

SECTION I

CHARACTERISTICS OF THE VARIOUS PARATRANSIT SYSTEMS

In order to analyze a wide range of alternatives for providing local paratransit service in Northern Virginia, it is first necessary to detail the options that are possible. Fortunately, over the years the variety of options has greatly expanded; we are therefore, faced with a situation where variations and combinations of traditional and innovative systems can be integrated successfully. For the purposes of this study the options have been defined as follows:

- Hail or Phone Services
- Pre-arranged Ride Sharing
- Conventional Transit/Mini-Transit Systems

In an attempt to put these three types of service into proper perspective with the various other transportation modes available, the following table on the general service characteristics of each mode was designed by the Urban Institute.^{1/} It has been made as simple as possible and is, therefore, limited in distinguishing between modes. Some of the service characteristics such as comfort, scheduling, reliability and safety are excluded from discussion.

In Section VI of this report several scenarios involving the grouping of these various services have been designed to illustrate how these modes can be blended together to create an overall increase in efficiency and service.

^{1/} See Figure I.

FIGURE 1

GENERAL SERVICE CHARACTERISTICS BY MODE

Ride Characteristics	Para-Transit Modes							CONVENTIONAL TRANSIT
	PRIVATE AUTO	HAIL OR 'PHONE SERVICES				PRE-ARRANGED RIDE SHARING SERVICES		
		CARTS	Taxi	Dial-a-Ride	Jitney	Car Pool	Subscription Bus	
Direct route (DR) or Route deviations (RD)	DR	RD	DR	RD	RD	RD	RD	RD
Door to Door	Yes	Maybe	Yes	Yes	No	Yes	Maybe	No
Travel time spent as passenger (P) or driver (D)	D	P	P	P	P	P/D	P	P
Ride shared (S), or private use (P)	P	P/S	P/S	S	S	S	S	S
System routes fixed (F), semi-fixed (S), or variable (V)	V	S	V	V	S	S	S	F
Access determined by prior arrangement (A), fixed schedule (F), telephone (P), street hailing (H), or at user's discretion (U)	U	H	H/P	P	H	A	A	F
Vehicle parking required (yes or no)	Yes	Yes	No	No	No	Yes	Yes/No	No
Convenient for baggage	Yes	Maybe	Yes	Maybe	Maybe	Maybe	Maybe	No

Source: Kirby "Para-Transit", p. 8.

HAIL AND PHONE SERVICES

The major systems covered under this heading are taxis, dial-a-ride operations and jitneys. The taxi has been around for the longest time and continues to play a significant role in supplying a necessary transportation mode to many areas of Northern Virginia.

Taxi Service

Taxi operations are owned and operated by the private sector, with heavy regulation by State and local governments. The recent history of taxi operations in Northern Virginia has seen a major shift from one-owner fleet operations to single cab ownership and lessor operations. This has evolved from unfavorable financial conditions arising out of recent Federal tax rulings. This shift has had the benefit of giving each operator more say on how to run his particular taxi, but it has the concurrent effect of decreasing the fleet manager's authority. In all, the taxi market is in need of rejuvenation because of market demand which is decreasing, first because of continually higher fares and, second, because of competition from the public sector. It is for this reason that many taxi operators are increasingly interested in providing new and additional transportation services to increase their profits and productivity. In Section II (Existing Paratransit Systems) of this report a detailed description of Northern Virginia taxi operations is presented.

Jitney Service

Jitneys are a unique hybrid transit service, half a taxi, service that can be hailed from the street, and half conventional transit since they operate over the same fixed route daily.

The typical jitney service has the following characteristics:

- A small van or bus, with a seating capacity of from 5 to 20+ passengers.
- Operating over a fixed route with no permanent stops.
- Short headways and no fixed schedule.
- Able to deviate on demand from the fixed route.

(Figure I briefly summarizes the typical service characteristics.)

The flexibility of the jitney is what made it a very popular mode of travel early in this century. Trolley lines were slowly extending out over fixed routes from the central cities and at the time were very overcrowded. During this period private jitney operators came on the scene to capitalize on the excessive demand. Eventually, as the route structure of the trolleys became more sophisticated, the jitneys came to be looked on as more of a problem by the trolley operators because they were taking away business. To put a halt to this "unfair" competition extremely repressive laws were promulgated which effectively put a halt to almost all jitney operations in the United States. This is the heritage we are faced with today in Virginia. Jitneys are by definition in the Motor Carrier Laws, illegal. However, in many of the Northern Virginia suburbs jitney operations would be viable where low densities cannot support peak hour fixed route bus routes. They could also be used to replace off-peak fixed routes where patronage is too low to support the bus route. For it is generally accepted that jitneys would attract ridership in low density areas because of their superior service characteristics.

In summary, jitney operations are well suited for the areas of Northern Virginia where gaps exist in the current fixed route bus system, for replacing little used off-peak bus service and for increasing the general mobility of the captive rider groups, the elderly, handicapped, teenagers, and one-auto households.

Dial-a-Ride (DAR)

Dial-a-Ride (DAR) service, or Demand Responsive Service (DRS), is designed to provide door-to-door service on demand to anyone in a defined service area. The service is usually initiated by telephone and is available to a number of users with different origins and destinations. DAR's usually involve a small fleet of vehicles, taxis, vans, or minibuses that are radio-dispatched. While traveling from origin to destination the user shares the ride with others who are traveling in the same general direction or neighborhood. During the course of the trip the vehicle will make small detours to pick up and drop off passengers, as well as packages. These deviations are usually limited by the dispatcher to keep travel times down to a minimum. The ride-sharing aspect is meant to increase the efficiency of the vehicle while still providing demand responsive service.

There have been a number of systems of this type set up all over the country, with varying degrees of success and costs.

One such system was developed and operated in Fairfax City, but failed for a number of reasons which are further described in Section II.

Up until recently all these operations have been run by government agencies; however, as of late private taxi operators have begun to contract for these services. These private operations have proven to be much more economical than the public operations, which gives hope that new DAR systems may be developed.^{1/}

The potential for dial-a-ride systems is quite broad. These systems can be used as feeders to line haul transit; as replacement service for conventional transit in low density areas or at periods of low demand; and providing specialized services for the elderly and handicapped.

CARTS - Community Auto Rapid Transit System

CARTS, which is a concept developed to relieve peak hour auto congestion is based on a simple idea: Turn some of the commuter automobiles into shared-ride vehicles that pick up and discharge passengers on a relatively fixed route.

Basically this is how the system works: Drivers who wish to participate in the CARTS program are first screened for their safety record, police record and insurability. They are then issued a decal and flag for their automobile which identifies them as CARTS drivers. The decals are color coded to indicate the vehicle's destination for both home-to-work and work-to-home trips. The drivers then make one pass through a designated pickup route in their neighborhood or job site to search for passengers, passengers flag any vehicle heading for their destinations. Fares are paid directly to the driver but are fixed by a local regulatory agency. A fixed-schedule conventional bus service would pick up straggler passengers.

^{1/} See Appendix II, (ITA Taxi Cab Management Magazine)

This system could also be used to feed existing bus and rail terminals.

Since this is a program for peak-hour commuters, I am not going to go into any more detail about CARTS. If the reader wishes more information, I refer them to the Mitre Corporation's publication "An Outline of a Proposal to Test Community Auto Rapid Transit Systems (CARTS)", 1975.

PREARRANGED RIDE SHARING SERVICES

Subscription Bus Service

This service is designed to guarantee a seat to travelers of a particular neighborhood from their door, or defined pick-up points, to line-haul transit or to some other common set of destinations. This prearranged ride-sharing service has great diversity among operating modes, e.g., company-sponsored van pools, company sponsored bus service, neighborhood cooperatives, school buses with volunteer drivers, chartered buses as in Reston, and even shared-ride taxicabs.

This type of operation has been particularly successful in the distant suburban areas where there is limited fixed route transit service, or little patronized bus service.

Subscription service in the Washington area has been successfully applied where large businesses have supported efforts to promote the use of the subscription service, thereby cutting down on the number of parking spaces required and reducing peak-hour congestion and in areas where there is strong community interest in such a service.

In Virginia, Colonial Transit has subscription service from Reston and Fredericksburg to downtown Virginia, District of Columbia locations, and to the Pentagon, and Gray Line has service to and from Mantua, Greenbriar, Sterling Park, and Fairfax City.

Car Pools/Van Pools

The typical carpool may have between two and six regular members, and usually rotates drivers and auto.

Participants either meet at one common point and depart from there to a common work site, or they rotate picking up members of the pool and then proceed to work. Van pools have the same basic concept of ride-sharing, but use a company-owned or participant owned van to travel to and from a common work site. The usual arrangement in a company-sponsored van pool program is such that one individual, the driver, is assigned the vehicle and has free use of it so long as he or she drives a set number of fellow employees to and from work. The riders in the van pool pay the expenses of running the van and the driver is responsible for maintenance.

In privately operated van pools numerous arrangements are made up by the participants based on their company's sponsorship or lack thereof. The operational aspects are similar to company run programs.^{1/}

^{1/} For more information on Van Pooling see VDH&T report titled Organizing and Operating a Van Pool Program, September 1976.

CONVENTIONAL TRANSIT/MINI-TRANSIT SYSTEMS

When we speak of conventional transit systems, we are referring to scheduled, fixed route, fixed fare, line-haul types of systems, using the standard type bus vehicle. In the Washington area Metrobus is our conventional transit system.

Mini-transit systems are also fixed fare and fixed route, but employ a much smaller vehicle and are confined to a small service area. Reston Virginia operates such a system, it is described in detail in Section II, Existing Paratransit Systems.

Mini-transit systems are able, because of their smaller sized vehicles, to reach into neighborhoods where the large conventional buses would not be readily accepted by the residents. These smaller vehicles can be set up in a number of different configurations.

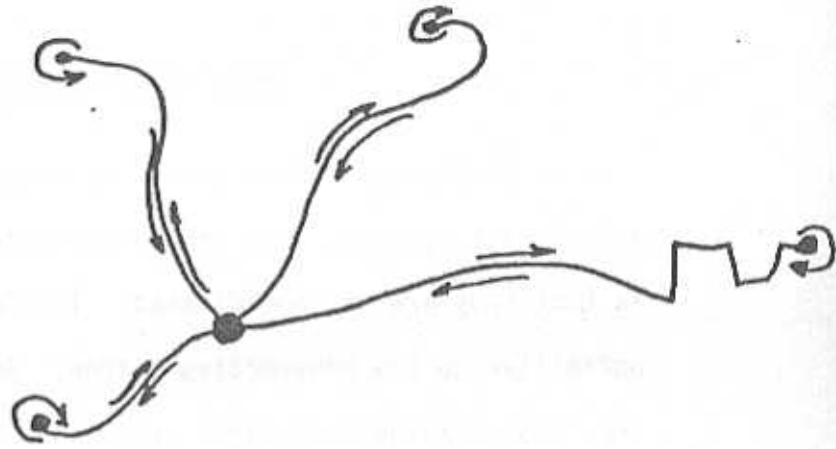
(See Figure II.)

- Conventional Routing, radial in nature going to a high sensity activity center.
- Partial Loops, navigating through a neighborhood before heading for a terminal point, and
- Full Loops, minibuses circling through a neighborhood with a terminal for transferring to another neighborhood loop.

The main objective gained by using a mini-transit system is the flexibility of the smaller vehicles versus that of the large conventional buses.

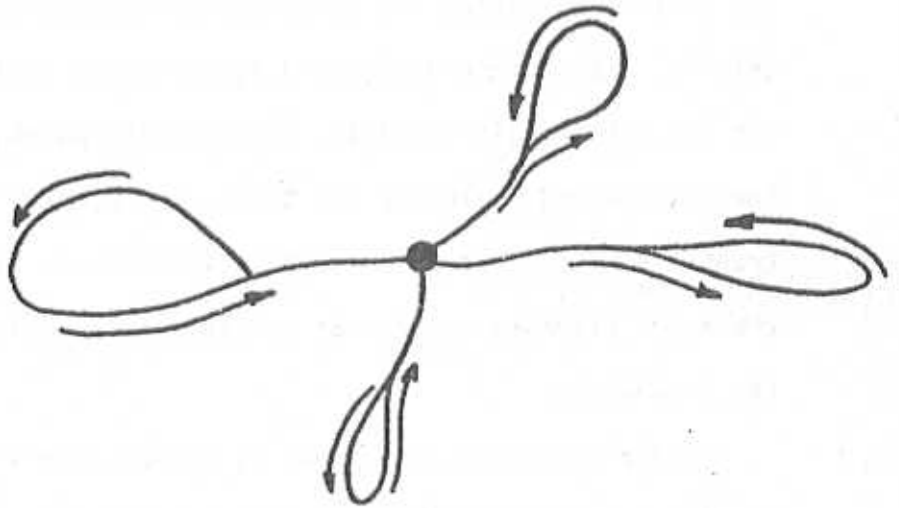
FIGURE 2
ROUTE SYSTEMS

1. Conventional Metrobus Routes
and Subscription Service



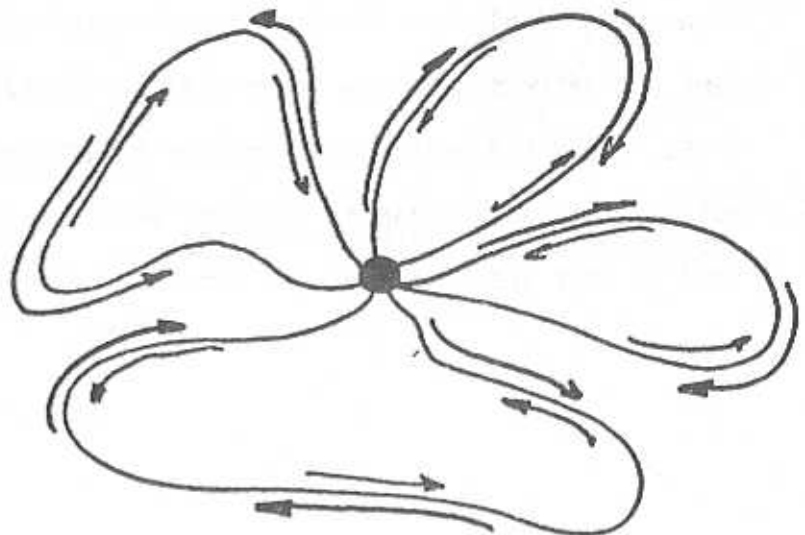
2. Partial Loop Routes

Jitneys and mini-buses.



3. Full Loop Routes

Jitneys
Minibuses



TRANSPORTATION BROKERAGE

In Northern Virginia there are a number of existing transit and paratransit systems. One of the major problems with these systems is that they are not coordinated. In addition many are unknown or unfamiliar to the prospective patron. An answer to this problem is the "ride-sharing brokerage" system. This concept would be implemented at a regional or local level. It involves some agency assuming the role of marketing and coordinating transportation services. In this role the agency designated aggressively seeks out available transit and paratransit services, subscription buses, van pools, car pools, shared-ride and exclusive use taxis, and elderly and handicapped paratransit services, as well as potential riders. It would then match these two elements to provide a viable alternative to dependence on the automobile.

There are great variations as to how such a service would be developed. In the Washington area one Maryland County has a Transportation Information Center which gives information out to prospective users of all the forms of transit available, but does not actively seek out patrons. On the other side of the spectrum is Norfolk, Virginia, where not only is information about transportation available, but the City also solicits business and is designing paratransit systems to meet the latent demand for services.