



## **PUBLIC TRANSPORT INTEGRATION IN A PRIVATISED MARKET: RECENT POLICY LESSONS FROM ABROAD**

**Charles Rivasplata, Ph.D.**

*Planning Department, San Francisco, U.S.A.*

*San José State University, San José, U.S.A.*

Charles.Rivasplata@sfgov.org

### **ABSTRACT:**

The principal objective of this paper is to review recent policy issues surrounding the integration of public transport. While some cities have successfully co-ordinated regional services, providing visible benefits to users, others have had difficulties. This paper examines recent case studies in Santiago, Bogotá, and Manchester, reviewing the effects that a number of agents have had on the implementation of integration strategies in these cities (e.g., factors that have led to better schedule, route and fare co-ordination). This paper begins by providing a general overview of integration. Next, it describes each case city, its efforts to achieve co-operation amongst private operators, and some of the planning and design employed. It explores the institutional changes introduced and their broader impacts on systemwide planning. Ultimately, the paper concludes that while institutional reforms have facilitated co-ordination in all three case cities, past deregulatory forces have in part prevented full-scale integration.

### **RESUME :**

Le but principal de ce reportage est la revue des politiques récentes s'agissant l'intégration du transport en commun. Tandis que certaines villes ont réussi à coordonner les services régionaux, du point de vue de la provision des bénéfices notées par les utilisateurs, les autres villes ont eues des difficultés. Ce reportage examine les expériences récentes de Santiago, Bogotá, et Manchester et revue les effets d'une variété de moyens de la réalisation des stratégies d'intégration dans ces villes (les moyens menant aux meilleurs horaires, meilleures routes, et meilleure coordination des tarifs). Ce reportage commence avec la introduction en général de l'intégration, et continue avec la description de chacune des trois villes indiquées, l'effort de chacune atteindre la coopération parmi opérateurs de transport privé, et un peu du planning et dessin employés. Il examine les changements institutionnels qu'on a introduit et leurs effets en planning pour tout le réseau. Finalement, le reportage conclut tant que les reformes institutionnelles ont facilité la coordination dans les trois villes, mais les forces de la dérégulation, dans le passé, ont empêché l'intégration de grandeur nature.



## INTRODUCTION

While most experts agree that privatisation has promoted innovation and reduced government expenditure on transport, in some unregulated markets it has also resulted in the deterioration of systemwide service planning. In many cities, private operators do not actively participate in co-ordinative efforts with other bus or rail operators, largely due to a lack of incentives. However, in response to rising levels of travel demand and auto dependency, some public sector authorities have begun to work closely with private operators to integrate public transport services.

This paper traces the evolution of public transport integration in three privatised markets: Santiago (Chile), Bogotá and Manchester (U.K.). In all three case cities, the negative effects of unregulated services prompted government to make overtures toward ensuring some level of co-operation among private bus operators. This paper attempts to provide insights into the factors that have influenced co-ordinative efforts to improve public transport in the case cities. It explores the institutional changes introduced in each of these cities (e.g., the TransMilenio Plan in Bogotá), and their broader impacts on systemwide planning. The following section provides general background on public transport integration, its principal goals and objectives and its significance in regionwide transport planning.

## OVERVIEW OF PUBLIC TRANSPORT INTEGRATION

Public transport integration includes the comprehensive planning of services within an urban market for the purposes of facilitating seamless, multi-operator journeys. It entails the organisation of modes and services into a rational system of operational features in terms of routes, frequencies, timetables, fares and ticketing, as well as policy aspects, such as planning, marketing and development (Rivasplata 2006). Historically, efforts to improve integration have focused on large metropolitan areas, where levels of public transport demand necessitate the provision of frequent and dependable services.

Integration is a key element of any transport system. While operators serve key origins and destinations, it is too costly for them to provide direct service between all points and some interchange is inevitable (LTP 1997, White 2002). Passengers interchange when there is either no direct service, or when transferring offers a faster alternative (TfL 2001). In order to adequately serve transferring passengers, it is important that key services are provided, such as timetables, transfers, and off-street facilities.

Studies have revealed that improved system co-ordination can enhance urban access and mobility, which in turn, has social, economic and environmental implications for society (LTP 1997, Hensher and Brewer 2001). For example, commuters spend less time travelling, and not only save time and money, but also contribute less to urban congestion and pollution. While time-savings is of primary interest to middle and high-income urban residents, cost savings is critical to the survival of low-income residents (e.g., a higher percentage of their wages are spent on transport).



However, in order for transit to be considered a viable travel alternative by commuters and other transport users, operators must not only ensure reliability and comfort; but also, reduce travel and transfer times, and enhance through-ticketing, thereby increasing productivity. Public transport can be co-ordinated so that the transferring passenger only pays once; routing and headways facilitate the transfer of passengers; and interchange facilities are kept clean and safe for the passenger (Rivasplata 2000).

It is important to note that there are different forms of integration, requiring varying levels of operator and/or public involvement. Physical integration, the most common and least expensive form of co-ordination, involves establishing transition points between public transport networks (Henry 1990). While this contact is essential, without some element of fare integration, such as operator and government-supported card schemes, passengers may be less inclined to rely on transfers.

In addition, informational integration is essential to the distribution of up-to-date route, fare and timetable data, while institutional integration ensures public sector participation in ongoing planning and investment in interoperator schemes. Under optimal conditions, the more integrated the public transport system, the greater the potential is for significant cost and time-savings to the passenger. For example, interoperator integration can establish the conditions for two or more operators to develop a discounted, multi-ride ticket/pass. Nevertheless, the specific institutional structure of an urban area (e.g., extent of privatisation ownership of public transport, competition requirements) often limits widespread integration (Rivasplata 2006).

In a privatised environment, regional transport planning is often not conducted on an ongoing basis, leaving providers to operate without fare and timetable co-ordination. In cities where a majority of the bus market is privatised, widespread accessibility and system connectivity are jeopardised if fares, routes and schedules are not carefully coordinated and monitored on an ongoing basis. In contrast, there are also examples where the demand for interoperator transfers is inherently low because there are a small number of operators.

One of the conditions necessary for the development of a well-integrated public transport system is that an autonomous, metropolitan authority be given the power to introduce a set of through-service standards (Nash 1988). When establishing a set of intermodal transport objectives, this authority must balance the commercial interests of the operators with the needs and expectations of public transport passengers. Indeed, it is essential that regional co-ordination policy be transparent to all; be designed to preserve operator competitiveness and integrity; and respond to a proven demand for transfers.

In the developing world, if widespread public transport integration is to be achieved, it is essential that regional plans propose policies and financial support for ongoing integration. In addition, it is important that public transport service plans incorporate the needs and desires of all parties, including passengers, operators, local communities, and society-at-large.



## THE CASE CITIES

### *Santiago*

In the early 1990s, Greater Santiago became one of the first urban areas in South America to implement a competitive tendering scheme for selecting bids and awarding bus route contracts to private operators. However, it was not until a decade later that authorities developed a transport plan that seriously sought to integrate the principal public transport modes. The controversial Transantiago multi-modal scheme, inaugurated in early 2007, was largely an outgrowth of this plan. The following paragraphs describe Greater Santiago, its local transport system and its past experiences in the area of re-regulation.

Santiago, the capital and principal commercial centre of Chile, lies at the northern end of the Central Valley, 1,100 kilometres west of Buenos Aires. It is the sixth largest urban area in South America, with more than five million inhabitants (see Table 1). In recent decades, Greater Santiago has experienced substantial expansion in all four directions. It currently encompasses an area of about 650 square kilometres (Malbran et al 2003).

Table 1. Urban Characteristics of the Case Cities

Indicator	Santiago	Bogotá	Manchester
Population (thousands)	5,430	6,850	2,550
Total Employment (thousands)	2,100	3,150	1,100
Density (per hectare)	84	236	51

Sources: INE 2002, Alcaldía Mayor de Bogotá 2003, National Statistics 2001.

The average population density of Greater Santiago is more than 80 persons per hectare, comparable to densities in some cities of Western Europe. This pattern has resulted in high average trip lengths. In fact, despite the historic predominance of public transport, motorisation rates have increased rapidly, particularly in the middle to high-income residential areas. While the downtown is still a major destination, transport infrastructure investment has supported commercial and residential decentralisation (Rivasplata 2006).

Currently, the public transport network consists of bus services, shared taxi services, a heavy rail metro system and local rail (urban segments of the national network). The road-based systems are privately operated, whereas the rail-based modes are run by the public sector. Since 2007, the entire public transport system has been branded as one multi-modal system, Transantiago, which is heavily regulated by the government. Collectively, the local transport system carries over five million daily passengers: 80 percent by bus, six percent by shared taxi and 14 percent by rail (see Table 2).

Since the 1990s, the Interministerial Transport Secretariat (Sectra) has been charged with designing the tendering system, although the local office of the Transport Ministry has actually overseen much of the programme. A separate government entity, Transantiago, was established prior to the initial development of the system in 2005. While three major schemes broadened the geographic limits of bus tendering in the 1990s (Malbran et al



2003), Transantiago dramatically altered the entire transport system to include regulation of almost every service aspect, including fares, routes and schedules.

Table 2. Travel Characteristics of the Case Cities

Indicator	Santiago	Bogotá	Manchester
Daily Trips: All Modes (thousands)	16,300	11,400	6,300
Daily Mode Split <sup>1</sup> (percent)			
Private Transport, incl. taxi	35	25	87
Public Transport	65	75	13
Public Transport Modes (percent)			
Rail	14		14
Bus <sup>2</sup>	80	100	86
Shared Taxi	6		

<sup>1</sup> motorised trips only

<sup>2</sup> approximately 20 percent of Bogotá's bus market is served by TransMilenio

Sources: Malbran et al 2003, Sectra 2001, STT-DANE 2005, DfT 2005

Tendering sought to improve system efficiencies through the reorganisation of public transport in Santiago. In the 1990s, Sectra's *Transport Plan* set system fare integration as a goal for 2005 (Sectra 1995), however, it was Transantiago that introduced route, schedule and facility integration. It also formalised the bus-metro transfer of passengers, a decision that adversely impacted the metro (e.g., insufficient capacity).

In practice, Transantiago's implementation has proven difficult for various reasons. A number of service changes, including the restructuring of routes and reductions in the number of vehicles, have resulted in a chaotic situation in which passengers are inadequately served. In addition, the system has been plagued by problems associated with the diffusion of a large amount of service information, the inability to adequately control bus frequencies, and the reluctance on the part of many large operators to commit their entire fleets to service, as contracts offer little incentive for improving service.

Clearly, these difficulties have impacted Transantiago's ability to provide a seamless network of services, resulting in additional requests for government funding. In the first year of operation, passenger complaints included the scarcity of connecting buses, the lack of timetable co-ordination, deficient transfer infrastructure, and increases in the number of transfers required to complete a trip. Transantiago has vowed to resolve these issues, and recently restructured fare and route standards to respond to passenger needs.

### *Bogotá*

The image of public transport in Bogotá has forever been altered by the events of the past decade. Despite political pressure to build a heavy metro system, local government opted to construct a bus rapid transport (BRT) system, TransMilenio. Prior to this change, the



system had been characterised by a disjointed set of private bus services that offered no service integration. A description of Bogotá and its transport system is provided below.

Bogotá serves as the capital and major commercial centre of Colombia. With close to seven million inhabitants, it is currently the fifth largest urban area in South America (see Table 1). Greater Bogotá, which is in a valley, has continued to expand to the north and south. While Greater Bogotá comprises more than 1,000 square kilometres, its urbanised area covers less than 300 square kilometres (Alcaldía Mayor de Bogotá 2003).

With a population density exceeding 200 persons per hectare, Bogotá is by far the densest of the three case cities. While some trips have lengthened with the further proliferation of the auto, average trip lengths are still comparatively short when compared to most megacities in the industrialised countries. Much like in Santiago, the central area of Bogotá continues to generate a significant proportion of the city's economic activity; however, key investments in transport infrastructure have promoted both commercial and residential development in affluent areas to the north and northeast.

In Greater Bogotá, public transport carries 75 percent of motorised trips (see Table 2), a statistic that reflects Colombia's position as a developing country with limited access to high-end consumer goods. Bogotá's public transport system is comprised of various vehicle types (in ascending order of size): micros, busetas, colectivos, standard buses, and articulated. While bus operations are privately owned, TransMilenio, S.A. regulates the services of the BRT system. Currently, the entire transport system carries close to seven million daily passengers, about 20 percent of them on TransMilenio (Ardila 2007).

Prior to TransMilenio, all private bus operators were organised into firms and route associations, much as they are in a number of cities. However, in the Bogotá case, these operators were largely unregulated, offering a disjointed set of services. Bus operators depended solely on fare revenues, aggressively competing for passengers in common areas. This operational structure brought with it social costs, including traffic congestion, and poor environmental and safety conditions (Rodriguez and Mojica 2008).

By the late 1990s, local officials were committed to making the necessary changes to improve mobility in Bogotá. After having contemplated construction of an expensive heavy rail system, local authorities opted to invest in a BRT system for a fraction of the cost. In 1999, Mayor Peñalosa paved the way for the creation of TransMilenio, a separate institutional entity focused on "competition for the market," where operators bid for a contract to provide a specific set of services for a limited period of time.

TransMilenio proved to represent not only a revolution in the way passengers travelled, but also a revolution in the way operators were expected to provide service to their passengers. The new BRT system effectively designed trunk routes and rail-like stations along major north-south and east-west corridors. The original plan called for almost 400 kilometres of bus routes to be built in seven phases for a cost of about \$3.3 billion. Presently, the system consists of eight trunk lines, totalling about 55 kilometres in length.



TransMilenio operators are required to conform to a well-defined set of system guidelines designed to improve service quality and connectivity. In particular, this system offers opportunities for passengers to connect to other routes at stations; integrated fares and timetables for interline travel; and widespread route and timetable information. Nevertheless, a majority of independent bus operators still remain outside of the TransMilenio system, continuing to run unregulated services that do not integrate. These are freestanding services that do not provide users with the benefits of through-service connections (e.g., time and fare savings). Critics point out that until this issue is resolved, integration will not exist outside of TransMilenio. The short-term challenge left to Bogotá planners is to develop reforms that will effectively neutralise the negative impacts of traditional operators (e.g., legislative provisions that regulate service aspects).

### *Manchester*

Greater Manchester, which includes the central city and nine surrounding districts, is located in Northwest England, 300 kilometres north of London. It is currently the second largest urban area in Britain, with more than 2.6 million residents (see Table 1). It serves as the commercial and administrative centre for the Northwest. Clearly, its strategic location, near the geographic centre of Britain, has made it an attractive city for business.

Compared to Santiago and Bogotá, the density of Greater Manchester is low, averaging about 51 persons per hectare. As a result, while Manchester is one of the largest cities in Britain, it is also one of the most auto-dependent. Over the past decades, Manchester has witnessed a significant rise in congestion, as motorisation has increased. For example, between 1986 and 1998, the number of autos per resident increased by 60 percent to 400 autos per resident -- it has since stabilised. In 2005, 75 percent of all journeys were by auto, up from 51 percent in 1981; while only 11 percent were by bus or train, down from 25 percent in 1981 (DETR 1999). See Table 2.

Greater Manchester's transport system consists of three major modes: bus, tram and local rail (urban segments of the national network). As in other Metropolitan Counties, the bus is the most frequently used mode (80 percent of the market). The area is served by about 50 individual private operators, however, three large operators dominate the market. The tram system, Metrolink, is the only transport service directly managed by the local Passenger Transport Authority (PTA). Since its opening in 1992, local planners have sought to develop and expand Metrolink. The PTA has envisioned developing the tram and rail network into the central spine for public transport services in the County (GMJTPT 2001), with many bus services serving as feeder routes. In practice, many bus services are cross-city trunk routes connecting to local buses at a common node.

Prior to 1990, the absence of a rail link across the central area inhibited development of an integrated network. This deficiency may have contributed to a rise in auto ownership in the 1980s and 1990s. By the mid-1990s, most operator wars and mergers had taken place and few markets were contestable (e.g., scarce head-to-head competition). Consequently, few operators considered integration, especially in light of the prohibitions on fare and timetable co-ordination instituted by the Office of Fair Trading (OFT). While



the PTA supported integration, it could do little more than disseminate information and promote a few intermodal passes.

In 1997, the newly elected Blair Government introduced transport reforms aimed at reducing auto use and encouraging the use of public transport and other alternative modes. However, while these reforms focused on the integration of modes, they did not impose a new set of regulations on public transport operators. Instead, Government chose to promote collaborative service planning through the formation of public-private (or quality) partnerships. This policy gave operators some commercial autonomy (e.g., setting of fares), but required that they be more accountable to the public transport user.

One such quality partnership is the Integrate Project, a collaborative project involving the PTA, bus operators, rail operators, the airport and other local entities. The Project seeks to improve the quality of integrated services and facilitate their use. It regularly engages its members in both network-level (countywide) and corridor strategies. The countywide component is the most relevant to transit integration, as it entails extensive discussions between agencies and the Office of Free Trading to improve network-level co-ordination of services (GMPTE 2000). The Project seeks to provide more passenger information; expand multi-modal ticketing; and provide improved passenger interchange facilities.

Despite these gains, integration is not at the level that it is in Greater London, where has successfully incorporated integration into the competitive tendering system on various levels. Consequently, Manchester's progress will depend heavily on local funding and resources. Authorities have taken an incremental approach to developing interchanges, focusing on the improvement of information at new bus stops (e.g., signage and access maps); the provision of new shelters; and the introduction of real time information.

## CONCLUSIONS AND RECOMMENDATIONS

This study has reviewed efforts to integrate public transport services in three case cities. In Santiago, Transantiago addressed the issues of transport integration that had eluded the local government for decades; however, implementation proved problematic and thus far, only fare integration has been improved. In Bogotá, the TransMilenio system significantly improved the quality of service in the corridors of highest demand; however, integration is limited in scope, as at least 80 percent of the market is served by unregulated operators that do not offer integration. Finally, while Manchester promoted the formation of Quality Partnerships along key transport corridors throughout the County, the fact that most services are still not tendered means that integration is still somewhat voluntary in nature.

Transantiago proposed to develop an integrated public transport network through the development of a co-ordinated system of trunk and local bus routes, similar to the TransMilenio project. For the first time, the route tendering process in Santiago featured provisions for ensuring fare, route, timetable and institutional integration. Despite its initial difficulties in implementation, Transantiago has the potential to offer a more



orderly, integrated set of services that can ensure greater connectivity (Malbran et al 2003). Clearly, this form of regulation can be instrumental in achieving a desired level of service, as long as the regulator incorporates specific provisions into the bidding process.

The TransMilenio system, which was largely patterned after the bus system developed in Curitiba (Brazil) in the 1970s, sought to improve service and land use planning along the corridors of highest demand in Bogotá. It not only improved service quality through the provision of newer vehicles, rail-like stations and off-vehicle fare collection, but also improved the capacity and speed of service along these corridors. Once the network began to expand, integration became increasingly important to develop the market (e.g., catchment area). Unfortunately, TransMilenio does not yet reach some areas of Bogotá, leaving most passengers to depend on the inferior, unregulated services.

In Manchester, local authorities found creative ways of establishing Quality Partnerships, adopting some national guidelines for system integration. Unfortunately, it appears that regional directives were only marginally successful in achieving the level of system planning necessary to establish ongoing co-operation. There has been some evidence of public transport patronage gains in Manchester over the past few years however, these cannot be directly attributed to integrated services. Nevertheless, recent legislation in Britain (e.g., Local Transport Bill) can potentially reform OFT requirements and place greater pressure on operators to be accountable for the quality of their services and to provide a wider set of fare and timetable integration services.

In sum, this paper concludes that each city must identify its long-term objectives, weighing the costs and benefits of the integration strategies that are chosen. On the one hand, regional transport planning is essential; in order for a system to be sustainable, operators must strive to collectively provide the consumer with a safe and efficient service that can compete with the auto. However, in order for the private operator to survive, economic incentives must play a key role in the achievement of local service objectives and perhaps, operators should have input into the establishment of timetables and fare structures. System planning must involve not only local authorities, in their capacity as planners; but also private operators, as service providers and innovators.

At a metropolitan level, it is important that integration plans incorporate the input of stakeholders, including representatives of passenger groups, transit operators, and regional transport authorities. Perhaps, transport providers could collaboratively plan future co-ordination through the creation of a technical advisory committee (TAC) of transit professionals. In each case, such a committee could be charged with developing incentives for informal and/or deregulated operators, and with establishing guidelines for implementing integration standards regionwide, i.e., based on an established set of objectives and policies. At a minimum, any formal/informal agreement or contract between operators and local transit authorities should ensure service punctuality and reliability; improved physical access to transfer services; availability of service information (timetables); and participation in systemwide, through-ticketing services.



## 7. REFERENCES

- Alcaldía Mayor de Bogotá. 2003. *Población por Localidad*.
- Ardila, A. 2007. How public transportation's past is haunting its future in Bogotá, Colombia. In *Transportation Research Record, No. 2038*. Transportation Research Board of the National Academies, Washington, D.C., 2007, pp. 9-15.
- Chile. Instituto Nacional de Estadísticas (INE). 2002. *Censo 2002*.
- Chile. Secretaría Interministerial de Planificación de Transporte (Sectra). 1995. *Plan de Desarrollo del Sistema de Transporte Urbano Gran Santiago, 1995-2010*.
- Chile. Sectra. 2001. *Encuesta Origen y Destino de Viajes del Gran Santiago*.
- Colombia. Secretaria de Transito y Transporte (STT) y Departamento Administrativo Nacional de Estadísticas (DANE). 2005. *Encuesta de Movilidad*.
- Greater Manchester Passenger Transport Executive (GMPTE). 2004. *The Integrate Project Fifth Annual Report*.
- Greater Manchester Joint Transportation Policy Team (GMJTPT). 2001. *Greater Manchester Local Transport Plan (GMLTP)*.
- Henry, E. 1990. The metro put to the test in Latin America. In *Rail Mass Transit in Developing Countries*. London: Thomas Telford, Ltd.
- Hensher, D. and A. Brewer. 2001. *Transport: An Economics and Management Perspective*. New York: Oxford University Press.
- London Transport Planning (LTP). 1997. *Interchange in London: Patterns of Access Interchange at Rail Stations Outside Central London*.
- Malbran, H., G. Muñoz, A. Thomas and D. Scharz. 2003. Transantiago: Un nuevo sistema de transporte público para Santiago. In *Actas del CLATPU XII*, Bogotá.
- Nash, C. 1988. Integration of public transport: an economic assessment. In *Bus Deregulation and Privatisation*: Aldershot, UK: Avebury.
- Rivasplata, C. 2000. Alternatives for promoting public transport integration in the Americas. In Diaz and Jamet, eds., *Urban Transportation and the Environment*: 273-278. Rotterdam: Balkema.
- Rivasplata, C. 2006. *An Analysis of the Impacts of British Reforms on Transit Integration in the Metropolitan Areas*. Ph.D. Dissertation, Univ. of California, Davis.
- Rodriguez, D. and C. Mojica. 2008. Land value impacts of Bus Rapid Transit: The case of Bogotá's Transmilenio, *Land Lines*, April, pp.2-7, 24.
- Transport for London (TfL). 2001. *Intermodal Transport Interchange for London: Best Practice Guidelines*.
- United Kingdom. Department of the Environment Transport and the Regions (DETR). 1999. *Transport Statistics for Metropolitan Areas*, London: HMSO.
- United Kingdom. Department for Transport (DfT). 2005. *Focus on Personal Travel*, London: HMSO.
- United Kingdom. National Statistics. 2001. *Census 2001: Key Statistics for Urban Areas in England and Wales*, London: HMSO.
- White, P. 2002. *Public Transport: Its Planning, Management and Operation*, London: Spon Press.