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Effect of Paratransit on Other Modes

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Abstract

Paratransit, or Dial-a-Ride, is an alternative mode of flexible passenger transportation that does not follow fixed routes or schedules. At their simplest they may consist of a taxi or auto rickshaw which has no definite stop. A small bus that will run along a more or less defined route and then stop to pick up or discharge passengers on request may also be considered as a type of paratransit. The current study is based on analyzing the effects of these paratransit modes on public transport and private vehicles.

Keywords: Paratransit, Dial-a-ride

Introduction

Public Transport service is the most used service for the trip making. The rising demand of these trips has led to the implementation of several Transport systems like Rapid Transit service (Metro), Monorail, Bus rapid Transit Service (BRTS) in the leading cities. The implementation of these systems however failed to reduce the traffic congestion to several extent due to the fact that the systems have a definite stops and pick up points, thus making commuters depending on some other modes to reach the station to use the system. Integrated Transport system has been planned to some of the major schemes like Delhi Metro which have failed miserably.

The major reason behind this being the use of paratransit modes like auto or taxi etc that provides flexibility in terms of origin and destination point. These paratransit again depends upon the number of commuters making trip and the distance. The present study is based on analyzing the effects of paratransit on other modes.

Literature Survey

Advantages of paratransit

Summarizing the preceding discussion, primary application of paratransit can be classified in to following categories.

1. Fully personalized high- fare public transport service, offered by all cities. It parallel transit, but does not compete strongly with it because of the difference between the two service/prize packages.
2. Basic public transport service in small cities that do not have regular transit system.
3. Supplementary service to transit (car sharing, DAR, leased buses or trains for group etc) provided by Paratransit in suburban feeders or substitution of lightly used lines in the late evening periods and on Sundays
4. Para transit is more economical alternative to transit along moderately busy and heavy traveled corridors during peak or other daily hours.
5. Airport shuttles such as vans, minibuses and buses, play an important role in providing access to airport from a number of focal points or MAC's such as CBD, shopping malls, convention centers and others. This case is particularly in the North America cities with high travel volumes and typically large low-density suburbs.
6. Specialized service such as those for the disabled, which can be provided by paratransit by any other mode. Although more expensive than regular transit on a per sq km basis, paratransit can usually offer both lower total cost and higher LOS for the personalized service disabled persons require. Hybrid services that carry the disabled with the other person serve the social goal of mainstreaming the disabled.
7. Considerable potential exists in coordinating the school and university bus services with both paratransit and transit. It is sometime possible to use school buses for subscription service at various times. On the other hand a substantial portion of school of trip can be served by transit.

Many transfer of school traveling children traveling from special school buses to public transport services could in much area result in significant reduction of school cost, improvement of paratransit and transit services and many other positive consequences. In some cities, such transfers could be organized rather easily, in others this could be achieved only if transit service and information about them were first improved and carefully prepared for this additional category of passengers. In all its application, the greatest benefits can be obtained from the paratransit. If it is carefully coordinated from the other modes, particularly with regular transit. Indeed this is the purpose of Hybrid services, their integration and bringing of the separation regular transit and the paratransit.

Effects of paratransit

1. The effect of paratransit depends on the number of people traveling from the trip generation and the trip attraction point. It will be less in case of an individual traveling due to the economy of other modes particularly public transport and the private car or two wheelers. But in the case of group of people the effect will be more as it is more economical as compared to the other type of mode.
2. The rate of use of paratransit is directly proportional to the distance of travel. The effect is more when the distance is less but as the distance increases the effect decreases as it is very expensive as compared to the public transport services and less comfort in riding through the distance.
3. The purpose of the trip is the one of the cause depending on the factors like the commercial, education, or other purpose like entertainment, traveling etc. The effect will be very more in the attraction point like the bus stops which accommodates the people to catch the public transit to go to other places, thus the people not using their private vehicle. But however it again depends on the number of peoples. The persons traveling especially for the entertainment and other purpose like shopping etc. will have the use of their private vehicles thus decreasing the rate of the Para transit, where in case of education purpose the travel by public transport will be more.
4. Emergency factor plays a vital role in all the above mentioned factors as the use of paratransit will be quite more for any of the purpose or distance to be traveled in this case. The use of private vehicle is also quite

high thus decreasing the rate of use of public transport service.

Methodologies

General

The paratransit effect mainly depends on the persons making trip, various factors like their income, purpose of the trip, their mode of travel and number of persons making the trip i.e individual or along with group. Other factors like emergency also cause variations in the effect of paratransit .to the other modes as the persons without the private vehicles may undergo the use of Taxis or Auto in the case of emergency.

Therefore it is the opinion of the persons making trip which can give the clear knowledge of the effect of the paratransit to the other modes. The interview of the travelers, their choice of mode to different areas and choice of the mode while traveling individually or in a group. The person's opinion to the trip attraction point will vary depending on the various trip generation points. Therefore the station point which is to be considered as the trip generation point should be selected in a single stretch so that the opinion of the persons making the trip will not vary much from each station and an average value of the effect can be easily tabulated.

Procedure

The following procedures were adopted in calculating the effect of the paratransit to the other modes:

1. A Survey point was selected on a particular stretch so that a uniform opinion of the persons making the trip would be known. The station point was considered as the trip generation point and four trip attraction points were selected from the station point.
2. The trip attraction point will be the same for all the trip generation point i.e the stations and equal number of persons are been interviewed in each of the survey station.
3. The data sheet was prepared classifying the paratransit mode in to Taxis, Auto, Jitney etc and the other mode as public transit, Private vehicle, two wheeler etc. so that there is a convenience for the persons to select their choice
4. The survey was conducted in station point and the persons were interviewed and asked their choice of mode to all the trip attraction point from the survey point. They were made to choose the mode separately when they were traveling individual or in a group and along with their purpose of the trip like

commercial, education and others purpose like shopping, Entertainment etc.

5. After interview process is completed the summation of the choice of mode like auto, Two wheeler, Jitney etc divided by the choice of public transit mode and the private mode gives the total effect of paratransit in percentage for the first station.
6. The same procedure is carried out in the remaining stations to obtain the total effect of Paratransit (in percent).

Results and Analysis

The survey work in order to calculate the effect of paratransit was carried out on the four stops in a single stretch srinivasnagar, GaneshBhavan, Ashramastop, Chamrajpet. The interview process was carried out for the 50 persons in each of the stops a total of 200 persons.

Objective of survey	To calculate the effect of paratransit to other modes
No of stations selected	4
Name of stations	Srinivasnagar, Ganeshbhavan, Ashramastop, Chamrajpet
Total persons interviewed	200

The interview was carried to 50 persons at every station, their individual opinion as well as their opinion while traveling along with the group was taken separately and the effect were also tabulated separately.

Here are the results of the survey conducted separately for both opinions (individual and group) in survey points.)

Table4.1 Effect of Paratransit at Shrinivas nagar (Individual opinion)

Opinion: Individual		Survey Point: Srinivas Nagar				Date: 21/4/2010			
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	48	2	-	-	-	-	0%
Srinivas Nagar	Kormangala	50	36	9	-	5	-	-	10%
Srinivas Nagar	Vijaynagar	50	41	7	1	1	-	-	4%

Srinivas Nagar	White field	50	43	6	1	-	-	-	2%

Table 4.2 Effect of Paratransit at Srinivas nagar (Group opinion)

Opinion: Group		Survey Point: Srinivas Nagar				Date: 21/4/2010			
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	17	7	5	21	-	-	52%
Srinivas Nagar	Kormangala	50	17	15	-	18	-	-	36%
Srinivas Nagar	Vijaynagar	50	23	12	3	12	-	-	30%
Srinivas Nagar	White field	50	35	12	2	1	-	-	6%

The percent effect shows the total effect of paratransit to the other mode. Eg In the first case the effect of paratransit towards Majestic from the survey station were i.e all the persons interviewed made their choice of trip by

public transit or private car/Two wheeler. So as in the case when group of persons were traveling the percent effect of paratransit increased as compared to the trip made individually.

The percent effect went on decreasing from 52% to 36% for kormangala ,30% for vijaynagar and a 6% effect for whitefeild a longer distance from the survey point.

The effect of Paratransit in each of the stations was tabulated and a total effect was calculated.

Table 4.3 Effects of Paratransit at Ganesh Bhavan(Individual opinion)

Opinion: Individual		Survey Point: Ganesh Bhavan			Date: 22/4/2010				
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	44	6	-	-	-	-	0%
Srinivas Nagar	Kormangala	50	40	10	-	-	-	-	0%
Srinivas Nagar	Vijaynagar	50	42	8	-	-	-	-	0%
Srinivas Nagar	White field	50	50	-	-	-	-	-	0%

Table 4.4 Effect of Paratransit at Ganesh haven(Group opinion)

Opinion: Group		Survey Point: Ganesh Bhavan			Date: 22/4/2010				
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	22	11	1	16	-	-	34%
Srinivas Nagar	Kormangala	50	21	9	4	16	-	-	40%
Srinivas Nagar	Vijaynagar	50	29	8	-	13	-	-	26%
Srinivas Nagar	White field	50	38	6	-	6	-	-	12%

Table 4.5 Effect of Paratransit at Chamrajpet (Individual opinion)

Opinion: Individual		Survey Point: Chamrajpet			Date: 24/4/2010				
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	39	11	-	-	-	-	0%

Srinivas Nagar	Kormangala	50	39	11	-	-	-	-	0%
Srinivas Nagar	Vijaynagar	50	40	10	-	-	-	-	0%
Srinivas Nagar	White field	50	43	7	-	-	-	-	0%

Table 4.6 Effect of Paratransit at Chamrajpet (Group opinion)

Opinion: Group		Survey Point: Chamrajpet			Date: 24/4/2010				
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	25	4	2	19	-	-	42%
Srinivas Nagar	Kormangala	50	18	6	2	24	-	-	48%
Srinivas Nagar	Vijaynagar	50	28	8	-	14	-	-	28%

Srinivas Nagar	White field	50	38	7	1	4	-	-	10%

Table 4.7 Effect of Paratransit at Ashrama Stop (Individual opinion)

Opinion: Individual		Survey Point: Ashrama Stop				Date: 26/4/2010			
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	37	7	-	6	-	-	12%
Srinivas Nagar	Kormangala	50	35	7	-	8	-	-	40%
Srinivas Nagar	Vijaynagar	50	38	8	-	4	-	-	8%
Srinivas Nagar	White field	50	42	8	-	-	-	-	0%

Table 4.8 Effect of Paratransit at Ashrama Stop (Group opinion)

Opinion: Group		Survey Point: Ashrama Stop				Date: 26/4/2010			
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Srinivas Nagar	Majestic	50	26	8	1	15	-	-	32%

Srinivas Nagar	Kormangala	50	20	9	-	21	-	-	42%
Srinivas Nagar	Vijaynagar	50	28	12	-	10	-	-	20%
Srinivas Nagar	White field	50	42	4	-	4	-	-	8%

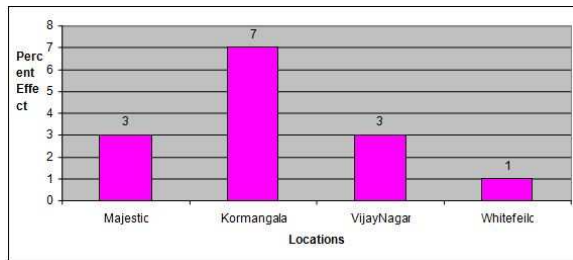
Table 4.9 Total opinion of all stations (Individual)

Total opinion of all the stations(INDIVIDUAL)									
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Station	Majestic	200	168	26	-	6	-	-	3%
Station	Kormangala	200	150	37	-	13	-	-	7%

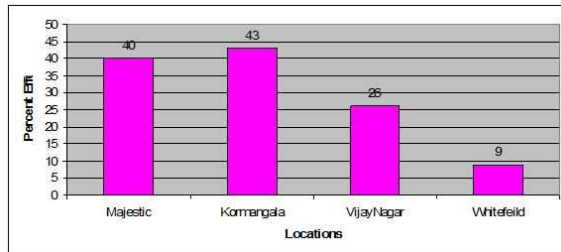
Station	Vijaynagar	200	161	33	1	5	-	-	3%
Station	White field	200	178	21	1	0	-	-	1%

Table 4.10:Percentage Effect of Paratransit (Individual opinion)

Total opinion of all the stations(GROUP)									
Location		No of Interv	Public transit	Car/ Bike	Paratransit				Percent Effect
From	To				Taxi	Auto	Jitney	Others	
Station	Majestic	200	90	30	9	71	-	-	40%
Station	Kormangala	200	76	39	6	79	-	-	43%
Station	Vijaynagar	200	108	40	3	49	-	-	26%
Station	White field	200	153	29	3	15	-	-	9%



Graph 4.1: Percentage Effect of Paratransit (Individual opinion)



Graph 4.2: Percentage Effect of Paratransit (Group opinion)

The above graphs represent the total Effect of Paratransit over other modes.

The first graph represents the total effect when the trips were made individually by a person. The total effects were very less than 10% for all the trip attraction point from the survey point.

The second graph represents the total effect of paratransit on other modes when the trips are made in a group. The total effect was higher as compared to the effect when the trips were made individually. The total effect from the survey point to Majestic was 40% which indicates that 40% of the people making their trips towards Majestic opted to go by the Paratransit. It increased to 43% towards Kormangala, but thereafter started to decline to 26% for vijaynagar and 9% for Whitefield.

Conclusions

1. The effect of paratransit over the other modes depend on the number of persons traveling (i.e Individual or group)
2. The paratransit effect will be more while the trip is made in a group where as it will be very less when made individual.
3. Effect of paratransit is directly proportional to the distance of the travel .The greater the distance of trip attraction point from the trip generation point lesser will be the effect of the paratransit .
4. The economy of the paratransit also depends on the distance and the number of people. It is economical for the nearest distance where as the cost increases as the distance

increases and as the number of persons traveling decreases.

5. The Effect of paratransit also depends on the purpose of going towards the trip attraction point. Eg. Travelling towards Bus stops, railway station for migrating to the other places will have the use of Paratransit than private car or two wheeler. However this also depends on the previous factor as how many persons are traveling towards the attraction point.
6. There will be a considerable variation in both the individual and group opinion in case of emergency.

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