

Experiences from a non-conventional urban public transportation in a Brazilian medium-sized city

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ABSTRACT : This paper shows the experiences in the deployment and regulation of a non-conventional transit service, provided by low capacity vehicles (vans), in a Brazilian medium-sized city (Uberlândia, MG, population 500,000 inhabitants). The basic characteristics of the service, since its appearance in the city until its regulation, as well as the first insights after regulation as a complementary and partner to the regular bus service are presented. The vans operate free to passenger, running in the suburbs of the city, feeding transfer terminals and regular bus stops. It is expected that the regulation will provide a better transit service. In addition, it may offer more jobs, reduce the automobile use and improve the urban transportation system as a whole.

Key words: Urban Public Transportation; Mobility; Low Capacity Vehicles.

RESUME : Cet article montre les expériences de la mise en service du transport collectif par véhicules de capacité réduite (*vans*) dans un moyenne ville du Brésil (Uberlândia, MG, population aux alentours de 500.000 habitants). Leurs caractéristiques fondamentales depuis son debut jusqu'à sa réglementation, les premières observations après la mise au point comme un service complémentaire partenaire avec l'autobus. Le transport par *van* est gratuit pour les passagers, circule dans les banlieues, nourrissant terminaux d'intégration et points d'arrêt régulier d'autobus. Il est attendu que cette réglementation fournira un meilleur transport collectif aux passagers. En plus, le nouveau service offrira plus de poste de travail, peut reduire l'usage des voitures privée et améliorer les conditions de transports dans la ville dans son ensemble.

Mots-Clés: Transport Public; Mobilité en Transport; Véhicules de Capacité Réduite.

1. INTRODUCTION

The urban bus transportation in the large and medium-sized cities of Brazil has been experimented a competition from vehicles of smaller capacity (vans) in the last years. Those vehicles, operated most of the time by autonomous private drivers, appeared without the approval of the MPOs (Metropolitan Policy Organizations) and started to compete with the buses as they offer a service with smaller trip time and with very close characteristics and attributes to the private car.

Several factors, related or not to the regular bus service, might have contributed to the appearance of the non-regular or informal van transportation

service. In spite of the territorial extension of Brazil and differences in socioeconomic and form among the large and medium-sized cities of the country, some of those factors can be enumerated as indicative of the appearance of the non-regular transit service.

The accentuated increase of the urban population in the last decades –more than 80% of the Brazilian population live in the cities (FERRAZ & TORRES, 2001)– and the consequent increase of the demand for public transportation was not accomplished by the regular system, which did not increase the offer of the service in the same order of the required demand. Thus, the level of service of the regular bus system deteriorated opening space for the non-regular operators. Besides, the regular system is not able to compete with the vehicles of smaller capacity

in their more characteristic appeal, that is, the reduced trip time.

On the other hand, factors not related to the bus public transportation, such as the reduction of the import taxes of vehicles in the beginning of the 90s and incentives in the purchase and leasing of those vehicles, might also have contributed to the rise of the non-regular system. It is possible that the process known as globalization –consolidated with that denomination in the 90s– have enlarged the transportation market, through the privatizations and concessions, motivating the appearance of the non-regular system. In Brazil, the apparent stabilization of the currency in the middle of 1994 might also have contributed so that new operators ventured in the non-regular transportation market.

The informal system still presents some attractive factors as high profitability (because the system is operated practically in the corridors and at rush times); the operators don't pay taxes; they don't provide free rides for the senior citizens and fare reduction to students, attributes that are provided by the regular bus system. They are also faced with great mobility in the system, that is, the operators may enter and leave the system by their own, as the service is an informal and non-regulated one.

This article analyzes the appearance of the informal urban transportation service operated through vehicles of smaller capacity in the city of Uberlândia, MG, from its appearance, around 1995, as a non-regular transit system competing to the regular routes of the urban buses to its regulation in October of 2001. Through a partnership among the MPO, the regular bus operators and the new operators, the service was regulated as a complementary to the regular bus transportation, running in the suburbs of the city, feeding terminals and regular bus stops, and providing free trips to riders. The idea of running in the suburbs of the city is a way to reduce the traffic flow in the central areas and the free trip could prevent the still non-regular operators (as not all current autonomous operators were suitable to enter the new system) from continuing running their vehicles.

The first insights indicate a certain acceptance of the new system by users and operators, with improvements in the operation of the urban public transportation as a whole and consequent decrease in the traffic flow in the central area of the city, improving the traffic conditions for regular buses and private cars. It is also expected that the new

system, besides contributing to improve the mobility and reduction of the air pollution in the central area of the city, could stimulate people to leave their private car at home and to ride in the public transportation.

2. HISTORICAL

The transport through vehicles of smaller capacity is known as paratransit. That transport type is common in less developed countries, being the transit mode used in most of the cities of the Latin American countries, except in Brazil where the bus mode prevails (more than 90% of the trips for urban public transportation in Brazil are accomplished by bus) (FERRAZ & TORRES, 2001).

The paratransit denomination varies according to the country: *Públicos* in Porto Rico, *Por Puestos* in Venezuela, *Dolmus* in Turkey, *Jeepneys* in Philippines, *Jeetneys* in the English spoken countries, *Kombi* in Mexico, etc (FERRAZ & TORRES, 2001).

According to BALASSIANO (1996), that transit type has been used by several reasons in several cities of the world, including the school transport and the charter. According to the same author, *Rickshaws* and *Cycle Rickshaws* are responsible for 15% of the public transportation market in India and *Tuk-Tuks* and *Silor Leks* play an important part in the provision of fast transport for people and goods in Bangkok, Thailand (Tanaboriboon & Agad, 1990; Tanaboriboon & Madrona, 1990, apud BALASSIANO, 1996). In the USA, the options vary among Shared-ride Taxis, Jitneys and Commercial Vans. *Matutus* in Nairobi, Kenya, *Por Puestos Minibuses* in Caracas, Venezuela and *Bajays* in Jakarta, Indonesia are other examples in less developed countries (BALASSIANO & BRAGA, 1999).

FERRAZ and TORRES (2001) classify the paratransit mode in three groups: private transportation with modified use, where appear the rented cars and those used as shared cars (carpools); contracted transportation, including the shared vans (vanpools) and the chartered vehicles; and the flexible regular transportation such as the taxis, dial-a-ride transportation and low capacity vehicles (vans or minibuses providing a deregulated service).

BALASSIANO and BRAGA (1998) make a parallel between the van operation and minibuses in countries like Great Britain, in spite of the design

differences among the vehicles. The authors state that the minibuses operation began before the deregulation of the transit system in 1985, filling out a gap among the regular system for bus and for taxi.

In Brazil, the existence of non-regulated or informal transit services is not a recent fact (SANT'ANNA & BALASSIANO, 2000). The beginning of the 20th century witnessed the appearance of the first urban transit routes operated by road vehicles. In the middle of 40s buses and vehicles of smaller capacity were operated as a complementary to the traditional trolley services. That transit mode started to compete in an intensive way in routes operated by trolleys, which practically stopped operating in the 60s. It is possible that the competition that is verified now between the non-regulated transit and the buses is similar to what happened in the past between the bus and the trolley mode.

In Uberlândia, the informal transit system began to operate in the middle of 1995, so much for vehicles of the van type as for a new taxi mode known as "moto-taxi", through motorcycles.

The regular bus transit system of the city went by a restructuring, in July of 1997, through the deployment of the Integrated Transportation System (SIT). The transit system, then operated through radial and diametrical routes, changed its operation to the trunk-fed routes, with the introduction of four suburb terminals and a central integration terminal. The physical and fare integration allows the passengers to make the transfer in the transfer points (terminals) without paying two passenger fees (SETTRAN, 2001).

The non-regulated van transportation started then to compete with the regular bus transportation, which was losing ridership even after the implementation of the SIT system. The fare charged in the non-regulated mode had the same value of the charged in the regular bus mode. In the middle of 1999, it was introduced into the regular bus system some routes operated by minibuses, with the idea of competing with the non-regulated mode. That strategy did not reach the expected results, mainly because those minibuses have adapted chassis, appearing more like the regular buses than with the vans. The informal transportation mode was regulated in October of 2001, when the drivers started to operate as partners of the bus operators, feeding routes and terminals without charging a fare from passengers.

3. DATA FROM THE TRANSIT SYSTEM IN UBERLÂNDIA

During the 1995-2001 period there was not much information about the unregulated van service ridership. There was, though, a 24 day police enforcement period, which precluded most of the van operators from providing the service. In the period, from November 17, 1999 through December 10, 1999, the bus ridership increased from 3,402,675 passengers before the period, to 4,120,184 passengers during the period, and reduced to 3,682,649 passengers after the 24 day period (Source: SETTRAN, 2001). Despite that, the bus service was losing ridership since 1995 (see Table 1). The transit data for the city of Uberlândia, from 1995 to 2000, can be seen in Table 1, collected by month and presented as annual average (SETTRAN, 2001).

As it is observed in Table 1, the ridership is falling since 1995, as well as the annual average IPK (Passenger per Kilometer Index). The amount of routes, which had a quick increase in the period from 1997 to 2000, was not compensated by the correspondent increase of the fleet, what resulted in an increase of the average age of the vehicles. The number of monthly trips in 2000 almost reached the 1997 figures, although the number of kilometers traveled in 2000 overtook the 1997 value. It is possible that the fall in the number of trips after the implementation of SIT is because the passengers that make two trips in a row and use the transfer terminals are not being counted twice because they do not pass through the vehicle counter when they begin the second trip.

The data of the non-regulated transportation were collected through field research by the MPO, in 2000, and they are shown in Table 2 (SETTRAN, 2001).

Table 2: Data for the non-regulated transportation by vans in 2000

	Working days	Saturdays	Sundays
Fleet	436	229	47
Number of Trips	608	475	36

Table 1: Data of the transit system for Uberlândia

Year	Passenger transported	^a IPK (average)	Routes (average)	Fleet (average)	Fleet age (years)	Trips (month)	Km (month)
1995	74,936,311	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1996	72,791,321	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1997	63,744,489	n.a.	^b 77	^b 287	^b 4.26	^b 146,363	^b 2,188,285
1998	58,173,096	2.193	81	277	4.52	136,122	2,120,552
1999	55,711,639	1.988	84	283	4.89	138,961	2,210,506
2000	49,697,853	1.674	87	288	4.97	143,236	2,330,064

^a = passenger per kilometer index; ^b = after implementation of the SIT system, in July; n.a. = not available

It is observed that the non-regulated transportation provides mainly work type trips because the vehicles operate more in the working days and in the Saturday morning. The fleet and the number of trips fall considerably on Sundays. The service is only offered during the day, being practically inexistent after 10PM, according to SETTRAN.

The data of SETTRAN also show that the taxi service in the city presented 282 permissible drivers, 73 drivers registered in the charter service and 191 drivers that provide the school transportation in the city.

4. REGULATION OF THE INFORMAL TRANSPORTATION

The regulation of the informal transportation in Uberlândia, proposed by the MPO, with the agreement of the bus operators and the drivers of the informal transport, was approved in October of 2001 and denominated "Passe Livre" (Free Pass).

The proposal establishes that the vans operators will operate complementing and feeding the regular bus routes in a partnership way. The bus companies make the payment for the service to the van operators and the passengers use the Free Pass system without paying a fare. The vans run between neighborhoods and terminals of the SIT system, as they can connect points where the bus frequency is higher.

The van operators receive a monthly payment from the bus operators according to the kilometers run by month. There is a fixed monetary value by km calculated by the MPO (Metropolitan Policy Organization) according to the van costs. This value was set up by the MPO in accordance with the bus and the van operators. The MPO is responsible for the control of the offered service. The passengers

and the community as a whole provide suggestions and information and the service goes through changes and adaptation when needed.

The main advantages of the Free Pass system, besides the regulation, are in relation to the operation, which was restricted to the neighborhoods of the city, within areas with lower demand and the fact that passengers are transported free. The vans also circulate in the neighborhoods where the bus offer was low or the service was inexistent. The vans replaced some buses of regular low demand routes, which were transferred to corridors and routes of higher demand. By doing that, the average waiting time in the bus stops could be reduced. As a consequence, the congestion in the downtown area reduced and the police apparently stopped the enforcement operations to the van drivers, also reduction the justice requirements needed during the previous unregulated service.

Initially the Free Pass system defined 43 routes and 35 connection points. Three of those points were eliminated in the first week of operation, during the adaptation period. The schedule proposal is for a time operation from 5 AM to midnight, during the seven days of the week, with frequency reduction in the weekends and holidays. 100 vehicles and 200 drivers were authorized to participate in the now regularized transportation. Most of the vehicles are of the van type, with an average capacity of 12 seats, including the driver and a board auxiliary, which is responsible for the opening of the doors. Some minibuses, with an average capacity of 18 seats, also operate in some routes. The maximum capacity, however, can reach up to 30 passengers (seating and standing up) when children are riding the Free Pass vehicles.

5. DATA FROM THE FREE PASS SERVICE

It was made a monitoring of the Free Pass system in the first month of operation, from October 12 through November 09, 2001. Researchers surveyed the 35 connection points collecting data of the service frequency, kilometers traveled and the number of passengers that boarded and alighted on the stops. The survey coverage was the widest possible, reaching 84% for the surveyed days and 92% for the researched schedules during each day.

The objective of the monitoring was to verify if the service was being offered according with the SETTRAN proposal, if the number of kilometers traveled was close to that foreseen by the MPO and

by the bus operators and if the number of passengers making the transfer in the connection points would justify the implementation of the routes and the service as a whole.

The payment to vans operators was made in advance, based on an expected monthly kilometers traveled and on a monetary value stipulated for each kilometer of operation.

Table 3 shows the expected and researched figures surveyed during the monitoring period. As the coverage for the days and for the schedules was not complete, due to the lack of researchers, corrected values, indicating the probable offer of the service in the period, are also presented.

Table 3: Expected, surveyed and corrected figures during the monitoring period

Attribute	Figures	Expected	Surveyed	Corrected	Corrected / Expected (%)
Number of trips		109,508	64,067	83,274	76.0
Number of kilometers traveled		615,131	349,365	454,151	73.8
Passengers (B+A) in the connection points		600,000	456,408	593,299	98.9

As it is observed in Table 3, the corrected number of trips and kilometers traveled was under the expected, although the corrected number of passengers that boarded and alighted (B+A) on the connection points was closed to the expected. The main reason, which may have influenced on the expected service offer, is the difficulty in accomplishing the proposed frequency, mainly during the high demand period. Other reasons as the lack of vehicles for the service, vehicle maintenance problems, drivers and assistants stops for snacks and rest and provision of fuel for vehicles may also have jeopardized the service offer. That indicates that the system needs a reevaluation, not only in the proposal of schedules and frequencies, but also in the operation as a whole. Another factor to consider is that the passage of an informal system for a formal one is slow and gradual, and that the fact of the operators is not totally concerned with the users' service requests that the system is very well supervised by the public power.

The number of passengers corrected was very close of the expected by SETTRAN. The corrected number, however, can be still higher, because the passengers that used the service and did not boarded

or alighted in the connection points were not counted. This work is for a future research.

6. CONCLUSIONS AND RECOMMENDATIONS

The non-regular urban transportation, that appeared in the city of Uberlândia, MG in the middle of 1995, was regularized in October of 2001 as a complementary service to the regular bus transportation system. The service, known as "Free Pass", is operated by vehicles of smaller capacity (vans), transports passengers free among transfer points with regular bus routes and urban transfer terminals and it is financed by the bus companies.

The first insights, obtained through a monitoring survey in the first month of operation, indicate that, quantitatively, the service can be considered an important one in the improvement of the level of service of the regular bus transportation. The monitoring period, that surveyed the number of trips, the kilometers traveled and the number of passengers that boarded and alighted in the connection points, indicates that the service needs improvements in the operation besides constant enforcement by the MPO.

The new service works better than the unregulated one, at least for the traffic as a whole (reduced congestion in the central city area) and because there is no need of police enforcement anymore. However, it is too early to know its durability. Only time and more surveys (qualitative ones) could clarify the question. Despite that, more cities in Brazil are regulating their van service, including the service for the disable passengers.

A new research, now qualitative, needs to be done in order to verify if patrons are accepting the new service. Surveys like the boarding and alighting (on-off county) for a round trip should also be made to verify the demand for the service at intermediate stops, not only at the transfer points as it was done.

The main results, however, already indicate improvements in the traffic of the central city area, as the complementary van service does not operate in that area. As a consequence, it is expected an increase of the mobility, reduction in the pollution and probably a future reduction in the use of the private car, bringing a better level of service for the urban transportation system as a whole.

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