may not be applicable to other, locally sponsored brokerages initiated during the same period. The number and variety of demonstrations studied present both an opportunity to draw more valid conclusions about the concept and, at the same time, a challenge to compare what outwardly appear to be quite different projects and outcomes.

The conceptual foundations of transportation brokerage lie in the use of brokerage in the private sector. Examples of private sector brokerage include real estate, stocks and bonds, commodities, insurance, and travel. Here the term "brokerage" refers to "an intermediate market function that serves to remove the barriers to the exchange of goods and services between suppliers and consumers" (2,p.22). The purpose of the broker is to locate areas of surplus and need, resolve potential bar-

riers and market imperfections that could constrict the exchange, and, finally, to consummate the sale or transaction.

The brokerage concept, as applied to transportation, is similar to the private sector concept in that the broker's role is primarily to identify the specific needs of potential riders and match them to the most appropriate transportation provider. In some cases in which a feasible provider does not exist, the broker serves to facilitate the provision of the service deemed necessary. One major difference between transportation brokerage and more traditional transportation arrangements is the emphasis on determining specific demand before arranging for service delivery. This is in contrast to a more mode-specific, supply-oriented agency that provides a somewhat static service and depends on induced demand for that service.

The demonstrations exhibited a great deal of variability in terms of targeted users, services brokered, organizational structures, and the impacts on users and the general public as a whole. Table 1 gives the brokerage projects used in this study and notes the target groups served. The common elements across the brokerage projects were the targeting of specific client groups and the facilitation of innovative services to satisfy their unique demand patterns. Targeted client groups included special user groups (elderly, handicapped, low income, commuters), individuals in low-density areas, general populations, and even local agencies as a brokerage client group. The projects spanned mode-specific services, modal integration, regulatory and institutional revision, marketing, and interagency liaison. Organizational mechanisms ranged from an individual acting as a broker to an entire transit agency centered around the brokerage concept. Finally, some demonstrations had a relatively significant impact on targeted users whereas others were more limited in their ability to match potential users and sup-

TABLE 1 Brokerage Project Sites and Markets Served

Project Site	Targeted Markets	Project Dates
Knoxville, Tenn.	SSAs, commuters	10/75 - 12/78 (d)
Mt. View, Calif.	E&H	2/76 - 2/77 (t)
Westport, Conn.	General public	4/77 - 3/79 (t)
Minneapolis, Minn.	Commuters	6/77 - 2/80 (d)
Lancaster, Pa.	SSAs	11/77 - 5/83 (c)
Northeastern Illinois	E&H, general public	2/78 - 6/82 (c)
Newport News, Va.	E&H, commuters	7/78 - 7/81 (d)
Pittsburgh, Pa.	E&H, SSAs	7/78 - 6/82 (c)
Bridgeport, Conn.	SSAs, general public	9/79 - Present
San Diego, Calif.	E&H, SSAs	8/81 - Present
Dade County, Fla.	SSAs, commuters, general public	12/81 - Present
Los Angeles Co., Calif.	E&H, general public	6/82 - Present
St. Louis, Mo.	SSAs, commuters	Not implemented

Note: SSA = social service agency, E&H = elderly and handicapped individuals, (c) = brokerage activities continued beyond demonstration period, (d) = brokerage activities significantly desopped, and (t) = brokerage activities terminated.

pliers. The impact on the entire transportation system varies from slight improvements in mode split to achievements made solely in the area of regulatory reform, which could lead to systemwide improvements after the demonstration period.

Two distinct topics are covered in this paper. First, several definitional issues are addressed in an attempt to resolve certain conceptual arguments about exactly what constitutes a brokerage. The range of brokerage applications is presented, followed by a number of interpretations of the concept and its applications. These interpretations revolve around the issue of the degree to which the broker actively intervenes in the transportation market. From this discussion, a working definition is formulated.

Second, conclusions from the crosscutting analysis, which speculate about the future of transportation brokerage, are presented. Several of the transferable "lessons" from the projects are enumerated. In addition, critical differences between demonstration and future brokerages will be discussed. Finally, the underlying question is addressed: Is brokerage a single "recipe for success" or is it simply an approach or "philosophy" guiding the planning and implementation of transportation services?

The crosscutting analysis is designed to provide planners or decision makers contemplating the formation of a brokerage (or comparing organizational options) a better understanding of the concept and some of the lessons gained from the demonstrations. As such, the analysis did not strive to document which brokerage was the "best" type for a given situation or that brokerage was the most effective means of solving particular transportation problems. The brevity necessary for this synthesis precludes detailed assessment of each project. The reader is encouraged to consult the larger crosscutting study or the individual evaluation reports for project specifics.

APPLICATIONS OF THE BROKERAGE CONCEPT

No one organizational structure, planning process, or set of services typifies brokerage. Applications of the concept varied from project to project. In this section the development of the brokerage concept, as conceived by those involved with the specific projects, is presented. The set of definitions put forward by project initiators and evaluators provides an interesting background on how the concept was originally defined and how it has since evolved. Applications of the concept included specialized brokers for commuters or elderly and handicapped users, "community" brokers, "decentral-

ized" brokers, and those brokers who sought to integrate a "family of services" and coordinate specialized brokerage activities with conventional, fixed-route services. Although many projects seemed to be a combination of these categories (especially the earliest projects), definitions and illustrations of each type are provided.

The first brokerage, in Knoxville, Tennessee, (2,p.2) foresaw that the purpose of the broker would be

To locate areas of surplus and areas of need, to resolve institutional barriers and to consummate the sale. Whatever the form or mode of operation, the broker acts as a clearinghouse by helping buyers find solutions to their needs.

The Knoxville project was, in theory, an attempt to reorient the management of transportation toward the dynamic matching of supply and demand, taking neither for granted. Although the project originally emphasized commuter ridesharing and social service agency coordination, the Knoxville model of brokerage was not mode specific; it envisioned becoming involved with whatever target group it identified as potentially being served. The key to this initial definition was the implicitly passive, intermediary stance of the broker. It was foreseen that, through regulatory and institutional changes, transportation efficiencies could eventually be realized.

Several demonstrations represented the application of the brokerage concept to transit agencies. Brokerage was viewed as a means of accomplishing certain paratransit and transit integration objectives. As such, separate "brokerage departments" were established that were designed to be coequal with their fixed-route counterparts. The Dade County (Miami), Florida, (3,p.2) demonstration used a definition of brokerage based on matching of demand and supply but went on to further define the role of broker:

Beyond linking consumers with transportation services, the brokerage will fulfill the function of integrating the provision of transportation services with community and economic development objectives throughout Metropolitan Dade County.

The Dade County brokerage represented an attempt to fully and efficiently use all potential suppliers to serve a variety of markets and specific user needs.

A similar project within a transit agency was undertaken in Newport News, Virginia. The Easyride brokerage project became involved in services for

commuters and the mobility impaired. The stated role of the brokerage (4,p.2) was:

Easyride, in its role as transportation broker, promotes and facilitates ridesharing in public/private vehicles in much the same manner that a real estate broker advertises and arranges property sales. Easyride also acts as a ridesharing advocate and encourages citizens to participate in ridesharing for their own benefit as well as for larger, societal goals. Easyride also operates special transportation services for the handicapped and works to coordinate the supply of and demand for transportation at social service agencies.

The key difference between this brokerage and those mentioned previously was its operation of a transportation service for handicapped persons. This service was neither a coordination attempt nor a contracted service, either of which might loosely be defined as brokerage. The reason for this in Newport News was that the broker tried to coordinate and offer contracted service, and, when it failed to do so effectively, it resorted to providing the service itself to fulfill a need identified as crucial.

Another brokerage application focused on commuters. In targeting a single user group, specific needs and opportunities were to be identified and alternatives explored to serve the travel demands of that group. One brokerage project, housed within the transit agency in Minneapolis, Minnesota, sought to "test the feasibility of using transportation brokerage to promote and coordinate a variety of commuter services" (5,p.2-2). A key element of this new role for the transit agency was the client orientation of brokerage as opposed to the service orientation associated with more traditional transit operations.

Another demonstration that targeted a single set of users was the ACCESS demonstration in Allegheny County (Pittsburgh), Pennsylvania. The demonstration established a network of service providers to serve the transportation needs of the elderly and handicapped population who could not use the fixed-route system. The ACCESS project was designed to establish the broker as a "marketplace coordinator" (6,p.60). On the supply side the broker contracted with a number of private providers to form a transportation network for elderly and handicapped persons; on the demand side the broker established relationships with a number of social service agencies (SSAs) to address the transportation needs of their clients. The broker was an intermediary, placed between the demand for services for elderly and handicapped persons and the potential suppliers.

Although several brokerages have been organizationally housed within transit agencies, and others worked with operators, two demonstrations involved the transit property reorganizing itself as an "integrative" broker. The brokerage concept was not applied only to the paratransit or ridesharing elements of an operator--the broker was the operator. Demonstrations in Bridgeport and Westport, Connecticut, involved total reorganization of the agencies to better function as brokerages. The definition of brokerage provided in the Bridgeport evaluation (7,p.37) states:

Brokerage is the combination of management functions that conceives initiatives and then sees to their orderly development and operation, fostering and applying the necessary planning and evaluation tools and criteria to fine-tune the action to success.

This brokerage process would identify needs, assure services met those needs, and manage the process within a single planning and operating organization. Market research activities were explicitly foreseen as aiding in identifying needs, and innovative services (fixed route, services for elderly and handicapped persons, community-based transit, shared-ride taxi, employment center bus service) were developed to address those needs. Although these integrative brokerages may appear to be a far cry from the passive, intermediary role envisioned for the Knoxville project, the key was still a client or demand orientation and the belief that different user groups or target markets required different and often innovative services.

A final application of the concept was termed "decentralized brokerage." The decentralized approach was applied to large metropolitan areas and regions and involved the needs assessment and service identification functions being vested in the hands of localities. The role of the regional body, in managing the areawide "brokerage" program, was seen as reviewing locally initiated plans and service policies, channeling funds, and offering technical assistance to those localities. The advantage of this approach, as cited by the evaluators, was the ability of the regional body, through funding and technical assistance leverage, to coordinate the various local services and to coordinate these activities with regionwide services, programs, and policies.

In the decentralized demonstration in Northeastern Illinois, the services funded were paratransit services and included both services for elderly and handicapped persons and community-based and feeder services (8). In the case of the Los Angeles County demonstration, the funds could be used for any transportation purpose including the purchase of additional regional fixed-route service (9). The motivation for each of these demonstrations was a dedicated regional tax to be used for improving transportation services. The commonality between decentralized brokerage and centralized brokerage is again the orientation toward identifying disaggregate transportation needs and facilitating the provision of services deemed appropriate to effectively address those needs.

EMERGING DEFINITION OF BROKERAGE

The preceding discussion emphasizes the variety of applications of the brokerage concept in the public transportation field. This same variety may serve to preclude the formulation of a single, all-encompassing definition at this point. The discussion does suggest, however, two general conclusions. First, the one common factor brokerage represents is the reorientation or refocus of transportation planning and implementation toward the identification and accommodation of demand instead of the promotion of service. In concept, a demand-oriented agency and a supply-oriented entity may appear to be two ways of viewing exactly the same agency or outcome. In practice, however, the two orientations tended to operate quite differently.

Second, the degree of market intervention appears to be the key differentiating factor that causes a single definition to be elusive. Although it was the intent of most brokerage projects to simply facilitate the matching of supply and demand, many projects resulted in various services being directly provided by the broker. The issue of market intervention by the brokerage is the primary focus of the following discussion concerning the various interpretations of the brokerage concept as put forward by others studying the concept.

INTERPRETATIONS OF BROKERAGE: PASSIVE VERSUS ACTIVE MARKET INTERVENTION

Many of the brokerage demonstrations appear to have outstepped the initial passive, intermediary role outlined for the Knoxville project and others. The key point of departure from the original brokerage concept appears to be the actual provision of transportation services by the brokerage organization, referred to as market intervention. The key issue thus becomes: does the brokerage function cease to exist when the broker is forced to directly provide a service even if that service is deemed necessary to satisfy some unmet demand identified by the broker? A host of brokerage "analysts" and "interpreters" have expressed their thoughts on the concept, on the variability exhibited across demonstrations, and on the range of roles assumed by brokers. Some interpretations defined a more passive brokerage role; others directly questioned the more activist role.

One interpretation of brokerage viewed the broker's function as simply persuading various parties to engage in activities related to the objectives of the brokerage. This interpretation (10,p.29) further defined the broker's role:

The broker, serving some overall public objective, decides upon the type of service it wishes to facilitate which will best meet the needs of the target population(s) and the overall objective. Its role is then to persuade: 1) the parties involved in the provision of the service that it is in their best interest to offer the service, 2) the target population that it is in their best interest to use the service, and 3) the parties involved in the (transportation) environment who stand to oppose the service or whose support is necessary for provision of the service.

This interpretation appears to support the passive, intermediary role outlined for the broker in the Knoxville model and redefines matching as persuasion.

Several interpretations focused on the evolution of the brokerage concept from a passive to a more active stance in fulfilling brokerage objectives. One interpretation (11,pp.4-5) stated:

If (brokerage) can identify markets and understand each market's preference for service, it should be able to match supply with demand--to broker between markets and services. This intervention can take several forms: the most limited form is that of the pure brokerage which restricts itself to improving the flow of information between buyer and seller; a more activist form is the regulatory approach which seeks to open or close market opportunities; and the most interventionist role which seeks to change the actual supply and demand functions.

Other, similar interpreters contended that the brokerage concept, as applied in a number of the early demonstrations, had changed to describe approaches to coordinate and integrate service providers and as such represented attempts at actively modulating transportation demand. Whereas brokerage was originally conceived as oriented principally toward demand determination, applications of the concept were actively involved in determining the form and amount of transportation supply. These interpreters contended that earlier efforts had relied on regulatory change and later efforts on

negotiated attempts, often fostering a previously nonexistent service. As such the focus of brokerage was management as opposed to planning. These interpreters concluded by pointing to the need for a new breed of transportation professionals to become brokers--individuals who were skilled managers and negotiators instead of strict planners and technicians (12).

A final set of interpretations attempted to structure the differing forms and degrees of intervention of the brokerage concept. One such interpretation (S. Edner, unpublished data) explicitly stated:

The brokerage concept, while intuitively appealing, is a conceptual nightmare. Outside of a common sense notion and commitment to effectively exploiting all transportation options and possibilities within urban areas, there does not seem to be much in the way of commonality in the definitions used.

One solution to this dilemma was presented in the form of a brokerage typology. Several researchers delineated a range of possible brokerage roles, which varied most notably with respect to the degree of broker activism in reshaping the market structure. One such typology (13,p.39) enumerated four distinct brokerage roles:

- * Passive facilitator of market transactions (e.g., carpool matching);
- * Activism limited to the removal of market-distorting rules and practices (e.g., regulatory barriers to vanpooling);
- * Entrepreneurial activism to provide services that would otherwise be unavailable; and
- * Comprehensive activism to change the overall institutional and planning context and perhaps also to integrate the full array of transit and paratransit.

Beyond formulating a brokerage typology, these interpretations further suggested two conclusions related to brokerage. First, brokerage may just be a "tool or attitude toward some preferred (transportation) future." Thus, brokerage was viewed as a term attached to what can also be called multimodalism, systems integration, systems management, public entrepreneurship, or a host of other things. Second, although brokerage may have represented a slightly different orientation to this "preferred future" than the other terms offered, brokerage really "only accelerates an already present tendency--slow evolution toward multimodalism" (Edner, unpublished data).

BROKERAGE AS A TRANSPORTATION APPROACH

Although the purpose of the preceding discussion was to formulate a single definition of "brokerage," the range of applications and the variety of interpretations dictate that no one definitive explanation is possible. As stated earlier, no one organizational structure, planning process, or institutional arrangement typifies brokerage. Therefore, a definitive statement about brokerage would have to emphasize the distinctive approach adopted by "brokers." This approach refers to the philosophy subscribed to by the broker--the way of looking at a transportation problem. Whereas the means of addressing and structuring the solution may differ significantly enough to preclude a single definition, this philosophy, or approach, or orientation remains the singularly common element.

For the purposes of this analysis, brokerage is defined as an approach characterized by an orienta-

tion toward understanding and accommodating the actual demand for transportation services as identified by and through specific target populations. This orientation differs from that of traditional transportation agencies that design single-mode, somewhat static delivery systems that are intended to serve areawide, aggregated demand for a range of needs. Whereas this type of "supply orientation" begins with the service and induces travel behavior changes, the brokerage approach attempts to understand that behavior on a manageable level and tailor services to those needs.

To better delineate the brokerage approach, six components of this orientation can be enumerated. Although each specific brokerage demonstration may not have formally adopted all components, each exhibited a definite subscription to the approach. The brokerage approach is as follows:

1. Market oriented
 - a. Assesses specific needs of target groups;
 - b. Designs, facilitates, and may operate tailored services; and
 - c. Serves to inform potential users of options.
2. Action oriented
 - a. Is entrepreneurial, geared toward specific tasks;
 - b. Links planning and implementation; and
 - c. Views brokerage as means to task-specific ends.
3. Innovation oriented
 - a. Unbiased toward modes or techniques and
 - b. Willing to try new and untested methods and services.
4. Multimodal oriented
 - a. Seeks to achieve best mix of services (public and private) and
 - b. Promotes range of services and options.
5. Management oriented
 - a. Broker is manager of service elements and
 - b. Service elements are provided in a number of ways (including direct operation by broker).
6. Advocacy oriented
 - a. Promotes services it deems necessary to potential suppliers,
 - b. Promotes services it facilitates to consumers, and
 - c. Promotes services it facilitates to key decision makers.

Given this definition of brokerage as an approach to transportation problem solving, the complicating issue of the degree of market intervention is largely resolved. Thus, although "entrepreneurial" or "comprehensive" activism (service provision, demand modulation) may not be brokerage as defined in its purest sense as an intermediary role, such activism does still conform to the brokerage approach and can be identified along one or more of the orientations listed previously.

FUTURE OF TRANSPORTATION BROKERAGE

The outcomes and impacts of the demonstration brokerages examined in the crosscutting study were mixed at best. The reader, however, should keep in mind the experimental nature of the projects. The approach, although intuitively attractive and plausible, needed the period of testing afforded by the SMD program. Testing the feasibility of the brokerage approach in diverse political and regulatory environments was one of the objectives of funding a number of projects. In general, three steps were involved in moving from the brokerage concept to

implementation. First, the appropriate role for the broker within the local transportation environment needed to be clarified. This step included identifying the specific problems that the broker would address and finding an acceptable location for the broker within the existing institutional structure. Second, certain formal regulatory barriers that prevented the broker from carrying out its objectives (e.g., vanpool insurance rates or carrier certification authority) often had to be addressed. Finally, with a clear set of objectives in hand and institutional and regulatory barriers overcome, the broker could go to work developing service alternatives.

Unfortunately, the time required to address the first two sets of barriers was often equal to the demonstration period. In many cases, such issues were dealt with throughout implementation to the exclusion of other, more central project elements. In addition, community transportation needs, political attitudes, and economic conditions often changed during the project period, possibly presenting new travel demands and concomitant barriers and attitudes. Although this might be an oversimplification of the reasons behind the mixed success of the demonstrations, it does point to some of the overriding, unforeseen frustrations experienced at the brokerage sites.

The brokerage approach, as implemented, produced results that differed little from a variety of other approaches aimed at meeting a targeted set of needs (e.g., third-party ridesharing, social service agency coordination). Costs, user impacts, supply arrangements, and institutional constraints, which were similar to those associated with other approaches, were experienced by the brokers. The projects may have produced such similar results because the brokerage approach served to accelerate the same trends as those being pursued elsewhere. This is not to say that the brokerage approach itself should be discounted, for as an approach (as opposed to a new type of service) it could not be expected to produce radically different outcomes. However, anyone speculating about the future of transportation brokerage should be more cognizant of the multimodal, demand-oriented nature of the concept, whether it is referred to as brokerage, coordination, integration, or any number of other things.

TRANSFERABLE FINDINGS

The transferability of the brokerage approach will be greatly determined by local circumstances and the progressiveness of those institutions responsible for the transportation system and its component parts. The brokerage approach is not appropriate for all localities and situations. A key conclusion from the demonstrations should be that the workability of the concept in a given urban area or situation may only be determined by actual experience. This is because the approach primarily involves institutional and attitudinal change not more tangible, physical change.

The individual evaluations do, however, provide a number of valuable insights concerning the transferable elements of the demonstration brokerages. Although the transferable "lessons" identified by the individual evaluations will not be foolproof predictors of future brokerage success, they may serve to underscore not the simplicity of the concept but the complexity of its effective application. Given that a more rigorous, comparative testing of various brokerage mechanisms was not and cannot be produced, these lessons should serve as an initial guide to those contemplating forming or facilitating a brokerage. By learning from the mistakes, experiences,

and achievements of the projects, decision makers can better cope with future brokerage applications and decisions may be made in a more rational and locally acceptable manner. The following is a set of transferable lessons extracted from the evaluations and is organized by the three steps enumerated previously.

1. Lessons on Institutional Change

a. Institutionalization of the brokerage approach is most successful when it is implemented in response to a clearly defined and widely acknowledged local transportation problem (or set of problems).

b. Substantial preimplementation planning and consensus building are necessary before the brokerage approach can be made operational within a given local environment.

c. Brokerage advocates must realize that the approach and the projects fostered may be threatening to many established modal entities and planning agencies. Consequently, an important preimplementation brokerage activity is to assuage the fears of these other organizations.

d. A strong local base of support for transportation and public service innovation can be a great asset in gaining acceptance of the brokerage approach.

e. The presence of an energetic entrepreneur or core of entrepreneurial managers can do much to facilitate institutionalization and implementation of the brokerage.

2. Lessons on Regulatory Change

a. Regulatory authority over certain local transportation service providers (e.g., taxis and paratransit providers) represents a powerful tool that the brokerage can use to promote various supply objectives. However, these regulatory controls should be used sparingly so as not to compromise the intermediary role of the broker.

b. A brokerage acquires only that regulatory or organizational power that is delegated from an existing organization or political body. Consequently, brokerage advocates must first convince local decision makers and responsible agencies of the merits and potential benefits of the approach.

3. Lessons on Brokerage Implementation

a. The brokerage should have a clear sense of its goals, target markets, and scope of activities.

b. Brokerage planners need to realize the complexity of the urban transportation system and understand the trade-offs involved in influencing different parts of the system.

c. The brokerage approach offers the flexibility to continually search for better solutions instead of accepting the status quo.

d. A comprehensive marketing program is needed both to inform the potential user and as a tool for demand determination (market research).

Finally, the Bridgeport evaluation (7,p.133) offers a somewhat different conclusion on the subject of brokerage transferability. Paraphrasing from that conclusion: Much of the demonstration work is experimental, and this is reflected in the results and the costs. Brokerage in the more transferable sense is much more pragmatic. It represents a continuous search for innovation and improvement in the delivery of mass transportation services. A large staff and budget are not required to pursue such a program under normal circumstances, and in most cases it is simply necessary for existing staff to broaden their awareness of concepts, techniques,

constraints, and resources. Specialized skills can be acquired on an as-needed basis. Funding for most improvements can be realized under existing federal and state programs. The demonstrations have performed a valuable service in not only piloting several potentially useful concepts, but in identifying the major constraints to implementation and effectiveness. This knowledge should help sharpen the focus and reduce the effort of future users of the brokerage approach.

Most of the evaluations agreed that, in concept, the brokerage approach is a valid, workable notion if implemented carefully and when accompanied by the right local political, institutional, and regulatory conditions. Some of the lessons presented appear to be platitudes for any good planning process. Many of the projects studied here, however, lacked such foundations and were consequently subject to some basic pitfalls. Perhaps the single most important transferable element, therefore, is that a true need for the broker must exist. The application of the concept needs to make sense given travel and land-use patterns and potential transportation alternatives. In addition, the brokered services have to make sense in terms of economics, operations, and their overall effect on travel patterns. This may appear to be an obvious precondition to any successful project or program. However, in the absence of a clear mandate for the brokerage approach, the barriers to the approach's successful implementation and institutionalization are nearly insurmountable.

DIFFERENCES BETWEEN DEMONSTRATION AND FUTURE BROKERAGES

Several factors suggest that future brokerages may not be close replications of the demonstration projects. This is not to say that future brokerages will not exist, but rather that they will most likely be somewhat different than the demonstration projects. These differences, and the reasoning for such differences, include (a) the influence of federal demonstration monies, (b) the impact of the demonstrations' mixed results, and (c) the success of those demonstrations with more limited scopes.

First, the influence of federal demonstration monies on the past projects cannot be overstated. The fact that the major financial burden and concomitant accountability did not rest on the local government probably accounted for the lack of vehement opposition during demonstration inception. Without the need for financial commitment, however, local decision makers and agencies were often not actively involved in project development and ongoing commitments were not obtained. Consequently, political and institutional conflict often did not arise until after implementation. The lack of meaningful commitments from key participants was one reason for the ineffectiveness of some of the demonstrations.

Future brokerage proposals will probably need the kind of financial and participatory commitment lacking in these earlier projects. Whereas the experimental status and funding may have appeased many local constituencies in the past, future brokerages may have to acquire a broader base of support for the approach to be even tenable. This is not to say federal monies will not be available for brokerage planning and operations. Section 4(i) (Innovative Techniques and Methods Program) provided some \$750,000 for four brokerage projects in FY 1983. The change, however, from experimental to operational projects will still necessitate a greater amount of planning and consensus building to assure both that a greater local share is raised (25 percent or more) and that the broker's role is an effective and non-

threatening mechanism for addressing transportation problems.

Second, the influence of the demonstration results may cause future decision makers to be skeptical of the approach, as intuitively appealing as it may be. Few of the demonstration brokerages facilitated overwhelming shifts in travel behavior or improved operating efficiencies, and this may be a deterrent to future applications. The current initiation and implementation of a large number of brokerage projects would tend to counter this presumption. Projects funded by the previously mentioned federal monies, as well as state and local sources, are being fostered. The difference, however, seems to be that these new projects are existing ridesharing or transit programs renamed or re-oriented to reflect the brokerage approach. This is consistent with the finding that many of the demonstration projects differed little from a host of other projects operating under the auspices of third-party ridesharing, coordination, integration, and so forth. Such brokerage "by name only" runs the risk, however, of ignoring the experiences of the demonstrations and heeding the warnings to fully develop an environment more conducive to the brokerage approach.

Finally, the relative success of those demonstrations that had limited scopes of activities (targeting only one or two specific markets) may foretell a more limited application of the concept in the future. Indeed, the set of currently forming brokerages appears to be oriented specifically to commuters or markets made up of elderly and handicapped people. This notion may appear to go counter to the brokerage concept because effectiveness is seen as contingent on the range of options. However, experience has shown the opposite to be true; flexibility in using different alternatives may be more important than the sheer number of options available and the user groups served. As also mentioned previously, future brokerages will more likely be housed in existing agencies or at least be of a smaller scale. This is because resources may not be available for large semiautonomous staffs and because the staff size and resources available did not appear to be a good indicator of a successful program.

CONCLUSIONS

The first section of this analysis concluded with a definition of brokerage as an approach to urban transportation planning and service delivery. Although the range of applications and project scopes defied a single definition, brokerage as a way of approaching transportation problems appeared to best describe the brokerage concept. As stated in that definitional section, the brokerage approach is characterized by an orientation toward understanding and accommodating the actual demand for transportation services as identified by and for specific target populations. This orientation differs from traditional transportation agencies that design and operate single-mode, somewhat static delivery systems that are intended to serve areawide, aggregated demand for a range of needs. Whereas this type of "supply-orientation" begins with the service and induces travel behavior changes, the brokerage approach attempts to understand travel behavior on a manageable level and tailor services to those needs.

Although the approach may have been common to all the demonstrations analyzed here, the actual techniques used and the results achieved varied dramatically. Brokerage per se cannot be considered a definitive "recipe for success." Techniques, organizational relationships, and specific projects that were effective in one situation were often ineffec-

tive in others. Brokerage is not a step-by-step plan for solving all transportation problems. Brokerage cannot be neatly packaged like some explicit planning or operational tools and methods. Brokerage is more a "frame of mind," a way of approaching a problem, regardless of the resulting solution technique. One brokerage analyst called brokerage an "attitude geared toward a preferred transportation future"--that preference being for a multimodal management orientation to meeting actual demand and using existing suppliers to the greatest possible extent (Edner, unpublished data).

The approach is not an explicit plan or model, yet it does suggest a planning process. This process is attuned to market trends, imperfections, and opportunities. This process seeks to build the necessary consensus up front among suppliers, public agencies, decision makers, and private interests in order to effectively implement a feasible plan. The process is reiterative in that priorities change as travel patterns and institutional relationships change and as new needs or opportunities, or both, arise. The process is guided by a transportation entrepreneur to keep it dynamic and progressive and to act as a focal point for establishing credibility for the approach.

If brokerage can be implemented in existing organizations and amidst existing institutional arrangements, the approach becomes far more feasible than establishing an entirely new organization. Such a revolutionary change (superimposing a new organization) would tend to force new institutional relationships on the environment. The adoption of the brokerage approach by existing and incoming transportation professionals and decision makers, however, would work to create a new environment more conducive to the approach.

Brokerage is not a panacea for all transportation ills, nor is it an explicit blueprint for success. Brokerage is an approach aimed at improving the ability of the transportation system to be an effective, responsive means of satisfying transportation needs. Although the approach may or may not be adopted on a widespread basis, the lessons learned and experiences discussed in this analysis (and in the individual demonstration evaluations) may serve to assist planners and local decision makers who are contemplating alternative ways to address transportation issues and even those seeking solutions to specific transportation problems and needs.

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Estimating Ridesharing Levels for Reductions in VMT

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ABSTRACT

The research described is a set of supply models for estimating the number of commuters needed to participate in ridesharing programs to achieve a desired level of travel reduction. Supply models have been developed that estimate the number of commuters needed to participate in carpooling and vanpooling to achieve given levels of reduction in vehicle-miles of travel and energy consumption. Determining participation levels identifies the degree of effort necessary to reach desired reduction levels and provides a means of assessing whether to continue with these reduction levels or adjust target reduction values to coincide with acceptable intensity and funding levels. Estimating the number of necessary commuters early in the planning process makes possible a realistic assessment of the feasibility of achieving reduction goals given the magnitude of participation levels. For even small reduction levels the number of new ridesharing commuters quickly approaches levels that are realistically difficult to attain.

Transportation activities have changed significantly in recent years with emphasis shifting from major highway construction and long-range master planning to a more diverse set of issues and concern for achieving a set of short-term objectives. A fundamental strategy of short-term objectives is to encourage more efficient use of existing highway facilities through increased vehicle occupancies.

Ridesharing offers the chance to extend the use of existing transportation systems in ways that increase their efficiency and reduce the need for additional vehicles and roadway capacity.

Given this renewed interest in ridesharing, transportation planners are increasingly interested in determining the number of commuters needed to participate in ridesharing to achieve a desired